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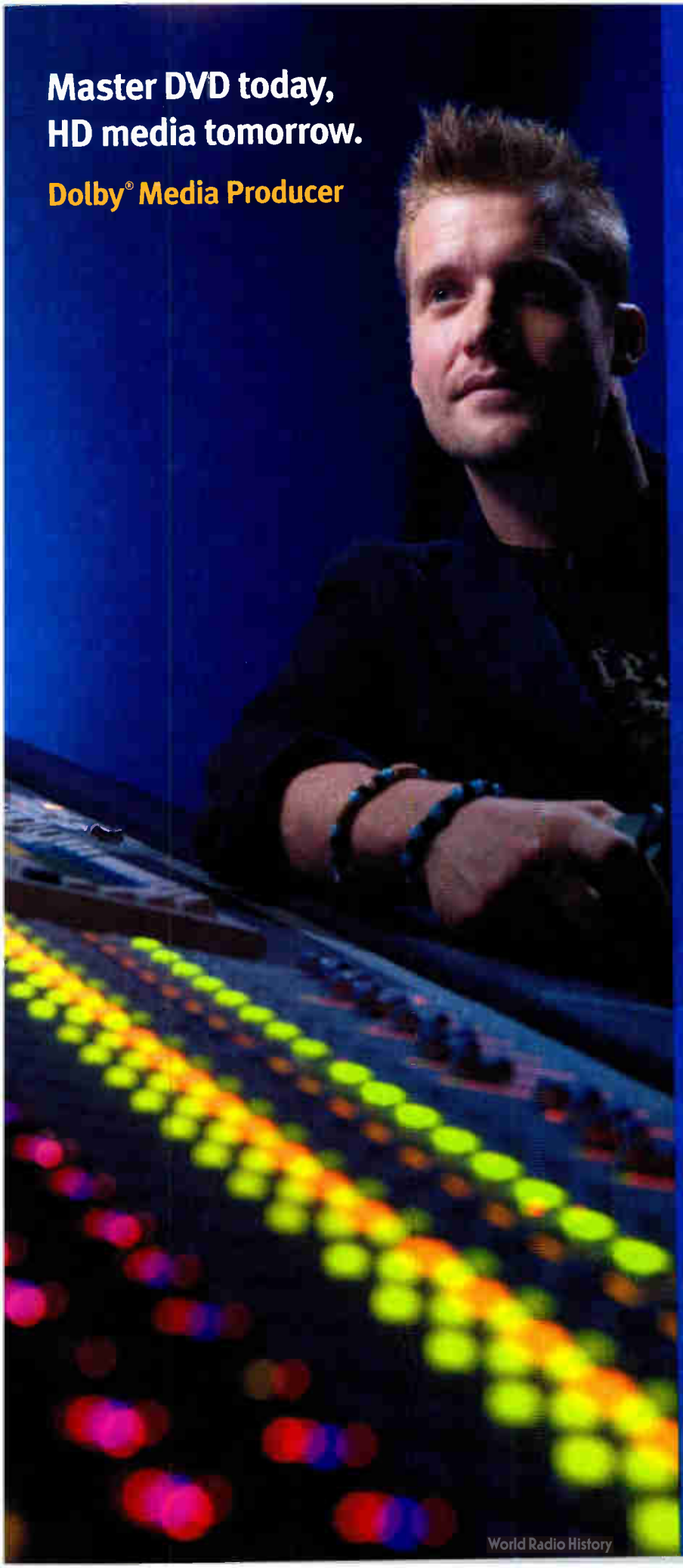

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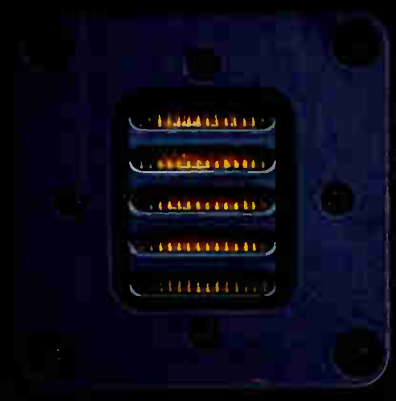

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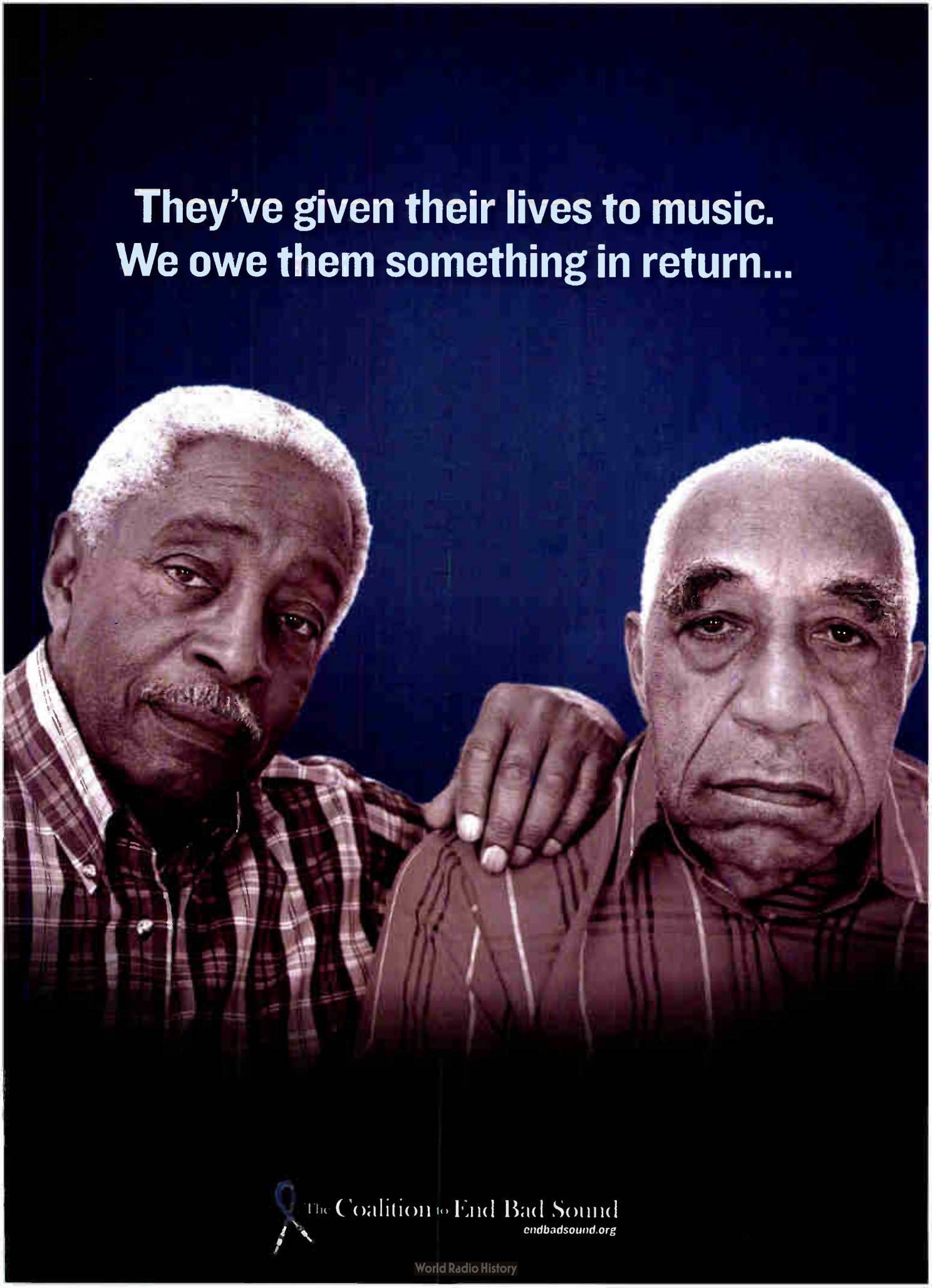

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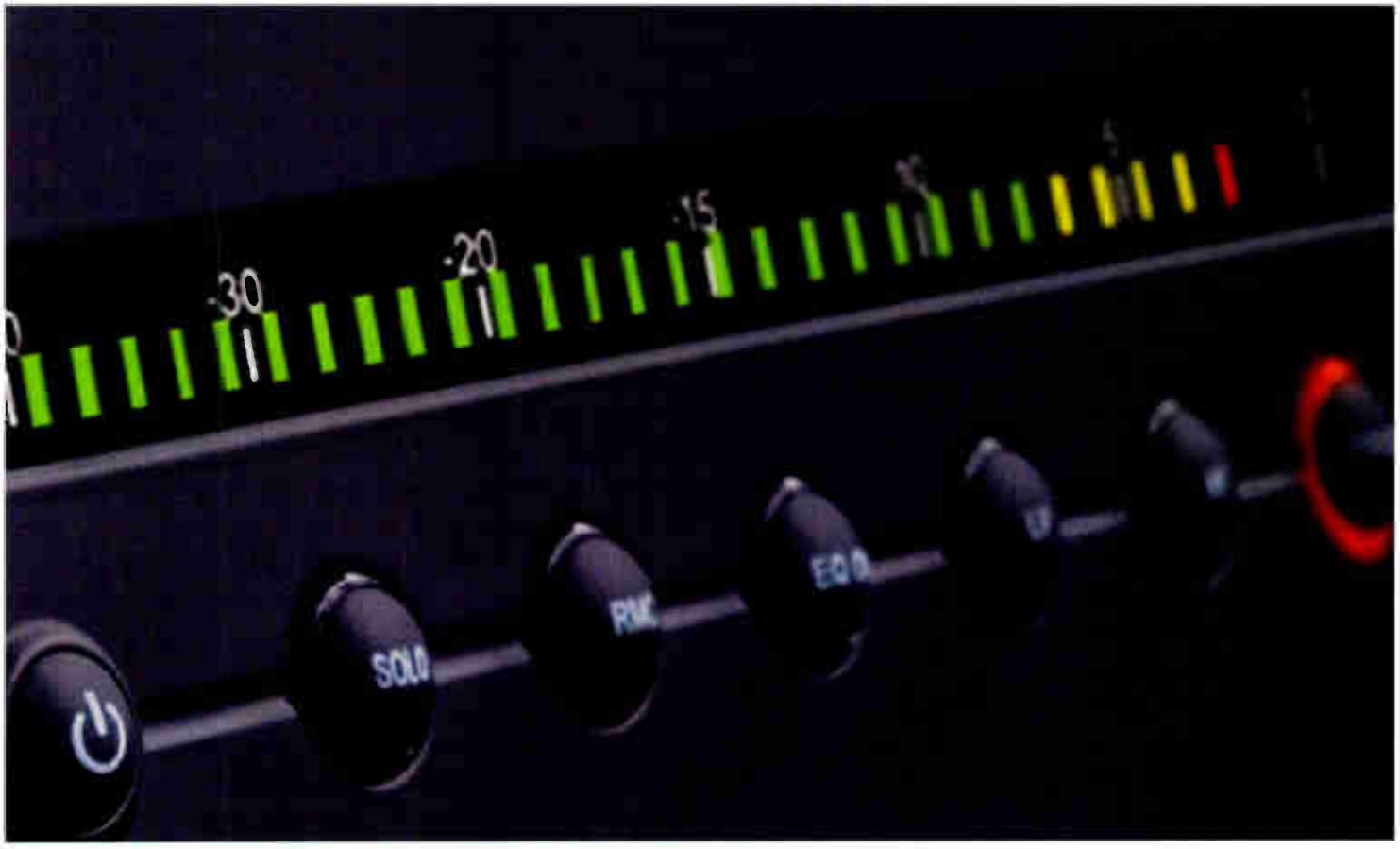

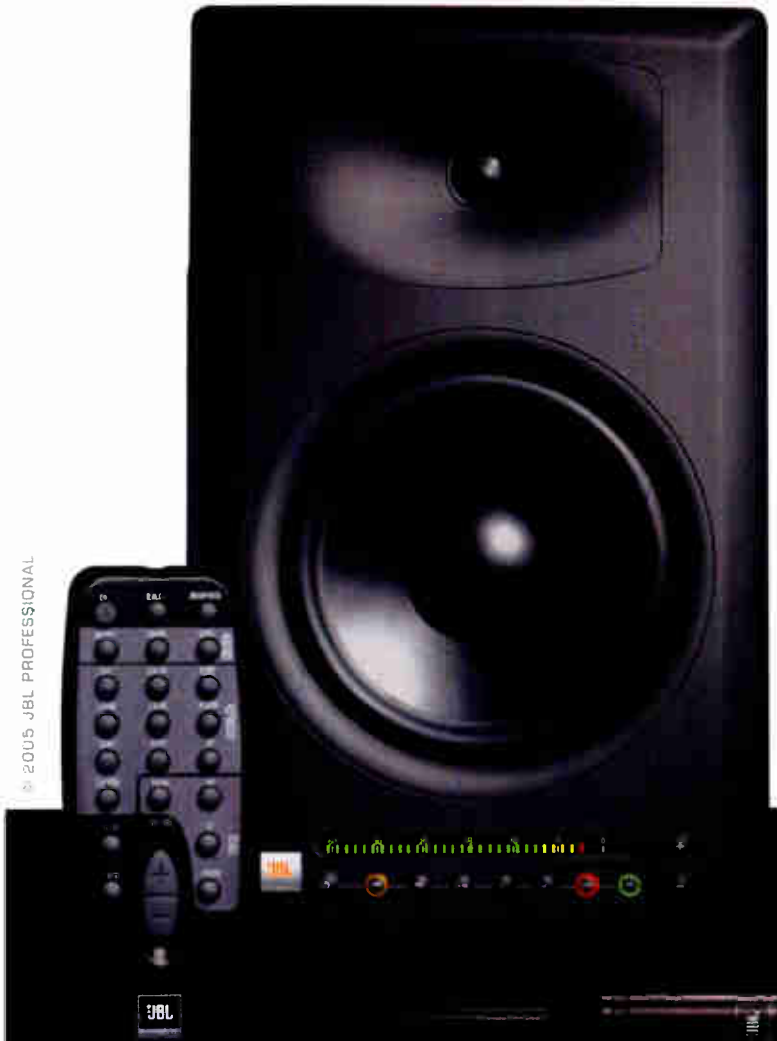

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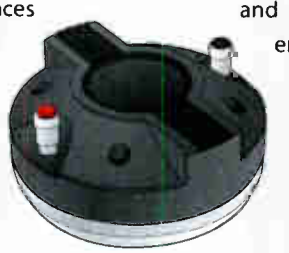

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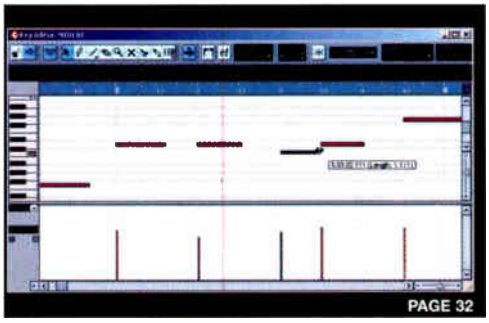

MIX®
PROFESSIONAL AUDIO AND MUSIC PRODUCTION
March 2006, VOLUME 30, NUMBER 3

features

On the Cover: The spacious Pilchner-Schoustal-designed control room at Saint Claire Recording in Lexington, Ky., features an SSL 9000 console, Pro Tools and custom Pilchner-Schoustal mains. **Photo:** Stephen "Rosco" Weber. **Inset Photo:** Steve Jennings.

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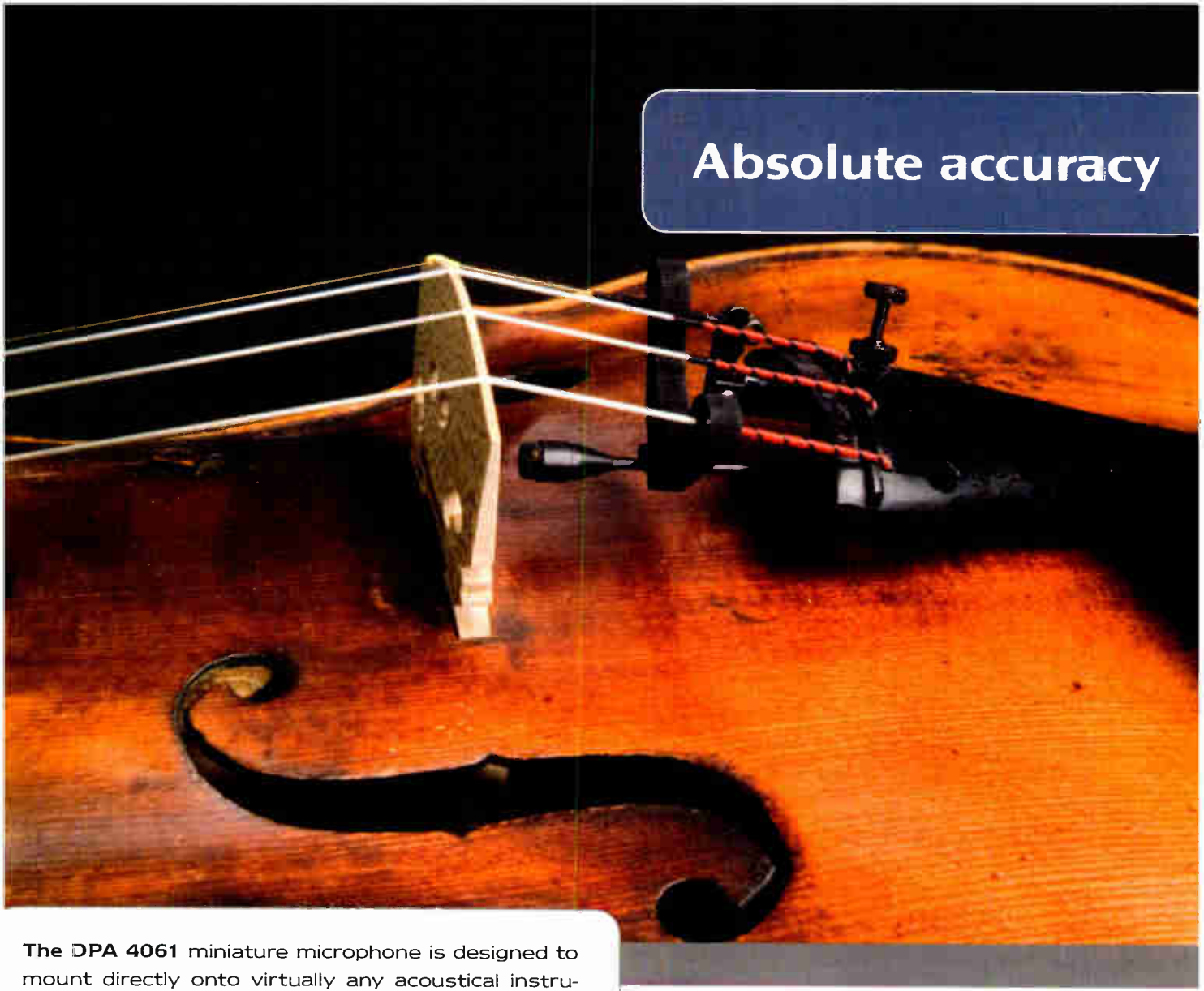

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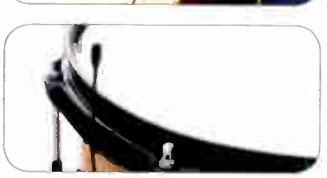

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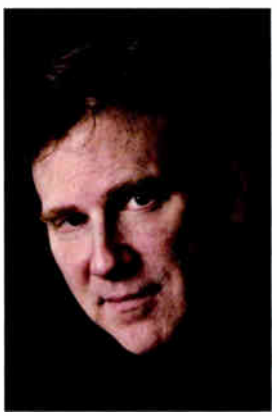

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The NASCAR Studio

Not too long ago, "studio computer" simply referred to a CPU/monitor/keyboard setup either built into an SSL or used as an outboard automation controller. These days, the computer is more typically the center of the entire studio environment, handling all recording, mixing, editing, mastering and storage duties. In fact, at NAMM, we witnessed a single PC playing back 125 audio tracks—no small feat.

In many ways, the modern studio is like a high-performance race car, with the engine (computer) providing the power that gets everything else moving. And like a NASCAR racer, our high-octane DAWs start as stock machines, but most similarities end there. The race car is born from a new showroom model, but every one of the vehicle's systems (and subsystems) is examined and tweaked, honed, replaced or discarded in the quest for maximum speed and power. You won't find frills such as cruise control, emission controls, power windows (or any windows) on a pro racer.

In building the ultimate DAW, we may upgrade the drives, RAM, power supplies and motherboards, and add DSP cards, accelerators and external A/D/A converters—all of which increase performance—yet still be held back by the operating system itself. For example, Apple's G5 chip is fully capable of 64-bit operations, yet certain parts of OS X Tiger still run at 32-bit. And both Mac and Windows operating systems exhibit the symptoms of bloatware—lots of animations and other frills that may impress the casual user, but ultimately slow operations and eat up RAM and disk space. One clear indication of this is the hundreds of printer drivers, foreign languages, fonts and more in any system install.

Another issue? After upgrading the system or any software, you're invariably left with a slew of odd files with unfamiliar names/prefixes, and you're never really sure if they're necessary. The situation is even worse if your computer is also used for non-audio applications and/or serves as your Internet machine. One sure way to clean out all those superfluous files is to reformat your drive and run a clean re-install of your OS and all apps; if you back up your preferences/settings files beforehand, the procedure isn't so bad.

A longer-term answer to system bloatware? OS authors (meaning Apple and Microsoft) should offer more options for customizing system installs. In my studio, we have an audio-purposed computer that's never been connected to the Internet—or even a printer. Look, I'm over 21 and can take responsibility for my own actions, so if I would like to trade endless printer drivers, or the ability to display Cyrillic or Chinese characters, for the capability to run a couple more plug-ins, so be it.

Computers dedicated to a single task are common in industries from robotic assembly to chemical analysis, and most of these machines could surely benefit from a leaner, meaner, faster OS. If audio also benefits from such a windfall, I won't complain.

George Petersen
Editorial Director

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Letters to Mix

Editor's Note: Our December 2005 mastering feature ("The Big Squeeze") generated a number of responses lamenting music's "loudness wars." The following letter seemed to sum up many of the sentiments. Note: The full version is available at www.mixonline.com.

IS ANYBODY LISTENING?

It is not often that I read something in the trades that makes me want to write a letter of response. The December *Mix* focus on mastering and in particular the article "The Big Squeeze" really got me going. It stirred to life a series of ongoing discussions that Lars Tofastrud and I have been having about this subject. We have preached to clients and associates alike that, as "professionals," it is our job to make the best-sounding, highest-quality end product possible. This has nothing to do with any mitigating excuses about the end listeners' choice of playback format or equipment. We in the music production business must hold ourselves to a higher standard.

There are a number of articles that have been posted by TC Electronic, Bob Katz and Orban (among others) relating to the subject of over-compression or excessive digital levels and the distortion artifacts introduced when mastered CDs produce output beyond 0 dBFS. The TC Electronic Website (www.tcelectronic.com/TechLibrary#LoudnessControlandMastering) posts a series of articles that *everyone* in our profession should read. In particular, the articles entitled "Distortion to the People," "0 dBFS + Levels in Digital Mastering" and "Overload in Signal Conversion" by Nielsen and Lund are quite revealing.

The technology available today offers all opportunities to create some of the best-sounding recordings ever made. There are higher bit depths and higher resolution in the entire recording and mastering chain. Why do all the "new" records sound like they are recorded on 12-bit equipment and run through a fuzz box? I'd say we can thank the "Loudness Wars." There are artists and record company folks telling recording and mastering engineers to "Make it louder!" Guys, there's a great device invented decades ago known as *the volume knob* that will easily make things louder without causing the THD of my final product to exceed 10 percent! When the whispered voice is just as loud as the electric guitar through a full "stack," then what is louder?

I understand it's a "service business"; so is the studio design business. I've been working in the service industries related to music recording for more than 25 years. One thing I have always believed is the customer is always right, unless they're wrong! If they're wrong, then it's our job to help them understand why it's a "bad" thing to do. Shouldn't one expect a "professional" in any field—from plumber to doctor to recording engineer—to do things in a professionally sound manner and explain to you, as a client, why certain things will make your final product better? This is how I've always run my business, and it's worked quite well for me over the years.

I'm sure most of you know the "loudness wars" started because folks wanted their single to stand out and be louder on the radio. Another interesting article by Bob Orban and Frank Foti (www.orban.com/orban/support/optimod/pages/Appdx_Radio_Ready_The_Truth_1.3.pdf) clearly exhibits that the same material mastered at levels that ranged over 9 dBs in relative loudness *all* came out of the back end of an Orban Radio processor (standard FM broadcasting equipment) at the same level! The only difference was the ones mastered at lower levels actually sounded better! The article goes on to explain how the various components of the FM broadcast chain work and how they are affected by material that contains multiple excessive overs. It's not pretty, folks! Please read this stuff—several times.

By now, many of you want to tell me that all this is a bunch of BS because 90 percent of our end consumers are gonna download an MP3 or AAC file and listen exclusively on their PC or iPod. Go ahead and put together a short playlist of some of your favorite contemporary records and mix in some stuff from the '80s and early '90s. Take a listen on your iPod or your car stereo, or wherever. I'll bet you can plainly hear the distortion. One of the problems is everyone is getting used to hearing music this way. Is the reason why MP3s and similar formats are embraced by the masses related to the fact that (so many) contemporary CDs sound so horrible in the first place?

The technology is here. Don't blame digital. Don't blame Pro Tools. (Don't even get me started on that!) Don't blame anyone but yourself. Don't expect your mix to sound as loud as a (properly) mastered CD. Leave the mastering folks some room to do their job! It has been suggested in chapter 7 of TC's "Overload in Signal Conversion" that "mastering engineers should start using oversampled meters and limiters, or at least normalize against; e.g., -2 or -3 dBFS rather than 0 dBFS. It should also be noted that some data-reduction codecs are even more sensitive to excessively hot level than a linear signal part. Digital-to-digital converters tended to sound worse than digital-to-analog converters due to clipping exclusively in the digital domain." There is no way for the end consumer to turn down the distortion. Only we can.

The NARAS Producers Wing is involved with CES in an attempt to ensure that the consumer equipment manufacturers maintain a high standard of quality for audio playback. Why bother if the CDs we produce today will play back with 10-percent (or higher) THD? It's not the playback equipment's fault; it is designed to play back musical waveforms. Not the "flat-topped" distorted signals on today's CDs (www.omniaudio.com/tech/mastering.pdf).

Does someone need to oversee the professional recording community to ensure that we are doing a good job? I'm not suggesting a governmental regulation agency; I'm suggesting that it's you and me who need to provide the "quality control." As studio designers, we strive to provide accurate listening and pleasing performance environments that can be used to make better-sounding recordings. As a principals in a loudspeaker-manufacturing company, we strive to produce a "better" monitor with lower distortion, with higher resolution and output. These are tools, just like your microphones, equalizers, compressors and, most importantly, your ears! We need to learn or maybe remember how to use these tools and take advantage of all the wonderful technological advancements provided to us over recent years. Maybe then we can justify (and save) the new "high-resolution" formats. We are professionals. If we don't care, who will? Is anybody listening?

Francis Manzella
President, FM Design Ltd.
Managing director, Griffin Audio USA

Lars Tofastrud
Senior acoustician, FM Design Ltd.
Director, Griffin Audio USA

Send Feedback to *Mix*
mixeditorial@primediabusiness.com

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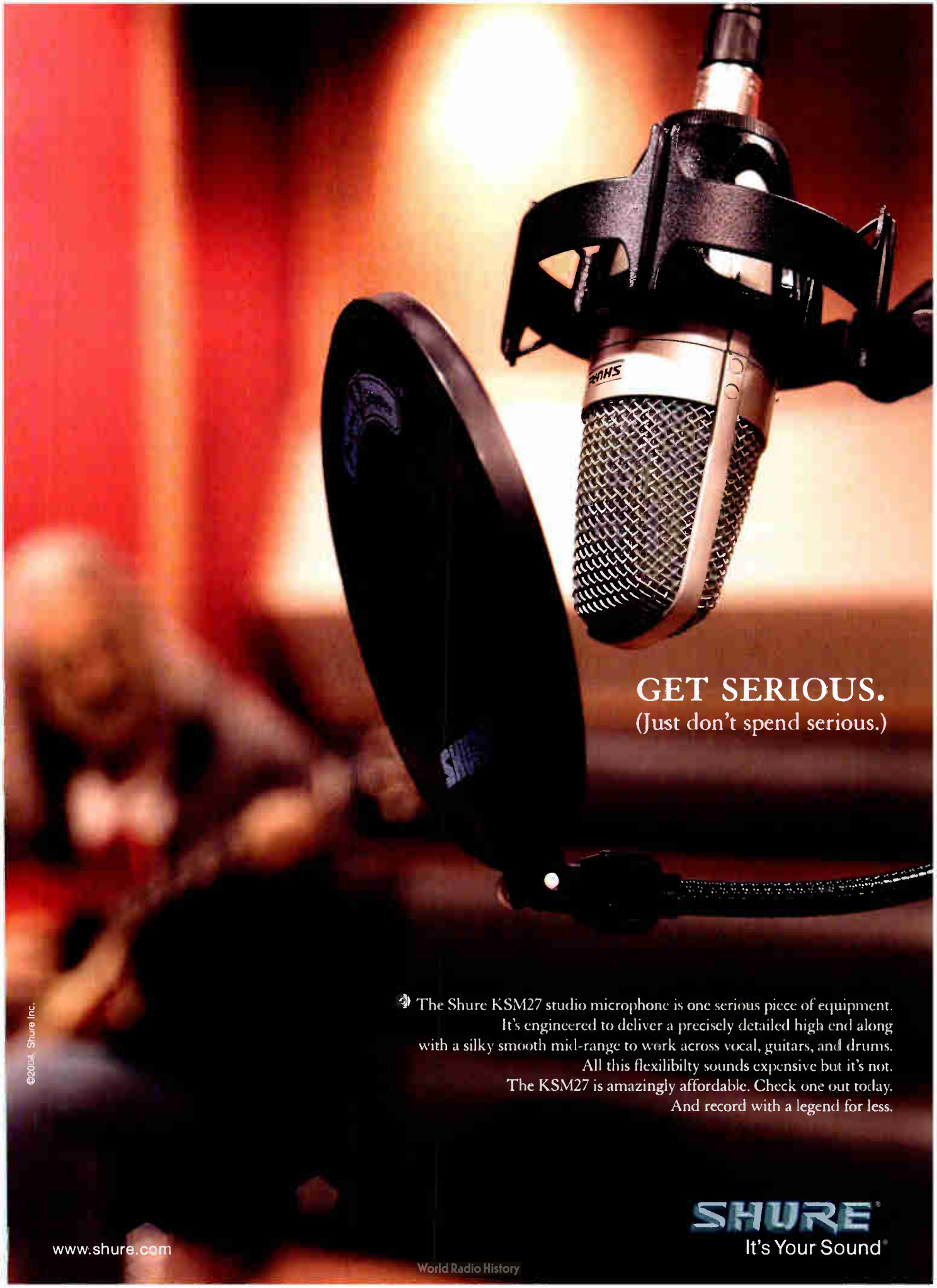
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MURRAY ALLEN, 1930-2006. FULL COVERAGE NEXT MONTH.

WIDGET POST EXPANDS
POST FACILITY ADDS THE LOT

Widget Post founder Brian Slack

Widget Post Production has acquired the 37,000-square-foot audio post facility formerly occupied by Warner Bros. and Goldwyn Sound at The Lot in Hollywood, adding four fully equipped dubbing stages and more to Widget's full-service 10,000-square-foot facility in West Los Angeles. Also included in the deal are The Lot's ADR stage, Foley stage, a sound transfer department and a 130-seat screening room, as well as offices for rent by production companies working with Widget.

The Lot will remain operational throughout the transition, and there are plans to make several technical and aesthetic upgrades to the facility in the near future. The company intends to expand its staff and will be adding mixing teams and an ADR mixer.

"Taking over at The Lot is truly a dream come true," said Brian Slack, founder of Widget. "When we opened Widget, we set out to create an atmosphere that was warm and inviting, and that offered top-quality technology and services. It is amazing that we have managed to achieve that goal—and take over one of the most prolific audio post facilities in the country in just five short years."

MANILOW REMAKES HISTORY
OCEAN WAY HOSTS HIT SONGS

PHOTO: DAVID GOGGIN

Barry Manilow completed sessions at Ocean Way (L.A.) for his new album, *The Greatest Songs of the Fifties* (CD/DualDisc). The album includes remakes of many great tunes, including the Four Lads' "Moments to Remember" (1955), the Everly Brothers' "All I Have to Do Is Dream" (1958) and Bobby Darin's "Beyond the Sea" (1959). The album is now available (at press time, it had debuted at Number One) and features behind-the-scenes footage of the making of the record.

From left: arranger Jorge Calandrelli, Barry Manilow, arranger Ray Ellis, co-producer David Benson, arranger Artie Butler and recording engineer Bruce Botnick

It's how you listen (and a big ear doesn't hurt, either): House Ear Institute's Marilee Potthoff (left), and Mix Foundation's Karen Dunn and Hillel Resner

TEC DONATES
HEARING HEALTH HIGH ON LIST

Following the 21st Annual TEC Awards, the Mix Foundation for Excellence in Audio has announced that more than $40,000 has been contributed to hearing organizations and audio education programs. More than half of the amount will support a new outreach campaign of the House Ear Institute to educate teens and young adults about protecting their hearing while listening to music.

The balance was donated to scholarships and student assistance programs of the AES Education Foundation, SPARS, six existing endowment funds at colleges and universities, and one individual TEC Awards Scholarship. The monies were distributed in addition to $28,000 in net proceeds from the TEC Awards Music and Sound Auction on eBay, half of which went to H.E.A.R. (Hearing Education and Awareness for Rockers). For more information about the Mix Foundation's programs, visit www.mixfoundation.org or call Karen Dunn at 925/939-6149.

World Radio History

SCHOOL IN SESSION

TAKING A CRITICAL LISTEN

One of the few audio schools that offers a master's degree in Sound Recording Technology, the Music Department at the University of Massachusetts Lowell (www.uml.edu) recently celebrated the news that its $500,000 critical listening room was rated as one of the top five rooms in the industry by a panel of sound engineers. The room features a 5.1 sound system and serves as both a recording studio and lab. "We ask students to identify and quantify by ear specific aspects of sound, a necessary component of recording any music," said program associate director Bill Carman.

The critical listening room is also a multitrack recording environment that incorporates four separate spaces, including the main live room with variable acoustics, an iso booth and two amp closets. Creating the foundation for the room's 5.1 surround sound system is a pair of Bag End D18E-I dual 18-inch subwoofer systems controlled by a Bag End INFRA signal processor and powered by Stage Accompany amps. The designer of the room, Bob Alach, chief designer for Alactronics, said he chose Bag End subs because of their clarity and accurate reproduction of the bass range. Other components of the system include SLS 1266 and 1065 monitors, an EMM Labs Switchman III surround controller and an Integra DVD-A/SACD player. Mixing and mastering are accomplished through a mobile production system that includes a Steinberg Nuendo DAW, Yamaha DM2000 console, TC Electronic System 6000, Genex GX9000 HD recorder and a Merging Technologies Pyramix 8-channel DSD/DVD-A workstation. Recording is facilitated via 48 mic lines, a Furman 6-channel cue system and two-way video communications.

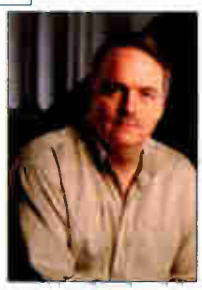
All the systems in the room, together with tracking in the Multitrack Recording Studio and editing in Room 223, are integrated via a new Fibre Channel SANmp Pro SAN from Studio Network Solutions.

OIART ADDS GAME DEVELOPMENT

The Ontario Institute of Audio Recording Technology (www.oiart.ca) is the first audio education program in North America to be registered as a game developer with Creative Labs. Three full-time OIART faculty members have full access to Creative Labs' 3-D audio tools and have already incorporated them into the school's program. The software will be taught by award-winning sound designer Vince Iannelli.

Keith Charley, software engineering manager in the Custom Engineering department of Creative Labs Inc., said, "I am both excited and impressed to see the way OIART is expanding their curriculum to encompass what is happening in the audio world in areas like video gaming and 3-D audio. They are really raising the bar and at the same time giving their students increased skill sets that will give them a needed edge that will help them to enter into the workplace."

ON THE MOVE



Who: Mike Pappas, Sennheiser USA senior applications engineer

Main Responsibilities: use my extensive experience in the television and radio broadcast industries to assist customers in getting the most from Sennheiser/Neumann products.

Previous Lives

- 1992-present, chief engineer at KUVO Radio Denver
- 1993-2003, freelance TV engineer for all major networks doing sporting events

If I weren't in the pro audio industry, I'd like to try...auto racing.

The last great movie I saw...*Sin City*.

Currently in my CD changer...iTunes, with everything from John Coltrane to Aerosmith using Apple Lossless encoding.

When I'm not in the office, you can find me...behind a mixing console doing live 5.1 concert broadcasts on KUVO, or playing with my 9-year-old son, Miles.

PAUL HONORS JBL

SIGNS ON THE DRIVER LINE

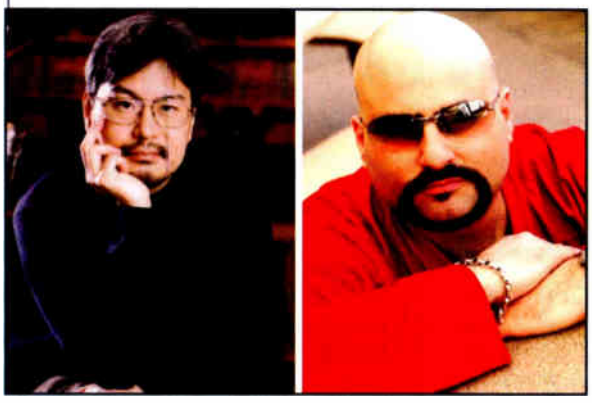
Guitar innovator Les Paul congratulated JBL on its 60th anniversary by autographing a JBL state-of-the-art Differential Drive transducer. A longtime fan of JBL technology, Paul is currently using JBL LSR6300 studio monitors and a JBL screen array system at his home facility in Mahwah, N.J.

World Radio History

THWAK! MOVES TO AVATAR STUDIOS

Owner/producer/drummer Tony Verderosa's Thwak!—a company that specializes in artist placement, music licensing and original music for TV and film—has moved its operations to New York's Avatar Studios. According to Verderosa, "Our clients call on us to produce music that sounds like it was lifted from a hit record. The list of Grammy-nominated projects that have been recorded and mixed at Avatar is intense. I'm thrilled to be at Avatar. It's a state-of-the-art facility that can accommodate any type of project, from remix-style sessions to a 60-piece string orchestra. There is a growing synergy between the recording industry and the advertising industry, and Thwak! at Avatar will continue to be at the forefront of that movement."

Avatar owner Kirk Imamura (left) and Thwak!'s Tony Verderosa



To learn about Thwak!'s work, visit www.thwak.com. For more on Avatar Studios, cruise over to www.avatarstudios.net.

ENGLAND AT VILLAGE TRACKS WITH FURCH

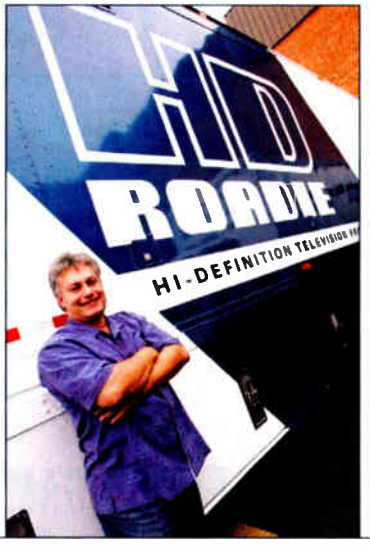
From left: Richard Furch, Eric Holden, Kyler England, Bryan Keeling and Ben Butler

Singer/songwriter Kyler England was at The Village Recording Studios laying down tracks for a new EP release with producer/engineer Richard Furch, who was assisted by Jim Monte. England recorded with guitarist Ben Butler, bassist Eric Holden and drummer Bryan Keeling.

SHURE MICS ON THE SOUNDSTAGE

PBS's *Soundstage*, which began airing in 1974, is jointly produced by WTTW-TV, the Chicago-based affiliate of PBS, and HD Ready, a St. Charles, Ill.–based company specializing in bringing music to television in high def with Dolby surround audio. "We never shoot in anything other than high definition, and we always go after the highest-quality audio," said 25-year vet Frank Pappalardo (pictured), chief audio engineer of HD Roadie, HD Ready's traveling arm. "This is our third regular season with *Soundstage*, doing 13 shows per year, plus we've done special events associated with the program, including a Fleetwood Mac concert and Farm Aid.

For a recent taping with Robert Plant, Pappalardo created a stage blueprint including the SM58 at lead vocals and an assortment of other Shure mics (KSM32, SM81s, VP88, SM89 and SM98A). "I've done over 44 TV shows in 5.1, and haven't mixed anything that isn't live in over three years," Pappalardo said. "Live and in 5.1, you deal with myriad problems—extraneous noise and bleed being two of the most potentially vexing. That's another reason Shure mics are so important to me because their rejection is so great. I don't want the drummer in the lead vocalist's mic, nor do I want all of the coughs in the audience in that channel."



INDUSTRY NEWS

Chris Hollebone

Propellerhead Software (Stockholm, Sweden) named **Timothy Self** to the newly created position of senior VP sales & marketing; he will be based out of the company's Stockholm headquarters...**Chris Hollebone** is **Euphonix**'s (Palo Alto, CA) director of European operations (including Europe, India, Middle East, Russia and Africa), and will be based out of the company's London office...**American Music & Sound** (Agoura Hills, CA) news: **Lee Carpenter** joins the company as product specialist for live sound and contracting applications; **John Devins** is the new national sales manager for Focusrite and Novation products; and **Gabriel Whyel** fills the newly created marketing manager position for all product lines...Addressing the growth of HD radio, **Harris Corporation** (Cincinnati) has responded with these radio broadcast systems sales team additions: **Mark Goins**, national accounts manager; **Doug Thompson**, district sales manager for upper Midwest (Minnesota, Iowa, Wisconsin, Illinois); **Paul Dadian**, sales, mid-market accounts; and **Garrett Wood**, team leader and broadcast sales specialist in the company's Mason, Ohio, Broadcast Center...**Bryan Dowd** joins **ProSonic Solutions** (Woodland Park, CO) as sales representative for several live sound and retail audio product lines...New distribution deals: **Telex Communications** (Burnsville, MN) appointed **Erikson Pro** (Montreal) to distribute the Dynacord line; **Yamaha Corporation of America** (Buena Park, CA) assumed distribution and marketing responsibilities for **Central Music Company**'s (Beijing) products in the U.S., as well as for **AuviTran**'s (Meylan, France) AVY16-ES; **TerraTec Producer** (Nettetal, Germany) appointed **Synthax USA** (Boardman, OH) for U.S. distribution; **Astatic Commercial Audio** (Mentor, OH) named **CB Electronic Marketing** (Denver) for Colorado, Utah, Wyoming, Eastern Montana and Southeastern Idaho; and **Symetrix** (Mountlake Terrace, WA) expands distribution in China with **Sanecore Audio Co. Ltd.** (Shenzhen, China).

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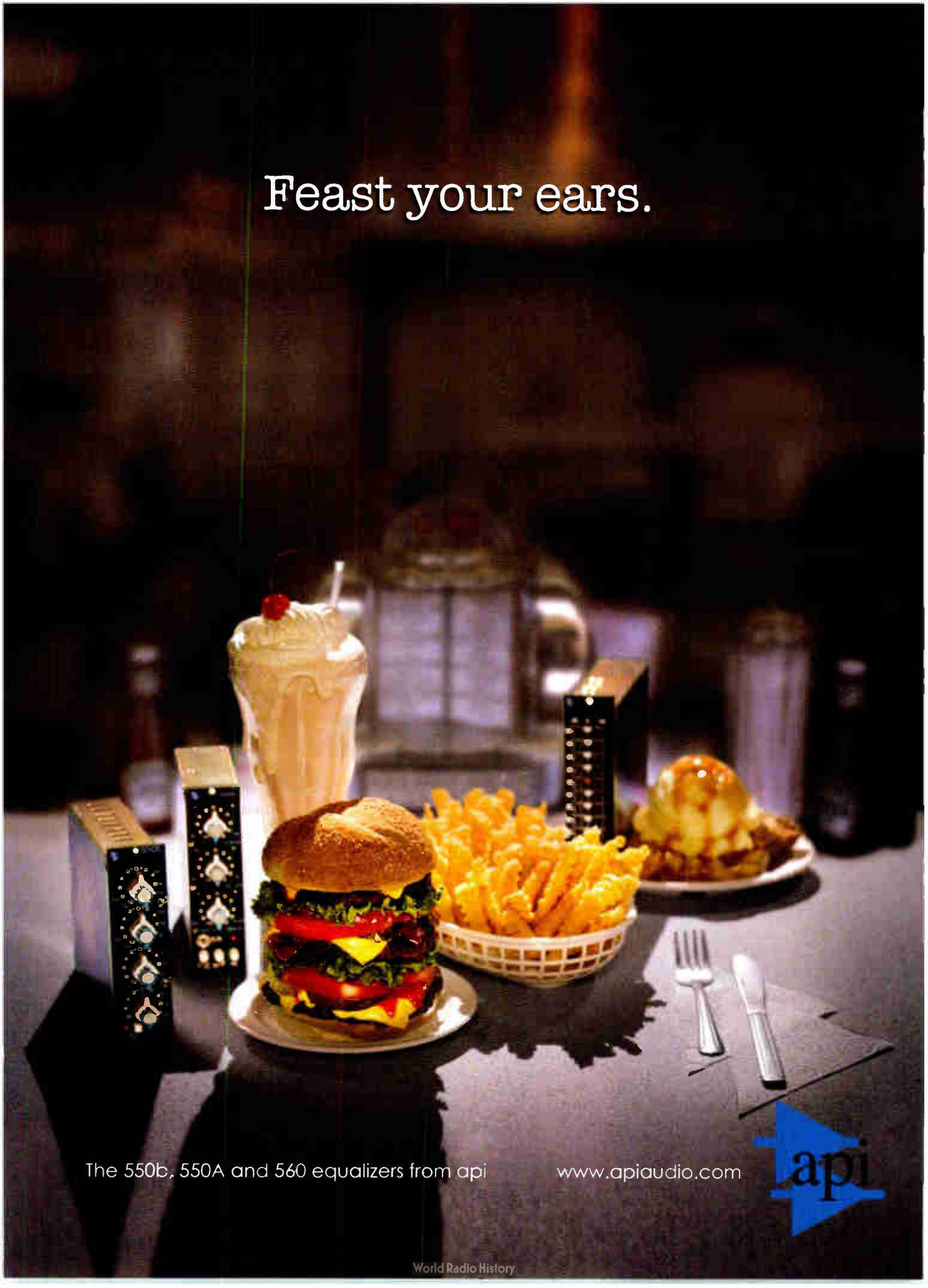

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EXTRAS

MIX WEB

Go beyond the printed page and log on to www.mixonline.com to get extra photos, text and sounds on these select articles:

Audio for Videogames Special Section
Videogame audio budgets continue to grow in an effort to give end-users an immersive experience. Dig deeper into our special section on audio for videogames, and peruse the photo gallery from highlighted games.

The Complete Computer-Based DAW
The *Mix* archives are filled with stories on choosing the right DAW, ancillary add-ons, DAW manufacturers, I/O and interface gear to record audio into your DAW and much more.

Hybrid Monitor Mixing
Get more tips from monitor engineers on mixing bands and solo artists using in-ears, wedges or a combination of the two.

Producer's Desk: Steve Epstein
Find out more about this classically inclined producer, including his thoughts on winning the Grammy for Producer of the Year, Classical, in 2004 and recording in surround. You'll also find an extensive discography.

NOTES FROM THE NET

SOUNDEXCHANGE INKS DEAL WITH IODA

IODA (www.iodalliance.com), the Independent Online Distribution Alliance, has signed a deal with SoundExchange (www.soundexchage.com), the nonprofit performance rights organization that collects and distributes royalties for sound recordings played on Webcasts, satellite radio and television, and digital cable television. IODA is the first digital music distributor to offer the integration of this service, giving its roster of more than 1,000 independent rights holders the option to manage and collect all of their digital revenue in one place. Royalty collection and distribution via IODA are expected to begin in early 2006.

Under the terms of this arrangement, IODA will provide all necessary data to SoundExchange for the labels that opt to collect the copyright holder portion of the digital performance royalty through IODA. In addition to collecting future royalties, IODA will also administer distribution of past royalties on behalf of the labels that opt into the service. IODA-distributed labels will be able to track royalties collected from SoundExchange alongside the rest of their digital royalty earnings via the Rightsholder Dashboard, IODA's Web-based business-management tool.

WARNER LAUNCHES "ELABEL"

In addition to promoting its artists through online and offline marketing, traditional and lifestyle marketing, touring and radio promotion (college, specialty commercial, satellite and online radio), Warner Music Group's new label, Cordless Recordings (www.cordless.com), will offer music through a variety of online music services, as well as through the leading wireless carriers. Cordless content will also be distributed on legal peer-to-peer networks. Rather than releasing music in the traditional album or single configuration, every few months, the label will release "clusters"—three or more songs—by an artist.

Cordless Recordings is the brainchild of music executive Jac Holzman, the founder and former CEO and creative head of WMG's Elektra and Nonesuch Records. Jason Fiber, the founder of Superfecta Recordings and The Ideal Copy, has been named president of Cordless Recordings.

According to Fiber, "As a lifelong music fan and a self-proclaimed computer geek, I've always been drawn to the intersection of music and technology. With the Cordless label, the Warner Music Group is experimenting with a new approach to introducing tomorrow's great artists while offering a home for established musicians who want to make the most of today's online world."

Artists releasing the first clusters on Cordless include Jihad Jerry & The Evildoers, Breakup Breakdown, Dangerous Muse, Nozzle, Koishii & Hush and Humanwine.

PEART ON ANATOMY OF DRUM SOLOS

Brian Brodeur, founder and president of NewYorkDVD, a DVD development, design and authoring firm, has completed Neil Peart's *Anatomy of a Drum Solo* DVD, which was produced by Hudson Music. The two-disc package features the Rush drummer discussing the elements of his nine-minute tour de force solo, a highlight of each Rush performance. Using a solo recorded in Frankfurt, Germany, in September 2004, Peart describes the inspiration and conceptual thinking behind his solos. Included are three multi-angles of the Frankfurt solo; the solo for the Grammy Award–nominated "O Baterista"; two full Rush performances shot from the drum cameras' point of view; interviews with Peart's drum tech Lorne Wheato, and Rush co-producer/engineer Paul Northfield; a previously unreleased solo from the 1994 Rush Counterparts tour; and much more.

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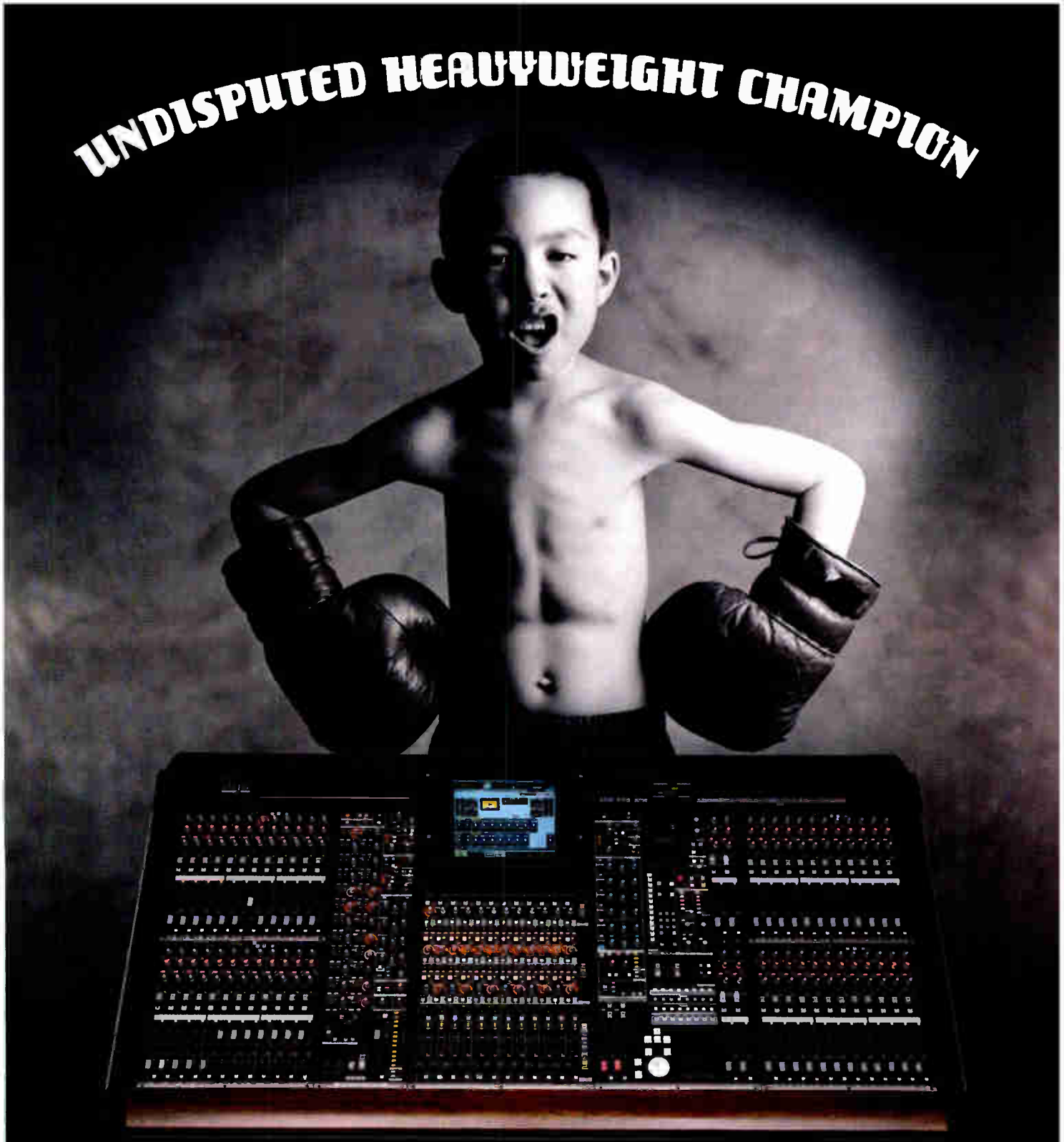
UNDISPUTED HEAVYWEIGHT CHAMPION



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Saint Claire Recording

By Barbara Schultz

In the studio business, it's not surprising to hear colleagues say that their co-workers are "like family," but at the four-months-new Saint Claire Recording (www.saint-claire.com) in the rolling hills of Lexington, Ky., the feeling is palpable. The staff members welcome clients to their state-of-the-art studio, and to their hometown, with a generous spirit. "When someone walks into my control room," explains studio owner John Parks, "I want them to be impressed and say, 'Wow, this is great. Let's get down to work.' But what I want them to *walk away* saying is, 'The staff really took care of us.' I need to do whatever needs to be done to make sure that person is comfortable."

It's not too difficult to make visitors feel at home in this richly colored, Pilchner-Schoustal–designed facility complete with four on-site luxury suites. The look of the place is a successful meshing of rock 'n' roll and deluxe hotel—like many surfaces at Saint Claire, those acoustical ceiling clouds are covered with red velvet.

"John wanted to have a no-compromise recording studio with all of the amenities to make it a full retreat experience," says Martin Pilchner. His firm designed this facility from the ground up, from the exterior walls (thick enough to soundproof against a nearby railroad crossing) to the floating walls and floors of the studio, to the complex infrastructure of the SSL J Series–equipped, 5.1 surround control room—one of the biggest control rooms in the business, much less Kentucky. "We started with a simple shell," Pilchner says, "rectangular in shape, into which we placed the complex geometry of our control room. The isolation booths and the main studio envelop the control room in a way that optimizes visual communication."

"Aside from sounding great, the control room is very ergonomic," studio manager Ron Bennett says. "I love the placement of the gear and the patchbay, and the iso booths that flank the sides of the studio. You can work within this large space and nobody feels cramped. Or there's room for people who aren't directly involved in recording at any given time to go away and relax. We have a game room, a movie room with surround sound, a hot tub—things that help you recharge."

Bennett left Music City after running The Salt Mine and October studios, as well as working as a freelance engineer/producer, to join Parks' team. "Having worked in Nashville and then seeing the scope of this studio, I was blown away," Bennett says. "It doesn't get much better than this!"

PHOTO: STEPHEN "ROSCO" WEBER

L-R: Ron Bennett, Will Parks, John Parks, office manager Joe Nipp and assistant engineer Stephen "Rosco" Weber

Parks did consider opening a studio in Nashville. The Full Sail grad is a Kentucky native who worked as an intern at The Castle before starting to build an engineering career. "But Nashville's overcrowded," he says. "There are too many great artists, too many great engineers, too many great producers, too many great studios—and only so much money. I toyed with the idea of putting my own little room together with a Pro Tools rig, but I couldn't find any good land or any good buildings to renovate. So I moved back, and not even five minutes' drive away from my house we found 14 beautiful acres."

Parks built the studio with the support of his father, Will Parks, a Kentucky banker/entrepreneur. "It's been almost four years now," Will Parks says, "since we started planning this facility. We've worked side by side, nights and weekends, together as father and son, and I'll always cherish that. I've watched my son pick out every detail, from the hardwood to the technical equipment to the wall colors, and I keep telling people, 'For a young man that never built a tree house as a child, to embark on something like this'—what he has accomplished just makes you proud as a father."

Parks says he spec'd equipment that would be a balance of perennial favorites (SSL console, UREI 1176, Neve 1073, Genelec near-fields, big mic cabinet, etc.) and his own favorite toys, like the Kurzweil KSP8. ("It's an amazing modular effects unit inside a box," Parks says.) The 5.1 monitoring is a Pilchner-Schoustal–designed MAXelle Q8 system with matching subwoofers, powered by MC² amps.

Since opening last summer, Saint Claire has hosted the band Tantric recording a single with engineer Elliott Blakey, Ronan Chris Murphy and the King Crimson rhythm section engineered by Bennett, regional act 8 Count and Kentucky-born artist Amber Rhodes recording with remixer/engineer/producer Axel Niehaus (The Roots, Faith Evans, Puff Daddy).

"For me, the biggest highlight after having opened Saint Claire," says Parks, "is that since Amber is from here, she was able to invite all her family to listen. All the people who meant the most to her—her mother, her father, her aunts, all of the [Straydog Productions] team that worked on it—and it was so cool to see her sitting right in the center section, elbows up on the console, just smiling away listening to her songs. I had my wife on one side and my mother on the other, and my father was sitting on the back couch, and we're all just sitting there grinning like fools, thinking, 'This is what it's all about.'" ■

Barbara Schultz is a Mix *assistant editor.*

World Radio History

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World Radio History

BY STEPHEN ST.CROIX

The Classics

Industry Takes Wrong Turn, World Comes to End

[Editor's Note: Stephen St.Croix is off this month. The following column on audio quality was written in March 1993, yet again showing his prescience. Simply substitute MP3 for MiniDisc...]

This month's column is really a test, and here are the instructions. Please read normally, but keep a little highlighter marker with you. When you get to the point in the column where you figure out what it's about, mark it with the highlighter. Keep this issue forever. Sometime in the future, I will ask you to send in your copy. The person with the earliest mark wins the contest. First-prize winner gets me writing a column about them personally, or *not* writing a column about them personally, whichever they would prefer. Let us begin.

Let me ask you something. Well, as I am not actually sitting next to you as you read this, I guess I will have to ask you to ask yourself.

Have you noticed a strange new trend toward *lower*-quality audio? Now I'm not talking about some tiny esoterica like 20th-bit settling or third-order, noise-shaping modulation artifacts. (I made that up—I wonder if there *are* any third-order, noise-shaping modulation artifacts; there certainly are some very strange "noise-gating"–type effects with the newest 20- to 16-bit translation schemes.) And I don't mean some obscure, nonlinear response in sample-and-hold capacitors that makes oak wood blocks sound like teak when recorded at -50.

I'm talking about the new gear that is about to become part of our lives, that is *purposely designed to have inferior audio quality*.

I guess it was inevitable. The potential developed as the public became more and more accustomed to the insanely impressive rate at which new and improved technologies appeared, as people developed the attitude, "If you don't see what you want today, you only have to wait until next month and you will." Basically, as the end-user begins to believe that *anything* is possible, a sort of "situation" emerges. Why shouldn't he think that? Look at some of our recent magic: from plates and springs to digital reverb; from scraping rocks over the surface of vinyl to reading CDs with lasers; from storing data on rust to storing it optically; and, well, from analog to digital.

Pressure to compete forces manufacturers to come up with radical new ideas and improvements on the radical ideas that their competitors came up with the week before. Pressure to try to grab and reserve market share as soon as possible so that the end-user won't go out and buy the competing product from company B while company A is still getting its product finished forces that company to *show* all of its radical new cool stuff way too soon, at whichever trade show happens to be next. Pressure to stay in business then forces the company to actually figure out how to manufacture this amazing device, hopefully within three years of the latest extended promised ship date.

So it's a bit hard to say if this is all of your fault (the end-user) or the manufacturers' fault for being bad parents and letting the end-users push them around and for letting them talk them into stuff that they really can't do.

Well, anyway, I have always been fascinated with the fact that, for all these years, this stupid system of incredible pressure has actually worked so well. It has brought us decades of advancement in only a couple of years. We play with toys today that we wouldn't have seen for years if that good old capitalist pressure system hadn't worked. But...

> They say all things come full circle. Maybe this is so. Ashes to ashes, dust to dust, 8-bit to 8-bit.

I fear that for the first time it is failing us. I feel that there has always been a possible alternative path that this self-energized evolution could take and that we have been incredibly lucky that it has not...until now.

Certain Japanese manufacturers have been doing something interesting for several years now: delivering more features per buck with less audio quality. More effects in a box at the expense of what they *sound* like. I have no problem with this. There definitely is a market for this approach, especially when you consider how dramatic this trade-off is. But this is *not* what I am talking about. This has been going on for some time now, and garages all over America are better for it. What *has* happened that worries me *looks* similar, but has some very important and very scary differences.

Here it is: There is a horrifying new trend, brought on by this audio techno-race. We have finally arrived at the dreaded theoretical point of *no longer being able to keep up with the expectations of the consumer*! Yes, folks, we have reached a point that was always looming just beyond the event horizon. It is no longer possible to deliver techno-growth at the rate that the end-user expects it.

CDs weren't *good enough*, were they? We need mini CDs, don't we? But there is a little problem with these little diskettes—*current technology doesn't support the format*. Let me put it in plain terms: It can't be done. At least not today, not this year, not with what we as a planet are capable of technically. Way too much data in

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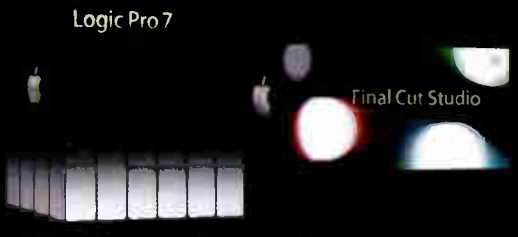

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way too little space with a way too slow read-write technology and another five years to go before compression can come to the rescue.

So there we are. The time has come when manufacturers are forced to design a product that exceeds the abilities offered by the current state of the art. How can this be done? It can't. But it has to, because the race must go on. The consumer has been taught to expect it. So what to do? The answer is obvious—*you cheat*.

Remove something that we have all come to expect as baseline, as standard. Back down on some aspect of the machine that would normally be assumed to be intact. Lower some spec, pick some attribute that uses too much of the device's power or time and simply define a new, lower (read "inferior") spec to replace it with, one that is so relaxed that it actually appears that you *can* deliver the impossible technological advancement that the boys on the street expect this season.

Now let's see, which spec should we throw out to get this done? It can't be features or convenience; that certainly is not the trend. What can we throw out so we can get MiniDises and Digital Compact Cassettes on the street now? Wait! I know: *audio quality*!

There you have it. That is the alternate path that we have avoided until now. Basically, the only way to get those two products to work is to seriously compromise the audio quality, to take a giant step *backward* for mankind, thereby completely negating the first step man made on the moon.

The type of irreversible, lossy compression used on these devices is the beginning of a new, dangerous trend—lowering the actual quality of the *audio* to get all the features on the street before the next guy.

Remember those Japanese DSP rack toys that I mentioned earlier? They don't bother me because they do not represent a new format standard. They screw up any audio that goes through them, but the user gets to decide if the damage inflicted is acceptable considering the demands of the track that was processed. I mean, they're special effects, not a new storage standard.

But these two nonlinear, low-bit formats *are* being put upon as new standards. Oooohh. Scary, boys and girls; really scary.

EPILOGUE

They say all things come full circle. Maybe this is so. Ashes to ashes, dust to dust, 8-bit to 8-bit. Maybe it's not my place to be alarmed—maybe this is just the natural order of the universe. I mean, we lost the technology of building pyramids and we seem okay, so I guess we will be okay in 100 years when we look back and sort of remember when digital audio end-products were more than 8 bits.

Or maybe we should wait until a *legitimate, nondamaging,* high-density encoding technology is ready before we ship new music standards...Maybe we should.

EPILINEAR

By the way: Sony, Philips and anyone else who might be thinking about showing up at my door and offering these formats for pro use had better be wearing a steel cup.

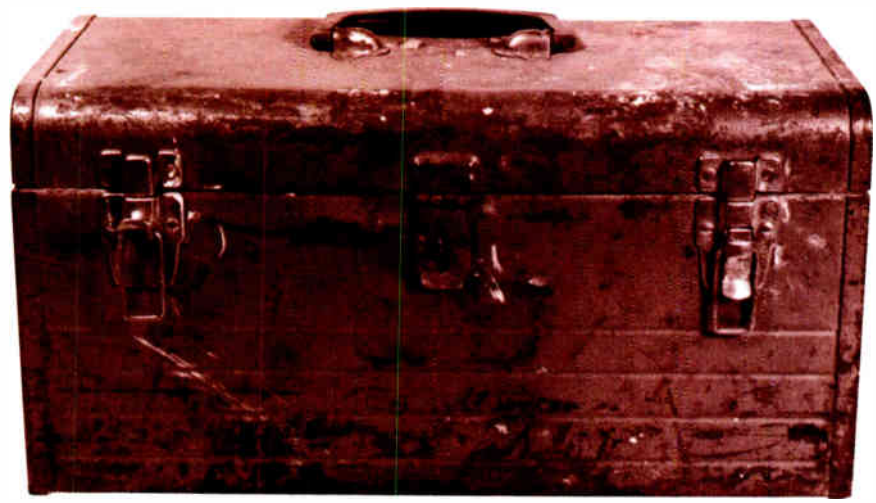
EPILADY

I *would*, however, be happy to see a second, pro standard for MiniDisc that offers 15 minutes with *no* compression. A couple of singles or a reel of film on that cute format? Sure! I would like that.

Stephen St.Croix will buy a consumer MiniDisc anyway, but promises to only listen to it in his convertible at speeds over 55, with the top down. That way, only the top 4 bits should be audible, and he thinks that might be okay.

World Radio History

Production tools getting rusty?



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BY PAUL D. LEHRMAN

One Sine Wave at a Time

Synful Builds an Orchestra From the Ground Up

Composers have long been fascinated with using electronic instruments to simulate real orchestras. And now, as music budgets for films and television programs shrink, more producers and composers are looking for computer tools that can do the job of performing orchestral scores, and can do it better. The success of high-priced orchestral sample libraries that can fill the better part of a terabyte drive is testament to this approach's popularity. Still, the number of people who can use these libraries to their fullest potential remains pretty small.

Despite the incredible amount of thought and engineering that has gone into them, most sample libraries require a long learning curve, careful resource and disk-space management, and even more of the kind of left-brain/right-brain split that can interfere with creative flow. And that's not to mention the sheer time and expense involved in upgrading when the next set of sample disks is released.

As a one-time orchestral player and a composer who leans toward classical sounds in my film scores, I'm always on the lookout for tools that will let me put human-style expression into electronic performances. Thanks to a new program from a tiny company that is beginning to get some serious attention, my goal may be much closer. The company is called Synful, and the product—which is just the first of what is hoped will be an extensive line—is Synful Orchestra. In its earliest incarnation, which came out at the end of 2004 for both Mac OS X and Windows, Synful Orchestra was capable of playing standard orchestral sounds—strings, woodwinds and brass—but only solo instruments; there were no string or horn sections. Early this year, though, a new version was released that includes string sections, and it takes the program to a whole new level.

Synful's chief cook and bottle washer, Eric Lindemann, is also a pianist and an experienced ensemble player, and he has obviously been thinking long and hard about this issue. Lindemann's resume reads like a history of late-20th-century music: He toured with the 5th Dimension, studied composition with Olivier Messiaen, played on the soundtrack of the first *Star Trek* movie, spent time at IRCAM with Pierre Boulez working on computer music engines and helped design the LinnDrum and the Wave-Frame. He's also designed console automation systems and hearing aids, and has his name on some 15 patents, three of which are integral to his current project.

Synful Orchestra, which comes in the form of a plug-in for AudioUnits, VSTi and DXi-compatible hosts, is not a huge set of samples. In fact, there are no samples at all; the whole program is only 58 megabytes, which means anyone with a decent Internet connection can download a whole new version in a few minutes. But the sounds are derived from real instruments, and recording a wide variety of human orchestral players was a crucial step in Lindemann's design. Rather than playing back sampled recordings, however, Synful Orchestra uses the recordings as models to construct instrumental sounds using a form of additive synthesis.

"It's analysis resynthesis using sine waves," Lindemann explains. "You need to synthesize about 100 harmonics on each sound to cover the whole audible range. Each harmonic has a time-varying amplitude envelope, and the envelope segments are computed about every 10 milliseconds. I call it 'additive coding.' Like MP3, it's a way of coding the sound to reduce it in size. Representing a sound using time-varying harmonics is smaller than a PCM recording by a factor of 50." Lindemann also uses controllable amounts of noise in the sounds—both on the attack transients and sustained segments—to simulate bowing and breathing. And because the harmonic and envelope calculations are independent of the pitch, there's no need to build a complete model of every different note on a given instrument.

As a one-time orchestral player and a composer who leans toward classical sounds in my film scores, I'm always on the lookout for tools that will let me put human-style expression into electronic performances.

The models were built from hundreds of recordings, but the players in Lindemann's studio didn't come in and methodically play single notes. Instead, they performed whole phrases from the orchestral literature. "If you ask people to play individual notes or even intervals, you get mechanical, not expressive playing," he says. "If they play real passages, they play expressively. I take the passages and break them down, and annotate and categorize them by descriptors—what note, what interval, what kind of dynamic shape and articulation is being played—and put them into a database.

"I extract from the database a rule for generating a good basic timbre based on pitch and loudness," he continues. "Then what is actually stored in the database are fluctuations around that basic timbre. When the program searches the database, it looks for a sequence of fluctuations appropriate for a certain note. It may not find exactly what it needs in the database, so it has a method

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of searching for the best match based on weighted criteria, which it then hammers into shape."

Another unique aspect of the program is the emphasis on the transitions between notes. "A lot of the character of the instrument is the nature of the transitions," he says. "For each instrument, there's a vocabulary of transitions. When an oboe player leaps a major seventh, for example, all of the work of playing the second note actually occurs in the first note. That's what I want to capture. So when I look in the database, I'm looking for the right transition. I'm looking from the middle of one note to the middle of the next note.

"It took me several years of research to get to the point where I could stitch together these pieces so that they sounded coherent. You have to smooth out the timbres since you get different timbres from different recordings so that they sound consistent. You have to scale the intensity of attack. I'm still learning about how big the database has to be."

> With a sampled string section, when you play a divisi, you have twice as many players. But I literally split the individual players up, so different ones are playing different notes, which is much more realistic.
>
> —*Eric Lindemann*

Synful's use of MIDI expression also helps make the sounds expressive. Volume is treated like a fader on a mixing board, but expression changes not only the amplitude, but also the harmonic content of a note as it sustains, the way bowing or blowing harder or softer on a real instrument does. MIDI velocity also changes the timbre, but its effect is concentrated in the attack portion: "Raise the velocity, and I will find something in the database that will have a sharper attack," explains Lindemann.

Vibrato is another factor that the player can control. "Vibrato is stored in the recordings," says Lindemann, "but unlike a sampler, I can isolate the natural vibrato and bring it in and out with a modulation wheel." Right now, only vibrato depth is under user control, but Lindemann hopes to also tackle speed in a future release.

Another interesting way that Synful takes advantage of MIDI is a special mode for dealing with pitch-bend information to create portamento, or glides. In a standard MIDI instrument, portamento is specified in terms of rate: how many half-steps the pitch will glide in a given unit of time, which doesn't change according to the starting or ending points. But real instrumentalists could never be restricted to a fixed slope like that; each time they use portamento, the speed is likely to be different. So when Synful Pitch Wheel mode is enabled, if it detects two notes played legato, then MIDI pitch-bend commands will change the pitch of the first note, but the second note will be unaffected.

Synful Orchestra also includes a unique way of localizing its sounds in the stereo field. Lindemann has built in a finite set of early reflection parameters that can be used to define a room, pinpoint an instrument's location on a stage in two dimensions and specify the listener's position within the space. These reflections provide a more believable image than simple MIDI pan

—CONTINUED ON PAGE 149

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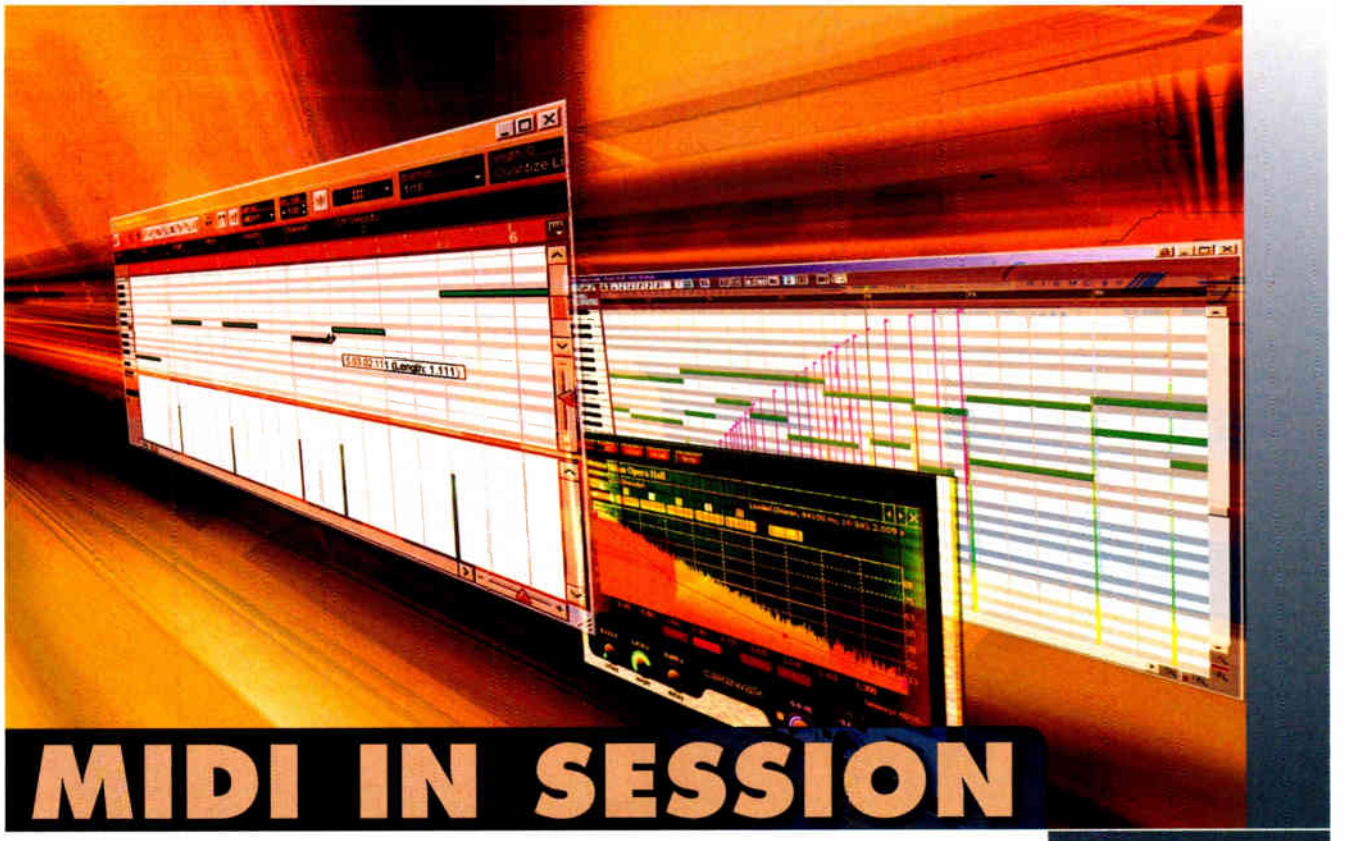

MIDI IN SESSION

Illustration: Alex Butkus

By Jim Aikin

Take Your Sequences to the Next Level

By 1999, MIDI was, if not dead, certainly an obsolete and uninteresting technology. Today, it's hotter than ever. What changed? Virtual instruments came of age. Advances in CPU speed have made computer-based synthesizers and samplers essential in any well-equipped studio. As a result, engineers and producers with years of audio experience are grappling with the finer points of MIDI sequencing.

This article is not about the basics. We'll assume you know how to get MIDI from your controller keyboard into the computer, how to assign plug-in synths to tracks and so on. But maybe you're not satisfied with the sound of your MIDI tracks and would like to take them to a higher level. Here are some tested techniques.

GRAB THOSE KNOBS AND FADERS

MIDI was developed to control keyboard instruments. As a result, a typical MIDI performance provides, at best, a gross and imprecise description of how the music should sound. To paraphrase an old joke, "Note-on, note-off, repeat if necessary." To create an expressive MIDI track, grab the knobs and sliders on your hardware controller and start caressing the sound

But before you can do that, you'll need to assign the knobs and sliders to useful parameters in the synth or sampler. Many soft synths have a MIDI Learn feature for just this purpose: Go into MIDI Learn mode, wiggle the slider and the link is set. Having a (mostly) fixed set of assignments for all of your presets will make it easier to remember what each slider does and to learn playing techniques.

The parameters most often assigned to real-time modulation include expression, filter cut-off, envelope attack time, vibrato depth, panning and effect wet/dry mix. Expression (CC11) is usually mapped to volume. The difference between expression and master volume (CC7) is that master volume is used to control the level of the entire track, while expression is applied to individual notes and phrases. If you're playing a brass or woodwind sound, it may already have MIDI breath controller (CC2) mapped to do the same thing.

Instead of recording a wind section by playing chords on the keyboard, MIDI experts who are going for a realistic orchestral sound will track each part separately, on its own MIDI channel, so that each "player" can have individual controller moves. With string section sounds, try layering the section sample with one or two solo instrument samples mixed in at a low level. This can add to the immediacy of the sampled section, as well as create tiny variations from note to note.

A good way to work is to record the MIDI notes first and then perform your wheel and slider moves as overdubs into the same track. When adding vibrato to a short note, the Pencil tool may work even better than real-time overdubbing (see Fig. 1), but I generally avoid drawing pitch-bends with the pencil because they never sound the way I want them to.

To learn to use a physical pitch-bender, spend some time practicing lead lines. Practice microtonal blues bends upward in the middle of a note, fast bends up from below at the start of a note, subliminal fall-off bends downward at the end of a note, slow and fast bends from one pitch to another and so on.

I like to assign one physical controller to do several things at once. For instance, I'll increase the vibrato depth, open the filter a little, shove the wet/dry mix of a distortion effect over toward wet and compensate for the added level by pulling back on the output level—all from the mod wheel. If the depth of each modulation is set with care, then the result can be striking. Moving the mod wheel increases the sound's perceived intensity rather than just adding vibrato.

Unfortunately, many soft synths are not

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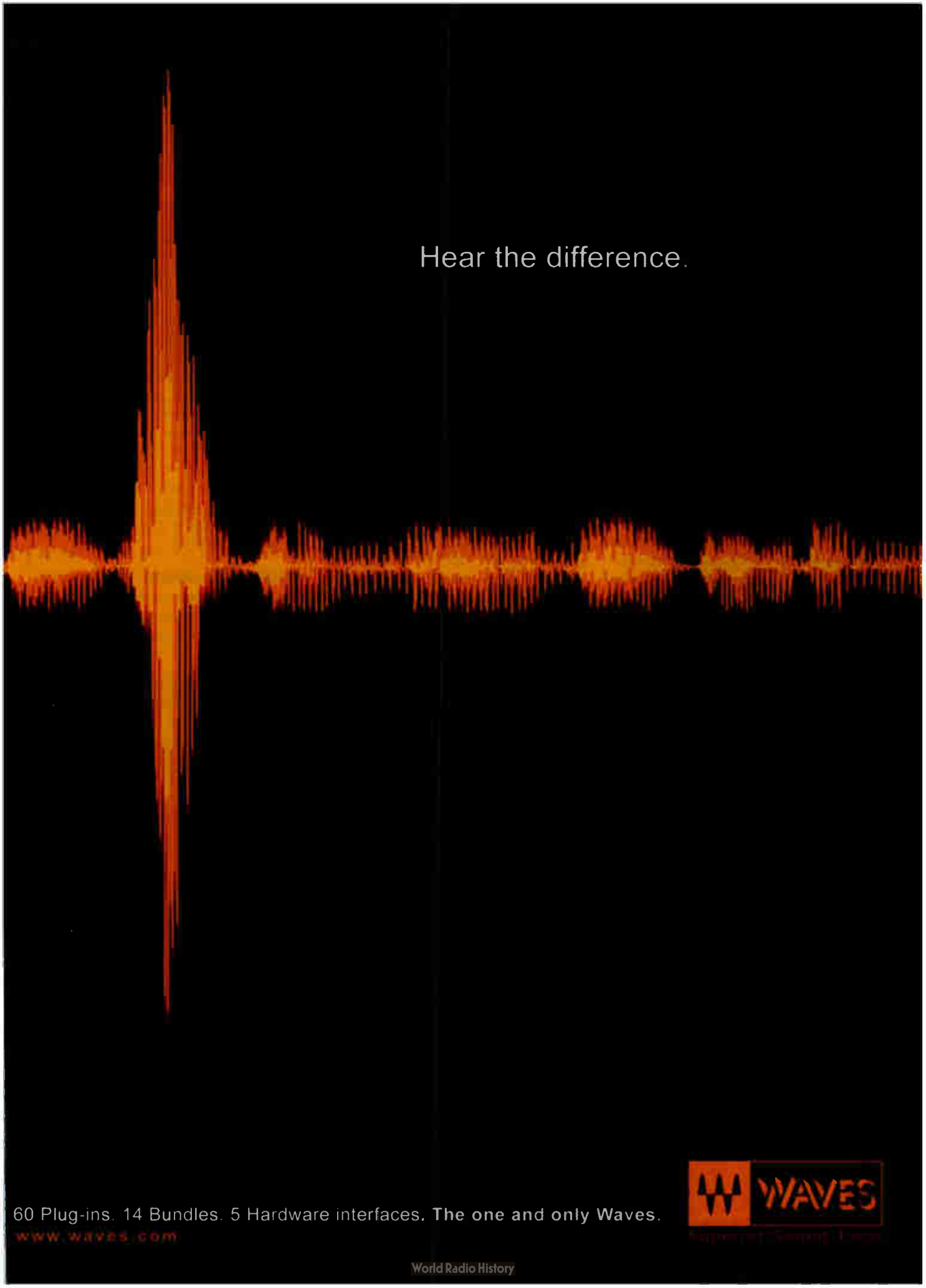

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With multisampled sounds that use velocity cross-switching, a few notes in a keyboard performance may stick out because they're triggering different samples. Sampled Rhodes and Wurlitzers are notorious for this unfortunate effect. One solution is to scale the velocities in a track down by a percentage, but this can make the track sound bland. I prefer to find the "too loud" velocities in the piano-roll editor and drag them down with the Pencil tool, thus preserving the dynamic character of the part as much as possible. While I'm at it, I may bring up a few velocities that are too low to balance a chord voicing.

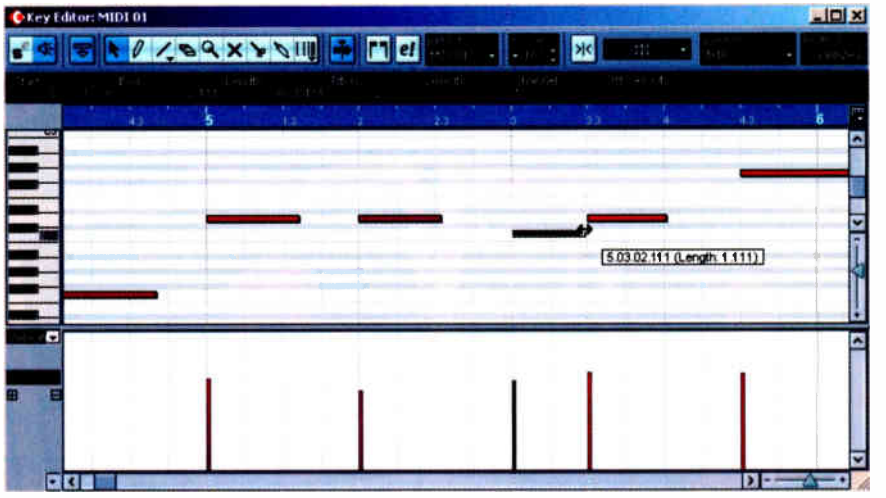

Figure 3: editing note overlaps in Steinberg Cubase. The pop-up ToolTip shows both the note's length and its end time in MIDI ticks.

LEGATO AND MONO SUBTLETIES

A synth can often do a respectable job on a bass line because the bass' role in pop music is largely functional: to fill in the low end. But paying attention to the duration and overlap of bass notes is essential, and there's often no way to get it right except by hand-editing, note-by-note, in the piano-roll window. The type of necessary editing will depend on whether the bass preset is in monophonic single-trigger mode or in polyphonic mode.

If the bass is in Mono mode, then any notes that overlap previous notes won't be given new attacks by the envelope generators. This smooth effect may be appropriate at some spots in the phrase, but not in other spots. By dragging the end of the note so that it's almost, but not quite, at the next note, you can get legato phrasing while also preserving the attack of the next note. (See Fig. 3.)

If the preset is polyphonic, then every note will have its own attack transient, but wherever notes overlap, there will be a little splash of mud because two low-pitched notes are sounding at the same time. In this case, tightening the end of the preceding note so that it overlaps the new one by, at most, a few clock ticks will often clean up the mix's low end in a surprising way.

In either case, you'll need to shut off snap-to-grid while dragging the right end of the note. Each sequencer uses its own keystroke for doing this. In Digidesign Pro Tools, use the Trim tool and switch to Slip mode (F2). In Steinberg Cubase, turn snap-to-grid on and off with the "J" key. In Ableton Live, hold "Alt" (Windows) or "Command" (Mac) to bypass snap.

PRESET CORNUCOPIA

Nothing makes a MIDI track more useless than choosing the wrong preset. Even if it sonically fits, it may send the wrong message stylistically. (String pads in grunge rock?) If the tone color is fighting with another track, then EQ may fix it, but grab a different preset and you may not need EQ. Editing the existing preset by changing the filter or waveform settings will sometimes turn a trash track into a keeper.

After making any edits in the voicing, save the edited preset (or an entire preset bank) to your project folder for easy backup. Give the preset a descriptive name, including the project name or initials.

One of the great time-wasters in the studio is spending half an hour hunting through lists of hundreds of presets searching for just the right tone color. If your instrument supports it, then create a bank of favorite presets for quick loading.

I generally name my MIDI tracks using the preset name. If I load the song file again six months later, after I've downloaded some new banks of presets and items have moved around in the Preset menu, it's easier to recapture the original sound. To be extra safe, you may want to bounce or freeze MIDI tracks as a project nears completion. Next year, you may be working on a different computer and may no longer have that soft synth installed, but the audio bounce will still sound the same.

MIDI MANIA

Rather than use MIDI, would I prefer to have a live band who could read my scribbled charts, never make a mistake, be available in my modest project studio seven days a week and never charge for the session? Sure. Well, maybe not always.

Synthesizers can make some amazing sounds that no live band could ever create. But whether you use it for realistic emulations of traditional performances or for wild-eyed sonic experiments, it's safe to say that MIDI is here to stay. It's not a perfect technology, but it's good enough to make some great music if you put in the effort. ■

Jim Aikin writes and edits books and articles about music technology.

MORE EXPRESSIVE CONTROLLER MOVES WITH REASON

Propellerhead Reason is a great general-purpose MIDI module when used as a ReWire client. By instantiating several layered synths and effects in Reason's Combinator module, you can control parameters in all of the modules from a single Combinator Rotary knob. The knob can be assigned to respond to incoming MIDI controller data, but in Reason 3, the knob won't respond to MIDI over ReWire, making this type of macro-controller assignment tough to use with a sequencer.

Fortunately, there's a workaround: Don't use ReWire to send MIDI to the Rotary. Instead, use MIDI-Yoke (Windows freeware, www.midiox.com) or the Mac Inter-Application Communication (IAC) bus. Assign the MIDI track output in your host DAW to the MIDI pipeline (Yoke or IAC) instead of to Reason directly. In Reason, go to Edit/Preferences/Control Surfaces and Keyboards. In this window, activate the MIDI pipeline as an "external" control surface. Now the Combinator Rotary will respond to the MIDI controller data in the DAW track, not just to the notes.

—*Jim Aikin*

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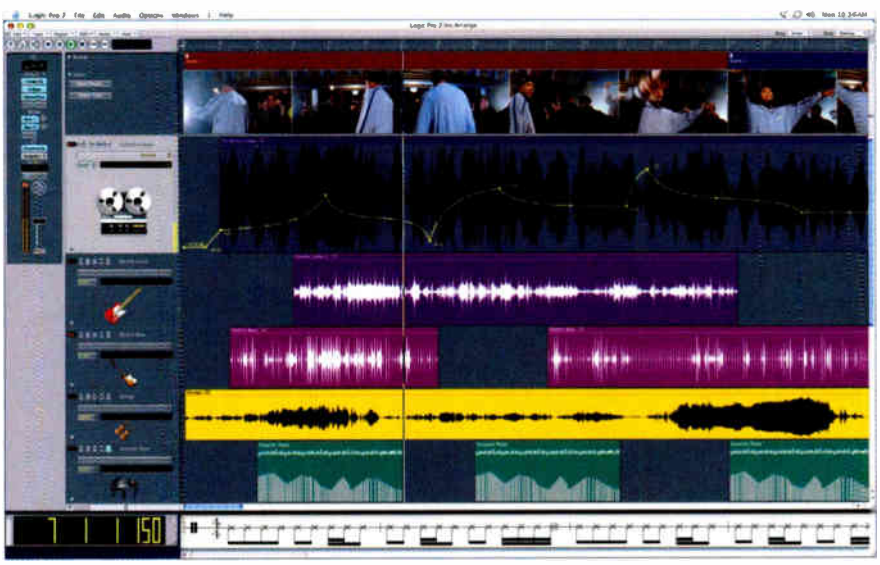
THE COMPLETE COMPUTER-BASED DAW

State of the Industry, 2006

By George Petersen

Twenty-five years ago, an IBM PC with its 64k RAM and 4.77MHz speed would have set you back $6,000. Today, that same price could buy a *very* nice setup, with gigs of RAM, terabytes of storage, monitors that stretch as far as the eye can see and blazingly fast CPUs. We're in a cost-down/power-up market, driven by the latest Intel Pentium 4s and AMD Opterons for your PC or Intel's Core Duo chipsets pumping the latest "MacTel" generation from Apple. Meanwhile, these super-CPUs, along with native processing and FireWire peripherals, have opened up the door for the serious laptop studio. In terms of computer-based DAWS, *these* are the good old days.

Keeping up with the demands for more speed, power and features, computer-based DAWs are evolving at a dizzying pace. Meanwhile, the number of players in the industry has actually increased. For example, several systems that were once loop player/editors—such as Apple's Soundtrack Pro or Sony's ACID—have become full-fledged DAWs. Many DAWs have expanded their feature sets with more built-in DSP effects (or included plug-ins), virtual instruments and more, coming closer to a one-stop production solution. So, with a whole lot going on, we checked in with computer-based DAW companies to keep up with the latest developments.



Apple Logic Pro 7.2 runs natively on both PowerPCs and Intel-based Macs.

Combining MIDI sequencing, looping, VIs, effects and 32-bit/192kHz multitrack hard disk recording in an interface designed for fast, real-time music creation is Ableton (www.ableton.com) Live. Live 5.2 brings native support for Apple's new Intel-Macs for significant gains in track count, instruments and effects for a nominal $49 upgrade, while still supporting Windows and non-Intel Macs. Ableton has announced Live 6 (due Q3 2006), which will support multicore/multiprocessor architectures to the benefit of both Windows and Mac OS users.

Available this month, Apple's (www.apple.com) flagship Logic Pro 7.2 runs natively on both PowerPC and Intel-based Macs. Among 7.2's features are support for Apogee's Ensemble FireWire I/O interface, compatibility with Pro Tools|HD 7 DAE and the ability to directly open GarageBand 3 projects. Among its feature set is stereo Rewire object support, control surface support enhancements (including support for M-Audio's iControl GarageBand controller), 32-channel support for multichannel Audio Units instruments and the ability to play AAC and Apple Lossless compressed files.

It started off as a quick means to create production music from loops and has become a full-on recording DAW, with multichannel editing and more than 50 integrated AudioUnits and Logic plug-ins. SoundTrack Pro seamlessly integrates with Apple's Final Cut Pro 5, with several useful apps for dealing with noise, glitches and pops. SoundTrack Pro is now only offered

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as part of the $1,299 Final Cut Studio suite; however, STP owners can upgrade to the entire Final Cut Studio bundle (including STP, Final Cut Pro 5, DVD Studio Pro 4 and Motion 2) for a bargain $199. Shipping later this month will be Universal (Intel/PowerPC-based Mac-compatible) versions of Final Cut Studio, with a low-cost "cross-grade" available to current owners.

Whether used as a dedicated 2-track recording/mastering tool or as a flexible editing solution for an existing workstation, Peak Pro 5 from **BIAS** (www.bias-inc.com) offers sample rate conversion, batch processing, Red Book CD burning, advanced editing, looping, DSP, plug-ins and more. This Mac OS X app is available in several forms: the $599 Peak Pro 5 or the $1,199 Peak Pro XT 5, which includes Peak Pro 5, SoundSoap 2, SoundSoap Pro and the new BIAS Master Perfection Suite. Also sold separately at $599, BIAS MPS is a bundle of six pro plug-ins (Pitchcraft, Reveal, SuperFreq, Repli-Q, Sqweez-3/5 and GateEx) for AudioUnits, DirectX, RTAS and VST host apps.

Cakewalk (www.cakewalk.com) announces SONAR Power Studio™ 250 and 660—two bundles that combine hardware interfaces with the SONAR Studio Edition, taking advantage of the power of 32-bit and x64-compatible PCs. Shipping next month, the $599 Power Studio 660 includes Cakewalk's SPS-66 24-bit/192kHz FireWire interface; the $449 Power Studio 250 comes with the SPS-25 24-bit/96kHz USB interface. Both packages ship with Roland GrooveSynth™, TTS-1 GM 2 synth, Cyclone™ groove sampler and SFZ Soundfont player; the Sonitus: fx effects suite; and Lexicon's Pantheon LE reverb. Also included are Roland's V-Vocal VariPhrase pitch/harmony technology and IK Multimedia's Amplitube LE.

Digidesign's (www.digidesign.com) Pro Tools 7 has Windows XP and Mac OS X versions for Pro Tools|HD, LE and M-Powered systems. Features include all-new Instrument Tracks for improved integration with virtual instruments and MIDI sound modules, new real-time MIDI processing, REX and ACID file support, host processing optimization for running more instances of RTAS processing/instrument plug-ins and a streamlined, re-organized menu structure. The big software news comes from Pro Tools 7's completely overhauled RTAS engine, now allowing up to twice the number of RTAS plug–ins as compared to using Pro Tools 6.9.2 software on dual-processor CPUs. On the hardware side, Digidesign now offers both PCI and PCI Express (PCIe) versions of its hardware cards to ensure Pro Tools|HD compatibility with PCIe-based Mac G5s.

Cakewalk SONAR takes advantage of 32-bit and x64-compatible PCs.

Digidesign's $1,295 DV Toolkit™ 2 for Pro Tools LE offers a toolset for producing sound for film or video, including the TL Space™ Native Edition convolution reverb, DINR™ LE noise reduction and Synchro Arts' VocALign Project time-alignment plug-ins. Also provided are tools for importing/exporting projects to/from video editing apps and MP3 export. DV Toolkit 2 can expand LE sessions to up to 48 mono or 48 stereo tracks at up to 96 kHz, and adds many post-specific functions, such as working in timecode and Feet + Frames, a Scrub Trim tool, continuous scrolling, Replace Region and Edit to Timeline Selection commands and more.

To expand the power of Pro Tools LE or Pro Tools M-Powered systems, the company's Music Production Toolkit ($495) offers new plug-ins, enhanced editing tools, MP3 file export and increased system track count to 48 mono or stereo 96kHz tracks. Included plug-ins are the Hybrid high-definition synth, TL Space Native Edition convolution reverb; Smack!™ LE compressor/limiter;

What's in a Name?

RAMPING UP YOUR DAW WITH 64-BIT PROCESSING AND PCI EXPRESS

Our vote for the hottest buzzwords of 2005 goes to "64-bit processing" and "PCI Express (PCIe)." However, these latest developments in computer power and interconnectivity aren't just paying lip service; they deliver all they promise and more. On the Mac side, PCIe architecture was first introduced in the December 2005 Power Mac G5 carrying twin Dual-Core processors operating at up to 2.5 GHz per core. The new digital pathway betters the previous G5 PCI standard by offering three slots, providing a series of "lanes" (two four-lane slots and one 8-lane slot) that allows data to travel over a series of discrete two-way, point-to-point paths rather than sharing a single path as before. This offers some serious horsepower to Mac users, specifically in relation to Pro Tools when coupled with the PCIe cards that Digidesign released concurrently with the new Apple computers. For instance, HD1 users will gain the ability to run some Accel plug-ins, despite the absence of an Accel card, and see up to an 80-percent increase in power. HD2 users will see a 20-percent performance boost, and the HD3 user will see no significant change.

On the PC side, users can avail themselves of the latest 64-bit technology, but what's the advantage? For starters, x64 CPU architecture gives the user the ability to carry more RAM than is possible with a 32-bit system. Most importantly, the extended memory cache lets users run more RAM-hungry software instruments. At the recent Winter NAMM show, Cakewalk demoed a project running on a 64-bit system that ran 125 tracks, including 16 instances of its Dimension Pro sampler—a session that wouldn't even load on a 32-bit system. The main components needed to supercharge your system is a computer with an x64 processor, a 64-bit operating system—such as Microsoft's XP 64-bit edition—and drivers for all of your hardware. What's the downside? You can't run your 32-bit plug-ins on the new systems. However, Cakewalk now offers Bit Bridge in SONAR 5, a workaround that allows you to host 32-bit plug-ins on a 64-bit system.

—Kevin Becka

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SoundReplacer and DINR LE noise reduction. Music Production Toolkit also has a multitrack version of the Beat Detective automatic groove analysis/correction tool.

M-Audio's (www.m-audio.com) Pro Tools M-Powered is a cross-platform (Mac/PC) version of Pro Tools that runs on select M-Audio hardware. The software is similar to the familiar Pro Tools LE, but lacks certain features such as SMPTE timecode support. However, the package includes 30 plug-ins, adds Digidesign Command|8 controller support and allows sessions created on the software to be imported directly into Pro Tools TDM and LE systems, making it ideal for inter-studio collaborations. A new enhancement is Digidesign's Music Production Toolkit (described above), which expands the capabilities of M-Powered systems.

Mackie's (www.mackie.com) Tracktion 2.1 64-bit–capable PC/Mac recording software enhancements include direct MP3 file import/export, simultaneous multiple files import, file import from a PC's CD drive and the ability to create MIDI (and audio) loops as clips. Controller support is increased, now including Frontier's TranzPort, in addition to a custom function for tweaking Tracktion's transport, navigation, options and channels for use with most hardware/keyboard controllers. Mackie is also offering six new free plug-ins (reverb, compressors, EQs and stereo panner) to registered Tracktion 2 boxed bundle owners.

Magix (www.synthax.com) is shipping Samplitude V. 8.2 multitrack record/mix/sequencing software for Windows XP. New features include a MIDI drum and controller editor; Vintage Effects Suite PRO (with chorus/flanger, delay and filter plug-ins); VST Waves shell support; tempo maps for VSTi, ReWire and VST effects; and a Sound Cloner feature. Surround enhancements include 5.1 panning, multichannel EQ, dynamics and a convolution-based, real-time room simulator.

Digidesign Pro Tools 7 has Windows XP and Mac OS X versions for Pro Tools|HD, LE and M-Powered systems.

Sequoia is Magix' high-end, multi-user, network-capable DAW software for native host PCs. Version 8.2 shares most of the updates offered in Samplitude 8.2 (listed above), but goes deeper with more pro functions, such as support for all major multichannel formats (freely configurable up to 12 channels), a full-function 48-track mixer, Magix Elastic Audio (audio pitch shift–editing, auto-pitch correction and pitch automation algorithms), the Robota Pro 8-voice virtual analog synthesizer with integrated step sequencer, DVD-Audio stereo and surround disk burning, extended support for external hardware controllers and full-screen video output with 16:9 support.

BIAS Peak Pro 5 can be used as a 2-track recording/mastering tool or as a flexible editing solution for an existing workstation.

Version 5 of Merging Technologies' (www.merging.com) software-only version of its full-blown 128 I/O Pyramix Virtual Studio DAW provides a major increase in functionality. Pyramix Native now has a maximum of eight I/Os with full 24-track editing and doesn't require Merging's Mykerinos DSP hardware. It retains all of the editing/mixing capabilities of the main Pyramix VS system with real-time factory plug-ins for EQ, dynamics, metering, etc. A range of third-party plug-ins is also available, including reverb, audio restoration and time compress/expand with DirectX and VST compatibility. Pyramix Native can operate on any Windows XP–based desktop or laptop using the computer's onboard audio engine or ASIO-compatible audio card.

Digital Performer 5 from MOTU (www.motu.com) is a major upgrade that includes six new virtual instrument plug-ins, track folders, a meter bridge feature, new audio editing tools, numerous film scoring features, new input monitoring modes, clip-based volume automation and more. Instruments in this Mac OS X DAW include BassLine™, a monophonic bass synth; PolySynth™, an analog-style synth; Modulo™ subtractive synthesis; Nanosynth™ (sampler, plus filter mods); Model 12™ drum module; and Proton™, a two-operator FM synth. For film/TV composers, Digital Performer 5 can now superimpose streamers, punches and flutters directly on a QuickTime movie playing in Digital Performer's movie window for easier collaboration with music editors and prepping for soundstage scoring sessions. Version 5 also supports CueLine ProCue 1m1 and ClickStreamMachine, two third-party devices for live orchestral scoring. DP5 ships Q1, 2006, for $795.

RML Labs has released V. 3.9k of its SAWStudio/SAWStudioLite PC-based mixing/editing DAW. Recent enhancements include a Hot Track Solo mode, the ability to host VST plug-ins in any folder on any drive, a function for automatically compensating for the latency of VST plug-ins and a bypass of the auto-compensation feature. The company has also started an improved online SAWStudio User Group that lets users chat with SAWStudio developer Bob Lentini and longtime SAW users at www.sawstudio.com.

SADiE (www.sadie.com) is shipping V. 5.4.1 software for its Series 5 range of PC-based DAWs. Features include new automation snapshot facilities; multitrack and group editing in the Trim window; multitrack editing in Playlist Edit; CD ripping interface (with automatic sample rate conversion where required); a Dither window; and support for Mackie HUI and Yamaha DM2000. Options include multichannel CEDAR plug-ins, VST plug-in support, CD-text support, auto-conforming, enhanced 9-pin control for up to 64-channel record enable, Pro Tools 5 interchange and more.

Slated for release at AES Paris, soundBlade ($1,495) from Sonic Studio (www.sonicstudio.com) is a host-based, OS X–native application, offering stereo record/editing, integrated CD burning and PQ handling. Its source/destination editing model and cut/copy/paste editing with improved Fade tool simplifies editing chores. Other features include optional support for Sonic's Model 302 DSP hardware; drag-and-drop files from iTunes or any .AIFF, .WAV, Broadcast .WAV or SD2 source; high-quality sample rate conversion; psychoacoustically optimized shaped triangular redithering; and VST and AudioUnits plug-in support.

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Shipping this month is Sony's (www.sonymediasoftware.com) ACID Pro 6 ($499.95), a major upgrade that takes this native Windows 2000/XP loop-based music creator to a new level with full-featured, 24-bit/192kHz audio support and new MIDI editing and workflow capabilities. New features include unlimited audio and MIDI tracks with on-the-fly punch-in overdubbing; VSTi parameter automation; drum map editing; Mackie Control Universal support; real-time pitch and tempo matching; more than 20 real-time DirectX effects; 5.1 mixing; and more.

Now at V. 8, Sony's Sound Forge native PC recording/editor platform adds new features such as VST plug-in effect support, ASIO driver support, batch conversion, Flash-format (.swf) import, direct export to CD Architect software, an Audio Scrubbing tool, customizable keyboard mapping, and additional HD video options, including support for 24fps DV video files. Sound Forge 8 also includes a full version of CD Architect 5.2 software for disc-at-once CD burning.

Having purchased the company back from Mackie, Soundscape (www.sydec.be) has opened a U.S. office in Florida. Highlights in Editor V. 5 include the ability to play/record native (PC-based) tracks; the software is offered as an update to all Soundscape 32 and REd users. Also new is a full line of 24-bit/96kHz interfaces supporting 24 to 64 simultaneous I/O channels in various formats—analog, TDIF, ADAT, AES and/or MADI—along with two new hardware controllers and a remote 8-channel mic preamp.

Steinberg's (www.steinberg.de) Cubase SX3 adds some 70 features, including Audio Warp Real-Time Time-Stretching, in-place editing of MIDI to audio and/or video events, and many new editing functions. Beyond its included VIs, audio mixing and loop/pattern-based arranging, this native OS X and Windows XP DAW also adds MIDI device maps with user-definable graphic editing panels, Studio Connections "Total Recall" support (optional integration of Yamaha's Studio Manager 2), external effects plug-ins for integrating external hardware effects processors into the VST audio mixer and more.

Steinberg's flagship Nuendo 3.2 DAW software includes a unique control room busing/monitoring system, allowing separate mixes to be created for headphones, control room and up to four studios, along with foldback, external audio source handling and up to four separate studio mixes with integrated talkback. Control surface integration is also expanded with all of 3.2's control functions now available in the WK Audio ID Controller, a Nuendo control surface co-engineered by Steinberg. Nuendo 3.2 also enhances support for the Euphonix MC and System-5 MC control surfaces.

An all-in-one solution for high-res stereo/multichannel audio editing, mastering, CD/DVD burning and CD or DVD-Audio production, WaveLab 6 ($699) adds more than 120 new features, including the new Spectrum Editor, full integration of outboard effects and hardware remote controllers, a loudness-corrected SmartBypass system, DIRAC time stretch and pitch-shift technology, Bob Katz' K-System metering and more. ■

George Petersen is Mix's editorial director.

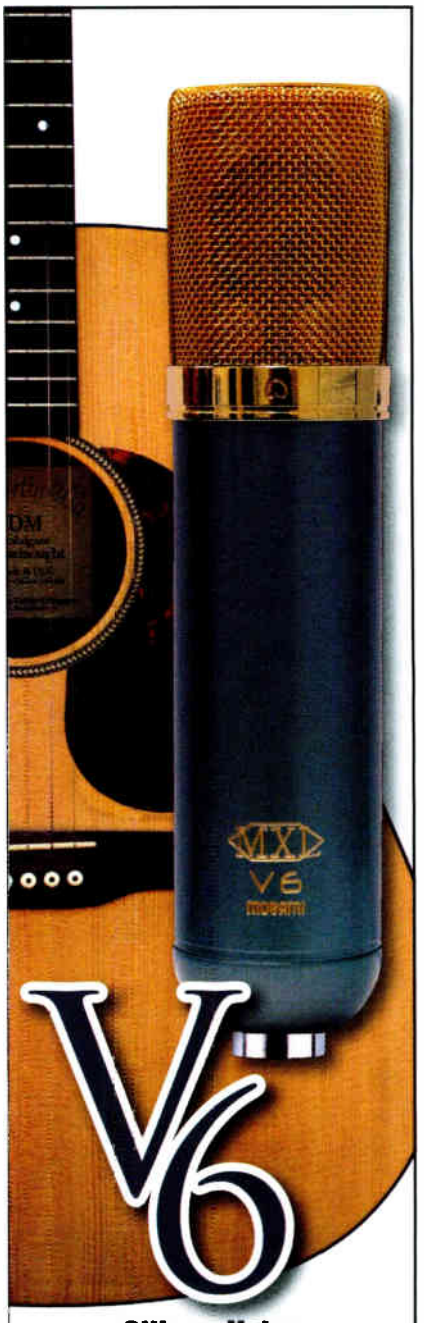
The Hardware Alternative

While this article focuses on computer-based DAWs, hardware-based systems offer a straightforward solution where manufacturers can tailor a system to specific chores. At one end of the hardware spectrum, just about every soundcard, hardware or I/O manufacturer on the planet (E-mu, Lexicon, Focusrite, M-Audio and Metric Halo, among many others) ships product with a "lite" or freeware offering, although these are not covered here.

The DAW-in-a-box designs—such as those from Alesis, Genex, iZ/RADAR, Mackie and Tascam—have also found favor as multitrack replacements in applications where users already have a favorite console to work on, as well as a convenient means to move tracks around from studio to studio (or dub stage) or patched into a live board for remote recordings. Interestingly, while these were born as hardware-only solutions, all have expanded the feature sets immeasurably via external control software. On a larger scale, DAWs such as AMS-Neve's AudioFile and Fairlight's DREAM Series are equally suited to stand-alone use or integrated into consoles, creating a seamless production environment.

Smaller all-in-one products, such as the offerings from Roland, Korg and Yamaha (with their record/mix/master/burn functionality), have maintained a solid niche in both small project rooms and pro apps such as radio spot production.

—George Petersen



Silicon Valve Condenser Microphone

"This could be the best solid-state mic I have ever used on acoustic guitar."
Dana Gumbiner, Tape Op Mag. Nov 2005

"On this Martin, the V6 captured the guitar with a tone so full and natural that no eq was needed during tracking or mixdown - awesome!"
Paul Vnuk, Recording Magazine July 2005

"The V6 has the full, rich sound we need to produce hit records."
Joey P & Dale "Rambro" Ramsey Producers, Ludacris, Justin Timberlake, Jay-Z, Sean "P. Diddy" Combs

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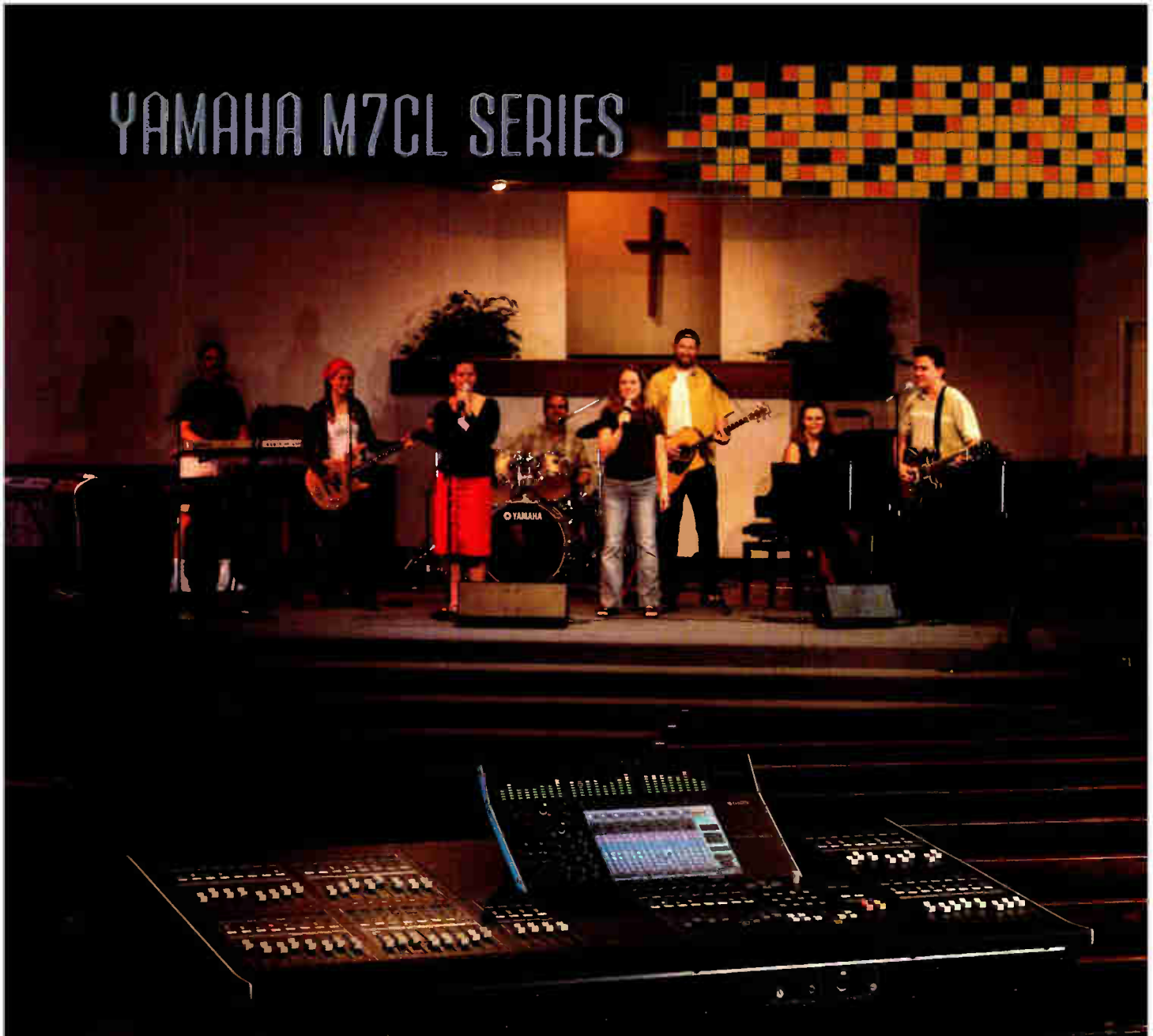

Practice Made Perfect

Practice is useless unless you can recall it at the service. It's true for the mix engineer as well as the musicians. Yamaha digital mixers like the new M7CL, give you the power to completely and instantly recall all of the mixer settings from practice at the service with just the touch of a button.

M7CL is a new digital mixer Yamaha developed specifically for houses of worship. 32 or 48 inputs (plus four stereo input channels), 16 "omni" outputs, 8 DCAs, 16 GEQ, 4 stereo effectors, and a plethora of input and output channel processing provide a complete sonic package.

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Pro Meets M.I.

NEW TECHNOLOGIES SHINE AT WINTER NAMM 2006

By the Mix Staff

Despite the show's glitz and packed aisles of music wannabes, NAMM has always been a fairly conservative organization. Yet the annual winter convention's overall makeup has changed significantly of late. Sure, there are still rows of pianos, strings, brass and woodwinds—but most of those instruments displayed were from companies with unfamiliar names and origins a half-world away from Elkhart, Ind. Many of the crammed booths were offering demos of the latest software rather than autographs of famed endorsers.

Sure, the show still features Fender, Gibson, Peavey, Ludwig, Marshall, Selmer, Baldwin and Yamaha, but when one thinks of NAMM, exhibitors such as Avalon, Manley, Millennia and Neumann don't immediately come to mind. This time, even Solid State Logic made the trip to NAMM, drawing crowds with its AWS 900 console and a new series of rack processing.

With 1,462 exhibitors showing music and audio gear, there was plenty to see, and here are some highlights. Ironically, one of the buzzwords at this NAMM show was neither M.I.- nor pro audio–oriented at all; it was podcasting.

Apple's (www.apple.com) much-touted GarageBand 3 provides looping, virtual instruments and multitrack audio. Offered free with new Macs or for $79 with the iLife '06 bundle, GarageBand 3 now includes a video track for scoring iMovie projects and podcast production capability, with audio recording, pointers to chapter artwork, hotlinks and the ability to interview several guests simultaneously. Also provided is a library of 200 podcast sounds, including radio-type stingers, sound effects and jingle-length production music.

Several companies showed USB peripheral/front ends for notebook DAW or podcasting, including Alesis (www.alesis.com), which is shipping its IO|2 USB portable 2-channel, 24-bit/48kHz USB interface with two phantom-powered mic preamps, two line/instrument ins, insert points, MIDI I/O, ¼-inch main outs, headphone out and S/PDIF I/O. Retail: $299, with Cubase LE.

The podcast mic crowd was not ignored. USB mics were displayed by BLUE and Samson, but RØDE (www.rodemic.com) wowed us with its Podcaster, a large end-address, USB-powered design that's somewhat RE-20–looking and tailored for voice, with an "on" LED, shockmount and table-mount arm.

DAW NATION

Version 6 of Sony's (www.sonymediasoftware.com) ACID Pro graduates the program to full-fledged DAW status, with multitrack recording of audio. Other new features include unlimited audio files per track, automatic crossfades between those files, punch-in loop recording for multiple takes of audio or MIDI and much more, including a version of Native Instruments' Kompakt with a 2GB sound library.

MOTU's (www.motu.com) Digital Performer 5 includes six soft instruments, waveform editor updates, clip-based automation and more. We also checked out MOTU's Ethno Instrument, offering loops and instrument sounds from all over the world, authentic and corrected tuning, disk streaming and more. And Ethno's onscreen spinning globe wins the "coolest interface" award.

Celemony's (www.celemony.com) Melodyne already lets users edit monophonic audio as if it were MIDI data; now, the new Melodyne 3 Studio works on polyphonic material, as well.

MusicXPC (www.musicxpc.com) showed versatile, slick-looking PC laptops for music/audio production, including the Professional M3, featuring a 15.4-inch WXGA TFT screen, 533MHz FSB, 512MB RAM, Intel Pentium M 1.73 GHz, 80GB HD, DVD±RW, FireWire, USB 2 and Gigabit LAN.

PreSonus (www.presonus.com) did some more-for-less magic with its new FireStudio and FaderPort modules. FireStudio has an 18-in/18-out FireWire recording interface with eight mic preamps, MIDI I/O, S/PDIF I/O, word clock, eight channels of 96k ADAT (dual SMUX) I/O, 36x18 DSP matrix routing mixer and a surround-capable desktop monitor controller. FaderPort offers a motorized 100mm fader, transport control and a footswitch jack, and it's compatible with any Mac/Windows-based recording software.

Promising to be your everything box, Open Labs' (www.openlabs.com) Miko is a hybrid unit with a built-in DAW that can record up to 64 tracks while running more than 200 plug-ins. A 24-bit/96kHz audio section features two phantom-pow-

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ered mic ins, DVD/CD burner, twin headphone outs and two additional line inputs. The keyboard features up to 500-note polyphony, while the 37-note controller offers mappable knobs, faders and a 15-inch color LCD touchscreen. All of this can be viewed on a dual-component VGA section providing higher-than-HD resolution.

INSTRUMENTS—VIRTUAL AND MORE

Native Instruments (www.native-instruments.com) blew away showgoers with KORE, a revolutionary, new "Universal Sound Platform" hardware interface that acts as a stand-alone instrument host *and* plug-in with every major sequencer. KORE is designed to reduce your CPU load while providing instant access to all libraries and instruments. KORE reaches beyond the studio with tons of features for live performance, like easy recall of sophisticated layer and split configurations and on-the-fly scene and sound set switching. The technology will be released later this year.

Three years ago, the Vienna Symphonic Library (dist. by Ilio, www.ilio.com) redefined the art of sample libraries. Now, Vienna Instruments, VSL's new virtual instrument (in stand-alone and VST and AudioUnits plug-in formats for Mac and PC), blends easy-to-use software with a vast array of samples. In a single preset, the software automatically summons from hundreds of articulations as the notes are played. The Symphonic Cube has 10 sample-based instruments—all of the Pro Edition and Horizon Series—some 800,000 samples (550 GB) with trills, arpeggios, performance nuances, harmonics and more.

The big news at Digidesign (www.digidesign.com) is the Digidesign Advanced Instrument Research group, which is focused on creating virtual instruments for Pro Tools. Two VIs were released at the show: Xpand!™ is a free multi-synthesis sound factory workstation plug-in; and Hybrid is a high-definition synthesizer plug-in. The company also announced the purchase of Trillium Lane Labs' plug-in assets.

E-mu's (www.emu.com) Emulator X2 software sampler for PC includes SynthSwipe™ automated sampling, TwistaLoop™ nondestructive manipulation, Morph Filter Designer, advanced LFO/envelope/arpeggiator programming, a convolution DSP tool, real-time control of multiple loop points, REX2 and MP3 import, and more. X2 builds on E-mu's 24-bit/192kHz sound engine and patented pitch interpolation, and runs stand-alone or as a VST instrument. It ships in May for $299/street, including a 2-in/2-out USB MIDI interface and 3 GB of sounds.

E-mu Emulator X2 software sampler for PC

Rapture from Cakewalk (www.cakewalk.com) is a wavetable PC software synth equivalent to hardware synths such as the Access Virus or Nord Lead. The $249 app is targeted toward dance and electronica production.

Mac users note: Tascam (www.tascam.com) will release two new virtual instruments using GigaStudio technology to be available on the Mac later this year. The first two instruments—GVI, a sampler that can open existing Giga libaries, but with fewer editing features than the flagship; and GigaViolin, a dedicated violin instrument—will be released initially as VSTi and RTAS plug-ins for the PC.

The wonder guitar debut from Terratec (www.terratec.com) is the AXON AX 100 MKII, an amazingly fast guitar-to-MIDI controller with 500 internal sounds, 12 play area zones, arpeggiator, automatic pick position recognition and more.

The Synful (www.synful.com) Orchestra for Mac or PC is an AudioUnits/VST/DXI plug-in featuring some of the most realistic samples you'll hear coming out of a computer. Its Reconstructive Phrase Modeling uses a database of recorded phrases that are spliced together and resynthesized using additive synthesis, making the plug a veritable DSP and memory sipper.

MONITORING THE MONITORS

Blue Sky (www.bluesky.com) used the nearby Disney production studios to demo its Blue Sky SAT 12/Sub 15 studio monitors. This three-way, tri-amplified (500 watts in each) mid-field design packed crisp highs (-3 dB at 30 kHz), thundering lows (-3 dB at 20 Hz with sub) and superb transient response in a system that's not for the faint of heart.

M-Audio (www.m-audio.com) stepped out of the usual low-price box, releasing the EX66 monitor ($699 each). The tall, slender, powered units feature analog or digital inputs, onboard DSP, titanium HF drivers and twin 6-inch woofers. Tannoy (www.tannoyna.com) showed a DSP version of its Precision Series monitors called the Precision iDP. Looking much the same as the original but with much more inside the box, the new speakers feature networking intelligence, Class-D digital amps, AES/EBU inputs and support for setups up to 5.3. And JBL (www.jblpro.com) showed network software for controlling its LSR4300 speakers directly from your Mac OS X desktop.

PLUG-IN PICKS

Waves (www.waves.com) and Universal Audio (www.uaudio.com) created quite a buzz at the show with their respective manufacturer-authorized plug-in versions of SSL and Neve hardware. Waves' SSL 4000 Collection includes three modeled plug-ins: the SSL G-Master Bus Compressor, SSL E-Channel and SSL G-Equalizer. The trio is based on the renowned sound

Native Instruments KORE—an instrument host and a plug-in

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of the SL 4000 G center-section compressor, Black Knob EQ and dynamics section featuring a soft-knee compressor/limiter and expander/gate. Universal Audio and Neve announced a strategic software alliance to create UAD-1 DSP plug-in emulations of Neve's processors, starting with the 1073.

Cycling '74 (www.cycling74.com) rocked the surround world with the release of two plug-ins. Octirama is a multiband surround compressor for TDM featuring up to five bands of compression, five in-band peak limiters, band mixing and a final peak limiter. UpMix is a surround processing and upmixing software package for VST and RTAS on both Mac OS and Windows. The plug-in offers an easy way to move mono or stereo files into an immersive surround environment for film, DVD, HD broadcast and music surround formats.

Muse Research (www.museresearch.com), maker of the Receptor hardware VST plug-in player, showed new plug-ins including Ivory, BDF 1.5, B4II, Lounge Lizard 3, dfh Superior, Ultra Analog, String Studio and Sonik Synth 2. The company also demonstrated its UniWire technology, which lets users seamlessly integrate Receptor into a host computer environment via Ethernet.

Peak users, get ready: Initially part of the flagship Peak Pro XT 5, BIAS' (www.bias-inc.com) Master Perfection Suite of six processing plug-ins will ship this month. The suite includes Repli-Q spectral matching, PitchCraft pitch correction/manipulation, Reveal analysis, Sqweez-3 and -5 multiband dynamic processing, SuperFreq parametric EQ and the GateEx gate/expander.

Plenty of plug-in debuts at McDSP (www.mcdsp.com): The Revolver convolution reverb ($495) offers complete impulse response shaping, dedicated and routable EQ, two synchable delay lines and specialized stereo imaging, with hundreds of presets and tools to shoot your own spaces and gear. Want "tape tone"? An LE version of Analog Channel LE is only $199. The Project Studio bundle includes Revolver LE, FilterBank LE, CompressorBank LE, Chrome Tone LE and Synthesizer One LE for $495.

The Drumagog (www.drumagog.com) drum replacer plug-in was turning heads with its simple and effective method for replacing any drum sound with a .WAV, .AIFF, SDII or GIG-compatible sample. It features

Hits You Might Have Missed

Ampeg (www.ampeg.com) showed the SVT-VR, a re-issue of its beloved SVT bass amp, but the studio crowd should check out the SVT-DI studio tube direct box ($429) and the SVT-MP tube mic/preamp/DI ($529). If these sound half as good as they look, this may be the birth of a new studio classic.

Avlex' (www.avlex.com) Pink Lady puts a phantom-powered pink/white-noise generator into a tiny tube with XLR out. It's perfect for your gig bag and is $60.

Hosa's (www.hosatech.com) PWC-400 line has 14-gauge, 3-prong Edison-to-IEC AC power cables in 15/25/50-foot lengths—ideal for flown or tripod-mounted powered speakers or monitors. You need these!

EZQuest's (www.ezq.com) slick Studio Rack 8 holds eight removable drives that can be used as individual drives, mirrored drives or as a RAID. Drives can be removed from your rack and used as desktop devices without the need for a base station.

Korg had a slew of new keyboards (see 'em at www.korg.com), but we flipped over its padKONTROL, with 16 trigger pads and wide range of MIDI control possibilities. It also has a KAOSS-type X/Y touchpad, two assignable knobs, onboard Mac or PC MIDI/USB interfacing, 250 MB of drum kit plug-in sounds and more. Yeah!

The **mPATHX'** (www.mpathx.com) SmartRack eliminates the need for AC/DC wall warts and uses patent-pending technology to reduce heat, weight and noise. Users program the different voltages required by various M.I. and pro audio devices in/outside the rack. MSRP: $250 to $300.

Tronical's PowerTune ($800) is an electromechanical system that automatically tunes your guitar at the press of a knob. The modular system is retrofitted to your guitar, and allows dozens of instant tuning settings such as perfect tuning, alternate tunings, etc. Check out the video at www.synthax.com, because you have to see it to believe it.

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SSL G-Equalizer, part of the Waves SSL 4000 collection

auto sample-rate conversion, an extensive onboard sample library and compatibility with Pro Tools, Logic or Digital Performer.

Seven-time Grammy Award–winner Roger Nichols packaged his studio wizardry into TDM plug-ins. New from **Roger Nichols Digital** (www.rndigital.com) are The Bitchinizer (for punching up stereo mixes), The Level-izer compressor (for adding power and punch), The Limit-izer (offering maximum headroom without clipping) and The Equalizer, a smooth multiband EQ. First shipments are slated for Q2, with pricing TBA.

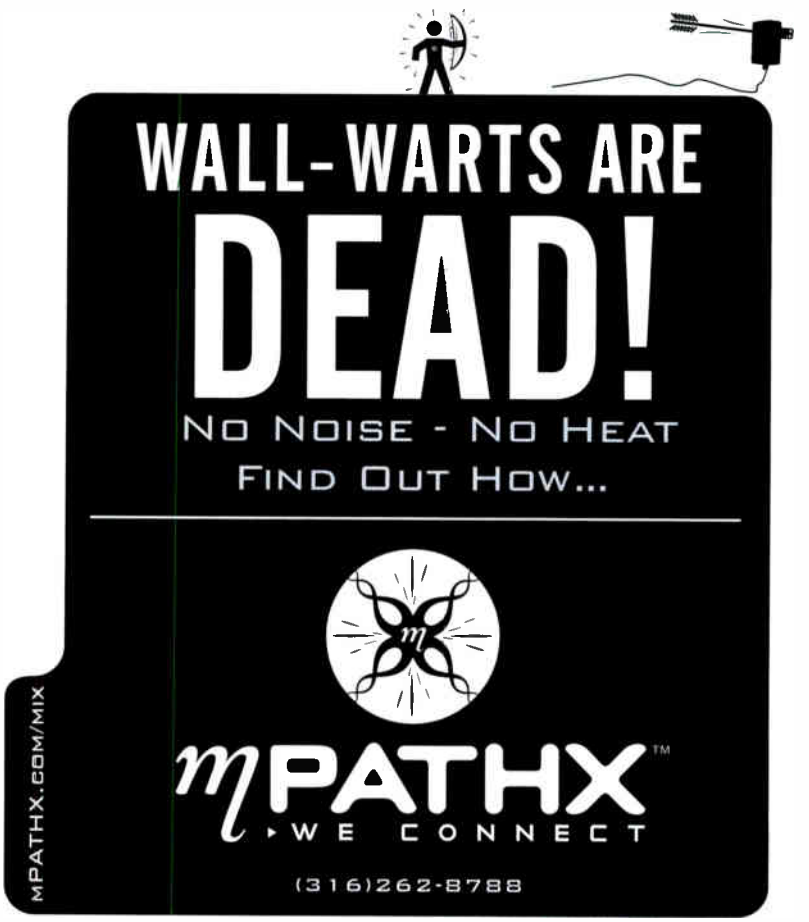
STUDIO ESSENTIALS

The H7600 stereo processor from **Eventide** (www.eventide.com) offers 1,000 preset algorithms and a 174-second sampler. The library of signature Eventide effects is supported by a box featuring AES/EBU, S/PDIF and word clock digital I/O; two channels of analog I/O via XLR; and two channels of ¼-inch inputs for instrument connection.

Germany's **Brainworx** (www.brainworx.com) showed a mastering hardware box and plug-in that featured multimode operation. It offers a traditional L/R 5-band EQ and an M/S mode, letting users process the center and sides separately.

Dangerous Music's (www.dangerousmusic.com) Modular Monitor Controller adapts for stereo or surround via specialized modules and features a stepped-attenuator volume control, four input sources, three speaker outputs, programmable input gain/output level offsets, assignable sub output, mute/solo functions and a stereo cue system with power amp.

Some new mics offered a refreshing change from the prevailing "mine's just like yours" design school. UK-based **Sontronics** (www.sontronics.com) showed a line of studio mics—both condenser and the new Sigma *active* ribbon model—with looks that harken to an earlier era. **Lauten Audio** (www.lautenaudio.com) debuted Horizon—its cardioid tube mic, featuring an NOS military-grade tube, large-diaphragm capsule—and Oceanus, a dual-tube multipattern condenser. Our "I shoulda thought of this first" award went to **MXL's** (www.mxlmics.com) V67i, a $199 cardioid condenser with back-to-back 1-inch capsules (voiced "warm" and "bright"), with a switch between the two, putting two completely different mic sounds in one body.



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Why pay less?

I'm amazed at the recent price drop of entry level condenser microphones.

Is the $1.99 microphone coming?

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Today, there are many cheap guitars, drums and keys for sale. These novice instruments serve a purpose by allowing kids and those who want to begin to experience music, to do so at a relatively low cost. If they don't continue playing, they haven't lost a lot of money. The cheap microphone does the same thing for recording.

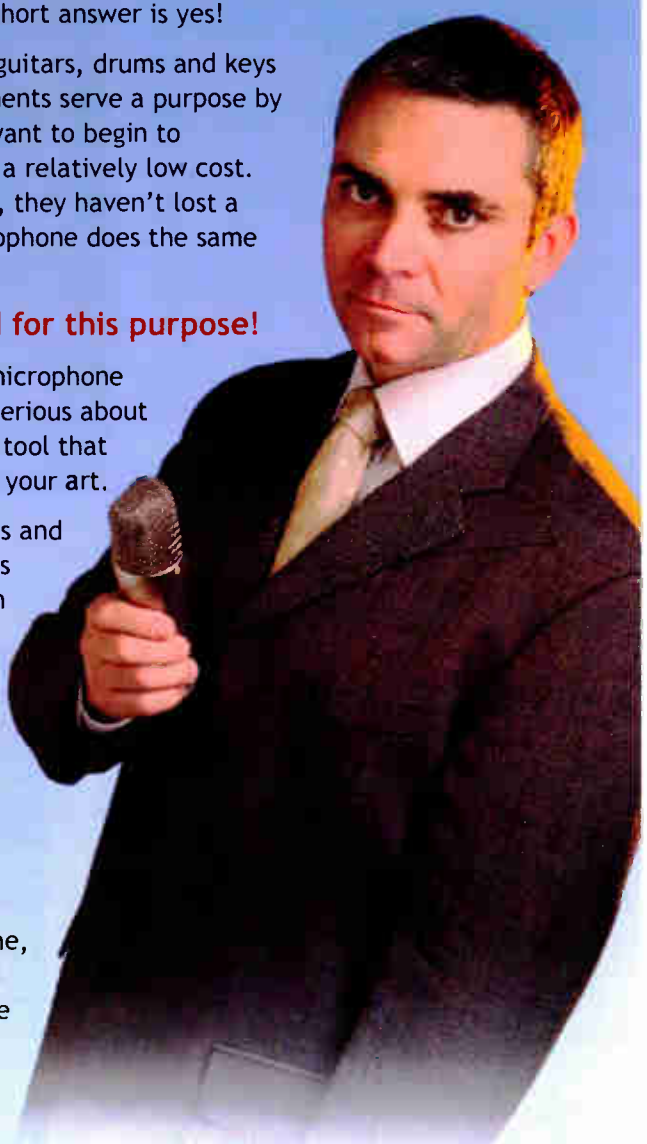
The NT1-A was not designed for this purpose!

The NT1-A is studio quality microphone designed for people who are serious about their music. This is a creative tool that can be relied upon to capture your art.

Thousands of serious musicians and engineers have invested in this microphone, thus making it an industry standard.

While the NT1-A isn't the lowest cost microphone available, it's worth every penny and continues to win prestigious awards for quality and performance.

Please listen to the NT1-A before you buy any microphone, and you too will hear why you should invest just a little more for the real thing.



Peter Freedman
President - Rode Microphones

Electronic Musician 2004 EDITORS CHOICE

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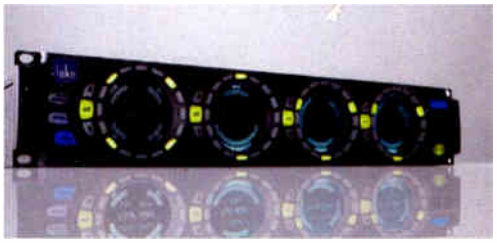


Dolby Lake Processor brings Dolby into the SR world.

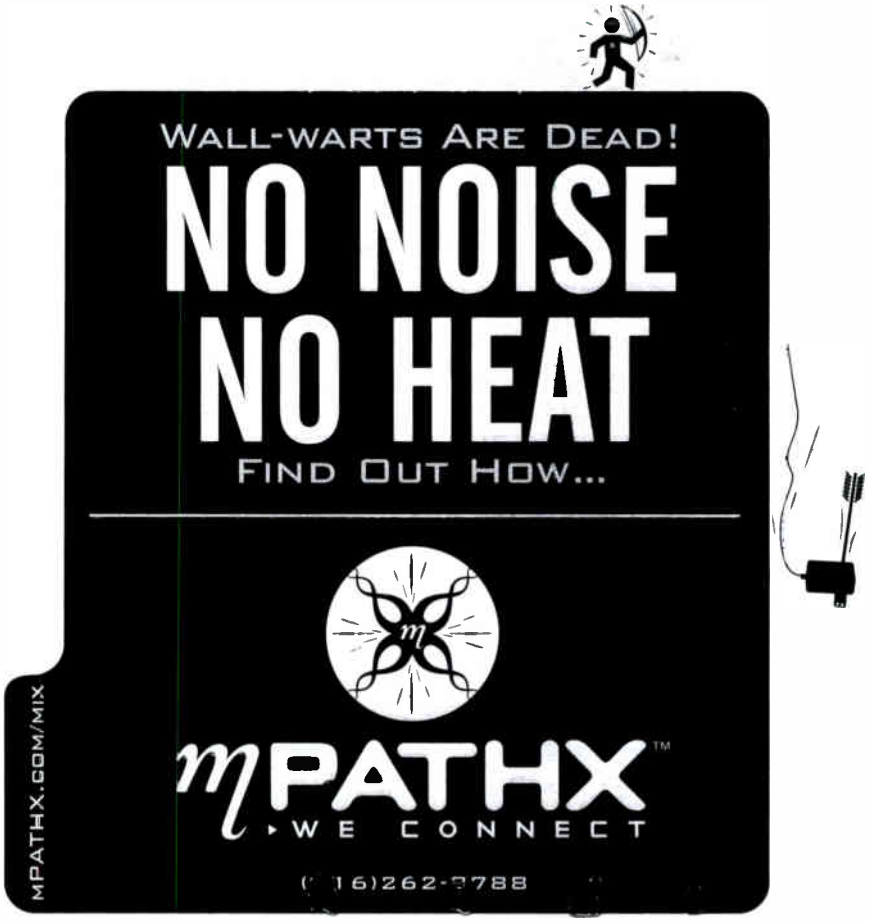
LIVE SOUND HITS

Peavey (www.peavey.com) joins the line array club with its VersArray series. Model 112 combines a 12-inch Black Widow woofer and a HF waveguide with twin 4.75-inch ribbon tweeters. Two subs (single- and double-18) are optional, as are a variety of versatile mounting and flying options. QSC's bi/tri-ampable ILA line array pairs dual 8-inch neodymium drivers (one for lower mids, one as woofer) with two compression drivers on a diffraction waveguide for 140-degree coverage. A companion sub is optional, and all include flying hardware.

Bag End (www.bagend.com) now offers powered versions of its entire line, using onboard Minima One modules that deliver 1,000W (into 4 ohms) from a 6-pound chassis. A-Line (www.a-line acoustics.com) selected Bang & Olufsen's ICEpower digital amplifier modules for its AL10 Series line array, subARRAY woofers and uSonq monitors. The ICEpower units weigh less than 10 pounds, and include onboard DSP for setting crossover points, limiting and EQ.

NAMM spotlighted consoles for mid-sized venues. Mackie (www.mackie.com) expanded its Onyx Series with the 24/32-channel Onyx 24.4 ($1,849) and the $2,599 model 32.4. Both offer balanced signal paths, 4-band EQ, six aux sends, 6x2 matrix and a stereo comp/limiter section based on THAT's 4301 chip. Crest's (www.crestaudio.com) 8-bus HP-W is available in 28/36/44-mono input frames, with four stereo channels, eight Automix™ channels, 10 aux sends, 4-band EQ, 2-channel matrix, talkback/monitor section and eight scene mutes.

Offered in 16- to 56-channel versions, GL2800 from Allen & Heath (www.allen-heath.com) is a front-of-house/monitor board with eight groups, L/R/M outs, 10 auxes, 12x4 matrix and mute groups. In monitor mode, 14 stage mixes and an engineer's monitor wedge mix can be created, while ambience for IEM mixes can be added via mic cross-patching into the matrix. Designed for FOH, Soundcraft's (www.soundcraft.com) 8-bus Live 8 is



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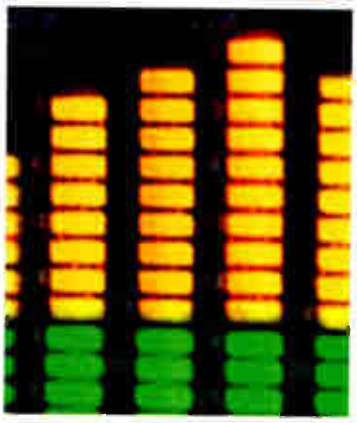

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from the Spirit 8 lineage. With 16 to 40 mono input frames ($3,199 to $6,199) available—plus two stereo channels and eight stereo returns—Live 8 can put 60 inputs in a compact chassis

Dolby in your FOH racks? Unveiled at a pre-NAMM event, the Dolby (www.dolby.com/livesound) Lake Processor combines Dolby and Lake Technology technologies. The DLP has loudspeaker management/EQ functionality, global software control (via computer or wireless tablet), RMS and instantaneous-attack peak limiting and up to eight channels of Lake Mesa EQ or up to 4x12 channels of Lake loudspeaker processing. Its four-portal interface creates the coolest-looking rackmount box we've ever seen.

NAMM offered some hip new stage monitoring solutions. Sensaphonics Hearing Conservation's (www.sensaphonics.com) 3-D Active Ambient in-ear system features a precision-equalized mic within each custom-molded silicone earpiece, letting artists add the ambient feed to the monitor mix to taste. Westone (www.westone.com) showed an IEM system with ear-level ambient mics combined with programmable DSP for personalizing mixes with 6-band parametric EQ and multiband compression. It's compatible with most IEM systems and existing custom earpieces. TC Helicon's (www.tc-helicon.com) VoiceSolo is a line of compact, cast-aluminum monitors designed to mount on mic stands/booms. The range comprises the $275 passive VSM-200P, the active 150-watt VSM-200 ($420) and the $560 active VSM-300, with the latter adding connectivity and personal mix controls.

NAMM had lots of other neat toys that we'll cover in future issues. Meanwhile, Summer NAMM moves to Austin from July 14 to 16, 2006. See y'all there! ■

MIX CERTIFIED hit Certified Hits

OUR TOP 10 COOLEST PICKS (LISTED ALPHABETICALLY)

- Apogee Ensemble
- Cycling '74 UpMix
- Dangerous Modular Monitor Controller
- Drumagog
- E-mu Emulator X2
- MOTU Digital Performer 5
- Native Instruments KORE
- Sony ACID Pro
- VSL Vienna Instruments
- Waves SSL Plug-Ins

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HYBRID MONITOR MIXING

BAND PHOTO: CAMBRIA HAINEY; ILLUSTRATION COLLAGE: DMITRY PANICH

Wedges and In-Ears From One Console

By Mark Frink

Monitor engineers have a tricky task at hand. It's hard enough to please everyone onstage, and as stage monitoring continues to evolve, the majority of shows now require both wedge-based and in-ear monitoring—mixed from a single desk. A few monitoring truisms apply: In-ear monitors are not for everyone. Drummers and keyboard players love IEMs, while guitarists and (to a lesser degree) bass players tend to dislike them. Some singers need the intimacy of direct interaction with their audience, while others can't perform without the isolation provided by in-ear monitors. With the recent introduction of "ambient" in-ear systems that blend binaural mics at performers' ears with their monitor mix, we may have reached the Holy Grail that finally tips the balance in favor of IEMs. However, for the foreseeable future, many engineers will mix a hybrid monitor system.

Old-school wedge-based foldback monitoring blends a few inputs with the backline wash and the sound coming back from the house to complete the sonic image each musician hears onstage. Stage musicians have surprisingly little in their wedge as compared to an in-ear monitor mix. Musicians often hear their neighbors just fine, and in their wedges, other than their own instrument, they only need to hear those farthest away, perhaps with some kick and hat for time and a bit of keys or bass for pitch. Vocalists need lots of themselves and some reverb, as well as, when harmonizing, the other singers.

Because of the isolation provided by in-ear monitors (20 dB or more), the IEM engineer must create a complete listening environment for performers because the only way for them to clearly hear the entire show is for the engineer to put it into their mix. As a result, the mix ends up requiring nearly every front-of-house input *plus* a similar package of outboard processing, application-specific inputs like ambience and talkback mics, and any count-off or click tracks for accompanying playback. The monitor engineer's mission is much harder than the FOH engineer's, when you realize that the monitor mixer must create not one, but several, custom stereo mixes—one for each performer—and the sound quality is more critical because it's directly monitored like a headphone mix.

POWER OF TWO

IEMs perform better in stereo. You can verify this by switching a mix from stereo to mono and back. Try this with any headphone mix: Switch to mono and try picking out the faintest tracks in the mix, then switch back to stereo and notice how quickly you turn it back down. In stereo, it's easier to discern individual inputs, especially those in the same frequency range (even at lower levels) than in mono. This stereo requirement makes consoles with enough "level-and-pan" stereo auxiliaries very desirable.

Effects are also key for realistic in-

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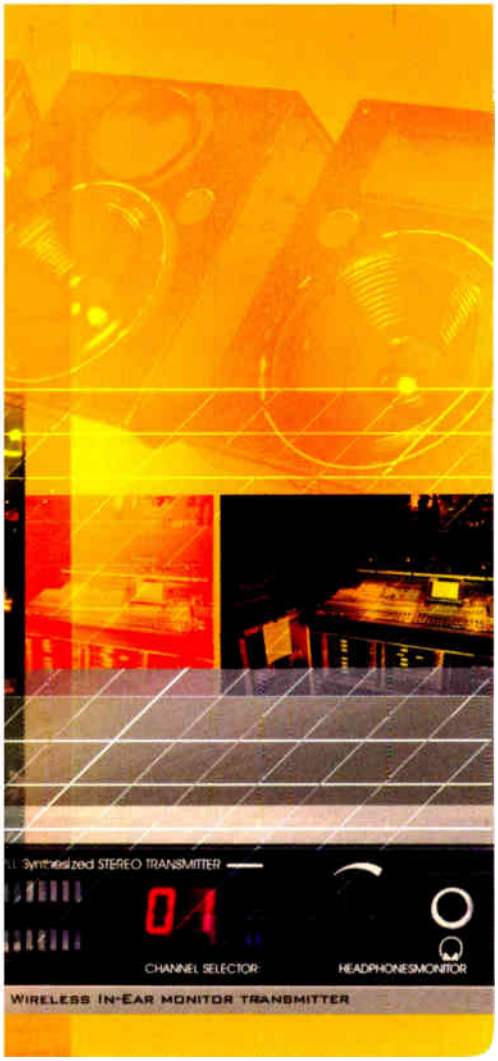

ear mixes: Placing the mix directly into performers' ears means adding reverb to many inputs to make them sound natural. Just like in a front-of-house mix, using dedicated reverbs for drums, instruments and vocals helps improve quality. Shared reverb compromises each musician's ability to get the most out of his or her mixes, as they can't isolate their own inputs when heard with a shared effect. One of the biggest mistakes made with backing singers is that they aren't given stereo mixes and individual stereo reverbs, as the number of inputs and auxiliary buses increases with this accommodation. Employing direct outputs for dedicated effects conserves aux buses, but a six-piece band with four backing vocalists can easily use 24 aux sends and 56 inputs.

In a hybrid situation, one common (and very big) in-ear mistake is using only one earpiece. This exposes the open ear to all the SPL of the stage and forces the IEM to be turned up to stay in balance, ultimately leading to as much hearing damage as wedge-based monitoring. If you find musicians using only one earpiece, it's often because they're getting a mono mix and are simply trying to add dimension to what they hear. If their instrument is a mono source, then a second input or a reverb may be needed to create width.

KNOW YOUR EAR BUD

Be aware of the headroom limitations of wireless IEMS. It has always been recommended to use a brickwall limiter across IEM mixes for hearing protection. In reality, most performers will rip their buds out long before damage occurs. The larger danger is from feedback heard from the compression drivers in wedges. Most wireless IEM systems have a sweet spot when their level is just below clipping. Lower levels raise the noise floor, and higher levels push the system into clip, where distortion takes over. Brickwall limiters serve to optimize the performance of wireless systems by helping them maximize signal-to-noise without overmodulating the transmitter (just like any other radio broadcast). Sophisticated multiband compressors used in mastering also make a great final link from console to wireless.

In addition to their headroom limitations, IEMS have reduced bandwidth capacity. The lowest mix frequencies, already difficult for the tiny drivers to reproduce, push transmitters into clip that much quicker. RF transmission also suffers in the highest octave, making it difficult to create IEM mixes with sparkle. Furthermore, the stereo field is limited, so hard-panned inputs sound only partially panned. With all these limitations, it's easy to see why hard-wired IEMs have a distinct advantage, even before getting into the daily challenge of frequency coordination.

Different ear buds have different response curves, and it's nice for each engineer to have all performers on the same IEM product so what they're hearing can be properly referenced. Unfortunately, every musician has unique hearing, monitoring needs and even personal preferences. Familiarity with the needs of each performer onstage will help the mixer tailor individual mixes with EQ tweaks.

PRE-EQ OR PRE-FADER?

With wedge-based monitoring, it's expected that musicians' mixes remain fairly static throughout the show, with the exception of accommodating a change of a guitarist's playing style from strumming to picking. On the contrary, with their limited headroom and bandwidth, IEMs are enhanced by active mixing (fader moves that bring lead inputs up in the mix and then return them). However, not everyone wants the same "bumps and rides"—primarily, the musician playing the lead benefits from that lift. The ability to individually select aux sends to ride the fader is a key element in IEM monitor desks, and budget consoles that globally select auxes as pre or post, or configure several together on a channel are restrictive.

Venue characteristics are a key variable in EQ'ing wedge mixes. A well-crafted IEM mix needs little in the way of input EQ if the mic choices are appropriate, but wedge-based monitoring can require tone adjustment from one night to the next to compensate for the changing acoustics of the stage and room. On dedicated monitor consoles, the ability to have auxiliary buses that operate post-EQ, but pre-fader for wedges, is helpful, while IEMs benefit from post-fader, pre-EQ aux sends. Unfortunately, this functionality is not common in many desks. When all aux sends must be post-EQ, an engineer may have to further modify wedge EQ to get an input to sound better.

Monitor console limitations often require the engineer to split inputs to double channels for critical inputs, increasing input counts. Some inputs are naturally double-miked by the front-of-house engineer, providing opportunities for the IEM engineer. A double-miked kick drum offers two different ways to hearing it onstage and a third way when the mics are blended. Double guitar mics can create a stereo dimension when panned for IEM mixes. Sometimes, however, a front-of-house mic choice that worked fine in the wedges is no longer good enough for IEMs, and it becomes necessary to replace that mic with a different one for the monitor mix.

FLAT WEDGES

The equalization of the floor monitors plays a key role in determining how well both wedges and in-ears can be served from the same console. Both live and studio engineers understand that whether using a live system or a studio monitor, response peaks or deficiencies tend to ultimately be compensated for with additional channel EQ. Careful system frequency-response analysis allows the engineer to smooth out the wedges' response so they accurately reproduce sound, like good studio monitors. If the main speaker system is creating extra lows or mids onstage, it may also be necessary to cut those out of the wedges' EQ so individual monitor inputs don't need to have those cut.

Starting by verifying the frequency

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response of the wedges may seem like a luxury, but when you're mixing both wedges and IEMs from the same console, it becomes mandatory to have a known starting point for all the speaker-based mixes. Simply equalizing by voice can't provide the accuracy and consistency that can be achieved using a computer, no matter what brand of FFT measurement you prefer.

While some sound companies build presets into their crossovers for each type of speaker in inventory, verifying each monitor speaker the first time you use it is worth the trouble. It's surprising how often a horn's polarity can be found reversed, evidenced by a "grand canyon" at the crossover point.

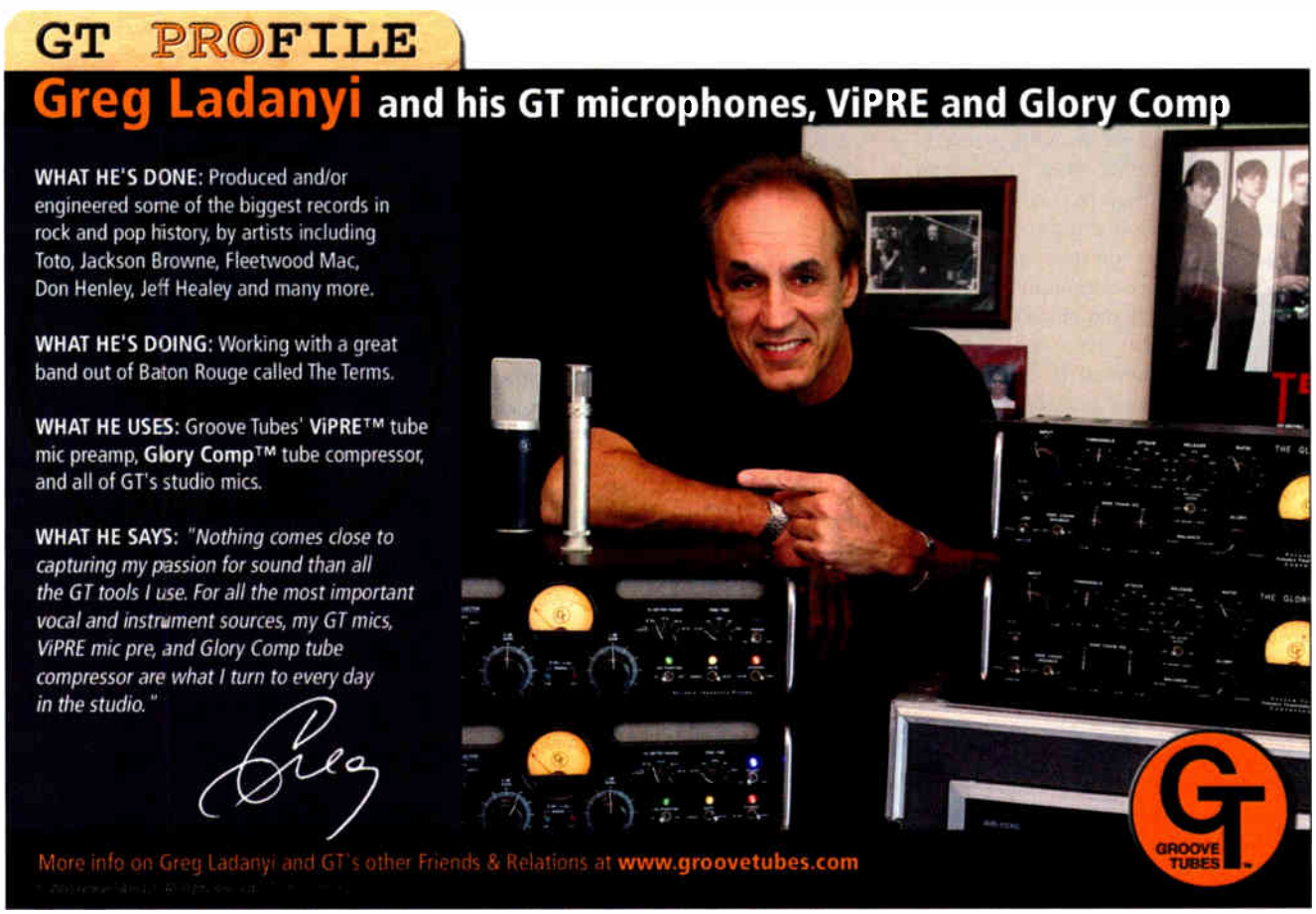
Unlike using IEMs, the balance between backline, house sound and what's heard through the floor monitors varies from one stage to the next, while the major elements in an IEM mix are all controlled through the monitor engineer's console. The challenge of getting wedges to blend backline and house can be vastly different from one venue to the next, but the monitor engineer's variables are limited to far fewer inputs. When an IEM engineer must start with a new system each day, the number of variables is far greater, and a large number of controls must be adjusted with precision. Unlike wedge-based monitoring, where putting musicians onstage and simply "dialing it in" on the fly for one-offs is normal and acceptable, so much goes into an in-ear mix that it must be pre-built and tested before being handed off to each performer so it doesn't waste time and destroy confidence.

> With the recent introduction of "ambient" in-ear systems, we may have reached the Holy Grail that finally tips the balance in favor of IEMs.

Earpiece monitoring provides a closed system, free from room interactions (though limited in bandwidth by driver and RF frequency response). Individual performer hearing and preferences come into play, and while someone may like a warm mix with lots of low end, someone else may prefer a thin or bright mix. Dealing with individual preferences by using output EQ goes a long way toward avoiding fights over how the performers want individual inputs equalized. In the end, each performer gets first choice for his or her own input EQ, so one strategy is to work out EQ with that musician first and to try making minor output EQ changes initially, rather than going straight for the input strip.

One final note: A hearing test is an integral part of any musician's adoption of IEMs, and though many will be reluctant to share that information, a private discussion with individual performers about their hearing can go a long way toward giving them the kind of mix they need, whether you're using wedges or IEMs. I worked with one musician for a number of years before he shared that he had a notch at 4 kHz in one ear. That helped me to put his wedge in the right place and decide how to EQ his mix and instruments, and I had far fewer problems from then on. ■

Mark Frink is Mix *magazine's sound reinforcement editor.*



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Game Audio Integration

By Alexander Brandon

Most audio professionals started their careers with little more than a love of music, film, radio and/or television. This generated the passion to create, and for some, that passion led to understanding a console so complex that it would baffle most 747 pilots. In my case, however, the situation is reversed. I have been involved in game audio integration for nearly 12 years and have only just seen a legendary Neve console for the first time, at Soundelux's Signet Studios (formerly Motown West, in the heart of Hollywood).

The first dive I ever took into music-making and audio production was with an Ad Lib music synthesizer card. Back then, most recording engineers would have found it hard to take such an endeavor seriously, but at this point, the complexity and qualitative considerations of the audio I integrate into games is sometimes more complex than a high-end studio album by at least an order of magnitude.

The tables have turned, so to speak. In the game world, whereas the Ad Lib used to be the only consideration in the entire sound set for a title, now I send off NDAs and contracts, I negotiate rates and licensing. I work with orchestrators and contractors. I fiddle with multi-PC GigaStudio setups and wrestle with MIDI assignments. I write lengthy sound design documents and huge Microsoft Excel Asset spreadsheets, and in the end, I delve into the games and integrate the audio itself with a huge array of tools.

As a result, many music recording artists and composers whom I have come to admire—such as Peter Gabriel, Scott Gershin, Reeves Gabrels and Danny Elfman—are now colleagues in the game world. They are interested in the art of game audio and contribute to it in various ways—making the music and sound soar just as much as it would in a film, and in some cases moreso due to games' interactive nature. However, most of these artists still don't understand one important aspect of game audio: the actual integration of sounds.

I'll explain: It is easy to throw a piece of music or a sound into a game, just as it is easy to strum a power chord and throw it on a CD. The means to access a programming language and play a .WAV or MP3 file have been standard and accessible for some years now. However, as we all know, the skill of the engineer(s) involved can either make that raw data sound like a finished product or let it sound like just another demo. In this article, we will explore game audio integration, and the game industry in general.

REAL-TIME MIXING IN AN INTERACTIVE UNIVERSE

FILM-LEVEL SOUND PRODUCTION

It should come as no surprise that game sound long ago transcended the "bloops" and "bleeps" of mobile and embedded audio. An average high-budget, high-profile title contains at least an hour of multichannel 44.1kHz/16-bit music tracks, streamed adaptively with custom scripting (we'll get to that in a minute), at least 1,000 sounds played via Dolby Digital, DTS or Pro Logic 2, and at least 1,000 lines of voice-over. Visit the *Mix* Website (www.mixonline.com) to hear sampled segments of two high-end titles, and tell me they couldn't be found in a feature film! These days, all this real-time audio has to sound as good as it would if it were mixed for a film. Why? Simple. Games are becoming so realistic that people will compare them to films. And, of course, many of them are designed to be like extensions of popular films. Take *The Lord of the Rings* series, for example. The TV commercial for Electronic Arts' TV games starts with film footage, not game visuals. Therefore, end-users may be disappointed when they find that the game visuals are not as realistic as the film, and their suspension of disbelief is lost. The same principle applies to sound. The question then becomes: How can you mix and master a game to these standards?

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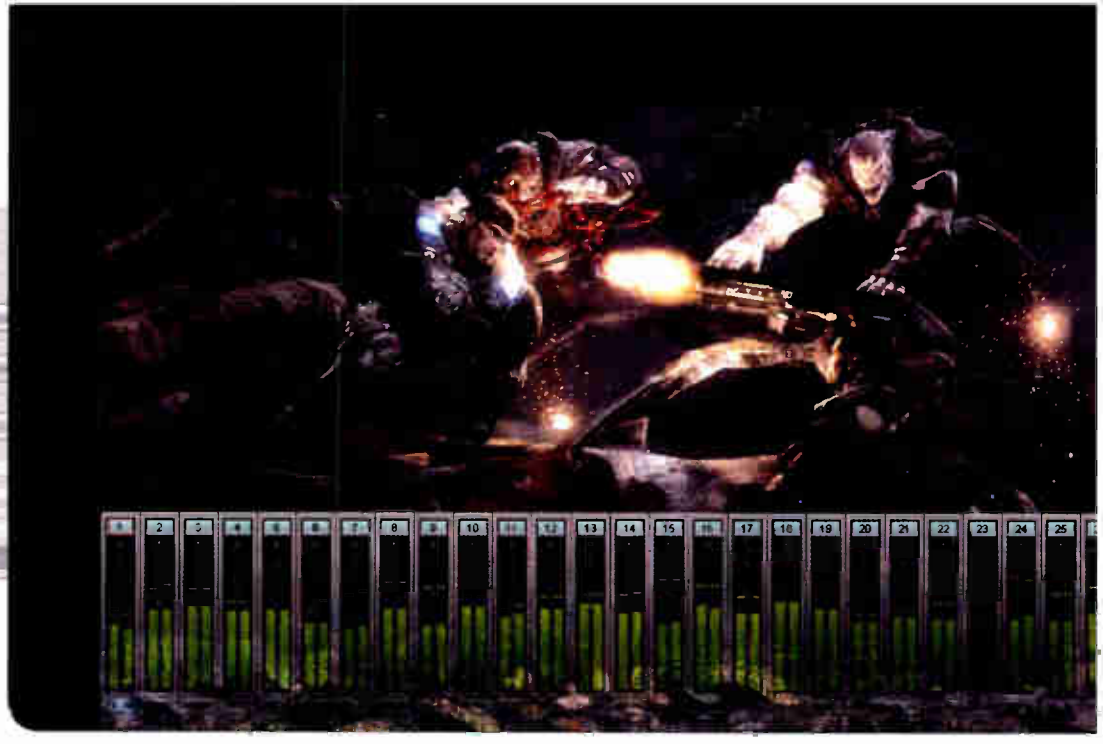

Gears of War is one of the most hotly anticipated titles for next-generation consoles. Imagine mixing the game as one would in a post room for a film: faders onscreen with debug tools close at hand for instant tweaking.

The ability to monitor levels in real time is an obvious metric requirement for next-gen games if they're to have a fast, efficient sound post-production process.

REAL-WORLD GAME AUDIO

In my studio, next to the Xbox and PS2 hardware-development kits, are a pair of Mackie HR824s running into a Yamaha 01V06 V2, linked to a Layla with I/O to a fairly powerful PC running Cubase SX2, and two 21-inch monitors. (They're not even LCD.) I use Waves plug-ins all the time, as well as Sound Forge 6, and nothing quite beats a good day with Absynth. In other words, behind every game is a very typical project studio. The trick is to identify the set of post-production tools that will be most useful to games. For example, does one need the equivalent of an in-game audio? Qualitatively, if we're to compete with film sound, the answer is yes. Realistically, however, an actual Neve would never fit on a screen that one typically uses, so some sort of facsimile would be required.

Studio gear aside, one of the most talked-about concepts in the game audio world is a newly established production skill set called "real-time mixing." The idea is to have your boards, effects—anything you'd have on a high-end mixing stage—available while a game is being played and integrated seamlessly into a game-play session. The chart on page 58 represents this process, step by step. Never mind that game sound doesn't exist in this

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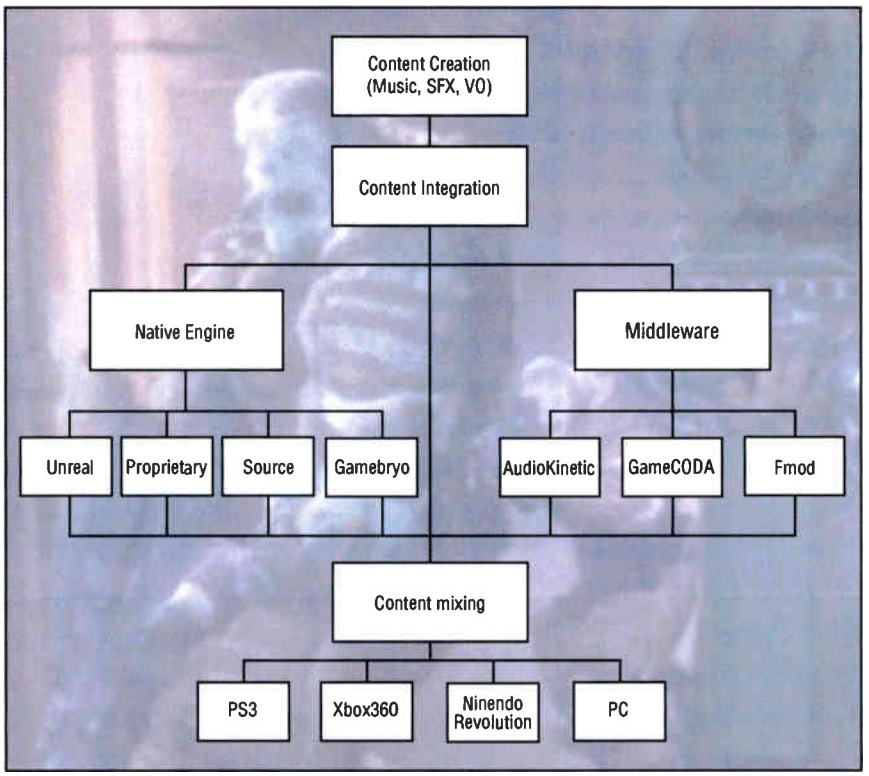
form yet—it will.

Let's look at the real-time mixing process from start to finish. As you can see, there are several steps before you can twiddle knobs, just as there are in film/record/TV production. You begin with the creation of individual assets: sound effects, music and voice-over. After your assets are nicely normalized according to whatever rules you set (average dB, RMS or simply voice-over at -10, sound effects at -13 and music at -16, etc.), you place them into your game engine and integrate them with game objects. Here's where it gets tricky, and where the gaming industry can learn a lesson from pro audio: The key here is to use programmers *as little as possible.* Unfortunately, we are in a world where programmer tool creation and sound integration still happens on a project-to-project basis.

Some developers have their own proprietary engines, but most use commercial engines, such as Unreal (www.unrealtechnology.com). I was fortunate enough to be involved with the development of the sound system for the first version of the Unreal engine, and anecdotally, I had to fight for 16-bit sound. Yes, yes, I really did. Each engine has its native sound-integration tools that vary in usefulness and user-friendliness, but as an alternative, you can use middleware. Middleware apps are similar to plug-ins, and audio middleware can make your life a lot easier by adding features and functionality that will enable you to integrate audio with a minimum of programmer involvement. For example, Unreal alone has a fairly good visual (flow chart–based, in fact) system for setting up sounds and their properties (effects, filters, etc.), but when it comes to actually attaching those sounds to game objects, the techniques are a bit more convoluted. GameCODA (www.gamecoda.com) and its CAGE producer by Sensaura allows you to connect game objects directly in 3DStudio MAX, the tool used for creating the art assets.

But you can even go a step further and ask, "Why not do everything within

Game Audio Integration Process



A typical high-level view of game audio integration. Native Engine is for those who use the tools already found within a game engine that handles everything. While native engines might have great strengths in rendering, adding a middleware engine like GameCODA or Audiokinetic's Wwise provides audio tools that round out the engine with solid sound-integration capabilities for multiple platforms.

Tips and Tricks

From the Game Studio to Your Recording Studio

This game audio monkey has learned a few things since my foray into real studio work that may be of help for game-specific and general studio use.

Remote control: In any given day, I will be required to do either temp or final voice-over, being a voice actor, as well. My setup is a control room linked to a studio via audio hookups and a window. So when I need to record myself, what do I do? Run from room to room? Frontier Design obviously heard my pain and released the Tranzport: a remote DAW controller giving you transport controls 30-plus feet away from your PC, even through walls. A true blessing. I just set up a session and go, whereas before, someone running the board would have been necessary. The only drawback is not having someone ride the knobs on the preamp itself, but establishing levels overall at first takes care of that in most cases.

Multiple console testing: Not all consoles are created equal. A PS2 does sound different from an Xbox with the same audio running through the same speakers. The ability to have multiple builds running on Xbox, PS2 and PC are very important. This way, you can hear differences in the output through a single source (reference amp or just a mixer if you like). In the future, you'll be able to do this in the engine itself and make changes on the fly on a per-platform basis.

Remote talkback: When recording voice-over, I use a pretty standard mixer: a Mackie 32•8. But how on earth does one hook up an infrared remote talkback system to it? I talked with representatives at Mackie, and they're not sure themselves, although I'm sure there are a few L.A.-based electronic experts who can hardwire something custom for you if you have an arm and a leg to give. Fortunately, there's a solution I found that's easier. At the risk of a blatant plug to the company, it is the Hear Technologies Talkback 600mv. It allows you to link audio into any system with IR remote for talkback. Nifty!

—Alex Brandon

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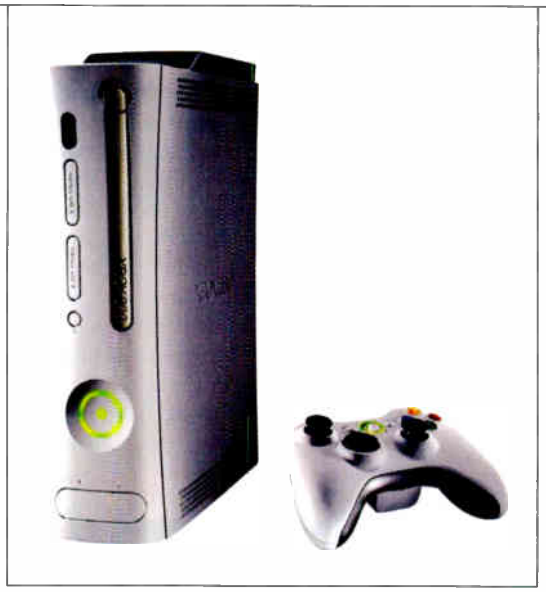
the same tool?" This is where the magic of real-time mixing goes to work. Take a list of your sounds, assign them to the object you want (footsteps, voice-over, music, etc.) using either your native engine functionality or middleware tools, and then hit Play. The game begins and you play the game with faders and controls onscreen for each sound. At this point, you're just as at home as Terry Porter is at Disney's Main Theater. Each sound is identified and each one can be controlled with a fader, EQ, plug-in—whatever you like. Each change you make and then save in a session is copied to a build (version) of the game, and once that build is released, anyone playing it will hear the results. As I said, this technology isn't completely available commercially yet. XACT (Xbox) and SCREAM (PS2) come the closest, but they're only available to registered PS2 and Xbox developers. But rest assured, it will happen.

When I said Porter would be at home with this setting, there's only a couple of caveats—the differences between a linear medium like film and the nonlinear format of games. As a real-time experience, a game differs every time you play. The differentiating factors to consider are actual game-play time vs. total game-play time (account for cinematics); player perspective (first or third); point source, planar source or geometric primitive source sound distance from the player; volume steps between minimum and maximum distance in the radius from source; volume fall-off curve from player; and simultaneous sounds and overall headroom.



Xbox 360 takes audio features to the next level.

All of these depend on the game type. For a puzzle game such as *Tetris*, your life is made a lot simpler because the player is not in a 3-D environment and because the mechanics are simpler. For a game like *Medal of Honor* or *Gears of War*, you're trying to create a cinematic experience at every moment of game play. With an average of 15 to 30 hours going into each game experience, on the surface, you're looking at a minimum of seven times the amount of tweaking as you'd do in a feature film. Fortunately, once you account for actual game-play time, you're only looking at about two-thirds of that time on average. Regardless, it's a daunting challenge for today's game engineers, and just like in the old days of tape hanging from the walls, game audio post-produc-

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tion is fraught with complex proprietary solutions and myriad dependencies.

THE NEXT GENERATION

Let's examine the multifaceted audio world of just one console in the next generation of game platforms: Microsoft's Xbox 360. Brian Schmidt has been involved in game audio since 1987 and is now program manager of audio and media at Microsoft for the Xbox. According to Schmidt, the Xbox 360 presents more challenges than ever for a realistic and/or compelling audio environment in games. "Gamers are expecting more from their games' graphics and game play, and audio/music is no exception," he says. "We have a lot of technologies in the Xbox 360 to help meet these expectations. One is XMA, a custom data-compression format specifically for gaming. This lets a sound designer compress a sound in the range of 10:1 with little, if any, loss of fidelity. And, of course, we have tools like XACT that really try to put the control of how the game sounds in the hands of the sound designer or composer rather than the programmer. We also make it easy to support interactive 5.1 Dolby Digital, both through tools and APIs."

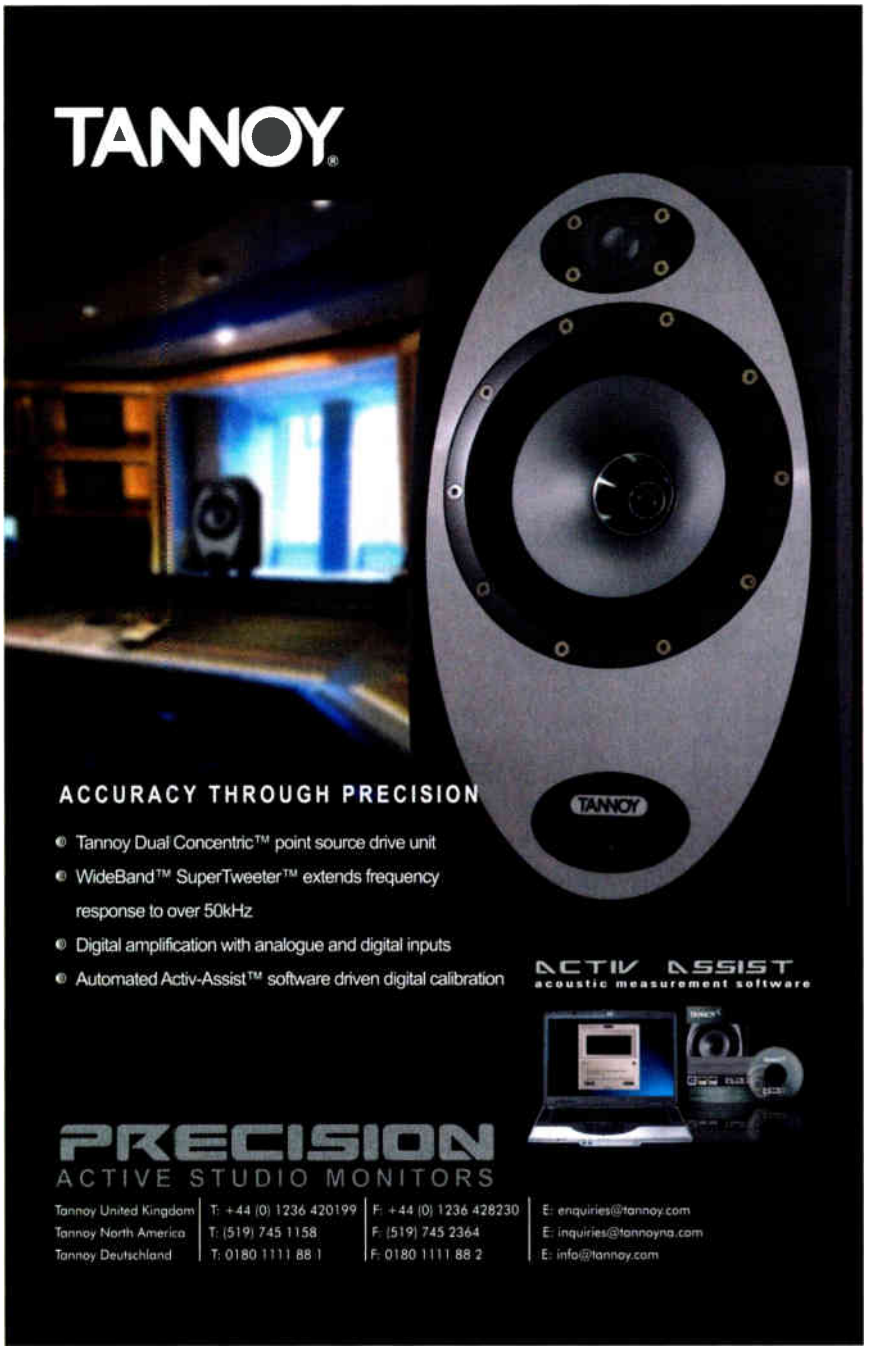
Schmidt adds that Xbox 360 is full of advanced audio features for both the programmer and the end-user: "One is the ability to let a gamer play their own music on any Xbox 360 game, as well as a much more sophisticated way of letting a game incorporate the gamers' own music into the gaming experience," he explains. "The Xbox 360 lets you play music from a variety of sources: the Xbox 360 HD, a Windows PC, a portable MP3 player or iPod. Gamers can access that music and play it, but not lose all the cool dialog, ambiences and sound effects they'd lose if they just turned off the game's sound and popped on their iPod headphones. Our hardware XMA audio decompression is pretty groundbreaking, as well. Using XMA is like giving audio designers a whole lot more memory so that they don't have to make the kinds of compromises you typically associate with doing games [lower sampling rates, shorter loops, etc., to fit all your sounds into a very limited footprint]."

Finally, just what does one do with surround? 5.1? 7.1? 9.2? Fortunately, on next-generation platforms, the number of surround speakers you have won't matter. Sound will be panned to the appropriate channel in real time. In terms of surround mixes you play back in a linear format, that's up to you, but there are far more 5.1 systems in use than there are other setups. And dear old stereo is still king of the hill, so don't forget about it. Make sure you thoroughly test through even mono devices to avoid any phase or overdrive issues on your cones.

SOUNDS OF TOMORROW, TODAY

The new challenges in game audio are vastly complex. This leads to more specialization of tasks and because development cycles haven't actually changed that much, game-development team sizes are growing from 50 to 200 to 300. Interfacing with designers and producers is the same gig as you'll find in a typical film. But what people continue to forget is that post-production still needs to happen. The audio still needs a good mix and proper levels just like a film. The means to achieve that is there, and all we have to do is implement it. For the first time with new-generation consoles and PCs, it is possible. ■

Alexander Brandon is the audio director for third-party development at Midway Home Entertainment in San Diego, Calif.



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"We Switched"

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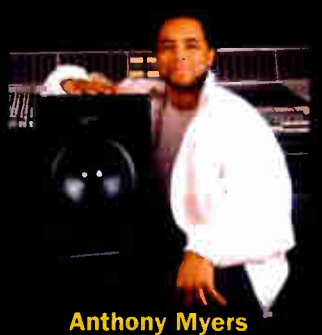
Producer / DJ / Recording Artist

Francis Buckley
Multi-Platinum Grammy-Winning
Engineer / Producer

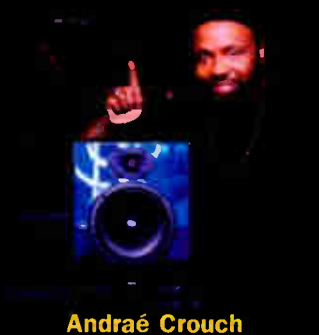
John Rodd
Orchestral Scoring Recordist
Music Scoring Mixer

"Prince Charles" Alexander
Multi-Platinum Grammy-Winning
Engineer / Producer



Anthony Myers
Engineer / Producer
Sound Designer

Gerhard Joost
Multi-Platinum Engineer
Mixer / Producer



Andraé Crouch
Multiple Grammy-Winning
Gospel Singer / Producer / Pastor

Lionel Jarvis
Multi-Platinum Musician
Musical Director

DJ Ron G
Remixer / DJ

Steve Pageot
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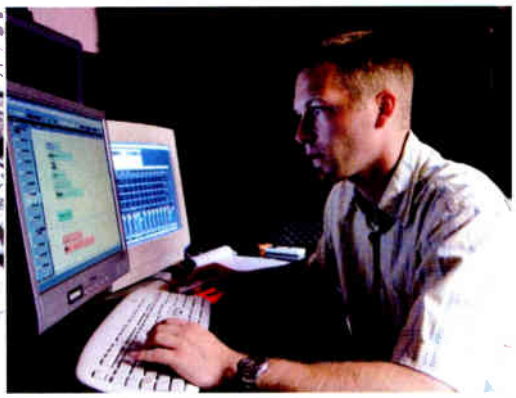
BY BLAIR JACKSON

Sound Effects for 'King Kong, the Game'

To Skull Island and Beyond With Ubisoft's French Team

Serious gamers will be the first to tell you that not every great action movie can be successfully turned into a videogame. Indeed, for every successful film-to-game franchise—*Star Wars* has yielded many popular titles; *Spider-Man*, *The Lord of the Rings* and James Bond are also consistent winners—there are many more failures. Sometimes, it's the animation that sinks a game; other times, it's clumsy game play or an over-reliance on the original film's plot and details, leaving too little room for the player's imagination. Of the big fall 2005 film releases, the one that most critics agree made the smoothest transition to a game is Peter Jackson's *King Kong*, made by Ubisoft. Reviews for the game, which actually came out a short while before the film, have been strong, and so have sales. It probably helped that Jackson actually collaborated on the game. But beyond that, who wouldn't want to explore the creature-infested nooks and crannies of Skull Island or to play *as* Kong—fighting dinosaurs or wreaking havoc in 1930s New York? It's an intoxicating adventure.



Left: Yoan Fanise recording his Uncle Marc's shotgun. Right: Fanise at work on his Nuendo system.

As with the heavily CGI'd film, the *King Kong* game is highly dependent on the quality of the animation and the realism and power of its sound effects. The game was made in Montpellier, France, by a large Ubisoft team; the sound effects, which already have earned the game a 2005 Best Sound Award from www.gamezone.com, were spearheaded by Yoan Fanise, who says, "Two years ago, Peter Jackson and his son played one of our previous games, *Beyond Good & Evil*, and he really enjoyed it—the story, the [artistic] realization, the deep emotions—so he contacted our creative boss, Michel Ancel, to make the game for *King Kong*. After several prototypes, he signed with Ubisoft for the game."

Beyond Good & Evil, which took place on a planet populated by sinister aliens, was Fanise's first experience creating videogame effects, but that was after many years as a sound editor and re-recording mixer for film and TV in France. "It was such a revelation to work with interactive audio, for the first time," he says, "despite the technical limitations of PlayStation2. Games are an incredible area to explore—there's so much freedom of creativity."

With some games made from films, the sound designers are provided with actual FX stems from the film, but in this case, Fanise says, "We had to finish the game before the movie mix had begun, and if you add time to re-edit, mix, integrate and de-bug sound effects in the game, it was impossible to get final sound effects from the movie. However, I did send my sound effects creations to them [Park Road Post in New Zealand] and they sent me some really great feedback, and later some stems from a temp [dub]. In the end, though, about 90 percent of the game sound effects are homemade, and that makes it sound different from the movie—it's like another vision of the Skull Island atmosphere."

To create the Skull Island ambiences, Fanise and his audio team spent several days in the mountains recording wind, trees, rock sounds and rivers with Fanise's Tascam DA-P1 stereo DAT recorder and a stereo pair of Audio-Technica 4041 mics. "I also wanted to record lots of forest 'silences'—these really quiet backgrounds that make your atmospheres more immersive and realistic," he says.

Like most effects designers, Fanise is constantly on the lookout for sounds: "For example, the rain in the sea storm in the first map of the game is a recording I made from the studio window on a day last year when there was flooding in Montpellier," he says. "The authorities had forbidden everyone to take their cars into town, and [sound editor] Thomas Vannier and I were blocked in the studio, so we took the DAT out to record this heavy rain. It was perfect—no cars meant no traffic noise, and the big plane trees in front of the windows made the rain sound really tropical!

"Another great recording experience was the amazing collection of hunting weapons my uncle Marc has," Fanise continues. "I could record all sorts of shotgun manipulations, as well as his new hunting bow that made really great arrow swooshes." While Fanise stresses that most of the sounds in the game were original, he also used some FX library material from Sound Ideas, BBC and WWA (Wild World of Animals) with newly created sounds.

And, of course, one has to ask about the sound of the mighty Kong's roar: "In the game, Kong's roar is a mix of 12 elements,

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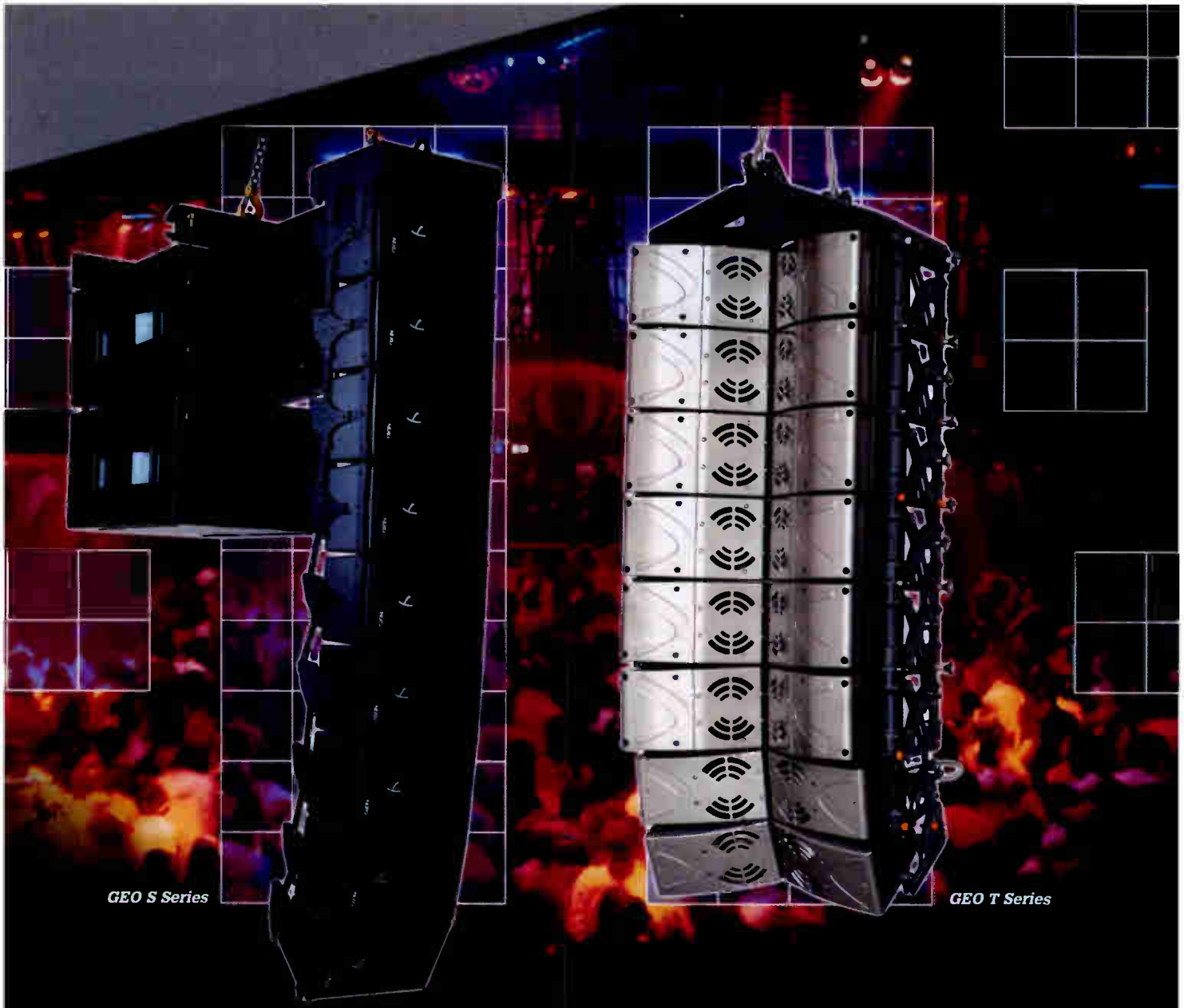

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the main one being human—it's a female horror scream pitched down a lot and saturated. It gives this tonal aspect that brings a strange emotion, a mix between sadness and anger. Peter [Jackson] described Kong as a really old monkey, alone for a long time on his island, so I wanted to add that aspect [of loneliness] to his basic angry roar. In the last month [of production], we received a temp version of Kong's roars and sound editor Olivier Ranquet included them as an element of the edit. They have a really great presence."

Fanise and his team did all of the FX and ambience mixing in Nuendo, "a total of 1,242 sessions for the 1,885 sound effects," he says. "There are lots of reasons that pushed me to leave Pro Tools, and after two years of daily work with Nuendo, I won't go back. Nuendo is so useful: You can combine 16-bit, 24-bit, stereo interleaved and 5.1 files without any conversion process, and there are also many little features that make your work more simple and fast.

"For the creature sounds, I used lots of plug-ins, principally the Delaydots Spectral Suite and the PSP MixPack [of analog sounds]. And for all the atmospheres sessions, I used the great freeware SIR [Super Impulse Reverb] convolution plug-in to re-create exterior acoustics. All of it was mixed in my DAW with my little [CM Labs] MotorMix [control surface]."

Fanise switched to Nuendo for its ease of use and flexibility in working with multiple file formats.

The time span from the first designs of the audio universe of Skull Island to the final mix was nearly two years, with the later mixing phases including making level adjustments in the FX to accommodate different game formats. "We had to tweak the reverb parameters for each [gaming] console, also set the 5.1 rules for the spatialization on the Xbox," Fanise notes. "Also, the global mix volume is different on each console: The PS2 has great headroom and summing is not a problem, but on GameCube and Xbox, we had to lower the master [volume] to avoid clipping. But we had to use the same data for all platforms. I had no time to re-sample sound effects for each one."

Who knows—if the game continues to sell well, then maybe Fanise and company will get to visit Skull Island again for a sequel, applying everything they learned from making this game, and creating sounds for new creatures and new worlds. ■

Blair Jackson is the senior editor of Mix.

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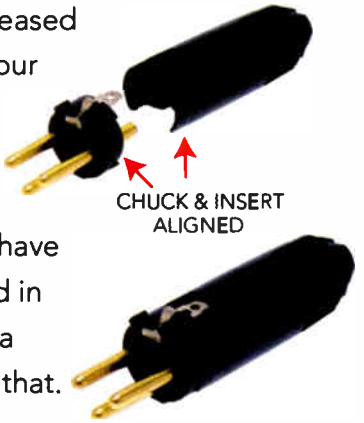

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BY HEATHER JOHNSON

Sound Design for Motocross Games

Rainbow Studios Gets the Dirt

On a dry, sunny day just outside of Phoenix, pro motocross drivers speed through the wide-open desert, doing crazy jumps and otherwise kicking up a lot of dust on their tricked-out bikes. They're going to great lengths to rev their engines and travel at high speeds, even with no first-place prize. They do get credit, though, for accelerating the sonic integrity of games such as *Motocross Madness, ATV Offroad Fury, MX Unleashed, MX vs. ATV Unleashed* and many other titles developed by THQ subsidiary Rainbow Studios.

When the company launched in 1992, the concepts of sound design and field recording were virtually unheard of in the game industry. But now, with better technology and bigger budgets, production companies budget for full-scale sound production. "It's a nice fit for us to be able to develop sound for our games with cutting-edge equipment that's accessible and really high-quality," says Michel Henein, sound supervisor on *MX vs. ATV*. "It is a lot like what they're doing in the film world."

For the *MX Unleashed* title, released in 2004 for PlayStation 2 and Xbox, the Rainbow audio team took to the desert to record motocross bikes ranging from small roadsters to professional two-wheelers for the game's track competitions, as well as jumps and landings for the freestyle section. They followed a group of trained riders with their mobile rig, which included, at the time, a Dell laptop with a MOTU 896 interface, a parabolic dish outfitted with a microphone, a Tascam DAP1 DAT machine and an assortment of dynamic and condenser mics. "We were presented with a real challenge in recording machines that are amazingly difficult to mike," says Rainbow Studios composer/sound designer Dave Lowmiller. "The parabolic dish afforded us the ability to record a focused area of the vehicle without being invasive to the rider."

Rainbow's field recording rig now includes an Apple G4 Powerbook, a Digi 002 interface, outboard Focusrite preamps and a Galaxy Audio Far Outlet Model 300 S battery. "It has an AC outlet on it," says Henein of the battery, "so if we're out in the middle of nowhere with no power, it works really well. It puts out a pure sine wave, a 60Hz/120-volt signal and lasts for about four hours."

The Rainbow Studios crew, L-R: Michel Henein, Karen Muro-Waller, Dave Lowmiller, Tatyana Koziupa

The portable digital setup lets the team record with multiple mics, using a combination of Shure KSM 141s (matched pair), Sennheiser ME 66 shotguns, Neumann KMR81, two AKG D-112s (to capture low-end exhaust sounds, they say) and Audio-Technica AT-4033s for ambient sounds. The Rainbow team can also record to a Marantz PMD 670 (which records at a 48kHz sample rate direct to compact Flash cards) and an M-Audio MicroTrack 24/96.

They also record an array of larger, sometimes hard-to-find, vehicles, such as dune buggies, baja trucks (a raised truck with a NASCAR engine), monster trucks and ATVs, as witnessed on *MX vs. ATV Unleashed*. These automotive behemoths get placed on a dynamometer, a machine used in the auto world to measure an engine's horsepower. "The 'dyno' simulates the car moving and revving," says Henein. "We can get really dynamic sounds of the engine, exhaust and the car, but it's stationary so it's somewhat of a controlled environment. That way, we can place mics all around the vehicle without it moving."

With the Digi 002, the sound designers can record all of their engine roars and exhaust fumes to multiple tracks, at 24-bit/96kHz, and generally end up with eight channels of audio to review, modify and mix at Rainbow Studios' new 1,500-square-foot audio facility, completed last year by Russ Berger Design Group.

Inside the 700-square-foot studio lies a small recording area, iso booth and control room; the latter is equipped with a Pro Tools|HD Accel workstation; Focusrite, Buzz Audio and other preamps; Avalon comps; Dolby professional decoders; a JBL 6300 Series 5.1 system; and a THX-certified screen. Plug-ins (Digidesign EQ III Series, SoundToys Speed, Waves Platinum Bundle and IR-1 Convolution Reverb, and Serato Pitch 'n Time) come into play during mix mode, while Sony Sound Forge is used to prepare rendered audio for game implementation.

While increased budgets allow for more authentic sounds in better-equipped studios, games are also becoming more intuitive, which presents new and more complex sound design challenges. "Having the ability to create real-world physics in a game, and having the sound respond to it, really immerses the player in the off-road experience," says Rainbow sound designer Tatyana Koziupa. Considering the power of next-generation consoles such as Xbox 360 and PlayStation 3, Koziupa notes, "This is an exciting time to be working in game audio." ■

Heather Johnson is a Mix *contributing writer.*

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World Radio History

BY BLAIR JACKSON

The Musical World of 'The Godfather' Game

Electronic Arts Re-Scores for an Interactive World

One of the most eagerly anticipated videogame releases this spring is *The Godfather: The Game*, based on Mario Puzo's famous book and Francis Coppola's immortal films, and produced by Electronic Arts at its Redwood Shores, Calif., headquarters. Besides using the voices of some of the film's original actors, EA also obtained the rights to Nino Rota's memorable score for the film—at this point, it's nearly as iconic as the film's characters.

Some of that music did find its way into the game, but it also became the jumping-off point for the more than 100 minutes of new music that was written by veteran TV and film composer/collaborators Bill Conti and Ashley Irwin. "Unfortunately, the original recordings [of Rota's score from the early '70s] were not much use to us," comments EA audio director Ken Felton. "The recording quality was fairly poor. We knew right off the bat we needed to re-record everything."

"What happened," adds Andre La Velle, the game's music supervisor, "is Ashley and Bill went to Paramount and acquired the reductions of the original score, and then they re-orchestrated a lot of it and then re-recorded the main themes."

"The classics—the 'Godfather Theme,' the waltz, et cetera—were recorded as is," Felton continues. "They're pretty much note-for-note and the same orchestration. But we re-recorded them to give us better quality and more flexibility. Implementing music in a game is always difficult. Discrete tracks and smaller cues will give you a lot more options and interactivity. We asked Bill and Ashley to create new music that occasionally hearkened back or paid homage to the original themes. But there are a lot of pieces that are completely new and absolutely different. Because there was no chase scene in *The Godfather*, there was no taking over a warehouse or extorting a butcher. But a lot of the game has a *Godfather* melody weaving in and out."

The music was recorded during two days at Capitol's Studio A in Hollywood, with Malcolm and Jamie Luker engineering the score and doing some of the editing and mixing. It was recorded to Pro Tools at 48k/24-bit. "After Bill and Ashley approved, the unity gain mixes were delivered to EA by DigiDelivery," Felton says. "The unity gain mix was about 24 tracks wide and arranged for 5.1 playback. We did some mixing, tweaking and ProLogicII encoding to make it work."

From The Godfather game: an audience with Don Corleone

The Godfather represents a departure for EA in that it's the first game the company has produced that takes place in an open-world/free-roaming environment; i.e. it has an open-ended story architecture that is not level-based, but instead allows the player to wander through different environments, usually to complete some sort of mission.

"Ours has more music in it than a lot of open-world games," La Velle says, "and we had to build a system for our 'living world' that plays different music, say, for driving, or for being chased, for interrogating somebody, or shooting them and what-not. We also have the mission aspect, where game play is scripted and we'll use the same piece [of music] as you repeat the mission, although we sometimes randomize that, too."

Did the composers work from rough animations or descriptions of game action, or what? "Bill and Ashley had locked picture to work with for IGCs, or In Game Cinematics—what most people call 'cut scenes,'" Felton says. "The real-time, player-controlled missions had basic descriptions and goals. We decided how long they should be and how many 'levels' of intensity they needed. Most missions also had a series of success or failure endings. They were written so the music system can cut to them at the next tempo node. The cues were done first on synth. We tested them in-game as best we could. Then, when the cue was approved, it was prepped for the scoring stage."

In this kind of game, the mixing is an ongoing process that must continually reflect the variability of the game-play situations and environments. This is true of music, dialog and effects—the levels of each are constantly changing as the world of the game changes. "We'd tweak these XML files," Felton notes, "make small changes, then you click on a batch file and you 'rebuild' the game and you play that section again and hear how the change was. You're doing that constantly."

There were many other music-related issues to deal with, including sample rate adjustments, bandwidth issues, compression schemes and the peculiarities of different formats. "The key is communication," Felton concludes. "You have to be close to everybody else [working on the game]. We're right around the corner from the visual effects artists, whom we work closely with, and all the audio people sit in a little pod. Things change on a dime, and you have to be ready." ■

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World Radio History

BY HEATHER JOHNSON

Game Characters Speak Up!

Advanced Platforms Integrate Enhanced Dialog

It wasn't so long ago that speaking roles in videogames comprised a few repetitive words, a grunt or maybe an *oomph* for effect. But as games have become more sophisticated, the landscape has widened to include more story-driven titles—conversations meld with action; no longer just point, shoot and move on to the next victim.

Gamers expect more than that now, and the market's increasing budgets and advanced technology have allowed developers to deliver. For dialog, that means higher standards in terms of voice-over talent, as well as recording equipment, facilities and technique. "Dialog now is telling the story—the backstory—and has become the action of the game itself," says David Murrant, sound design manager for Sony Computer Entertainment America. "You've got actors [who require large salaries] involved, and not just to do voice-over, but for doing motion-capture and voice at the same time."

At the turn of the new millennium, many starring-role actors turned up their noses at the idea of reciting dialog for a videogame. But the tides turned when videogame profits began eclipsing box-office profits. "Game developers used a lot more sound-alikes in film or TV series–based shows; you wouldn't get the real actors," says Tor Kingdon, who, with Dave Atherton, recorded *CSI: Dimensions of Murder* at Margarita Mix Hollywood. "That doesn't happen as much now. The gamers expect to hear the same people they hear on *CSI* every week. They understand the difference between someone who imitates that voice and someone who *is* that voice."

As the consumers demanded higher quality, naturally, so did developers. "With every new generation of hardware and every new development cycle, dialog is playing a bigger role," says Greg deBeer, dialog coordinator for Sony Computer Entertainment America. "The size of the scripts is getting bigger, and the level of professionalism is way up. It used to be that we had to have 'Joe from accounting' do half the voices in our game. But now, everybody has raised the bar and expects quality acting and implementation." No more recording in the back office on the laptop, that's for sure.

The Sony team records most of their material in Los Angeles–area studios due to the area's high concentration of actors and voice-over talent, or at their Foster City, Calif., and San Diego, Calif., studios. But deBeer emphasizes that they'll travel to the other end of the world if necessary. "When we recorded [*Rise to Honor* star] Jet Li, he was on set in Hong Kong, so we went to him," he says.

PHOTO: ERIK BUENSUCESO

Sony Computer Entertainment America's David Murrant (L) and Greg deBeer

For *SOCOM 3: US NAVY SEALs*, the casting agent and director went to great lengths to find individuals who spoke fluent Russian and dialects from its most remote areas. "We'd talk to people on the streets, people working in cafés, restaurants. You really get to know the community," Murrant says.

Most of the time, however, a casting director finds the appropriate voices for the job. "The *God of War* cast was primarily warriors, gods and demigods," says deBeer, "so all of those voices needed to have a lot of weight behind them. The main character was a mortal, but the mortal had to sound strong enough to beat the Gods, so he needed to have those qualities in his voice to make the story convincing."

Next comes the often tedious recording process, which can last anywhere from three weeks to three months, and can result in tens of thousands of lines of dialog. Both Murrant and Kingdon work in Pro Tools, using minimal processing on the front end, save for a high-quality preamp and microphone. "We want to get the data raw so we can do what we need to do with it later," says Murrant.

It's crucial to keep detailed records during this phase. "When [an actor] comes back three months later, they need to sound exactly as they did the first time," says Kingdon. "If the mic is two inches off to the left or right, it's going to sound very different. So I'll take detailed notes of where I put the mic, what settings I used on the mic pre and in Pro Tools so that I can reproduce that sound later."

Excellent organizational skills become even more crucial as audio files get passed on to the editors and for localization. "The best tool we have is a solid and well-thought-out naming convention," says deBeer. "Every line in our script gets a file name and is put into a folder structure, usually organized by character name, and also put into spreadsheet format." Adds Murrant, "If we're localizing it to five or six other territories and we don't have all of those files named properly, who knows what we'll get back?"

Whatever the language, quality will only improve with next-generation platforms. In addition to features such as 48kHz/16-bit audio capability, the new platforms will allow engineers to mix in real time. "Often, the same line of dialog could be triggered in a variety of different locations, but you don't know where it's going to happen," says deBeer.

"With more onboard DSP, we'll be able to handle these variable situations with a lot more finesse," Murrant adds. "We also hope to achieve 3-D placement, so if you're listening to a conversation behind a door and then you open the door, the filter opens and you can hear it as it was originally recorded. It's an absolutely amazing opportunity, and I don't think there's a single sound designer out there who would disagree." ■

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BY GARY ESKOW

Steve Epstein

Grammy-Winner Knows That, in Miking, Less Is More

Steve Epstein has snared 13 Grammy Awards in a 30-plus-year career that has brought him into professional contact with many of the greatest musicians of his time, including Isaac Stern, the Juilliard Quartet, Yo-Yo Ma, Rudolf Serkin, Chick Corea, Wynton Marsalis, Midori and many others. You might think that he would be ready to downshift—but you'd be wrong. The longtime Sony/BMG/Masterworks producer is maintaining his relationship with that label while pursuing a variety of independent projects. He's also staying in touch with his early love of technology and broadening his skill set to include digital editing at his home project studio. And in 2005, he was on the short list yet again for Producer of the Year, Classical: his 27th Grammy nomination. (At press time, the awards were a few weeks away.)

In the early to mid-1960s, when many of his contemporaries were listening to masterpieces such as The Troggs' "Wild Thing" and The Cyrkle's "Red Rubber Ball," Epstein was studying the covers of classical recordings and building short-wave radios from Heathkit catalogs. "I used to imagine I was sitting in the concert hall while I listened to these records," says Epstein. "I studied the credits and kept coming across the names of these great producers, including Tom Frost and Tom Sheperd—who ran Columbia Masterworks together from the late '60s through the mid-'70s—and Andy Kazdin."

Although the former Queens, N.Y., resident says that he was a "barely proficient" violinist, Epstein gained first-hand awareness of orchestral textures when he landed positions with the New York All-City High School Orchestra and eventually his college orchestra; hearing great music unfold from the inside would have a significant impact on the miking techniques he later developed. Before heading off to Hofstra University, Epstein pestered Frost with letters and requests, which ultimately paid off with an invitation to come in and chat. "Tom was great to me," Epstein recalls. "Back then, there weren't any programs in recording technology. He told me I should major in music with a possible minor in communications, which I did at Hofstra. I also worked at their excellent radio station as classical music director and engineer for all four years."

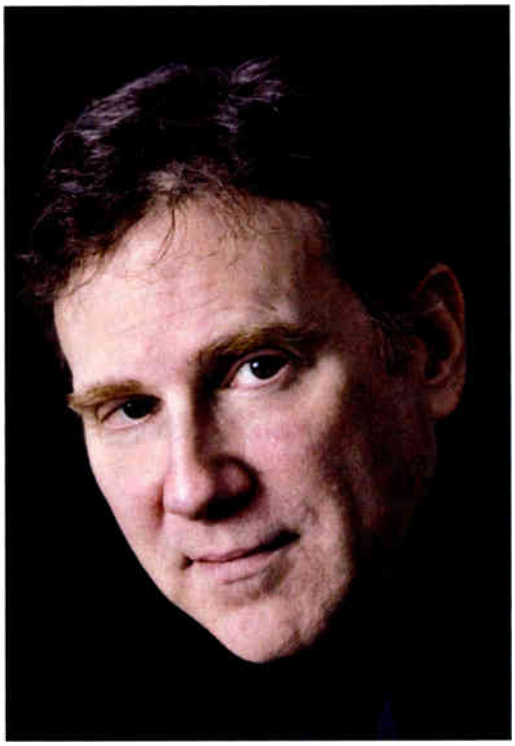

PHOTO: NICK BASTIAN

Steve Epstein (standing) with Yo-Yo Ma (center) and members of the Silk Road Ensemble during sessions at the now-defunct Hit Factory (New York City)

Using school microphones and eventually a Revox 77 tape recorder, which he purchased for about $600 during his senior year, Epstein sought out chamber groups to record. All the while, the college kid was working on a plan. "Every step of the way," he says, "I was preparing myself to march right back to Tom Frost and ask for a job.

"That time—the early 1970s—was really, I believe, the tail end of the golden age of recording. A few major companies still had some of the great orchestras under contract, and labels had reputations based on the artists they kept in their stables. Columbia had the New York Philharmonic and the Cleveland Orchestras, as well as Horowitz and Bernstein; it was all very exciting. My initial interview at Columbia was with Tom Frost and Tom Sheperd, and I was nervous; maybe even more so when I was called back for a second interview in June of that year, 1973. I knew they had one job to offer and another applicant with more experience than me. But I got a call in September saying

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they'd decided to hire both of us, and I went to work immediately.

"In those days, there was a clear distinction between engineers and producers, and the union had a hand in keeping their tasks separate. As a producer—or music editor back then—I wasn't allowed to touch Columbia's in-house equipment. Buddy Graham, the legendary engineer with whom I was fortunate to work with until his retirement in 1991, told me that he was working with Leopold Stokowski one day and Stokowski really wanted to get involved with the mix. But he wasn't allowed to touch the board either, and so he put his hands on Buddy's and guided the moves! Buddy told me that they even breathed in unison!"

The importance of mic placement became clear to Epstein very early in his career. "The first disc I made for CBS was a recording of Mozart's last four quartets with the Juilliard Quartet, a group I idolized as a student. We recorded at Columbia's 30th Street Studios, one of the greatest studios in the country. It was originally built in 1857 as a church. In 1981, someone at CBS Records made the moronic decision to sell the real estate and it was torn down to make a high-rise. I believe the final recording at this location was Glenn Gould's last version of *Bach: The Goldberg Variations*—one of the early digital recordings.

Epstein in Right Track's (New York City) Studio A509 during a session for Mark O'Connor's group, Hot Swing

"Buddy was the engineer on the Juilliard session. Back then, the general practice was to have four closely placed cardioid mics mixed with ambience mics on the same four tracks of a multitrack. You can imagine the potential phasing problems! But playback equipment wasn't as sensitive as it is today, and the recordings were EQ'd to sound effective."

Epstein would use orchestral sessions to experiment with mic setups, and eventually he moved away from having up to 17 or 18 AKG C 12s hovering over the orchestra. "We went all the way down to tracking with only two microphones, which, whenever possible,

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is how I work today," Epstein says. "This puts more pressure where it belongs—on the conductor and players! If an oboe solo needs to be louder, I'd rather do another take and have the player push the extra air required to achieve the proper balance. Making him/her achieve the right level adds upper harmonics and a natural, organic sound. Of course, to successfully use two microphones, you need the right environment, as well as excellent players and a conductor who can achieve the proper balances. In an orchestral session, we will always be sure to cover the ensemble with as many spot mics as we feel are necessary should we need to refine a balance. Considering the large investment labels make in symphonic recordings, it would be way too chancy not having this option. If we don't need them, we don't use them.

"But I'm getting ahead of myself. We started out with all these microphones. As time went on, I began using three AKG 414s in cardioid as a basic pickup for the orchestra. We'd use Neumann KM84s for string spots until we found ourselves up in Canada working with the Toronto Symphony in 1980. Buddy and I weren't happy with the sound we were getting, and so we decided to change our strategy. We'd never used omnis for our main pickups, but we switched the 414s from cardioid to omni; we needed to open things up, to get some more air, and we liked the sound. It may seem trivial, but this was the beginning of a shift in how we approached making records.

"Then we started using three Schoeps omnis—MK2 capsules—either in a Tree configuration or as a spaced set, and ultimately we pared that technique down even further. One day, a design engineer from B&K [now DPA] came into my office and showed me their new mic, the 4003. The 4003 and the 4009, the 4003's descendant, have become my microphones of choice ever since, although, depending on a variety of factors, we also continue to use Schoeps omnis as an overall pickup.

"One of the first recordings we made using just a pair of microphones was a session with Lorin Maazel and the Pittsburgh Symphony in Heinz Hall where we used the 4009s. Union rules prohibited us from rolling tape during rehearsals, but we could set up and balance microphones, which we did prior to those dates. We were tracking some huge material, including the [Camille] Saint-Saëns Organ Symphony and [Ottorino] Respighi's *The Pines of Rome*. After some work positioning and repositioning our main mics, we discovered that, lo and behold, we could get an accurate sound with only those two mics. By eliminating many microphones

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After 33 uninterrupted years as an employee of the company now known as Sony/BMG/Masterworks, Epstein is embarking on the next leg of his professional journey. Although he has a host of projects lined up for them—including the complete violin/piano sonatas of Brahms, featuring Nikoaj Znaider and Yefim Bronfman, and Midori's take on a set of Mozart sonatas—Epstein has also hung out a shingle advertising his services as a freelance producer. He produced the cast recording of Adam Guettel's multiple Tony Award–winning score to the musical *The Light in the Piazza*, which was tracked and mixed by Todd Whitelock for Nonesuch Records. This has led to a series of projects that Epstein will produce for that label. "I really enjoyed working on that absolutely gorgeous score," says Epstein. "I've been fortunate to work with some great engineers, and Todd is in that line. We mixed in Room 309 at Sony Music Studios. The signal path includes Meitner converters and an analog board that Sony Music Studios custom-built and which is incredibly musical."

To maintain the flexibility that will allow him to work on the projects that interest him, rather than just those that command the highest fee, Epstein has put a Sequoia system into his project studio. This move has brought him full circle, back to the days when he spent hours tinkering over gear in his parents' living room. "Editing is great therapy, like kit-building!" he says. "I've tinkered with different editing systems. Back in 1982 or so, I had the luxury of sitting in a London editing suite working with a Sony DAE 1100. We had just finished recording Michael Tilson Thomas and the Philharmonica's performance of Tchaikowsky's Orchestral Suites 2 and 4 at Abbey Road. The DAE 1100 was Sony's first really good digital editor. It worked with the 1630 digital electronics with a pair of Umatic tape machines. It wasn't computer editing, but it was satisfying, and I was able to get hands-on experience.

"In the course of time, as computer editing systems evolved, I had the opportunity to observe editing sessions, but I never owned a system of my own. When I started thinking about putting an editing station into my place, I contacted Tom Sailor of Synthax, the company that distributes Sequoia in the U.S. Lots of engineers I respect had positive things to say about Sequoia, and I wanted to check it out. Sequoia has outstanding sound quality, and its crossfade editor, in my experience, is second to none. I've played around with the plug-in effects and am very impressed, but I haven't used them yet on any projects. If I go deeper into production, I'll use them."

Epstein and Richard King, his engineer and longtime collaborator, recently recorded the violinist Cho-Liang Lin and the Sejong Players for a Naxos release at the Church of the Holy Trinity on Manhattan's upper east side. "The church has very good acoustics," Epstein says. "We recorded the group's performance of *The Four Seasons* and two other Vivaldi concertos. Richard tracked onto a Pyramix system, which he copied onto my hard drives. I'll make the edits on multitrack files and take them back to Sony Music Studios—probably Room 309 again—for mixing. It's a great way to work! ■

Gary Eskow is a contributing writer to Mix.

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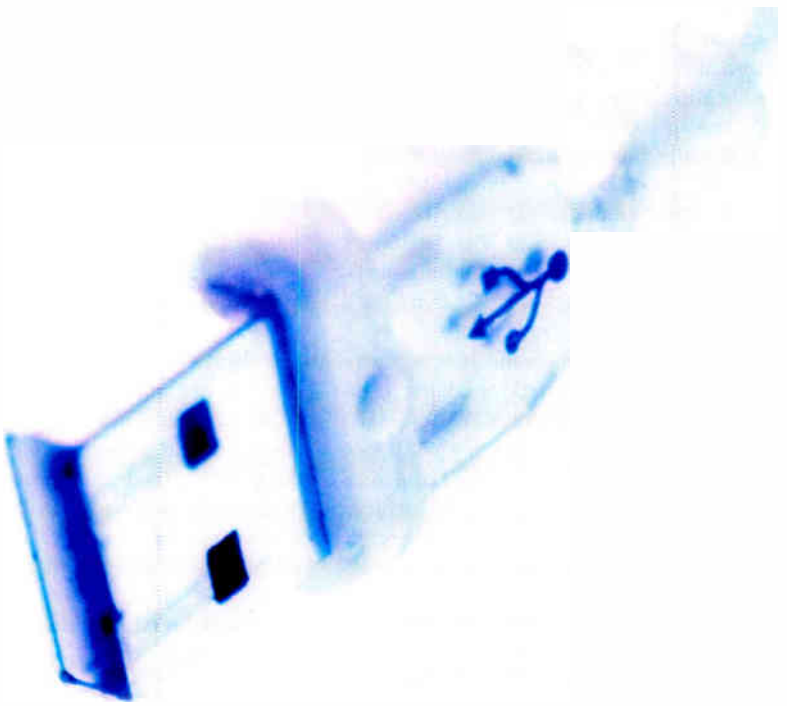

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World Radio History

BY HEATHER JOHNSON

Darren Rust's Skyland Studios

Creating a Big Sound in a Small Space

PHOTO: GERRI RUST

Skyland Studios' Darren Rust maximizes every inch of space in his Minneapolis-based home to create a wide-open sound.

Vocal and a cappella groups usually want a warm, clean, big and wide sound that comes through, even on layer upon layer of vocal tracks. But when you don't have the real estate or resources for an expansive room to get that sound, you've got to make the most of whatever space you've got. Darren Rust, a producer, engineer, arranger and leader of his own vocal group, The Blenders, has learned how to squeeze every bit of sonic integrity out of his mid-sized Skyland Studios, which he opened six years ago in his Minneapolis-area home.

Dave Ahl, known around the Twin Cities for his work on local facilities such as The Terrarium, Babble-On and, probably most famously, Jimmy Jam and Terry Lewis' Flyte Tyme Productions, designed Skyland Studios with vocal recording in mind. The 12x10-foot recording room can hold a small group of musicians, vocalists or, if necessary, a drum kit. "We don't do it very often, but we have done it," says Rust.

The 13x24-foot control room is the hub of Rust's activities; it's designed and equipped for editing, post-production and mixing. Rust works on a Pro Tools|HD Accel workstation (192 I/O) paired with Apogee Rosetta 200 AD/DA converters and a Dangerous Music 2-Bus analog summing mixer. Software includes Spectrasonics Stylus RMX, Trilogy and Atmosphere; IK Multimedia SampleTank; Waves Platinum Suite plug-ins; Sony Oxford plugs; Digidesign ReVibe reverb; Synchro Arts VocALign; Apple Final Cut Pro (for video editing); and Antares Auto-Tune 4. A Mackie board serves as his control surface. He can mix to two Alesis MasterLink ML-9600 mixing/mastering systems, and he monitors through a pair of Mackie HR824s and/or Yamaha NS-10s.

Because of Rust's affinity for spot-on vocal tracks, as well as analog processing equipment, the musician/producer also stocks his studio with ample outboard gear, including API 5502 EQ and 512b pre's, a Great River EQ-2NV, TL Audio C2 compressor, Summit TLA-100a and Alan Smart C2 stereo compressors, among other items.

To capture a wide-open vocal sound without a wide-open space, Rust invested in a few choice microphones, including a Sony C-800G and AKG C 12VR tube mics, a few AKG C 414s and a RØDE Classic tube mic. "For one Blenders session, we quadrupled every part in our group," says Rust. "We had six- and seven-part chords stacked over 35 tracks of vocals, and the RØDE mic worked great."

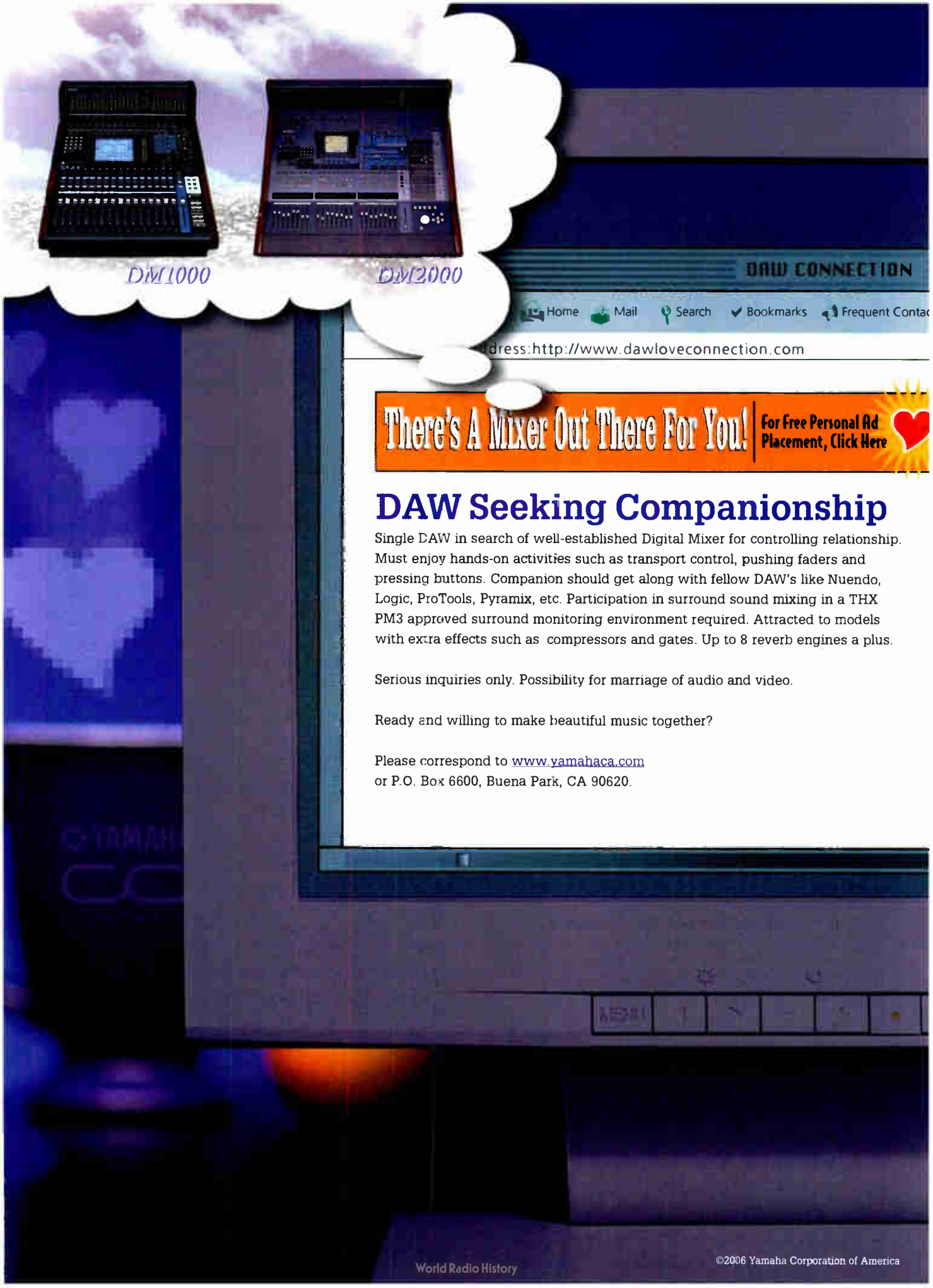
Although a lot of Skyland's clients come from the Minneapolis area (including his own group), a large portion of Rust's work comes from out-of-state, if not outside the U.S. "I do a lot of editing and mixing for clients who track elsewhere," he says. "Because of the Internet, I work with groups and never see them. I'll mix tracks and then post the mixes on a server for them to download. I just did a small mix project for a group in Switzerland. They sent me Pro Tools files on disc; I sent them everything—references and 24-bit masters—over the Internet."

Many clients, including Naturally Seven, Sounds of Blackness and 98 Degrees member Jeff Timmons, have come to Skyland after hearing Blenders recordings. St. Paul, Minn.–based jazz vocal quintet Voice Trek wanted a Take 6–style "Nashville Sound," and were told they couldn't get that in the Twin Cities. They heard The Blenders' song "When It Snows," which had that sound, found Rust and hired him to mix their eighth album, *An A Cappella Trek*. "When you are part of a vocal group, what you hear in your monitors onstage is what you want to hear on your recordings," says Voice Trek member Vicki Plaster. "Darren gave us that."

With clients scattered all over the globe and the ability to work with them virtually, Rust could certainly take his business to a more music-centered market. "As a producer, I'm always questioning whether I should move to one of the coasts or to Nashville," he says. "If I were to move, I might find a bigger pool of work. But I have a family, and we're Midwest people. And I have clients here that keep coming back."

Besides, Rust believes that the area that spawned Prince and Morris Day & The Time, among others, has potential for resurgence—and he'll be in the midst of it as a producer, engineer, artist or some combination of the three. "I've become a good engineer, but I started out as a musician," he says. "The writing falls by the wayside when you spend so much time on other people's albums, but the musicality is there in everything I do. The day I can sit down and write music, I know I will take inspiration from these artists." ■

World Radio History



World Radio History

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Don Pearson, 1942-2006

Don Pearson passed away during a routine medical procedure on January 9, 2006. In 1978, Pearson co-founded Ultra Sound with Howard Danchik and went on to mix thousands of shows. (Ultra Sound was the Grateful Dead's exclusive sound company for more than 15 years.) Pearson finally came off the road in 2004 to join Meyer Sound as a technical seminar instructor.

"Don had incredible real-world experience," says Helen Meyer, co-founder and executive VP of Meyer Sound. "He'd been out in the field talking to everybody and gained a huge amount of respect. When he came to work for us, he brought a certain legitimacy to the way we were doing things. Don's contributions were invaluable to our education program. He made all of us at the company feel like we started off 26 years ago and ended up in the right place doing things in the right way."

During Pearson's and Danchik's years touring with the Dead, they worked continuously to improve the sound system; Pearson convinced the band to let John Meyer try new techniques during live performances. Meyer would then integrate those experiences into the development of many technologies and methods. "I think Don's biggest role in the Grateful Dead days was to clear a path for us to try experiments," John Meyer says. "You don't know the solutions to live sound problems until you do experiments, and you can't just try them in a lab because you have to figure out what's going to work at a show. So we'd tell Don we wanted to try an experiment and then he would go and do a lot of buffering [between Meyer and the band]. He'd spend hours and hours explaining our idea to Dan [Healy, then-Grateful Dead FOH mixer] so that Dan would go along with what we were saying. Don took a lot of abuse for that sometimes."

According to Meyer Sound's educational program manager, Gavin Canaan, a close friend who worked with Pearson for years, "When I was at Ultra Sound with him, I once asked him to tune a system we were providing for a theatrical production. Don came in to tune at the end of the day, and after he finished tuning, he said that the system was 'not up to Ultra standards.' Despite the fact that the client was perfectly happy, Don wasn't, and that was all that mattered."

FixIt

Front-of-house engineer Daniel Nygaard is currently on the road with The Perishers, who fill the opening slots for the current Sarah McLachlan, Tracy Bonham and Aqualung tours. Nygaard will soon find himself touring with the band in the UK and throughout Europe.

The Eventide H8000A provided me all the effects and processing I needed in a single unit. It essentially replaced four other dual-engine effects units that I used to use with The Perishers. The H8000A allowed me to add input equalizers for all the effect sends routed to the H8000A. I used the H8000A for six reverbs, instruments and vocals, as well as one vocal delay throughout the set. Having that many effects could be a problem. With the H8000A, I was able to easily create my own presets that mixed all effects down to two stereo outputs, streamlining the setup process. Effects and levels for each song were also pre-programmed. When the set started, all I had to do was simply press one preset button and the effects mix was ready. It was much more efficient than selecting presets from four different units.

inside

News

Black Eyed Peas' Fergie uses a champagne-colored Shure UHF-R wireless transmitter.

The **Adamson M15 monitors** are now in full production, with the first run pre-ordered by several of the company's European Partners; more speakers are bound for the U.S., China, Singapore and India...Nashville's **Soundcheck**, a rehearsal and touring facility, has taken delivery of 10 **A-Line** AL10A enclosures and six LS218A subs...Since 1996, **db Sound** has brought the sound of the Trans-Siberian Orchestra to fans with **Electro-Voice's X-Array** loudspeaker systems. According to db Sound's Todd Johnson, "X-Array has been with the TSO since they were playing small theaters, and it sounds just as good in the arenas. We simply added more boxes as the show grew, allowing us consistent sound quality from year to year without compromise."...**Shure's UHF-R wireless** is quickly taking up residence on numerous tours, including the Black Eyed Peas and LeAnn Rimes. In other company news, Shure and **TC Group A/S** announced plans for a strategic alliance focusing on technology sharing, whereby both firms will develop networking solutions to enhance system performance while simplifying system setup and use...Frank Garcia, owner of **Mainline Pro Lighting, Sound and Video**, which installed Soma's (Queens, NY) new sound system, reports that 28 **Turbosound** speakers (TCS-59, TC-315, TCS-35) are used to cover the club's four main areas, which are spread out over two floors.

World Radio History

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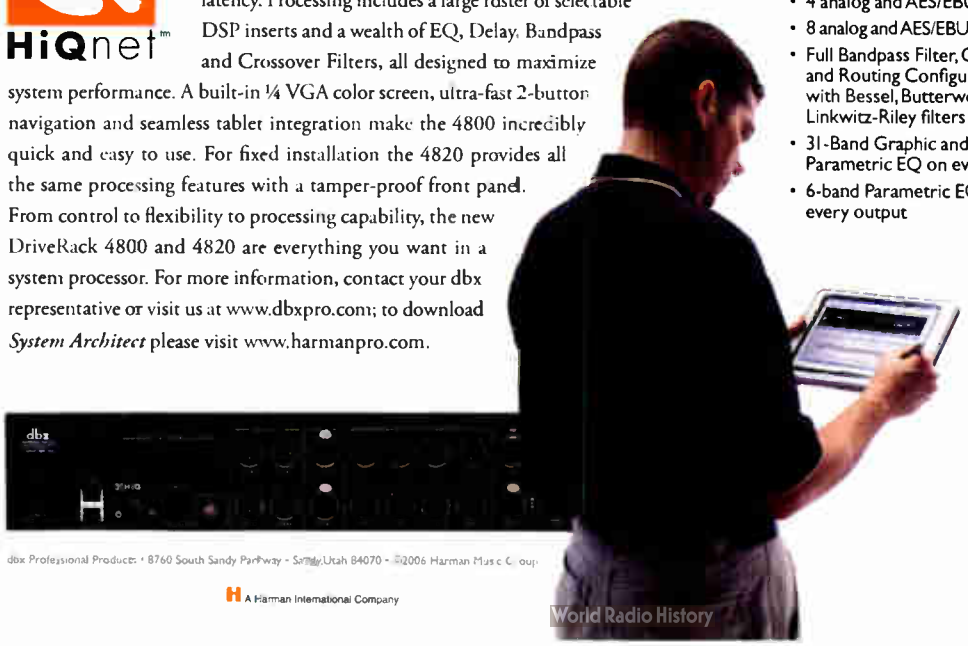

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World Radio History

On the Road

Mitch Lerner

The Barefoot Servants joined *Mix*, *Electronic Musician*, *Remix* and Intel to celebrate *EM*'s 20th anniversary at the annual NAMM Advertiser Party (January 19, 2006). *Mix* caught up with front-of-house engineer Mitch Lerner, who has also worked for Charlotte Martin, Jimmy Eat World, Polyphonic Spree and many others.

What gear did you use for this show?

The P.A. provided had P.A.S. tops and a single 18-inch sub per side (QSC Powerlight–powered). Monitors were also P.A.S. (Crown-powered). I used a Mackie console for front of house and monitors. Outboard gear includes dbx 31-band EQs for the house and 15-band for the stage. I also carried a dbx 1066 2-channel compressor and a 376 channel strip for vocals. I also brought a TC Electronic M-One for 'verb.

Any special mixing techniques?

While I tend to lean toward more atmospheric acts that allow me to add elements and enhance a mix, the Barefoot Servants really give me everything I need straight from the stage. The most difficult aspect has to be the effort required to make the acoustic guitars sound natural and full enough to drive the songs while still remaining clear for solos and flavor.

What are you using mic-wise?

Shure Beta 87s on vocals, Sennheiser e602 for kick, Sennheiser e604 for snare (mostly for body), AKG 451s over the kit, Tubeworks DI and Shure SM7 for bass, Shure 57s for acoustic and lap steel amps, and Shure KSM 32 for Ben.

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

I wish I could say that I'd be bowling, but I typically find myself continuing in the studio wherever I'd previously left off. I'm currently wrapping up a record with a band called Edgewater and have been working on pre-production for two more projects.

Now Playing

Kathleen Edwards

Sound Company: PA Plus Productions (Toronto)
FOH Engineer/Console: Charlie "Sciff" Ferguson (also tour manager)/Midas H3000
Monitor Engineer/Console: Mark Radu/Midas H3000
P.A./Amps: JBL VerTec 4889, 4880, 4887/Crown I-Tech 4000
Monitors: PA Plus Custom M1
Outboard Gear: Lexicon M4000, M2000, PCM 91; TC Electronic D2; Yamaha SPX-2000; dbx 576 Silver Series; BSS DPR-402, DPR-404, DPR-504; Lake Mesa; Klark Teknik Helix
Microphones: Audio-Technica 2500, 4060; Shure SM57, Beta 87C; Electro-Voice ND468, RE 200, RE 20; AKG 414, C3000; Sennheiser 409; Radial 64 DIs
Additional Crew: Dave "Meep" Allen, guitar tech

Mozella

FOH Engineer/Console: Jamie Harris/Midas Heritage 2000
Monitor Engineer/Console: Devan Skaggs/Midas XL250
P.A./Amps: Electro-Voice XLC127+ flown over Electro-Voice Quad 18-inch X Subs
Monitors: Electro-Voice XW12
Outboard Gear: TC Electronic D-Two, Yamaha SPX-990, Drawmer gates, dbx compressors, Klark Teknik DN3600, Lexicon PCM91
Microphones: Shure Beta 52 (kick), SM57 (snare, electric guitar), SM81 (hi-hat), Beta 98 (toms), Beta 58 (vocals); Countryman DI

When iPods Take the Stage

Chicago-based rock band Midstates recently "hired" an Apple iPod (with video capability) as the group's sixth member while on tour with Wheatus during the holidays. The 'Pod played drums, keyboards and guitars, as three-fifths of the band could not make it on tour due to conflicting holiday schedules.

PHOTO: ANNIE CAMARA

Two-fifths of Midstates in Boston, with iPod playing drums, synth and lead guitar. Note: the drummer is "projected."

"I bought the new iPod right when it came out to keep me entertained on the road," says Paul Heintz (lead vocals/guitar). "Then I found out that Angel [Ledezma, drums/percussion], Sasha [synth] and Michael [Dahlman, lead guitar] couldn't make it. We spent a lot of time working up to this record [*Boxing Twilight*] and live show. Touring with Wheatus was a great opportunity. I hated to see it lost. [Then I thought], 'Why not record Sasha and Dahlman's parts and videotape Angel playing his drums?' We can mix it all down and project Angel behind us."

Using a digital video camera and their studio, Spectra Kakarot, the band put together a video of Angel playing drums in time with the rest of the band. Using Videora, a free converter application, the band converted the video and music to iPod-compatible backing tracks. They ran the iPod through the board and a video projector, and played along the tracks and Angel's video, all while controlling the order and volume of the tracks from the stage.

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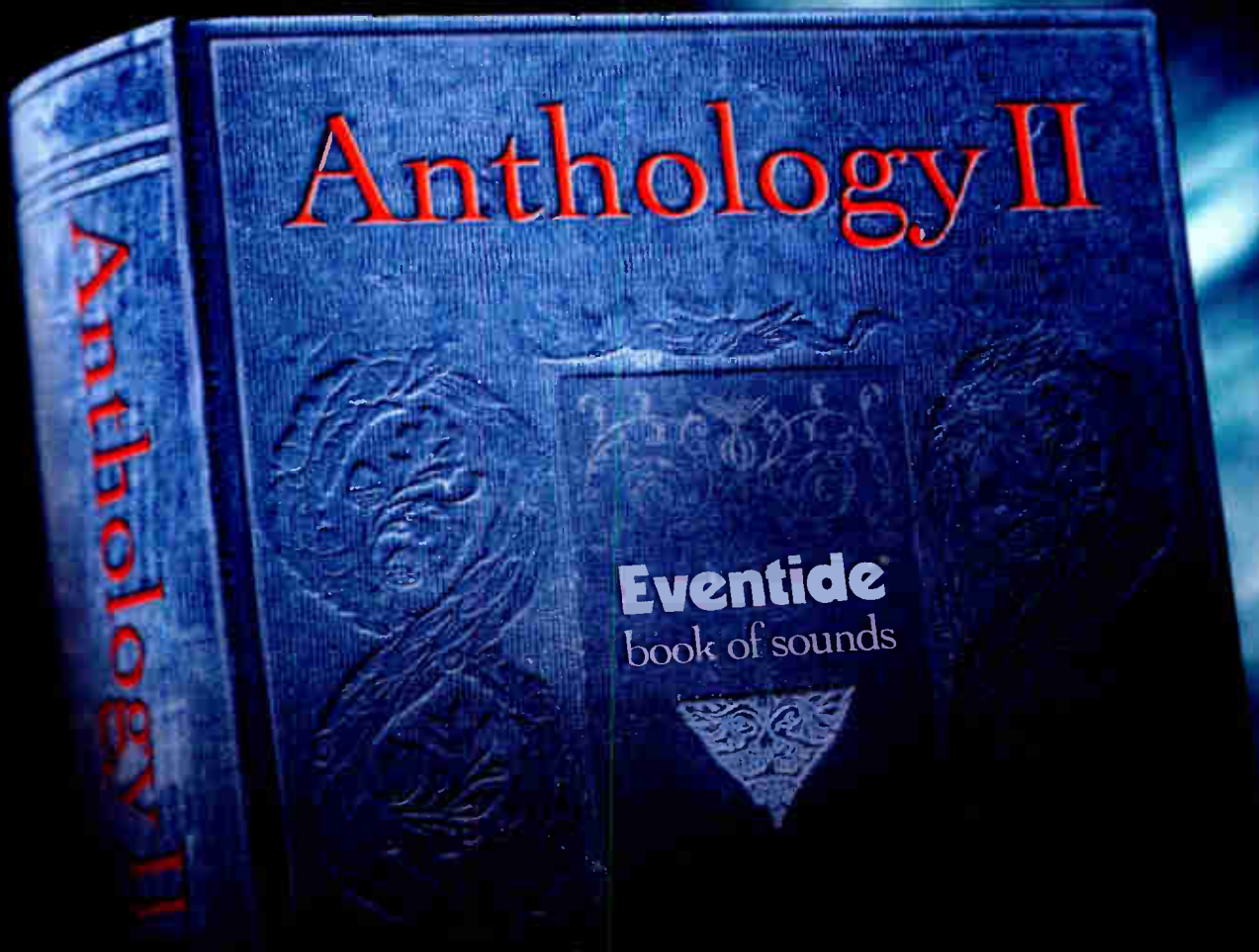

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World Radio History

Violent Femmes

An American cult band since the 1980s, the Violent Femmes are reasserting their claim to coolness with the recent release of *Permanent Record: The Very Best Of.* In support of this 25th-anniversary album, the band is traveling across the U.S., playing to sold-out mid-sized venues. *Mix* caught up with the band and engineers—some of whom play onstage in addition to their engineering duties—in early February at San Francisco's historic Fillmore club.

Photos and Text by Steve Jennings

As the tour is not carrying production, front-of-house engineer Brian Miller specs his board to have a minimum of 15 inputs; at the Fillmore show, they swelled to 30 inputs, due to the addition of drop-in guests. "This unpredictability can create a great deal of confusion, which is actually a lot of fun," Miller relates. "In fact, sometimes I will not know of the lineup until 30 minutes before the band goes onstage."

As for working with this band of seasoned pros, Miller says, "It certainly makes my job much easier. They generally do not soundcheck, as they know the show will differ greatly from soundcheck; therefore, they put their trust in the crew."

Front-of-house engineer Brian Miller

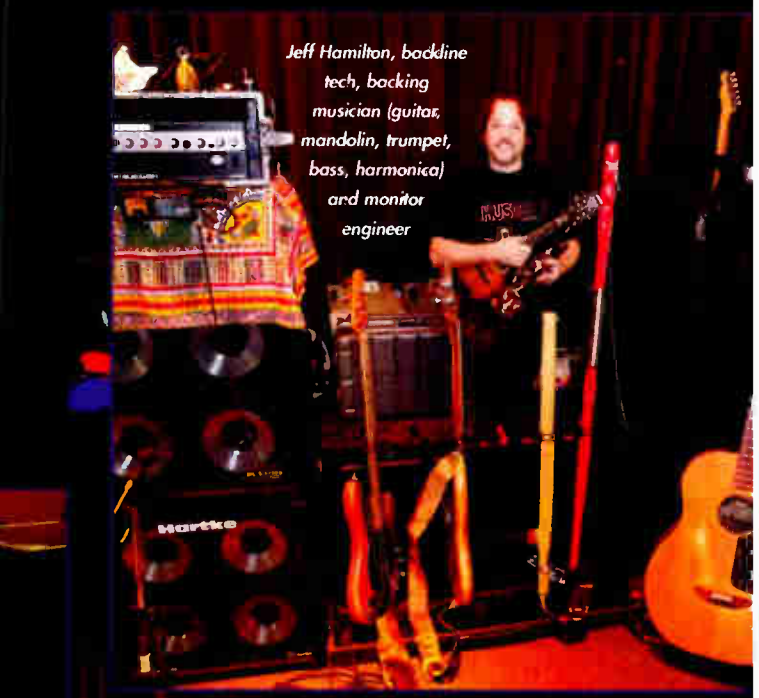
World Radio History

Gordon Gano, vocalist/guitarist

"I am really pleased with the Sennheiser MD431-2 on Gordon Gano's lead vocal," says FOH engineer Brian Miller. "Gordon has a tendency to start singing quietly at the beginning of the set. I have all the gain I need without risk of feedback. It also does not lose any warmth if Gordon's slightly off the mic. I use beyerdynamic's TGX 80s for [drummer Victor De Lorenzo] and [bassist Brian Ritchie]. These mics also have exceptional warmth and tremendous gain before feedback."

Brian Ritchie, bassist/multi-instrumentalist/vocalist, uses a GK 800RB amp that is bi-amped so that monitor engineer Jeff Hamilton has more control over the low end.

"Since I only have two drums to work with," FOH engineer Brian Miller says, "I'm very particular with my snare mic setup. I use a Shure 98, coupled with a Sennheiser e604 on the top. This works particularly well when Victor is playing with brushes: By boosting the 98, you can actually hear the dynamics of the brush on the snare drum. The 604 comes into play more when Victor is playing with sticks, delivering great punch from the snare drum. Using both together gives a surprisingly full sound from one drum. I also use a Sennheiser e604 on the bottom snare and a Shure 98 on floor tom."



Jeff Hamilton, backline tech, backing musician (guitar, mandolin, trumpet, bass, harmonica) and monitor engineer

Jeff Hamilton is a jack of all trades: In addition to performing monitoring duties, he's also a backline tech and backing musician for the band. "My priority is the band and their instruments," he says. "Playing and singing with the band is an extra perk. I have put down my guitar/mandolin or whatever mid-song to deal with problems Brian or Gordon may be having, or to escort off a raving fan who gets onstage! I am literally watching the guys not only for music cues, but also for any problems that may arise.

"I enjoy working with the band," Hamilton continues. "Our production manager, Joe Bzura, is one of the best in the biz. The new kid, John Sparrow [drum tech/cajon player], is coming into his own nicely. All this makes for an excellent crew, and getting to perform with a band of this stature is an honor and fun."

Victor De Lorenzo, drummer/vocalist

World Radio History

INXS

Big-Time Band Returns to Medium-Sized Venues

PHOTOS: STEVE JENNINGS

Front-of-house engineer James McCullagh (left) and system tech Alon Behr

By David John Farinella

It's not surprising that INXS would pull out all the stops for their Switched On tour. It's the band's first outing since a reality television show netted them a new lead singer and a revitalized image. With visuals that include a dynamic light show and a custom-made 23x10 video screen, the nearly two-hour show has all the gloss of the Hollywood set where *Rockstar:INXS* was filmed.

What is impressive is that INXS—with singer J.D. Fortune, guitarist/saxophone player Kirk Pengilly, guitarist Tim Farriss, drummer Jon Farriss, keyboardist/guitarist Andrew Farriss and bassist Gary Beers—doesn't actually need any of that glitz to hold their audience's attention. All they need is the music coming off the stage.

Mix caught up with the act at the Paramount Theater in Oakland, Calif., in late January. The venues in which they're playing are a bit of a challenge for front-of-house engineer James McCullagh—especially the Paramount, which has reflective side walls that spread wider as they extend farther away from the stage. Also, the FOH position at the Paramount is under an extensive balcony and hanging the line array (Martin Audio W8LC, powered by Martin MA4.2 amps) closer to center-stage for better coverage would have restricted the audience's sight lines.

McCullagh credits his system tech, Alan Behr, with getting the system right each day and helping resolve that sight-line issue. "[Behr] th ght the best thing to do would be to har it and then tweak it in," McCullagh explains. "It's a Catch-22, because if you tweak it too much, we get nodes, and if we don't tweak it enough, it seems to go past you. We've pulled them in slightly, but we didn't want to pull it in too much because then the seats on the side go dead."

Moving the cabinets in slightly also solved the reflection issue; as for the balcony, the array's natural upward curve covers the upper floor. Although they didn't have to do it at the Paramount, McCullagh and Behr have had to turn off a box that's aimed right at the balcony's lip to avoid reflection problems.

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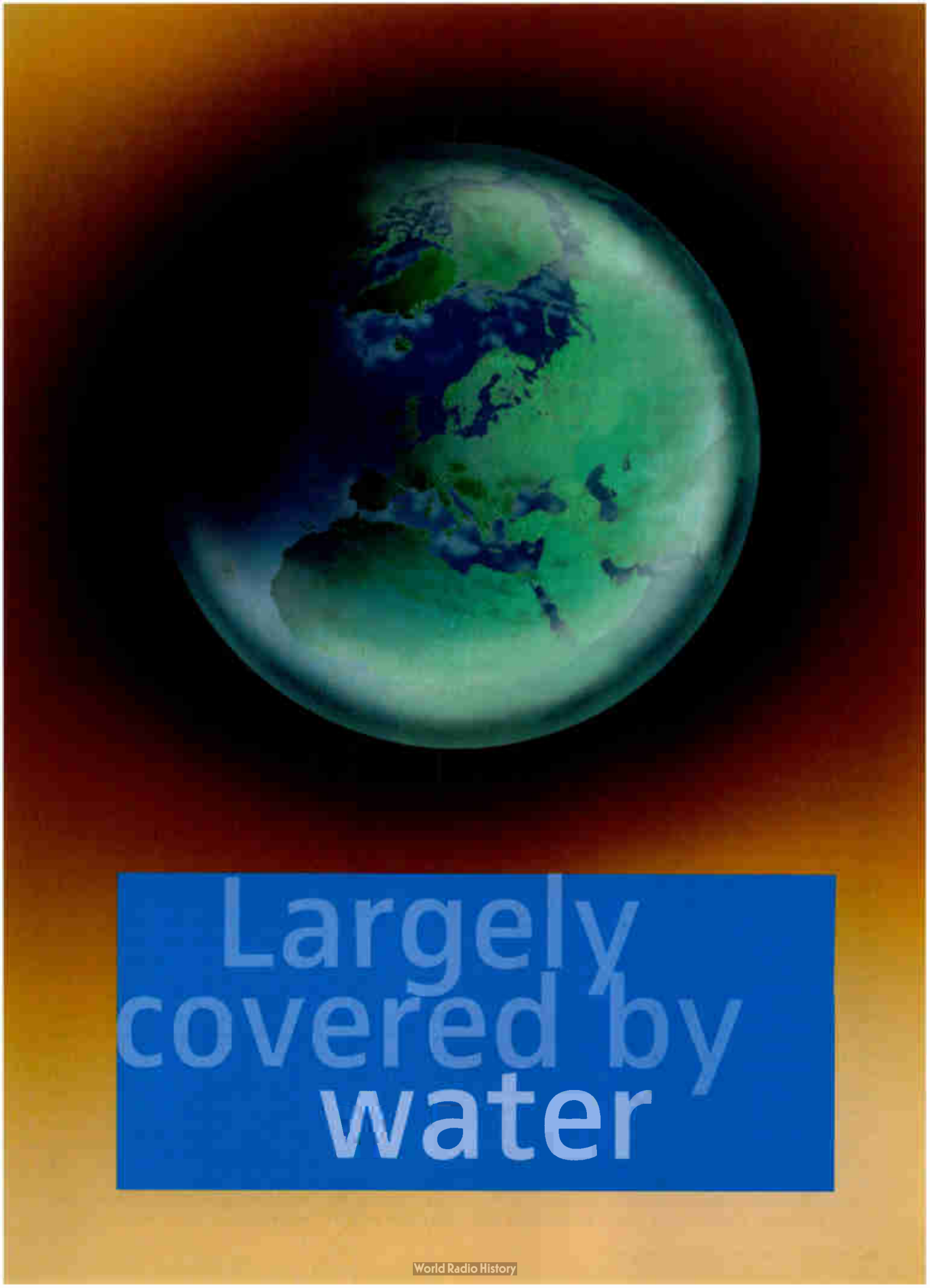

World Radio History

McCullagh spec'd the system to supply a lot of bottom end for a very specific reason: The band is "making a comeback, so you've got to make an impact," he says. "I said that I wanted at least nine subs on the bottom, because that's what I probably would have used on a V-DOSC system in this size venue." Instead, he got 12 W8LS sub cabinets (with Crest 8001 power), and he has yet to use them all.

"At the first gig, I turned on all six and it was too much bottom end," he says with a smile. "In this room, I'm using four and I have them turned down. We could probably turn them back to zero, unplug one and be okay. That's what I like about this system: It's very tight around the bottom end and there are no holes around the 200/160Hz area." Infill cabs are four Martin W2s with Crest 7001s behind them. There are also two stacks per side of Martin W8C/CS as sidefills; again, 7001s on those, crossed over by BSS OmniDrive.

In terms of outboard gear, McCullagh carries a Lexicon 480 and a dbx 160SL stereo compressor/limiter. "I got the 480 as an external reverb because I wanted something just a little bit better than the standard reverbs out of the [Yamaha PM5D FOH console]," he says. "I've got a dbx 160SL over the whole mix to warm it up slightly, just because it's pretty clean coming out of the console and I wanted it to be a little more rock-like and dirty."

While he appreciates the board's ability to set scenes for the songs, McCullagh has yet to take advantage of that feature. "I enjoy having the spontaneity of each gig," he explains. "I've got the first song of the shows dialed up and then I tweak from there. If I want to save it, I can. It keeps things alive for me."

TUCKED IN STAGE LEFT

Manning another PM5D is monitor engineer Paul Kennedy, who has to balance the pairs of Shure PSM personal monitors used by Pengilly (PSM700), Jon Farriss (PSM600) and a pair of background singers (PSM700s) with the Martin LE700 wedges (amps are Crest 7001, crossovers by Martin) used by the rest of the band. Jon Farriss went with the personal monitors, plus a pair of 8-inch subs and a stool shaker because he's running a number of sequences and click tracks during the show.

Kennedy tried to get the whole band to use personal monitors, but it didn't work out. "They've been playing together for so long with a million wedges, and after a week of rehearsal, I could see that they were uncomfortable," he recalls. "So I gave them the option." Kennedy gets both mixes from the PM5D. "I do [the personal monitor mixes] for the first three or four songs, and if they are happy and no one is waving their arms at me, I'll let them go," he says. "Once they are up and running, very little needs to be changed."

For the most part, all of the bandmembers get full mixes, but Fortune mostly receives a vocal mix with a touch of reverb that comes from a Yamaha SPX-990. The only other outboard gear that Kennedy touches is a Summit TLA-100.

Of course, the wedges contribute to a high stage volume. It's that way for a reason, Kennedy explains. "The band has got to fire up and perform. They are a rock band, and it's hard to do that quietly. They enjoy the electricity of it when it's pumping along, and you get a better performance out of them. That's why the ear thing fell over, because they were all in their own little world listening to ear phones and the vibe wasn't there."

Monitor engineer Paul Kennedy (left) and system tech Steve Walsh

GETTING THE SOUNDS

INXS has an endorsement deal with Shure, whose microphones dominate the stage: SM57s on guitar amps and snare, SM58s on vocals, a 91 and a 52 on kick, and Beta 98s across the toms. However, Jon Farriss' cymbals are miked with AKG 414 overheads, and AKG 4060s are used on both hi-hats (one on either side of his kit) and ride cymbal.

Beers' bass track is DI, as are Andrew Farriss' keyboards. Pengilly also sends his saxophone tracks—which are miked with Shure 98s and then run through an Eventide effects unit—to McCullagh as he wants them. "Kirk wants to make sure he's giving me the same amount of effects that he wants to hear," McCullagh explains. "I get great sound from him. I just put up two faders with a bit of EQ."

FINDING THE MIX

When it comes to establishing his mix philosophy for the tour, McCullagh says, "I thought about what I would want to hear. Since J.D. is the new singer, the focus would be on people comparing him to Michael [Hutchence, the band's original singer who passed on in 1997]," he explains. "That's not necessarily the right thing to do, but it's going to be a focus. So I concentrated on that.

"They are a simple band of bass, drums, keyboards, guitars and vocals," he continues. "A bit of sax here and there and background vocals. So in every venue, I try to get the drums kicking along with the bass, then put J.D. up and layer everything else inside the mix, making sure that nothing is cluttering. There's nothing too fancy. I think that's my secret. Let the band impress the audience rather than me trying to impress them."

Yet McCullagh does have the challenge of bridging the Hutchence and Fortune eras. In an effort to create some continuity for the fans, he went back through the INXS catalog and listened for obvious outboard tricks. For instance, he says, "Most of the vocals have delays, like on 'Suicide Blonde' and 'Original Sin.' I had a close listen and discovered that sometimes it's not a delay, it's a pre-delay on the reverb with a long decay. So I've got all those things going in the right places."

At the same time, McCullagh understands that audiences aren't coming to listen to a studio reproduction. "I'm past trying to mix a live band like it's coming out of a studio," he says. "It's live, so when you're watching it, you don't want to think about the nice P.A. it's coming out of—you just want to watch them and hear them as they should be onstage." ■

David John Farinella is a San Francisco–based writer.

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BY SARAH BENZULY

Big House Sound

Reinforcing the "Live Music Capital of the World"

In about two weeks, Austin-based Big House Sound (www.bighousesound.com) will begin one of its busiest seasons of the year, with numerous SR and lighting duties at this year's SXSW show: the main stage at Auditorium Shores and at local venue Stubb's. In addition, at press time, Big House is in talks with Austin Music Hall to handle its SR requirements. And then there are a bunch of private events that labels and magazines throw throughout the week.

"There is just a lot of work involved," says BHS co-founder/owner Rod Nielsen. "Most of those [events] want to load in the day before, and they require a lot of attention to detail." And rightfully so, as SXSW (March 15-18, 2006) will showcase headliners and new talent. Creating the pristine sound for these acts will be all 12 full-time Big House employees, as well as a slew of contractors. "We'll do six or seven shows a day," Nielsen says. "A lot of these venues are multishow events—five or six acts in the afternoon and another five or six acts at night. So some of my guys will be getting 10 to 15 acts a day for four to five days."

Back in 1989, Neilson and his cohort Roy Kircher were living in Austin and engineering for local bands. "He and I just ran into each other a lot," Nielsen remembers. "I had a small P.A. that I was renting out, and he was working with 6th Street bands, as well, and he had a couple of other partners and another small P.A. One day it just came to us that we needed to get together and combine our resources and start something bigger and better."

In addition to the award-winning *Austin City Limits* television production and festival, BHS is also contracted for Shiner Beer's Bocktober Festival every year. They also supply gear to local mid-sized (2,000- to 3,000-seat) venues. "In our busy times, [we handle] up to 60 shows a month doing regional work," Nielsen reports. "We've done a little bit of touring with a Christian band called Caedman's Call. We did that for about five or six years. We also do some Broadway-style shows, symphony work and touring with local artists."

When a client books BHS, they get access to top-notch engineers and high-quality gear, including large-frame (Yamaha PM5Ds and PM3500; Soundcraft Series Five and SM20) and smaller-format (Soundcraft MH3s and GB8; Yamaha 24- and 32-input) boards. As for P.A., Big House stocks Adamson systems, which have been used since the company opened its doors. "We have a lot of the [mid-sized] Y10 line arrays, a bunch of the [full-sized] Y18s and their MH boxes, which is the standard trap box, as well as 40 boxes of their RA Series, which are great: more of a wrap-around box, like an arena-style." Power is provided by Crown MacroTech (though Nielsen says he is looking into upgrading to Crown iTechs), and all drive racks have BSS OmniDrive control.

Rod Nielsen (left) and Roy Kircher in Big House Sound's warehouse

Other gear of note includes Shure UA Series wireless mics, an assortment of effects devices—"just about anything anybody would ask for," Nielsen says. "We also have an assortment of in-ear units [Shure PSM700 Series] and then a load of rigging," which includes truss, chain motors, controllers, etc. "We can meet just about any rider."

"Our main focus over the years has always been on sound," he continues, "just because that's the thing we've started with. But we started lighting and video divisions to cater to people who need those things, as well. We also have started an install division. Churches are really big here in Texas. When I grew up, when you went to church, it was quiet and the minister spoke and people sang hymns. Now I think there is much more of an entertainment aspect to church. There's a lot more going on—high-end video, concert sound, big lighting—and they're making these into multipurpose rooms: by morning it is a sanctuary and by night it's a youth center with live music."

But at the end of the day, it comes to maintaining the bond with the local music scene. "We have a lot of very loyal customers that come to us for just about everything that they need," Nielsen says. "We're always talking to new acts about touring. It's not something that we thought was going to be a bread-and-butter for us, because being in Austin, we just don't see the same amount of big acts coming out of here as you would in L.A. or New York or Nashville. Those [SR] companies are going to get the first pick of the big acts that are going to be out touring and we accept that. But we're always talking to see what we can get out on the road." ■

Sarah Benzuly is Mix*'s managing editor.*

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New Sound Reinforcement Products

PEAVEY VERSARRAY

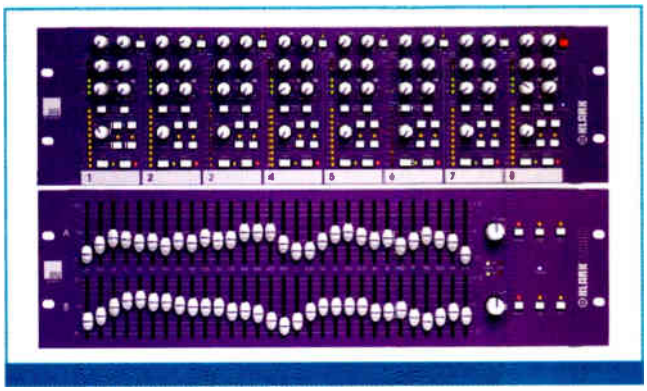
VersArray marks Peavey's (www.peavey.com) debut into the high-end line array market. The VersArray 112 line array puts a Black Widow 12-inch neodymium woofer and a waveguide with dual 4.75-inch ribbon tweeters in a 13-ply Baltic birch enclosure for modular coverage in small- to medium-sized venues. Bracket-and-pin flying hardware allows full top box articulation in 2.5-degree increments for a classic straight-line array or various angling configurations. Other mounting options include a pole for the VersArray 118 subwoofer that supports a two-box array, a ground-stacking kit for the 218 sub that handles up to four modules with full articulation, and a crankable tower lift to elevate up to six modules 13 feet.

TCS TA4000 POWER AMP

Designed for pro touring and fixed installs, the TA4000 ($1,995) from TCS Audio (www.tcsaudio.com) uses proven Class-A/B topology to deliver 2,000 W/channel into four ohms. The three-rackspace unit features CTM™ (Constant Thermal Monitoring) technology, parallel XLR inputs for cascading multiple amps, variable-speed cooling fans, binding post and Speakon output connectors, LED status indicators, and switches for selecting power limiting, ground lift and stereo/parallel/bridged mode.

BEYER OPUS 89

Designed for live vocal applications and made to withstand the rigors of touring is the Opus 89 ($279) dynamic mic from beyerdynamic (www.beyerdynamic-usa.com). Using the rare-earth neodymium magnet structure of the company's TG-X 60, the mic offers fast transient response and excellent feedback rejection.

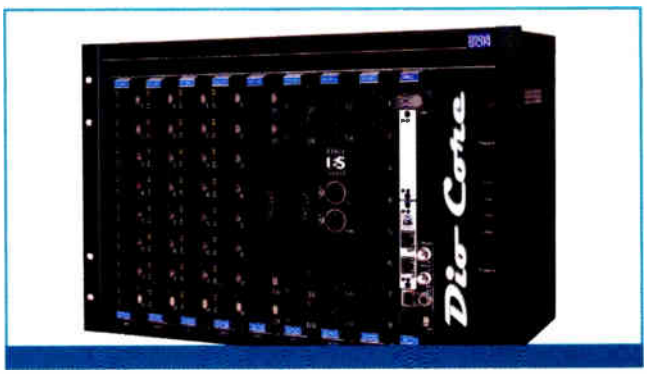


KLARK TEKNIK SQUARE ONE

Square ONE, a new series from Klark Teknik (www.klarkteknik.com), combines affordability with high-performance analog audio processing. The Square ONE Graphic is a dual 30-band EQ with 45mm sliders, switchable high/lowpass filters, balanced I/Os, PROportional Q filters and relay-activated bypass. Square ONE Dynamics is an 8-channel unit that can act as an RMS-sensing compressor, "vintage" peak-sensing compressor, broadband frequency-conscious compressor, de-esser, limiter, expander or gate.

CREST HP-W CONSOLE

Available in 28/36/44 standard mono input frames with four full stereo channels, eight mono Automix™ channels and two stereo line returns is the HP-W from Crest (www.crestaudio.com). The unit features 4-band (swept mids) EQ, eight analog subgroups, 100mm faders, 2-channel matrix, full talkback and monitor systems, 8-scene mute, 10 aux sends (with fader flip for use as a monitor mixer), and four stereo line input channels with EQ, assignment and aux sends.



INNOVASON DIO CORE

New from InnovaSON (www.innovason.com) is Dio Core, a modular, 64-channel, EtherSound-enabled stage box that's compatible with I/O modules using the company's Dio ES multichannel audio interface module. Usable with Sy80 and Sy48 digital consoles and/or as a remote I/O box for other EtherSound-enabled devices, the unit features up to 64 high-quality input/outputs, digitally processed bus and direct outputs for remote/stage locations, and multiple channels of AES-to-EtherSound or EtherSound-to-AES conversion. ■

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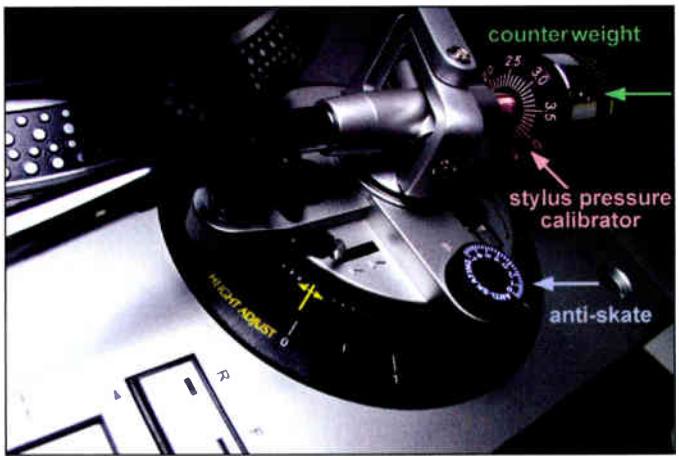
BY EDDIE CILETTI

Gettin' Into the Grooves

The Art and Science of Turntable Optimization

Just as digital audio jump-started the vintage analog craze, club DJs have kept turntable and cartridge manufacturers in production. This month's focus is on turntable optimization.

The most popular (and most often cloned) DJ turntable is the direct-drive Technics SL-1200. Audiophiles would choose something more esoteric for archiving and transfers—preferably a belt drive model—but nearly all respectable models have common design features.



Detail of the Audio-Technica AT-SL120 (a clone of the Technics SL-1200 Series) shows adjustment locations for tone arm height, anti-skate and stylus pressure (weight).

FAMOUS PICKUPS

The front end of every turntable is the cartridge, a user option that is dependent on personal taste and playback requirements. The cartridge is typically mounted to a removable headshell at the end of the "tone arm," a name that dates back to the acoustic phonograph era. (Purists will sacrifice this convenience for reduced mass.) Regardless of cartridge choice, the first goal is mechanical alignment, the five primary parameters of which are overhang, vertical tracking angle, horizontal tilt, stylus pressure and anti-skate.

To realize the importance of the interrelationship of tone arm, cartridge and stylus, you must first understand how a master record (or dub plate for DJs) is created on a lathe. The key component is the cutter head, which comprises a magnet assembly and voice coils that convert electrical energy into motion. The coils connect to a shaft (or cantilever) to which a cutting stylus is mounted. Grooves are cut into an acetate-coated aluminum disc.

The cutter is driven linearly through the radius of the disc by a "feed screw," the speed (or pitch) of which is computer-determined based on program level and groove depth. Obviously, the goal is to play back the records exactly as they were cut, with the stylus precisely tangential to the groove and at a right angle to the radius. However, playback with a linear arm is not so easy because to follow (rather than create) the varying groove pitch requires precision frictionless mechanics, coupled with a bit of electronic intelligence. Only the most esoteric of turntables are so outfitted and still functional.

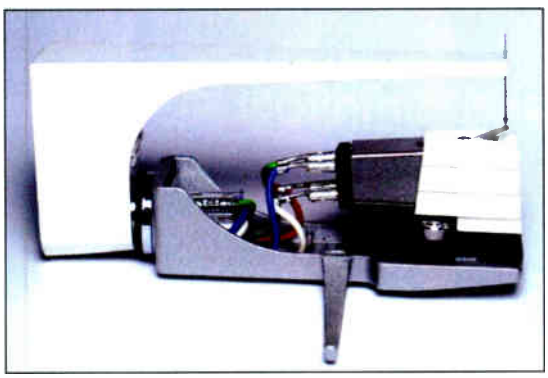


Figure A: Technics overhang tool (part number SFK0135-01) with Audio-Technica shell and cartridge

Enter the more common and economical pivoting-style "s"-shaped and straight tone arms. Both make an arc across the record, and while neither is a perfect solution, each keeps the cartridge within a few degrees of optimum. The longer the arm, the more gentle the radius. The first mission-critical tweak is the soon-to-be obvious overhang adjustment.

The primary disadvantage of pivoting arms is their tendency to "skate" across a record (either toward or away from the spindle). A stylus "leaning" on either side of the groove wall causes wear, mistracking (distortion) and groove-hopping. The anti-skate adjustment counteracts this.

During the years, manufacturers have created an assortment of templates, jigs and tools (such as those shown in Figs. A and B) to assist the user in optimizing overhang, the phono-equivalent of tape head azimuth. Elongating the cartridge mounting holes in the head shell, for example, allows front-to-back cartridge tweaking.

STRAIGHTEN UP AND FLY RIGHT

The cutting stylus is not perpendicular to the groove; it's some 15 to 20 degrees off-axis, like the claws of a garden rake, so the Vertical Tracking Angle (VTA) is sometimes referred to as Standard Rake Angle (SRA). To get VTA

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in the ballpark, start by observing the arm while a record is playing. The arm should be parallel to the record. (See Fig. C.)

Both the Technics SL-1200 and the Audio-Technica AT-SL120 allow the arm to be raised or lowered with an outer ring located below the arm's pivot area. The AT-SL120 adjustment did not go low enough, so another slip mat was added to raise the disc.

STYLUS PRESSURE

For the stylus to accurately trace the grooves, the cantilever to which it's attached must be highly flexible in both the lateral and vertical planes, as determined by the rubber-like substance used at the pivot point. User requirements determine the actual tracking force.

Audiophiles and archivists strive for the lowest mass and resonance, taking advantage of space-age cantilever and tone arm materials so that the force exerted by the stylus on the grooves is as low as possible. By contrast, a DJ wants a cantilever that can tolerate scratching without bending. Not only is the cantilever (which is hollow) thicker and more robust, but its suspension is tighter to allow increased tracking force without the cartridge body dragging on the record.

To set stylus pressure, minimize the anti-skate. Calibrate the arm by turning the counterweight until the arm floats. Without turning the counterweight, the black "calibrator" ring is rotated until "0" lines up with the black stripe on the arm so that the arm still floats. Now rotate the counterweight until the calibrator ring indicates the desired force. With the anti-skate set to the same value and the turntable spinning, lower the needle down on a groove-less land (in between two tracks, for example), and the arm should stay in place until a groove catches the needle. Increase anti-skate if the arm wanders toward the spindle or decrease if it wanders toward the disc edge.

GROOVE ME

For a standard stereo record, the playback stylus contacts the groove wall at 0.7 mils (0.0007 inches). With no modulation, the top of the groove—at the disc surface—is typically no more than 2 mils (0.002 inches) wide, so that 400 grooves can be squeezed into an inch for a standard stereo LP. By contrast, a club track's kick and power requires increased depth to keep the needle from bouncing out of the groove, expanding the pitch to less than 100 grooves per inch.

Figure B: Shure's overhang tool has a saddle for its V-15 Series cartridge to snap into; alignment errors are magnified at the spindle.

If, like me, you play 78 rpm records for archiving purposes, you'll need something other than the stereo needle, which typically has a 2.7- to 3-mil tip radius and costs around $50. Different eras and wear patterns require a wider tip radius range (from 2-mil to 5-mil, for example), whereas prices are easily three- to five-times standard.

Last fall, I purchased two Audio-Technica AT-SL120 turntables specifically for their ability to play 78 rpm records. The AT looks like an exact Technics clone, but pressing both the 33 and 45 buttons engages a high-speed mode—although there is no strobe to indicate speed accuracy. Note: While the stock SL120 has two speeds, there is an aftermarket 78 rpm mod available, but it's not for sale in "kit" form.

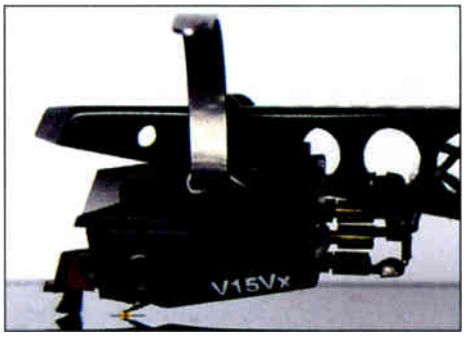

Figure C: The VTA (seen under stylus) is optimized when the arm and headshell are parallel to the disc surface. This is accomplished when the user raises or lowers the arm at the pivot point.

The next time I tackle this subject, I'll address stylus size optimization, preamps, disc equalization and artifact-removal software. Until then, groove on! ■

Eddie credits his dad for inspiring his life and career. Listen to his 78 rpm transfers at www.tangible-technology.com.

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Tools of the Trade

LUCID GENX192 STUDIO MASTER CLOCK

Having a split personality is usually considered a bad thing, but not in the case of the latest clock from Lucid (www.lucidaudio.com). The GENx192 Studio Master Clock has two operating modes that let users choose between internal reference and distribution functions. Furthermore, in internal mode, its 14 (!) outputs are split into two groups of seven, each capable of generating an independent multiple of the base frequency. For troubleshooting word clock connections, there's an LED to indicate bad terminations. Price not yet announced.

CHANDLER LIMITED EMI TG12413

Chandler Limited (www.chandlerlimited.com) has collaborated with London's Abbey Road Studios to release the new EMI TG12413 limiter plug-in (TDM, $675; RTAS, $450). Based on the original compressor/limiter module built in the 1960s, the TG12413 was developed from design notes and technical drawings from the original TG12345 mix desk, the same console used to mix records such as *Abbey Road* and *Dark Side of the Moon*. Chandler's TG12413 limiter plug-in emulates this classic model. Key features include the option to configure from mono up to 7.1 for versatile gain reduction in a variety of applications. A demo is available in the News section of Abbey Road's Website (www.abbeyroad.com).

WAVES Z-NOISE

Promising to deliver a hat trick of noise-reduction ability, the Z-Noise ($800, native; requires iLok) plug-in from Waves (www.

waves.com) offers dynamic noise profiling, transient preservation and increased low-frequency resolution. Boasting a more musical algorithm, the plug is ideal for removing tape hiss, ground hum and computer noise using a familiar 5-band EQ interface. Real-time operation lets users fine-tune Z-Noise's parameters and hear changes on the fly while retaining all the power and punch of the source recordings. Rather than use an isolated sample of the noise, Z-Noise features an exclusive Extract mode, as well as an Adaptive mode to reduce noise that changes over time.

DISC MAKERS PICO

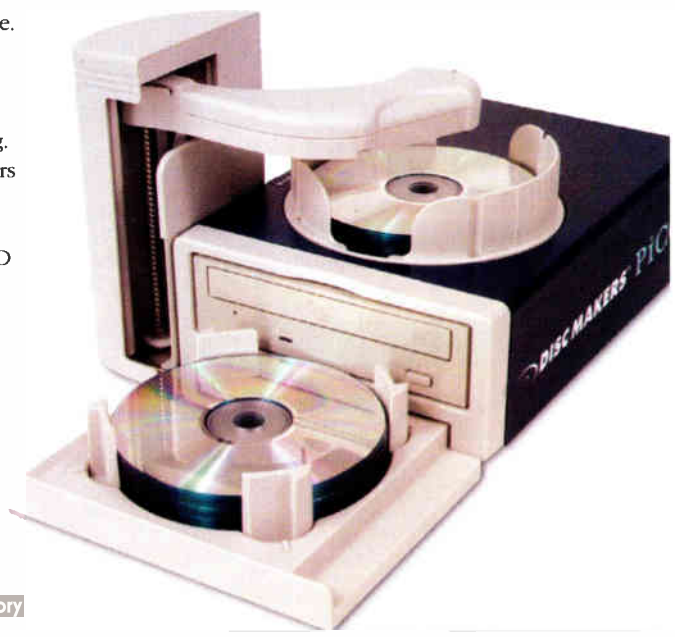
Now it's cheaper to hire a robot to do your CD duping. Pico ($699) from Disc Makers (www.discmakers.com) is a 16x DVD/48x CD duper that's barely larger than a CD and drive put side-by-side. Measuring a mere 7.1x15.75 inches and weighing 6.6 pounds, Pico has a 25-disc capacity and includes easy-to-use DiscForge software with audio, CD data and DVD data editing software. Pico can deliver up to six full DVD-Rs or 12 CD-Rs per hour, and includes a 3-inch disc and CardDisc adapter for creating portable giveaways or leave-behinds. The unit includes free lifetime tech support and 100 CDs or 50 DVDs, and it comes with discounted blank media pricing for life.

EUBERSCHALL LIQUID GUITAR

Air guitarists can now drop the 0_2 and shred for real by using Euberschall's (dist. by East West, www.eastwestsounds.com) Liquid Guitar ($199.95) for Mac and PC. The collection is recorded from acoustic (nylon/steel) and electric guitars across a broad range of styles, including funk, R&B, pop, rock, blues, fusion, jazz, Western and guitaristic sound effects. Features include the ability to control audio as MIDI data, multiple content management, advanced editing, the ability to change tempo and key, a Quick Sound browser and sync-to-host.

URS CLASSIC CONSOLE COMPRESSOR BUNDLE

Bundle up for the last throes of winter with the URS Classic Console Compressor Bundle Version 1 (AudioUnits). These two compressors, titled the 1970 and 1980, digitally re-create the sound of two popular British console compressors of days



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gone by. Each features a separate compressor and brickwall limiter, plus internal sidechain with highpass and lowpass filtering. The URS 1970 is smooth and warm, while the URS 1980 is snappy and more aggressive. Both plug-ins feature up to 192k sampling and 64-bit double-precision processing. The bundle is $449 for native AudioUnits, including RTAS, or the two compressors are sold individually for $249.99 each. A 10-day demo is available at www.ursplugins.com.

VIOLET AUDIO A/V PREAMP DECODER

Violet Audio (dist. by Kaysound, www.kaysound.com) has launched the ADP61 ($1,495), a 24-bit/192kHz A/V preamp and decoder unit that features a multitude of analog, digital and S-video inputs, allowing the control of both video and audio signals over a wide range of source material. Inputs include one balanced stereo, six unbalanced stereo, balanced 5.1 via 25-pin, unbalanced 5.1, AES/EBU, coaxial digital, optical digital, four S-video inputs and a single balanced 6.1 output.

M-AUDIO PROJECTMIX I/O

This slick I/O and controller unit from M-Audio (www.m-audio.com) gives users of M-Powered Pro Tools, Ableton Live, MOTU Digital Performer, Steinberg Cubase, Cakewalk SONAR and Apple Logic a solid option for desktop control. The unit connects to a computer via FireWire and includes eight channels with 10-bit, touch-sensitive motorized faders; buttons for mute, solo, record-enable and select; an assignable rotary controller; LCD scribble strip; phantom-powered mic preamps; and line inputs. The ProjectMix I/O ($1,249.95) also offers a front panel instrument input, MIDI I/O, dedicated transport controls and keys for in/out points, zoom, region nudge, looping and more. Other I/O is provided on ADAT Lightpipe and S/PDIF for a total of 18 inputs and 14 outputs.

WEISS ENGINEERING SARACON-LIGHT

Easy on the pocketbook, this sample rate–converter software from Weiss Engineering (dist. by Las Vegas Pro Audio, www.LasVegasProAudio.com) operates at 44.1/48/88.2/96 kHz and at word lengths of 16/20/24/32-bit fixed point and 64/32-bit floating point. Priced at less than half the cost of the standard Saracon, Saracon-Light ($925) runs on Windows platforms and supports .WAV, AudioUnits and .AIFF file formats. Word length reduction is performed using the included POW-r and flat TPDF dithering algorithms. Additional features include extensive monitoring tools, log files and a built-in sine wave signal generator for testing purposes.

STUDIOMASTER C3 AND C3X

Need lots of function in a tight space? These 12-channel, single-rackspace mixers come in a standard (C3, $279) or an enhanced (C3X, $379) version featuring onboard DSP effects. Both offer four balanced combo XLR/¼-inch inputs (two front/two rear) for microphones or line-level gear and four ¼-inch/RCA stereo inputs. The balanced inputs have a 3-band EQ; stereo channels share 2-band EQ. All inputs have access to a pair of pre/post-fader aux sends. The stereo output (XLR and RCA) features LED metering, master level and monitor master controls. The CX3's DSP includes room and plate reverbs and a variable 10ms to 720ms delay with a regeneration range of 0% to 90%.

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KJAERHUS AUDIO SPECTRA

Spectra ($198), the latest Windows 2000/XP synth plug-in from Kjaerhus Audio (www.kjaerhusaudio.com), combines multistage additive synthesis with subtractive synthesis, providing a wealth of timbral possibilities. Spectra features a 250 partial-additive engine with up to eight detune-able oscillators per voice. In addition, an audio analyzer is available to convert .WAV files into harmonies. The subtractive component includes 12 analog modeled filters with resonance. Other features include a two-bank preset system and two LFOs with five multipoint envelopes, with looping and time-stretch capabilities for each. The onboard effects section offers chorus, flanger, delay, phaser and reverb.

MAXTOR ONETOUCH III TURBO

Nicely breaking the buck-a-gig barrier, the latest effort from Maxtor (www.maxtor.com) offers a Terabyte of storage for $899.95. The Turbo features FireWire 800, FireWire 400 and USB 2 interfaces, and imbedded software tools (Mac and PC) provide the ability to synchronize data between two or more computers. A System Rollback feature helps return PC systems to a healthier state after a damaging spyware attack. The drive features improved acoustics, an inner disk drive casing and shock-mounts for additional durability and drive protection. In addition, Maxtor DriveLock data security provides a password-protection option to safeguard contents if the drive is lost or stolen.

MXL 2010 MICROPHONE

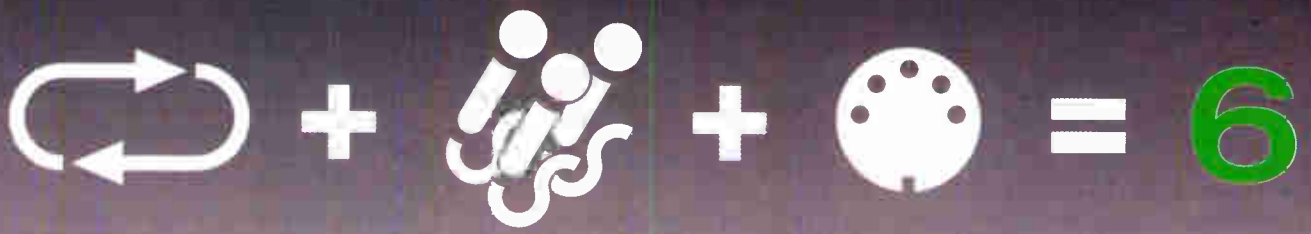
This affordable, new microphone from MXL (www.mxlmics.com) features a 1-inch capsule, Class-A FET circuitry and three switchable patterns (omni, cardioid and figure-8). It is internally wired with Mogami cable. A -10dB pad is included for those high-SPL situations, while a low-frequency roll-off compensates for proximity effect and room rumble. The slick-looking, silver-finished mic ships with shock-mount and deluxe carrying case. Price: $199.95.

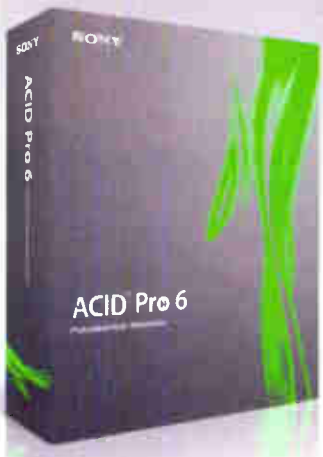
Upgrades and Updates

Apogee Electronics (www.apogeedigital.com) **has standardized its Rosetta 800 line at 192k sample rates** and has reduced the price to $2,995. Previously, the ability to operate the Rosetta 800 at 192k came as a $995 upgrade only...**Celemony**, the company that brought you Melodyne, has **a new users forum at www.celemony.com/phpBB2** for those who want to offer their opinions, suggestions or criticisms. Company representatives will answer questions on a regular basis and join in discussions from time to time... **Digidesign's** (www.digidesign.com) **Digi 002 systems now include the Digi 002 Factory software bundle** at no additional charge. The bundle includes Pro Tools LE software, the Pro Tools Ignition Pack and 50 Digidesign and Bomb Factory plug-ins, including Factory BF-3A, Moogerfooger Ring Modulator, Moogerfooger Analog Delay, SansAmp PSA-1, Cosmonaut Voice, Joemeek SC2 Photo-Optical Compressor, Joemeek VC5 Meequalizer, Tel-Ray Variable Delay, Voce Spin and Voce Chorus/Vibrato...**IK Multimedia** (www.ikmultimedia.com) is **now shipping SampleTank 2.1** (Mac OS X and PC), offering 2 GB of additional new material, more than 1,700 sounds and a total of 6.5 GB of samples on two DVDs...**Focusrite** (www.focusrite.com) has **released V. 2 for Saffire users**, free of charge. The new upgrade includes enhanced 192kHz and FireWire operation, improved graphics contrast, roll-over tool tips, newly removed bugs and improved interface clarity. Visit the company's Website for download instructions...Speaking of downloads, **V. 1.1 of MOTU's Symphonic Instrument** universal orchestral plug-in for Mac and PC is now available for download at www.motu.com/download. The free version adds stand-alone operation, 64 parts per plug-in, support for 64 MIDI channels, support for multiple independent outputs and disk streaming...**TC Electronic's** (www.tcelectronic.com) **PowerCore 2 software upgrade** includes an overview of CPU power and RAM, as well as the status of plug-in licenses and all PowerCore devices running on the system. In addition, it enables a fully functional 20-hour trial version of a number of optional TC plug-ins...**Submersible Music's DrumCore 2** (www.drumcore.com) **adds synching to ReWire host tempos and separate outputs for its MIDI drum module sounds.** The new version also increases the number of included loops, fills, hits and kits. ■

World Radio History

SONY





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World Radio History

BY JIM AIKIN

Steinberg Hypersonic 2 Multitimbral Synth

Large Library of Sounds With Search Engine and ReWire

Multitimbral "workstation" synthesizers were once fixtures in nearly every project studio. But in the new world of software synths, they're few and far between. Most manufacturers with the resources to develop or license a massive sound library have put their weight behind software samplers.

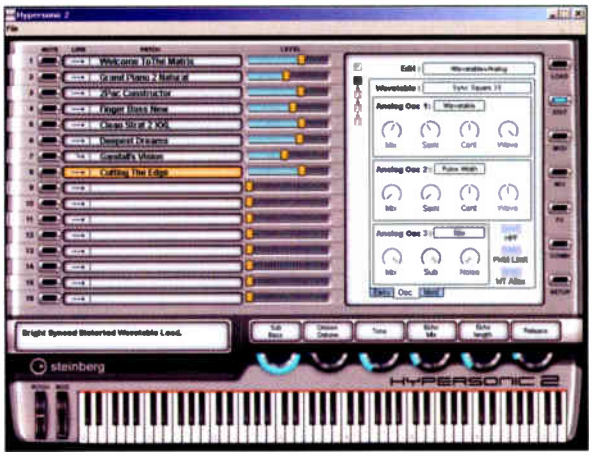
Steinberg bucks the trend with Hypersonic. Although it's a closed system—you can't add to the 1.7GB library of factory samples—several other types of synthesis besides sample playback are part of the package. If you already have an extensive sample library, then you're probably better off buying Native Instruments Kontakt or Steinberg HALion. But if you need a soft synth that covers piano, organ, choir, guitar, drums and five dozen other meat-and-potatoes sounds, and can do modeled analog patches, then Hypersonic is worth considering.

New features in Version 2, which lists for $399, include fully programmable voicing, several new effects and user-assignable macro knobs for easy modulation. Hypersonic is 16-part multitimbral, so you only need to load one instance to get a full ensemble. In addition to being Mac/Windows cross-platform, it's ReWire-compatible, so Pro Tools users needn't be frustrated by the absence of an RTAS version. Copy-protection uses a Syncrosoft USB dongle, which can hold licenses for numerous Steinberg products.

START YOUR SOUND ENGINE

Workstations live or die by the quality and variety of their factory sounds, and Hypersonic scores high in this area. Its built-in library runs to 1,800 patches in 46 folders; even a cursory description of the complete soundset would fill pages. The synth sounds are especially vibrant, and everything is more than usable. I'm not too fond of the solo orchestral instruments, but to be fair, this is a weak spot in many sample playback synths. The string section patches are pretty good, and the contemporary percussion is colorful and punchy. The big stereo "ahh" choirs are sumptuous, and the distorted electric guitars' crunch is satisfying.

The acoustic pianos are a bit bland and compressed, but the mallet percussion and saxophones are excellent. The acoustic bass doesn't have enough sustain and editing the envelope doesn't fix it, but the electric basses are very solid. The tempo-stretchable drum loop patches are all one measure long, but you can edit a pattern to double its length, and some of the beats change when you push the mod wheel up. When I used a Hypersonic beat in a song, I ended up layering in a snare on another channel because the beat itself didn't kick enough to avoid getting smothered by my rather busy arrangement.



Hypersonic's deeper voice-editing options are tucked away in the panel on the right.

The folders of presets are arranged in a rough order (percussion first, then keys, mallet percussion, basses, guitars, orchestral, winds, ethnic instruments and synths), but listings within a given folder are an utter jumble. If you remember the name of the patch you're seeking, then you can use Hypersonic's search engine. Another approach is to create a Favorites folder to store often-used sounds.

MODELED SYNTHS AND MORE

The standard soundset also includes modeled analog, FM and wavetable synthesis. The FM implementation is extremely simple, but it's a welcome addition to the palette. An arpeggiator with a user-programmable step sequencer is also included. The grand piano and analog synths are identical to add-on modules formerly marketed by Wizoo.

User sound programming is much more flexible than in Hypersonic 1. It's now possible to add new elements (either synth voices or effects) to a patch and to choose a new waveform for a sample playback element from a menu of hundreds of waves. The interface for sound editing is rather cramped and spartan. Easing the burden are the six Hyper knobs, which are set up at the factory with useful parameters for quick twiddling of things such as tone and attack. In V. 2, the Hyper knobs can be reassigned to other parameters, and most of the synth edit parameters can respond to MIDI control change data, so the possibilities for automation are far greater.

I employed Hypersonic 2 in various projects and found it stable and eminently usable. When I put it through its paces, Hypersonic performed like a champ. A couple of analog-type presets are out of tune with reference to concert pitch, and the FX send sliders at the bottom of the element (voice insert) effects don't seem to do anything.

THE LOWDOWN

Hypersonic faces some serious competition from other software samplers, but it has its strong points: great soundsets and exciting new features. For instance, loading patches into a Hypersonic combi and programming the combi with panning and MIDI settings is easy, and MIDI keyzone and velocity crossfades are now supported. In addition, you can use up to 16 stereo outputs, and if your CPU will handle it, you can have dozens of effects running at once.

Another strong point—and unlike a hardware synth that has a fixed set of effects processors—Hypersonic doesn't choke off or change the timbre of notes that are currently sounding when you load a new patch. So even though there are some downsides, Hypersonic is worth a serious look.

Steinberg, 877/253-3900, www.steinberg.de. ■

Jim Aikin writes about electronic music and plays electric cello. Visit him at www.musicwords.net.

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BY BARRY RUDOLPH

Soundelux E47C Cardioid Condenser Mic

Accurate Re-Creation of a Coveted Classic

Large-diaphragm condenser microphones such as the Telefunken ELAM 251, AKG C-12 and Neumann U47 are practically legendary: They captured many of the quintessential musical performances and historical moments of the 20th century. With the utmost care and near-reverence, Soundelux has painstakingly re-created new microphones based on the designs and classic sounds of some of these mics. The company's newest release is the E47C, a cardioid-only re-creation of the short-body Neumann U47.

INSIDE STORY

The E47C is handmade in the U.S. The similarities to the U47 begin at the business end of the E47C: the metal head grille. Three layers of the same wire cloth with the same hole spacing and diameter as the original Neumann are used. Soundelux's point here is to reproduce the "space" around the capsule without any trickery or "improvements." The only difference between the two mics seems to be that Neumann's screen pattern ran diagonally and Soundelux's runs horizontally and vertically.

The E47C uses a classic K47-style capsule with a single backplane drilled in the identical hole pattern of the original. It's a center-terminated, 1.1-inch-diameter capsule with 6-micron-thick, gold-sputtered dual-Mylar membranes and brass mounting rings.

Because most engineers have used the U47 in cardioid mode for vocals, making the E47C cardioid-only solves many problems common to the original U47. Higher power resistors cut down the amount of generated internal heat. (The E47C runs at close to room temperature.) This means you'll have a lower noise floor, and you'll find no noise-prone pattern switch in the E47C. Because it has a dual-membrane capsule, another advantage of the E47C is that, after years of close vocal use, you can just flip the capsule around instead of replacing it.

The E47C uses an NOS Telefunken EF814k tube situated in a shock-mounted ceramic socket. (The suffix "k" is added after selection, burn-in and testing of the tube at the Soundelux factory in Los Angeles.) The EF814 is a large plate–area pentode tube (wired as a triode) that's very close in characteristics to the original U47's "out of print" VF-14 tube. Soundelux located and procured a huge supply of EF814ks in Europe, so the company is well-stocked for the future.

The E47C's output transformer follows the original U47 BV8 transformer's construction and hybrid lamination style. It's the same size and shape, and has identical four-section windings for good low-frequency response without loss of high frequencies.

The company's new 110/220VAC outboard N470 linear power supply is the exact same size as the U47's, but it is more modern and has both AC and DC mic power indicators on each end of the chassis. So from across a dark studio, you'll always know if you've got power. The mic connects to the power supply with a supplied 20-foot multipin cable that uses threaded Tuchel connectors at each end. You can order a second cable and connect them together to make a 40-footer.

WORKIN' IT

During a month of sessions, I recorded three different solo singers, a flute, a group of singers, a drum kit and an acoustic guitar with a single E47C. In all cases, I used the exact same mic placement, and the microphone was extremely true to the source.

I tried a Neumann M149 alongside the E47C on my first singer. I used Neve 1073 modules for both mics, followed by Universal Audio LA-2A leveling amps. By comparison, the M149 has a "finished mix" sound with a bold midrange character, extended high frequency and loads of output. Although it is a great mic, my soft singer sounded better on the E47C because the low-end warmth filled out her thin sound. As an unexpected benefit, during the mix and after adding EQ and compression, I had to de-ess much less (or not at all) on her vocal tracks.

My second female vocalist sang louder and more stridently. I used the same signal chain, and the E47C stood up very well for her close-mic style—much better than a vintage Neumann U47 where close vocals frequently overload. I can safely say that any overloading I heard (a kind of compressed graininess) was on extreme peaks caused by a combination of the Neve and the LA-2A and not by the mic, because backing the singer off the mic and making up the level drop with preamp gain produced the same results (though it became more roomy-sounding).

For my flute recording, I placed the E47C about one-and-a-half feet above the musician, who sat in the middle of a large room. I used 34 dB of gain from a Mercury Recording M72s tube preamp. To better fit the dense track, I added 2 dB at 9kHz shelf and 1 dB at 3kHz broad with a GML 8200 EQ. The tube mic and preamp were a good call for a large and beautiful sound that captured all of the flute's subtleties along with the room's spatial qualities.

When recording background singers, the cardioid pattern seemed right—not too wide so as to bring in too much room, but narrow enough for a focused sound on my singers, who were standing two or three abreast. The singers found the mic's proximity effect wonderful to accent certain phrases or to make the more important harmony notes "pop" out of the blend.

In a home studio using a Pro Tools|HD rig, I recorded a barrel-chested male singer with a PreSonus M80 mic preamp

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HD-P2

NEW! Portable HD stereo recorder with timecode

The pro solution for challenging live and on-location applications, the HD-P2 records at up to 192kHz/24-bit resolution to Compact Flash media. Audio files are instantly available to your DAW through the built-in FireWire connection. There are 2 XLR mic pres and a built-in mic for interview situations, an instant re-take feature, and a time code input for syncing with external devices.

This is no consumer-grade recorder masquerading as a pro unit—it's a true high-definition stereo recorder for anyone who needs the best possible recording, wherever the work takes you.

FRONTIER DESIGN GROUP

- Records at up to 192kHz/24-bit resolution to Compact Flash media
- 2 XLR mic inputs with 48V phantom power
- Broadcast WAVE files instantly available to DAW via FireWire connection
- Time code input for synchronization and time-stamping audio files
- Supports pull-up & pull-down sample rates
- Records for up to 5 hours using AA batteries
- Ergonomic, rugged design for easy use

TASCAM

www.tascam.com

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set to about 30 dB of gain with no EQ or compression. I A/B'd to a different M149 that required only 15 dB of gain. Both mics were the same height and distance, and I recorded the same performance to two separate tracks at the same time.

The E47C had a more robust sound without the presence peak of the M149. The Neumann, in this case, sounded roomy or distant, and a little thin. The E47C sounded "gutsy" and closer. I like the different qualities of both these mics, but I would have to add a broad peak at 3 to 5 kHz to duplicate the Neumann's forwardness. As a mixer, I like the option of adding EQ after recording vocals to best match a project's musical and production style. During the mix, I could "twist" the tracks made with the E47C any way I wanted—everything was there.

NATURAL DRUMS AND GUITAR

I recorded an entire drum kit with the E47C and was surprised by how true the recording was to the way the kit had sounded in the room, especially considering that the single mic was four-and-a-half feet in front of the kick and about five feet off the floor. The balance was natural-sounding, with plenty of low frequencies from the kick and snare. The E47C has tremendous "reach" in that an entire range of sounds—from closest (and loudest) to most distant (and softest)—are all heard in natural perspective.

Acoustic guitar recording went well, even though I usually prefer the extra articulation that small-diaphragm condensers deliver for this task. Placing the E47C about 18 inches out front of a Martin D-28 between the soundhole and 12th fret produced a natural, full sound—excellent for rhythm playing. I used minimal compression and a very gentle highpass filter to remove room rumble and boom.

A MIC FOR MANY APPS

Many home studio owners ask me what mic they should buy for recording *everything*. I can confidently say that, apart from close-miking drums or loud guitar cabinets, the E47C is a great choice. Whether you're tracking lead and backing vocals, acoustic guitar, drums or orchestral instruments, you would have a hard time duplicating the great sound of this mic at any cost.

Price: $4,250.

Soundelux Microphones, 323/464-9601, www.soundeluxmics.com. ■

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

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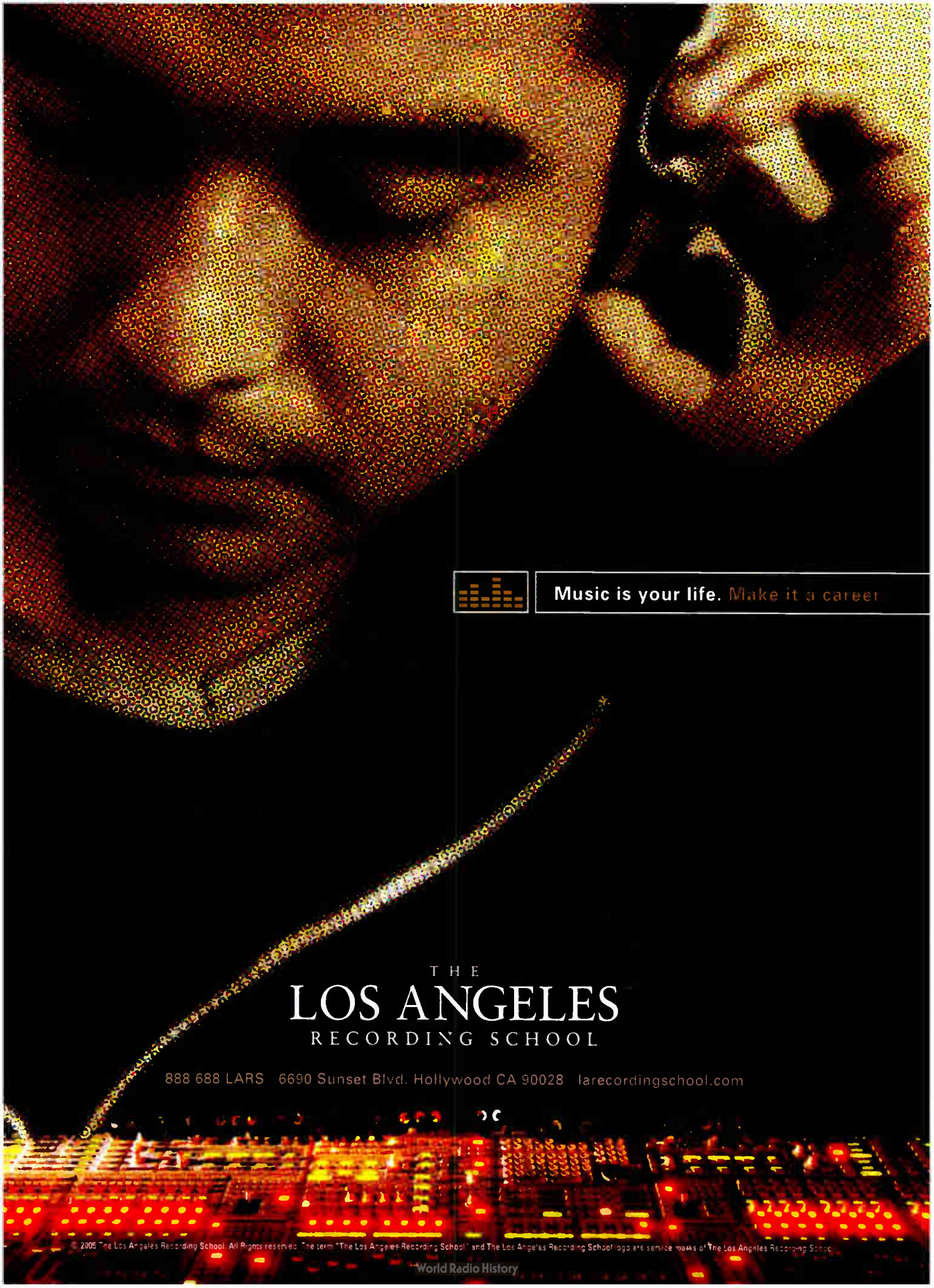

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BY BARRY RUDOLPH

Benchmark Media ADC1 A/D Converter

Four Digital Outs With UltraLock Clocking

We've been waiting more than two years for Benchmark to release its half-rack companion to the DAC1 2-channel digital-to-analog reference converter, but the wait is over. The 2-channel ADC1 is a high-resolution A/D converter for recording, broadcast and either portable or studio DAW rigs. Both the ADC1 and DAC1 operate from 44.1 to 192 kHz, and offer up to 24-bit resolution.

The ADC1 starts with a built-in power supply that will operate worldwide from 95- to 285VAC mains. Overall construction is very good with a tight-fitting, heat-sinking cabinet; the ADC1 runs warm, so give it some breathing space. It has an anodized front panel and surface-mount components on a single circuit board. Both the digital and analog connections use gold-pinned XLR and BNC connectors, and each output is DC-isolated, ferrite toroidal transformer-coupled, diode-protected and current-limited. If a faulty cable shorts one output, the others will continue to operate.

LOW-NOISE ANALOG INPUTS

To maintain a full 0dBFS digital output from the ADC1, the unit's analog "front end" is optimized for the best signal-to-noise and THD+N performance from any audio input level source from -14 to +29 dBu. Analog Devices' AD797 audio op amps are used for the low-noise first gain stage, the subsequent differential amplifier and the variable, final gain stage. There is enough gain here to directly connect and record synths and other semi-pro sources.

Two variable input gain control paths with a 20dB range for the L and R channels are provided on the front panel: two 41-detent control knobs, and two recessed, 10-turn trim pots. Each path has a separate toggle switch to select between them, and both share a common three-position coarse gain range switch with 0, 10 and 20dB positions.

The trim pots are used for calibration to standard studio operating levels such as a console's stereo bus output. The knobs would be used to maximize the gain structure of any external analog signal chains, such as a mic preamp/EQ/compressor chain. This is a very useful and practical feature.

HOW IT CONVERTS

The ADC1 samples all audio at 218.75kHz/24-bit using AKM Semiconductor's latest AK5394A ADC chip. The ACD1's sampling circuit uses an oversampling ratio of 32:1—exactly 7 MHz (32x218.75 kHz). At 44.1 kHz, the ADC1 has an effective oversampling ratio of approximately 159:1 (7 MHz ÷ 44.1 kHz). Benchmark chose 218.75 kHz to prevent aliasing of signals around half the sample frequency. Sample rate conversion from 218.75 to 192 kHz and lower rates removes these aliasing components.

There are two Analog Devices AD1896 192kHz converter chips. The AD1896 is the first sample rate converter to exceed 130dB S/N ratio and it has jitter attenuation at all frequencies above 3 Hz, with more than 100 dB of attenuation above 1 kHz. Two SRC chips are used: one for the main output and another one for the aux output if it is set to a different sampling frequency; otherwise, both outputs are bit-for-bit the same and use identical drivers and isolation transformers.

To make a quick copy, you can record at 192kHz/24-bit using the main output to your DAW and simultaneously use the aux output to feed 44.1/48kHz with a TPDF-dithered, 16-bit word length to a CD burner or DAT machine. Triangular Probability Distribution Function, or TPDF, uses random numbers as a dither noise source instead of noise-shaped dither as used in mastering. This TPDF dither noise is added to the 24-bit audio before truncation to 16 bits, and it's a good choice for safety backups and demo CD-R recordings.

The ADC1 has four digital outputs—very useful for feeding several different digital recording systems in your studio at the same time without repatching. These are a single 24-bit, XLR balanced, AES/EBU output; two 75-ohm, coaxial unbalanced BNC connectors that spit either 24-bit AES/EBU or S/PDIF at all rates (BNC to female RCA adapters are provided); and one 5mm Lightpipe Toslink Type-F05 optical that supports AES, S/PDIF, ADAT, ADAT S/Mux[2] and ADAT S/MUX[4].

THE WORD ON CLOCKING

Benchmark's UltraLock system technology uses a clock derived from a fixed-frequency crystal. The A/D conversion clock signal is completely isolated from the external signal received by the AES/EBU, S/PDIF, ADAT, world clock and super clock interfaces. The ADC1 produces digital audio at all times, and a poor-quality clock reference will not degrade the system's jitter performance—even during the presence of errors and interruptions or if the sample rate status bit is set incorrectly.

The clock input receiver always measures the sample rate of the incoming clock signal to synchronize the main output. This is called Auto mode, and the ADC1 will follow any vagaries of the clock signal such as sample rate change or type of reference signal. In Internal mode, the unit will act as clock master with all devices locking to it. There are BNC connectors provided for both word clock output from the ADC1 and external word clock input.

AT PLAY WITH THE ADC1

Setting up and using the ADC1 could not be easier. The well-written manual takes you through all choices of clock source, sample rates, bit depth and the main/aux

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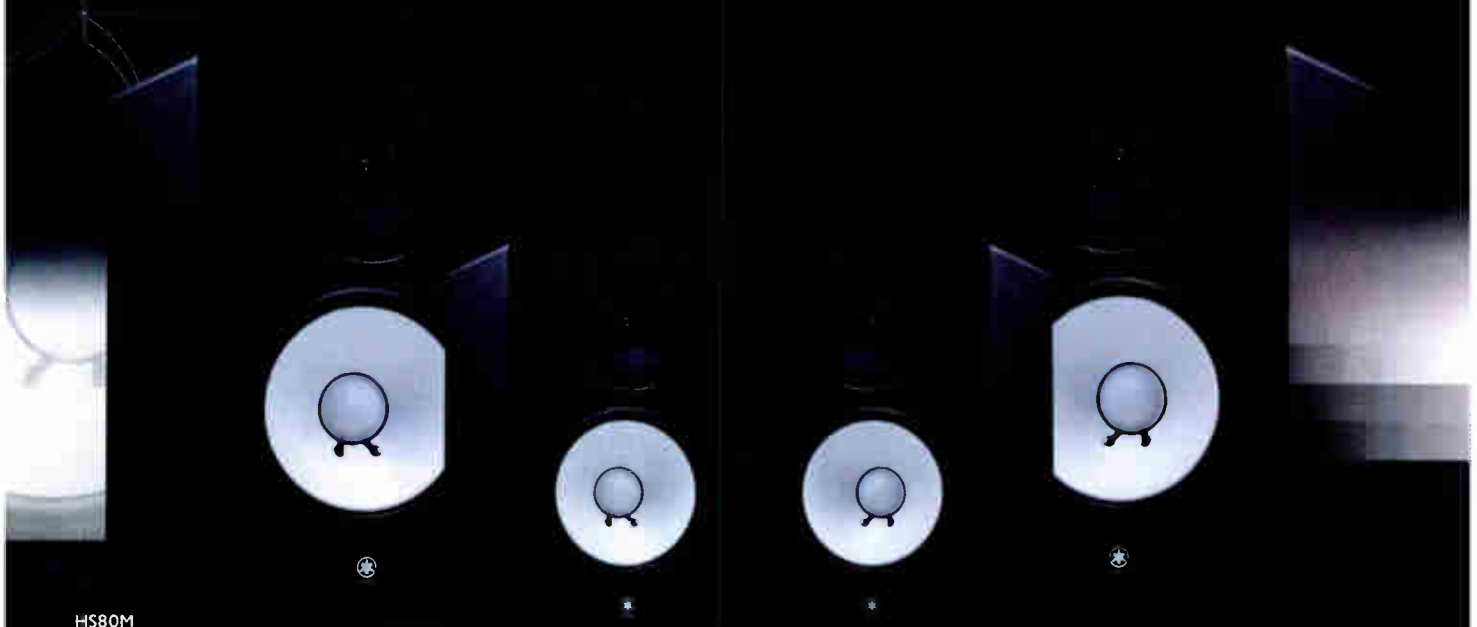
IF YOUR MIX SOUNDS GOOD ON THESE, IT'LL SOUND GOOD ON ANYTHING



HS80M

HS50M

HS50M
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- 3/4" dome tweeter
- 70-watt biamplified power
- XLR and 1/4" connectors
- Room Control and Frequency Response Switches

HS80M
- 8" white polypropylene cone
- 1" dome tweeter
- 120-watt biamplified power
- XLR and 1/4" connectors
- Room Control and Frequency Response Switches

HS10W
- 8" long stroke 120-watt woofer
- Dual XLR and 1/4" inputs
- 3 balanced XLR outputs (Mix, L&R)
- Phase switch
- Low/High cutoff

HS SERIES POWERED MONITORS

The new HS Series powered monitors were designed to be true studio reference monitors in the tradition of the famous NS10MS. That means, mixes that sound good on Yamaha HS speakers will sound good on anything. In fact, that's the ultimate test of a reference monitor. Even better than that, HS series speakers not only sound good, they look great, too.

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

HS10W

THE NEW STANDARD IN NEAR-FIELD MONITORS

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output configurations using the toggle Mode switch. The ADC1's configuration is confirmed by a matrix of nine LED indicators. After optimizing the input gain controls to accommodate your analog signal's level, you're good to go. I liked the meter because it's digital and post-conversion and indicates all clips—even a clip of only one sample. The three-position meter toggle switch selects peak hold function on/off and resolution of either 6 dB or 1 dB per step.

For my evaluation, I fed identical audio from the studio's API console to the ADC1, an Apogee Rosetta 200 and Pro Tools|HD 192 converters. I recorded monaurally at 24-bit and at both 48kHz and 96kHz rates into Pro Tools. At that point, I wanted to see if I could hear any differences without the "distraction" of stereophonic sound.

I connected the ADC1's word clock using good, short 75-ohm cables and gold-pin BNC connectors to the Apogee and HD 192 (Digidesign's Sync I/O unit) external clock inputs. Likewise, I used proper 110-ohm AES/EBU digital cables to connect the digital audio outputs of the Apogee and Benchmark units to the AES/EBU inputs of the first two HD 192 units in the studio's Pro Tools system.

All of the converter's outputs instantly phase-locked from the ADC1's clock signal with no problem, and after a careful 1kHz level setup for all three systems using Pro Tools' metering, I was ready to listen to three simultaneously recorded tracks: one made with each converter and played back through the HD 192's D/A converters, patched to three equally set mono faders of the API console. I repeated my listening test after I switched the faders around on the API console and changed the HD 192 outputs to nullify any slight differences in the console's individual input modules or the HD 192 D/A converters.

I used a single B&K 4011 cardioid microphone—placed three to five feet away to avoid any possibility of capsule overloading—and an API 512C preamp. No other processing was used to record a variety of sources, including hand percussion (tambourines, blocks, bells, etc.), vocals, acoustic guitar and piano.

All three converters sounded great, and the sonic differences were tiny. But at the 96kHz rate, I was able to discern extra clarity with the ADC1—I would characterize it as a clearer, more transparent low midrange with smoother high frequencies. The HD 192 sounded good, but was slightly harsh in the highs—most noticeable on tambourine—something I would resolve with a different mic and/or tambourine choice. The Apogee was also wonderful-sounding: smooth high frequencies but slightly thick in the low midrange. This was noticeable within my acoustic guitar recording—especially when playing chords.

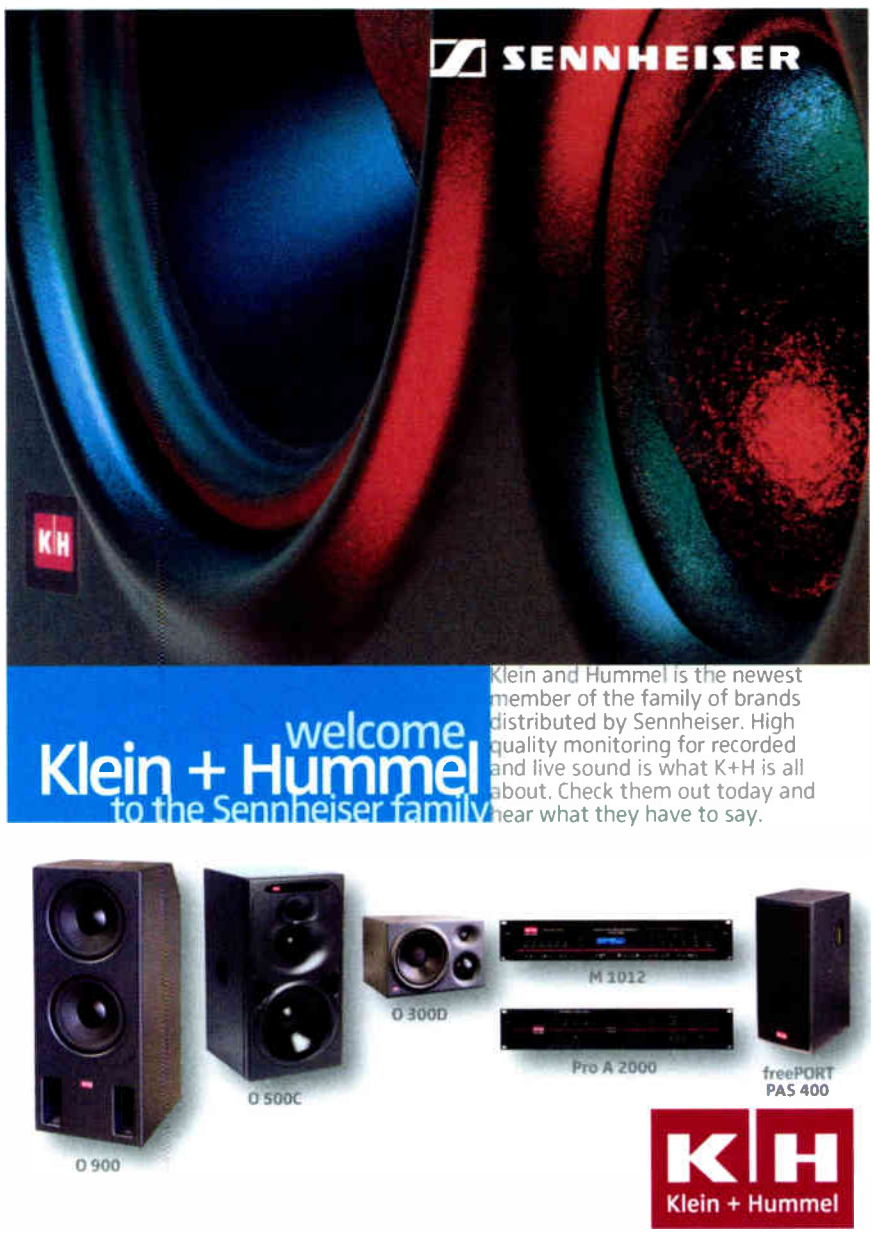
Apart from recordings that are tracked live, a lot of today's records are built one overdub at a time. When you consider that each of those overdubs might use the same A/D path, the converter's quality and clock—like the microphone and analog signal chain—become more important than ever.

I'VE BEEN CONVERTED

The Benchmark Media ADC1's superior down-conversion design—made possible in part by the latest chip technology, the unique UltraLock low-jitter clock, optimized analog input circuitry and the four multiformat digital outputs—makes it a worthy studio tool that will sound great for years to come. I highly recommend it as a way to instantly upgrade the recording quality of any studio.

Price: $1,775 MSRP.

Benchmark Media Systems, 800/262-4675, www.benchmarkmedia.com. ■



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BY ROBERT BROCK

EastWest Quantum Leap Symphonic Choirs

Sample Library With Word Builder Software

The EastWest Quantum Leap Symphonic Choirs (EWQLSC) virtual instrument will change any preconceived ideas you may have about what sampled choirs can do. This instrument can sing just about anything; no syntho-voices here. The library uses real people singing in the same concert hall used to record the Quantum Leap Symphonic libraries that are also available from EastWest. But how does this system allow you to customize what the choir sings? EWQLSC accomplishes this by combining two core elements.

GIMME A SAMPLE

The first element of EWQLSC is based on high-resolution, 88.2 or 176.4kHz, 24-bit recordings made of every possible phonetic utterance a group of human voices might make when collectively singing in a classical choir style. Each set of vowel and consonant sounds was recorded with various intensities and at multiple room positions for soprano, alto, tenor and bass, as well as for a soprano boys' choir. The collection generates nearly 40 GB of data on DVDs.

The samples in EWQLSC are played back through Kompakt—a stripped-down version of Native Instruments' Kontakt sampler. It works with Windows and Mac OS X as standalone applications, or as a plug-in offered in VST, AudioUnits, RTAS and DXi formats. Kontakt/Kompakt optimizes the use of RAM by loading only the leading edge of every sample into memory. Once you play a note, the remainder of the note is streamed from the hard drive.

VOTOX INJECTION

This massive sample library is harnessed by an ingenious custom program called Word Builder. Word Builder allows you to enter what you want the choir to sing using a phonetic language called Votox. For example, the Votox translation for having the choir sing "Long live *Mix* magazine" is "long lEv mEX mA-gu-zEEn." Learning Votox can take some time, so Word Builder has a built-in dictionary of more than 100,000 words. This lets users enter words in conventional English, and the corresponding Votox translation is automatically entered. Very smart!

Word Builder also includes a graphical editor that allows detailed tweaking regarding how you want to shape the words. This provides control over the accents and elongations of any part of the word. Simply put, Word Builder is a phenomenal undertaking that puts this sample system into a league of its own.

MAKING IT ALL WORK

Installing EWQLSC is a somewhat convoluted process, as you're actually installing several individual components, such as the samples, Kompakt and Word Builder. Each of these elements has its own issues in terms of acquiring the appropriate updates and jumping through copy-protection hoops. Copy protection for both Kompakt and Word Builder is based on a challenge/response system that is referenced to your computer.

Unfortunately, Word Builder is a separate application that's not integrated into the Kompakt instrument. Therefore, configuring Word Builder with your host application and getting into the correct position in the MIDI signal flow becomes less than intuitive. I was using EWQLSC on a Mac with OS 10.4 running Logic 7.1. Although much of the included documentation was clear, the parts that dealt with setting up Word Builder in Logic were confusing and contained inaccurate and inconsistent information.

Once I weeded through the initial setup issues, the system was fairly easy to use. Considering the complexity of what it was doing, using Word Builder seemed remarkably simple. However, having to run Word Builder as a separate application adds some extra steps. This also creates some logistical issues connected with your host application. For example, in Logic, I lost any simple method of freezing tracks once I had the choir sounding how I wanted it. Also, when saving my song in Logic, I had to remember to save my corresponding choir setup in Word Builder.

Another issue: The option of choosing from multiple microphone positions (close, medium or far) is fantastic, and the manual recommends experimenting with blending the various mic positions. Unfortunately, the manual doesn't explain how to do it, and it isn't obvious in the user interface as to how to accomplish this.

Top: Samples are played back through Native Instruments' Kompakt. Above: phonetically working with Word Builder.

THE FINAL WORD

The library's biggest weakness is that it tries to put an extremely unique idea into a preconfigured, one-size-fits-all interface. It works, but it would be much simpler, more powerful and fun if EWQLSC had a customized sample playback instrument with Word Builder built in. However, don't let this deter you from experiencing this incredibly powerful and unique tool. It sounds awesome, and there is simply nothing else like it.

Price: $995.

EastWest, 800/833-8339, www.soundsonline.com. ■

Robert Brock is an engineer, educator, composer and pianist in the Phoenix area.

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Josephson C617SET Condenser Microphone

Smooth, Versatile, Small-Capsule Omni

Founded by David Josephson in 1989, Josephson Engineering is a boutique mic shop. Unfortunately, most engineers have never used Josephson mics—or perhaps they just don't know that they have.

As an OEM supplier, Josephson has manufactured capsules for Manley's Gold Reference mics and for Groove Tubes' (pre-Alesis) Series 2 and Series 3. The company has also built instrumentation mics for Meyer Sound and SYSid Labs. Josephson keeps a low profile, which is a shame, because this small, Santa Cruz, Calif.–based company consistently offers excellent products.

I decided to check out a matched pair of Josephson C617SETs. Each mic has an all-Josephson body and a Josephson-branded Gefell MK221 half-inch diameter, 0.9-micron-thick nickel capsule. The body is based on and refined from the C606 mic; the C617SET uses improved FET front-end circuitry that is combined with a balanced, bipolar, Class-A symmetrical output stage.

Although the body requires standard 48VDC phantom powering, the mic provides full 200-volt polarization potential for the Gefell capsule. This higher voltage lets Josephson use a lab-grade measurement capsule that is noted for its accurate off-axis frequency response and a more true omni polar pattern at higher frequencies. The small nickel diaphragm can be tensioned much higher than a traditional Mylar design, providing a very fast transient response, all of which translates into very good audio.

A VERSATILE PLAYER

The C617SET is adept across a number of studio applications. For starters, I heard them on a recording of a Yamaha C5 Grand piano. The sound was well-balanced top to bottom with no high-end hype. The recording sounded as if you were in the room with the instrument—the mic is very revealing and uncolored. What you hear live is what you get with the C617SET.

For this application, the mics were placed in a spaced pair about eight inches from the hammers. At first, I tried placing the mic about two feet from the open end of the piano, but that brought too much of the room into the mix. To adjust this, the mics were moved closer over the hammers, which mixed more of the direct sound of the piano into the mix—perfect.

Next I used them as a spaced pair of overhead drum mics. They produced rich sonic detail and a beautiful stereo picture with no smear or harshness, even when the cymbals were hit hard. There was plenty of bottom end from the kick and toms, providing an accurate picture of the kit—a great feature. I was able to get most of the mix from the overheads with the tom mics used as fills. I also used them as room mics with equally good results. Once again, the mics produced a rich, balanced tone with plenty of punch in the kick.

The mics also excelled on acoustic guitar. The C617SETs were placed in an ORTF-like array about eight inches in front of the player, centered in the area between the soundhole and the place where the neck meets the body. The tone was full with plenty of definition in the high end, perfectly bringing out the sound of the pick hitting the strings. The tone was not boomy at the bottom or hyped at the top.

The mics' uncolored nature was quite evident in this application—the guitar had dead strings that were in need of changing. Once they were switched out with new strings, the tone was much better, with the high end becoming more "in your face." A pair of cardioid condensers put up on the same guitar during the same session hyped the high end and did not reveal this. The cardioids also had a dip in the midrange and were hands-down losers in comparison to the Josephsons.

A single C617SET was just the ticket for recording a soprano sax. I sent it through a Rupert Neve Design Portico 5012 dual mic preamp without the Silk button engaged. The mic was placed six inches in front of the horn, pointing at the keys about six inches above the bell. It tamed the usually screechy quality of the horn in the upper register, and a colleague of mine was in awe that there was not a compressor on the horn to smooth it out. It sounded like a record.

CAN YOU HANDLE IT?

The word that best describes the sound of the C617SETs is "real." In every application, the tone was balanced—there's plenty of body without boom and a beautifully detailed high end that was never brash, even under high SPL. The C617SET renders cymbals beautifully. At a distance in the room, it imparts a silky smoothness that you have to hear to believe. Up close, directly over the kit, the sound is once again balanced and beautiful.

No matter what I threw at this pair, I was pleasantly surprised at the outcome. However, in some applications, I did find that the mics' "truth" hurt, telling me that, in the case of my guitar recordings, the source was in need of a string change or an altogether change of instrument.

The truth about the C617SET also hurts the budget: The C617SET body alone is $960, and with the addition of the Gefell MK221 capsule, the price goes up to $1,840. (Yes, you can choose to use another type of compatible capsule.) But isn't the truth worth it? It's like having a good friend in your mic locker who will always give it to you straight.

Josephson Engineering, 831/420-0888, www.josephson.com. ■

Kevin Becka is the technical editor of Mix.

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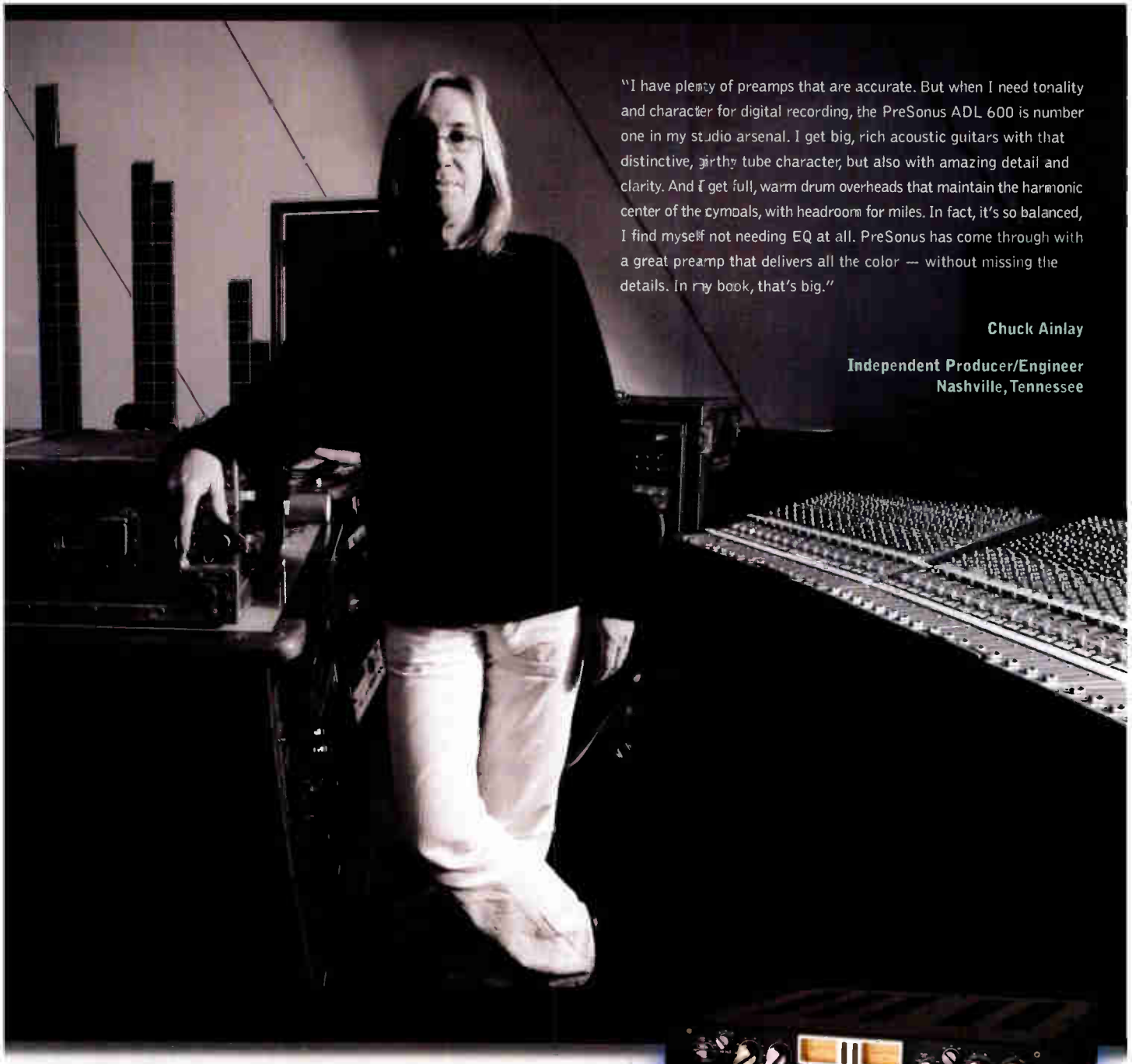

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Snapshot Product Reviews

E-MU PM5 PRECISION MONITORS
Powered Near-Field Speakers

After decades of creating high-end sampling, synthesis and pro recording gear, E-mu Systems unveiled the PM5—its first studio monitor—at last year's AES show. The PM5 is E-mu's first speaker product, yet this is hardly a freshman effort. The company partnered with noted audiophile designer Jun Makino of Majeel Laboratories, which is known for its advanced power amplifiers and Nagisa line of active speakers.

Housed in a front-ported, 11.5x6.9x9.7-inch (HxWxD) enclosure, the PM5 is a two-way, bi-amplified system with a 5-inch glass-fiber cone woofer and a 1-inch neodymium soft-dome tweeter. Each driver is powered by a 40-watt custom discrete amplifier with a Class-A input stage and MOSFET output devices. An LED on the front baffle glows blue for power-on and switches to red if the PM5's onboard overload-protection circuit kicks in. The active crossover is a second-order (-12dB/octave) Butterworth-type, centered at 2.5 kHz.

The rear panel sports a standard IEC AC socket, power switch and a large heat sink that keeps the operating temperature under control. Also on the back are input jacks (Combo ¼-inch/XLR balanced and unbalanced RCA), a rotary input sensitivity knob and two three-way switches (treble tilt and bass roll-off), with settings for attenuating low/high-frequency response to match your room's acoustics or personal taste.

The PM5s impressed me with their response, especially given their compact size. E-mu rates the monitors' LF response at 67 Hz (-2.5 dB), but they go well below that figure and give the impression that you're listening to a much larger system. The 1-inch tweeters offer unhyped highs and smooth uncolored mids, and the crossover point is nearly undetectable. Max SPL is rated at 103 dB/1m, but I usually monitor at around 80 to 85 dB, which allowed tons of headroom and punchy transients. Makino's amplifier design philosophy is to come as close as possible to a straight-wire approach, and the PM5s' low-distortion amps deliver clean reproduction during long listening sessions without ear fatigue. I like that.

The monitors also provide excellent stereo imaging with a realistic soundstage. Better still, mixes made on the PM5s translated precisely to other media, large and small. At a street price of $249.99 each, the E-mu PM5s are compact, accurate and affordable. And this spring, when the optional PS12 subwoofer begins shipping, the system should be even better.

E-mu, 831/438-1921, www.emu.com.

—George Petersen

U-HE AUDIO FILTERSCAPE
Resonant Filter Plug-In

Rhythmic effects are essential in pop music, as is the squelchy sound of resonant filters. Filterscape combines the two in a package that is powerful and affordable ($129, direct Web purchase only), sounds great and serves up some unexpected extras.

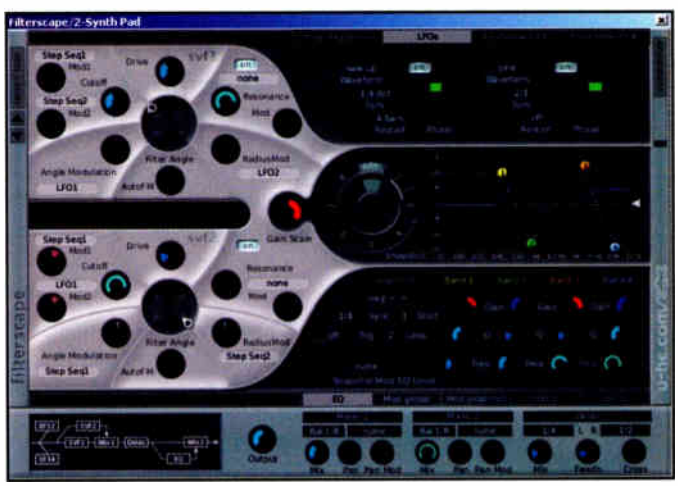
The plug-in runs under AudioUnits on a Mac and VST in Windows. Its main components are two resonant state-variable multimode filters with overdrive, a 4-band morphing parametric equalizer, two LFOs, two 16-step sequencers, four envelope followers and a stereo delay line. All of the modulation sources sync to the host's clock, and there are so many parameters to modulate that I couldn't help but wish for more LFOs. MIDI modulation inputs can be used if your host routes MIDI to effects and, of course, if automation is supported.

The audio signal paths among the modules can be configured in five different ways: not just series and parallel, but with the EQ in the delay feedback loop, with both filters in parallel within the delay loop and so on. The morphing equalizer is a revolutionary design. You can sweep back and forth among eight different curves. In addition, each of the eight snapshots has its own modulation inputs for changing the gain, frequency and bandwidth of each band while the music plays.

I've used Antares Filter, which is comparable to Filterscape in some ways. For example, Filterscape has only one delay line and two filters to Filter's four, but Filterscape's overdrive and the extreme possibilities for the EQ give it a more edgy, modern sound. I liked it on drums and other tracks, but I generally needed to follow it with a compressor to tame the extreme resonant peaks.

When you buy Filterscape, U-HE also throws in FilterscapeQ6, a 6-band version of the morphing EQ. It only has the four envelope followers for internal mod sources, plus external MIDI. As in Filterscape, the followers can track low, mid or high frequencies, or the entire input signal. The threshold is adjustable, and the output curve can be smoothed—just the thing for livening up a ho-hum drum loop.

The third part of the package—included with Filterscape at no extra charge—is FilterscapeVA, a full-featured, two-oscillator, virtual analog synth plug-in. FilterscapeVA



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has one multimode filter and the 4-band morphing EQ. It also sports basic FM, versatile waveform modulation, a slick little arpeggiator, its own chorus and delay, and hundreds of great presets. I loved the instrument's crisp sound, which held its own in an all-electronic arrangement against much more expensive synths.

That's three plugs for the price of one, giving Filterscape the best cost-to-performance ratio of any download I've seen in years.

U-HE Audio, www.u-he.com.

—Jim Aikin

ART TUBE MP—PROJECT SERIES
Preamp/Limiter/Direct Box

In 1995, Applied Research & Technology (ART) unveiled its Tube MP, which packed single-channel tube preamp/direct box functionality into a package barely larger than a stompbox. Best of all, it sounded respectable and cost less than $100, earning a TEC Award nomination in the process. Now, a decade (and more than 100,000 units) later, ART has upgraded the original with the Tube MP—Project Series.

This is not just a simple makeover; the new unit is completely redesigned, with front-mount controls, illuminated switches, a 4-LED gain meter, mic input impedance select, FET peak limiter, selectable highpass filter, XLR and ¼-inch I/Os, and a beefier (but still wallwart) power supply. The chassis is stackable, but it could use a threaded point underside for rack tray mounting. MSRP is a "pick up several" $79.

No mysteries here: It's just plug in and go. I was immediately surprised by the cleanliness of the new model's discrete preamp circuit. Response is only -1 dB at 40 kHz, and noise is almost nonexistent. That said, it *is* possible to grunge things up and overdrive the 12AX7 tube stage, as the input control is wide-ranging, offering up to 65 dB of gain on the mic side; the output XLR is capable of pushing up to +26 dBu. Both XLR and ¼-inch outs are always active, useful for doing recorder/P.A. splits, etc. At the same time, headroom is much improved as compared to the original.

The switchable peak limiter kicks in before the tube and, unless pushed to extremes, is mostly invisible and does a decent job of protecting against overloads. The Bessel design, 40Hz highpass filter effectively removes rumble without gutting or destroying the signal. Another new addition is an input impedance switch on the XLR input. The "high/low" marking on the front panel refers to 4.7k/600-ohm impedance switching. The switch worked fine left in the "high" setting with every mic I tried, but there's no harm in using whichever setting you prefer. The unbalanced ¼-inch input is set at 1 Megohm, and is ideal for direct guitars or basses.

The unit's Project Series name may imply that this new Tube MP is not up to pro specs—wrong! I doubt this preamp is going to replace the ViPRE/LA-2A or Millennias I normally use in my vocal chain, but at a paltry $79, this new unit outdoes the original Tube MP in performance and features. It's a handy addition to any studio, large or small. Better still, ART is releasing a USB output version for $129 in a couple months—perfect for the podcasting crowd.

Applied Research & Technology, 585/436-2720, www.artproaudio.com.

—George Petersen

MIDDLE ATLANTIC PRODUCTS
Split Screen Pop Filter

Middle Atlantic Product's Music Accessories line now offers the new Split Screen Pop Filter. The $45 unit uses APDT (Air Pressure Dispersion Technology™), one of many innovations that makes this screen very effective in filtering breath-caused plosives. Though this new filter may look like a typical hoop-style pop screen, upon closer inspection, it is easy to see that it's an all-new, re-engineered design.

The Split Screen Pop Filter uses two fully washable, 90-percent nylon screens. The two screens face each other and are in durable, molded-plastic surrounds with textured finishes and non-parallel internal surfaces said to prevent frequency resonances. A 1-inch air gap (open on all sides) separates the screens. This air gap is key to the filter's efficiency. In use, the first screen diffused the main brunt of air blasts and then the middle air gap and surrounding openings vented the wind sideways. Finally, the second screen diffused what little forces were left before they hit the mic.

The pop screen's dual surround has hardened threads and screws onto a 13-inch gooseneck that easily conforms to any shape or position. The gooseneck stayed in any position without a fight because of its dual-wound construction: a steel coil inside another steel coil.

The stout, ⅛-inch steel C-clamp mounting bracket, called an Omni-Clamp, has a brass clamping screw with a knurled tension knob. The padded return added extra grip and makes for easy attachment to most mic stands or booms without knuckle-busting tightening or scratching. Both the Omni-Clamp and the gooseneck are coated in black chip-proof E-Coat™—an environmentally friendly electro coating that's stronger than paint.

The Split Screen Pop Filter is a simple and effective device that can take all the punch and energy out of the worst "p," "b" and "t" sounds without drastically removing the high frequencies. It's a must-have for studio vocal recording, voice-over or radio announcer work.

Middle Atlantic Products, 800/266-7225, www.music-accessories.net.

—Barry Rudolph ■

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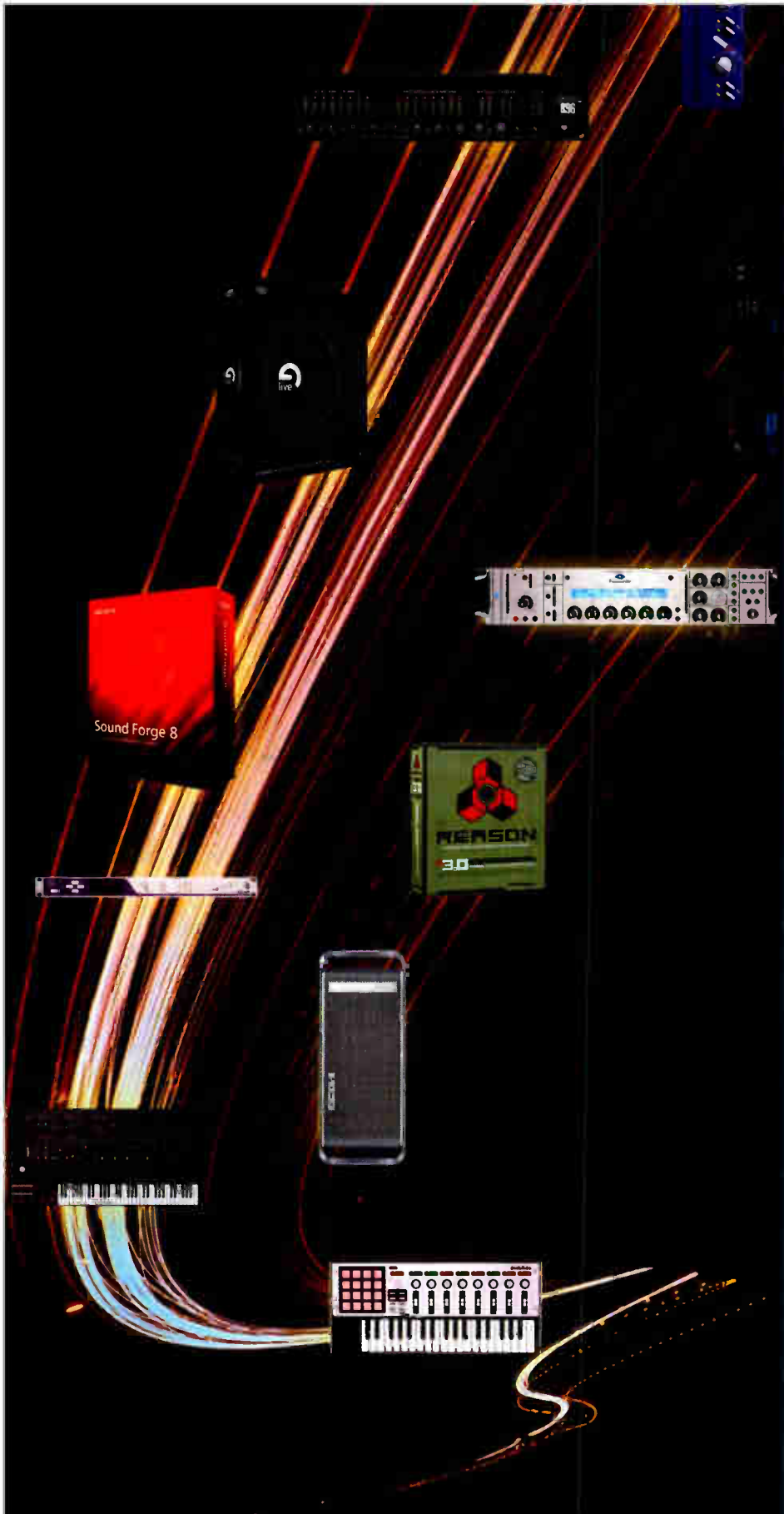

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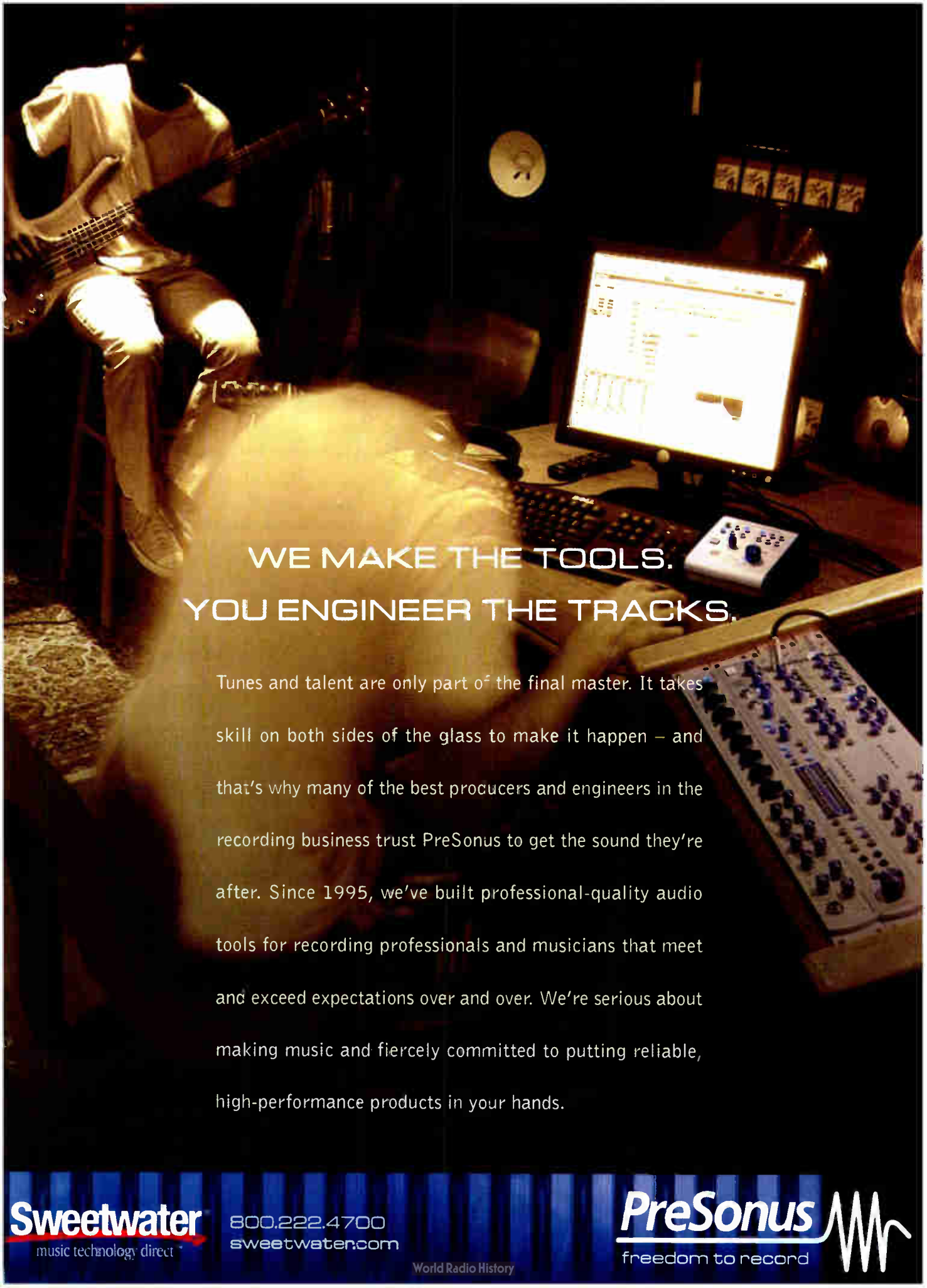

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The Darkness, from left: bassist Richie Edwards, drummer Ed Graham, vocalist/guitarist Justin Hawkins and guitarist Dan Hawkins

PRODUCER ROY THOMAS BAKER LIGHTS UP THE DARKNESS

By Paul Tingen

The members of British heavy rock band The Darkness don't take themselves too seriously. With tongue somewhere near cheek, they say that their concerns during the recording of their new album, *One Way Ticket to Hell...And Back*, included "the exhaustion and the fear, the pressure, paranoia and pan pipes, the breakdowns and the breakups, the sackings, sitar solos and endless studio sessions."

Producer Roy Thomas Baker, the man behind the "endless studio sessions," has worked on numerous rock records.

PHOTO: JIM STEINFELDT

Mix will leave the "paranoia," "breakdowns" and "sackings" to the tabloids, but we definitely want to know more about the "endless studio sessions." The man in the know is Roy Thomas Baker, the legendary producer behind pioneering albums by Queen, The Cars, Journey, Foreigner, Devo and many, many more.

The pairing of Baker and The Darkness is a marriage made in heaven, and has been in the cards ever since the band entered the public consciousness with *Permission to Land*, which sold some 3.5 million copies in 2003. Take a lead singer (dis-)graced with leotard suits and a balls-in-the-bench-vice falsetto, add music that takes its inspiration from 1970s hard rock, season with lots of operatic pomp, and you have a band that can lay claim to being the 21st-century heirs to the likes of Led Zeppelin, Queen, AC/DC, Slade and other rock bands from rock's golden age.

Baker's name, meanwhile, will forever be associated with Queen albums such as *Queen II* and *Night at the Opera*, which contained the track "Bohemian Rhapsody," the band's ode to rock 'n' roll bombast, and was filled to the brim with overdubs. It was the highpoint of what Baker calls his "kitchen sink production time: Any idea that we had, we just threw it on." It looks as if Baker has revived his kitchen sink production approach with The Darkness. And how.

On the phone from his studio near Lake Havasu, Ariz., Baker frequently roars with laughter as he describes the Spinal Tap–like excesses that went into the creation of *One Way Ticket to Hell...And Back*. They include 50-odd guitars in the control room

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AFTER KATRINA

"SING ME BACK HOME" TO NEW ORLEANS

By Blair Jackson

Last summer's two horrific Gulf of Mexico hurricanes—Katrina and Rita—destroyed countless lives and caused unimaginable damage to both the physical and social infrastructure of Louisiana and Mississippi. Talk all you want about rebuilding, New Orleans will never be what it once was, and that is an immense tragedy in itself. The hurricanes also dispersed New Orleans' sizable population of musicians all over the country like seeds; these suddenly rootless evacuees have struggled to find their way in new cities and towns. But the nation has opened its arms (and ears) to New Orleans' musicians, and it's no surprise that in the wake of the hurricane ,a number of exceptional music projects featuring the Big Easy's best

A calvacade of Crescent City artists and musicians gathered in Austin to record Sing Me Back Home. From left: Leo Nocentelli, Henry Butler, Raymond Weber, Leo Sacks, George Porter Jr., Ivan Neville and Ray Bardani

have come out. For the musicians, playing music can be like a healing balm, plus all of the CDs have benefited various charities helping the storms' victims.

In the fall, the Katrina-related releases included Dr. John's powerful *Sippiana Hericane*, the live *Higher Ground: Hurricane Relief Benefit* (both in Jan. '06 *Mix* "Cool Spins") and the exquisite bayou all-star album *Our New Orleans 2005*. (See "Back Water Blues," page 136.) Now comes the moving and joyous *Sing Me Back Home*, featuring a wonderful assortment of some of the Crescent City's top singers and players—billed collectively as the New Orleans Social Club—captured during one very emotional week in Austin, Texas, last fall.

Sing Me Back Home was conceived by noted New York–based reissue and compilation producer Leo Sacks, whose impressive credit list includes multiple works by The O'Jays, Isley Brothers, Earth, Wind & Fire, Patti LaBelle, Marvin Gaye and many others. When Katrina hit last August, "I was sitting in my new home in Cold Spring Harbor, New York, horrified like everyone else," Sacks says. "I knew which neighborhoods were being hardest hit because I've spent over 25 years going down there, first as a reporter covering Jazz Fest for *Billboard* and then developing friendships there. As those waters rose, a lot of people knew I had close relationships in New Orleans and started e-mailing me about what was happening there. I couldn't believe it."

One thing led to another and eventually, encouraged by Columbia Records president Steve Greenberg, Sacks came up with the idea for *Sing Me Back Home*, which is being released this month on Burgundy Records, a new Sony/BMG imprint. "Within an hour of envisioning this record," Sacks says, "I knew who I wanted in the core band and which guests I wanted, too. With Cyril and Ivan [Neville, of the famed New Orleans musical family] having relocated to Austin, I thought that might be a good place to record. Then it became the logistical challenge for Kimball Packard, who manages Henry Butler and John Boutté, to bring everyone into Austin. I thought it was important to make the record as soon as possible, because emotions were so fresh and so raw. We ended up doing it in the second week of October, less than six weeks after the event. A lot of the cats still didn't really know the state of their homes.

"That was the significance of creating a sort of community in the studio," Sacks continues. "I think of musicians as healers, and these musicians were in need of healing themselves. It was important that they were all gathered in one place and played some music together, like a real group."

And what a group it was. The "core band" comprised two members of New Orleans funk kings The Meters—guitarist Leo Nocentelli and bassist George Porter Jr.—Ivan Neville on organ, Butler on piano and the hot young drummer Raymond Weber, who plays in Ivan Neville's band, Dumpster Funk. The Social Club's "guests" included Cyril Neville, Dr. John, Irma Thomas and Marcia Ball, Big Chief Monk Boudreaux, The Subdudes, Willie Tee and others.

"I wanted the musical continuity we could achieve with a house band, and I also wanted thematic continuity," Sacks says. "I didn't want songs about flooding; I didn't want songs about rain. I wanted to celebrate the musicality and the spirituality of the

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THE POINTER SISTERS' "YES WE CAN CAN"

PHOTO: HERB GREENE

By Blair Jackson

When the Pointer Sisters burst onto the national scene with "Yes We Can Can" in mid-1973, they seemed completely different from any other popular group of the time. The Oakland, Calif.–born sisters—Anita, Ruth, June and Bonnie—clearly had some gospel music in their background and oodles of "soul," but they also had a look and sound that hearkened back to the '30s and '40s, with echoes of Billie Holiday and the great female big-band singing groups. Nobody was going to confuse these girls with The Supremes. And "Yes We Can Can" was the perfect vehicle for their intricate harmonies and upbeat attitude: The song, written by the great New Orleans producer/songwriter Allen Toussaint, had been a minor R&B hit for Lee Dorsey in 1970 (Dorsey had previously had hits with such Toussaint numbers as "Ya-Ya," "Working in the Coal Mine" and "Get out of My Life Woman"), but it was essentially unknown in rock music circles. The Pointer Sisters, it turned out, successfully bridged the white and black music worlds, and "Yes We Can Can" was precisely the kind of optimistic anthem of harmony and brotherhood that seemed to strike a universal chord at a politically volatile and divisive time.

"Yes We Can Can" was one of a number of fine songs the Pointer Sisters recorded at the suggestion of David Rubinson, who produced their first few albums. "I had loved the original of that song," Rubinson told me recently by phone from Jamaica where, now retired from the music business, he lives several months a year. "In fact, I loved almost everything Allen Toussaint ever wrote; what an amazing man! But I could really hear the Pointer Sisters doing that one, and in that case, my instinct was right."

By the time Rubinson and his studio partner, engineer Fred Catero, recorded the Pointers' eponymous first album, he was already well-established in the Bay Area recording community. Originally from Brooklyn, N.Y., Rubinson got his start at CBS Records in New York in the mid-'60s, at first doing Broadway soundtrack work, then moving into other genres, working with everyone from Mongo Santamaria to the Clancy Brothers to comedian Phyllis Diller. Along the way, he went to San Francisco and checked out the burgeoning rock scene there in the late '60s, producing classics such as Moby Grape's first album and the Chambers Brothers' *The Time Has Come*, and falling in love with the area. After he was unsuccessful in his attempt to get CBS to open a major studio in San Francisco (that would come later), he and Catero left New York and moved to the Bay Area as independents (still a rarity in 1969) and set up shop in a mid-sized studio called Pacific Recording in San Mateo, south of San Francisco. Outfitted with a custom console and one of the first Ampex MM-1000 16-tracks when the New York duo arrived, Pacific Recording later acquired a Quad Eight console when those came in vogue; that was the board they used to record various projects by the likes of Herbie Hancock, Taj Mahal, Cold Blood and others. For a while, Rubinson worked as part of Bill Graham's Fillmore Corporation, but by 1972, he had broken off and formed his own production and management company, David Rubinson & Friends (of which Catero Sound was one element).

The Pointers, meanwhile, were following their own path. Bonnie and June sang as a duo in Bay Area clubs; after Anita joined, they went to Houston hoping to make a dent in the music scene there, but ended up broke and desperate instead. A call to Rubinson, who had admired their talent but did not know them well personally, brought them enough money to return to the Bay Area, where he started to use them as backup singers on projects by Cold Blood, Elvin Bishop and others.

"The greatest thing about the Pointer Sisters back then is they hadn't been brainwashed by anything," Rubinson reflects today. "Not by religion or ghetto life—they didn't really pre-conceive who they had to be and what they had to look like or sound like. They were very open. But they were also *sui generis*; there's no place they really fit, which is why I was so attracted to them. I remember very early on I gave them a Lambert, Hendricks & Ross album, which they'd never heard, and a couple of days later, they came back with it learned. It knocked me out. They were singing with Sylvester, which I think is part of how they were influenced to wear thrift-store clothes and boas and all that, and they seemed to be able to sing just about anything."

Catero notes, "David was one of those people who, if someone had raw talent, if you were undirected but artistic and had a lot of energy, he could mold them into a viable act. That's what happened with the Pointer Sisters. He really

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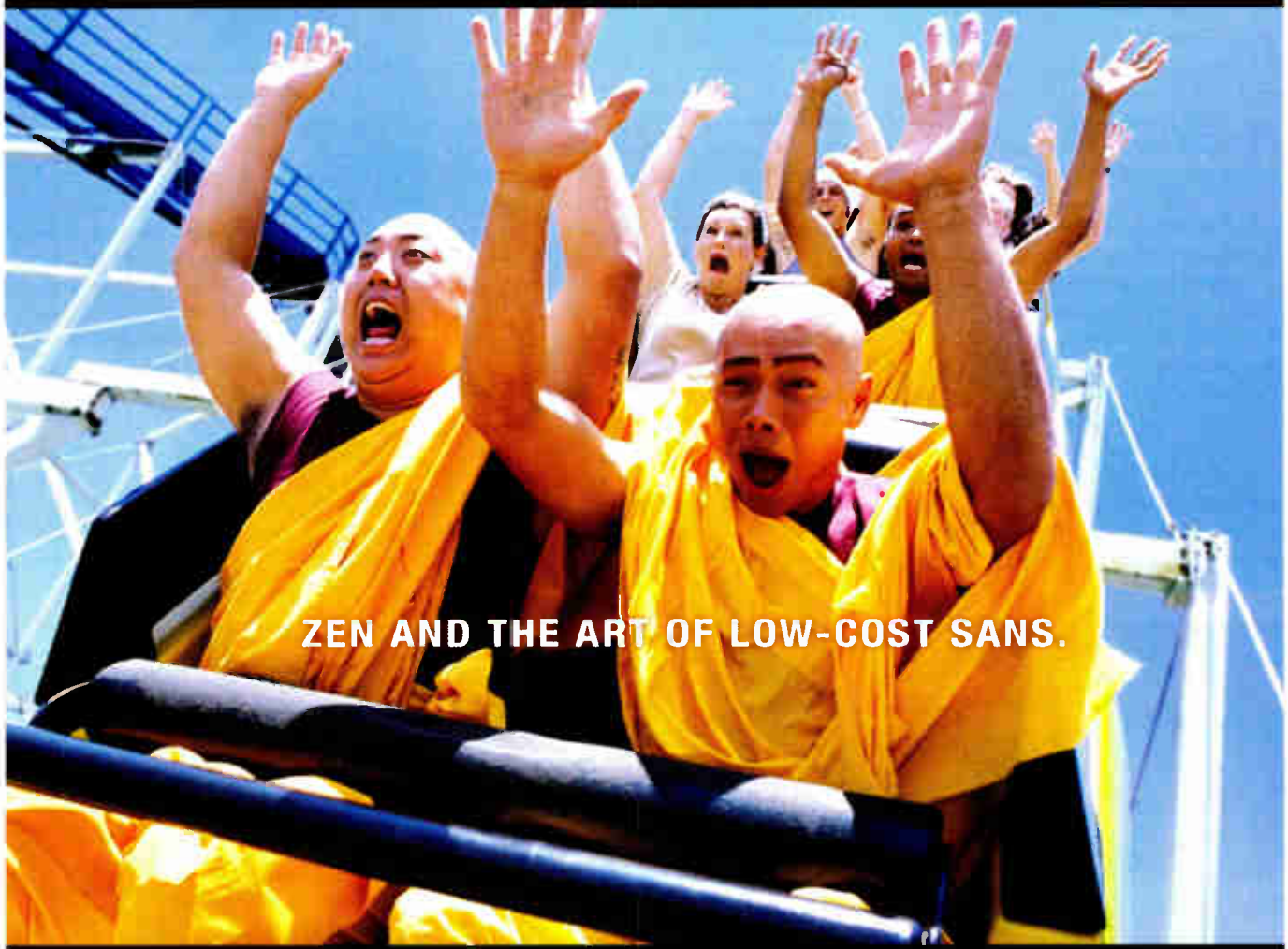

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shaped them and directed them and found what they were best at. So much of that first album was songs and ideas that he came up with."

Rubinson and Catero almost didn't get the chance: The Pointer Sisters first sessions were cut for Atlantic Records, but that label was interested in a more traditional "soul" sound, and neither the group nor the label were pleased with the results. So in early 1972, Rubinson signed the band to a management deal, and it was around that time, too, that sister Ruth joined the group. That fall, they went into Pacific Recording and started work on the group's first album, beginning with "Yes We Can Can," "Jada" and "Cloudburst" (all of which they had demo'd before the Atlantic Records debacle). As fate would have it, midway during the recording of the album, Rubinson and Catero left Pacific Recording for good and moved their operation to Studio A of Wally Heider Recording in San Francisco, the hottest facility in town. "We were busy, busy, busy," Catero recalls. "It seems like we barely slept." Studio A, too, was equipped with a Quad Eight console, but by '72, Heider's had switched from Ampex 16-tracks to 3M models. The studio was a famously good-sounding tracking space, with a nice complement of high-quality microphones and a great-sounding echo chamber.

"I know we did the basic track for 'Yes We Can Can' at Pacific Recording," Rubinson says. "I can remember recording [drummer] Gaylord Birch there—getting that bass and drum part down that was the foundation of the song." (On the album, there are no musician credits for individual songs, but Rubinson's recollection is that the bass on that song was played by Richard Greene of the Hoodoo Rhythm Devils, whose *nom de bass* was Dexter C. Plates. Ron McClure played bass on most of the album, however.) The guitarist was Willie Fulton, "who had really invented this whole funky, slinky sound as part of Tower of Power," Rubinson continues. "Boy, was he funky!" Fulton laid down a rhythmic *thwack* all through the song, and later added an overdubbed lead part. And really, that was *it*: The rest of the track is the intricate vocal arrangement, with Anita's lead dancing above *perfect* group harmonies for nearly all of the tune's six minutes.

"We used to rehearse our asses off to get the vocals right," Rubinson says. "That's one thing I really believed in. Because if you got the vocals down in advance, then you could get free in the recording and have some fun. When you hear some of the other vocals on the first album, we let them be raw; we didn't refine some things. And that makes them sound very human. The best thing about 'Yes We Can Can' is that Anita's vocal is so human and so real, and then the way it meshes with the background vocals and the double layers going against each other is very organic."

Rubinson says that he always liked to record vocals live with the band playing, "and then we'd go and put in the background vocals and leads and we'd see what spaces were around rather than putting down a whole bunch of [instrumental] tracks and trying to fit the vocals around that. Having all those vocals that double-back on each other didn't leave a lot of room for other things, so we left it simple. It's funny, because later, after the song was done, various people asked me, 'Aren't you going to add some horns? Don't you think it needs some keyboards?' And I'd look at them stupefied because it was right *there*; there was nothing else needed."

When it came to recording the Pointers, "I never liked to put a group of vocalists on their own mics because they know what their blend is better than the engineer and I do," Rubinson says. "They balance themselves and they react instinctively and intuitively—they

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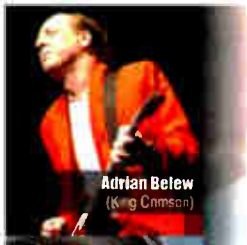

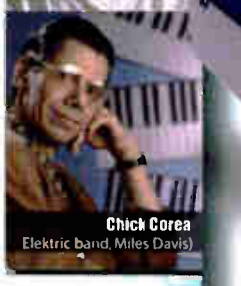

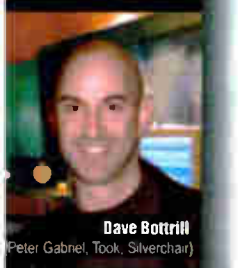

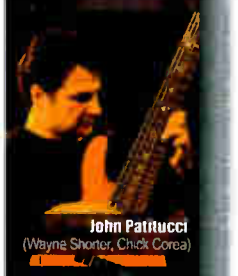

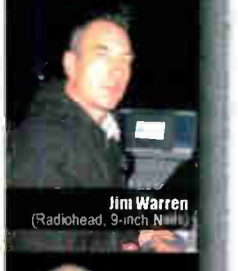

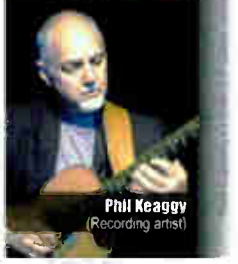

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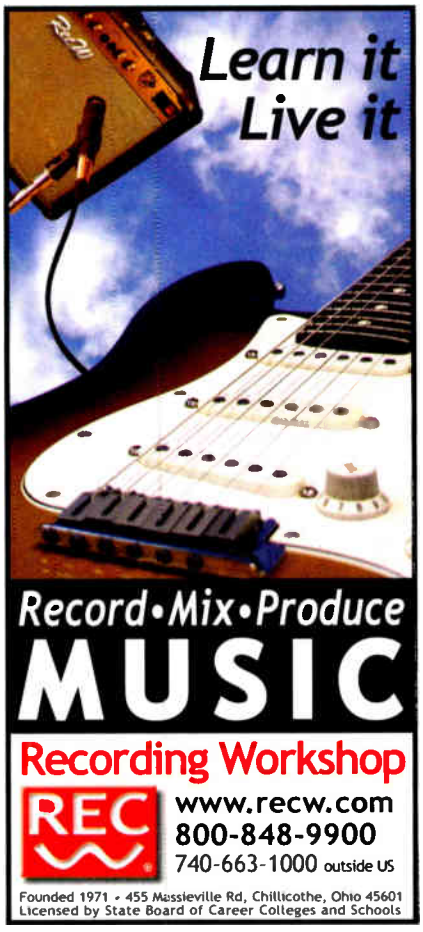

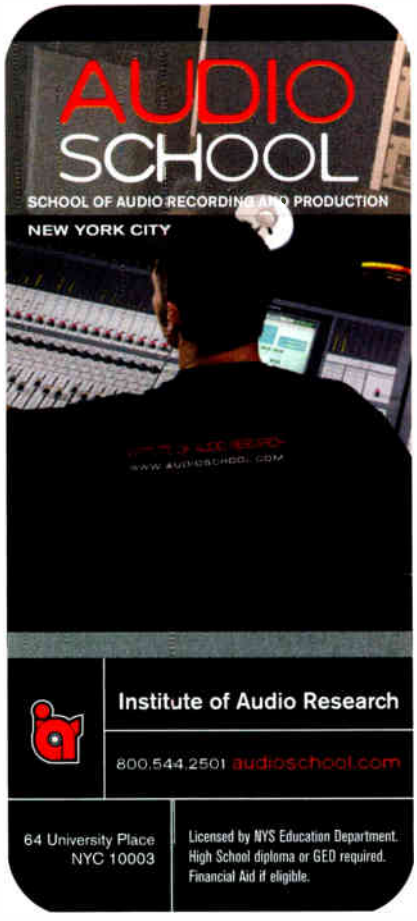

know when to move in, move out, shape the tones to match. When you have people all on different mics, you're dealing with headphones and the monitor mix and they're not hearing their blend the way they're used to. So to record the Pointer Sisters, we always put them around one microphone"; in this case, a Neumann U87. "The great thing about the 87 is it had a 360 setting; you could open it all the way around," Rubinson continues. "You could do a cardioid pattern or a 180 or a 360. I think when we were still at Pacific Recording, we might have used a [Neumann] 67, but we definitely used an 87 [at Heiders]."

"We didn't care about leakage," Catero adds. "Unless they were going to change vocal parts, it didn't matter. We always did as much as we could live in the studio."

Rubinson says that the intricate vocal parts—indeed, all of the tracking and overdubbing—was done fairly quickly, "a matter of hours, not days. We had a very limited budget—maybe $15,000 to $20,000—but beyond that, I never believed in whacking at vocals for hours and hours, and I didn't like picking three words from one take and five words from the other take. If you have good musicians and good singers, that shouldn't be necessary. I was more interested in getting good performances."

Clearly the formula worked. The album was released in March 1973 to immediate acclaim, and an edited version of "Yes We Can Can" stormed the airwaves that summer, lodging at Number 11 on *Billboard*'s pop chart and Number 12 on the R&B chart. This started a chart run for the Sisters (and Rubinson) that included "Fairytale," "How Long (Betcha Got a Chick on the Side)," "You Gotta Believe" and "Having a Party."

In the late '70s, Bonnie departed for a solo career and the remaining trio and Rubinson parted ways, as well. Then, with producer Richard Perry at the helm, they traded their vintage look for modern clothes, and they went in a more rock direction, scoring huge crossover hits with such songs as "Fire" (by Bruce Springsteen), "He's So Shy," "Slow Hand," "Automatic," "Jump (For My Love)," "I'm So Excited" and "Neutron Dance"—all cracked the pop Top 10. By the late '80s, however, their star had faded and they never regained their footing as a popular act. Even a mid-'90s turn back to their earlier style, spearheading a new version of the Fats Waller musical *Ain't Misbehavin'*, failed to turn the tide in their favor. But today, they still are fondly remembered as hit makers and true originals in a world filled with copycats and sound-alikes. And "Yes We Can Can" was the beginning. ■

ROY THOMAS BAKER

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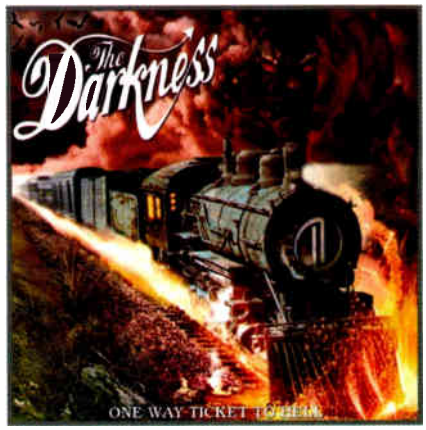
("Don't touch 'em, don't even point at 'em!"), up to 160 guitar overdubs per song and a similar number of vocal overdubs, orchestras, bagpipes, a sitar and, yes, a pan flute. Everything ended up on 400 reels of 24-track tape, and some songs expanded to 1,000 (!) tracks before they were whittled down to 72 tracks for final mixing. It truly boggles the mind and begs for the truth, the whole truth and nothing but the truth.

Pre-production for *One Way Ticket to Hell...And Back* began in earnest in October 2004, when Baker flew over to the UK to work with the band. "They are pretty unique songwriters, and they churn out a song a minute," recalls Baker. "We had what seemed like thousands of songs. The whole purpose for me as a producer in being there



was to work out what the best parts were and help evolve them. We were working arrangements out as we went along, and ended up with very clear ideas of the kind of arrangements that we wanted."

In the beginning of 2005, Baker and band moved to Rockfield Studios in Wales, where the producer had cut "Bohemian Rhapsody." The Darkness hired both studios for the first half of 2005, and for several months, Baker had the band over a barrel, recording the backing tracks—mostly drums, bass and rhythm guitars—in endless different configurations and locations, all to get the densely, subtly and richly textured sound he was after.

The story goes that you had as many as 120 overdubs in some songs.

Oh, of course, there were at least 120 guitar parts in many of the songs! Dan [Hawkins, the band's rhythm guitarist] has a lot of different guitars, and so we went, "Okay, the first half of this verse sounds good on this guitar,

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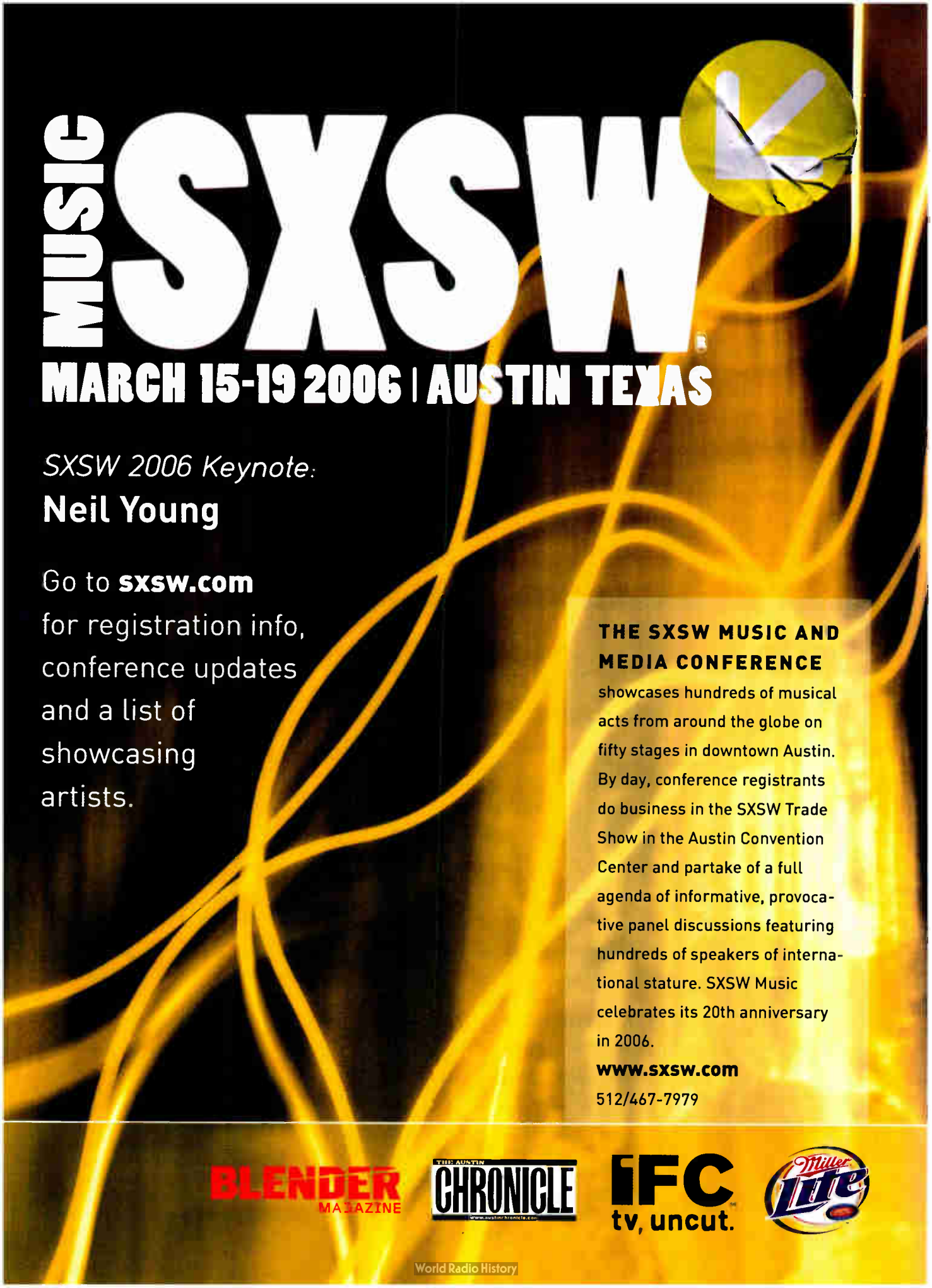

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but why don't we change to a different guitar in the second half and then go back to the first guitar for the chorus," but in a different tuning, or with different strings, or a different amplifier, or a different microphone and so on. By the time we multitracked all those, we ended up with up to 160 guitar parts on a good deal of the songs. If you listen closely, one set of guitars will come in and then a totally different set of guitars and then yet another set of guitars. In some places, there may be a bunch of guitars that comes in for just two seconds.

That sounds like a massive amount of work. How did you keep that in focus when working with the guitarist?

I like to have the guitarist and all his guitars and his amplifiers in the control room so the guitars are all at the same temperature and you never spend half an hour waiting for a guitar to stabilize and remain in tune. I also can have complete communication with the guitarist all the time. With the sound coming back from the monitors, you instantly know whether you have the right sound or not.

Dan had between 40 and 50 guitars in the control room during this stage of the recording. The amp heads are all in the control room because it's far better to push a signal than to pull it; running a short lead from the guitar to the guitar amp is better than running a long lead from control room to studio. We had the speaker cabinets outside the control room, wired in such a way that we could connect any amp head to any cabinet—each lead was marked and also had all the cabinets in different rooms. The microphones could be everywhere—hung from the ceiling, lying on the floor and so on—but we often had dynamic mics for close-up and antique tube-like mics for ambient. The microphones themselves were of every conceivable vintage and make, and we had everything ready to record via a preamp of our choice.

After the Rockfield period you went to Whitfield Street Studios in London. What did you do there?

Justin [Hawkins'] lead guitar and vocals, keyboards—not many people know that he's one of the world's best keyboard players—and the bagpipes. During the vocal recording, Justin was in the recording area, just behind the glass. We used the full ambience of the studio itself, and I put a whole slew of microphones around him—he looked a little bit like the president does during a press conference! All the mics went to the Neve mic pre's, which have a great sound.

Because I could have the mic pre's next to where Justin was singing, the signals were pushed into the control room, which gives a much better S/N ratio. We might use one or

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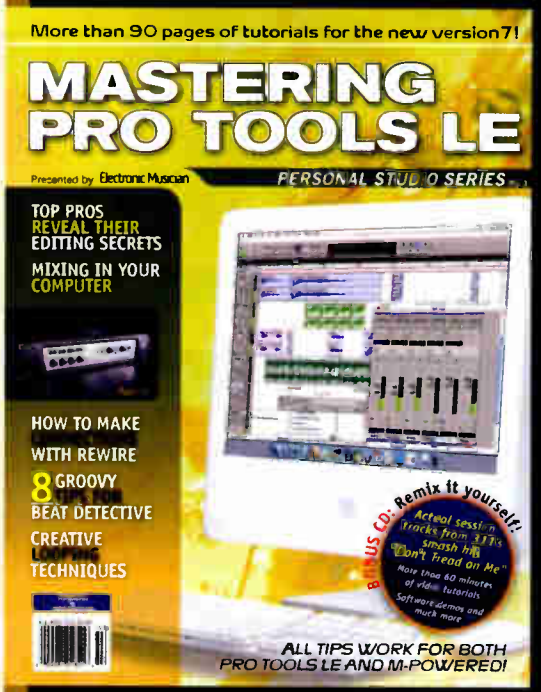

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two or six microphones at all sorts of different levels, EQ settings and so on to get the right vocal sound for a part of a given song. Sometimes, each line of each verse would have a different sound. I would also run his voice through a compressor, like a Fairchild or, something I particularly like, a Tube-Tech compressor going into a Tube-Tech EQ. On a track like "Blind Man," we could have 160 vocal overdubs, with me changing the sound of every part, especially the low ones. All this may sound a bit complicated, but it ended up being excessively slick. Obviously, his voice would sometimes get tired and then he would go on to playing keyboards or guitar.

You also recorded an orchestra at Capitol Studios in Los Angeles on 50-odd tracks. How much material did you end up with?

Oh, I filled about 400 reels of 24-track tape. We must have used the world's entire supply of tape at the time! We were trying to get a hold of more tape because we were wiping tapes that we had already used to make space for new overdubs. We had bunches of slaves. We might have a whole slew of guitars on one slave and then submix those to two tracks on another slave and carry on overdubbing onto that one. We were always submixing and bouncing backward and forward. It was very, very time-consuming.

How on earth did you organize all that material?

We were making a massive-sounding type of record. We were going for a huge, huge production sound; hence, all the overdubs. But we did not want to make a retro record. We wanted to get the best of both worlds, of old and new. I wanted to make a modern record. Since the aim was to go for the big, hybrid sound, we used analog 24-track to record on and then transferred everything to Pro Tools|HD and did our editing in there. I like utilizing the best aspects of both.

It sounds like doing everything in Pro Tools from the start would have made life much easier for you.

Analog gives you a nice, full texture that you cannot get any other way. When recording on analog, I make sure that the levels are at full tilt and the red lights are flashing. I press it exceptionally hard. For this reason, I don't need to use Dolby. We align the tapes so that everything is just on the verge of distorting, and the tape acts like a giant compressor. It's why I don't like to use outboard compressors during the recording stage because you stop the sound of tape compression from happening.

You mixed at the The Village in Los Angeles. Why?

I know the studio inside out and I really like mixing on their Neve 88R. I felt it was good

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to mix on something that's discrete—I'm a big fan of Neve. We did a lot of sub-bouncing inside of Pro Tools before mixing. Some tracks had loads and loads of guitars and vocals, and we'd end up with 1,000 tracks otherwise. That's impossible, so we got everything down to 72 tracks. We then set Pro Tools up with the Neve 88R and started mixing. I don't like mixing inside of Pro Tools because it feels a bit Mickey Mouse to me when you need a cursor to push up and down faders and so on.

Can you describe the mixing process?

For me, mixing is mainly balancing and giving the final tweaks sound-wise. Since I don't add much compression during recording, I may add compression. I'll be using old and new stuff during mixing, like Fairchild, Summit or Tube-Tech. Instead of sticking a Lexicon on the vocals, I used natural echo: echo chambers, plates or slap tape echo. And we mixed the album to half-inch analog on an Ampex 2-track and also back into Pro Tools as a comparison. We listened to both and found that the analog had a nice, big, saturated bass sound, while the digital had a really nice crispy top end. We ended up using the analog mix for mastering, adding some treble to make it sound as sparkling at the top end as the digital did.

Again, about the excessive amount of material that you amassed: How did you keep a clear head over what's good and what's bad?

You have to be mentally organized and make very good notes of everything you do. There were recording engineers who made sure that it all got to tape and who did the transfers to Pro Tools, which was also a task. But for me, there's no risk of not seeing the trees for the wood. It's totally the opposite. You get focused on what you think is appropriate for a song, and then you tune into different microphones and preamps and EQs and so on.

You have to know what your goal is. The band and I had discussed beforehand what we planned to do, and we mapped it out before we went into the studio. Of course it changes; it always changes. In the studio, you're running 100 percent on instinct, and you sometimes end up with something that's a lot better than you had planned. But the structure of every song on the album is exactly the way it was planned out to be. We had a vision of how the record was going to pan out, and we stuck to that vision, unless happy accidents happened. And I think we pulled it off. ■

AFTER KATRINA

FROM PAGE 123

old neighborhood because I didn't know if there would even *be* an old neighborhood to return to. So I wanted the spirit of the neighborhood bar."

In all, 13 tracks were cut in a week at Austin's Wire Recording, with New York–based engineer Ray Bardani handling the technical end of the sessions. "I sort of feel like I sent Ray into battle with a loin cloth and a spear," Sacks says with a laugh, "because there was so much to be done in such a short period, and it was tough running people in and out of the studio."

"It was complete craziness to get it all done in seven days," Bardani agrees, "but where there's a will there's a way. We captured the moment and the performances in the way those classic New Orleans records were made." Right down to recording analog. "Wire has this great API console that was just fantastic with the really good microphones we were using, the MCI JH-24 [recorder] and analog tape," Bardani offers. "I love the quality of what analog does with real instruments and real musicians."

Bardani says that Wire is "an interesting

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room. It's a medium- to small-sized room and the setup was hard, but once I figured out the layout, I was able to get what I needed, and luckily there was one extra iso booth I was able to use for each artist. It was a tight, intimate setup. We worked fast and got the whole thing on 10 rolls of tape. The rhythm section was *so* good. And on more than half the record, the vocal performances that were sung with the band were the final performances. The whole thing was really, really raw and alive.

"I didn't have much time to get sounds," Bardani adds. "You've got all these people waiting to do their songs, and people are flying in and out. George Porter was the musical director, and he did a great job of organizing things and keeping it moving. Each song was done to completion—if there were punches or more vocals to be done, we'd do it right then."

Bardani kept the miking scheme simple: The drums were miked with Neumann 87s and 67s, a Shure 57 and AKG 414; piano was two 87s; and guitar a 57. A Neumann SM2 stereo mic was used to pick up the sound of the music in the room. For vocals, he used a variety of mics: SM7s for singers with rawer, raspier voices; but also a Sony 800G, a Neumann 47 and an 87. "I put the vocals through Neve 1073 [mic pre's]; everything else was in the console—Massenburg compressors and the classic [API] EQs. That console sounded really, really good."

The recording basically went off without a hitch. The house band cooked, and all of the performers seemed particularly inspired. You can hear the raw emotion in the politically charged version of "Fortunate Son" by Ivan Neville. Dr. John—Mac Rebennack—couldn't make it to Austin, but he sat in long distance from New York for a funkalicious reading of "Walking to New Orleans," fronting those players he knows so well: "You got all my fellas,"

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Back Water Blues

RECORDING "OUR NEW ORLEANS"

Another worthy CD to come out of the Katrina tragedy is *Our New Orleans 2005* on Nonesuch Records. It's chock-full of stirring performances by a wide range of top New Orleans musicians, including Dr. John, Allen Toussaint, Irma Thomas, Buckwheat Zydeco, Beausoleil, the Dirty Dozen Brass Band and others. Unlike *Sing Me Back Home*, which was cut in one studio with a house band (and guests), *Our New Orleans* was recorded in September and October of 2005 at a variety of studios, using a number of different producers and engineers recording multiple lineups of musicians—also a logistical challenge. Some of the performances are spectacular, too: Toussaint rolling through "Yes We Can Can" (see "Classic Tracks"); Thomas, soulful and gritty on Bessie Smith's topical "Backwater Blues"; Ry Cooder unleashing one of his greatest slide guitar solos *ever* on Buckwheat Zydeco's "Cryin' the Streets"; pianist Eddie Bo breathing new life into "When the Saints Come Marching In"; Randy Newman fronting the Louisiana Philharmonic for a spellbinding version of "Louisiana 1927"; and on and on. All the musicians, engineers and studios donated their time.

The first sessions took place in Manhattan on September 20 and 21, 2005, following a big Katrina fund-raiser at Madison Square Garden. Working at Avatar Studios, producer Joe Henry and engineer Kevin Killen spent the afternoon of the 20th setting up, and then the band—a number of Henry's regulars—came in around 7:30 p.m. "We rehearsed the band until about 11," Killen says, "and we weren't sure what time Allen [Toussaint] and Irma [Thomas] were going

World Radio History

he told Sacks approvingly. (Bardani had recorded Dr. John's *Sippiana Herricane* at Bearsville Studios in upstate New York just before the Wire sessions.) Butler sings "Somewhere" from *West Side Story*, with genuine heartbreak: "There's a place a place for us..." And Boutté completely reinvents Annie Lennox's beautiful "Why." There's gospel, soul and even a buoyant reggae track: Boudreaux's, worked up on the spot from a poem the Wild Magnolias leader had written after the floods.

Once the week was done—and all of it was captured on video for a forthcoming DVD release, too—Bardani took the tapes to one of his favorite rooms in Manhattan—Right Track/Sound on Sound—and mixed on the SSL J Series console in the recently renovated Studio C. "The tapes sounded really good—we actually got the sound of the instruments to tape," Bardani says. "It really didn't need much—some balancing, a couple of rides and very little EQ. We were very fortunate. Everything seemed to go our way. And mixing there is sort of like home for me."

Bardani believes the musicians also got a lot out of the project. "This was like an oasis for them," he offers. "In the middle of what was a very weird time for them, they got to do what they do, which is play music, and keep their minds free. There were intimate, sad moments and moments when everyone had a great time, but in general, everything was always extremely positive."

"Whenever you gather together New Orleans musicians, you're going to get that grit and groove and gumbo, and I think that's what we got," Sacks adds. "But these were lives in transition, so we also got their uncertainty, their rage, their frustration, their desperation, their sadness, their heartbreak and, in the grandest way, in the spirit of great artistry, their vulnerability. It was an amazing thing to be a part of." ■

to show up from the concert. They probably came in around 11:30, and then we literally ran down the songs once and started cutting. We were ready to go; we just had to get our vocal levels. Everyone was really revved up." The next morning, Henry and Killen cut "Yes We Can Can" and "Tipitina" with Toussaint, as well as a track with the Dirty Dozen Brass Band. "It was extremely poignant," Killen notes. "These musicians didn't know if their homes had survived, if they even had a home to go back to." Killen mixed the tracks at Randy Ezratty's personal facility, Sevonay Sound, which is an ICON D-Command/Pro Tools|HD room. "We kept everything simple," Killen says. "Our approach was to document what was going down in the room, with a minimal amount of overdubs. I think it turned out really well."

Meanwhile, over at Clinton Recording (N.Y.), producers Doug Petty and Matt Sakakeeny and engineer Todd Whitelock were tracking the Wild Magnolias and the Perservation Hall Jazz Band for their tracks, and in the weeks that followed, more songs would be cut at Clinton, Avatar, Young Avenue Sound in Memphis, SugarHill in Houston and Avery Fisher Hall at Lincoln Center in New York, with a host of producers: Mark Bingham, Steve Epstein, Joel and Adam Dorn, Nick Spitzer, Ry Cooder and Hal Willner; and many fine engineers—Bill Bennett, Sammy Holbrook, Gene Paul, Jamie Polaski, Larry Rock, Anthony Ruotolo and Drew Vonderhaar.

Of special note, though, is the handful of tracks recorded in October at Dockside Studios in Maurice, La. Miraculously, the studio was spared Katrina's wrath—which is why engineer Steve Reynolds, of New Orleans' historic Ultrasonic Studios, gravitated there when his own facility was completely destroyed. "I'm afraid Ultrasonic is ready for the bulldozer," he says sadly.

"We managed to salvage some of our gear after Katrina and we put it in vans to take down to Dockside because we had a couple of projects to do and [owner Steve Nails] was nice enough to let us work there," he continues. "But then here comes Hurricane Rita and it was headed right for that area, so we evacuated again and drove around with all this gear, dodging hurricanes for what seemed like the longest time."

Eventually, Reynolds found his way back to Dockside, and working on *Our New Orleans* turned into a rare pleasure at a time when he was extremely stressed out from dealing with Ultrasonic's reversal of fortunes. "In New Orleans, everything was wrecked and my whole world was upside down," he says. "I was going back and forth trying to salvage things, but when I returned to Dockside, it was so beautiful and nice and peaceful. I'd pull in the gate at Dockside, and it was like the weight of the world was off my shoulders. I needed to do that album. I think we all did." —*Blair Jackson*

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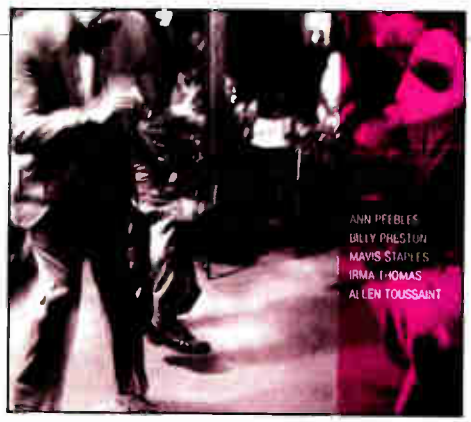

Various Artists

I Believe to My Soul

Rhino/Worksong/Hear Music

As mentioned elsewhere in "Recording Notes," a handful of great CDs have been released in the aftermath of Hurricane Katrina to benefit those in need. *I Believe to My Soul* was recorded in June of last year for producer Joe Henry's Worksong label, and when Henry and his distributors witnessed the terrible destruction in New Orleans, they committed a sizable portion of the CD's revenue to hurricane relief. This collection would be well-worth purchasing, however, even without its worthy purpose. It's Henry's latest heart-stopping, soulful lovechild, a sort of follow-up to the Grammy-winning comeback album he produced for Solomon Burke, *Don't Give Up on Me* (2003). The producer felt so inspired after completing that project, he was driven to record more of the living legends of soul. Yet, as on Burke's release, he aims to surprise listeners a bit with what he calls "a contemporary version of authentic soul." Henry stirs it up with spare, funky arrangements, this time showcasing soul luminaries Mavis Staples, Ann Peebles, Billy Preston and two New Orleans fixtures: Irma Thomas and Allen Toussaint. Anyone who shares Henry's musical passion, and his concern for the Katrina victims, will be moved by Staples' version of Curtis Mayfield's "Keep on Pushing" or Peebles' "When the Candle Burns Low." If you see this on the counter at Starbucks, buy it there: $10 is donated to hurricane relief from sales by the coffee giant; $3 from all others.

Producer: Henry. Engineer: Husky Huskulds. Studios: Capitol Studios, L.A. (recording), The Mute Matrix, L.A. (mixing). Mastering: Gavin Lurssen/The Mastering Lab (L.A.).

—Barbara Schultz

Original Soundtrack

Brokeback Mountain

Verve Forecast

It's been a while since I've been so moved by a score during a film, and I would have enjoyed an entire CD of just Gustavo Santolalla's spare, gorgeous and haunting country score, with its atmospheric acoustic and pedal-steel guitar and occasional tasteful string accompaniment. Instead, that music is pushed somewhat into the background in favor of other country-ish song tracks, several written by Santolalla, by a fine cast of singers, including Willie Nelson, Emmylou Harris, Teddy Thompson, Rufus Wainwright and Steve Earle. Tracks range from folk-tinged country to a few rock numbers, and there are no clunkers in the batch. But the short Santolalla instrumental segments unfortunately become more like "filler."

Producers: Santolalla, Larry Campbell, Thompson, Wainwright, Earle, Ray Kennedy. Engineers: Anibal Kerpel, Tony Peluso, Steve Addabbo, Helik Hadar, Larry Klein, Earle and Kennedy. (Hollywood). Additional credits at www.mixonline.com.

—Blair Jackson

Elvis Costello

My Flame Burns Blue

Deutche Grammophon

Costello fans have been waiting for a live album for decades. This set—recorded in The Netherlands at the North Sea Jazz Festival with the Metropole Orkest—isn't the pumped-up rock 'n' roll show some listeners might dream about, but it's a musical feast. The set opens with a boisterous interpretation of Charles Mingus' "Hora Decubitus," with Costello-penned lyrics, before entering *slightly* more familiar territory. Costello performs his own tunes in orchestral arrangements with jazz leanings—a complex marriage of styles that has prompted some critics to evoke Gershwin. A bonus disc contains the *Il Sogno Suite*: the classical score Costello wrote for Italian dance company Aterbaletto's production of *A Midsummer Night's Dream*. Costello's musical interests and talents are boundless; listeners who are similarly open-minded will be richly rewarded.

Producer: Gert-Jan van den Dolder. Engineers: Gert de Bruijn, Al Schmitt. Studios: Capitol, The Hague. Mastering: Doug Sax and Robert Hadley/The Mastering Lab (L.A.). *—Barbara Schultz*

Default

One Thing Remains

TVT Records

When Default hit the charts in 2001 with *The Fallout*, there were few other bands working the melodic rock scene. Today, wannabe hard-rockers have flooded the airwaves with songs full of monotone guitar lines, inexpressive vocal leads and steady, but annoying, drum hits. However, Default maintains a hard-hitting edge with their latest CD, bringing in Nickelback's Chad Kroeger (who discovered Default on a demo tape) and Marti Fredrickson, a frequent contributor with Aerosmith, to bring back rock to its glorious default setting: soaring guitar riffs, melodic (yet sometimes strained) vocals, evocative drums. It's a wonderful sound full of bleed and hiss and *energy*. Throw producer Bob Marlette (Tracy Chapman, Black Sabbath) into the pot, and you've got one fine straight-ahead rock record.

Producer/engineer/mixer: Bob Marlette except "Count on Me" with Chad Kroeger and Joey Moi (producers) and Ron Saint Germain (mixer). Additional engineering: Sid Riggs, Jake Davies. Additional credits at www.mixonline.com. *—Sarah Benzuly*

Mimi Fox

Perpetually Hip

Favored Nations

What's a straight-ahead jazz guitarist like Mimi Fox doing on rocker Steve Vai's record label? Well, she's got chops galore, as evidenced by this fine two-disc set: one featuring her fronting a solid piano/bass/drums group from New York on a set of tunes that mixes her originals with standards by Kern & Hammerstein, Cole Porter and the inescapable Alan and Marilyn Bergman (with Sergio Mendes); the other is solo guitar musings on tunes by Ellington, The Gershwins, Jimmy Van Heusen and others. (The "Band" disc also has a lovely solo, "Night and Day.") An admitted acolyte of the late Joe Pass, Fox plays crisp lines with a clean, undistorted tone, and has a great sense of both melodic construction and rhythm. It's hip *and* it swings.

Producer: Mimi Fox. Tracking engineer: Randy Crafton. Studios: Kaleidoscope Sound (Union City, N.J.), San Pablo recorders (Berkeley, Calif.). Mixing: John Evans. Mastering: Michael Romanowski/Paul Stubblebine Mastering (S.F.)

— Blair Jackson

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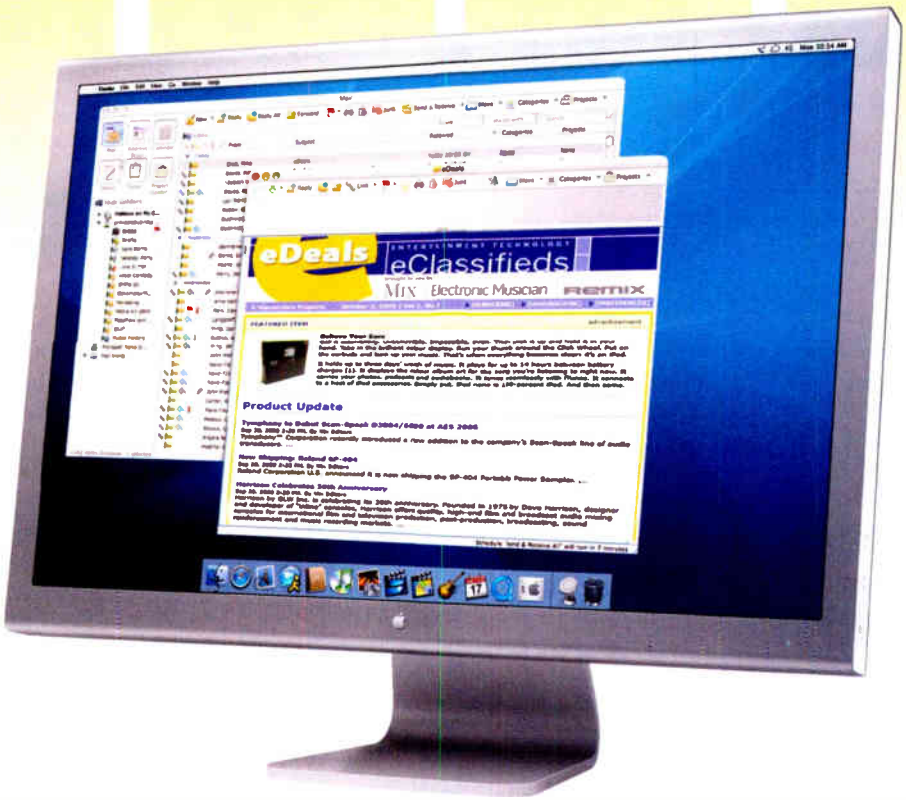

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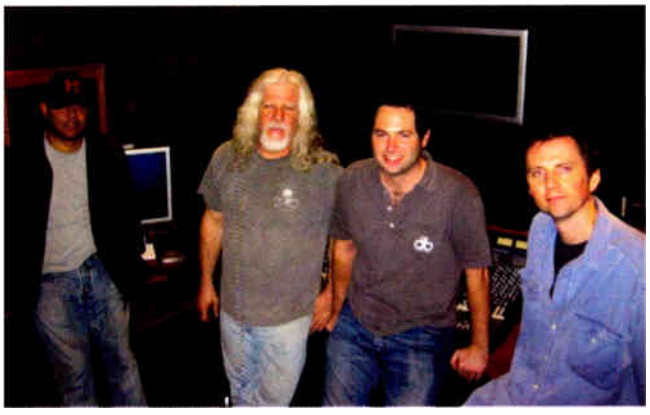
L.A. GRAPEVINE

by Heather Johnson

After three years in a sort of active limbo, super-producers Jimmy Jam and Terry Lewis have finally moved into the new, private headquarters for their Flyte Tyme Productions in Santa Monica.

It's an exciting, yet bittersweet time, as the multi-Grammy–winning production team bids farewell to The Village, where they've occupied the third floor during most of the long waiting period. They'll be missed. "Our whole staff fell in love with these guys, and so did our other artists," says The Village's CEO, Jeff Greenberg. "They're two of the hardest-working producers in the business, and they're charming. It's been a great honor and a lot of fun having them here."

I caught up with Flyte Tyme staff engineer Matt Marrin the morning after a late night of testing speakers in the new five-room studio, which is housed in an 8,000-square-foot, steel-enclosed building originally designed by David Forbes Hibbert as a visual art space. At the time, three of the five studios were operational; the remaining two, Jam and Lewis' personal spaces, had about a month to go.



The Flyte Tyme L.A. team (L-R): engineer Ian Cross, studio builder Jack Vieira, engineer Matt Marrin and technical design/wiring supervisor Paul Cox

One reason for the lengthy build time, Marrin says, had to do with acquiring the necessary permits from the city of Santa Monica. But mainly, a lot of inner work needed done to get the building studio-ready. "But it was the perfect spot," says Marrin, who, coincidentally, got his engineering start at The Village. "It had a parking garage in the bottom, balconies on the top floor, terraces, but nothing was built up on the inside."

After completing the first floor, which contains offices for Flyte Tyme's publishing companies and labels, a conference room and lounge, Jam and Lewis brought in John Vieira to oversee studio design and Paul Cox to take charge of wiring and installation. They made the most of the new digs by foregoing a large tracking room in favor of more control rooms, vocal booths of varying sizes and tielines *everywhere*. "It's so extensively wired that you can do anything you want," says Marrin. "You can select any space—including the conference room, lounge and offices—to be used with any control room. With the press of a button, automatically all of your queue mixes are instantly designated to the space you're going to work in."

Three smaller control rooms, located at one end of the second-floor space, all share one central vocal booth. A larger, dedicated studio for Jam will include a control room and one iso booth, as well as tielines to his large office next door, where he will keep his grand piano. Lewis' studio will contain a control room, vocal booth and a larger recording room for piano and drums.

All five studios will contain SSL AWS 900 consoles with Total Recall, Pro Tools|HD3 Accel workstations with 32 I/O of Apogee converters, Big Ben Master Digital Clock and access to iZ RADAR, 24-track analog and other recorders via a central machine room. While small in physical size, the SSL boards seem to fit the producers' needs; they broke in two of them during their residency at The Village. "Before we took delivery of the consoles, we were mixing a lot in Pro

—CONTINUED ON PAGE 144

NASHVILLE SKYLINE

by Rick Clark

I got a phone call from a good buddy of mine, Bill Lloyd. Lloyd is a fine songwriter, producer, multi-instrumentalist (primarily guitar) and father of a wonderful son named Ryman—after the home of the Grand Ole Opry. I guess you can say his love of music and the roots of great music runs deep.

As a songwriter, Lloyd (www.billlloydmusic.com) has placed some excellent compositions—most recently, Trisha Yearwood's latest single and a cut on the next Cheap Trick album, which he co-wrote with the band. He has also put out a number of strong power-pop records, including *Set to Pop*, for which I had the memorable experience of playing bass with Big Star drummer Jody Stephens.

Anyway, Lloyd and I were talking about Cameron Crowe's *Elizabethtown* and his use of music, when someone informed him that, as we spoke, one of Nashville's most historic recording studio buildings was being leveled to make way for a car dealership parking lot. The building was not originally designed to house a studio, but for a number of years, it was the home of the United Methodist Television, Radio and Film Commission. The Methodists leased space to RCA, and this facility was the site of some of the most famous recordings in rock and country history, including Elvis Presley's "Heartbreak Hotel" and "I Want You, I Need You, I Love You," and major recordings by Chet Atkins, the Everly Brothers, Hank Snow, Jim Reeves and others. Before RCA began recording at the McGavock Building in 1955, the label had been using several recording facilities downtown. As we were getting off the phone, Lloyd told me he was going to drive by the McGavock Pike address and get a piece of the building.

In spite of the demise of historic recording sites and recent studio sales, things are looking up in Music City. These days, many studio owners and managers have become creative about getting new clients; they realize that milking the traditional artist/label relationship alone will not sustain them.

Some of the other industry/community

World Radio History

NEW YORK METRO

by David Weiss

chatter right now concerns the new sign that went up on Masterfonics' outside awning, which reads, "What were we thinking!" This sign was ordered and hung by new owner Voss Entertainment, a relative newcomer to Nashville's audio circles. Voss bought the historic studio this past summer.

Last year, I wrote about the upheavals at Masterfonics (formerly Emerald) and shared the new owners' observations. It was clear these weren't the most seasoned folks in the business, but they had a lot of ambition and desire to make it work. Since then, Masterfonics' owners have suffered some travails, but they seem to have come out of the process as better students of the business. Even Ocean Way Nashville, which is respected worldwide and is responsible for bringing to Nashville projects for artists such as Three Doors Down, Matchbox Twenty and Bob Seger, is beginning to diversify.

Recently, the studio, owned by Belmont's Curb School of Music Business, partnered with Sirius Satellite Radio Network to produce acoustic showcases that will be broadcast on Sirius and recorded in Ocean Way's Studio A. *From Nashville and Beyond* did their most recent show to celebrate the release of Jack Ingram's new record on Big Machine Records. In front of many radio execs and

—CONTINUED ON PAGE 146

PHOTO: NICOLE COCHRAN

From left: Glenda Cones, Ocean Way Nashville studio manager; artist Jack Ingram; Scott Linday (Sirius Radio); Big Machine's John Zarling

"MOCEAN WORKER MAKES IT BIG" may never be splashed across *The New York Times* Sunday "Styles" section, but a headline like that may not be so important to him. New York City–based Mocean Worker—aka MOWO, aka Adam Dorn (www.moceanworker.com)—is content to float over the radar and fly back under again, using his broad industry knowledge to build a 21st-century audio career.

PHOTO: DAVID WEISS

A man with three names: Adam Dorn, Mocean Worker and MOWO

Dorn's resume is long for someone who's just 35: He's an electronic music whiz in the studio with equally hardcore touring experience supporting his four full-length album releases; a former in-demand bass session cat; and a film remixer, producer, label head, publishing/licensing master and overall entertainment business expert. To understand how he wears so many hats successfully, it helps to go back a full 20 years, when Dorn—not yet eligible for his driver's license—was given permission by his parents to leave his native Philadelphia for the Big Apple to start a career on the four-string.

"The main reason why I do many different things was because the start of my career was as a sideman," explains Dorn in his Manhattan apartment, which doubles as a Pro Tools|HD–based studio. "I was called upon to play pop, funk, jazz, Broadway and sight-read all kinds of stuff. You had to do as many things stylistically as possible, just within one job. Everything you can do well is an asset, and you have to be able to concentrate on learning as many things as you can do. Your skills have to be varied, and you can't do just one thing, or if you do, be the best in the world at it."

Looking back on his beginnings, it was MOWO's moxie that won him his start. As that same 15-year-old, Dorn started a mail correspondence with in-demand jazz/R&B/rock bassist and producer Marcus Miller, who invited him to hang out in New York City for a session or two. Dorn took him up on it and was immediately hooked on the scene. Negotiations for release from high school (provided he earned his GED first) went smoothly, aided by the fact that he had an uncommonly understanding father, the esteemed Atlantic Records music producer Joel Dorn (Charles Mingus, Bette Midler, the Allman Brothers).

Once in New York City, Miller took Dorn under his wing, letting him look in on every aspect of record production with the likes of Roberta Flack and Luther Vandross while MOWO supplemented his income as the "absolute piss boy" at Quad Studios. It was his next gig—as the daytime tape

—CONTINUED ON PAGE 146

World Radio History

FM RECORDERS GOES PUBLIC

FOSTER/MCELROY STUDIO OPENS TO BAY AREA BANDS

Hidden away in a large, unmarked warehouse on the Oakland/Emeryville, Calif., border, hit production team Denzil Foster and Tommy McElroy have busily churned out tracks for En Vogue, Regina Belle, Silk-E and others since 1994. With 16,000 square feet at their disposal, the duo never outgrew the space—just the opposite. As recording technology become more computer-centered, they found they didn't need as much space as they used to. But bands around town would love it.

In early 2005, after teaming with co-owner/producer/manager Sep Valizadeh, FM Recorders (www.fmrecorders.com) opened as a public facility, but with a distinct focus on developing independents and, more specifically, becoming a tool to reinvigorate the San Francisco Bay Area music scene. The transition from private to public began in early 2004, when Valizadeh launched an open-mic night to recruit new talent. Soon, bands began soliciting him, wanting to know how they could get in on this East Bay action. "We couldn't really say no," Valizadeh adds, "because we started to achieve what we initially set out to do, which was to create a scene."

The 1,200-square-foot, Chips Davis–designed LEDE™ control room features a Euphonix 2000-M digitally controlled analog mixing desk, and an extensive selection of outboard gear and microphones. "We have two [Otari MTR-100 24-track] analog machines, a Pro Tools MIXPlus system and a Tascam MX-2424 hard disk recorder online," says Valizadeh. "We can slave them together, and with the Euphonix TT007 unit, we have transport control in any part of the room."

Recent mods include adding tielines and a headphone cue system to Live Room B, a highly reverberant rehearsal/recording space that works well for drum sounds, full band projects and recording their own samples and reverbs. Live Room A, also known as the "fish tank," was also designed by Davis and features rotatable panels to alter the room's acoustics. Hallways, lounge area, office area and even a bathroom can serve as additional recording areas.

PHOTO: DAVID WRIGHT

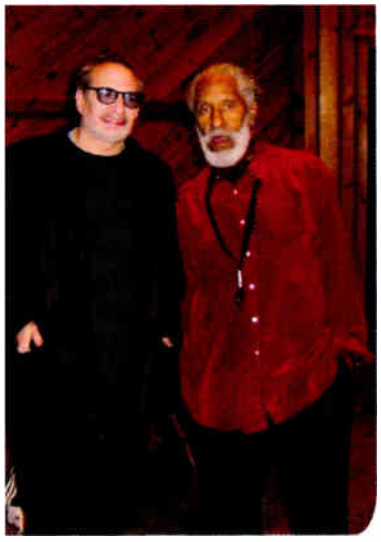
Co-owner/producer Sep Valizadeh (seated), engineer Mike Wilhelm (left) and engineer Rich Graff in the FM control room

Perks at FM include the use of numerous keyboards and synths, guitars and amps, and a Hammond B3 organ, among other items. Tenant Steven Jarvis' equipment-rental business is right down the hall. Bands also work with one of several in-house engineers, although it's not unusual for Valizadeh or McElroy to lend a hand. The studio, however, is only one element of FM Recorders' much larger vision. In the coming months, they will develop, produce and record new acts, as well as launch a new division that will take their involvement in the local scene one step further.

BEHIND THE GLASS

AVATAR HOSTS FAGEN

AUTOTGRAPHS ALL AROUND



Donald Fagen (left) meets Sonny Rollins in Avatar Studio A

Even an artist as credentialed as Steely Dan vocalist/keyboardist Donald Fagen can get starstruck. Fagen was busy in Avatar's (New York City) Studio C finishing his new solo album, *Morph the Cat*, when he heard that one of his favorite artists, tenor sax man Sonny Rollins, was down the hall in Studio A recording his forthcoming album, so Fagen stopped in during a break to say hello. Clifton Anderson, who also plays trombone on the record, produced the Rollins sessions, while Rich Corsello engineered. Sony's Jim Yates also recorded the sessions to DSD format via Sony's Sonoma system.

MAYER AT EDDIE'S ATTIC

RECORDS LIVE WITH TRIO

From left: bassist Pino Palladino, John Mayer and drummer Steve Jordan

John Mayer stopped by ZAC Recording (Atlanta) to listen to live tracks recorded by his front-of-house engineer, Chad Franscoviak, during a three-night run at Eddie's Attic in Decatur, Ga.—Mayer's regular haunt before his career exploded. Franscoviak enlisted ZAC neighbor Eclipse Audio to provide a Pro Tools|HD 24 rig, as well as the Mackie console and speakers for playback; Neve, API and Vintech pre's; and Neumann and Royer mics.

World Radio History

THE MASTER'S CORNER

IT'S FINAL FOR 'IDOL'

NIKKI MCKIBBIN AT FINAL MIX

Producer Joe Connizzaro (left), Nikki McKibbin and engineer Don Budd (right).

Engineer Don Budd of Final Mix Studios in Campbell, Calif., recorded a new song for *American Idol* finalist Nikki McKibbin's forthcoming release, using the studio's Pro Tools|HD3/ProControl system. FYI: McKibbin finished third during *Idol*'s first season; she also owns a karaoke company.

'LOST SESSIONS' FOUND

BROOKS MASTERS LATEST

From left: mastering engineer Eric Conn, producer Allen Reynolds, Garth Brooks and engineer Mark Miller in the studio

Garth Brooks' recent Walmart-only release, *The Lost Sessions*, was mastered at Independent Mastering in Nashville. *Sessions* was mastered from an ATR 1-inch 2-track, according to engineer Eric Conn. Brooks' first six Capitol albums have also been remastered for re-release on his new label, Pearl Records.

TRACK SHEET

Indie rock band the Southern Backtones completed their self-titled debut at SugarHill (Houston) with producer Dan Workman and engineer/mixer Steve Christensen, pictured, hard at work on the Neotek Elite.

NORTHWEST

At **Nettleingham Audio** (Vancouver, WA) engineer **Kevin Nettleingham** mastered releases for Portland-area artists **John and Jose Troncoso, Dealer, Grant Richards, Celtic Poet Society, John Bolt, Soul Vaccination, Three Together** and **Thirty-3**; Cheyenne, WY–area artists **The Fugates**; and Tempe, AZ, band **Brother Lush**. Principal bassoonist/producer **Mark Eubanks** came in to master the Oregon Symphony's Classical #3 concert for radio airplay, as well a new theme piece for Public Radio...Texas-based recording artist **Papa Mali** finished up a new album at Studio C, located in the **Hyde Street Studios** (San Francisco) building with producer **Dan Prothro**. Singer/songwriter **Jolie Holland** continued work at **Tiny Telephone**'s (S.F.) Studio C with engineer **Justin Phelps**. Studio C also turned out new albums for percussionist **Sikiru Adepoju** and Bay Area artist **Loop! Station**, both engineered by Phelps...At **SF Soundworks** (S.F.), owner/engineer **Tony Espinoza** kept both SSL J rooms humming—he mixed/mastered a new album for **Bill**, produced by **Riyadh Drebika**; co-produced/engineered **Smith Point**'s next release; tracked and mixed the new album from **The Don'ts**; and mixed/mastered the forthcoming release from **Halou**, produced by **Count**.

SOUTHEAST

Atlanta rockers **Sound Decision** (with Nickelback drummer **Daniel Adair**) mixed their debut with **Jan Nerud** at **Sound Lab** (Smyrna, GA). Country singer **Patsy Dean** returned to record two singles with Nerud producing. **Lil Jon** worked on projects for **Lil Scrappy** and **Bohagan**, as well as his new solo album...At **Reflection Sound Studios** (Charlotte, NC), **Bruce Irvine** engineered and mixed tracks for **Anthony Hamilton**'s next release, produced by **Mark Batson, James Poyser, Kelvin Wooten** and Hamilton. **Mark Williams** engineered tracks for **Shirley Caesar** and **James Brown**. Baby worked on a new project with **Don Dixon** producing and Irvine engineering. Irvine is also co-producing and engineering **Shadowflag**'s debut album...**ZAC Recording** (Atlanta) ushered in '06 with **Toni Braxton**, in to finish tracking and mixing her latest with producers **Brian Michael Cox** and **Teddy Bishop**, and engineer **Sam Thomas**. Meanwhile, **Jagged Edge** overdubbed with **John Legend**, with **Dru Castro** at the board; **JC Chasez** worked on tracks with artist/producer **Akon**, with **Alec Newell** engineering; **Sleepy Brown** mixed a new album with producer **Ray Murray** and engineer **Mark Goodchild**; über-talented **Jamie Foxx** worked on his new release with producer **Sean Garrett** and engineer Castro; and **Heather Headley** recorded vocals for the song "Back When It Was" for her '06 release, *In My Mind*, with producer **Johnta** and engineer **T. Cash**...**The Walt Disney Company** chose selections from **615 Music**'s (Nashville) extensive music library for two recent projects. The 615 staff also wrote new theme packages for The Animal Planet and The Food Network's "Sugar Rush" show, and developed new music for HGTV.

SOUTHWEST

Still Life came to **Tierra Studios** (Houston) to finish their debut with engineer/producer **Randy Miller**; engineer **Glenn Wheeler** mixed *Here I Am: 10 Hymns for Orchestra*, produced by **Katherine Sharman**; and Destiny's Child's **Kelly Rowland** tracked vocals for her upcoming album in Studio A...Pop-rockers **Orange** squeezed into **SugarHill Recording Studios** (Houston) to record their band-produced debut with engineers **Josh Applebee** (tracks) and **Steve Christensen** (mix).

NORTHEAST

Lots happening at **Loho Studios** (NYC): **Ryan Adams** sat in the producer's chair, working on new projects for **Willie Nelson** and **Minnie Driver**, both with **Tom Gloady** at the board. Another talented artist/producer, **Butch Walker** produced a track for **Lindsay Lohan**'s next record, while **Joe Hogan** and **Gus Oberg** worked on tracks with the **Back Horn**... Avatar (NYC) also reports an active start to the year. Blue Note Records' Lovano recorded in Studio A with engineer **James Farber**; **Gladys Knight** cut vocals in Studio B with producer **Tommy LiPuma** and engineer **Al Schmitt**. Producer/engineer **Jay Newland** recently visited Avatar to record violinist **Nigel Kennedy**; pianist **D.D. Jackson** recorded a new one for Justin Time Records with engineer **Jim Anderson**; producer **Don Gilmore** worked with **Dashboard Confessional** on overdubs and mixing for a new project, with **Mark Kiczula** at the board. And Avatar's newest studio addition, Fred Kevorkian's **Kevorkian Mastering**, mastered albums by **The Bullys, Nathan Maxwell, moe., Saint Bastard** and **Jamieson Tobey**...At the **Magic Shop** (NYC), **Duran Duran** recorded a song for Amnesty International's Make Some Noise project with **Matt Boynton** and **Brian Thorn** assisting. **Keane** also recorded new work with producer/engineer **Andy Green**, and **John Goodman** mixed a new Matchbook Romance record, among other sessions. ■

Send your session news to mixtracksheet@gmail.com. High-resolution photos encouraged!

World Radio History

L.A. GRAPEVINE FROM PAGE 140

Tools," says Marrin, "but we didn't want to rely on just that. We needed a few channels, some EQ and mic pre's, a controller for our Pro Tools systems and a proper monitor section. The AWS seemed to take care of all those things."

At press time, they hadn't nailed down the monitor systems for the three smaller studios. However, Lewis' studio will have a set of PMC BB5/XBDs with Bryston crossovers. "They're massive," says Marrin. "They're about six, seven feet tall and about 31 inches deep. It's an active rig so the amps come up to about six feet. You can give them as much as you want and you're not going to kill them at all." Jam's private recording lair will contain a pair of custom Augspurgers with TAD components; not quite as tall, so they can sit on custom cabinets.

Flyte Tyme L.A. is expected to be fully operational this month. The last of their equipment left The Village in early February after parading top-tier projects such as Janet Jackson, Usher, Gwen Stefani and many others to the top floor, while acts such as Oasis, the Rolling Stones and Nine Inch Nails worked below. Greenberg says he already has the space filled. With any luck, they'll make as good a tenant as the Jam/Lewis crew. Looking back, Greenberg says, "It's been a gas."

Another historic studio has been saved from demolition recently. On January 19, 2006, the building and contents of Cello Studios—formerly Ocean Way East, formerly United Western Studios—went up for auction at the Sulmeyer Kupetz bankruptcy law firm. The highest bidder: Doug Rogers, president and creative director of sound **developer/distributor EastWest Sounds (www.soundsonline.com).**

EastWest purchased both building and contents. The facility will remain as an operational studio, and will be restored to its "former glory," according to Rogers. "The studios are fine, but the peripheral areas need a lot of work," says Rogers. The building suffered some water damage after the extensive floods early last year. "The roof needs replacing, the entire front of the building needs refurbishing, as well as all of the lounges, hallways and offices. We're going to bring the studio up to 21st-century standards while preserving the studios."

The Neve consoles in Studios 1 and 2 will remain, and EastWest will install new desks in Studio 3, 5 and the Mix room. Location Connect, the company contracted to identify and evaluate all of the equipment for sale (with the exception of the microphones, which were tested by Wes Dooley of Audio Engineering Associates), deemed all equipment a-okay. "Our engineer, Richard Robinson, tested the consoles and every bit of outboard, including the three Fairchilds, two of which have been stored in the attic, and found all to be operational," says Pournelle. "All of this information is being presented to the new owners."

News of the sale comes as a great relief to the L.A. studio community, which has lost nearly 30 rooms spread between several facilities during the past year, according to Studio Referral Services' Ellis Sorkin. "There were people seriously depressed about it," says Sorkin, who helped some of Cello's regular clients find new places to work.

But Cello's filing for Chapter 11 bankruptcy on January 28, 2005, hit the community especially hard. [See April 2005 "Grapevine" for more info.] Many feared that the historic building—built in 1917, redesigned in '61 by Bill Putnam—would end up in the hands of a revenue-minded developer who would ultimately demolish it. That almost happened. If Rogers hadn't won the bid, 6000 Sunset Blvd. would have gone to a wealthy real estate developer, and the prime corner space would have surely

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become the site of a new shopping mall.

But that won't happen now, and within a matter a months, regulars such as Jim Scott, Rick Rubin and Jon Brion will have the opportunity to return to Cello, now known as EastWest Studios, although they'll naturally have to work around a busy calendar of EastWest projects. "We needed a good facility for what we do," says Rogers. "We're all sound fanatics over here, and because we're not relying on outside studio business, we can acquire things that most studios couldn't justify. We'll have sounds, software and recording under one roof. Our aim is to have one of the top studios in the world." ■

E-mail L.A. news to mixeditorial@primediabusiness.com.

PHOTO: ASHLEY HAMBELTON

Masterfonics' new owners, Voss Entertainment, let the neighborhood know that running a studio is difficult business.

NASHVILLE SKYLINE FROM PAGE 141

Music Row types, Ingram performed an hour-long set and was interviewed by Sirius Radio personality Scott Lindey.

Just before Christmas, Secret Sound crept back onto the studio landscape. The studio, owned and operated by songwriter/producer Chas Sanford, was wildly popular in the '90s, but as of late has been used largely for Sanford's projects. The studio also underwent a complete equipment overhaul and added a five-star guest house. Secret Sound offers amenities such as spa service, chef service and some wonderful views on the huge country estate. A self-described "gear slut," Sanford outfitted the studio with a ProControl mixing surface with 32 faders. It is complemented by a Pro Tools|HD Accel 7 card system with tons of outboard gear, as well as a coveted mic collection.

Paul Jankowski, an NFL agent and president of Access Pro—a sports and entertainment branding firm that represents Jo Dee Messina and Beyoncé, among others—recently visited the studio and guest house while scouting recording locations. "My clients have stayed in the nicest places around the world," Jankowski says, "but the guest house provides a unique ambience you could only get from the welcome isolation and attention to detail it provides. They will enjoy the ability to relax in a creative atmosphere. The list of available services rivals any of the resorts we've stayed in, but with more of a personal touch." ■

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NEW YORK METRO FROM PAGE 141

librarian at Right Track Studios—that really helped Dorn. "I spent every night working on Marcus Miller records," he recalls. "On his team, I learned a little about every person's task, including what the artist is like to work with; the producer, engineer and mixer's role; what it is like to be the programmer on the date; meeting sidemen."

Dorn kept taking things to the next level, playing bass for the likes of Chaka Khan, Vandross and French pop star Patrick Bruel, who took Dorn to France for three years. It was that extended stay that got him fully immersed in European DJ culture and production gigs

The tracks that Dorn hoarded for his own nefarious purposes became his brilliant 1998 debut indie album, *Home Movies From the Brain Forest* (MOWO! Inc.), a musically proficient synthesis of drum 'n' bass and jazz that led to the 1999 *Mixed Emotional Features, Aural & Hearty* in 2000 and *Enter the MOWO!* in 2004. During his journey from indie to major-label artist and back again, Dorn learned even more music business lessons—not all of them pleasant.

"Palm [which put out his first albums] always seemed to be struggling, but I got really lucky with [*Mixed Emotional Features*] because we did a lot of licensing," he explains. "It also almost crippled me because the label would say, 'We put the music on films and made money, so we won't give tour support.' It's smart economics if you think about it: If you're already in the black, why put a six-piece band on the road?"

Fortunately, he wasn't just a typical

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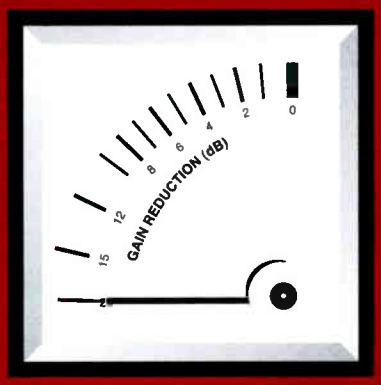

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artist getting slapped around by a label head, because at the same time, he was a label head. As co-founder with Joel Dorn of the jazz archival reissue label 32 Records, Dorn oversaw highly successful releases by Mahalia Jackson and Slim & Slam. In that capacity, not only did Dorn become highly conversant in the business of releasing records, but also in mining a catalog for samples and bending them to his will.

By the time he was creating *Enter the MOWO!*, Dorn had become a full-on sampling freak, a development that means he can pare his production plant down to a single laptop if need be, as long as it's outfitted with Propellerhead Reason. "I'm probably one of the top five fans in the world of Reason," states Dorn. "When I first started making records, I used an [Akai] MPC3000, which is a sampler with a great sequencer. That's exactly what Reason is, but the difference is that [Reason's Dr. Rex module] gives me the ability to take every sample I've ever sampled and, combined with their other application, Recycle, my sample library is about 12 times bigger than it was because every sample now has multiple slices in it. So you can take an old jazz record, cut it into four or five slices, assign them to your MIDI keyboard and create something cool when you put a dotted quarter-note delay on a slice and tune it down, for example.

"There's other stuff in my studio, like an Avalon 737 and Empirical Labs Distressor, but I don't use it as much. Pro Tools is a really, really expensive sampler. I literally drop the needle on the record and record it into Pro Tools to prepare it for use in Recycle. I'll record a 30-second snippet of something, and you'll never hear it in a context where you would recognize it."

The result was a snappily inspired sound for *Enter*, which is still selling well nearly two years after its release. Meanwhile, the next Mocean Worker album is almost complete.

Encapsulating what he's learned from his two-decades-long education, he says, "I've made business mistakes. All you need is to get ripped off once, and then you realize you need a contract for everything, and that publishing is of über-utmost importance. When you start to work in the music business, you come to understand album design, artwork, PR, sales, budgets. When artists say, 'Man, the record label ripped me off,' well, record labels don't rip you off. You just didn't do your homework." ■

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World Radio History

—FROM PAGE 30, ONE SINE WAVE AT A TIME

(although that's an option, too) as Lindemann's models take into account interaural time differences, not just relative levels. The documentation correctly says that Synful's localization modes are not a substitute for a real reverb, but instead should be used with a digital reverb.

The new Section feature—which for now is just strings—is impressive in both its simplicity and its flexibility. Synful builds its sections from the ground up, out of solo instruments. The user can specify how many players are in each section, how physically spread out they are and how tight their timing and tuning are. Perhaps most importantly, every instrument in the section uses a subtly different synthesis model: "Whenever I search the database for transitions for a single note," Lindemann explains, "I find the best one, but at the same time, I also find the *10* best ones. With a solo instrument, I discard the others, but in a section, I will use all 10 of them, so each 'player' is playing a slightly different transition. I can also use different vibratos on each instrument on long notes."

The localization algorithm takes the multiple-player effect into account, as well. "The early reflections are different for each player, depending on their position," Lindemann says. "The last player in a section will be close to a wall, so even though his direct sound gets to the listener later than the first-chair player, his first reflection arrives *before* the first reflection of the first chair, who is farther from the wall."

Another clever trick is using *divisi*, when players within a section are asked to play different notes. "With a sampled string section, when you play a divisi, all of a sudden, you have twice as many players," says Lindemann. "But I literally split the individual players up, so different ones are playing different notes, which is much more realistic."

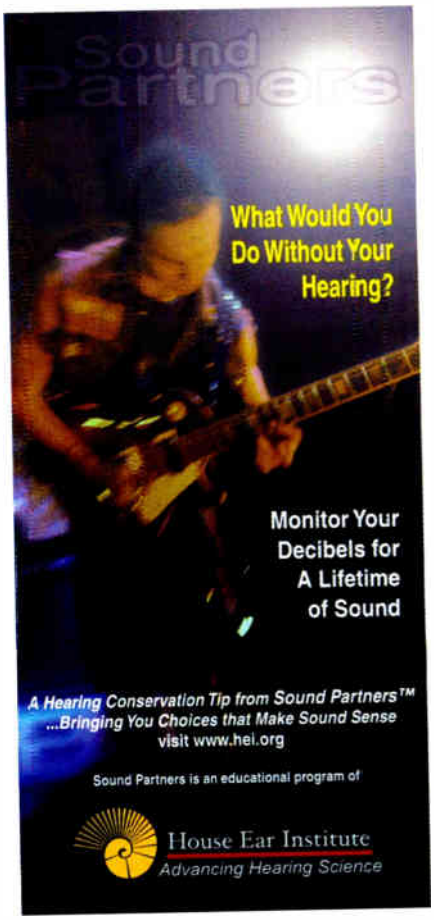
There's just one problem with all of this. When a human oboe player has to jump from a low C to a high B, she knows it ahead of time because she can see it coming up in her part. But how do you get a computer to do that? Lindemann's answer to this is to build in a switchable delay: When you are playing tracks back, you can delay the sound by one second, which gives the engine the ability to look ahead and make the necessary decisions. Of course, this doesn't work when you're laying down tracks, so you do the best you can putting in the expression and articulation you want, and hope it all works when you play it back. And in fact, it does work amazingly well, although it takes some getting used to at first and is probably the trickiest part of using the program.

Things get more complicated when you use Synful Orchestra with other sound sources whose approach to time is a little more conventional. In that case, if you're going to use the "Delay for Expression" feature, then you have to advance all the Synful Orchestra tracks by exactly one second in your sequence. But that can be clumsy, especially if you have a lot of tempo changes in the file. For that reason, Lindemann is talking to sequencer manufacturers about building a controllable look-ahead feature into their products. "It's the same as delay compensation on an audio track," he says. "The sequence is just sitting there in memory, so there's no reason why Synful can't query the sequencer as to what's coming next. It's not technically hard at all. But as of now, no sequencers do it."

There's another problem: Synful Orchestra needs a boatload of CPU power, especially when you are using Sections. My venerable 800MHz G4 Mac did okay with the older version of the program when I asked it to handle about 10 solo instruments, but when Sections came out, I couldn't even play two tracks of violin sections without the computer falling over. I've since upgraded to a dual 1.6GHz configuration and it's much better, but I still bang up against the CPU's limit when I try to play a complete orchestral score with good-sized sections. One workaround, according to Lindemann, is to freeze finished tracks by turning them into audio and that can certainly help, but I don't like working that way when I'm composing. Well, hopefully the next computer I buy will have the muscle to handle a full-sized Synfuls symphony without breaking a sweat.

Lindemann is currently in the process of putting together an all-new database of recordings and models, and will add muted strings and brass, pizzicato strings and the more unusual members of the orchestra when he releases it as Version 3 later this year. Other Synful products coming down the pike are jazz, rock and what he calls "fictional" instrument sets. "Individual jazz players have distinctive sounds, so the jazz instruments will emphasize player styles more and be specific to real musicians," he says. As for the fictional set, "The plan is to fan out from classical instruments—where you have a clear expectation of what that instrument should sound like—to imaginary instruments, hybrid instruments, that would exist in a fictional universe. I would use the database I have now so that these instruments would have an organic base, which would give people a reference for what they were hearing." ■

Paul Lehrman also has a lot on his plate.



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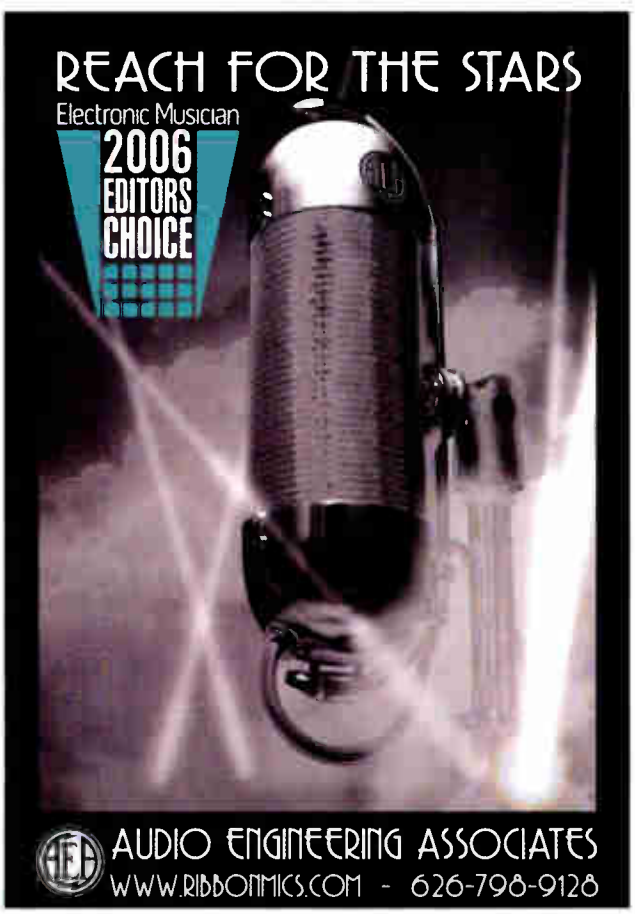

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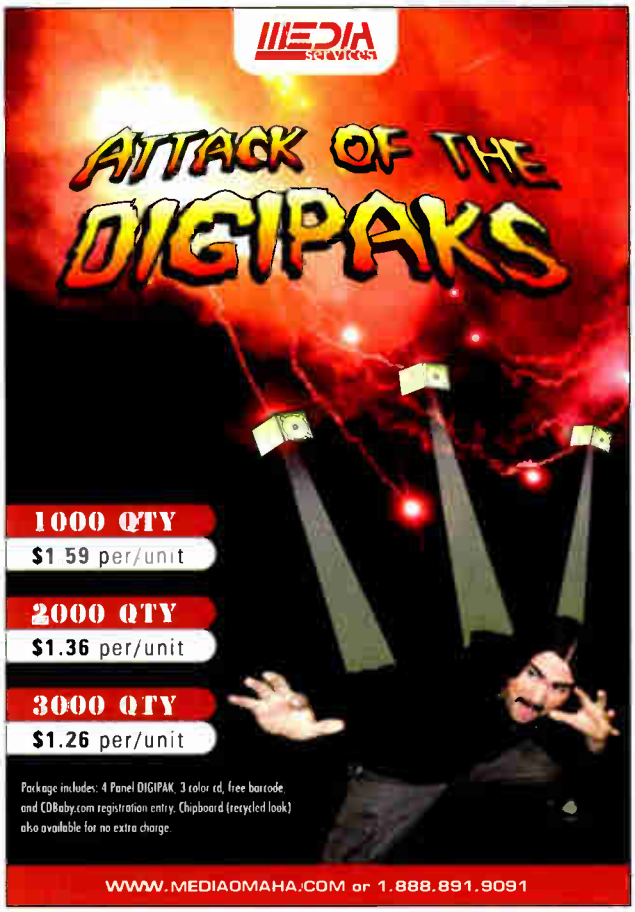

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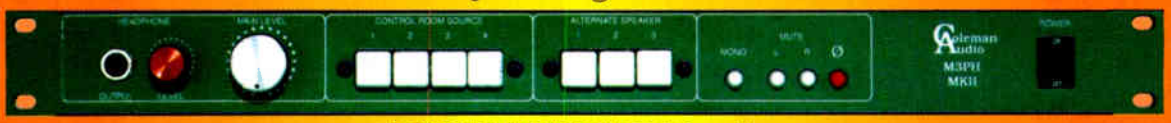

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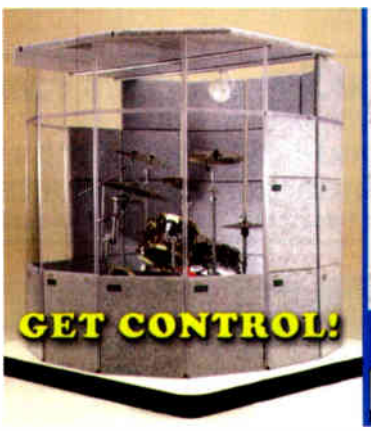

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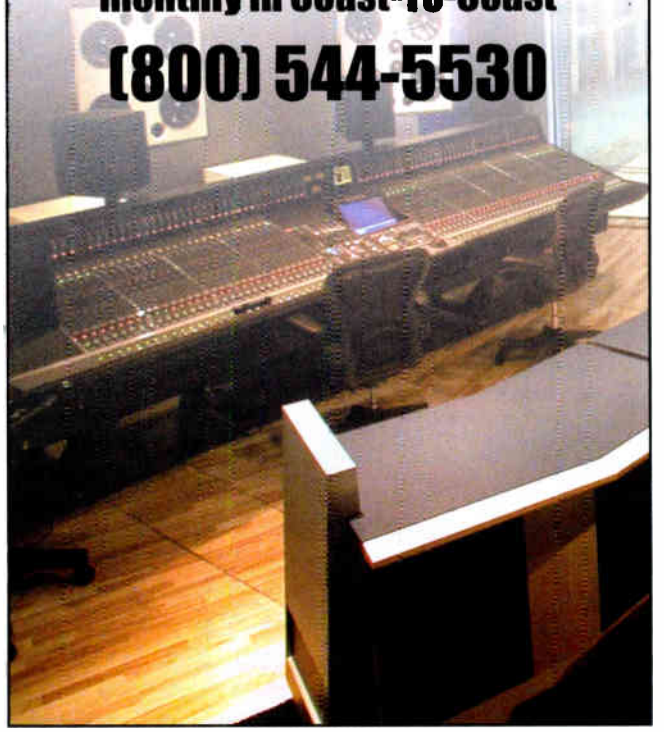

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Stackable MOTU audio I/O

All **MOTU FireWire interfaces**, including the **Traveler, 828mkII** and **896HD**, are stackable, giving you a cost-effective, expandable system that delivers stunning quality and performance. You can daisy-chain up to four MOTU interfaces to your Mac — even the sleek and portable PowerBook — and record all inputs simultaneously. For example, you could connect four Travelers directly to a PowerBook to record 64 inputs to 64 tracks simultaneously at 48kHz. If you connect four 896HDs, you can record 72 inputs to 72 tracks — all to the internal hard drive. On today's multi-processor G5's, you can expand even further with a PCI FireWire card. With four Travelers connected to the on-board FireWire bus, plus a fifth Traveler connected to the PCI FireWire card, each with 20 inputs, that's a whopping 100 inputs recorded simultaneously to 100 separate tracks. Make no mistake: a MOTU native system with multiple interfaces delivers astonishing performance and value.

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Unprecedented Native Studio Power

Wireless transport control.

Looking for transport control of Digital Performer that goes way beyond your mouse or the extended keypad on your Mac keyboard? Try the new **Frontier Design Group** TranzPort, the world's first wireless DAW remote controller. This convenient, compact unit frees you from your conventional position, sitting in front of your Mac. Now you can control Digital Performer from anywhere in your studio. TranzPort has plug-and-play compatibility with DP, thanks to its dedicated DP control surface plug-in software. In addition to controlling all of DP's transport functions, you can also arm tracks for record, set markers, punch in/out, start loops and more using TranzPort's intuitive interface. You also get real-time feedback on signal levels, timecode position, track names and more via the backlit LCD and LED indicators. Controlling DP has never been more fun, convenient and flexible!

Compact MIDI control.

Looking for the ultimate compact keyboard controller for your MOTU studio? The **Alesis** Photon X25 Portable 25-key USB MIDI controller/audio interface delivers the revolutionary Alesis Axyz controller dome and ten 360-degree rotary knobs, giving you powerful hands-on MIDI control of your Digital Performer studio and software plug-ins. Advanced features include 24-Bit 44.1/48 kHz USB audio I/O with balanced stereo audio inputs and outputs, 25 key, velocity sensitive keyboard, full-size pitch and modulation wheels, and an LCD screen with dedicated encoder for fast and easy set-up.

On-demand Waves DSP.

For large-scale multitrack recording systems, it is good practice to offload plug-in processing from you host computer. The **Waves** APA-44M delivers on-demand Waves processing to your MOTU native desktop studio via standard Ethernet. Open your existing Waves plug-ins as usual in Digital Performer via the new Waves Netshell™. But now you can run up to 6 Waves IR-1 Convolution reverbs at 44.1kHz at once, and save your CPU power. Need more Waves processing? Just add another APA-44M with the snap of an RJ45 Ethernet cable. It's that simple. For extreme processing needs, connect up to 8 units to your network. The APA-44M is equally at home connected to a laptop, desktop or both. Just transfer your Waves authorized iLok. You can even share a stack of APA-44M's among several computers across the Waves Netshell network. The APA-44M ushers in a new era of state-of-the-art, distributed-network Waves processing for your MOTU multitrack studio.

5-bay removable storage.

The **Glyph** GT 205 is a 2U five-bay FireWire enclosure offering many advantages for large-scale multitrack recording, including hot-swap portability and convenience. Specifically designed for applications requiring multiple drives, it can be configured with four FireWire hot-swap GT Key drives up to 500GB each. Its expansion bay offers the option of AIT backup, a SCSI or FireWire hot-swap receiving bay, DVD-R/RW or CD-R/RW. Using Glyph's proprietary Integrity™ hot-swap technology, you can easily shuttle content to other GT Series enclosures. To keep your studio quiet, GT Keys incorporate sound-dampening composite metal technology in their frames. Includes 3-year warranty, plus overnight advance replacement warranty in the first year for GT Keys.

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Or, perhaps we should say, it's the perfect finishing touch.

The control room.

The PreSonus Central Station™ is the missing link between your MOTU recording interface, studio monitors, input sources and the artist. Featuring 5 sets of stereo inputs (3 analog and 2 digital with 192kHz D/A conversion), the Central Station allows you to switch between 3 different sets of studio monitor outputs while maintaining a purely passive signal path. The main audio path uses no amplifier stages including op amps, active IC's or chips. This eliminates coloration, noise and distortion, enabling you to hear your mixes more clearly and minimize ear fatigue. In addition, the Central Station features a complete studio communication solution with built-in condenser talkback microphone, MUTE, DIM, two separate headphone outputs plus a cue output to enhance the creative process. A fast-acting 30 segment LED is also supplied for flawless visual metering of levels both in dBu and dBfs mode. Communicate with the artist via talkback. Send a headphone mix to the artist while listening to the main mix in the control room and more. The Central Station brings all of your inputs and outputs together to work in harmony to enhance the creative process and ease mixing and music production.

Purified power.

To get the most out of your MOTU studio gear, you need the cleanest power possible. The negative effects of poorly supplied wall outlet AC power on your gear can be dramatic, without your ever knowing how good your gear can really sound with properly supplied power. Furman Sound introduces the all-new Power Factor Pro with its ground-breaking Clear Tone Technology™, which actually lowers the AC line impedance supplied by your wall outlet while storing energy for peak current demands — over 45 amps of instantaneous current reserve. Additionally, Linear Filtering Technology™ (LiFT) dramatically lowers AC line noise to unprecedented levels in the critical audio frequency band. Also included are Furman's unique Series Multi-Stage Protection Plus (SMP+) surge protection and automatic Extreme Voltage Shutdown (EVS), which protect you from damaging voltage spikes or sustained voltage overload.

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Unprecedented Native Studio Power

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BY MICHEL HENEIN

Sony Sound Forge Digital Audio Workstation

Fast Editing of Game Sound Effects

Throughout years of working on films, television and videogames, I have used a variety of audio software and have to come to rely on one often-overlooked pro audio application that is indispensable to creating and implementing audio assets in videogames: Sony Sound Forge. Sound Forge is renowned in the PC world for being a fast and flexible audio editor. The latest version, 8.x, has some cool features, such as a built-in batch converter and ASIO support, and still includes the Acoustic Mirror convolution reverb, which has shipped with the app for years.

Sony's Sound Forge supports Windows-type functionality for streamlined editing.

44.1 KHZ AND BELOW

When it comes to developing games for current consoles, sound designers are still implementing sounds in various sample rates below 44.1k, as most game consoles have a limited amount of RAM allocated to store audio assets. And although most popular DAWs do not let you work with audio files that are below 44.1 kHz, Sound Forge lets you easily convert to any sample rate by using the Resample function in the Process menu and typing in the target sample rate.

Sound designers on game projects are usually the ones who decide which sounds will be downsampled to which sample rate; they produce an audio memory budget document that accounts for the total RAM each sound will consume from the amount allocated for audio. Obviously, the most important sounds in the game will play back at a higher sample rate than sounds that are less important, but another way of deciding which sounds are downsampled is to use the Nyquist theory to determine the highest appropriate sample rate for each sound; i.e., a low-frequency effect can be downsampled to save space as opposed to a sound rich in high frequencies, etc.

FAST AND FLEXIBLE

Sound Forge is one of the fastest audio editors out there, thanks to a very friendly interface that supports Windows-type functionality throughout, letting you drag sounds in and start cutting right away. It handles just about every audio format that exists. Working with many types of formats is important because most game consoles have proprietary compression formats, such as Microsoft's Xbox ADPCM .WAV, which has a compression ratio around 3.5:1. In addition, most game audio engines support standard .WAV files, not Broadcast .WAV (BWF, which has extra info in the header portion of the file). Because Pro Tools, for example, only supports BWF, you have to convert the sound files to standard .WAV.

LOOP-EY LOOP

Most games follow an asset pipeline in which a multitrack editor (Pro Tools, SONAR, etc.) is used to create, edit and mix sound effects, which are then bounced to stereo or mono as standard .WAV files. I like to use Sound Forge to "master" the mixed sound file: Drag the sound onto the Sound Forge application icon, and the sound loads in the editing window, indicating you're ready to go.

Let's say that I am working on a looping engine sound that will be loaded statically in the console's audio portion of RAM. I select the area that I'd like to loop and then identify the area as a loop using the Insert Loop under the Special menu. I will then use the loop tuner, in the View menu, which is an awesome looping tool because it shows you the crossing points for the end and beginning of the loop side by side so you can determine the best shape of the transition.

By using the buttons on the bottom of the loop tuner you can slide the loop boundaries to zero crossings or slide sample by sample to the desired point, monitoring the result. Note: Looping static sounds loaded into a console's RAM is tricky because most consoles like the number of samples in a looping sound to be a multiple of a certain number. (This is different on each console; for more info, log on to the console developer's site and check the audio section on how to adjust sample boundaries for looping sounds.)

Once the loop is exactly how I want it, I then save it with the appropriate file name, choose the desired sample rate and select the correct compression format for the console. Then, it's pretty much ready to be placed in the appropriate directory for the game engine to read. One thing to keep in mind: Make sure that Ignore Fact Chunk Data is checked when you're working with ADPCM compressed loops to ensure that there are no weird silent spaces at the beginning or end of the file as a result of extra data being placed in the file due to compression.

Sound Forge can really be an invaluable game audio tool because it addresses the highly specialized needs of audio designers who are implementing sounds into current videogame consoles. ■

Michel Henein was sound supervisor on the racing game MX vs. ATV Unleashed. *He co-founded Diesel Games in Tempe, Ariz.*

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m902 The crossover smash hit headphone amplifier! Celebrated by audio engineers and audiophiles alike, the m902 is the perfect hybrid of a high performance headphone amplifier, reference DAC and stereo monitor controller. With a sound field so balanced and articulated, the music comes alive with clarity, nuance and detail.

Grace Design strives to further the art by helping you become more engaged with the creation and presentation of great music. Our new monitor controllers provide all the necessary **details** to make that happen.

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Deceptively **compact.**

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- Compact: 8.5 x 7 inches
- Bus-powered
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- On-board CueMix DSP mixing
- LCD programming
- 2 mic inputs
- 6 TRS analog ins with 18dB gain
- 10 TRS analog outs
- Separate main outs & phones
- Individual 48V phantom power
- 60dB pad/trim preamp gain range
- Stand-alone mixing
- Main volume knob
- Headphone volume knob
- S/PDIF digital I/O @ 96kHz
- Metering for all inputs & outputs
- Sample-accurate MIDI
- On-board SMPTE sync
- Expandable
- 2 FireWire ports for daisy-chaining
- Mix & match w/ other interfaces
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Compact bus-powered 10 x 14 FireWire audio interface

Sturdy. Portable. Full-featured. The UltraLite 10 x 14 FireWire audio interface for Mac and PC is born from the innovative design, proven reliability and award-winning sound of the MOTU 828mkII and Traveler FireWire interfaces. You get the real thing in a compact, bus-powered, fully portable half rack I/O, complete with two mic/instrument inputs, front-panel LCD metering for all I/O, 8-bus CueMix DSP on-board mixing, front-panel programming, SMPTE sync and many other advanced features.

Just like the award winning 828mkII and Traveler interfaces the UltraLite delivers two mic/instrument inputs plenty of balanced quarter inch analog I/O on board mixing front-panel LCD programming and clean detailed sound

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