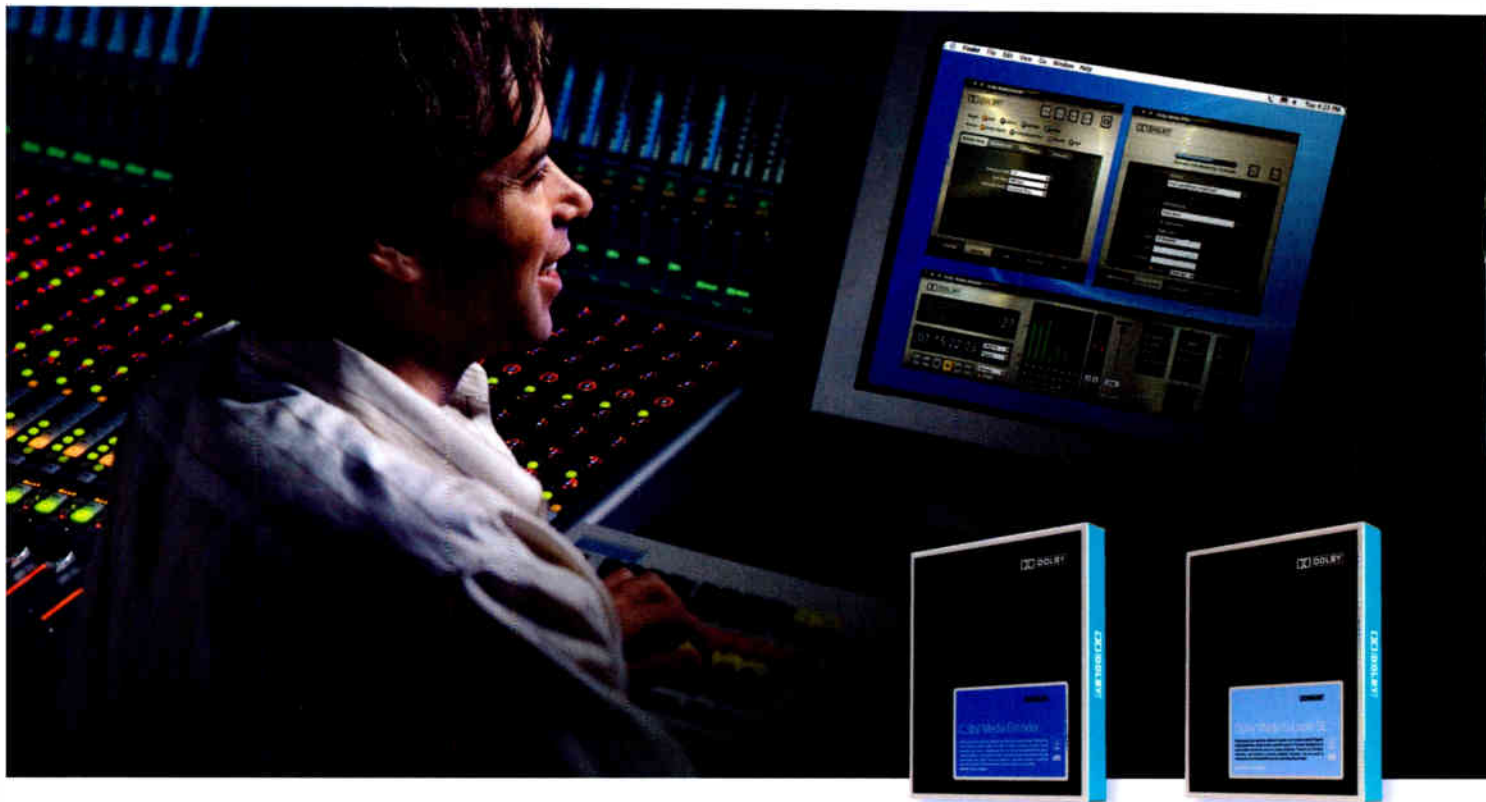


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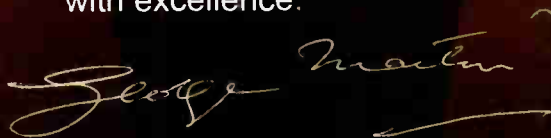
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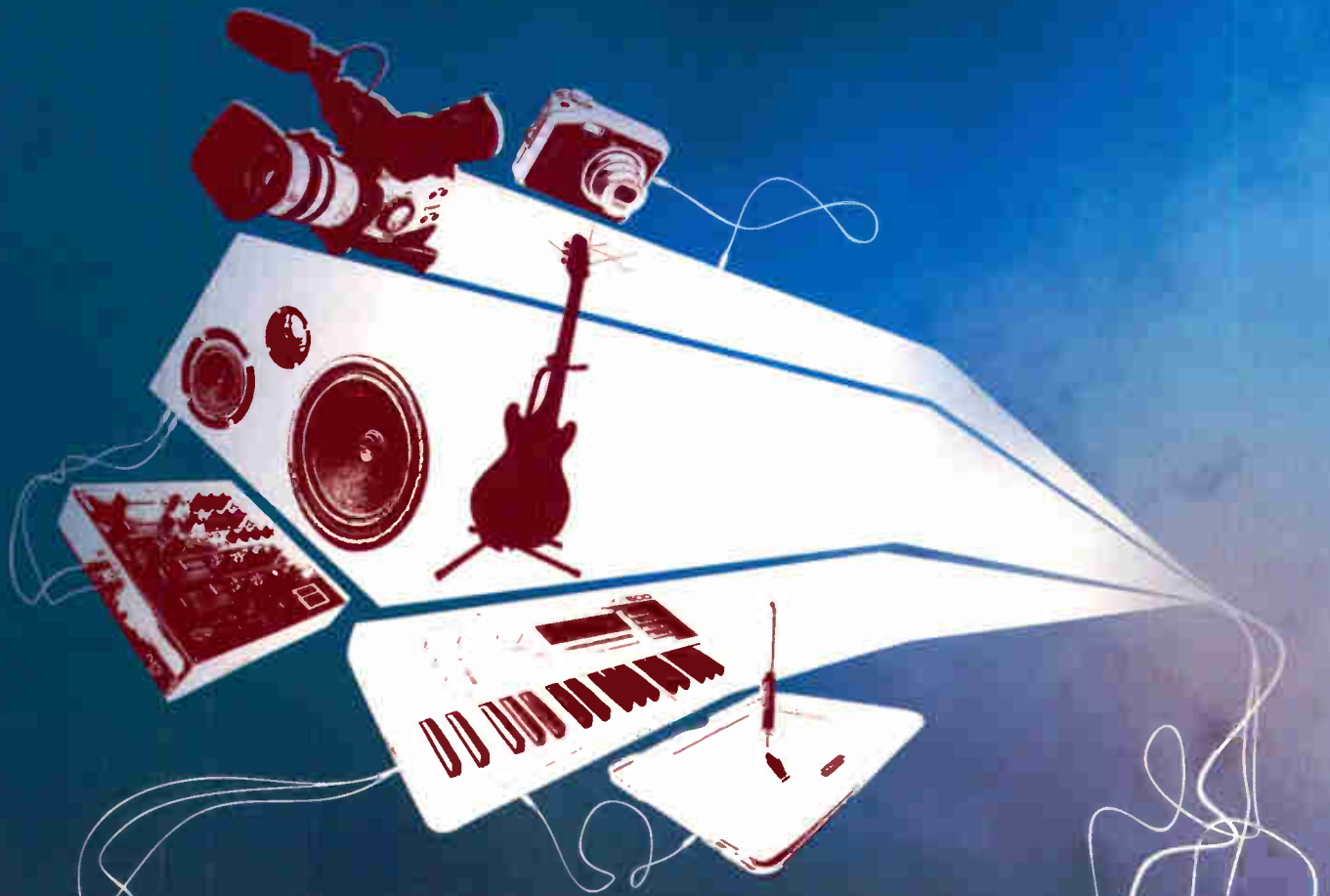
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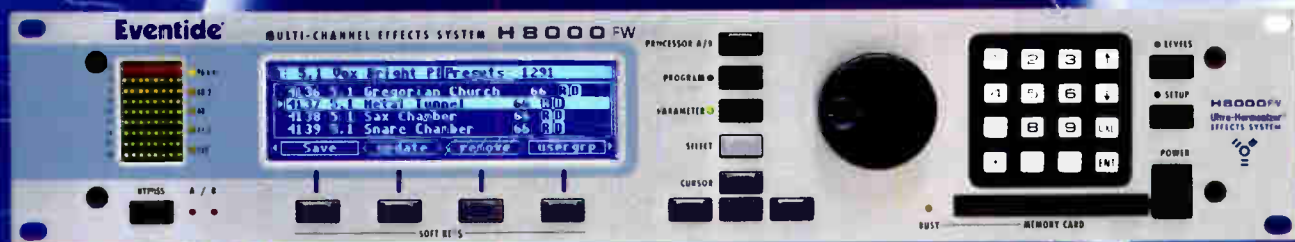
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Nathaniel Kunkel's Studio Without Walls is as much an approach to making records, as it is the actual physical studio. "I move around all the time and I take my studio with me. More often than not I find myself working in smaller, irregular rooms, such as a guest house, office, or hotel room. When I am working in a smaller room like that, the first thing that gets sacrificed is the monitoring environment – and there is almost always some kind of low frequency problem. The LSRs allow me to know exactly what is going on with the bottom end, and create mixes that translate impeccably outside of the studio. The RMC system makes a tremendous difference. I've been working on the JBLs exclusively and I'm really, really happy with them."

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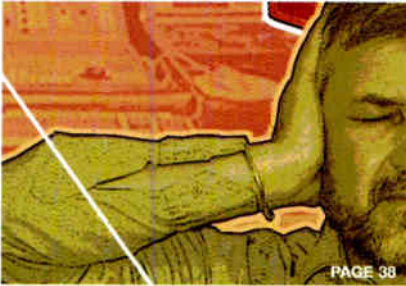
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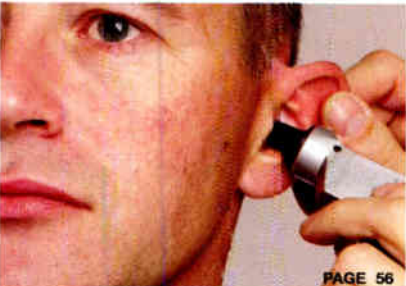
MAY 2007, VOLUME 31, NUMBER 5



PAGE 38



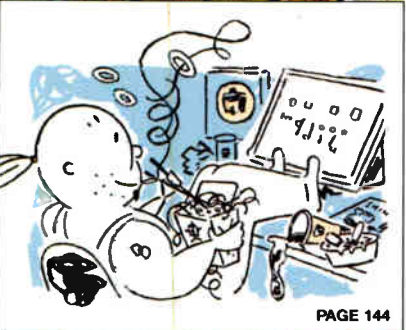
PAGE 50



PAGE 56



PAGE 60



PAGE 144

In our fifth annual special-focus issue, we investigate crucial health and wellness issues facing audio pros, from hearing protection to stress management to navigating workplace hazards and conquering the workaholic in all of us. Special coverage begins on page 29.

31 It's Your Life, Dammit!

That's for sure, and if you want to stay in this business for a long time, you'd better read up.

38 Bring Down the Noise

Your ears are your livelihood, and keeping them healthy should be the top of your best-practice checklist. Learn how to protect your hearing on and off the job.

46 Words From the Wise

With a whole lot of recording experience between them, Tom Flye, Al Schmitt, Ed Cherney and Elliot Scheiner have quite a few legs to stand on as they share war stories and hard lessons learned from decades in the studio trenches.

50 Road Reality Check

For three hours a day, five days a week, four to five months at a time, FOH engineers' ears—and well-being—can be pushed to the limit. Yeah, they bought this ticket to ride, but there are ways to protect their hearing and their sanity.

56 In-Ear Monitor Myths and Truths

It's easy to assume that in-ear monitors are fail-safe devices for protecting ears onstage. But like any other audio gear, they pose their own risks, and control lies in the hands of the user.

60 Finding Your Oasis

It's not uncommon to hear a friend say, "I'm totally stressed out"—whether that person works in audio or not. Learn how to handle the bumps and bruises of the studio world and stay calm, cool and collected.

68 Striking a Balance

An audio job can place incredible demands on your time, and for most, that's okay. But it's important to create time for other priorities in your life.

72 Studio Ergonomics

It's not all about posture: Job routines evolve with technology. Optimize your space with specialized gear and develop positive habits now to work better.

144 Back Page: Doofus and Dylan

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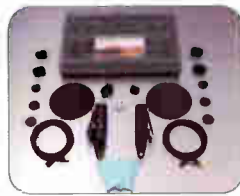
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contents

sections

LIVE MIX

- 86 **Live Mix News**
92 **All Access:** My Chemical Romance
by Sarah Benzuly



PAGE 94

- 94 **Tour Profile:** Christina Aguilera
by David John Farinella
98 **NSCA Show Report**
by Steve La Cerra

RECORDING NOTES

- 116 **Joe Zawinul** by Blair Jackson
117 **The Shins** by David John Farinella



PAGE 117

- 118 **Classic Tracks:** Sinéad O'Connor's
"Nothing Compares 2U"
by Barbara Schultz

COAST TO COAST

- 124 **L.A. Grapevine** by Bud Scoppa
124 **Nashville Skyline** by Rick Clark
125 **N.Y. Metro Report** by David Weiss
126 **Sessions & Studio News**
by Barbara Schultz

technology

- 106 **Tools of the Trade**
108 **Field Test:** Primera Bravo SE Disc
Duplicator



PAGE 110

- 110 **Field Test:** Chandler Limited
TG12413 Zener Limiter
112 **Field Test:** Red Type A Tube Studio
Condenser Microphone



PAGE 112

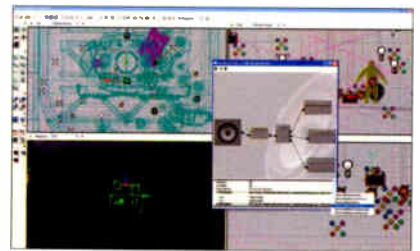
- 114 **Field Test:** Little Labs Lmnopre
Microphone Preamplifier



Most of us have rigged up a studio in a spare bedroom or even a garage. What's the oddest place you've built a studio? Talk to us at mixeditorial@mixonline.com.

columns

- 20 **Insider Audio:** The Healing Power of Music by Paul D. Lehrman
76 **Producer's Desk:** The Underdogs by Elianne Halbersberg
80 **Project Studio:** Karney Music and Sounds by Blair Jackson



PAGE 82

- 82 **AudioNext:** Audio Middleware, Part 3 by Alex Brandon
102 **Tech's Files:** Hazardous Materials—The "Other" Chemicals That Can Kill You by Eddie Ciletti



PAGE 102

departments

- 10 **From the Editor**
14 **Current/Musikmesse Report**
130 **Mix Marketplace**
136 **Classifieds**

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Confronting Taboos

The issue you hold in your hands is long overdue. Yes, perhaps we went over-the-top with our cover type, but we mean what we say. And we want all *Mix* readers to pause—if just for a moment—and think about what goes on in their daily lives, both inside and outside the studio.

In researching this special issue, we found that for many, there is no life beyond their job. And that may be just fine for some. Ours is an industry that's fueled by passion, and sometimes that passion translates into 24-hour sessions or six weeks without a break writing code for a new software release. Those who live a life inside the pro audio world are here because they simply can't imagine being anywhere else. The hours, the lifestyle, the take-out food are all part of the game. Or as Hunter S. Thompson said, "Buy the ticket, take the ride."

But that doesn't mean passion can't be balanced by a bit of common sense. In developing this year's themed issue, we were responding to two areas of concern. First, we noticed too many obituaries crossing our desk—men and women in their 40s and 50s who had plenty left to give. And second, we started thinking about ears. Last year, the mass media inundated us with warnings about how earbuds are wrecking an entire generation's hearing. What's really going on and how can we—who live a life in audio—save our own ears?

Not surprisingly, we found health and hearing to be taboo topics in professional audio. If an NFL running back pulls a hamstring, it's front-page news, but if an engineer discovers a notch at 3k, it's not meant for conversation. We know why that is, but that doesn't mean engineers should avoid getting their ears checked—or continue to ignore the hazards. Steps taken now can prevent further damage.

"When I talked to audiologists, they seemed perplexed that people who depend on their ears for a living are often the ones most reluctant to turn it down," says *Mix* features editor Sarah Jones, who drove this issue from concept to completion. "But it's more than just hearing. Being aware means recognizing your own limits, whether it's volume levels or pulling a second all-nighter this week. People can find success without reaching their breaking point. It's all up to the individual."

Each person's situation is different, and what causes stress in some may provide an adrenaline rush for others. But there is no denying that the world of professional audio presents some common lifestyle stressors, and some definite demands on hearing. Solutions for managing stress and for protecting your hearing are out there; it's a matter of finding what works best for you.

We're not self-help artists here, and we're not trying to tell anybody how to live a "correct" life. As Blair Jackson points out in our opening essay, there are plenty of glass houses here in our office. But we do care about this industry, and that means we care about the people who make it run.

Keep the passion. Keep the faith. Pump up the volume when the music demands it. Just be smart. And be aware.

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ETHAN WILLOUGHBY, 1976-2007



Grammy-nominated engineer Ethan Willoughby was killed in a car accident on February 18, in Los Angeles, as a result of being hit by a drunk driver.

Born in Evansville, Wis., Willoughby attended the Conservatory of Recording Arts and Sciences in Tempe, Ariz., earning his degree in Engineering and Production Education. After graduating in 1999, he began his career as an assistant under his mentor, mix engineer Dave Pensado, at The Enterprise Studio in North Hollywood. While assisting Pensado, Willoughby worked on projects for Pink, Christina Aguilera, Brian McKnight, Jessica Simpson, Mya, Lionel Richie and Destiny's Child, and embarked on his first collaboration with Justin Timberlake on the artist's debut album, *Justified*. He was awarded a Grammy nomination this year for Album of the Year for Timberlake's *FutureSex/LoveSounds*.

"Of all the people I've known in the music business," Pensado recalled, "Ethan had the purest love and enjoyment for what he did. Everyone he touched was better off for knowing him."

After two-and-a-half years working under Pensado, Willoughby transitioned to lead engineer, where his work with will.i.am on Bob Marley's "Africa Unite (will.i.am Remix)" led to a close relationship with the Black Eyed Peas and subsequent work on their projects. will.i.am stated, "Ethan was one of the few people I trusted with my music to mix it and make it sound perfect. Most importantly, he was one of the nicest, kindest people that God blessed us with."

Timberlake said, "I am deeply saddened by this loss. Ethan Willoughby was not only an amazing talent in the studio, but also an amazing person. We will all miss his presence and his love for music. We love you dearly, Ethan, and we will carry on your love for what we hold so dear. A true gift to our industry. A loyal friend to me. See you in the next one, my man."

Willoughby is survived by his wife, Stephanie Cooper-Willoughby; daughters, Ava and Mycheala; sister, Catherine; and parents, John and Barbara Willoughby.



NEW NEIGHBOR HOWLING ON ROW



Tapping into Nashville's expansive music scene, music production company for advertising Howling Music (www.howlingmusic.com) has a new address on Music Row. According to company principal David Grow (above), "Los Angeles has a large pool of musical talent, but it has been pretty thoroughly mined for ad work. Nashville is filled with amazing artists and players, a pool of talent roughly twice the size of L.A.'s, yet they have been remarkably underutilized for ad music, and that creates a great opportunity for our clients."

The production offices include two fully equipped recording studios. The company will maintain a small local staff while Grow and fellow staff composers Nick Brown, Jorgen Carlsson and Peter Slantsker will move between the company's Los Angeles headquarters and the new office. Grow added that the company plans to open a third office in Dublin, Ireland.

NOTES FROM THE NET

REAL-TIME RESULTS

Since October 2006, Blastmymusic.com (www.blastmymusic.com) has signed numerous artists across all genres. To use Blastmymusic.com, artists log on, create a profile and upload their music, placing the MusicBlaster player on their site. Digital downloads sell for \$0.99 each, with two-thirds of each sale generated going straight to the artist immediately after a 30-day fund-verification process. The MusicBlaster player lets users stream 30 seconds of a song and purchase the individual track in an unprotected MP3 form.



HEADPHONE SAFETY

Promoted as a safer headphone, Ultrason's S-Logic line aims the sound at the pinnae instead of directly down the ear canal, which is said to offer improved imaging and a 3 to 4dB SPL decrease, while delivering the same perceived volume. Going a step further the company's patented shielding technology reduces the magnetic emissions of its products to less than 90 nanoTeslas (nT). In a recent test, Ultrason reported measurements of 60 competing headphones averaging around 1,000 nT—some four times the max emissions recommended for computer monitors set by European standards organization TCO.



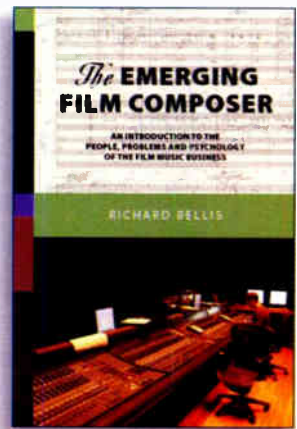
L.A. OPEN GARNERS MORE SUPPORT



The 12th Annual Mix L.A. Open, to be held on Monday, May 14, at the Malibu Country Club, is being strongly supported by the audio industry. Confirmed sponsors at press time include Absolute Music, Acme Audio, Audio-Technica, Design FX, Full Sail, Harman Pro/JBL Professional, *Mix* magazine, the P&E Wing/The Recording Academy, The Pass Studios, Record Plant, Shure, Sound Design Corporation and Yamaha Corporation of America. A limited number of playing spots and sponsorships are still available. Call Karen Dunn at 925/939-6149 or visit www.mixfoundation.org for information. Mix Foundation events benefit hearing conservation and audio education programs, including House Ear Institute's Sound Partners program and Sound Art.

BOOKSHELF

The Emerging Film Composer finds Richard Bellis tackling the many issues that arise for today's film composer—from the art and craft of writing music to picture, the day-to-day life of a film composer to easily surfing the waters between creativity and business practicalities. Bellis is an Emmy Award-winning composer who also serves on the faculty of the USC Scoring for Motion Pictures and Television program and has taught film scoring at UCLA Extension. He is a past president of the Society of Composers & Lyricists and has served on the Board of Governors for the Academy of Television Arts and Sciences. The book is available at www.richardbellis.com.



Want to get more information about film composing from the composers themselves? Then check out *Inside Film Music: Composers Speak*, a collection of candid interviews with numerous top film composers, compiled by first-time author Christian DesJardins. Featured interviewees include John Barry, Jan Kaczmarek, Rachel Portman, Stephen Warbeck and Gabriel Yared. Silman-James Press (www.silmanjamespress.com).



MO' MONEY SHURE GIVES



From left: Kathy Peck, H.E.A.R.; Benjamin Kanters, Columbia College; Marilee Potthoff, House Ear Institute; Christine Schyvinck, Shure; and Michael Santucci, Sensaphonics

Shure will again donate \$50,000 this year to four organizations—Columbia College, H.E.A.R., H.E.I. and the National Hearing Conservation Association Scholarship Foundation—as part of the Shure Listen Safe program. In addition, Shure Listen Safe will promote hearing conservation by providing free hearing screenings and distributing hearing protection devices at professional audio industry trade shows, music conferences and festivals, and to Shure's employees.

INDUSTRY NEWS

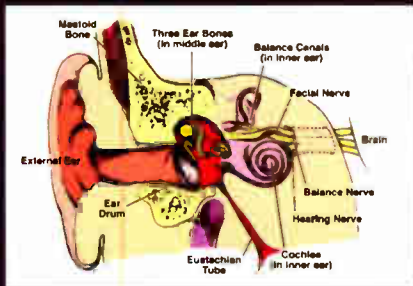
Audio post house RavensWork (Venice, CA) promoted Holly Musselman to director of operations...Shure (Niles, IL) announcements: Mark Brunner, senior director of brand management; Stephen Kohler, director of marketing strategy and planning; Jim Santilli, director of market research; and Scott Sullivan, senior director of product management...Doug Penna is the new VP of engineering for Panamax and Furman Sound (Petaluma, CA)...New director of client services for MusicBox's New York City facility is David Noble...Jørgen Broberg is now director of sales and marketing for DK-Technologies (Copenhagen)...Focusing on



Holly Musselman

Western U.S., Canada, Mexico, South and Central Americas, Asia and the Pacific Rim, as well as special accounts is Jennifer Cassidy, regional sales manager of HME's (San Diego) pro audio division...Aviom (West Chester, PA) promotions: Jeff Lange, consultant liaison; and Craig Sibley, marketing manager for house of worship...Distribution deals: API Audio (Jessup, MD) named Mix Wave (Tokyo) as its Japanese distributor; handling German distribution for InnovaSon (Nashville) is Camco (Wenden-Gerlingen, Germany); L-Acoustics' (Oxnard, CA) latest independent rep firm is Highway Marketing (Dallas), which will handle Texas, Oklahoma, Arkansas and Louisiana; and Linear Acoustic (Lancaster, PA) called on Sound Network (London) as its exclusive distributor/sales representative for the UK and the Republic of Eire.

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



READ: "Bring Down the Noise"

Get additional information, specs and guidelines to increase your hearing awareness.



READ: Road Reality Check

These road warriors had to plenty more to say about making sure their ears are not completely abused after a full-on rock show.

LISTEN: "Recording Notes"

Check out audio clips from Joe Zawinul, The Shins and Sinéad O'Connor's "Nothing Compares 2U."



PLAY: Talkback

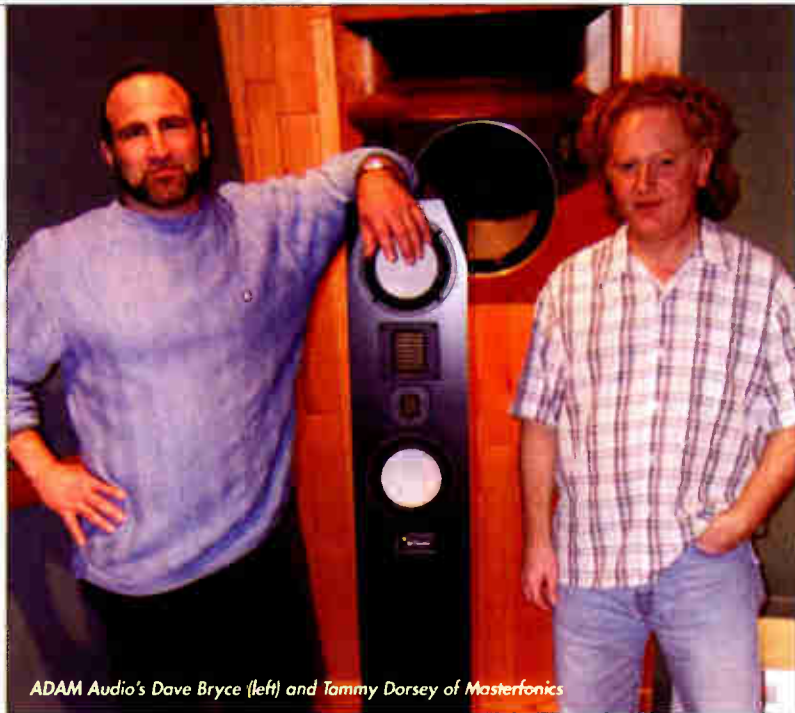
Most of us have rigged up a studio in a spare bedroom or even a garage. What's the oddest place you've built a studio? Talk to us at mixeditorial@mixonline.com.



TALKBACK

CURRENT

HEARD OUT LOUD



ADAM Audio's Dave Bryce (left) and Tommy Dorsey of Masterfonics

ADAM Audio recently held a day of critical-listening events at Masterfonics in Nashville, where local audio professionals, Nashville AES chapter members and local retailers were able to hear the company's P Series, S Series and Mastering monitor systems. The daylong event included private demos held with five local retailers: Corner Music, Ears Audio, GC Pro, Rack-n-Roll and Vintage King Audio. The evening session coincided with the Nashville AES chapter's monthly social, and hosted more than 100 members, local producers and engineers.

DICK BELLEW JR., 1935-2007

Veteran manufacturers' representative Dick Bellew Sales Inc. lost its president/owner, Dick Bellew Jr., who passed away on January 16, 2007, from sudden complications from cancer. Bellew received his Business degree from Coe College (Cedar Rapids, Iowa). He also completed Officers Candidate School at Ft. Benning, Ga., and served two years as an officer in the Army Security Agency. Bellew began working with his father, Dick Bellew Sr., in 1961 as a salesman covering Arkansas, Louisiana and Western Tennessee. In January 1981, the company expanded into Texas and Oklahoma. He was a past president, past Chairman of the Board and active member of the Southwestern Chapter of the Electronics Representatives Association.

"Many knew and will greatly miss Dick's leadership, experience and outlook," said Dave Formet of Dick Bellew Sales Inc. "He was an honest, fair-minded man who was disciplined and worked hard. He taught me a lot about sales, but mostly how to live a good man's life."



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PRODUCT HIGHLIGHTS OF MUSIKMESSE/PRO LIGHT+SOUND 2007

BY GINO ROBAIR

Among pro audio/M.I. events, Frankfurt's Musikmesse/Pro Light+Sound (March 28-31, 2007) takes the prize, with 15 exhibit halls showing gear from 2,400 companies. Coming on the heels of NAMM and NSCA, one could assume this European expo might lose its attraction as a launchpad for new gear, but there were many interesting debuts. Listed alphabetically, here are a few that caught my attention.

The iMultiMix 8 USB from Alesis (www.alesis.com) lets users mix stereo WAV files (16-bit/44.1 kHz) directly to an iPod. Priced at \$449, the Mac/Win system includes a dock that supports second- through fifth-generation iPods. The mixer has eight analog inputs (four of which are phantom-powered mic preamps), two instrument inputs, digital effects and 3-band EQ on each channel. Steinberg Cubase LE is included.



Alesis iMultiMix 8

Designer **John Bowen** (www.johnbowen.com), whose past projects include working on Korg's Wavestation and OASYS, as well as classics from Sequential Circuits, teamed with SonicCore GmbH to produce Solaris. This keyboard synth offers an array of sound generators (analog modeling, wavetable and sample playback, among others) and various popular filter types. A pair of vector-synthesis mixers, a host of envelopes and LFOs, an effects section and a knob-filled front panel complete the scene. It's slated for October release, and pricing is estimated around \$3,500. Solaris could be a formidable synth once it hits the streets. Keep your eyes (and ears) on this one.

Chandler/EMI (www.chandlerlimited.com) offered more interesting units based on vintage designs found at Abbey Road Studios. The TG12345 Curve Bender (\$5,000, plus \$160 for the power supply) is a stereo 4-band EQ with highpass and lowpass shelving, a Hold function, a stepped gain control (± 10 dB) and a germanium-based line driver you can use with the EQ circuit bypassed.

Digidesign (www.digidesign.com) drew crowds with its next generation of analog and digital I/O recording interfaces bundled with Pro Tools LE software and various instrument/effects plug-ins. Priced at \$2,495, the 003 Factory has eight touch-sensitive moving faders, eight motion-sensitive rotary encoders and a jog/shuttle wheel, and it comes with the premium collection of Digidesign and Bomb Factory plug-ins. Two rackmount versions are also offered: The 003 Rack (\$1,295) includes the Pro Tools Ignition Pack 2; the 003 Rack Factory (\$1,695) ships with the same extended software bundle as the desktop 003 Factory.

Makers of the alpha compressor, **elysia** (www.elysia.com) introduced the Mpressor (\$4,500), a compressor designed for recording and offering settings for extreme dynamics control. The stereo device has balanced analog I/O and sidechain I/O, and includes an Auto-Fast function, an Antilog release feature and a Max-Reduction function.

The newly launched **Equator Audio Research** (www.equatoraudio.com) announced its Q Series of powered coaxial reference monitors. Available with 10/12/15-inch woofers, all include software for tuning the system to your room, including Secondary Reflection Correction, which is said to compensate for acoustical obstructions such as consoles and computer monitors. The main

monitor connects to your computer via USB, and Cat-5 connections are used between monitors. The Q line is designed to provide accurate playback, no matter what the room conditions, with high-SPL capabilities when needed. I heard the Q12s, and they sounded great.

A new addition to **Meyer Sound's** (www.meyersound.com) popular UltraSeries, the UP-Junior VariO™ loudspeaker brings the sonic signature, flexible mounting/rigging options and high power-to-size ratio of the award-winning UPJ-1P to a smaller package. The 28-pound, self-powered, two-way enclosure is capable of 126dB peak SPLs from its 8-inch neodymium magnet woofer and 0.75-inch exit/2-inch diaphragm HF compression driver, providing a 65 to 20k Hz response.

Native Instruments (www.native-instruments.com) announced Kore 2, which includes a redesigned interface/controller, a library of 500 KoreSounds and the ability to have eight variations of a sound and morph between them. It's due to ship in June.

Orpheus from **Prism Sound** (www.prismsound.com) is a FireWire interface with eight analog inputs and outputs, and S/PDIF co-ax/Toslink ports for a total of 18 I/O channels. The interface features four digitally controlled mic preamps, two instrument inputs, two headphone outputs and a Mac/Win application for routing signals and controlling the built-in mixer. ASIO, WDM and Core Audio drivers are supported, as is 5.1 and 7.1 surround capability. It is priced around \$5,000.

SPL (www.spl-usa.com) and **Tonehunter** (www.tonehunter.de) teamed up to create Transducer Model 2601 (\$1,500), an analog speaker simulator for recording guitar amps up to 200 watts. The front panel has switches for selecting parameters such as open/closed speaker cabinet, dynamic or condenser mic simulation, speaker voicing and mic distance. The rear panel has a mic preamp output, a pair of line outs and a speaker-thru jack for sending a signal back into your speaker cabinet.



Equator Audio Research 15-inch

Europe's favorite music/pro audio show returns to Frankfurt next year, March 12-15, 2008. For more coverage of Musikmesse/ProLight+Sound 2007, see *Mix's* extensive show report at www.mixonline.com.

Gino Robair is Electronic Musician's senior editor.

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Autism Research Explores Response to Specific Frequencies

We all have to be concerned with loud sounds these days, whether it's making sure our kids don't suffer from "iPoditis" or taking care not to destroy our own eardrums in the course of trying to do our jobs. But there is a group of people for whom even normal sounds—at least ones that sound normal to most of us—can be extremely harmful.

That's the crux of a theory developed by French physician Dr. Guy Bérard about autism. And people I know and respect in the audio industry are finding it to be correct—and profoundly helpful. Autism, a disorder affecting both children and adults in which the sufferer fails to respond to normal sensory stimuli or responds in highly distorted ways, has been diagnosed for centuries, but in recent years, it has apparently been showing up more frequently, particularly in highly developed areas of the world. A new survey by the Centers for Disease Control and Prevention shows that approximately one in 150 children born today in the U.S. will show symptoms of autism, while the incidence in Great Britain is reported to be even higher.

It's well-established that there is some genetic basis to the syndrome, and there are a number of theories about environmental factors that may contribute to the incidence of autism. Likewise, a variety of methods of treating autistic children have been tried over the years—particularly to help kids who are more severely withdrawn. Some of these experimental treatments have been pointless, expensive and cruel; others give cause for hope. According to Tom McGurk, an award-winning composer and one of the owners of legendary Seattle studio Bad Animals, an unusual therapy involving exposing autistic children to recorded music may be the key to helping many victims of the disorder.

Before I get into the story, though, let me point out two things that might be obvious: One, I'm not a neurologist or child therapist, but there are many excellent people in those fields and others working with autistic children. If you have a child who is showing signs of slow development or unresponsiveness, then please consult a professional right away. If there really is something wrong, the sooner you find out, the better the child's chances for improvement. Two, autism comprises a whole range of symptoms and syndromes, and while this particular therapy has been helpful in this case, different children will respond to it in different ways, or perhaps not at all. Again, professional guidance is crucial.

Tom and his wife, Danielle, are the parents of a 6-year-old autistic child, Connor. I've known Tom and Danielle for a long time—they were both students of mine nearly two decades ago. As a student, Tom was

[Applied Behavioral Analysis is] very focused, and there are specific programs in reading, math and printing—teaching through repetition. It is one of the few therapies that provides tangible data showing an individual's progress. It's sort of like having a really intense music tutor.

—Tom McGurk

rambunctious, sarcastic, disruptive and very talented. He became a composer, sound designer and mixer for the smash PBS kids' show *Bill Nye, The Science Guy*. He and his team won seven Emmys and eventually bought the studio where they were working. Danielle—thoughtful, sensible and methodical as a student—is a product support engineer at Silicon Graphics, where she had been part of the now-defunct audio group.

They noticed when Connor was just out of infancy that he was different from other children his age. He was the last in his play group to roll over and sit up. He never pointed or made eye contact with anyone, he avoided other kids and he recoiled at loud noises. At 18 months, when he still wasn't talking, his parents knew something was wrong. He was diagnosed as being autistic, and they were urged to take early action.

So they researched the syndrome intensively. One treatment they pursued and have had success with is called "Applied Behavioral Analysis," or ABA. "It teaches skills that typically developing children learn on their own," says Tom. "The principle behind it is to break down complex skills into component skills, like how to imitate and read facial expressions, and both receptive and expressive language, and teach the skills so that they build on one another.

"It involves carefully charting and graphing what the child understands and what he doesn't," he continues. "If you look at a chart of Connor's skill levels at the time, it would look like a city skyline. There are deep spikes in some areas that would just not be noticed in

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a classroom. So it's very focused, and there are specific programs in reading, math and printing—teaching through repetition. It is one of the few therapies that provides tangible data showing an individual's progress. It's sort of like having a really intense music tutor."

But Tom and Danielle were interested in going further, supplementing ABA with at least one unconventional treatment each year. "I found a book, *The Sound of Falling Snow*, and one of the stories in it sounded just like Connor." Tom remembers. The book was edited by Annabel Stehli, a writer and parent of an autistic girl. Stehli is an advocate of a theory developed by French otolaryngologist Bérard, who says

that one of the causes of autism may be the way its sufferers respond to sound—that the sounds around them are simply overwhelming them.

"Connor always had stuff going on with sound," says Tom. "There are two floating bridges near us, and when he was little, whenever we'd drive over them, he'd cover his ears. We have a friend who has a very quiet voice, and when he would visit, Connor took to him so much that he even sat in his lap. Before he talked, he used to make this noise, which one day I realized was a siren going by because we lived on a main road. So after that, every time I heard him make a weird noise, I knew he was imitating something. One of his teachers at

school asked me if we had a Theremin because she said he was doing a really great imitation of a Theremin. And we did.

"When we did an audiogram on him, it was all over the place," he continues. "There are anomalies between the two ears and within the ears themselves; it's not flat. One ear showed a spike and the other a drop at the same frequency. Well, if your ears are interpreting what they're hearing completely differently from each other, it's impossible to understand sounds. It affects language development because you can't get meaning or emotions. It's why some autistic kids go into a corner: They can control and localize everything they hear by turning their heads. Or some make a lot of noise: They're trying to balance out the sounds that are around them.

"Going through the audio training I did, I realized that if you don't get the sounds coming at the same time, it's horrible. Once you understand that environmental sound is having an impact on someone, you think, 'If I were having these problems, it would drive me crazy, too.' If you're in school and you can't follow directions because you can't understand them, they think it's emotional. And soon it *becomes* emotional: 'This environment for me is driving me out of my mind; I have a huge spike right where fluorescent lights buzz—get me out of this room! I can't learn because all I hear is "bzzzz." But they think I'm dumb.'

"When they rang the bell in church, he would cover his ears and shake his head, and people would think, 'Hey, he's just a bad kid.' I asked the therapist about the frequency band where a bell would appear, and she said he's got a huge spike right there. One time he told us he didn't want to go to school, but he loved school. So I started looking for causes, and it turns out there was a kid screaming on the bus, which was driving him nuts.

"Kids can't articulate what's wrong and so they become withdrawn," he adds. "With some children, it's the stomach. Put them on a gluten-free diet and they get better. Once you try to see through his eyes, you realize he perceives things differently than we do. So you're trying to figure out what that perception is and somehow try to balance it out."

Dr. Bérard has developed a technique for retraining children with these kinds of hearing issues; he calls it "Audio Integration Training," or AIT. It comprises a number of 30-minute sessions, twice a day over 10 days, listening to specially recorded music CDs. "The practitioners don't talk much about the technology," says Tom. "It's music with certain fre-

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Όρφεύς

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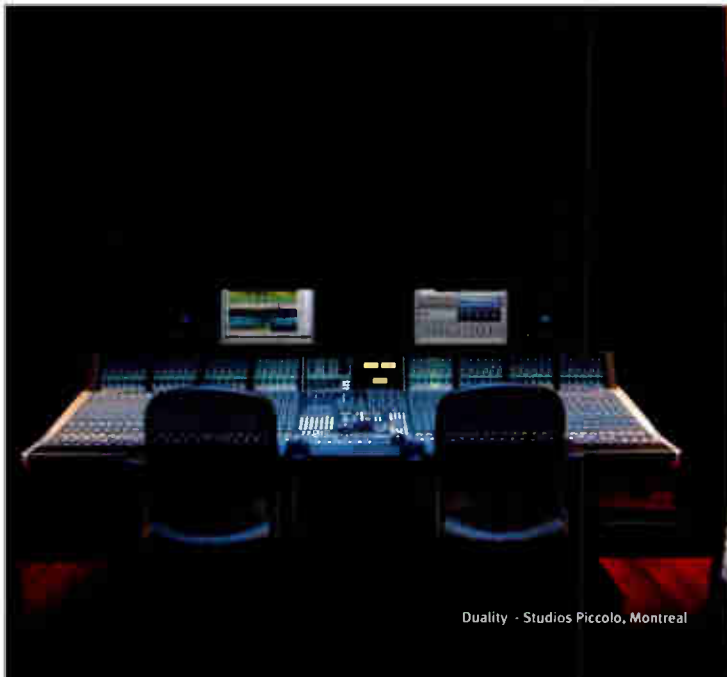
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quency bands and modulations, and you don't want to listen to it yourself. My interpretation of it is that it's retraining your ear to recognize what a level frequency response would be."

According to Stehli's Website (www.georgianainstitute.org), "By means of audiometric testing using a standard audiometer, it can, in some cases, be determined at what frequencies a person has hyperacute and/or hypoacute hearing. If such an auditory test is possible, then one or two of the frequencies at which hearing is most acute may be filtered." In other words, the CDs reflect the child's own hearing anomalies and allow him or her to hear music that is not bothersome. The underlying theory, which is still a long way from proven, is that somehow the brain—especially in a young child—compensates by physically reorganizing itself to be less sensitive to the missing frequencies.

"Of course, we were skeptical," says Tom. "But we said, 'We're going to do this and not tell any of his therapists, but just get empirical evaluations afterward and see if he's getting better.' We wanted people who could evaluate the improvement, if there was any, without biases. The first training was when he had limited speech; the thera-

pist got Connor's reactions from his facial expressions."

AIT is not an easy thing for a child to get started on; initially, children can respond very badly, even violently. "At first, we had to hold the headphones on him," says Tom, "and he acted like he had hot poker in his eyes. But at the end of the week, he was falling asleep with the headphones on. They warned us that there would be negative changes in his behavior, too. After the second week, we saw this beast we had never seen.

"But then we started to see positive changes," he continues. "It wasn't like this big Hollywood, 'Mom, Dad, I love you!' but incremental things, like all of a sudden he became interested in the family dog, whereas before he used to hate it when she'd bark. He understands his own behavior now. As he knows more, his other systems take over for them. He's able to tell me that the problem with those floating bridges was that when we drove over the diamond-plate, he was hearing subsonic stuff that we couldn't, and it bothered him.

"There are apparently inner-ear issues, as well. Putting him on an amusement park ride was like throwing him into hell. We

couldn't figure out why. After therapy, about two-and-a-half weeks later, he's on every ride. And his therapist laughs and says, 'What the heck did you do to this kid?' Now he's skiing, and he's into speed and turns, and the instructor says, 'Your kid's got great balance.' Well, he didn't two years ago.

"His speech has improved incredibly. His IEP [Individualized Education Program—the format used in special-needs education] no longer involves academics; now he's above a grade in some areas like reading. Everything that remains is behavioral. I'm not saying that AIT alone did all this; I believe in a comprehensive program. But we can definitely point to this specific time as a big turning point and spike in his development. *Big*. The therapists who didn't know we had done this treatment all noticed the marked change at the time and commented on it."

The recommendation of practitioners of AIT is that it should be done several times during childhood. "The body is changing, the brain is growing," says Tom, "and they think we should do it every two years. The second time we did it, Connor was fine with it—he knew what was going to happen. It even works with older people. We've read about 40-year-olds who get

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treatment who say their lives have changed. But it's so important, as we were told, to get to them early. If you wait until they're 12 years old, there are all those layers of protection they've built up against the outside world. You have to strip away all that stuff and build it up again. With a kid who's 2 or 3, that hasn't happened yet."

Connor's sensitivity to sound is now evolving into an appreciation for music. "I am amazed at the responses he has to specific pieces of music as they are playing," says Tom. "They're all about the actual acoustic elements, as opposed to the the-

matic or musical elements. He responds to vocal parts, piano and instrumental music differently. Some makes him absolutely calm, some really jumpy. When we visited my family over the summer, my nephew was really into the Icelandic group Sigur Rós. They are an ambient/sound collage-type band, and that music really affected Connor in a positive sense—calming. He really does hear differently than the typical person, and it never ceases to amaze me. We've got a lot to learn about sound and how it affects the individual."

Besides appreciation, there also appears

to be a growing talent there. "We have a piano in the living room, and when he was mad at us, he would pound the low keys," recalls Tom. "But later, at 3 or 4, he was doing scalar stuff, and I'd notice there was a tonal center to everything he played. It freaked me out."

"It's not a savant kind of thing, but he's musical. His teacher just told me, 'I think your kid has perfect pitch. Everything that we sang in class, that kid was firing back perfectly.' We went into Guitar Center, and he saw a drummer, so he sat down behind a kit and tried to imitate him. The drummer said, 'Wow, you should get your kid a drum set.'"

Not surprisingly, Tom and Danielle have become vocal advocates for early intervention when it comes to dealing with autism. "If you put your money into these kids, they'll be in society," says Tom. "They might be a little different, but if we help them along the way as they develop, they will be able to go to school and have productive lives. But if you don't, they say it could be a million bucks a person on the back side. How we choose to help these kids will have far-reaching effects in the next few decades, both societal and financial. Finding innovative treatments to enable the kids to learn is paramount, and we really don't have time to wait for the government to come rescue them. Many people are currently searching for the gene, the environmental effect, the triggers that cause autism, and that's great. But just as important is the education and therapy of the kids here *now*, and also educating the population in general as to how to interact with the ones living among us."

And Tom sees a role for the audio industry in all of this: "Our industry has a profound effect on these kids in many, many facets of their lives. We have so many great people who could be involved and supplying the resources needed to assist and train the therapists, and to create the technologies needed to get therapies to a wider range of individuals for a more affordable price. In the future, there may be handheld devices a kid can use to help him focus and calm down using sound—as opposed to Ritalin. Imagine that!"

I think there are *a lot* of parents who would be pretty happy about that. ■

Paul Lebrman is the director of music technology at Tufts University. You can catch up on 11 years of his scribbles in The Insider Audio Bathroom Reader, published by Thomson Course PTR and available at www.mixbooks.com.

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■ **SPECIAL REPORT: FOCUS ON HEALTH AND HEARING AWARENESS**

IS YOUR JOB KILLING YOU?

(Or just making you deaf?)

■ **INSIDE**

31 It's Your Life, Dammit!

38 Bring Down the Noise

46 Words From the Wise

50 Road Reality Check

56 In-Ear Monitoring

60 Finding Your Oasis

68 Striking a Balance

72 Studio Ergonomics

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It's Your Life, Dammit!

WE'RE NOT GOING TO TELL YOU WHAT TO DO, BUT YOU SHOULD PAY ATTENTION.

By Blair Jackson

Okay, now that we've got your attention with that cover—we're *not* just being dramatic. The fact is that a career in the trenches of the audio industry can be hazardous to your health and may cause an early death. And if it doesn't actually kill you, it might damage your hearing, raise your blood pressure, lead to serious weight gain or loss, funnel you toward all sorts of legal and illegal addictions, and destroy your marriage/relationships—all in the service of aiding and abetting the creation of art and entertainment.

Every one of us knows an audio workaholic (or 10) worthy of concern—and even pity—because of their selfless and, perhaps, foolish dedication to their craft. They *love* their job, and that means giving it everything they've got at whatever the cost in time, health and social consequences. You've heard 'em all: "This mix can be *just about perfect* in only a couple more hours" (on top of the 10 that have already been devoted to it). "Look, we've been up this long, we might as well stay up all night and finish." "My ears seem to be getting a little tired—let's turn it up so I can hear the detail better." "Nah, I'm not hungry; we'll get some take-out later." "We can crash here for a couple of hours and get a fresh start in a while." "I don't read manuals; I can probably figure out this kick drum-replacement program on my own." "Honey, it looks like we're goin' a little long here—can you take Sarah to her soccer game?"

Hey, wait a minute—they're not talkin' about some other guy! That could be me!

Yes, we're all guilty of neglecting our health for work's sake from time to time. Let's face it: It goes with

the territory and, of course, it's hardly unique to the audio world. But our little corner of the universe presents an incredibly broad range of hazards that require a special brand of vigilance (and intelligence) to avoid or overcome. That's what this issue is all about: understanding the myriad complex health issues so many of us face in this profession we all love and offering some practical solutions that can make your life better right away. You say you don't want to see the diagrams of the human ear with all those creepy little hair sensors? You want us to back off because you already know that coffee and cigarettes are less healthful than green tea and yoga? Who are we to argue with your five Platinum albums earned from marathon sessions fueled by Colombian flake in the late '70s?

A MODERN PHENOMENON

It wasn't always like this, of course. Before the mid-'60s, working in a studio was actually a fairly sane proposition. Sessions were mostly done in three-hour blocks, with time in between and breaks and all that sensible stuff. Rare indeed was the session that went overtime (it was heavily discouraged) and unusual, too, was the studio that had late-night sessions. Singers and musicians were expected to show up on time, ready to play. Engineers were the only ones who could touch the console; producers were music men (in fact, most had serious music backgrounds). Recording was essentially a live craft—documenting the studio session and balancing (mixing) it on the spot—with minimal if any overdubs, so there



wasn't the sort of endless post-tracking work that became the norm a little later. Studio monitoring was in its infancy, with even the best speakers of the day kept at reasonable levels.

But then, various industry-wide shifts began to happen and the music business has never looked back. Not surprisingly, The Beatles were at the center of it all. After their 1965 masterpiece *Rubber Soul*—the last of their “conventional” albums—The Beatles started to change the way they worked in the studio to reflect the growing complexity of the songs they were writing. (Pot and LSD certainly influenced this period of unusual experimentation, but that's a whole other story.) The group became less reliant on full-group tracking sessions, and instead started to assemble songs in different ways, perhaps starting with a vocal and acoustic guitar or piano, and then layering in instruments as arrangement ideas became clear through sometimes long periods of experimentation.

If they went past regular recording hours or all the members of the group weren't around, no problem: There were always engineers or assistants who were willing to

stay late to help out the lads. The first album to come out of this new, looser and more expansive work regimen was the 1966 opus *Revolver*—still one of the most adventurous works of the whole rock era. It blew minds pretty much everywhere, and when that was followed in relatively quick succession

Studios found themselves hosting midnight sessions while engineers spent untold hours messing with phase and running tape backward.

by the “Penny Lane”/“Strawberry Fields” single, and then the landmark *Sgt. Pepper's Lonely Hearts Club Band* album, bands everywhere began to re-assess how they made albums, and the age of both the studio session lock-out and recording-for-as-long-as-it-takes were upon us. In the U.S., Brian Wilson was initiating the West Coast to the new recording aesthetic, and it wasn't long before L.A. and New York City studios sud-

dently found themselves hosting midnight Mellotron overdub sessions while engineers spent untold hours messing with phase and running tape backward.

Eight-track came in with a vengeance in 1968; 16-track in 1969. The rock revolution saw the birth of new multitrack studios in all the major recording centers to accommodate the explosion of new bands in the late '60s. Recording was no longer primarily the province of label-owned facilities; they were now independently owned entities that hired their own engineers, either to work on staff or non-affiliated on a project-by-project basis.

LIVE SOUND GETS LOUDER

Meanwhile, on the live sound front, in the pre-Beatles world, P.A. systems were exactly that: modest public address systems designed for voice. Instrument amplifiers were small, low-watt affairs, but because no one was playing large venues, not much volume was needed. There were no road crews, per se. But with the rise of The Beatles, their decision to play larger arenas (and, later, stadiums) and the concomitant proliferation of electric rock bands every-

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where, more and more powerful amps were made (remember the Univox "Super Beatle"?), onstage volume increased and dedicated rock P.A. systems brought new clarity to the ever-escalating loudness. More and bigger amps, small portable mixing set-ups and the acceptance of such leviathans as Hammond B3s and touring pianos made setting up and tearing down a band's equipment increasingly time-consuming and required specialized knowledge, and so the modern-day equipment crew was born. The job description was vague, but included

long overnight drives, stays in cheap hotels and motels, a steady diet of bad road food, humping heavy gear out of trucks on to the stage, setting up gear, troubleshooting during the show, keeping groupies out of or inviting them backstage, stripping the stage at gig's end (when the band's backstage party was just beginning), repacking the truck and still more driving. Was this any way to earn a living? You bet!

The bigger, louder amps made their way into the studios, too, and a new generation of monitor speakers was developed

to accommodate the higher volumes now being pumped out by bands. Somewhere, late at night in an anonymous studio, an engineer complained about ear fatigue for the first time. But the bass player whipped out a bundle of an exotic newcomer on the scene—cocaine—and the engineer agreed he could probably work a few more hours. The '70s had arrived.

To be fair, not everyone was seduced by cocaine, but its ubiquity in major recording studios and its widespread use by musicians, engineers, producers, roadies, techs—hell, almost everyone who tried it wanted more—had an enormous impact on both the recording and live sound worlds. Cocaine kept recording sessions going longer and longer, later and later—the only way to keep up was to do more, or in the case of those who refused, drink more coffee, maybe smoke more cigarettes. Pot and alcohol were usually around to dull some of the edge off the coke, maybe help people get to sleep (though that's where a lot of prescription drug abuse started: Xanax, anyone?). But all of those substances, coupled with endless hours of deafening loud music in the smallish confines of a studio, contributed to an awful lot of people not hearing clearly and doing hours and hours of not very good work, which often had to be re-done later. It was an age of bloated recording budgets and what seemed like unlimited time to make albums, but the cost in damaged health and hearing, fractured psyches and personal relationships was incalculable and long-lasting.

The stress alone of trying to make one Platinum album after another—or in the case of smaller bands, records that would sell enough to allow them to stay on a label more than a year or two—was almost unbearable; in fact, it still is. There are so many musicians, engineers and producers who didn't survive the '70s and early '80s (when the madness started to subside somewhat); they died, burned out or found a new line of work. There are still too many of us in this field dying in our 40s, 50s and early 60s, even as we've tried to live healthier lives—when we can actually get around to it.

MODERN DILEMMAS

Generally speaking, drugs are not the problem they once were in the studio (or on the road, for that matter), but this modern age has its own new pitfalls, as well as carryovers from the past. Partially because of budget constraints, fewer artists are locking out studios for months at a time,

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but more musicians are working in their home studios or engineer- or producer-owned facilities, where there are often even fewer constraints on working long hours, and the actual recording environments sometimes are not as ergonomically designed as they should be.

The ubiquity of hard disk recording and editing systems has meant countless hours sitting at a computer terminal for many musicians and engineers, and that has its own deleterious consequences—everything from RSI (repetitive stress injuries) to blurred vision. And the “indestructibility” of digital recording means the ear is being exposed to even more repeated playbacks (which don't have to be limited because of the old fear of wearing out tapes and tape heads on playbacks). There is increased consciousness about hearing issues—mostly because we all know some musician or engineer who's nearly deaf—but hearing damage remains an insidious foe that sometimes doesn't make its presence known until it's too late.

Combating workaholic tendencies will always be a battle for some, and of course it's difficult to control the whims and de-

sires of others. Creative types often become obsessive about completing tasks when the passion and inspiration are there—regardless of how many hours have already been devoted to something. We've all heard tales of engineers being roused from their beds in the middle of the night by musicians who simply had to get into the studio immediately. That still happens. Who has the courage or fortitude to say no? Does the artist really care if you want to go home at six o'clock to be with your wife or husband and infant daughter? Probably not, though certain well-established engineers and producers do occasionally manage to impose their more reasonable work schedules even on demanding artists. You can and should fight for your right to a decent family life, within reason.

But let's be blunt: Bad hours are a part of the gig, in the studio or on the road. There are going to be late nights and long weekends because you're a perfectionist, even if the artist isn't. If you're working in film post, you're not abandoning that temp dub or that final mix until everyone from the director to your mix partners are happy with every last detail. If you're in

the videogame industry, you're not leaving that computer terminal in your cubicle until the audio you're putting under that action sequence runs seamlessly and your new effects reflect those last-minute changes in the visuals. And, yes, it's a drag that you have to re-edit that radio commercial because someone at corporate had a new brainstorm, but you do it and you give it your all.

The trick is to stay self-aware and know when you're too burned out physically, too stressed out mentally and too out of touch with your family to carry on at a potentially dangerous work pace.

Make no mistake: It's your life, your career. We're not here to tell anybody how to live. (Plenty of glass houses here at *Mix*, folks.) But with any luck, the stories in this special issue will help you understand some of the strains that are building up inside you, threatening both livelihood and life, and offer some positive steps that you can take to achieve a more balanced professional life. We want you to have a long career. And so do your friends and family. ■

Blair Jackson is Mix's senior editor.



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Bring Down the Noise

It all started with the EQ. He found himself reaching for the highs, trying to add back that sizzle his mixes seemed to be missing. At home, he started jacking up the volume on his phone, and then his iPod. During band practice, he was always asking the guys to repeat themselves; then his girlfriend began complaining that he never listened anymore. It wasn't until his ears started ringing that he finally made an appointment with an audiologist, but by then, the damage was done. He is a young, dynamic engineer on the verge of breaking into the big time and he has profound, irreversible hearing loss. He is 28 years old.

Know anyone with a story like this? No? Perhaps it's because hearing loss is such a taboo issue in the recording world—the skeleton in our industry's closet. In a work culture where people freely exchange war stories, no engineer wants to risk losing a gig because they have a notch at 6k.

Hearing damage sneaks up on you. Tape distortion and digital clipping are obvious to the ear, but hearing loss is slow and painless; by the time someone figures out there's a problem, it's usually too late.

It's a vicious cycle: Those who depend on their hearing to do their job put it at a risk *by* doing their job, day after day. To be sure, loud music is not the worst audio event you can inflict on your ears: The relentless industrial din of construction sites and factories, or the sudden acoustic trauma of gunshots are far worse. But unlike a job foreman or the guy at the firing range, audio engineers are a sound-savvy group and

have a pretty good idea of what they are getting themselves into.

So it should be a no-brainer: Engineers rely on their ears. The damage is preventable. Their hands are on the volume controls. Why isn't anyone turning it down?

A WELL-KEPT SECRET

Kathy Peck, founder of San Francisco-based grassroots nonprofit Hearing Education Awareness for Rockers (H.E.A.R.), made it her mission to raise awareness for hearing after she experienced severe ear trauma at a single concert in the '80s when her band, The Contractions, opened for Duran Duran at a local arena. Since then, she has worked tirelessly to educate the public about the dangers of noise exposure and provide musicians and music fans with hearing protection. She says that industry awareness was an issue from day one.

"When H.E.A.R. first started, people didn't equate music with hearing loss," she says. "Or you didn't talk about it, or you were too old, or you weren't cool." The first high-profile musician to publicly disclose his hearing loss was Pete Townshend, who admitted in 1989 that he had sustained severe damage playing with The Who; since then, a handful of famous musicians have come forward to discuss their own impairment.

The occasional rock star aside, personal anecdotes in the recording industry are hard to come by, but the numbers don't lie: The House Ear Institute has collected data from nearly 7,000 audio engineer hearing screen-

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ings from conventions since 1997, and results point to damage across age, gender and occupation. (See the graph titled "Is Your Job High-Risk?" on page 42.) In one of the most striking findings, all tested groups shared a characteristic "noise notch"—a distinct loss in sensitivity—in the 4 to 6kHz range. What's more, the notch grew deeper with results taken from trade shows dedicated to live sound, suggesting higher job-specific risks.

Cognitive psychologist Laurel Fisher, House Ear's associate director of clinical studies, says the extent of damage revealed by the survey was surprising. "For me, it shows that even in their 20s, these individuals are starting to have what someone in their 50s is beginning to experience with their hearing."

Voluntary tests don't necessarily represent a cross-section of the industry, but the real situation is potentially even more alarming. "Let's say the most at-risk people aren't willing or don't want to know this information—they don't come to the booth," says Fisher. "So only those people in those occupations that have significant noise exposure who are actually concerned enough come get tested. We're using them as a proxy for everybody in that business."

"There's also a legal component," she adds. "We found that organizations really don't want this information out because there's the Americans With Disabilities Act and there are OSHA

safety/safe-use permits; there's regulatory overlay that comes upon the music industry much like factories, and they don't want class-action suits and that kind of thing."

NO PAIN, NO PROBLEM?

The evaluation of sound levels is compromised by what audiologists call the "annoyance" factor: Your favorite song never seems too noisy, but the nails on the chalkboard appear screamingly loud; actually, they possess equal damage potential. "People can adapt psychologically to very loud sounds and it can be quite enjoyable," says House Ear audiologist and senior research associate Andy Vermiglio. "The problem is, people can sustain damage to their cochleas even when the perception was that it wasn't that loud."

Vermiglio uses his own experience as a drummer as an example: "I took a docimeter—a device that logs exposure to the acoustic environment—so there's a calibrated microphone clipped to my shoulder and I take it on a gig. I have [Pro-Mark] Hot Rods® [bundles of wooden dowels, a cross between drumsticks and brushes], and I'm playing and it 'wasn't that loud.' When I took the device off and loaded the data into my PC to see what I was exposed to, I was blown away. When I was hitting the rimshots with the Hot Rods on two and four, the levels were 140dB SPL at my shoulder."

It's easy to assume that if it doesn't hurt, it's not hurting you. "That's not true," cautions Chris Halpin, a clinical associate in audiology at the Massachusetts Eye and Ear Infirmary and assistant professor of otology and laryngology at Harvard Medical School. "You can find an area that's not painful that's too much of a dose for your ear, particularly if you have a 'tender' ear. Most of the research, of course, has been done on very steady workplace noise-risk criteria, but it is clearly possible, over the years of working somewhere, to drive



ILLUSTRATION: TAD MAJEWSKI

your hearing down noticeably with sounds that are loud but not painful."

"It's unfortunate that we can all adapt to that," adds Vermiglio. "I played in the Navy onboard an aircraft carrier. So they did flight operations, and I was out there jamming with the Navy rock band. We were trying to play louder than the jets overhead. It was fun, but it was totally insane. I mean, what were we thinking?"

KILLER SOUNDS

Generally, sound causes hearing loss in two ways. An acoustic trauma is sudden, acute damage caused by an intense blast of noise, such as an explosion. The type of damage commonly referred to as noise-induced hearing loss is a gradual degradation in sensitivity due to chronic exposure to high SPLs, such as those in an industrial factory environment—or, potentially, a recording studio.

Because the ear is not designed for repeated exposure to extremely high sound levels (see the sidebar "Inside the Ear," page 40), its defense mechanism is limited. A middle ear "reflex action" (a contraction of ear muscles that stiffens the system, reducing the energy

transmission) can minimally protect against sudden increases in sound, but it is too slow to protect against bursts of sounds such as explosions or even heavy drum hits at close range, and is inadequate for protection in high-level music or noisy environments. Exposure to continuous loud sounds sometimes causes a temporary hearing loss (temporary threshold shift) and the ears may recover in the next day or so. However, repeated exposure to harmful sounds eventually diminishes the ability of the sensory hair cells to transmit sound by flattening or disfiguring them, or fusing them together.

Two main factors contribute to this noise-induced hearing loss: intensity of sound levels and degree of exposure. Continuous noise above 85 dBA is considered a hazard potential (140 dBA for impulses), and the general rule is, the higher the SPL, the less time you should be exposed to it. OSHA safety guidelines limit "allowable duration" to eight hours at 90 dB; safe exposure time drops in half with each increase of 5 dB. These guidelines are designed to protect against long-term exposure (versus a single exposure) and are based on steady-state noise; to some



gram. And they would be directly able to compare them to see if their concerns were borne out by the measurement or not."

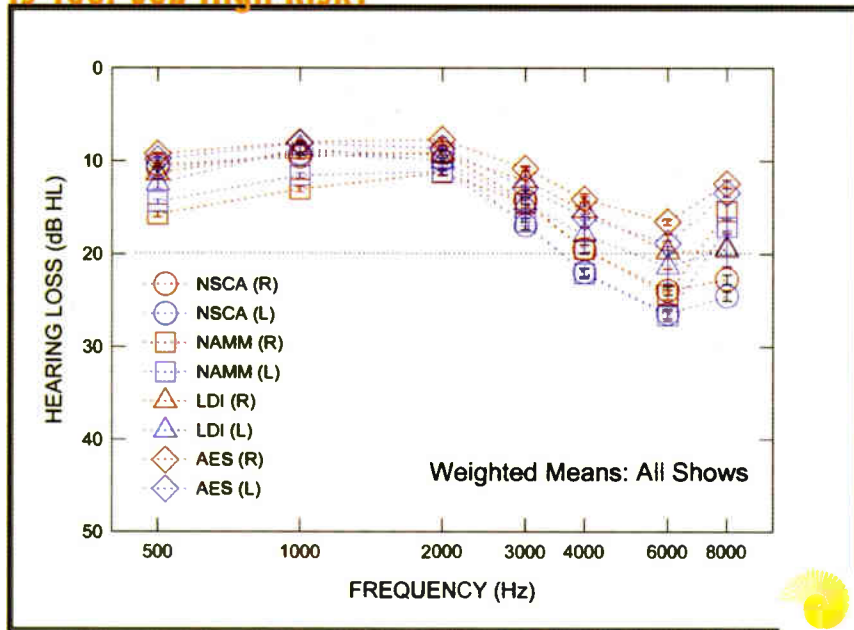
Most experts recommend an annual audiogram, the standard hearing test based on pure tones between 250 and 8k Hz. (OSHA's safe-listening guidelines are based on this test.) Some research shows that additional tests can detect the earliest signs of cochlear hair cell damage. "In the field of audiology, normal hearing is generally defined as the ability to hear these tones at a very soft level," explains Vermiglio. "So somebody comes in and takes that hearing test, and they're hearing those tones at 25dB HL or softer, then that's considered hearing within normal limits. While the audiogram is a very important measure of hearing ability, research has shown that the audiogram is not the most sensitive indicator of the earliest form of noise-induced damage to the cochlea." He recommends speech-in-noise tests and evaluation of otoacoustic emissions: sounds actually generated within the inner ear (related to the amplification function of the outer hair cells). "Audiologists have found a relationship between how well a person hears speech in background noise and how well their outer hair cells are functioning when you're looking at their otoacoustic emissions," he explains. "You can get two groups of people with normal audiograms, and traditionally audiologists would say both people have normal amounts of hearing. One group, let's say, has a history of exposure to really loud sounds; the other group does not. If you take a look at the otoacoustic emissions between the two groups, you'll find reduced emissions in the group with the history of exposure to loud sounds."

Once tested, audio engineers are tempted to compensate for losses in their hearing spectrum with signal processing, but when those frequencies are gone, there's no bringing them back. "That's a problem of misunderstanding," explains Halpin. "The test result looks like an EQ that's out of whack, but that's not what it is; it's dead and damaged sensory tissue that's deep inside the hardest bone in the body, and you just can't mess with it. And so even though it looks like you could just add back some high frequencies and be fine, it really, really doesn't work that way."

PROTECTION OPTIONS

How can you protect yourself on the job, short of avoiding loud sounds completely? First, take out the guesswork: Get a dB meter and find out what kinds of SPLs you're really

Is Your Job High-Risk?



House Ear Institute hearing surveys of nearly 7,000 attendees at AES, NAMM, LDI and NSCA conventions show a "noise notch" in the high end of the test spectrum, with more significant damage demonstrated at particular conventions—notably, sound reinforcement shows.

being exposed to throughout the day, both in and out of the studio; the results might surprise you. (I was a little surprised, for example, to find out that the hair dryer I point at my head every morning puts out 97 dB.)

Understand the psychoacoustic aspects of mixing at high volume levels. "As you know, there's something that happens to the mix when you're going from a low level to a really cranked level," explains Vermiglio. "Say you're mixing a metal band and they want to mix at loud levels. The mix is going to be different than if you had mixed at a low level because of that upward spread of excitation in the cochlea. The bass frequencies will actually mask out your perception of the high frequencies. So you have to pump high frequencies up to perceive them."

Anything you can do to reduce total average exposure counts. "First, always heavily protect yourself against the sounds that you don't really want to hear," says Halpin. "If you're hunting, shooting—go overboard with that protection." On the job, Halpin suggests bringing levels down to the lowest reasonable dose whenever you can. "And remember that as a dose, it works like that; a little bit less can really put you out of the range of danger." Take frequent breaks. Take advantage of the fact that some tasks, such as editing, can be performed at lower intensities and save cranking it up for the final mix. If a neighbor is mowing the lawn

at the end of a long day in the studio, throw in ear protection.

One of the best steps to protect your ears, however, is to invest in a pair of quality flat-response earplugs. Options range from off-the-shelf products to custom-fit models, and they can reduce levels by up to 20 dB or more without coloring the sound. Vermiglio says that as a musician, he finds that wearing flat-attenuation earplugs makes listening to music more enjoyable, and he can actually hear better. "The highs are crisper with the plugs in because of that effect called the upward spread of masking, or upward spread of excitation, where when the bass frequencies are really cranked, it distorts your ability to hear the highs."

He adds that he cannot stress enough the value of wearing ear protection. "At these trade shows where we've conducted tests, when I see somebody in, say, their 30s or 40s who has fairly good hearing as measured by the audiogram, I ask them, 'Well, what do you do?' And they'll say, 'Oh, I play guitar in a metal band,' or, 'I mix really loud bands,' or, 'I've been on the road for years and years,' and then I'll ask them, 'Do you wear hearing protection?' And they'll always say, 'Oh, yeah, religiously. I will not mix this band unless I'm wearing my hearing protection.' It is really, really significant the effect of hearing protection on the status of the ears. And then

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I've seen young guys, even in their early 20s, who might have a severe high-frequency loss. And I'll say, 'What do you do,' and they'll tell me their history of exposure to loud sounds, and I'll say, 'Do you ever wear hearing protection?' and they'll say, 'Oh, nah. You think I should?'"

Anyone who discovers that they have hearing loss should make sure their audiologist and ENT doctor rule out medical issues that might be resolvable, from problems in the ear canal to, in some cases, issues with the central auditory system. Finally, don't write your ears off once you've sustained damage. "In speaking with audio engineers and musicians, once in a while this comment will come up: 'Oh, well my hearing is shot anyway, so I don't need to wear hearing protection,'" says Vermiglio. "And that's not true. You always have to wear hearing protection, even if you have sustained some loss. You want to protect against a really rapid decline of your hearing as you get older."

"I hope people can calm that fear of finding out," says Peck. "People feel that if they do have some damage, then they have to stop doing what they're doing. But that's the wrong attitude. You might

have to modify what you do, but don't feel that you have to give up. Don't let it own you."

LOOKING AHEAD

The field of audiology has made huge strides in recent years; advancements have ranged from experimental psychological compensation training systems to successful regeneration of cochlear hair cells in mice, but don't count on science to find a way to reverse hearing damage during the lifespan of your career.

"I think they'll do it, but I don't think they'll do it really soon," Halpin says of the efforts to reverse hearing loss. "My own estimate is 20 years. I think the ear is one of the last ones they'll get to because if you think of it, you can look right in the eye and see the sensory cells. You can pretty well get at the heart when you need to. But man, the ear—the ear that I'm talking about, of course, is the cochlea with the little tiny nerve receptors and hair cells—it's much more difficult to get at that."

So take whatever precautions you can now to head off damage *before* it happens, because no amount of studio gear and no

Support Hearing Health

The Mix Foundation for Excellence in Audio, in partnership with the House Ear Institute and H.E.A.R., supports various programs dedicated to the advancement of hearing health—in particular, building awareness among both audio professionals and consumers about preventing hearing loss in music environments. To make a tax-deductible contribution, visit www.mixfoundation.org.

hearing aid will bring your ears—or mixes—back. Common sense is the name of the game: Reduce the level of the sounds you're exposed to and reduce the time that you're exposed to the sounds, and your chances of preserving your hearing are vastly improved. "The bottom line for me," says Halpin, "is to not let any of this stop people's work or enjoyment, but to be aware and dole out the dBs intelligently." ■

Sarah Jones is Mix's features editor.

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"The pair (of R-122V's) excelled when placed about 1 foot above the hammers of a Yamaha C5 piano. It was simply luscious when put on a raging guitar amp and then a Leslie cabinet, producing a rich bottom end, smooth top and great grind when the Leslie was pumping at full throttle."

"This mic will have legs as long as you own it."

Mix, July 2006, by Kevin Becka

"Where the R-122V really excels is in its midrange depth and detail. It's interesting because, in one way, the mic sounds identical to its phantom-powered counterpart (the 122) but, in another way, it's totally different. I'd describe it almost like the difference between a 16-bit, 44.1 kHz recording compared to a 24-bit, 88.2 kHz recording."

"On electric guitar, ...it sounded astounding. The bottom end was tight and punchy, the mids were present and dynamic and the top end sparkled."

"On another session, this time at my studio, I used the R-122Vs as overheads. In this case I used my GML 8200 EQ to add some sparkle on the top end and the result was wonderful. The kit sound was natural and full. The mic worked equally well capturing tambourine, shaker and finger cymbals."

"I don't think there has ever been a ribbon mic that I would purchase solely for vocals. That has changed with the R-122V. I had wonderful results using this microphone on both male and female vocals. The mic has the ability to capture high frequencies without any harshness or distortion and it especially shines on female vocals."

Pro Audio Review, January 2007, by Russ Long



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Words From the Wise

FOUR VETERAN

ENGINEERS

OFFER TALES

AND TIPS ABOUT

STUDIO SURVIVAL

Between them, these four engineering giants—all familiar to regular *Mix* readers—have more than 500 years of studio experience. Okay, that's an exaggeration, but they've all been around for a while, done great work with top artists on legendary albums and they continue to be vital studio pros.

When we spoke in mid-March, Tom Flye was working on a pair of DVDs with former Grateful Dead drummer Mickey Hart; Al Schmitt was finishing up a tribute album to Ella Fitzgerald featuring Diana Krall, Natalie Cole, Michael Bublé and others; Ed Cherney had just completed mixes on yet another multiple DVD set from the Rolling Stones called *The Biggest Bang*; and Elliot Scheiner had been involved in his usual slew of recording and mixing projects for DVD and CD for the likes of Jerry Lee Lewis, the Doobie Brothers and more. In individual interviews, we asked this impressive foursome to comment on some of the concerns of this special issue of *Mix*.

THE YOUNG AND THE SLEEPLESS

Flye: I've done some really long sessions. I remember Rick James said to me one day, "What's the longest session you ever did with Sly?" I said, "Jeez. I don't know. Maybe 30 hours?" And he said, "I gotta beat that!" And he did, by quite a bit. I guess I dug my own grave with that one. I also remember the night Rick said, "You know, I've been wasting all this time going up to the house getting in bed and then coming back down to the studio later. Tonight, I'm not going to the bed, the bed's coming to me." So he sent the bodyguards up to the house and brought

the bed down to the studio. That kind of thing doesn't happen anymore, but I still work some long hours. I had a late one with Mickey [Hart] just last night.

Schmitt: I can remember 72-hour days. We'd be in the studio for three days in a row. I remember doing that with Jefferson Airplane. I did another one, believe it or not, on a tribute to [Broadway composers] Lerner and Lowe. But we were on a major deadline to get that out, so we would take an hour or two and sleep on the couch, then get up and keep doing it. But I was in my 20s and it was a lot easier. We didn't think that much about it; we just thought, "That's the way it is. It's the music business."

Barbra Streisand was one of those artists who didn't seem to have any idea of time. One night I was heading out the door at 11 o'clock at night after a long day. I had called my wife and told her I was on my way home. And Streisand says, "Al, can we do a good rough mix?" I said, "Sure." I took my jacket off and sat down and then I didn't walk out of there until 4 o'clock in the morning. My wife thought I was dead. She was calling the police. And that wasn't that unusual. A lot of artists think you're a slave to them and that you will do everything at their beck and call. I don't do that anymore.

Scheiner: I remember in my first year at A&R [Studios in New York City], maybe 1968, I came in on a Tuesday morning to do a session for a movie called *You're a Big Boy Now*, which had music by the Lovin' Spoonful, and we didn't finish up until sometime very early morning Friday. I never left. We worked for 70-odd hours. Obviously, it was an extreme deadline.

The other side of that, though, is that

sometimes you'd be in the studio endlessly and nothing would be happening at all. There are a bunch of bands in the late '60s, early '70s that would book the studio on a lock-out and they'd tell you they were going to start at noon, and then they wouldn't show up until 9 or 10 o'clock in the evening. That happened a few times—you'd sit around for nine or 10 hours thinking, "What am I *doing* here?" Then they show up and they're messed up and they work for maybe an hour or two, or not work at all, and then leave.

Cherney: In 1978, I had a four-day session with a top soul band at a studio in Chicago. The band was basically producing themselves and everything was taking a really long time. They were writing and creating in the studio, which is how a lot of people used to work. Anyway, after this really long session, I was driving home and I passed out and crashed my car and almost killed myself.

Most engineers could work impaired—that was part of the job description. For years, most of the people I knew who were working in studios were driving home smashed. That was part of the experience. You had to out-hang and outlast everybody. I've gotta say, though, most engineers were real tough guys who had a lot of stamina.

COKE, CIGGIES AND OTHER DRUGS

Schmitt: There were times I was doing dates and the ashtray was full of cocaine and joints were being rolled all the time,

and we'd be there until four or five in the morning and what you realize is you didn't get much done in a night.

Flye: When it came to drugs, I guess God helped me with that because my body just wouldn't tolerate a lot of things. Of course, when you're young you try stuff. I mean, I went to college in the '60s and I was in the music business! [Laughs] But I found that [when I took drugs] I didn't want to work anymore. I just wanted to screw around, and I really loved making records and it was my livelihood, so I couldn't really do both.

But I became a total abuser of coffee and cigarettes, which I know hasn't been good for me, either.

Schmitt: We all smoked back then, even in the control room. It was like being in a sauna with cigarette smoke. Today, nobody smokes, and if they do, they do it outside. We didn't realize at the time but the smoke was even bothering the equipment; it affected the machines.

Scheiner: I didn't get into cocaine for any enormous amount of time—mostly in the late '70s and that was more recreational than anything else. But early in my career when I realized I was putting in those hours, I had a cousin who was a doctor and he wrote me a prescription for Benzedrine and that's how I got around the issue of insane hours. You had to do something, because a lot of times I would work from 10 o'clock in the morning till 4 o'clock the next morning; then I'd go home, lay down for two or three hours, get up and shower, and do it all over again. You'd be exhausted.

Cherney: Some consoles in the '70s were even built with mirrors on them! Through the '70s and most of the '80s, most sessions had a pile of blow on the console. And that certainly affected how long you worked.

But it got to a point where it wasn't necessarily about the work; it was more the hang and the party. And that still goes on, even if you're not seeing drugs much anymore. The way the session goes now is the artist performs for half an hour and

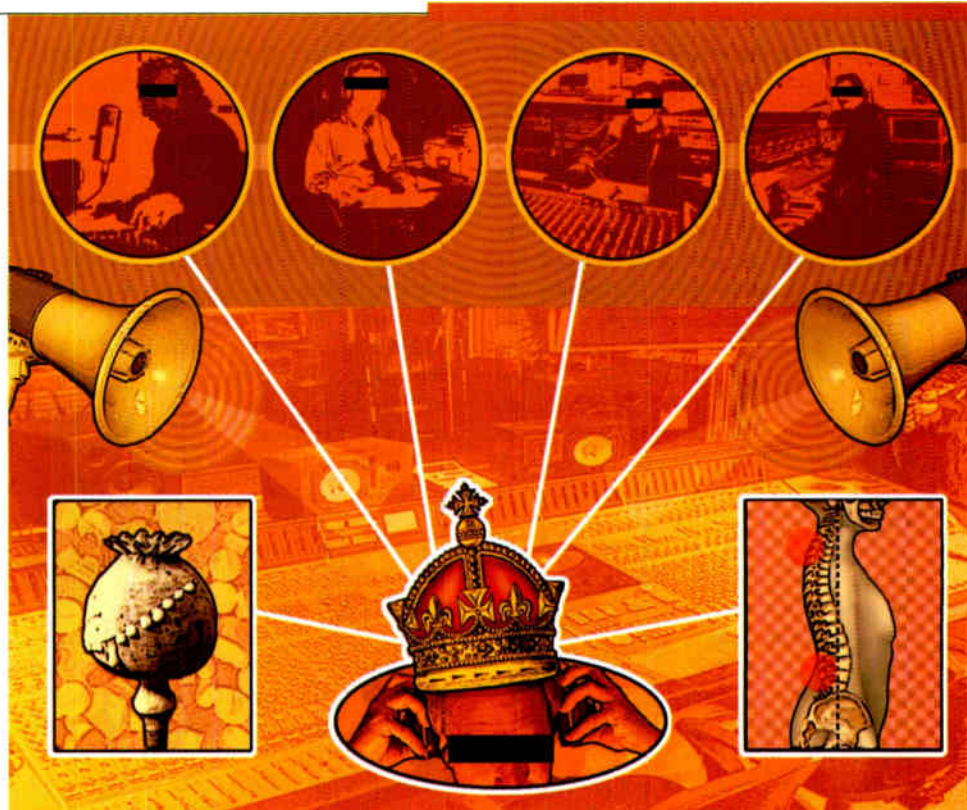


ILLUSTRATION TAD MAJEWSKI

then you've got a Pro Tools guy working for 10 hours, and you've got a lot of people kind of hanging around and looking over his shoulder and waiting to hear something. In the old days, when you had a rock band together, you might be hanging around for hours waiting for the muse to strike and for everybody to feel like playing together. There was a lot of waiting around, and so people wanted to be entertained somehow. Now, pretty much, if they're taking drugs, they're doing it privately.

Flye: It's kind of like running a big hotel: You don't want to know what's going on in every room. You want the place to be safe, you want your clientele to be happy and you want things to run smoothly. But you don't need to know everything that goes on.

RECIPES FOR HEALTHY HEARING

Scheiner: I monitor softer than anyone who has ever worked in the industry. [Laughs] I must monitor at 30 SPL, although I haven't actually measured it. Most people I work with have learned to tolerate it. I say, "If you want to listen louder, I'll leave the room and you guys can listen to it," and that's usually what happens. Or I keep a pair of ear plugs around me at all times. When I'm going

out to listen to music, same thing—I keep a pair of really good ear pieces.

Flye: Over the years, I've learned to monitor softer and softer. Or I'll use headphones, which give me more control even if the speakers are going. I work in so many different rooms, even carrying my own speakers—my [Meyer] HD-1s, which move very well—[and] each room has some kind of strange [acoustic] phenomena you have to deal with, so headphones help with that, too. In a lot of control rooms, you can't monitor quietly because of all the peripheral noise—you've got all this digital stuff with fans on it. Then there are people talkin'. Having headphones, it's like going into my own little cave. Years ago, I'd sometimes use a cigarette filter as a quickie earplug if I needed.

Schmitt: When people really want to crank up the volume, what I've done my whole life is I let them crank it up, but then I walk out of the room. When I monitor, I monitor at a fairly low level. And when I mix, the same. It's those last few hours [of a long session] when your ears start to really get fatigued. When my ears get tired, I'll say to the artist or producer, "That's it, I'm done for the day," and then we come back the next day. I learned a long time ago that when you



struggle along and you work past that peak, you wind up doing things over anyway.

Cherney: I still like it loud, but it depends on what I'm doing. If I'm doing a tracking date and there's a bunch of musicians in the room and it's rockin', I'll turn it up. Sometimes, I feel like I can't get the low end right unless I turn it up: I gotta get the speaker just about busted, get the woofer bottoming out,



Ed Cherney

to place the kick drum right. Ultimately, I mix pretty low; I do final balances down. And it's really important to limit your exposure. If you're going to listen loud, don't do it for long. Almost everyone I know is mixing alone now in their personal studios, so it's really up to them how loud they want it and how long they work.

The guys I worry about are some of the young hip hop guys who are going to a big studio because they want the big wall-mounted speakers and the big subwoofers. It's a style of music that's meant to be put *up*. If you're making music for guys in cars and you want to move metal, you've got to be able to turn it up and bone-rattle it. When you're young, you think you're bulletproof, but too much of that can hurt you in the long run.

I get a physical check-up every year, and I also get my ears checked every year at the House Ear Institute. I think both of those are really important.

OTHER STUDIO HEALTH ISSUES

Flye: A health hazard that doesn't get talked about much is back pain from leaning over those boards for so many hours, day after day—in my case for 40 years. I have a lot of back pain—mostly from that, but also from other stupid things, I guess. What do I do? Take aspirin. Stretch. I'm also trying to cut down on my schedule, and then the days I'm not in the studio, I work around the house and I do a lot of physical work and that helps, too.



Tom Flye

Cherney: I had back surgery. You spend so many hours sitting behind a console it's inevitable that you're going to gain more weight because you don't eat right and you don't exercise right. When

you're young, you're okay, but as you start to get older, your core muscles certainly deteriorate, and then you go skiing or do some

other activity and it's easier to herniate your discs and hurt your back. Most engineers I know have had had backs at some point.

Scheiner: I didn't have any physical problems until about 10 years ago. I've got arthritis in my neck, which is a tough thing because it hurts, it restricts my movement and there's not much I can do about it. I think the arthritis probably came from sitting at a console all these years. You're moving around a little bit, but for the majority of the time, you're looking at one area. Now it's even worse with the younger guys who are sitting there with a mouse in front of a computer screen and they have almost no movement. That's going to take its toll, absolutely.



Elliot Scheiner

Schmitt: I've had some back and shoulder trouble through the years. I go to an acupuncturist and a chiropractor to get it straightened out. I also work out a bit and I do Pilates, and that's helped a lot.

Cherney: Having health insurance is also really important. It's expensive, and for a lot of people, especially people just starting out—especially in the first 10 years of their career—they probably view it as a luxury. It's a matter of, "Do I pay my rent?" "Do I make a car payment?" But if you don't have health insurance, you're gambling.

Scheiner: There's also a bunch of stress that's often not related to the physical work. Especially these days, you wonder, "Am I going to get paid?" There were A&R guys a year or two ago who were hiring engineers to do mixes and then they'd say, "I didn't like your mix so I'm not paying you." And there's the stress of, "Will I work next week?" I've been very fortunate, but for a lot of guys it's very hard just to keep going.

CRAWLING FROM THE RELATIONSHIP WRECKAGE

Flye: My wife is definitely a music widow. We've been together almost 40 years and she's been through a lot because of my schedule. It was especially bad for me because [when I was at the Record Plant in Sausalito, Calif.] not only was I doing sessions, I was also chief engineer of the studio and the studio owned two houses on my street and the [remote] trucks, so I was really busy; there was always something. My wife always had to have her own life, and I missed a lot of things with her and with our kids. Eventually, some of the artists actually included

my family in things. Sly didn't care if my kids came down to the studio; he'd bounce them on his knee and play with them. Rick James was always real nice to the family, too—he had the whole band come over one Christmas Eve and carol us. And he took my daughters to Studio 54 for their birthday.

Schmitt: I went through a few divorces because of the hours and never being around and so forth. It was kind of difficult to keep a relationship going. This time, I'm married 15 years and it's worked out great. But I have more control over my hours than I used to. And if I travel to Europe to work and she can come, she'll travel with me.

Scheiner: The toll on my personal life? Well, I'm on my third marriage, if that's any indication.

I got married the first time about two years into my career and I was working 16, 18 hours a day and she just didn't understand that. I didn't have any kids until my third marriage, and we're still together, so I guess it's a good thing I waited. I work saner hours now.



Al Schmitt

Cherney: I feel like when I was younger I was like an animal—just working, working, working. Everybody who does this for a living has a compulsion to do it. It's not like, "Yeah, I might go to law school. Business school might be nice." It's not that. You fall into this because you were meant to do it and you *have* to do it. That's all there is to it. No matter how many hours you put in and no matter what your commitment is, there's no guarantee that you're going to be successful at it. So you dedicate yourself to it. All you really care about is the record you're working on, the studio and being in that room and messing with the gear and playing with music. It ate up *a lot* of relationships.

Now I have a studio at home, so the majority of the work I do happens here. And this is the first time in the 25 years my wife [Record Plant maven Rose Mann-Cherney] and I have been together that we actually have dinner together, go to bed at the same time, kind of wake up at the same time. The proliferation of home studios has certainly helped that because, especially if you're mixing, you can create your own hours. What people really care about is that you get the job done on time and you do a great job. ■

Blair Jackson is a senior editor at Mix.

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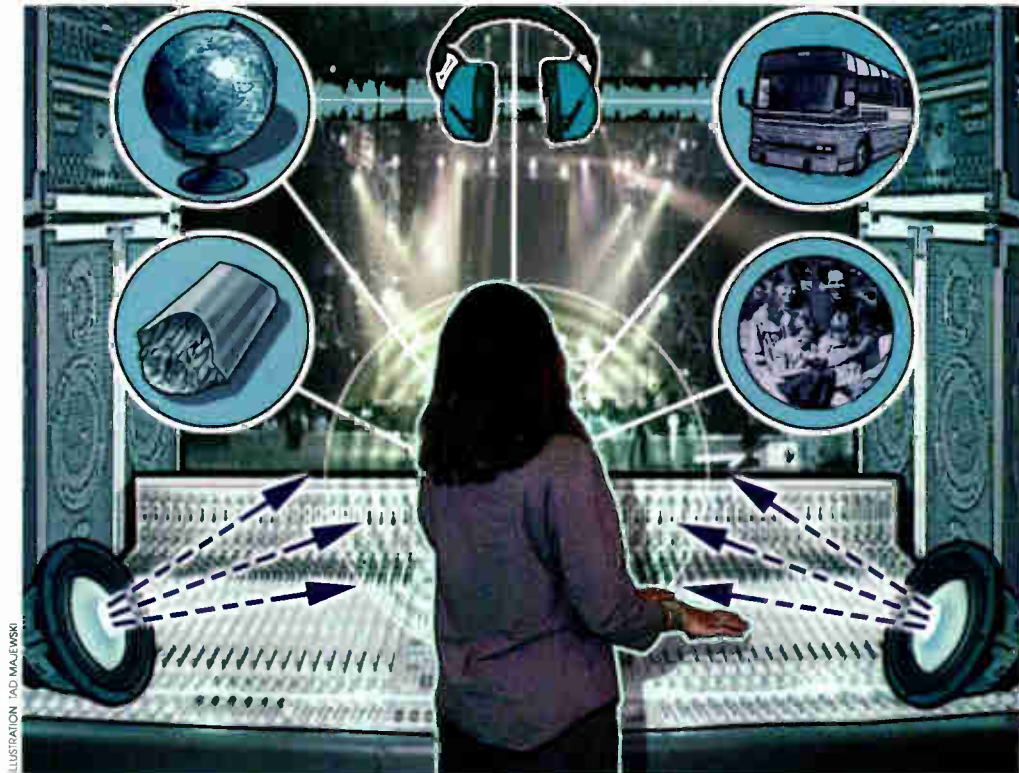


ILLUSTRATION: IAD MAJEWSKI

Road Reality Check

ou get the call: “Hey, can you mix for so and so from May to August?” It’s a tight to keep busy—especially with a shortened touring season and more live sound engineers entering the field—so you take the gig. You’re familiar with the artist and you know the tour is going to be hectic. And it doesn’t take a rocket scientist to figure out it’s going to be loud.

But this is the risk front-of-house engineers take when accepting work—knowing that after a four-month tour, where the band performs five nights out of the week for two hours a night, their ears (and maybe even their well-being) may suffer some serious damage.

It takes a certain mind-set to endure this lifestyle, one in which not only are engineers’ ears constantly being beaten up, but it’s also a struggle to maintain their mental health despite the rigors of the road. What are engineers doing to ensure that their ears stay just as healthy as they were before the P.A. was turned on, as well as keep their sanity long after the “venue-to-bus, bus-to-venue” routine gets old? Fortunately, they’re doing a lot.

TO CHECK, OR NOT TO CHECK?

As in all aspects of the audio industry, there is increasing awareness among live sound pros about their hearing health. Hearing loss may still be a taboo subject for discussion, but these road warriors are conscious of maintaining good hearing and, for the most part, are getting their ears checked. After all, hearing damage is cumulative and awareness is the first step toward ensuring a long professional life.

Longtime sound reinforcement engineer Robert Scovill (Tom Petty & The Heartbreakers, Prince, Def Leppard, Rush, Matchbox 20) began making changes after speaking with an audiologist about “the wicked ways of the concert world.” He began reducing his overall average exposure to SPL during his daily routine. This involved finding a place with “absolute quiet” where his ears could rest the same amount of time as the event, reducing exposure to the high SPLs on average. “On a nightly basis after the show, I would try to avoid loud music or TV on the bus or avoid going to nightclubs,” he explains. “I would put in high-reduction ear plugs as soon as I could after the show, especially during sleep hours while the bus was traveling to shake off the

show and the roar of the bus engines.”

Also to be found hiding out in the bus post-show is Chris Rabold (Widespread Panic); after a three-hour gig, he’ll rest his ears while reading a good book. His ears have taken abuse with the band’s rigorous tour schedule, which can comprise five shows a week, up to 8-week tours and assorted one-offs. Coupled with that, he’s running the show around 103 dB. “I feel that once you get below 100dB SPL, a much more ‘comfortable level,’ it feels like there is a show going on and your eyes are drawn to the stage and you feel like you’re watching a show,” he explains. “Once you get above that, you’re feeling it more, it’s right up in your face and you get that feeling of ‘the band is putting it out and I’m feeling it and we’re all in this together.’”

“And that, to me, is where excitement is created,” Rabold continues, “so I like to cruise around 103, which is not terribly loud, but there are peaks in there—109 easy—and after that is sustained for three hours, I anticipate and accept the fact that, by the end of the night, my ears are going to be beaten up. The world is definitely more bothersome after the show’s over; you’re so much more aware, you’re

A RIGOROUS TOURING LIFE CAN WEAR DOWN YOUR EARS—AND YOUR CONNECTION TO THE “REAL” WORLD

tempted to steer away from loud noises. It's definitely something I'm mindful of, but it's that trade-off between job hazard and job passion."

There are job hazards aplenty to be found on a tour. You may be fixing mic placements just when the drum tech decides it's time for line check or, as Brad Madix (Shakira, Rush, Def Leppard, Marilyn Manson) explains, "I managed to find myself re-seating a connector under the stage behind a monitor desk just as a concussion grenade went off. They used to put them under there with cases behind them to direct the 'blast' out from underneath the stage. I learned early on that if you're not doing critical listening, you should always wear ear protection."

Also carrying earplugs are Bryan Cross (Tower of Power, Vertical Horizon, Lifehouse, Howie Day), who also regularly checks his hearing, and Pete Keppler (Nine Inch Nails, David Bowie, AFD), who purchased custom-molded plugs with filters for different levels of attenuation—and wears them! Keppler says some instances that he can recall that have contributed to hearing damage come as a result of working onstage without protection, "especially miking up drums and guitars," he says. "Right when your head's next to the drum kit or the 4x12 cabinet, some idiot decides it's

time to play. If I know I'm going to be in potentially loud environments, I always keep my plugs handy."

On the flip side, Dave Natale (Tina Turner, Joe Cocker, Lionel Richie, Mötley Crüe), chooses not to get his hearing checked, relying mostly on feedback about his mixing style. "People aren't complaining that I mix really loud, which means I don't think my hearing has taken a serious beating," he says.

However, he is concerned about the subconscious effects that the results of these hearing tests would have on his ability to mix a show. "If you get your hearing tested," he continues, "and they show you a graph and you have a big hole at 3 or 4k, when you're standing out there mixing after that, you're going to think, 'Now I wonder if there's too much 4k because I know that I can't hear it.' You're going to start over- or under-compensating and second-guessing yourself."

But Natale does take steps to ensure his hearing health, including wearing earplugs at a gig when he's not mixing, not listening to the support band and mixing dynamically. For example, on his recent jaunt with the Rolling Stones, "They would play some up-tempo stuff and that's just loud the first few songs because you need to get over the excitement of the crowd, and then toward the end, the last three or four songs, you get really loud because it's supposed to be a climax in the show. So I try and not mix everything at the same level. I've been to a bunch of shows where guys turn stuff up and then they never turn it down again."

MAKE MINE DIRECTIONAL

Recent advances in P.A. technology have given FOH engineers increased control over consistency of volume throughout the venue, as well as the perceived loudness of a show. However, engineers need to understand the physics of a P.A.—the proper setup, tuning, power distribution, etc. Keppler points to the fact that a clean, undistorted P.A. can seem deceptively quiet. "If you start to push too much volume,

you'll really pay for it by the end of the night," he says.

Rabold notes that with today's P.A.s, an FOH engineer can tailor the sound very specifically so that the mix can still be loud but not harsh and bothersome by steering clear of the midrange. "That 1.6 to 3k [can be] really hurtful stuff," he says. "So if you can tailor the P.A. that way, you can go longer periods of time without it being an 'oh my god ice pick in the ear' kind of thing. With line arrays, where you're maintaining equal and constant SPL at varying distances, it's easy to know that it's 102 at 25 feet from the downstage edge, it's 102 at the second level of the balcony, et cetera. It's a lot easier now to have a consistent SPL around the venue. We can't value that enough because it really puts us in control of what's going on. There's always going to be the problem of a venue where you have to stack the P.A., which is where you're going to have an audience member with a speaker right in their face—literally. We're always going to have low trim heights where P.A.s don't fly that high, and that's the logistics and reality of the live touring realm."

Rabold points out a very real situation: Yes, you may be able to have even coverage throughout a large concert venue, but what about that one club where you can't fly the system? What about that audience member who got to the venue hours before show time so that he could get a spot right in front—and right in front of a speaker? "To whatever degree reasonable," Madix advises, "engineers need to take the time to make the SPL even around all of the seats. It hardly matters to the guy pressed against the barricade that it's 94 dBA at the mix position if it's 120 dBA where he is. Of course, in the real world—where SPL diminishes over distance and sometimes P.A.s have to be stacked—you can only do what you can do. Sometimes the guy in front is going to be exposed to higher SPL than the guy just to the left of the mix or in the back of the room.

"A problem arises when shows are very long, though," he continues. "If management is pressuring you to make the mix 101 dBA and the show is two



hours long, there's no way to appropriately limit the exposure time for the audience. On the other hand, it's just not reasonable to mix a rock show at 89 dBA. Of course, I can—and do—wear earplugs during long shows, but the audience is left to their own devices. The best thing to do is provide ear protection for audience members and put signs informing them of the risks and let them choose whether or not to avail themselves of it."

And that's exactly what Cross has done with the Pussycat Dolls tour: He pulls aside his barricade security during a meeting and says, "Here's a box of earplugs for you. If you see little kids out there, at least offer it to them." That may be one more thing to put down on the rider, and with shrinking budgets, that just may be too costly, but as Cross points out, "A box of earplugs per week costs you, what, \$35?"

FOH engineers aim for volume management that is ideal for the style of music and crowd comfort. "If you study your audience," Scovill continues, "you can get a pretty good sense of whether it's too loud or even too quiet. Too loud and they tend to look like 'a deer in the headlights' and their activity and response to the music generally declines as they just drift into a mode where they appear to be just tolerating the presentation. I saw an extreme example of this: I remember watching a colleague of mine mix at a very 'heavy' show that had a considerable mosh pit in action. He could literally control the intensity of the activity in the mosh pit with the volume fader."

A recent trend these engineers point to is that the FOH compound has ever-so-slowly been moving farther and farther back, making "listening" to the P.A. to ensure an appropriate level an even more difficult task. "First of all," Natale says, "you're going to mix it a little louder because you have to hear it. I like to have a certain amount of pressure when you're mixing with the kick drum—stuff like that. I also like to feel like I'm in the same venue with the band, like I'm part of the show. But there seems to be this trend of putting the FOH position too far away. People mix basically indoors anywhere between 90 and 120 feet. Outdoors, you mix anywhere from 120 to 140 feet and people are being pushed way farther than that."

Scovill agrees: "What I feel always needs to be addressed is for venues to provide for a mix position that allows the mixer to make relevant tone and balance decisions for a given audience geometry. It can't be a mix position that takes up the least amount of

seats or is the most 'out of the way.' This is for the guy making tone and balance decisions for the entire room! You can't just shove him over there in the corner or in the back of the arena, or even in a horribly treated sound booth where he will have a perspective unlike any other listener in the room."

If you can't hear the P.A. well enough, how can you be expected to put on a great-sounding show? "There is stress now because as high as the ticket prices are these days, if you sit and think, 'Two-hundred dollars a ticket times 50,000 people,' that's \$10 million," Natale says. "If the P.A. goes out, I'm liable for \$10 million. Once, you might be able to fast-talk your way out of that; twice, not a chance." It may sound a bit far-fetched to think that an engineer could be liable for such a large chunk of change, but this could be a very real stress for many engineers—just thinking about all of the gear they are required to "control" to create the best-sounding show they are hired to do. "A P.A. is complicated and there's a lot of stuff [on a tour]: three, four monitor consoles; two FOH consoles; hundreds of thousands of lines going everywhere; 300-foot lines going out front; things are moving, things can get run over; power cables can get pulled out—there's stress thinking about that," Natale adds.

NO YOGA ON THE BUS

You've been on the venue floor since 9 a.m. and you don't get back to the bus until well after midnight—after everything's been torn down and loaded on a truck. You get to do that all again in another city, and another, for the next four nights, with perhaps a few days off after that—if you're lucky. Multiply that week schedule for a four-month tour, and you've got a basic sense of what it means to be "on the road." Throw in the fact that with reduced budgets, more engineers are getting tagged with production management duties (sometimes FOH engineers even add monitor engineering), less crew and more work within the same 24-hour day, and it's amazing that you don't hear more stories about engineers just "losing it." But as we said earlier, it takes a very unique character to thrive on road life, stress and all.

"Right now I'm sitting in my office and I'm looking at a bunch of rigging plots and lighting plots and advance stuff; there's very little audio in front of me," Rabold says. "I do the production side of things, as well—I have never really known it any other way. If you're doing production and front of house, there's really no time off; you might be able to ignore your phone for

Back to the Real World

Sometimes, you just have to get away from it all. Here's where you can find these travelers when the passport has been filled up:

PHOTO: GABE ECHEVERRIA



Robert Scovill

I try to do anything or go anywhere where I am not exposed to technology or media in any way shape or form. I love to get out and do things that have little

or nothing to do with the music business and require very little technology as we know it.



Bryan Cross

When I get home, it's been sports cars as my latest hobby. You can actually get in them and drive them the way they're supposed to be driven.



Brad Madix

I like to spend time with my family. We have a little place up in the mountains where the cell phone doesn't work and we try to get away there whenever we can.

PHOTO: STEVE JENNINGS



Pete Keppler

I really love spending time with my kids. Other than that, I go to the beach as often as I can, go hiking, eat really well, continue with yoga and meditation.

PHOTO: SHELDON RADFORD



Chris Rabold

I like to spend time with my wife and our dogs—doing whatever it is they want.



Dave Natale

I putz around in my studio. If there's an interesting band that doesn't have any money, I'll do that. But mostly I do tech stuff in my studio and work around the house. There's absolutely zero life on the road, so I do as much as I can when I get home.

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Road Reality Check



a few hours on a day off, but, ultimately, you're going to have to get up and deal."

Cross also wears numerous hats, finding that his stress level is up there for the first couple of weeks before he can ease into a daily routine. "If the advance work is done properly, your stress level doesn't have to be as high. It's stressful, though: When it rains, it does pour. Prioritize your problems, step back and figure out what absolutely has to get done to make the show happen and then attack those problems one at a time." Ensuring even more road-sanity, Cross advises any audio crew to get out and do something fun on an off-day. For a recent tour, Cross and crew would scope out the nearest indoor go-cart track and tear it up.

Kepler found that learning how to properly approach tour and production managers with certain problems was a big step for him. "Practicing acceptance of situations that were beyond my control was another," he adds. "I leave the really long hours for the lighting crew. I run and use hotel gyms for exercise, and that can melt away stress and resentments. Bad tour bus drivers have been a major stress factor for me on occasion, and I won't think twice about having a bad driver replaced—that person has your life in their hands. If it were really getting that stressful, I would start looking for other work."

For some, being both on the production side and the audio side can be quite fulfilling—and a stress-reliever! Lately, Natale has been a mixer foremost, but has added crew chief or systems engineer titles along the way. "I live at the gig," he says. "I go in at 8 in the morning and leave after load-out. I walk around and look at everything all day so that when a show goes on, all I have to think about is mixing. That's how I reduce my stress. I also insist on guys that are absolute top-shelf."

"If you've got good guys around you," Rabold agrees, "your stress level is reduced greatly because if you try to go out there and micro-manage things, you're just asking for it because the scope of this stuff is just too large to not have good people around you and trust in what they are doing. On a day off, I'll try and make myself take some time off—try to acclimate to the real world for a day. If you go to a pet store and see those balls where you can put a hamster in and they roll around, that's kind of what touring is like: You can see the outside world, but you're not really in it. It's right there, you can see it, but you're not really part of it." ■

Sarah Benzuly is Mix's managing editor.

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World Radio History



Audiologist Michael Santucci uses an otoscope to examine a patient's inner ear.

The Quiet Stage

By George Petersen

At one time or another, everyone in audio has seen a list of the great lies of rock 'n' roll. You know, the ones containing, "This is one of Jimi's old Strats," or, "Your name will be on the guest list" or any of 50 other falsehoods. These days, the list should be expanded with, "Don't worry, in-ear monitors will protect your hearing." Actually, that statement is partly true and partly false—it all depends on the application and the skill of the user. As with shotguns or banana creme pies, earpiece monitoring can be dangerous in the wrong hands or when used improperly.

Regarding in-ear monitors (IEMs), there's no end to the amount of "heard it from a friend" or "read it on the Web" misinformation. Seeking some facts about hearing health and in-ear monitors, we enlisted the help of Michael Santucci, a credentialed audiologist and founder of Sensaphonics Hearing Conservation; Paul Owen, VP of Michigan-based regional sound company Thunder Audio (and Metallica's longtime monitor engineer); and Mike Dias of IEM manufacturer Ultimate Ears.

"People assume that in-ear monitors are safety devices, and I contend they are not," Santucci says. "They are earphones, and some are so loud they can reach a 140dB output. That's louder than wedges, so where's the safety? In-ear monitors are not safe unless somebody

directs you on how to use them."

The typical manufacturer response is a disclaimer in the user manual that states something about the hearing safety benefits of IEMs when used properly. Yet, according to Santucci, "They can't tell you how to do that or find a way to measure it. There's no ability to tell people how loud these things are in an everyday setting. We've developed technology to take sound level measurements at the eardrum, but an audiologist has to be at the soundcheck; otherwise, there's no way of determining how loud your IEMs are in an everyday setting."

With artists having control over the backpack's playback volume, the issue of providing safe hearing is complex for the monitor engineer. "I find when you start on a tour, you begin with the packs considerably lower, and the further you get into it—because the threshold of hearing has moved—the artists are running hotter and hotter toward the end," explains Owen. "One good piece of advice is to start the tour with the in-ears turned down as low as possible. If you start having artists walk offstage with ringing in their ears, you're monitoring too loud."

Santucci agrees, but adds, "The presence of ringing in the ears after use means you're listening too loud or too long or both. However, don't assume that the absence of ringing means you're safe. Seventy percent of industrial workers

THE MYTHS AND TRUTHS OF IN-EAR MONITORING

who have a reported hearing loss have never complained of tinnitus."

"You've got to work with the artist to settle into a safe zone," says Owen. "But a lot of this comes down to the artist: We can't entirely monitor what's going on inside their ear canals. However, there are things we can do to protect the artist. One mistake people make is not to set the squelch properly. I've seen a lot of people using backpacks with the squelch set wrong, so when anyone goes offline or loses power, you'll see all the artists onstage pulling their earpieces out."

Santucci feels a key factor in a good in-ear monitor is the earpiece's ability to seal external sounds. "That's why we only offer custom-fit products. You have to create a really good signal-to-noise ratio in that space within your ear to be able to hear," he says. "In this case, the 'noise' is the stage volume. If you can't effectively block that out, you'll have to turn the signal louder—it's simple physics. If the stage volume is 110 dB and you have leakage in your earpieces, you're not going to hear that signal at 100 or 105—it will be more like 116 dB."

The downside of a good seal is isolation from hearing the audience or being able to talk to other bandmembers be-

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tween songs. Sometimes, this can be countered by adding feeds from some audience mics into the personal monitor mix, but this has also its dangers. "You can put in ambient tubes to let in some outside sounds or you can bring in some ambient mics, but either of those will increase the volume inside the canal because you're not 100-percent blocked off from the outside," notes Owen. "And if it's a constant ambience—rather than ambience mics brought in at the end of each song by the engineer—you've got to run higher to get over the ambience and

can start getting into some serious levels. I use [Aphex] Dominator IIs across all my in-ears to protect against anything I feel is out of control. That also catches any spikes that come in so the artist doesn't get the full blast of it."

"For the artist who feels in-ears over-isolate them from the audience," adds Dias, "or want a more natural ambient sound, there are tools in the in-ear arsenal to compensate for that, such as a mix of ambient mics or monitoring systems with passive or active ambient features."

HANDS-OFF

One danger from too much isolation comes when musicians decide to "fix" the problem by wearing an earpiece in only one ear. "When players take one out, their brain loses its ability to do binaural summation, where two ears together add up to a 6dB increase in your perception of loudness," Santucci explains. "If you're hearing 90 dB in both ears, your brain thinks it's hearing 96 dB. If you take one ear away, then that one ear has to go from 90 to 96 to sound like 96. And now the other ear is open and getting hashed by the band, the P.A. and the crowd. So this loud sound coming into the open ear causes you to turn the other ear up even more. In terms of ear safety, using one earpiece is a dangerous practice—it could actually be worse than using none at all."

"There's a common misconception that an artist can use just one earpiece and still use stage monitors, but this results in the worst of both worlds," says Dias, who offers a simple experiment to demonstrate this. "Have someone stand onstage with a backpack using one ear and turn it up to a comfortable performing level. Now shut the backpack off and run the stage monitor to a comfortable level. When you turn the monitors and the single earpiece on, the artist inevitably thinks the in-ear sounds weak and cranks it up to compensate. But when you turn the wedges off, the artist will notice that the earpiece is too loud. In the case of one-ear listening, you don't get the benefit of hearing protection and you don't get the accuracy benefit of the in-ears."

There are numerous other illusions that are regarded as truth, such as whether ringing in the ears means those hair cells are gone forever. "The answer to that is 'no,'" says Santucci. But can your hearing heal? The answer takes the form of a "good news/bad news" scenario. "It's absolutely true that hearing can heal, because there are both temporary effects and permanent effects. The temporary effect can continue on for a long time unless you get away from those loud sounds," Santucci warns. "I have a study of a musician's hearing profile over eight years of using our in-ear monitors. It shows his bad ear—which was exposed to the band—didn't change for the better or worse, but his other ear had a small notch that actually went away. How did that happen? Well, it could be he never gave his ears enough time off the road to recover before testing. The point is, there's a *possibility* that things can improve, but hearing loss from loud sound is permanent." ■

George Petersen is Mix's executive editor.

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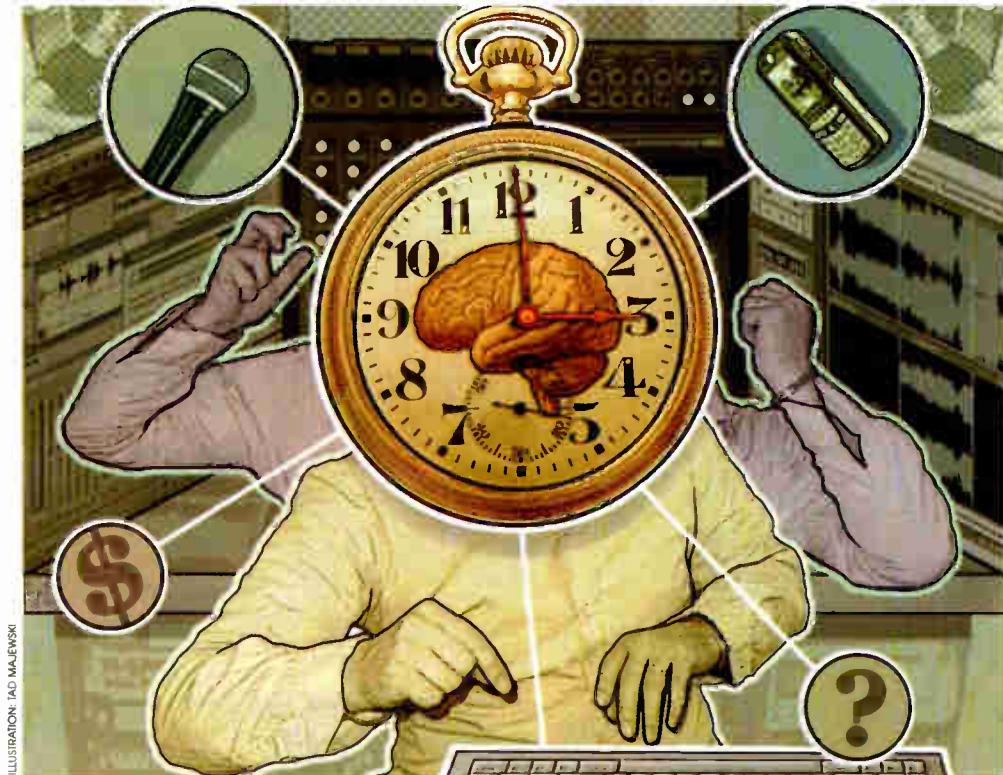


ILLUSTRATION: IAD MAJEWSKI

Finding Your Oasis

It's midnight and you've been mixing until 3 a.m. every night for six nights straight trying to finish this CD on time. This is in addition to your "day job" of tracking another project, booking your next gig, getting your taxes together and spending time with your 1-year-old who's just learned to walk. The phone rings and it's your client in China who can't access your ftp site and wants to send you the vocal comps for the next five songs you're mixing. It's 10 a.m. for them but you're at the end of your day, your wits and your energy reserves.

If that weren't enough, you just got an e-mail from a regular client whose project you just mastered last week that needs three remixes and wonders if you could give them a deal because they're out of money. You go to the sink to splash water on your face to get your fourth wind and notice your studio tan. Even though it's well into summer, you haven't left the studio for some time.

We've had to adapt quickly in a world that seems to spin faster than ever, making us work harder to survive. The 1950s view of technology freeing us for more leisure time simply isn't true.

We are always "in touch" through the ever-invasive and demanding tentacles of technology, making it harder to get away from work. In addition, changes in our industry have made our jobs more demanding than ever. Budgets have shrunk, and so work is harder to come by. Clients once dependent on outside engineers and studios now own their own gear because they can: It's more affordable than ever. Computer and software manufacturers are playing "can you top this," making it tough to keep your DAW stable. Every time a new processor or OS is released, you have to be sure that all your trusted, go-to plug-ins will work, sometimes as an expensive upgrade. You're constantly playing an internal tug of war between giving your family the time it needs and your business, which provides for your family. The "boss" is harping on us to produce more to stay ahead. The bad part is that in audio, we sleep, eat and live with the boss—because the boss is us.

As a sole proprietor, you must do everything. In addition to tracking and mixing, to compete in the new world, you have to be a bookkeeper, studio tech, IT tech, software upgrade guru, as-

sistant engineer, studio/career manager, promoter, Web expert, DVD author, MIDI programmer, auto-tuner, producer and even archivist. Not to mention, father/mother, husband/wife, chauffeur, lover, friend and counselor.

The faster we run, the more stress we get into. Our lives have gotten so fast-paced, we don't take the time to look around and see what's happening around us. All this stress takes a physical toll. The effects can be as subtle as feeling irritable to being driven to self-medicate and becoming someone even *you* don't like. That pain in your back, crick in your neck, sore shoulder and need for new glasses may not be caused by job stress, but it can certainly make it worse.

WE ARE HOOKED

We are all communication junkies: instant messaging, text messaging, cell phones, laptops, Websites, PDAs, Bluetooth, e-mail and more. Sure it's great for business, but this also means it's harder to say one of the best stress-reducing words in our language: No. We can't turn down work: It's too scary to think that the next engineer, doing the same shuffle, would say, "Yes." We are afraid of losing what

IN THIS MODERN,
OVER-CONNECTED
WORLD, STRESS COMES
FROM EVERYWHERE.
HOW DO YOU DEAL
WITH IT?

little work comes our way, so we stay hooked up. Our cell phones are attached to us, almost umbilically—so much so that we are admonished in church, in theaters, at the doctor and at the bank to *please* turn off our devices. There's fear of not working. A lot of us, me included, check e-mail five to 10 times an hour and immediately respond. Our cars have GPS so we know where we are and where we're going, so that God forbid, we don't get lost and, gasp—*waste time!* With computers everywhere (I use six between home and office), our homes have become our work and vice versa. Our lives have lost depth, dimension and downtime to our technological puppet-masters.

"Technology has made our lives 10 or 20 times more stressful than they ever used to be," says Dr. Nathan Currier, M.D. The Indiana University-educated psychiatrist has a family practice and has been an expert medical witness specializing in post-traumatic stress disorder (PTSD). The doctor's experience with ever-growing technological disturbance is a testament that it's not just audio folks who experience this effect. "The cell phone is such an intrusive device, I feel that I'm never way from my patients and practice," he says. "I've been backpacking in the desert and gotten a call from one of my staff in the hospital."

Andy Deguara of A and D Studios (Sunnyvale, Calif.) puts in 40-plus hours a week, but is always hooked to his laptop and cell phone. "I don't think I'm ever not working any more," he says "Even if I go on vacation, I've got my laptop with me; I'm checking e-mails and returning phone calls. It's something that's constantly on my mind. I'm here at the studio during office hours and I can run sessions here 24 hours a day. When I'm busy, it's not unusual to find me answering the phone at 1 or 2 o'clock in the morning."

The difference between success and failure can hinge on being able to say yes when a gig comes available. In the early '90s, things were just a bit slower, cell phones weren't as prevalent, the beeper was king and the Internet was just an apple in DARPA's eye. But now stress has become amplified because of the many ways we can be contacted.

WHAT CAN WE CONTROL?

The bad news is that there are some uncontrollable aspects to this situation. The days of the "audio cathedrals" have passed, with staff positions going the way of the Dodo. Freelancers rule, and while you'd think this would be liberating, with such freedom comes the responsibility to fend for you and yours without support, benefits, pensions or a union. Label work with bands or artists block-booking, once *de rigueur* in the studio business, has all but vanished.

Deguara has had his facility for six years and has seen his business grow, but he's also had to adapt to clients booking shorter sessions. "The thing that's always kept me going is the small stuff," he explains. "Because I don't rent my studio out for two months at a time, I don't have the waiting list that other studios have. I can get a call on a Monday afternoon and if someone needs to get in right away, usually I can get them in by the end of the week with no problem." When I asked how the changes in his business have affected his stress level, he responds, "It's gotten more stressful because of the growth we've had, and as you get bigger, you have to do more."

Nashville-based engineer Russ Long

(Rich Mullins, Sixpence None the Richer, Carolyn Arends) was an early adopter of home recording technology and has seen the business change radically since he started in 1988. He's had his own studio since 1994, which he originally built for mixing and overdubs. "In the past, I was doing almost all label projects," he says. "Now I'm doing 20-percent label work and 80-percent independent bands that have an investor, or have raised the money themselves."

It's so inexpensive to make a record now that labels can throw small amounts of money at a lot of artists, who often do a lot of the work themselves. It's not unusual for a band to hole up after tracking and do the majority of the overdubs themselves or with savvy friends who know a bit about audio.

For the most part, engineers who were once booked for six to eight weeks on a project, working with one band or producer, now get hired to initially track a record and perhaps mix it. "It's extremely rare to work on one project beyond two weeks," says Long. "On the other hand, the great thing is you don't have to say no to something else. You can fit it in-between other jobs." Long also talks about the added stress the freelancer faces when turning down work: "It's extremely hard to say no. If you tell them no, then they go to somebody else, and if [that experience] goes great, the next time around, they'll call that person first and not you."

TAKING NAMES

But there is some good news. We *can* help ourselves and take action to alleviate our stress symptoms and keep us healthy. The first step is awareness. The truth is, our stress comes from more than one source, so a good inventory of what's going on in our lives can help quantify the problem. Is your stress work-related? Financial? How are your relationships affecting your life? Family? Friends? Do you have a balance between work and play?

"People have a lot more control over their stress than they realize," says Dr. Currier. "In my practice, I do a stress inventory, and 70 percent of the time

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Finding Your Oasis



people can identify some of the stress events in their life. The problems come when they're not doing anything to try to control the impact of their stress either physically, emotionally or mentally."

What about the other factors causing you stress? Are you hitting the snack machine for its convenience? Does the client love pizza and you go along so you don't rock the boat? Do you guzzle coffee, Mountain Dew or worse to keep your edge? Your health, both mental and physical, is directly affected by what you put in your body.

"Certain foods are more stressful than others," says Dr. Currier. "Foods high in fat

It may sound simple,
but staying in touch
with a select group of pros
who are going through
what you are is a wonderful
way to help reduce
overall stress.

content are hard to digest, and too much refined sugar doesn't help either. It's amazing how some people will be drinking 10, 12, 15 cups of coffee a day, or Diet Coke or Coke, and not think about it as causing stress in their life. You've got to think of it as liquid stress: Bathing your body in all that caffeine every day is not really helping it very much." Is comfort food or binge eating your downfall? This adds weight to your frame, making it harder to get around, putting more tension on your joints and generally slowing you down. Not to mention the health risks associated with being overweight: diabetes, hypertension, heart disease, high cholesterol, stroke, certain types of cancer and gallbladder disease.

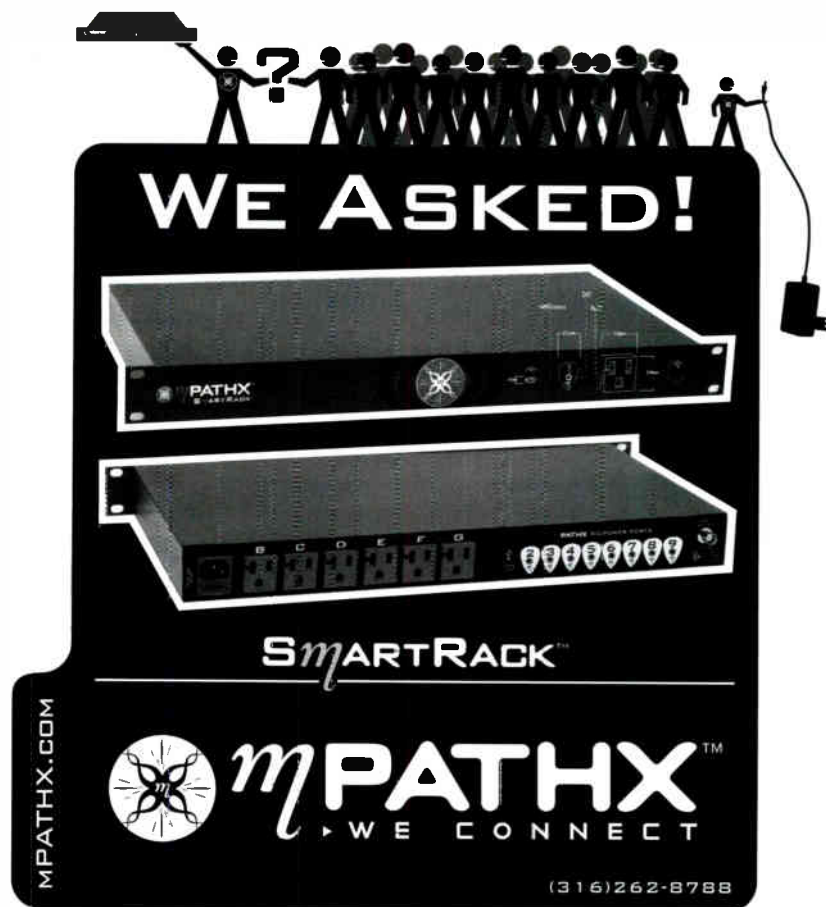
How well do you sleep? The call from the Chinese client mentioned above isn't fictional; it's a reality. It is now far easier to work with clients around the globe via phone and Internet. They may want to discuss your work in depth, just when you're ready for, or are in bed, or you may be a day person with a family to tend to, while your local client may want to start working at 6 p.m. and end at dawn. This is harder to manage when you have a home studio out back or in the same place your family

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resides. Do you drink a lot of alcohol? Is it Martinis with clients after work or beers in the studio? Do you feel you have to be a reveler to be accepted and get their business? Alcohol consumption can have a direct effect on sleep patterns. Do you exercise regularly? This also affects sleep.

Much of what we're talking about here is linked together, and even reducing some of the negative factors can have beneficial results. "The results are quite dramatic and response rates are pretty high," says Currier about people taking action and reducing the things that are negatively affecting them. "People who take it seriously and do most of the things we talk about see dramatic improvement in their symptoms, sleep patterns, energy levels and the way they feel."

FINDING BALANCE

Being informed can be the start of getting a handle on a quickly changing environment. Actually, using the stress-inducing technological bubble we're surrounded with is a great source for info. Going to trade shows, reading technical papers, networking and even starting your own blog can be great sources for staying abreast of change and creating a network of mutually supportive individuals. It may sound simple, but staying in touch with a select group of pros who are going through what you are is a wonderful way to help reduce overall stress.

Getting away from audio or any all-encompassing job is always a good way to get perspective. Do you like other pursuits? Reading? Managing a little league team? I once worked with a high-powered record producer who loved making model railroads and had a huge setup in his basement that was always evolving. He would spend hours painting a roundhouse or making a tree from balsa wood and found it extremely relaxing.

You can also work some tried-and-true techniques to help you get a handle on stress. Taking vitamins, using visual imagery, meditation, self-hypnosis, exercise, yoga, a healthy lifestyle and diet can all play a huge part in reducing your stress.

Taking time for leisure can take a lot of pressure off your work-related stress. Leisure time for some means taking some kind of pill or drug to alleviate stress. We won't get into self-medication here, but let's just say that its effects are surely short-term. As for medically prescribed solutions, Dr. Currier has some good advice. "Medication is only a very small part of the intervention into your illness. I stress a holistic kind of approach. You have to look at all aspects of the stress in your life

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and try to manage it better or else a pill is not even going to work. It's not a cure-all."

Finding balance means finding what works for you. Taking short breaks on the job can also help. "I like taking short mental breaks where I imagine I'm in my favorite place in nature," says Dr. Carrier. Using such imagery can immediately reduce stress and give you a breather from a stressful situation.

Russ Long runs to keep himself straight, participating in four marathons and one half-marathon in the past 10 years. "There's no phone to ring, there's nothing else in my mind and I'm able to get away," he says. "A lot of time I have a hard time relaxing at home. Running is extremely relaxing." He's also found a balance in his eating habits. "I try to eat pretty healthy and stay away from fast food and chain restaurants. I drink a lot of coffee, which is not the best, but it's hard for me to work long if I'm not drinking coffee. I try to complement it by drinking a lot of water." Long has also found a balance between work and being with his wife and son. "I don't like to work 80 hours like I did at one point; I have more of a family life now than I had when I was younger, but I love work as much as I ever have."

Andy Deguara uses the gym to relax and help him solve problems and find solutions in his business. "I try to make it to the gym if not every day, then every other day or so. When I have to concentrate on something else, it helps me solve problems I've been working on and gets me away from here." He also thinks that his business has gotten better as he's learned to adapt. "At this point, my business has probably stayed consistent, but the quality of clients has gotten better. A lot of it is getting a reputation for certain niches that we're good at. Then we've slowly increased our prices a little bit to bring in a higher end of clientele."

So the news is not all bad. We can find a balance and with a little effort, we can become less irritable, recover from stressful situations, lower our blood pressure and generally improve our health, mental and physical. Yes, there will be frustrations, failures and setbacks in our careers, but by getting in the habit of handling our hot-button issues, we can give back to ourselves what our environment takes away. By investing in long-term solutions, we can reduce the toll that stress takes on us daily.

And if none of these suggestions work for you, by all means, schedule a vacation. ■

Mix technical editor Kevin Becka turned in this story at 4:23 a.m.

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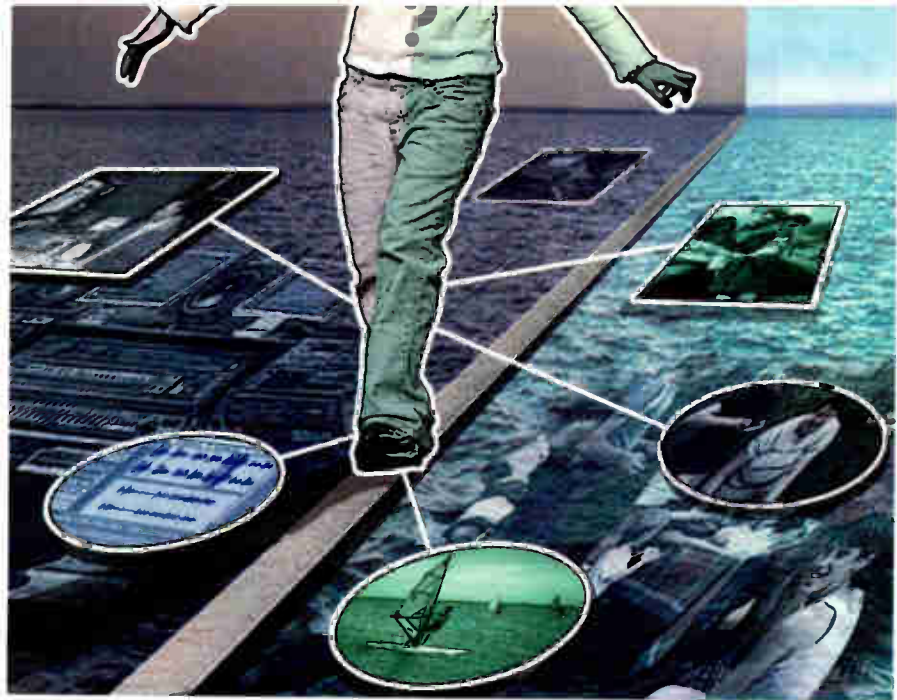


ILLUSTRATION: TAD MALJEWSKI

Striking a Balance

By Barbara Schultz

career in audio can be fabulously satisfying, but it can also be ridiculously demanding. Many of you never question working nights and weekends. It comes with the territory, and in a sense you wouldn't have it any other way. Creative people love their work, love the intense process, love the finished product. Up to a point, doing great work in your chosen career is worth every sacrifice.

This article is meant to explore the ways engineers, producers and studio owners (or some combination thereof) attempt to find balance between the personal and the professional. Some of you may be in for a reality check. Others may be inspired by the ways some of the hard-working professionals we interviewed make things work. But it's important to note that there's no finger-wagging here, no judgment—just some real-life stories about the profession Avatar Studios' Brian Montgomery described as "only comparable to the demands of a medical career."

WHAT'S YOUR STATUS?

Bob Irwin (Sundazed label co-owner; reissue producer for Sundazed, Sony

BMG, Arista, and others): I met my wife, Mary, through music 25 years ago. I was playing in a band with her brother. We hit it off, and we were married four months later. Mary and I started Sundazed together 18 years ago, when our daughter was a toddler. It's funny that you ask about this now. Our daughter, Katie, is starting her new job at Sundazed this week.

Brian Riordan (post mixer/studio owner, Levels Audio Post, Hollywood): My wife, Marrin, and I have been married for six years; we dated for 11 years prior to getting married. We have a daughter who is 15 months old. Before having a kid, my wife and I worked together. She handled all the administration here at Levels, so that was one of the ways we made it work: If we weren't working together then, she never would have seen me. My wife stopped working at the facility seven months into her pregnancy.

Zoe Thrall (facility manager, Studio at the Palms, Las Vegas): My husband, Pat, is in the industry, as well. He was a touring musician for 20 years. We have no children.

Brian Montgomery (staff engineer, Av-

CAN AN ENGINEER

HAVE A LIFE OUTSIDE

THE RECORDING

INDUSTRY?

atar Studios, New York City): I'm in awe of people who manage to keep a healthy relationship, but it's very difficult to fit in at this point in my career.

Joey Turner (freelance engineer): I married my high school sweetheart. We've been together since we were 16, and we know each other really well, which helps us get through a lot of stuff. She understands the dream, you know? We've been married for eight years and we've got a 5-month-old son, Riley.

Trina Shoemaker (Grammy-winning freelance engineer/mixer): I met my husband in a club. He was singing and playing guitar. Love at first sight, believe it or not. I left a note for him on the stage with my phone number and the message, "If you're single and live in Louisiana, you should call me." He did and I told him, "I'm not here to make a demo for you or get you a record deal. I want a date with a man who likes me and thinks I'm beautiful." We went on a date and 10

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months later, I was pregnant with my son [who is now 2].

EARLY DAYS

Irwin: We laugh about it now, but we started Sundazed in the dining room of our house with a broken typewriter and a princess phone. We had a separate phone line, and my daughter remembers this: When the phone rang, we'd say, "Katie, shhhhh, it's a business call."

Thrall: At the beginning, my whole life was focused on my career. All the people I know in this industry who worked to any successful level at that point in their career were the same way. There were many sacrifices and holidays missed. I'm very close to my family, but they understood the path I chose.

Montgomery: I started at the bottom, as an unpaid intern, working 40 hours a week. I quickly worked my way up, adding more and more hours to my work week. I was able to live at home with my parents, which helped, though I was commuting more than an hour each way between Manhattan and Long Island.

Turner: Before I went freelance, I was chief engineer at Omnisound [Nashville] and that was worse in terms of time with family. Being the head engineer at a studio, you have to make sure everyone's session is going smoothly. That was 24/7, with no end in sight.

Shoemaker: The career before child was all that there was, and that's what it required in my life. To make my career what it is now, it was 12, 15, 20-hour days every day for the better part of 15 years. There wasn't a husband; there wasn't a boyfriend for that matter. There certainly weren't any children. There was a dog.

EVERYTHING CHANGES

Riordan: I'm getting better at turning things away, and saying, "I'm not going to work all weekend." I'll work Saturday but not Sunday. And these are all difficult things for an entrepreneur and an owner/operator, but now everything's got to pass the life's-too-short test. I'm trying to look ahead as a father and husband and create a comfort zone financially, but all the money in the world doesn't do you any good if you're never home.

Thrall: To take this job, I moved from New York to Vegas, and I left behind my friends and family. Even as busy as I was in New York, I always knew that they were an hour away. Moving to Las Vegas was a positive move, but a very tough one for this reason.

Montgomery: Now things are easier fi-

nancially. I have a unique position in that I'm on-call at least 40 hours per week. I phone the studio every night to find out what my schedule will be for the following day. For example, I would call on a Friday night to find out about Saturday, Sunday or Monday. I can't make too many plans, though, because on any given day, unless I'm in the middle of an ongoing project, I rarely know what I'm going to be doing next.

Shoemaker: When I was about 37, I thought, "I've got a stack of CDs. I've got some Grammys. I've got some money. I've got nothing else. I'm alone. I have no family. And what I have now doesn't really have any meaning to me anymore. It's fun. It's a huge achievement, but I've already achieved it." These thoughts had been brewing and my biological clock was ticking, and I actually was on NPR doing an interview about the music business, and suddenly I thought, "Well, I quit as of today. This is the last record I'm going to make, and I'm canceling all other scheduled work." I said, "Until I find a life outside of the studio, until I find a partner and have a kid, I'm walking away."

WHAT GIVES

Irwin: Even after we were more established with some success for the label, this happened like clockwork for at least three years running when we went to take a vacation: There would be a big trip planned, and I'd get a phone call from a client saying I had to be in New York to produce an album. I'd say, "I'm leaving for Disneyworld with my family on Tuesday," and they'd say, "We need you to do this." And I'd stay behind, not because I needed to put food on the table, but because I loved the work and I didn't want to lose that client. But after three years of this, I realized this kind of crap is never going to stop, and it wasn't going to change anything for me to take a vacation.

Thrall: The last vacation we took was in 2000. The shame is, two summers ago, I was supposed to go for two weeks to Greece with my family. My roots are there, and Pat had never been there. But believe it or not, because I had started this job, I couldn't go.

Riordan: Things that fall into the category of more recreational-type business where, let's say, a client wants to play a round of golf—well, that's a whole Sunday I won't be with my family who I haven't seen for three weekends. It's those kind of things that just have to give. It's not easy to look at clients who have the potential for a bunch of work and say "no" to those things, but eventually you have to look down at it from 1,000 feet. The clients are going to keep coming be-



Top L.A. mixer Reyanne with dad Brian Riordan.

cause I did a good job, not because I did or didn't play 18 holes of golf with them.

Turner: At first we thought my wife was going to be a stay-at-home mom with our son, but she has a full-time job at BMI, and we realized we couldn't give up the steady paycheck or the health insurance from her job.

Shoemaker: I leave my mixes at 7 p.m. so I can be at home with my son and be his mom. This doesn't work for some clients, and as a result I lose some gigs, but I'm okay with that. I let everyone know in advance of the hours I now keep.

HAVING IT ALL

Irwin: I think the boat rises with the tide. If you're a creative person and you're creatively satisfied, that makes for a better life all around.

Riordan: You sleep "x" amount of hours, you work another amount and you've only got a few hours left. How are you going to use them?

Thrall: Being around creative people is very satisfying; that free spirit that doesn't let outside things govern it. It's inspiring.

Montgomery: If you love what you're doing, it doesn't feel like work at all.

Turner: I do the nighttime feeding. If I can't be with my son throughout the day, at least if he's crying in the night, he knows I'm going to be there. And if clients call and they want me to drop everything on a Sunday or late at night for their project, I tell them, "Look, there are no musical emergencies."

Shoemaker: There's no such thing as having balance when you're starting out in your career. Nobody gets that. But by the time you're in your mid-30s, you better look at it real close. ■

Barbara Schultz is a Mix assistant editor.



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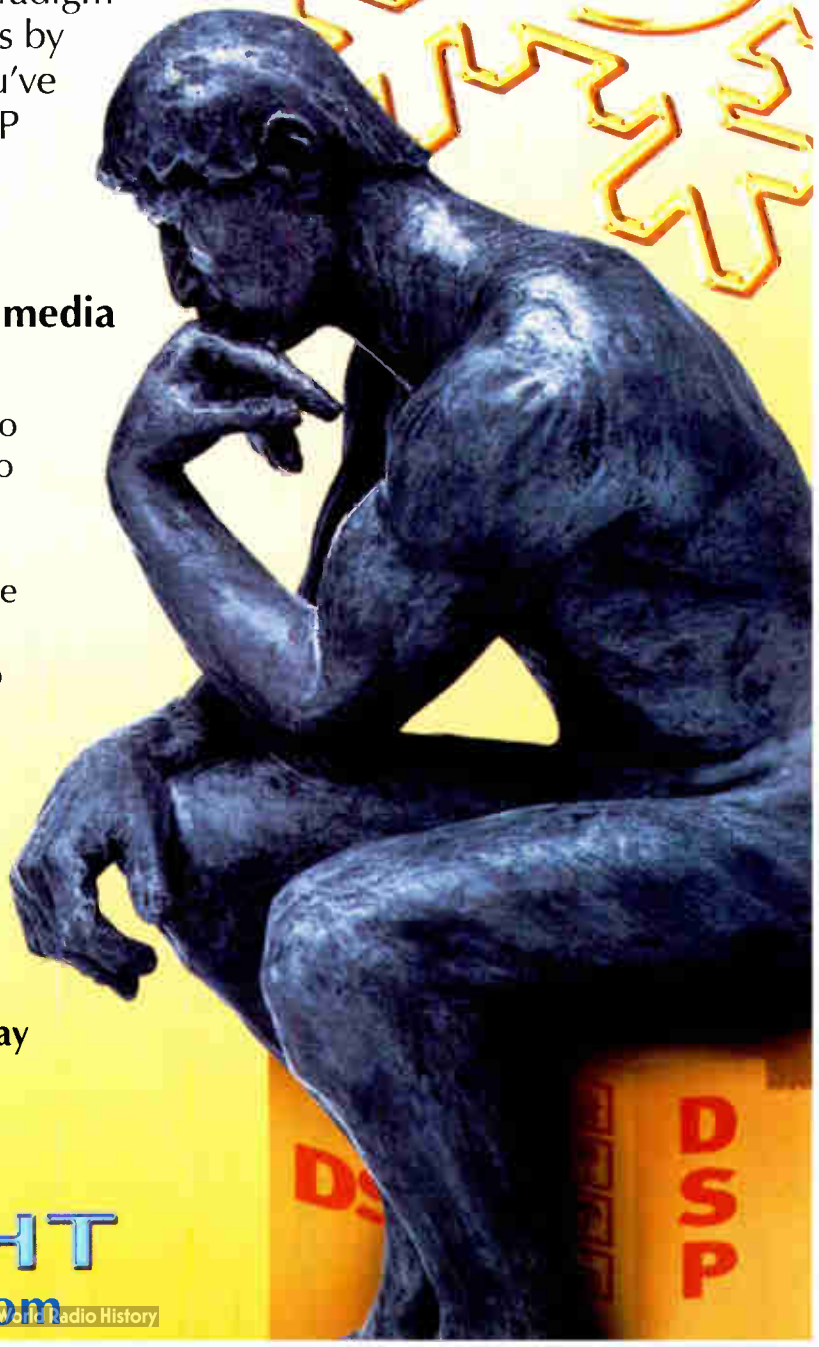




ILLUSTRATION: JAD MAJEWSKI

Studio Ergonomics

By David Weiss

On the surface, the traditional recording studio setup of the '70s and '80s looks darn-near ergonomically correct. A large board that you could roll up and down; a single knob per function, all in line of sight and easily reachable; speakers placed at proper height for proper listening. Hell, they even called it the sweet spot. But watch an engineer at work and you see *long* stretches for EQ shifts, straining the back; a quick pivot and a bend-over to make an adjustment in the outboard rack; and twisting the neck to view talent in a side booth. The layout looked good—until you had to work in it for 22 hours straight.

In the 1990s, DAWs entered the picture, and engineers began sliding over to a computer on a rolling stand, hunching over and slipping a track before sliding back to adjust EQ on the board. For many, the console simply disappeared, replaced by a controller or nothing at all.

Studio work culture has changed along with the evolution of technology. "Environments have morphed from crowd-pleasers—having to work for many different engineers and styles—to people working in rooms with smaller footprints

geared toward an individual user," says Dave Malekpour, president of studio integrators Professional Audio Design. "They often have their keyboard at their fingertips more so than their console, and in our projects, I'm finding there's less space needed for outboard gear and patchbays, and more space needed for things like dual video monitors—fewer big objects and often not a traditional console."

Proper ergonomics in audio production is a subtle science that can make a big difference in the day-to-day work experience, affecting your health, well-being and even the quality of the music and sound that gets made. "Ergonomics addresses the biomechanical and cognitive factors that influence on-the-job comfort, wellness and performance," explains Ellen Kolber, M.S., M.A., OTR, CHT, CIE of New York City-based Diversified Ergonomics. "Ergonomic office environments include supportive, adjustable seating and a properly configured computer setup; the outcome results in decreased pressure and strain to structures of the spine and upper extremities, reduced workloads to muscles and general ease of function. Postures and workstyle habits also play a significant role in influencing

OPTIMIZING THE WORKSPACE FOR HEALTH AND EFFICIENCY

comfort, efficiency and productivity.

"There's a progression from being healthy to not being healthy to injured," Kolber continues. "If you're feeling a lot of fatigue in your upper muscles or back, needles or numbness, something's wrong and something should be changed."

Getting it right means a lot more than just putting your feet flat on the floor, however. Increasingly, it often involves finding a means to be comfortable while staring at video monitors and making microscopic maneuvers with a mouse.

ERGO IN THE BOX

Every industry has body-health concerns when long hours are spent in front of a video monitor, but audio and other media tasks present particular risks with so many repeated, precise movements and often tiny onscreen controls to manipulate. Like graphic designers, we're constantly leaning forward to zoom in on the details, a reality that all software designers are



Nelly Furtado

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aware of. Audio pros spend the vast majority of their time working with DAW software, plug-ins and soft synths, and, in turn, software designers contribute to an ergonomically correct workspace with their graphic user-interface design and operation.

"The primary goal with software ergonomics is to let people get the sound they want," says Dan Gillespie, DSP engineer for Eventide. "Eye strain is an issue from staring at a screen all day, but particularly with plug-ins, it's about being able to get in and out and do what you need quickly."

For Gillespie and his team, there are two different modes of software and GUI design. One is faithfully re-creating existing hardware. A trickier realm is a hybrid re-creation/expansion of older pieces. "Obviously, the guys who created that hardware were limited by the small amount of space on the unit, but we can have as many buttons, knobs and switches as we want," he notes. "One of the things that was probably the most difficult to look at from the plug-in perspective is Eventide's Factory: multiple pitch-shifters, mixer modules, filters and various other functions all patched into each other, and each of the modules has its own character. That's about 180 parameters, and even though we can do as much stuff on the screen as we want, we have to make it usable.

"I find it helpful to model off things people already know. For example, we decided to use the modular synth model with patch cables. Color choice, the amount of onscreen real estate required, and the level of throw-in faders and ballistics of knobs are also major factors."

HEALTHY HARDWARE

There is a new awareness of the impact of hardware design on human performance—namely, impact on vulnerable fingers, thumbs, wrists, forearms and elbows. The evolution of hardware is easiest to see in devices that bridge the gap between people and software, such as the new Frontier Design AlphaTrack, a compact DAW control surface with a motorized fader and transport buttons, plus touch-sensitive encoders and jog/shuttle strip.

"For many people, the flexibility of a software-based studio comes at a cost, which is the efficiency that's lost when the engineer ends up having to use a mouse and keyboard to make changes to the software," observes Barry Braksick, co-owner of Frontier Design Group. "Essentially, the promise of all those parameters that appear on the screen isn't matched by the hardware that's used to manipulate them. So in our view,

design should be focused on making the myriad available parameters easier to get to, resulting in a faster and more natural experience. By bringing back traditional controls that are natural for engineers to operate, devices like the AlphaTrack and FireOne help them stay focused on the music instead of fighting the tools. Using faders and knobs is what feels natural to most people, so we're working hard to integrate those controls into the software-based production world."

A few hardware designers go beyond traditional controls. Such is the case with the JazzMutant Lemur, a flexible multitouch sensor control surface. "In the last four or five years, I've seen a significant move to people with DAWs using control surfaces," says Darwin Grosse, director of engineering for Cycling '74, distributor for JazzMutant products. "The Lemur is a twist on that. Rather than having something like a mixing desk, you can have something that looks more like what you're comfortable with, creating surface interfaces that match the software interface you're working with. With the Lemur touchscreen, it's better to look at the surface than the software—having spent hard hours with the software so you can best map the Lemur surface is a real help, of course."

Grosse points to Lemur's in-room placement flexibility. "It's a very portable, mobile device because it interfaces with a computer via a single Cat-5 cable," he says. "That's not an insignificant concern because sometimes sitting in front of a video screen is not the most creative place to work. Ergonomics is about many things, and one of them is that

sometimes when you're seated, you need to be able to get up and move."

A MATTER OF TIME

The perfect work environment is only as good as the way an engineer interacts with it. One of the most important factors, Kolber maintains, is how people work with time. "You can have someone like me come in and improve the postural factors so that people can work in a position that causes less strain to the soft tissues," she says. "But if someone works 12 hours a day, then goes home and gets online, they never get a break. Deadlines are problematic. Pace yourself so you're not doing 12 hours a day, day after day. Mix up the physical requirements so you're not sitting there all day with no movement."

Everyone who has obsessed over an automation curve or predelay setting knows the feeling of locking in with their machine and wrestling obsessively with it until the sound is perfect. But editing addicts need to learn how to break out of the zone. "In computerized workstations, or on consoles that are workstations, there are no little breaks built in," points out Kolber. "When people used to type, they had to stop to put paper in the carriage, for instance, but now with computers, there are no little microbreaks built into the path.

"Take mini-breaks where you get up every 30 to 45 minutes for about five minutes. It's also important to take microbreaks within the 30 to 45 minutes, where you stretch, move around, remove your hands from the keyboard and mouse while you're thinking and make readjustments in your posture. On top of that, take working breaks where you perform another activity altogether such as using the telephone or conferring with a colleague. Above all, pay attention to how you feel, and then pace yourself and your daily activities."

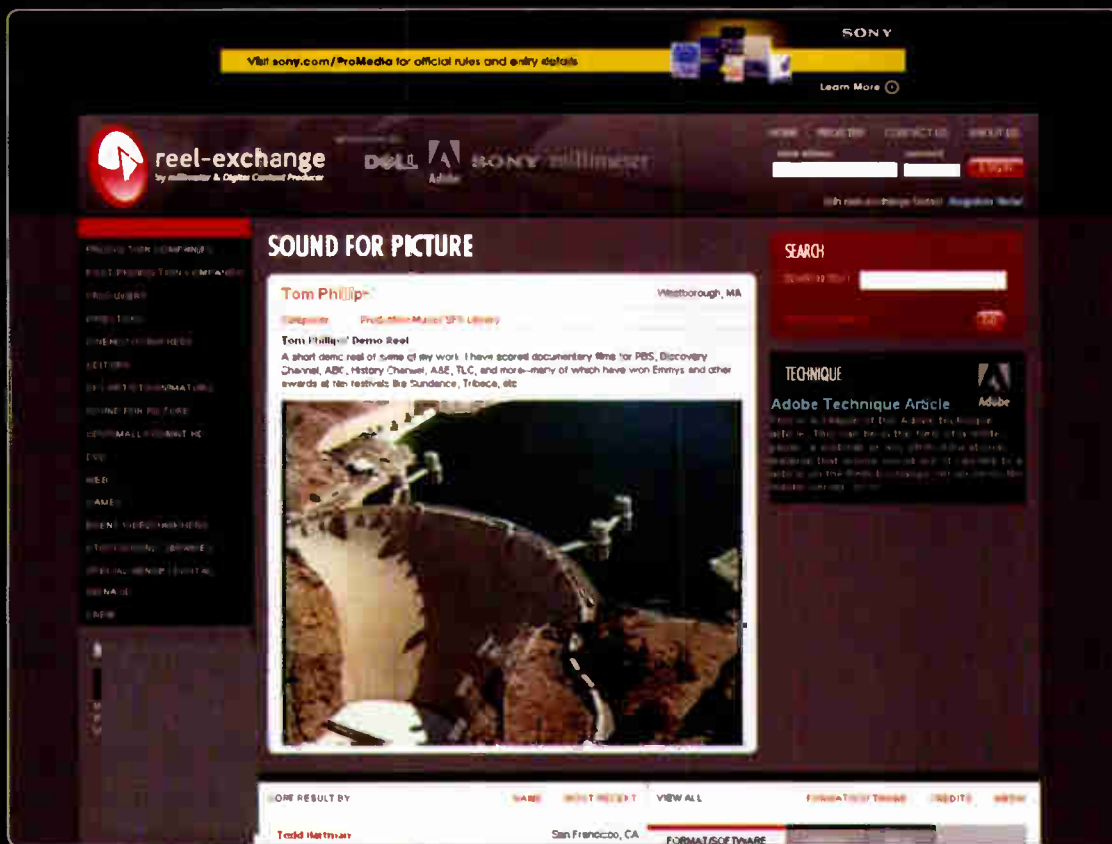
All of this advice comes back to evaluating everything that touches you during your audio day. The chair and the desk should be ergonomic, but so should your software, hardware and daily schedule. "Just remember that ergonomics is a process: You think about what's logical and then you have to try it," says Kolber. "You can't sit in a chair for five minutes and know that's *the* chair. Also, most input devices are returnable within 30 days, so go ahead and test it out. When people find the right combination, we like to think that they'll be more productive, have better morale and be freed up physically and psychologically to focus on their work." ■

David Weiss is Mix's New York editor.

Sit Up Straight, Johnny!

Buying the right equipment does not mean that you are ergonomically out of the woods. It's how you interact with the equipment. Following a few simple rules can help.

- Look at your fingers and thumbs: Are they relaxed and gently curved as they should be?
- Your wrists and forearms should be straight, not deviated up, down or sideways.
- Elbows should be close to the torso at approximately right angles or slightly greater, while your shoulders are relaxed down and back.
- Make sure your neck and head are positioned over the shoulders, and that your upper- and lower-back are upright, slightly reclined and well-supported by your chair.
- Feet should always be supported by the floor or a footrest.



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The Underdogs

Harvey Mason Jr., Damon Thomas Pump Out the Hits



The Underdogs: Damon Thomas (left) and Harvey Mason Jr.

When Harvey Mason Jr. and Damon Thomas first joined forces seven years ago, they brought together their respective credentials as songwriters and producers for Rodney Jerkins and Kenneth "Babyface" Edmonds. That session launched the two-man operation The Underdogs. Now, as Underdog Entertainment, their company encompasses Underlab Studio, with eight rooms manned by four engineers (Dabbling Harward, Aaron Renner, Riley Mackin and Ruben Rivera); a record label with Clive Davis (upcoming releases include Underdogs signings Luke & Q, two R&B singers from New Orleans and Grlfriend); and Underdog Music Publishing. They are also producing songs for upcoming albums by Jennifer Hudson, Whitney Houston and Chris Brown.

Mason and Thomas have worked with a roster of top artists too numerous to mention. Among them are Justin Timberlake, Kelly Clarkson, Toni Braxton and Pink. (For more credits, see "Selected Credits" on page 78.) Their cumulative projects equal album sales topping 50 million. Suffice to say that, if it's a hit, Mason and Thomas are probably involved. Last year, *Dreamgirls* director Bill Condon brought the two onboard to arrange and produce the movie soundtrack. Three songs from the film—"Listen," "Love You I Do" and "Patience"—gar-

nered Academy Award nominations in the Best Original Song category, a first in the production world. And while the *Dreamgirls* soundtrack sat comfortably at Number One on the album charts, The Underdogs also charted seven other songs during that same week.

Mason and Thomas make an interesting pair: focused, driven, genuinely humbled by their success, but with admittedly different personalities. They eschew individual interviews, preferring to tag-team. That said, Mason is the front man and Thomas is the quieter half of the duo, listening carefully and contributing periodically.

How did you become involved in the Dreamgirls project?

Mason: We had an initial meeting with Bill Condon, the director, and Henry Krieger, the original composer. They were trying to find someone to help them write some new songs for the movie. This was about three years ago. We didn't know much about the music, so it didn't work out. A year later, Bill and two music supervisors approached us for a meeting to listen to the music from the original [stage musical], listen to ideas for the new version and talk

strategy. At the end of the meeting, they asked if we were up for redoing the music, and we said, "Of course."

What were the biggest challenges while recording the soundtrack?

Mason: It was twofold. One, to try to make sure we pleased all the cooks in the kitchen. With a movie project, there are a lot more people you get input from: the director, music supervisors, studio executives, the cast, the choreographer. We were trying to pick our way through what information to take to heart and what was just opinions. We ended up having a good relationship with Bill and following his lead.

Two, how far to update the music and push the creative envelope in how the songs should sound. We didn't want fans of the original to be angry, and we didn't want to leave them suffering with the exact same songs. And we wanted the Underdog Entertainment audience to listen to it and say that it sounds like what they like.

How was Dreamgirls different from the projects you're used to doing?

Mason: Ultimately, when we're done with our records, we interact with record company presidents and we're used to dealing with Clive [Davis], so it's a partnership to make something really hot and still make someone's record and hope that it's what they want. And in this

We came from similar backgrounds and joined forces to put two halves of a brain together to make one brain. You always try to perfect your craft and keep your songs sounding better.

—Harvey Mason Jr.



case, that it would be what Bill wanted. *Did you have any idea that Dreamgirls would take off the way it did?*

Mason: We had an idea that it would be big when we looked at the cast. It's an amazing project with an amazing story, but we were unsure of how to pull it off to be a musical, where usually you see a guy walking down the street and he breaks into song. Bill had a creative way to go into every song—a concert, a rehearsal, a writing session; there's a reason for all the songs. It made things better for us. We try to involve ourselves in great things, and this was another perfect opportunity to do what we love and showcase what we do best, which is to make good music.

In 2003, you said, "We want to leave our mark on the industry and hate people like and respect us." You have certainly surpassed the goals you set for yourselves.

Mason: We've put good music on the radio and in theaters, and we still have a long way to go.

Thomas: Big goals. The people we look up to—like Quincy Jones, Babyface, David Foster—they're still going, and we're still trying to make it to that level.

Mason: Those are the types of producers we aspire to be. We still have a lot

of great songs in us to write. We've been very fortunate and pleased with our path to success and we're not discounting or downplaying it. We are thankful, not greedy. We just want to improve and continue to do more good work.

How do you balance each other as a team? What are the differences and similarities that make it work?

Thomas: The only similarity is the music. We love a lot of the same things. We've been together for seven years and we're different in a lot of ways, and that's why it works. We both play, write, do everything, so it's not like one person does and the other doesn't.

Mason: We balance each other out because of mutual respect. No one has the determining decision on how to make a record; it's a balance of one does something and the other counters it until we get to the end result, and that's in music, vocals, lyrics, how we mix, the interviews we do. It's a constant balance of partnership.

And we get along. Otherwise, it would be a power struggle. Damon is a lot wilder and I'm a lot more conservative. He's more adventurous musically, so he balances me musically. Businesswise, he's wilder; I'm more conservative. Clothing, he's wilder and I'm more conservative!

You've remained loyal to the SSL C200 and you're obviously Mac lovers. Why these particular pieces of gear?

Mason: We're five years in with the C200. It starts with the sound: The sound is incredible. It's superflexible for working on multiple projects at the same time. All day, we're pulling things up from the seven other rooms, and we have the freedom to work on all these projects, the mixes and the recalls. The sound and ease make it invaluable. All the rooms have Logic on G5s, Pro Tools on G5s synched together.

We do all the MIDI programming and tracks in Logic, record all the live instruments and vocals in Pro Tools. We have always done that; we haven't changed.

We use a Sony C800G mic, always have, on 95 percent of voices. It sounds the best to us for the way we like our vocals to sound. It's very accurate, with a clear high end. That mic stacks really well, and we stack a lot of vocals. We use a lot of Avalon outboard and mic pre's and EQ. Other than that, it's pretty streamlined. The Motif keyboard is our only outside sound. All the things we use are all flexible. We're constantly upgrading our sound and plugins, effects and EQs. Revisions are done on the console, so we keep stuff fresh for new sounds and creativity.

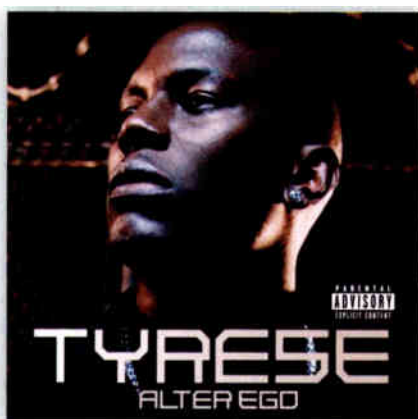
Thomas: Using our console for *Dreamgirls* was very useful because we could recall stuff so quickly.

Mason: There were 61 pieces of music for that film and we could push one button to recall something.

Looking back on some of your earliest projects, how have you grown and perfected your craft over the years?

Mason: We were pretty competitive in the early stages and making good records, but the sounds and styles have changed. We came from similar backgrounds and joined forces to put two halves of a brain together to make one brain. You always try to perfect your craft and keep your songs sounding better.

Anyone with a computer and Pro Tools can make a record in their bedroom now and sell it online. Were you among the last generation to come up through the ranks, work-



Selected Credits



Babyface: *Grown & Sexy's* "The Loneliness" and "Can't Stop Now" (2005)

Toni Braxton: *Libra's* "Finally," "I Hate You," "I Wanna Be (Your Baby)" and "Spoused to Be" (2005)

Kelly Clarkson: *Thankful's* "Thankful" and "You Thought Wrong" (2003)

Coyote Ugly soundtrack (2000)

Fantasia: *Free Yourself's* "Ain't Got' Beg You," "This Is Me" and "You Were Always on My Mind" (2004)

Jamie Foxx: *Unpredictable's* "Creepin'" (2005)

Michael Jackson: *Invincible* (2001)

Josie: *Unkunvenshunal Girl* (2000)

Jennifer Lopez: *On the 6* (1999)

Brian McKnight: *U Turn's* "Shoulda Woul-da Coulda" (2003)

Mya: *Fear of Flying* (2000)

Tupac Shukur: *Still I Rise* (1999)

Will Smith: *Willennium's* "Who Am I" (1999)

Britney Spears: *Oops!...I Did It Again* (2000)

Spice Girls: *Forever* (2000)

Ruben Studdard: *The Return's* "Change Me" and "Get U Loose" (2006)

Justin Timberlake: *Justified's* "Still On My Brain" and "Rock Your Body" (2002)

Tyrese: *2000 Watts' "I Like Them Girls"* (2001)

ing with people like Babyface and Rodney Jerkins? Do you think that kids today are missing out on that invaluable experience?
Mason: I think that's very true, but they can be as competitive and good as someone who did it our way of coming up with other people. It's about who makes the coolest record, and do people like it and want to hear it? The beauty of making music is that if you have a computer, you can make a record.

Thomas: Harvey and I were among the first guys to use Pro Tools fully, while others were using Sony digital machines. We did it before other people were thinking about it.

How have the Underdog Entertainment facilities expanded?

Mason: We started in a house with a studio in the corner of a room, combined our equipment, went to a commercial studio we leased for a year and we've been here for five years. We have a publishing company, we've signed writers and producers, and it's not cost-effective to try to rent rooms, so we built this to be our home base. Damon is in one room, I'm in another, somebody is cutting vocals, somebody is overdubbing. We had to have this to complete the plan we had in mind: production, recording and publishing companies all running at the same time and being efficient and productive. People see the amount of work and hours we put in and feel the energy. Everybody here is excited and passionate about making music. But we didn't go out like a lot of young producers, and say, "We're going to start a studio and build a camp." We did it ourselves—writing and evolving, not just jumping into it.

What are the advantages of being a one-stop shop? Are the stress levels overwhelming at times?

Mason: We're having fun. We all like each other and challenge each other, but it's not a stressful job. It's long hours and a lot of hard work and being focused for long periods of time, but it's not hard.

As songwriters, musicians and producers, how do you keep from overstepping your boundaries?

Mason: That's a tough question. I guess we're not so good at setting boundaries. Maybe we do. You do what you think is right. We don't get boundaries. The artist comes in, you do your homework, set up where you want to track them, do something fresh. Sometimes you have to push the boundaries.

What are you listening for in the song as it is written, as the singer is tracking it and as you're producing it?

Thomas: It's different, because we are the musicians sometimes. When we're writing, we start with chord progressions, and Harvey or myself will create a track around it and a concept, then a lyric. Then we get a vocalist, and it's kind of easy from there.

Mason: It's very personal, the way we make records. So it's very simple: We listen for things we like. We respect our writers' opinions. Vocally, we listen for things that move us and make us believe in the song, get an emotional reaction and performance that showcases artists and makes them look great. Production—again, we look for something we like, something cool, new and fresh.

Where did you gain your sense of what works?

Mason: We didn't, and that's what people don't understand sometimes. What we know is what we like, and what we like right now is what's working. Our idols, L.A. [Reid] and Babyface, knew what they liked, and at the time, radio and people liked it, so it sells. Great people don't study what works and try to do that. They do what they like. You can try to fake it and chase it, but to try to do what others do is not personal. We make music we like, and if people like it, it will work. If we fall out of favor, we've lost our timing or our connection with what works.

Is there an "Underdogs" sound? Is that possible, given the range of projects and artists that you work with?

Mason: If you're a true student of The Underdogs way, you can find it. Patterns we use in drums, bass lines, all our songs, we take pride in making sure are musically sensible and the structure is hopefully acceptable. Vocally, if you listen closely, there's consistency in the artists' vocals and harmonies. Most all of our records have cool bridges. Our mixes sound fairly consistent. You do have to be savvy to pick up on some of it, and certainly *Mix* readers are savvy enough to do that.

How do you repeat the success of that sound, but still make it new and not have it all sound the same?

Mason: It's the way we do things. Our sound doesn't come from us trying to make a sound; it comes from our likes and dislikes. It happens naturally, and so it comes out in every record one way or another, and as we change and evolve, our personal tendencies always follow us. We can change all the patterns and structures we want, but what sounds good to our ears will always follow us. ■

Elianne Halbersberg is a freelance writer based in Georgia.

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Karney Music and Sounds

Eclectic Audio Design for Games, Gamblers and More

Though there are a few big videogame companies with large staffs of in-house visual and sound designers, engineers, composers, etc., by and large, the industry is populated by thousands of independent contractors who do specialty work out of home studios. In the San Francisco Bay Area, where so many games originate, these contractors are numerous, and making a living in the field usually means piecing together multiple gigs—big and small. Anna Karney (www.karneymusic.com) knows this well: Last year was good for her. She wrote music and/or did voice-over recording and sound design for two major games, Backbone's *Death Jr.* and *Smart Card Wrestling*, and several smaller online ones. She also gets steady ongoing work in a field I was unfamiliar with—writing music for video slot machines—and she plays guitar and leads her hard-rocking band, Karney.

She came to the gaming world after being a composer and accompanist for dance; she has also scored industrials and TV and radio ads on the side. "I had friends who were involved with CD-ROMs and interactive media, and they suggested I look into it as another income source and use of my skill base," Karney says from her one-room San Francisco studio. During the course of her development as a composer, she became adept at using synthesizers, MIDI and MOTU's Digital Performer, so she was well-equipped (literally and figuratively) when game music assignments started coming her way, creating MIDI versions of college fight songs for a football game, writing songs and themes for Maxis' popular *Sim City* franchise and many other projects. Among the titles she's worked on more recently are LucasArts titles *Armed and Dangerous* and *Monkey Island IV*, two versions of *Star Wars Galaxies: An Empire Divided*, and Skunk Studios' *Tennis Titans* and *Mahjongg Adventures*.

"Gaming music is all about character," she says. "If you listen to the *Armed and Dangerous* piece, that was all Celtic and I hired a Celtic band for that. For a lot of the extreme, violent games, the character is street, so that can be hip hop or metal or whatever. But I've done everything from Hawaiian and other world music to more classical-sounding pieces, which is both part of the fun and a lot of the challenge. And, of course, music will have different functions within a game—sometimes you want to sort of lull the player, whereas other times it's this frenetic action pace."

Karney's studio is based around a Macintosh G4 running OS X and Digital Performer, "which I really love because it's geared toward a composer's sensibility," she continues. "I've got an old-fashioned Mackie mixing board and Mackie speakers, and the only outboard gear I use are synthesizers—the Roland XV-5080 and a JV-1080, mostly for its added soundcards. I have a GigaStudio Advanced



Anna Karney in her San Francisco-based Karney Music and Sounds

Orchestra setup; you can't beat the samples, especially if you beef it up with good 5080 sounds. I have a huge database of really good SampleCell sounds, which have all been moved to MOTU's MachFive sampling software. They're not quite as rich as GigaStudio, but they're good for various textures. For mics I have some Neumanns, AKGs and Shures. I have a PC on which I have Sound Forge [digital editing software from Sony], and I also use Waves' Gold bundle for processing and mastering. I sort of work in the old world—i.e., five years ago—and in the new world. My thing is that being an independent, I'd like to keep up with everybody, but I don't have major corporate money so I can't stay on top of everything all the time. But if it's working, I don't see what the problem is."

To accommodate voice-over work, Karney built an alcove that is deadened by large pieces of velvet, while the main room has worked fine for everything from drums to acoustic instruments to her screaming electric guitar. "I've recorded everything from single-voice to four-piece Dixieland here," she says. "For *Armed and Dangerous*, I recorded one person at a time and one instrument at a time, and it really sounded quite symphonic."

Finally, what about this music for video slot machines—for Las Vegas' bZillions and C2 Gaming, and even the huge Australian company Aristocrat? "That's my bread and butter," Karney notes. "There are different levels of slot machine. Besides the basic, old-fashioned mechanical, there's a whole group of video slots that are trying to attract people other than your usual tourist player. We worked on a game called *Monkey Business*, and to attract the player to the game, they created minute-long animations that were playing randomly on an LCD screen, so I scored that and then the music was also integrated into the game-play, meaning if you had a low, medium or high win, you had a different type of music for each. If you had a bonus game, there were other sounds and music. That work has also been a lot of fun and has allowed me to be super-eclectic." ■

Blair Jackson is Mix's senior editor.

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Audio Middleware, Part 3

The Final Chapter on Game Development Engines

In my March and April columns, I began a report on videogame audio middleware, examining the value of this software in game production. In this final installment, I'll look at three other players in the market: FMOD, the Miles Sound System and the Unreal 3 Sound System. So many choices, so little time.

FMOD

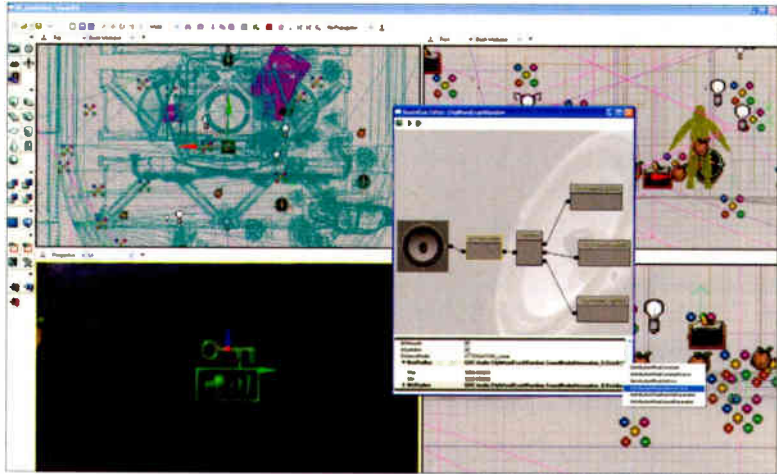
Firelight Technologies' FMOD (www.fmod.org) began as a simple assembly-written (assembly code = *fast*) audio engine that now stands as a serious contender to Wwise and Miles as a great "multipurpose" engine that can pretty much do it all. Its 13 supported platforms include Windows (all), Linux, Mac, Xbox, Gamecube, PlayStationPortable (PSP), Xbox 360, PlayStation 2 and 3, and Wii. Single-platform FMOD pricing begins at \$3,000, plus \$1,500 per additional platform.

Among FMOD's supported file formats are WAV, AIFF, MP3, Ogg Vorbis, ASX, FLAC, DLS, ASF, IT, MP2, MOD, RAW, WAX, WMA, XM, XMA, S3M, VAG and GCADPCM. FMOD has a feature that lets you optimize the sample rate during each sample's build process. However, you will be unable to access certain target platforms unless you have a signed nondisclosure agreement from the respective console manufacturer (i.e., Sony, Nintendo, Microsoft).

Surround support includes Dolby Digital 5.1, DTS and Pro Logic, with a panning matrix that lets you route mono/stereo/multichannel sources to any speaker in a 5.1 matrix.

FMOD has its own set of effects such as chorus, reverb, etc., yet it supports VST plug-ins, which is a huge plus. It would be too processor-intensive to run, but imagine using Waves Renaissance reverb in your game in real time! This is something to investigate. Certainly, the power to run a good, old-fashioned Eventide reverb or something from a Lexicon PCM90 is probably very achievable on an Xbox 360, isn't it?

The FMOD Designer is meant to compete with tools such as Creative Labs' ISACT and Audiokinetic's Wwise. It is an excellent bank-manipulation tool that allows most of the functionality of Wwise and nearly all the functionality of Creative Labs' GameCODA. It introduces a set of terms such as Sound Definitions and Layers, and completely leaves out the term "cue," which is something of an oddity, yet it takes only a few hours



Unreal's sound cue editor provides one of the best visual representations of audio objects as an extension of its highly object-oriented Kismet tool.

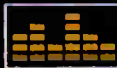
to get used to it.

The Designer GUI has a clean interface with tabs and a fairly intuitive hierarchy of objects and effects. Within the Event editor, you can create a rough idea of what a combination of sounds will do in the game.

FMOD's network-based auditioning lets you use Designer to try out sounds on the target platform while a game is running. It also includes a simple set of commands in the API that are also usable by the Designer tool, which is a simple way to expose commands to the integrator. Here, the documentation is somewhat sketchy and I'll look at a successful "real-world" implementation of this in a future column.

The channel groups and submixing function are straightforward, allowing the routing of sounds into different groups with independent control of volume, effects, etc., in those groups. The software doesn't include a sound matrix, although it does offer events that can be manipulated in different tracks to simulate a matrix. For some reason, streaming must be specified as a bank type (just as you specify memory-based sounds as a bank type) rather than on individual sounds.

In terms of interactive music, FMOD makes use of its basic event and sound definition functionality, and the Designer manual provides a tutorial on using these functions for music. It lets you randomize a number of clips and set up a sound definition to set "seek points" that will jump to a particular clip or ignore a particular clip based on parameters that you set. If your programmer can't do it for you, then the commands that let you sync to game events are Init, Close, Load, GetEvent/Start and UpdateParameter.



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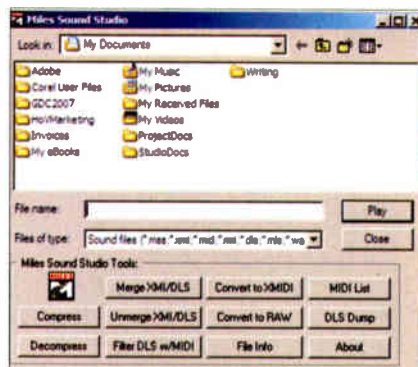
West L.A. Music's Mark Sprink with legendary
producer **Eddie Kramer**

FMOD Designer isn't quite as full-featured as Wwise and doesn't have the attraction of video tutorials. However, Brett Paterson, who wrote FMOD, answers support e-mails personally and is grappling with the massive task of providing support on a developer-wide basis. FMOD is less expensive than the competition and is one of the most stable, reliable engines currently on the market.

THE MILES SOUND SYSTEM

From RAD Game Tools (www.radgametools.com), the Miles Sound System supports Windows (all except Vista), Xbox, Xbox 360, PS2, PS3, PSP (coming soon), DOS, Linux and Mac OS 8/9/X, and is priced at \$3,000 per title for any platform. File formats include Microsoft WAV, ADPCM, Ogg Vorbis, MP3 and MIDI, and mono, stereo or surround in SRS Circle Surround (6.1), Pro Logic, quad, 5.1, 4.0 DTS, 5.1 DTS, 6.1, 7.1 and 8.1. Compression is offered for MP3, ADPCM and Ogg Vorbis.

Miles has the leanest feature set, the smallest set of tools and perhaps the most support for its code base of any of the engines. It comes with MIDI Echo, Miles Sound Studio and Miles Sound Player. Sound Studio lets you convert and merge multiple kinds of files, and that's really about it. The rest of the functionality is through the SDK (Software Development Kit) via programmers.



Miles Sound Studio is a bit short on designer tools, but long on reliability.

Miles claims you can have sound playing using three function calls (essentially, sentences in your game engine's code). This is pretty quick for engineering integration, but it certainly doesn't compare with real time. No sound-matrix function is provided, but like everything else, it can be programmed more quickly than in other engines.

Regarding code, Miles is about as clean or possibly even cleaner than FMOD. This enables streaming Redbook audio without using your CPU. It also allows you to stream in as little as three calls. Yet again, though,

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When used with its rock-solid, low-level code, Firelight Technologies' FMOD Designer provides very reliable performance.

if you're not an engineer, then you're out of luck. In terms of interactive music, roll your own: Miles will be a solid backbone. Also, the documentation has nothing specific about game-event linking.

At this point, you might wonder why I've included such a skeletal audio engine in this roundup. By current standards, Miles is dated. Without real-time parameter control and some sort of GUI interface that lets you organize your files beyond a simple directory structure, it doesn't offer much in the way of additional features, especially the ones required by larger projects. Yet John Miles revolutionized the industry and this engine is still used by a wide range of products. Why? Because it's super-cheap at \$3,000. It's solid and won't break, and it includes solid support with fast response to e-mails and phone calls. Can't say much better than that.

UNREAL 3 SOUND SYSTEM

Designed for Windows and Xbox 360 platforms, the Unreal 3 Sound System from Epic Games (www.epicgames.com) is arguably the most commonly used middleware in the industry today. Unreal offers support for Microsoft WAV, XMA and Ogg Vorbis files, with up to 5.1 surround and XMA or Ogg Vorbis compression that's customizable for each cue.

The Unreal Editor GUI is the best in the business; as a plus, it's all self-contained. You load a level—graphics animations and all—and the audio with it, and everything is integrated. It provides good visual feedback, which can get a bit tricky with larger sound cue structures, but many of the sounds' parameters are editable, such as volume, radius and crossfade functionality within Kismet, the integrator's link.

You can run the game right from the editor, with all sounds included. Sounds do not react in real time to changes, but it's the next best thing. Animations are a bit different.

You can use animation event notifications (Anim-Notifies for short) to add sounds directly to animations on a per-frame basis and preview them in real time. This is something I desperately wanted in the last Unreal game that I worked on, and thankfully it is now available.

There is no sound matrix. Unreal relies on sound cues alone for its object structure; just take a single file or group of files and create a cue. Streaming isn't currently supported. You simply play a file and it loads into memory.

Unreal has a great comprehensive interactive music system that allows you to manipulate multiple sections of songs at cue points that you define. Kismet controls just about anything that happens in an Unreal level, which is like Microsoft Visio—a flowchart of events, if you will. Renderware also had this view, and it can get insanely confusing to look at boxes and circles connected with lines. But, believe me, it's far easier to do this than to figure out code. Kismet is a godsend to audio folk and it provides a great playground for the engineer to dig in and create a lot of custom audio events that sync to game action.

In recent years, Epic Games has stepped up with much better support. Licensed Unreal developers have access to a Website with a comprehensive set of tutorials and information about each version of the engine, as well as a message board detailing prioritized bugs and feature requests that the team is working on. Your suggested feature may not be added right away, but you do get responses in 24 hours or less.

Unreal's audio system is solid and user-friendly, thanks to its unique visual interface, yet not as comprehensive by any means as Wwise. (Good luck doing vehicle engines using Cues, for example.)

Audio engines are rapidly expanding and evolving into slick professional tools, and I hope that after reading this series you have a good understanding of what they can do. However, they still have a long way before achieving the ease of integration provided by post tools such as Nuendo and Pro Tools. That's my next crusade. ■

Alexander Brandon is the audio director for Midway Home Entertainment in San Diego, Calif.

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Josh Groban



PHOTO: CHRIS MARSHBURY

By Sarah Benzuly

For the current Josh Groban U.S. tour, front-of-house engineer/Maryland Sound staff engineer Mickey Beck is manning a Yamaha PM1D. "With an extensive input list [150]," he explains, "the ability to use scenes to change levels, effects and mutes for each song is invaluable. The FOH and monitor position are sharing the preamps. This can get a little hairy, but offers us the option to avoid an analog split before the preamps and allows us to carry only one set of input cards. It does require good communication between myself and Will Miller, the monitor engineer [also Maryland Sound staff engineer]. We had to incorporate a PM5D for sub-mixing to fit in the PM1D's 96 channels." Miller is on a

PM1D and has added a PM5DRH sub-mixer, as well as an 01V for band talkback mics. Groban sings through a Sennheiser SKM Series wireless handheld transmitter with custom-made Neumann capsule run through an XTA D2 dynamic EQ and an Avalon 737. The JBL VerTec line array is completely digital from preamp to amplifier. "The best part about having a digital rig," Beck says, "is that there is no such thing as a ground loop. It is clean, stable and sounds good."

For the full story, visit mixonline.com.



PHOTO: CHRIS MARSHBURY

From left: Mickey Beck, FOH; Will Miller, monitor; and Bob Goldstein, Maryland Sound

FixIt

Andy "Baggy" Robinson has worked with George Michael for the past three years and is currently one of two monitor engineers, as well as head of sound, on the artist's tour.

With 15 in the band, including six backing vocals, plus the lead vocalist who has very exacting monitoring requirements, it became apparent that monitoring would be a job for two people. We brought John [Roden] in to do band monitoring and discussed the pros and cons of the potential digital solutions. It was obvious that DiGiCo was the way forward. We could share inputs, have a large number of channels and all the outboard we would ever need could be connected. When Gary [Bradshaw, FOH engineer] came onboard, he decided to join us and we used two stage racks each for FOH and monitors, giving a total of a possible 112 inputs, using over 100 for the show. Each monitor board had two local racks for the outboard connections, so we were running 160 channels each. FOH also had a local rack and a third stage rack, with all racks on an Optocore loop. The channels of each second local rack and the third FOH stage rack joined the desks together, so mixes and direct outs could be shared between the desks, all within the digital domain.



Andy Robinson (left) and John Roden

inside

- 86 **Live Mix News:**
Tours, Events, Installations
- 92 **All Access:** My Chemical Romance
- 94 **Tour Profile:** Christina Aguilera
- 98 **NSCA Show Report**

News



Northern Sound & Light recently outfitted the new off-Broadway touring production of Urban Cowboy with D.A.S. Audio Aero Series self-powered line array speakers.

Audio-Technica's Artist Elite 5000 Series UHF wireless was used with the AEW-T5400 handheld transmitters for frontline vocals on performances by Grandmaster Flash and The Furious Five, Aretha Franklin, Sammy Hagar, The Ronettes featuring Ronnie Spector and bandleader Paul Shaffer for the March Rock & Roll Hall of Fame induction ceremony. Technical staff included Mitch Maketansky, audio coordinator; XM Productions/Effanel Music remote recording with John Harris as lead engineer and Jorge Silva as production mixer; Dave Natale, FOH engineer; and Tom Holmes, monitor mixer...Standing in again at front of house for Alison Krauss and Union Station's current tour is Bernie Velluti, joined by monitor engineer Mark Richards and SE Systems' Cliff Miller's 24 year-old daughter, Haley Miller, who manages racks and stacks...LD Systems supplied a temporary install of Electro-Voice equipment for the annual Houston Rodeo and Livestock Series, held at the city's Reliant Stadium and celebrating its 75th birthday this year. The company also incorporated Electro-Voice's NetMax networked matrix system controller into the system design for the first time...Joe Lodi, systems designer of Advanced Audio Technology, and Angelo Poulos, partner and director of installations, specified, designed and installed the audio overhaul at club Duvet for a 2007 Winter Music outdoor pool party. The system included Turbosound Aspect Series TSW-218s, TA-880Ls and TA-880Hs.

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On the Road

Machine Head

Tour manager/FOH engineer Ted Kistner is once again out with Machine Head; he originally toured with the band in May 2004 and is back on the road for their current co-headlining jaunt with Lamb of God, Trivium and Gojira. After this, the band will be on the Heaven and Hell tour with Black Sabbath (where Ronnie James Dio will lend his vocal stylings) and then off with Megadeth.

How much gear are you carrying?

I'm carrying mics, cables, I've got a split sub-snake and that's pretty much it.

What are you requesting on your rider?

Lamb of God is handling all of that, but I don't ask for a whole lot: A [Yamaha] 3k or PM5D, but I'm totally happy with a Crest Century, too.

Are you using any effects?

The only effect I use is a [TC Electronic] D-Two for the lead vocal; other than that, I run everything straight. Once in a great while, I'll throw a little reverb on the vocal depending on the venue. But a lot of the time, the hall has enough in it that it's not really necessary.

Do you have a specific mixing style?

My goal is to get everything as close to unity and have it be loud enough for the room as possible. I might ride the vocals a little bit hotter than anything else, but I generally keep my mix straight across. I try to run through the board as little as possible to keep it clean. Being the second band on this bill, there's a lot of work really fast: I basically have about six minutes during the change-over to get all my line check done and hope that during the first song, everything is as it should be. It's guerrilla-style every day.

Where can we find you when you're not on the road?

I live in Atlanta and work for Atlanta Sound & Lighting and I'm the production manager for a club called Atlanta Live. They still keep me busy when I'm out here, too!

Now Playing

Taste of Chaos

Sound Company: Rat Sound Systems (Oxnard, Calif.)

FOH Engineers/Board: Greg Mahler, Andy Turner, John Dunn Levy/two Yamaha PM5D-RH
Monitor Engineers/Board: Jayson Pietri, Tony Luna, Chris Campbell/two Yamaha PM5D-RH
P.A./Amps: 24 L-Acoustics V-DOSC, eight KUDO, nine dV-DOSC, 20 Rat Sound dual 18-inch subs/L-Acoustics LA48a, Crest, Chevin

Monitors: Rat Sound MicroWedge 12, Rat sidefill, drumfill. Sennheiser EW 300 G2 IEM
Outboard Gear: Empirical Labs Distressor, Yamaha SPX990, TC Electronic D2, XTA DP44/DP428

Microphones: Shure, Sennheiser, Audix
Additional Crew: audio chief Tom Caraisco, audio techs Steve Kaminsky and Taka Nakai, production manager Kerry Nicholson, tour manager Matt Malles

The Academy Is...

Sound Company: Clair Bros.

FOH Engineer/Board: James Rudder/Yamaha PM5D

Monitor Engineer/Board: not using one/Yamaha PM5D

P.A./Amps: 28 Clair i4s, 24 i3s, 24 BPlus cabinets, 12 on-ground sub-low cabinets, six FF-2TMs



Monitors: in-ear monitoring, four S-4s, 14 12am wedges, two drum rig bottoms
Outboard Gear: Empirical Labs Distressor
Microphones: Shure Beta 52, SM57; Audix i5, D2, CX-112, OM5, OM7; MXL-604; AKG 414; Electro-Voice ND868

Glass Cactus Gets Boost With New System

Clair Bros. Systems recently installed a WJHW-designed audio system at the new Glass Cactus nightclub in Grapevine, Texas. The system includes JBL VerTec line arrays, AE Series loudspeakers and Control 29AV speakers. The \$16 million Glass Cactus covers a total of 39,000 square feet and accommodates approximately 1,500 people. The state-of-the-art sound stage features musical acts ranging from country to blues to rock.

The venue's design includes an abundance of glass surfaces, which posed an acoustical challenge. To counteract the hard surfaces (including the hardwood and concrete floors), WJHW did extensive computer modeling to balance the presence of the natural finishes with the concealed acoustical treatment.

On each side of the stage hangs six VT4888 mid-sized and three VT887 compact line array elements. Six JBL ASB6128V subs were placed underneath the stage for low-frequency reinforcement, while JBL AM6212 loudspeakers were installed to provide delay fills for the large first-floor/under-balcony area. Additionally, 15 JBL Control 29AV1 loudspeakers are situated in the outdoor patio area of the club.



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Yamaha's DM2000VCM. Retro Remixed.

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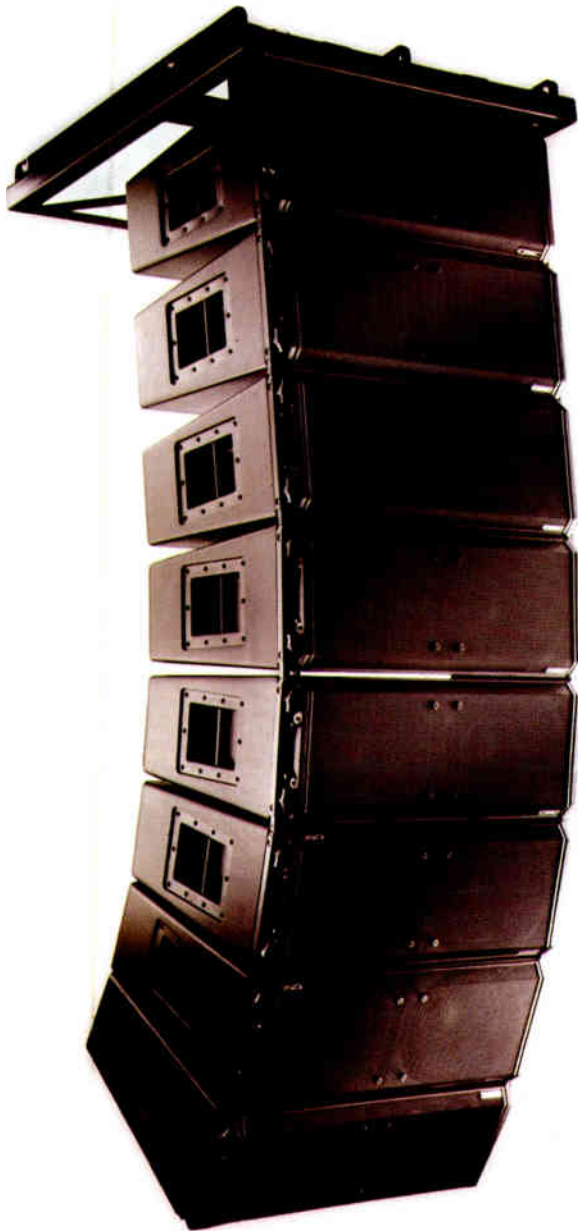
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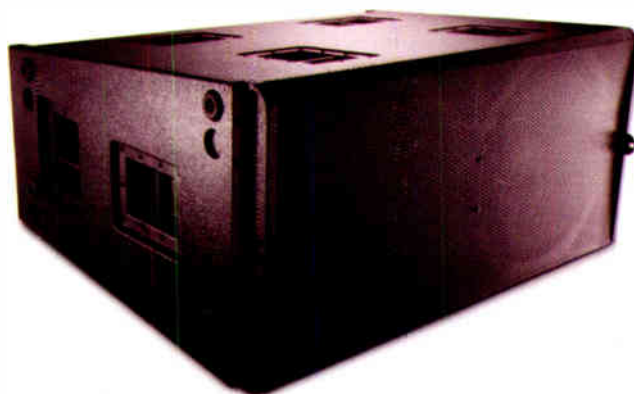
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MY CHEMICAL ROMANCE

By Sarah Benzuly



Skyrocketing to *Billboard*'s Number 2 slot in its first week of release, *The Black Parade* from My Chemical Romance has attracted so many fans to the band's current tour that they have added dates to the U.S. leg. Showcasing material from that album, as well as top hits from previous outings, My Chemical Romance wowed the pumped-up crowd in Oakland, Calif.'s Oracle Arena in mid-March. Or as front-of-house engineer Dave Rupsch says, "If the first half of the show is a large cup of coffee, the second half is 23 shots of espresso ingested through a beer bong."

Photos by Steve Jennings

The main P.A. system is an L-Acoustics V-DOSC, hanging 12 boxes per side with three dV-DOSCs at the bottom. Six additional V-DOSC cabs and six dV-DOSCs are used for side hangs. "It's such a smooth-sounding enclosure: crystal high-end and an unbeatable punch on your low-mids," Rupsch enthuses. "I also love the V-DOSC's coverage." For front-fills, Rupsch uses L-Acoustics ARCs or dV-DOSCs. XTA software and crossovers drive the Lab.Gruppen amps.

According to monitor engineer Ivan Laporte, the bandmembers use a combination of in-ears and wedges. "Frank [Iero, guitarist] only uses wedges," he says. "He didn't like the feel of the IEM. His mix is pretty simple: kick, snare, toms, guitars and vocals. Mikey [Way, bassist] uses IEMs; he likes very little of himself and more of the rest of the band. Gerard [Way, vocalist] uses IEMs; he likes lots of reverb and chorus on his vocals. Of all the mixes, his is the closest to a well-balanced album mix. Ray [Toro, guitarist] uses IEMs and wedges—mostly guitars, drums and vocals. Bob [Bryar, drummer] uses a ButtKicker and IEMs, with an overall mix in the left ear and a click on the right."

Laporte mixes on a Yamaha PM5D using all onboard effects and dynamics. For his mixing technique, he relies on a wide stereo image. "Ambience mics play a key role in the performance," he explains. "The gain structure is pretty even across the board. When you have good-sounding instruments and great musicians, your gig is 50 percent done; you just need to add what they need to be comfortable while performing."

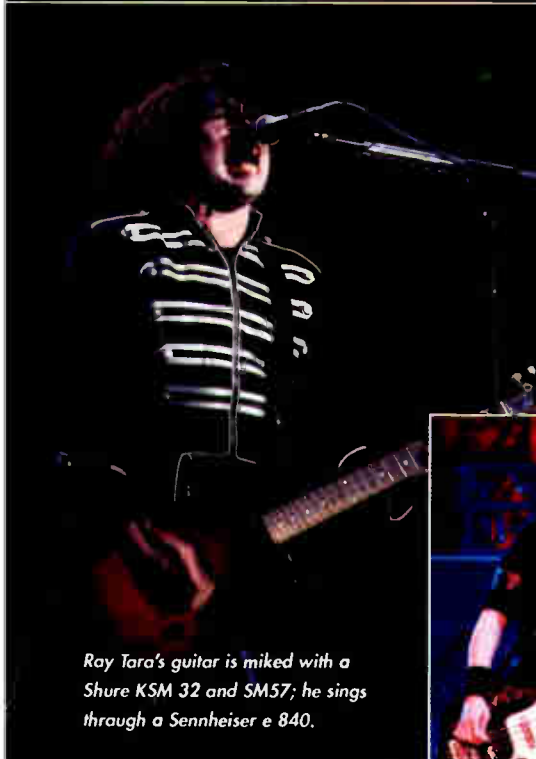
Monitor engineer Ivan Laporte (left) with monitor tech Peter Baigent



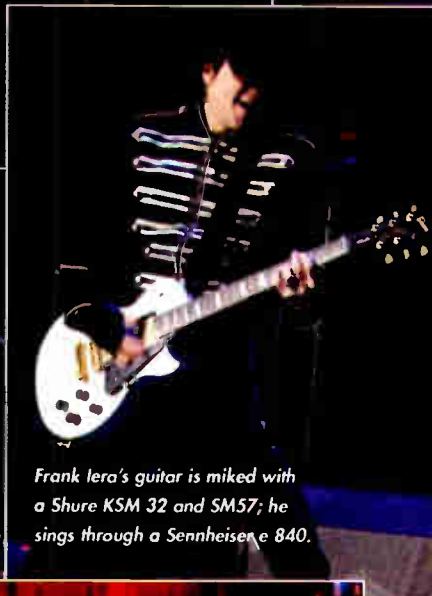
Vocalist Gerard Way sings through a Sennheiser 935 wireless for the first set. "He loves the way it sounds in his in-ears," says Rupsch, "and I like how it comes through the V-DOSC."



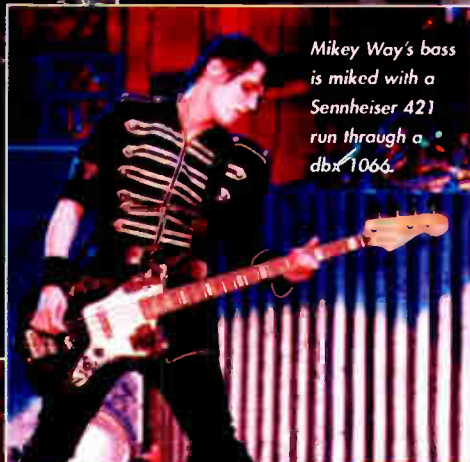
From left: Raz Janes, Rat Sound system tech; front-of-house engineer Dave Rupsch; and Mark Kocourek, opener Rise Against's FOH engineer



Ray Toro's guitar is miked with a Shure KSM 32 and SM57; he sings through a Sennheiser e 840.



Frank Iera's guitar is miked with a Shure KSM 32 and SM57; he sings through a Sennheiser e 840.



Mikey Way's bass is miked with a Sennheiser 421 run through a dbx 1066.



There are two drum kits onstage for the first set and drummer Bab Bryar switches between each kit for different songs. Drum mics include Shure Beta 91 and Audix D6 (kick); Shure Beta 98, SM57 and KSM 27 (snare); KSM 137 (hi-hat); Sennheiser e 604 (rack/floor toms); Shure SM57 (cowbell); Shure KSM 137 (ride); and KSM 32 (overheads). He sings through a Shure SM58.

On the tour's Midas Heritage 3000 (48 channels), FOH engineer Dave Rupsch installed additional stereo modules to accommodate the band's 50-channel input list and stereo effects returns. "The preamps on the Heritage are really pleasing to my ear," Rupsch says of the board. "The Heritage has a reputation of letting the mixer 'heat up' the input gain and bring out an unmistakable punch to inputs such as drums, which is 25 channels of my input list. Secondly, the Heritage has a smooth-feeling interface. During my set, I constantly move around the console making adjustments. Every job has its proper tool, and the Heritage 3000 is a beautiful rock 'n' roll desk, fitting perfectly into form for this show."

Rupsch carries quite a selection of outboard gear for this Rat Sound-supplied tour, including BSS Audio 901 II comps chained with Empirical Labs Distressor EL8s for center- and stage-left vocals. "There are a few extreme frequency areas in [lead vocalist Gerard Way's] voice that can quickly run out of control if not properly combated," Rupsch explains. "From the console channel, the signal first runs into the 901 where I compress a sharp cut around 500 Hz, 1.6 kHz to 3.15 kHz, and finally on the 8 kHz to 12 kHz. After that, the Distressor gives it a final smoothing before it returns to the channel. The same is done to stage-left [Ray Toro's vocal]." Rupsch's effects list comprises Yamaha SPX-990s, a Lexicon PCM91, an Eventide 3000 Ultra-Harmonizer and a TC Electronic D-Two "for fun," he says.

"My mixing is split into two different styles for this show," Rupsch continues. "For the first half, the band plays their current record, *The Black Parade*, from front to back. Songs like 'Welcome to the Black Parade' and 'Disenchanted' have the most layers, and it's a challenge to get them to breathe and have the layers nest among each other in these large rooms. I get goose bumps from accurately capturing that and delivering it to an excited crowd."

"The second half goes back to older material, with a four-piece drum kit with a 24-inch kick versus a 26-inch kick [used for the first half]. Guitar parts for these older songs are about as busy as guitars can be, and keeping these blistering fret burners under control in an arena is a challenge. For both sets, I mix Frank's tone a little darker and Ray Toro's a bit brighter. I keep my fingers on the mute buttons of the mics that I expect to get knocked over during the show!"



CHRISTINA AGUILERA

Bringing Club Ambience To the Arena

By David John Farinella

It's a circus! It's a concert! It's a multimedia extravaganza! Christina Aguilera's Back to Basics world tour is all these and more. The chart-topping, ever-evolving vocalist blends hits from each of her releases—including "What a Girl Wants," "Lady Marmalade," "Dirrty," "Hurt," "Beautiful" and "Candyman"—with a handful of videos and, yes, a circus into a rollicking 90-minute set that sends her fans over the top.

The challenge to bring it to audible life falls on front-of-house engineer Tony Blanc, monitor mixer Bill Chrysler and a handful of audio technicians. Aguilera, band and crew have been working in sold-out arenas across the States, including a stop at the Oracle Arena in Oakland, Calif., at the beginning of March. Blanc, who's been working this tour since September 2006, has found an easy trick to make these rooms work for him: "It's the same in any environment—you look at the stage and you should be able to hear what you're looking at," he says.

But in the slightly boomy Oracle, which hasn't been sonically retrofitted like some of the newer arenas, Blanc keeps an eye on the acoustics. "I won't overdrive this room," he says. "Once you get into its reverberant field, it's just too loud for this type of music. In the heavy metal days, you would have driven the room back into the car park and no one would have cared because it's all part of the great experience. But at our age and the audience that we've got, that's not the approach. If a room has a reverberant issue in



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the high end, I will go up to the point where that starts, sit below it and try to keep it clear."

Blanc says that Showco's Prism system helps him during this show. "It helps having a directional P.A.," he reports. "You're not putting up a whole wall of direct radiators that you're pointing everywhere around the room, hoping you're going to hit something. You're putting up something that has direction built into it, be it a line array system or a Prism. It's aimed at the people and not at the roof and floor, so you stand a better chance. But you cannot defeat acoustics; you can only work with them."

So does Blanc turn to analyzers to check his balances? "I'm old," he begins to answer with a laugh, "and I tend to use old things—my ears and my voice. I tune so the room has intelligibility and definition, and *then* I'll look at the analyzers. After I tune it like that, I'll put the pink noise back up after we soundcheck and it's dead-flat from 100 to 8k with my voice. The Smaart tells me that the conversion is pretty close. So hopefully we're in the ballpark."

Miking the band—and Aguilera—is straightforward. All but one of the microphones used onstage are from Shure, the company the singer endorses. The team also relies on Shure's wireless system, which comes in handy as it uses 28 channels of wireless, not including all of the personal monitor transmitters. "It's like a traveling radio station," Chrysler jokes. "We use that software every day and it's always clean."

Blanc uses a DiGiCo D5 console at FOH



Above: A bird's eye view of the "circus" to come. **Right:** At FOH (from left) are Showco's Wade Crawford, Tony Blanc, Bill Chrysler and opener Danity Kane's FOH engineer, Tim Miller.



with an assortment of outboard gear that includes a TC Electronic 6000 reverb unit, a Klark Teknik DN6000, four dbx 160 compressors and a pair of dbx 900s, a Waves MaxxBass, a Brooke Siren 4-band compressor and a pair of Empirical Labs Distressors.

Although Blanc uses the D5's snapshot function, this is hardly a show that he just sets up and then watches. Along with everything else, Blanc must also work with a handful of tracks running off of a Pro Tools system triggered by one of the keyboard players, so he constantly listens to what's happening. "When the keyboard player is playing a part, there is a string patch running underneath," he says. "They are locked together and you've got to have the tracks balanced. Sometimes it doubles, so you've got to thin it out or else the sound gets too fat. It's the same on the backing vocals on the choruses. There are things going on and you've got to make a choice of which bit you feature and which bit is allowed to speak. This is a very deep show with 80 inputs."

MONITOR WORLD, SAME AS THE FIRST

Things are equally complex at the monitor position, considering that Chrysler is shepherding 46 outputs through a Yamaha PM1D. Aguilera and 12 musicians receive personal stereo monitor mixes, and a pair of stereo sidefills are flown above the stage. In addition, there are a pair of wedges downstage-center for Aguilera that include her vocal, piano, kick drum and bass; a wedge for the musical director; a wedge for Chrysler; and 14 wedges that span the stage for the dancers. There are also a number of subs onstage for the dancers and musicians to hear and feel during the show.

The sidefill mixes are like an FOH mix, Chrysler reports, with a little less of Aguilera's vocals. "Her vocal is loud out front, so it's coming on the stage. The mix down-center has her vocal in it and that's a real sweet spot for her. Rather than flood

everywhere with her vocal, it's pretty comfortable, and with the combination you can hear everything."

Chrysler uses an Avalon 737 tube pre-amp on Aguilera's vocal, a trick he's been employing since her *Genie in a Bottle* tour. "That signal doesn't go to front of house," he continues. "We split the signal coming out of her receiver with one going straight to Tony and the other goes to the Avalon and then into the monitors."

This is Aguilera's first tour using personal monitors, but it's a move she's been working toward since the *Stripped* tour. "She used just one [personal monitor] because she thought it might help her pitch," Chrysler explains. "She felt real good about it and the music director pointed her in that direction, so this time we've gone to two cars. It's not that she sings any different, but she feels better about her pitch."

Most of Chrysler's mixes are straightforward, except for one of the background singers' mixes, in which drums and keyboards are on one side, the other two background singers are on the other side and her vocal is in the middle. "It's a real strange mix for me to go to, but she set herself up that way and that's her comfort zone," Chrysler says.

The only challenge that Blanc faces with all of that volume coming off the stage results from the liberal use of the subs. "So all I get from the stage is 'oomph,' 'oomph,'" he says. "You'd be amazed at how much volume eight to 10 18s can make on the low end!"

Of course, the subs onstage are just part of the club presence. "This is a dance show," Blanc says. "The audience needs to feel like they are in a club. The kids that watch MTV are the ones that buy the tickets down in that area and they are used to hearing the music in that environment." ■

David John Farinella is a San Francisco-based writer.



Monitor engineer Bill Chrysler oversees 46 outputs through the Yamaha PM1D for Aguilera, backup vocalists, the 12-piece band and dancers.

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World Radio History

Blinded by the Light

PRODUCT HITS OF NSCA EXPO 2007

By Steve La Cerra

NSCA Expo 2007 (February 21-23) raised a serious question for audio pros: Are the days of copper connectivity waning? One look around the floor of the Orange County Convention Center in Orlando, Fla., and you might think so. Fiber-optic connectivity was *everywhere*. Light is a great way to move audio: It's fast, reliable and lightweight, with a lot of channels within a relatively thin pipe—and there are no ground loops! While we were looping the NSCA show floor, we found our Top 10 picks, listed here alphabetically.

Engineered as an easy, cost-effective way to connect its 1788A remote-controlled preamp to any digital record/mix system, Aphex Systems' (www.aphex.com) Model 828 Anaconda 64-channel digital snake has two identical interface units on either end of a high-speed fiber run. Each interface has eight ADAT I/Os, word clock distro via eight BNCs and RJ-45s for Ethernet control, and

system throw, coverage pattern and directivity control. KILO is the KIVA system's LF extension with a single 12-inch driver handling the 50 to 100Hz bandwidth.

FiberPlex showed the LightViper (www.lightviper.com) VIM-MY32 mini-YGDAI interface, which fits Yamaha's PM5D, M7CL, DM2000, DM1000 and LS9, allowing these consoles to connect directly to LightViper's optical snake system. Two VIM-MY32 cards (master and slave) will handle 32 audio sends and eight returns at 24-bit/48kHz resolution via LightViper's fiber-optic digital audio cable. Add another VIM-MY32 card set, and the PM5D can run 64 optical sends and 16 returns.

Designed for enhanced RF rejection in critical applications, the EMC Series XLR connector from Neutrik (www.neutrik.com) looks like a standard XLR and is available in several versions. Inside the shell, a small circular capacitor surrounding the cable shield ensures continuous RF shielding from the cable to the chassis connector housing. An EMI suppression ferrite bead between pin 1 and the cable screen provides a lowpass filter for improved RF rejection.

RHAON—Renkus-Heinz Audio Operations Network—is the new loudspeaker network from Renkus-Heinz (www.renkus-heinz.com). Available for every R-II powered speaker, RHAON provides network control, digital audio distribution, DSP and system monitoring via standard Ethernet. Using CobraNet for digital audio distribution, RHAON allows 64 channels of 24-bit audio at up to 96 kHz. RHAON speakers have onboard DSP for crossover, parametric EQ, driver alignment and overdrive protection, and RHAON PC software features drag-and-drop signal routing/network management.

Nothing short of brilliant, SLS Audio's (www.slsloudspeakers.com) TPAC loudspeaker protection circuit addresses the age-old concern of protecting speakers without compromising audio quality. TPAC employs the well-known lamp attenuator for soft compression when the speaker input is overdriven. Unfortunately, lamp attenuators have a fast attack, typically providing too much protection too quickly, thus preventing a driver from reaching its maximum power handling. TPAC avoids this and

other problems (i.e., insertion loss and blown filaments) by using a relay-switched, variable-attack circuit that's out of the audio path until the input power exceeds a specified threshold and duration. The protection circuit is then automatically engaged, letting the drivers achieve full output with maximum component protection.

Soundcraft (www.soundcraftdigital.com) expanded its Vi digital live console series with the Vi4, which includes all of the Vi6's capabilities, but in a compact package for venues where space is at a premium. Just under five feet in length, the Vi4 provides access to 48 inputs on 24 faders with a total of 27 output buses, and inherits the Vistonics II touchscreen interface and Soundcraft FaderGlow features from the Vi6.

Extending its successful V Series, Tannoy (www.tannoy.com) introduced the PowerV active loudspeakers, including five full-range models and two subs. The full-range systems employ Tannoy's Dual-Concentric point-source drive unit, and all models include onboard Class-D amplification with multiple flying points/mounting hardware options and integral carrying handles.

Offered in digitally self-powered or passive models for use with its controllers and power amps, Turbosound's (www.turbosound.com) NuQ line of networked loudspeakers feature neodymium magnets, rotatable HF waveguides and preformed plywood construction. Available in various sizes with similar voicing, NuQ systems range from the compact 8-inch, passive two-way NuQ-8 up to the 15-inch, two-way NuQ-15, which delivers 133dB SPLs. TurboDrive software adds intuitive, real-time control of Turbosound controllers and NuQ loudspeakers individually or over a network.

Next year, the NSCA Expo moves to Dallas, February 19-23, 2008. See you there! ■

Steve La Cerra is Mix's sound reinforcement editor.



Turbosound's NuQ line



Soundcraft's Vi4 digital console puts the Vi6's features in a compact package.

metering of the preamps. Two fiber transceivers and dual-redundant power supplies are provided, with auto-failure switching.

JBL's (www.jblpro.com) VerTec series has two new compact models. The VT4887A is designed for use in multibox arrays, as a downfill in arrays with larger VerTec cabinets or as an extended-range fill speaker. It incorporates JBL's new 2268J-1 8-inch woofer and has a 55 to 22k Hz response. A companion VT4881A subwoofer uses a single 18-inch Differential Drive® dual voice-coil woofer for response to 34 Hz (-3 dB).

Though it looks like it could fit in your living room, the supercompact KIVA Line Array from L-Acoustics (www.l-acoustics.com) is capable of concert-level audio. KIVA incorporates L-Acoustics WST® (Wavefront Sculpture Technology) for even coverage in large acoustic environments where the height of the array constitutes the main factor in establishing

"It's like having a secret weapon."

~ Bil VornDick

~ Bil VornDick
Engineered 42 Grammy-nominated recordings and eight winners. Artists include Alison Krauss, James Taylor, Bob Dylan, Chet Atkins, Bela Fleck, Mark O'Connor and Dolly Parton.

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~ Gary Paczosa
Producer / engineer with eight Grammy awards for his work with Alison Krauss, Nickel Creek, John Prine, The Dixie Chicks, Dolly Parton. Gary has been nominated seven times for 'Best Engineered Album'.

"Wait 'til you hear the M296's on overheads.... you'll be thrilled. They've replaced what I've been using for over 10 years and I can't find an acoustic instrument that I don't love using these mic's on."

~ Alan Silverman
Engineered 21 Grammy-nominated recordings. Credits include Chaka Khan, Norah Jones, Ricky Skaggs, Cheap Trick, The Kinks, Bill Monroe, Keith Richards.

"The Gefell UM900 is sparkling, enormous and exciting. It's the ultimate compliment when a singer or musician says they've never sounded better. My Gefell microphones have earned this praise time and again."

~ Dave Bottrill
Engineer / producer for artists including Peter Gabriel, Tool, Silverchair, Deep Forest, Staind - Joni Mitchell, Robbie Robertson, Tony Childs, Trey Gunn, Kid Rock.

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~ Dave Rideau
Producer / engineer, Grammy nominee and winner. Artists include: Jimmy Jam & Terry Lewis, Sting, TLC, Janet Jackson, Earth, Wind & Fire, George Benson, Tom Scott, Kirk Franklin.

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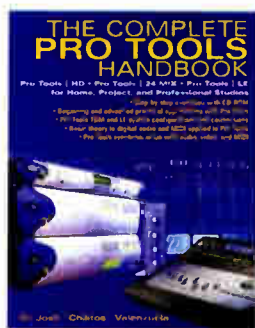
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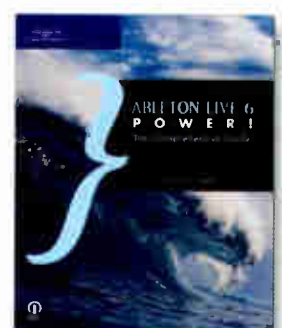
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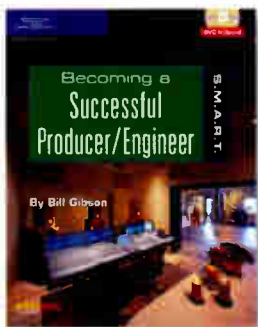
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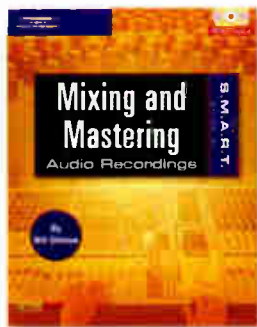
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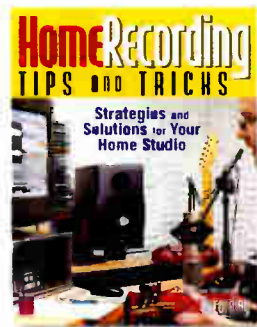
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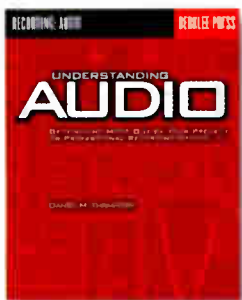
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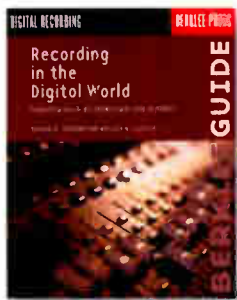
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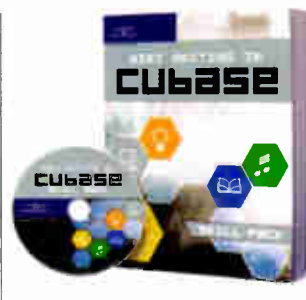


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Hazardous Materials

The “Other” Chemicals That Can Kill You

Studies have shown that enjoying your job is one of the keys to a long life. But what if the job you enjoy is reducing your chances to spend your retirement days fishing or just strumming your six-string on your front porch swing? This month, I'll talk about some of the visible and less-visible dangers that we in the tech lane may be exposed to every day.

BETTER AUDIO THROUGH CHEMICALS

Every job has its hazards, although the pursuit of audio does not carry the same levels of job peril as, say, maintaining a nuclear reactor. We're less likely to pay much attention to the dangers, big or small, until some life-changing event brings self-preservation to the forefront.

The most obvious hazards are listening too loud for too long, carpal tunnel (from “mousing” around), etc. And anyone involved in repairing, modifying and tweaking gear always thinks twice about the possibility of lethal electrocution, especially once we've removed that panel with the “no serviceable parts inside” warning tag. However, far less obvious are the long-term effects of exposure to our trade's nasty chemicals: solder, flux, flux remover, burnt insulation, pot/switch cleaners, etc.

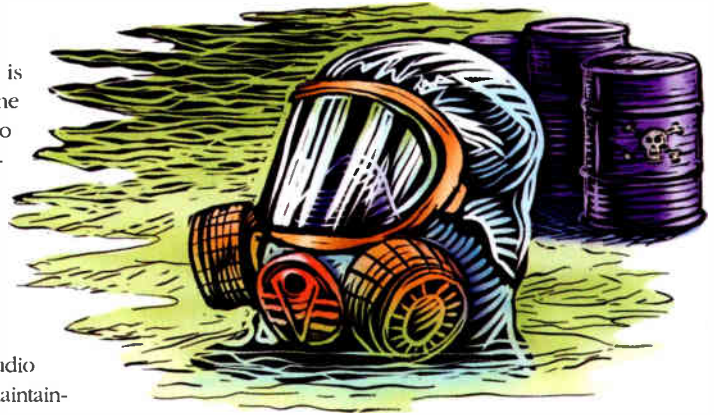
BC (BEFORE CONCERN)

I was sucking up solder fumes before puberty, wrapping solder around my finger to make “Slinkies” and weaving it into interesting “wire” sculptures—all before having any idea that such “play” would result in a life-threatening illness. My fingers would be gray from whatever rubbed off; I didn't wash my hands before eating—all the stuff I bug my kids about now. But combine that with the occasional lingering aches and pains, a friend's illness or the death of a peer and it's enough to make me stop and wonder.

THE WHIFF (MY TWO SCENTS)

Scents of all sorts trigger memories—including many fond ones—like the smell of warm tube gear, old fashioned solder flux or even a reel of recording tape (especially one that is freshly baked). Some of these aromas are the result of “outgassing”—chemical reactions that are still in the curing phase (like that new-car smell) or are accelerated by heat.

Batteries should be removed from equipment when not in use. None of us do it, but we should, due to the corrosive chemicals that are released into the confined space of a battery compartment. When was the last time you actually had a reliable flashlight? The outgassing corrodes switch contacts and can degrade nearby electronics unless they are isolated from the battery compartment. It's also why backup batteries are soldered in place



instead of being easily removable. Better to have no battery socket than a cheap, unreliable one.

As so much of our hunting and gathering now happens via Internet, chemicals are shipped to us and arrive with all sorts of warning documentation: “This product contains ‘xxx,’ a chemical known to cause cancer.” These notices are not just extra packing material; they should motivate everyone to do what it takes to improve their health and safety.

SIMPLE STEPS

The amount of soldering I've needed to do has varied widely over the years. When my company did wiring and installations, every employee had a fan. Much less soldering was required during the DAT/DA-88/ADAT heyday, but that has changed in recent years with the increasing interest in refurbishing and restoring vintage gear.

I've always had a fan at my bench that draws the fumes away from my face. It's amazing how funky the blades can get during a year, covered with gunk and toxic crud that otherwise would have wound up in my lungs. You can use any type of fan from a small computer-style model up to the more sophisticated filtered type. An exhaust hood would be ideal, but at least a fan moves the noxious fumes around, lowering their concentration in the work area.

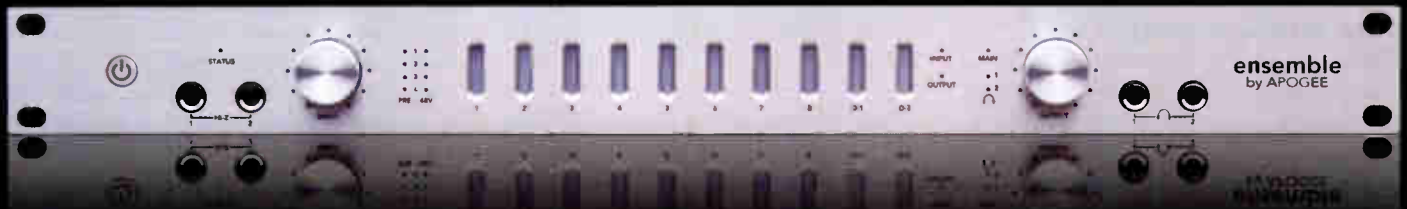
FLUX AROUND

Until recently, the wire solder we've used was a mixture of approximately 60 percent tin and 40 percent lead with a flux core. Flux is a chemical concoction used to remove existing oxidation from metal surfaces and/or minimize oxidation when the work is heated. Use of flux increases “wetting action”—a solder's ability to flow, spread and bond to the electrical connections. When all is well, the connection is nice and shiny.

Residual flux can absorb moisture and eventually acquire resistive properties, which is undesirable around the FET in your 1176, for example. I recently restored an

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With the legendary sonic quality of Apogee's audio interfaces combined with the power of Logic Audio and the computer audio expertise of Sweetwater, there is nothing standing between your Mac and sonic perfection.

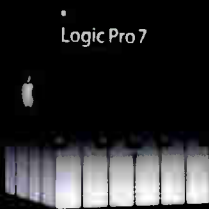
Apogee Ensemble - The first digitally-controlled pro audio interface built specifically for the Mac.

Apogee worked closely with Apple to deliver uncompromising performance and seamless integration with Logic Pro via Logic's Apogee Control Panel. With Ensemble, everything from mic pre and output gain to sample and bit rate selection are controllable from the Mac.



- 8 channels of premium 24-bit 192K AD/DA conversion
- 8 channels of ADAT I/O
- 2 channels of SPDIF I/O
- 4 digitally controlled 75db mic preamps
- 4 Hi-Z instrument inputs
- 2 individual assignable headphone outputs
- Core Audio compliant FireWire 400 I/O
- Apogee exclusive "Soft Limit" and "UV22HR" technologies

Apple Logic Pro 7 - Everything you need for creative audio production




Logic Pro 7

Once your audio reaches your Mac, you need a powerful, flexible application to turn your musical vision into reality. That's where Logic Pro comes in. With more than 30 software instruments, over 70 effects and distributed audio processing, Logic Pro is the choice of musicians, engineers and producers the world over.

Sweetwater - putting it all together for you.

At Sweetwater, we've been helping our customers use Macintosh computers to make music since the 80's. We've designed, installed, configured and tested more Mac audio systems than any other retailer, period. Give us a call and let us help you realize the promise of a professional native pro audio production system today.



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Apogee
SOUND AMAZING

early Mesa Boogie Mark-I guitar amp and it had many dark reddish-brown blobs of flux around each connection. After all the repair work was complete, I scraped off as much old flux as possible and washed what remained with something stronger than organic flux cleaner (water).

THE OFFICIAL WORD(S)

Back in the '80s, chlorofluorocarbons (CFCs) were used as propellants and refrigerants, Freon being the most widely known. Because CFCs were blamed for depleting the ozone layer, alternatives were needed and

that's how organic, water-soluble and non-clean fluxes came into being. A factory can generate a lot of effluent as contaminated flux remover and if it's in a non-toxic form, that waste water can easily be recycled.

Four years ago, the European Union adopted the "Restriction of Hazardous Substances" (RoHS) directive, which took effect on July 1, 2006. RoHS compliance requires that products be made without lead (and other hazardous chemicals) so they can be recycled without contaminating the environment. This forced many American manufacturers to get with the program *if* they wanted

to sell their products to EU countries.

One manufacturer recently released a new model that looked very similar to its discontinued predecessor, with one or two minor feature upgrades. As I discovered, the change was primarily made for RoHS compliance. Not only did RoHS get the lead out of solder, but also out of components such as resistors, capacitors, ICs, etc. Last summer, many of the "old" parts quickly became obsolete during the transition, resulting in some shortages until the RoHS versions re-emerged with new part numbers.

ALLOY ALLIES

Of the many unleaded solder alloys, the two main variations are tin/silver/copper and tin/copper. Both have higher melting points and tend to not make a connection as "pretty" as lead-based solder and its flux. As mentioned, there have been organic fluxes since the late '80s that are water-soluble and others that do not require cleaning. The problem with organic flux is that it can support life, as in mold. It must be cleaned immediately after the work is done with a decent amount of elbow grease and a brush; otherwise, it leaves a whitish-gray film.

On the upside, it's good to know that washing a PCB with water is acceptable (assuming power is not applied). The next time someone spills a beverage onto your console/keyboard/reverb/CPU, pull the plug and/or batteries ASAP (and drives, if applicable) and start scrubbing. Then bake at a low temperature until all traces of moisture are gone and your gear's chances of recovery are very good.

MANUFACTURING

I spoke with Dave Hill of Crane Song and visited Dan Kennedy at Great River Electronics to get a feel for their day-to-day realities. Both companies specialize in products with a discrete analog audio signal path, which means that traditional through-hole components are likely to be the key ingredients. Each company has slowly been integrating surface-mount technology, such as digital control circuits, digital conversion or, whenever it becomes necessary, to conserve "real estate" by using smaller components.

Keep in mind that boutique audio gear is a low-volume product as compared to consumer electronics—hundreds of thousands of cell phones, DVD players and computers are almost entirely fabricated by machine, while audio PCBs are often hand "stuffed." PCB production can easily be automated, but it's a huge investment for the manufacturer because all of the electronic components must be purchased in advance for a

TANNOY

Tannoy Ellipse iDP™ ... Grammy-winning Tony Maserati's monitor of choice

When outfitting his new Una Volta studio, Grammy-winning engineer Tony Maserati selected Ellipse iDP™ as his monitor of choice. Sought after for the specialized treatment he gives a song, Tony is famous for his precise mixes. Credits: Mary J Blige, Beyonce, John Legend, Black Eyed Peas, Anouk.



"Detailing has become a much more critical part of the mixing process, and I also need a speaker to give me accurate low-end representation. Tannoy Ellipse monitors really help me dig deep into the mix to get the right levels on every little thing."

- Class-D amplification
- Powerful DSP
- Networking intelligence
- Point source, constant directivity Dual Concentric™ driver
- WideBand™ technology



Ellipse iDP

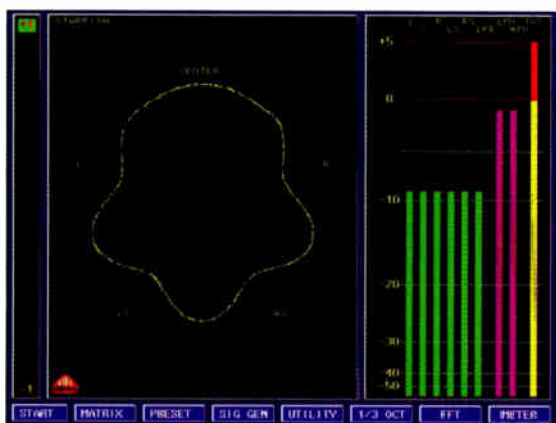


Precision iDP

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Tools of the Trade



DK-TECHNOLOGIES STARFISH DISPLAY

Designed for surround applications, DK-Technologies' (www.dk-technologies.com) StarFish display is based on its JellyFish display. Providing an image of the acoustic audio levels experienced by the listener, StarFish shows audio levels supplied to the center, Lt/Rt and Lt/Rt rear speakers. Colors in the StarFish contour reflect the correlation between neighboring audio channels in the surround signal. The display changes color to indicate positive, neutral and negative correlation, so users can see any unwanted effects in the surround sound signal. The StarFish and JellyFish displays are incorporated into DK-Technologies' Version 5.1 software for the MSD600M Series of audio meters.

E-MU 0404 USB INTERFACE

The E-mu 0404 USB (\$249, www.emu.com) is a compact USB 2 audio/MIDI interface featuring 24-bit/192kHz, AD/DA

converters, XTC mic/line/hi-Z preamps with phantom power and an onboard clock. Other features include digital I/O with optical and coaxial S/PDIF (switchable to AES/EBU), MIDI I/O, Windows XP and x64 USB 2 drivers, and zero-latency direct monitoring via hardware. The unit ships with the E-mu Production Tools software bundle, which includes E-mu's Proteus VX and software from Cakewalk, Steinberg, Ableton, IK Multimedia and more.

CAKEWALK SONAR HOME STUDIO XL

An affordable yet surprisingly full-featured DAW, Cakewalk's (www.cakewalk.com) SONAR Home Studio XL (\$209) offers the Boost 11 peak limiter with look-ahead design, program-dependent release, dynamic waveform displays of input vs. output, stereo peak and RMS I/O meters, operation up to 192 kHz and a 64-bit double-precision signal path. It also includes Dimension LE synthesis capable of multisample rendering, wavetable and waveguide synthesis and REX playback/manipulation. Other features include the Garritan Pocket Orchestra, Session Drummer 2, plug-and-play operation and powerful editing tools.

MERGING RAMSES MSC CONSOLE

Developed with Smart AV, Merging Technologies (www.merging.com) unveils the Ramses (priced per configuration) MSC digital console featuring 256 channel/tracks. A Pyramix system running the MassCore engine lets users control up to five workstations from a single surface. Essentially a digital console integrated into a large multitrack recorder/editor, MSC offers modes for post and live multitracking. It's scalable from 16 to 256 channels with up to 256 buses, and offers an integrated 48-channel DSD/DXD system. Ramses will still use Merging's Mykerinos and I/O hardware and will be offered as a stand-alone workstation or as an upgrade for existing users.

KLEIN + HUMMEL M 52, M 52 D

Updating its M 51 miniature active control monitors, Klein + Hummel (www.klein-hummel.com) has introduced the M 52 (\$825 each) and M 52 D (\$1,150 each). The 5.7-pound desktop units feature a 3-inch neodymium driver and an upgraded 24-watt amp, and can be AC- or DC-powered. The speakers are shielded for use near a computer or picture monitors. The M 52 D adds S/PDIF and AES/EBU digital inputs operating from 32 to 48 kHz at 24-bit resolution. Users can switch the M 52 D input between analog, digital-left and digital-right, or combine both digital channels using the front panel input-selection knob.



MINNETONKA BATCH PRO

Minnetonka Audio's (www.minnetonkaaudio.com) Batch Pro™ is a pro-quality batch-processing utility. Available for Mac and PC platforms, Batch Pro is a tool for editing, signal processing, encoding and converting audio files in a batch mode. Automatable editing functions include fade-in/out, cut (with the ability to send in/out points via timecode or manually in "punch" style), mute, trim, insert silence, concatenate, mix, channel merge, gain change and normalize. Onboard DSP includes EQ, compression, gating, sample rate conversion, bit-depth conversion and time compression/expansion. Batch Pro also supports VST plug-ins (stereo and surround).

SPL RACKPACK

The three-rackspace RackPack from SPL (www.spl-usa.com) can be loaded with the company's Transient Designer, SPL De-Esser or DynaMaxx compressor. These upright modules come with updated features not found on their predecessors. Also new and compatible with the RackPack is the Preference Mic Pre,





featuring a transformerless IC preamp, and the Premium Mic Pre module, featuring a triple-stage solid-state design with Lundahl input transformer and discrete transistor circuitry.

METRIC HALO CHANNELSTRIP V. 2.2

The latest Metric Halo (www.mhllabs.com) ChannelStrip plug-in features 48-bit resolution EQ, support for plug-in clip-light and system-wide clip indicator reset, support for Accel chips and 192kHz sampling rates on TDM Accel systems, complete page table support for all supported control surfaces, Universal Binary support for TDM and RTAS, and 16/8/4 mono instances per Accel chip at 1x/2x/4x rates. The upgrade supports Pro Tools V. 6.4 through 7.3 on both PowerPC and Intel Macs. It also supports HD Accel DSP cards and PCIe cards on all Mac platforms. ChannelStrip continues to support Pro Tools Mix and HD systems, and is available as a free download to all registered OS X users from the company's site.

ALESIS IMULTIMIX 8 USB MIXER

Showing some of the genius that put Alesis (www.alesis.com) on the map, the company has released the iMultiMix 8 USB Mixer (\$499) with professional mixing and direct-to-iPod recording. The compact unit features four balanced phantom-powered mic/line preamps (XLR/TRS), a built-in limiter, 44.1/48kHz 16-bit conversion, aux send/returns, 100 on-board digital effects and three EQ bands per channel. The mixer has an integrated iPod dock for recording WAV files directly to any second- through fifth-generation iPod. It also features iPod transport con-

trols and a control wheel built into its surface, and is bundled with Steinberg Cubase LE recording software.

DIGIDESIGN X-FORM PLUG-IN

This new time-stretcher/compressor from Digidesign (www.digidesign.com), the X-Form (\$495) is an AudioSuite plug-in that can alter an audio file from 12.5 to 800 percent of its original length, which allows shrinking it to 1/8 or expanding it to 8x its original duration. It can also alter the formant and pitch-shift the audio up or down by three octaves. Its minimal controls and support for Pro Tools TCE Trim Tool promises easy operation. X-Form works on both monophonic and polyphonic material, and supports Pro Tools HD, LE and M-Powered, and Avid DNA systems.

CEDAR CAMBRIDGE V. 4

Boasting a bevy of new offline features, CEDAR's (www.cedaraudio.com) latest version of the Cambridge restoration tools includes a new version of Retouch with unlimited file lengths, improved transport capabilities, time markers and more. Other members of the suite include Manual Declick, which lets users identify and remove impulsive noises on optical soundtracks and audio files, and Dethump, a process for eliminating low-frequency problems. The core improvements are free to existing owners at the company's site.

CHARTEROAK PF-1 POP FILTER

Debuting at Musikmesse, the PF-1 (\$44.95) pop filters are designed to work with CharterOak's (www.charter oakacoustics.com) SA538, SA538B and E700 models, and boast acoustic transparency featuring SaatiTech Hyphobe Acoustex fiber. The units attach via a Velcro strap, eliminating the need for bulky gooseneck mounts or secondary mic stands.

MARSHALL AR-DM RACKMOUNT MONITORS

Fresh from NAB, the AR-DM rackmount monitors from Marshall Electronics (www.marshallelectronics.com) come in five configurations; two single-rackspace and three two-rackspace models. All five support 16 channels in addition to four slots for optional input modules. Input modules include SDI/HDSi with re-clocked loophrough (eight stereo de-embedded channels), quad-unbalanced BNC AES/EBU with loophrough and quad-balanced AES/XLR to DB-25 with loophrough. All units also feature Class-D digital amplification, digital processing, a RS-485 port on the rear panel for firmware upgrades, VU and peak metering, Dolby Digital/Dolby E decoding capability (with optional Dolby E module) and a 1/4-inch headphone jack with level control. Single-rackspace units offer twin speakers, while the larger models provide larger transducers and a subwoofer.

MACKIE HRMK2 MONITORS

Replacing Mackie's (www.mackie.com) HR824 and HR624 monitors are the new THX-approved HR824mk2 (\$779 each) and HR624mk2 (\$579 each). Each has a cast-aluminum enclosure with a Zero Edge Baffle design. Both have 1-inch titanium-dome tweeters paired with 6.7-inch (HR624mk2) or 8.75-inch (HR824mk2) woofers and a 1-inch titanium-dome tweeter. ■



Primera Bravo SE Disc Duplicator

Compact, Medium-Duty Publisher for Mac or PC

The Bravo SE is a compact, small-run duplicator capable of burning and direct-to-disc printing (4,800 dpi) of up to 20 discs at a time. Primera has a full line of duplicators for publishing large jobs, but the SE is the company's most affordable product and perfect for those looking to produce small to medium runs. Keeping up with the latest media, Bravo SE is offered in both CD/DVD and Blu-ray disc versions (the latter for PC only). The SE is bundled with PTPublisher™ SureThing™ CD label software for PC (including Windows Vista) and CharisMac Engineering's Discribe™ Mac software for creating labels and running duplication jobs.

SMALL FOOTPRINT AND A WIZARD

At just 11.5 pounds and 15x14.75x7 inches, the Bravo SE is compact enough to sit on top of a JBL 4403A monitor. That just happened to be the most convenient spot to place it when I opened the box and that's where it stayed during the test. The Bravo SE is fairly quiet and doesn't shimmy much when printing, so it was never in peril of falling off its convenient perch.

New with the Bravo SE is a software wizard that can walk anyone through the process of a duplication job. The burning software is powered by the Sonic Solutions engine and is similar to Sonic's MyDVD Roxio product in terms of workflow. The PC bundle was easy to use and set up. I ran it on a dual-core AMD 4400 Athlon PC with 2 GB of memory running Windows XP and a 1.7GHz Pentium 4 system with 2 GB of memory running XP.

The interface has friendly prompts and big buttons that couldn't be much simpler. You can navigate the decision tree and move ahead, burning any number of CD and DVD projects, including data, audio, video and ISO image files. The label maker, Sure Thing, stands alone and has to be closed before proceeding with a duplication job, a step I would like to see eliminated. However, integration with the wizard is fairly seamless and should be helpful to anyone new to using a duplicator, which I imagine would be a significant number of Bravo SE buyers.

HOW'S THE QC?

During my tests, I produced several batches of CDs and DVDs with very good results. I did have one disc jam, in which the robotic arm did not place the disc perfectly, causing the unit to stop working. I aborted the job, rebooted and everything was back to normal.

For subsequent jobs, I could leave it unattended and return to an output bin full of 20 discs. The trusty unit made it easy to finish a mix, grab lunch during a duplication job and then send discs to clients. This can be a real time-saver for anyone who frequently provides small batches of discs for client approval when sharing FTP data is impractical or when a physical proof is required.

Bravo SE's burn and print quality is very good. I used a wide range of consumer and professional gear, and experienced no playback errors. Using the new WaterShield media available from Taiyo Yuden yielded great-looking glossy discs that did not smear. Inkjet-based duplicators, such as the Bravo SE, combined with this type of media can yield an impressive and professional product at a reasonable price.

MAKING LIFE EASIER

The Bravo SE is targeted at those looking to make small but professional-looking CD/DVD/Blu-ray disc runs and looking to offer a little added value for clients. This is definitely a unit that a small studio or production house could get into without breaking the bank.

If you're looking for a Blu-ray disc publisher, two issues may hold you back from purchasing the SE. First, it is only PC-compatible for now. Secondly, TDK and Imation are the only manufacturers that offer a single-layer 25GB disc that is inkjet-printable, yet this



disc was unavailable on Primera's Website.

The audio never failed during the runs I made and the print quality is great, especially when used with the Taiyo Yuden WaterShield discs. I would consider this essential as other media used with an inkjet printer takes more time to dry and can look "runny." The SE uses a single inkjet cartridge priced less than \$40 and Primera promises a run of 100 to 130 discs before you'll need to open your wallet.

I only had the Bravo SE for a short time and can't speak for its long-term durability, but I can say that this unit was easy to use and reliable during my tests. The results that can be achieved with a small-footprint duplicator like the Bravo SE make this a worthwhile purchase for anyone seeking professional-looking, reliable, small-run duplication. If you only need 4,800 dpi disc printing, the Bravo SE is also available without drives. Prices: AutoPrinter, \$995; CD/DVD, \$1,495; and Blu-ray, \$2,995.

Primera, 800/797-2772, 763/475-6776, www.primera.com. ■

Rick Spence is the owner of AVT Pro, a production company in the Silicon Valley.

A VIEW FROM THE INSIDE



ADL 600

{2-channel high voltage vacuum tube preamplifier}
Designed by PreSonus and Anthony DeMaria Labs

"I recently used the ADL 600 on some of the vocals on Justin Timberlake's new album, *FutureSex/LoveSounds* with Timbaland. It has a really cool 'now sound' to it. I have one at my studio & one at Timbaland's."



Jimmy Douglass - Mixer/Producer
Timbaland, Justin Timberlake, Linkin Park, Jay Z

"To me, the ADL 600 mic preamp is impeccably clear & musical. This is the third record I've done with Gwen Stefani & the vocal sounds we've achieved with this unit are hands-down the best yet."



Greg Collins - Producer/Engineer
(pictured to the right of Anthony DeMaria)
U2, No Doubt, Jewel, Matchbox Twenty

"We use the ADL 600 on every episode of *Criminal Minds* as well as on all the feature films we score. It gives a great big super sized sound with the ultimate in sonic detail. We call it our secret weapon!"



CBS *Criminal Minds* Composers: Stellan Fanlim, Mark Mancina, Scott Gordon & Marc Fanlim

"The ADL 600 is stellar in uses as varied as concert piano, vocals, drum room & acoustic string instruments. The ADL 600 finds that great balance of being forward & clear while not being overly bright, yielding a high resolution, articulated image."



Steve Kempster - Producer/Engineer/Score Mixer
The Bourne Supremacy, Training Day, Armageddon

For more details on how these top producers are using the ADL 600 visit www.presonus.com/adl600.html

A view of inside of the ADL 600 shows why it has a sound like no other: high-voltage design, six military-grade vacuum tubes, dual custom-wound input and output transformers, oversized toroidal power transformer, sealed relays, polypropylene capacitors, switch attenuators, conductive plastic potentiometers and the list goes on.

Designed by PreSonus in conjunction with Anthony DeMaria to deliver the highest possible sonic performance and built by hand at the PreSonus factory in Baton Rouge, Louisiana, the ADL 600 is the new high-end preamplifier delivering big, clear, smooth and balanced tonality with a character and sound that keeps producers and engineers reaching for it over and over.

FEATURES

- High-Voltage Class A Dual Transformer Design
- +73dB Gain
- Selectable Microphone Input Impedance
- Switched Gain and Variable Fine Trim Controls
- Microphone, Instrument and Line Inputs
- Ultra Low Noise (-125dBu EIN)
- Variable High Pass Filter, 48V, +20dB Pad, Polarity Invert
- Analog VU and Fast-Acting LED Metering

Sweetwater
Music Instruments & Pro Audio

Call Sweetwater today at
800-222-4700 for a risk free demo
of the ADL 600 in your studio.

PreSonus

Chandler Limited TG12413 Zener Limiter

A Vintage EMI Processor Gets a Makeover

When London's Abbey Road Studios recently celebrated its 75th anniversary, Chandler Limited design engineer Wade Goeke and the facility's senior engineer, Peter Cobbin, marked the occasion by modifying a classic EMI limiter used to record The Beatles and Pink Floyd almost four decades ago. The new dual-channel unit, dubbed the Chandler TG12413 Zener Limiter (\$5,000), is based on EMI's RS168 Zener Limiter and TG12345 console channel, but brings a host of new controls to the party.

These additions include a two-way input-impedance switch (which changes the gain by 12 dB to drive the limiter harder or softer), a new compression mode (joining the limiter's two original response curves), sidechain filtering, and 11-position attack time and 21-position release time controls. However, the heart of both the vintage and Chandler unit is their common gain-control element, comprising four zener diodes placed across the limiter's input circuit. And the zener diodes' characteristic logarithmic-compression response and saturation behavior provide the distinct personality to this neo-classic limiter.

DEAR ABBEY

The TG12413 has six rotary switches on each channel controlling I/O levels, attack and release times, compression mode and the corner frequency for the sidechain filter's highpass filter. As there is no threshold control, the 21-position input gain switch drives the compressor/limiter, whose action is also influenced by the input impedance switch.

Three compression modes are offered. Comp 1 produces a 2:1 ratio with slow time constants designed to emulate the vintage Altec 436 compressor, while the faster-responding Limit mode emulates the Fairchild 660's response. Those two modes were retained from EMI's classic zener limiters, while a new mode, Comp 2, essentially delivers Comp 1's curve but with faster release times akin to that of Limit mode.

The TG12413's new sidechain rotary switch offers a choice of five different frequencies ranging from 30 to 300 Hz and can also be switched out of circuit. A new THD switch disables the limiter to progres-



sively and more dramatically overload the zener diodes as input level is raised, producing up to 5 dB or more of distortion to uncompressed tracks. Separate hard-wired bypass switches are provided for each channel. The included stereo-link function is fairly primitive—you still need to adjust like controls on both channels to the same settings to achieve stable imaging. Sifam VU meters show gain-reduction amounts for each channel.

The rear panel has XLR I/Os and a multi-pin connector for the 6.5-foot cable that connects to the unit's outboard power supply.

TAKE IT TO THE LIMITER

Chandler's modifications to the classic EMI zener limiter—especially the new sidechain and adjustable attack time controls (vintage units had a fixed, fast attack time)—greatly enhance the TG12413's musicality and flexibility. Time and again, I found myself using those controls to obtain the best results, particularly on drums and bass.

Comp 1 and 2 modes really emphasized the beater slap of a kick drum track and tightened up the shell's low-frequency decay. In Limit mode, the kick sounded tappy with a very lean decay—a cool sound in its own right. In all cases, the kick's sound had more beef with a sidechain setting of 150 Hz or higher. THD mode sounded awesome, enhancing the kick's punch, richness and definition all at once. On snare, a fast attack time in Limit mode brought out room tone, while slow attack using Comp 1 or 2 put a nice point on drum hits.

On electric bass, Comp 1 and 2 sounded big and lush. Limit mode was even better for hard rock productions, transforming the instrument into a mad, straining beast. Sidechain settings of 90 Hz or higher lent the biggest bass sounds. THD mode made the bass growl nicely. The THD mode also sounded killer on electric guitar, adding

presence and size. Limit mode was perfect for chicken-pickin' country parts, driving a Telecaster's toe-tapping "clackety clack" to the front of the mix.

Comp 2 with a 300Hz sidechain setting sounded the most transparent on lead vocal tracks, although depth was still significantly flattened and pumping was clearly audible with only moderate compression. Also, the TG12413 would not be my first choice for compressing a stereo mix. Comp 2 mode, with a 300Hz sidechain setting and a very slow attack and fast release, provided nice glue for a rockin' country mix, but anything more than light gain reduction sucked the life out of the program. In this case, THD mode degraded rather than enhanced the mix and was cutting rather than smooth-sounding.

HAPPY ANNIVERSARY

So is this box for you? On a practical level, the names of controls are screened immediately below their knobs, making them very difficult to read with most placements. Also, the meters on my review unit weren't calibrated to zero, making it harder to gauge gain-reduction amounts.

If you're looking for a transparent limiter with which you can slam tracks with impunity, the TG12413 won't satisfy. But if you want something out of the ordinary—a unique limiter with a colorful, aggressive character and vintage pedigree—and can afford the steep price tag, you should definitely give the TG12413 Zener Limiter a listen. Particularly on drums and electric instruments, it's a monster!

Chandler Limited, 319/885-4200, www.chandlerlimited.com.

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



pre | eminence

- 8 Focusrite Mic-Pre's
- 16 Channels of ADAT In & Out
- Stereo 192kHz SPDIF
- 2 Dedicated Headphone Busses
- Software I/O Mix Control
- Link Up To 3 Units Via Firewire



Eight professional microphone pre-amplifiers form the foundation of Focusrite's new 52 channel Firewire interface.

For 20 years Focusrite has enjoyed a pre-eminent reputation for microphone pre-amplifiers. Today the focus is on Firewire interfaces for digital audio workstations. Whatever your choice of DAW software, you want the best mic-pre's for your projects to capture every subtle nuance from your music. Voices and acoustic instruments equally benefit from the excellent fidelity.

The Focusrite Saffire family of Firewire Audio Interfaces marries legendary mic-pre technology with pristine AD/DA conversion and Firewire interface engineering, optimised for the ultimate quality recording experience. For more than 25 years, Sweetwater has been known for outstanding computer audio expertise, service and support. Their Sales Engineers can help configure the perfect Saffire system for you, so call them now for more information.

Trust Focusrite with your talent to guarantee a pre-eminent performance.



audio heritage | sonic integrity | professional solutions

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World Radio History


Focusrite
www.focusrite.com

Red Type A Tube Studio Condenser Mic

Third Offering Features Eight Interchangeable Capsules

Red Microphones has released a number of products so far, including the Oktava MK-012 microphone preamplifier and the Red Lollipop large-diaphragm replacement capsule; the Type B solid-state mic; and the subject of this review, the Red Type A tube mic. The latter two take advantage of the Redhead Series—eight capsules that mount quickly using the familiar spring-loaded bayonet mount found in Blue's high-end Bottle mics. The slender body houses a single ECC88 tube and ships in a sturdy red flight case housing up to three capsules, the mic body, power supply, cable and shock-mount.

TYPE A BEHAVIOR

I tested three capsules: the R0, R4 and R6. I began with the R6, which made the most sense on a vocal session. The literature characterizes this capsule as having a "modern presence vocal sound," which is described as a brighter response with more proximity than Red's other vocal capsule, the R7, and less high and low extension than the cardioid R0.

Used on an especially challenging male vocalist who has a particularly strident top end, the R6 nicely rounded the transients and harsh edge when the singer hit it hard. The result was a warm bottom end with a pleasant presence in the mix. This application was especially interesting, as after much experimentation (even with high-end mics), the best mic for this particular singer was the Shure SM7.

Up until now, the SM7 was the only mic that didn't require surgical EQ and compression to keep this talented—albeit edgy—vocalist's track from becoming an ice pick in your ear. For an A/B comparison, the first pass of the vocal was recorded using the SM7 and then a second pass was done with the Type A/R6 combo, with everything routed through an SSL 4000 G+ Series console's preamps without EQ or compression. The consensus? The Type A had the effect of the dynamic mic, but with much more top end. Subsequently, it hit the reverb nicely and didn't need added EQ at the top to compete with the rest of the track.

On another session, I used the R6 on

another male vocal with equally good results. It was also used on an acoustic guitar placed about eight inches away from the front of the instrument at the top edge of the soundhole. The track exhibited plenty of top end with no LF boominess.

The big omni R4 capsule yielded poor results when used as a single overhead about 18 inches above a drum kit. It represented the cymbals harshly, making it my least favorite of the three capsules. Later, I tried it on the same session as a room mic, but it didn't provide what I was looking for; it still sounded a bit harsh, although it exhibited plenty of nice bottom end from the kick.

On another drum kit, I tried the bright-sounding cardioid R0 capsule as a center overhead between a spaced pair of Blue Bottles fitted with B6 cardioid capsules. I was anxious to hear the difference between the mics because the Bottles are so much more expensive. I was pleasantly surprised when the trio worked together perfectly. The Bottles produced an extended top end as compared to the Type A (the chicken head knob on the Bottle power supply was positioned at 12 o'clock), but the R0 capsule represented the midrange frequencies nicely when I added the mic into the center of the mix. Even by itself, the Type A sounded great in mono, yielding plenty of punch from the toms and snare, and a smooth reproduction of the cymbals over the kit. The combination of the Bottles and R0 rocked my mix.

The R0 sounded killer on a Fender Deluxe combo amp with a Shure SM57. I placed the 57 up close while the Type A was positioned back about three feet away from the cabinet at a slight angle. The 57 captured all of the midrange frequencies that you would expect, offering a clean representation of the guitar amp, while the Type A added bottom end and a smooth top. This combination really filled out the guitar sound in the mix.

THAT'S A LOT OF COLOR!

My main complaint with this mic/capsule system is that you need a secret decoder ring—or the appropriate documentation—to discern the pattern of each of the eight capsules. Each is marked with only the des-



ignated number, R0 through R7, and nothing else. A company as creative as Blue (aka Red) could devise a more clever way to keep the user's nose out of the manual and in the session.

That said, my overall experience was more than favorable. Out of the three capsules I tested, the R0 and R6 were exemplary, taming a vocalist whose pipes shot down even the most high-end mics. I loved the R0 as a center overhead between two Blue Bottles, while the R6 was absolutely beautiful on vocals and acoustic guitar. If you're looking for a versatile, great-sounding mic system that can cover instruments and vocals alike, then the Red Type A just might be your ticket. Prices: Red Type A (without capsule), \$1,345; R0, R1, R2, R3, R5, R6 and R7 capsules, \$649 each; R4 capsule, \$849.

Red Microphones, 818/206-8168, www.vintagemicrophone.com. ■

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World Radio History

Little Labs Lmnopre Mic Preamp

Versatile Features, Functions With a Wide Sonic Palette

The basis for the LMNO's discrete circuit topology was originally a limited-run mic pre designed by Jonathan Little in the late '80s. This single-channel pre was an insider choice among top engineers, producers and artists, and offers unique features and operating modes not available in any other mic pre. One unique feature is the built-in IBP phase-alignment tool. Phase alignment is crucial when using two mics placed on the same source or combining the mic and DI signals

Lmnopre has two mic gain controls—low gain (+20 to +48 dB) and high gain (+40 to +74 dB)—for adjusting its fully differential Class-A gain stage. This singer required the low-gain mode (about 40 dB), as did most of my recording projects. The unit offers a tremendous amount of gain (+31dBm max output), making it viable for Foley or ambient recording. The sound was extremely clean, neutral and quiet—clean enough for me to hear the mic's output compress on louder levels and the inherent noise floor of

dy when I combined the DI and mic signals to one track. The bassist played each string separately while I rotated the IBP knob until all notes were at about the same dynamic level. The DI bass sound was very clean and clear. I wanted more "hair" on the sound (like on a guitar amp with master volume), so I turned the master output knob down and boosted the gain. Saturating the output transformer produces an extreme sound with more attack than a tube-based preamp breaking up. You can do this on any source,



on bass or guitar. This set of passive, all-pass analog filters allow rotating the audio phase 360 degrees. For external use in a mix, this section is also available separately from the preamp via line-level XLR inserts.

I liked the ability to instantly toggle between the front panel XLR mic jack and a second XLR on the rear. This let me A/B mics on a singer or two mics that were placed differently on the same source. I also liked the low-frequency resonance control, which blends in an adjustable, musical LF peak without adding a specific equalizer circuit.

For added sonic color, you can overdrive the output transformer without distorting the rest of the all-discrete circuit. For a pristine, transparent sound, bypass the output transformer for transformerless operation. If you don't need to ride level, then you can switch the master output trim pot out of circuit. With the master output off, the bypass acts as an output mute. Inside the chassis, space is provided for installing your favorite mic input transformer, or you can temporarily connect one using the 5-pin XLR on the rear panel.

To establish full gain potential (+74 dB) and avoid switching transients, the manual recommends stabilizing the unit for an hour before use, but mine seemed fine in 20 minutes. It's powered by an external, linear 47-volt "line-lump" supply.

IN THE STUDIO

My first test involved a female vocalist singing into a Mojave MA-200 tube mic. The

mic's 5840 tube. For this mic and singer, I preferred using the transformerless output, but I made sure I was driving a fully balanced input on the next piece in my recording chain. I found no differences in the noise floor in either mode; high gain simply gives you a cleaner-sounding level.

The Lmnopre's LF resonance effect was most pronounced on vocals, sounding just like the LF proximity effect that occurs when a singer hugs the mic. My female singer "pops" easily, even with a screen, so she prefers to sing further away from the mic. I cranked up the LF resonance effect, and it sounded like she had moved within inches of the mic.

DIRECTLY YOURS

Lmnopre has two ¼-inch DI input jacks labeled "A" and "B." I recorded a Fender Precision bass direct using A and miked a Fender Bassman amp with a Neumann U47 FET mic going through the mic pre in the studio's API console. Input A is best suited for passive pickups. It has a 10-megohm active buffer amp before the custom DI input transformer, while B connects you directly to the 50k-ohm primary of the custom DI input transformer (giving you 6 dB less gain). I used this input for synths and guitars with active pickups. If you use the same DI path all the time, then you can set jumpers to configure the other DI's ¼-inch jack as a thru to feed a guitar amp.

The IBP phase-alignment tool was han-

but instruments with more sustain, such as guitars and basses, sounded best.


On electric guitar, I used the API console and the Lmnopre with two Shure SM57s on a single amp. Both mics were four inches away, with one aimed at the speaker cone's exact center and the other off to the side but pointed at the center. The IBP control let me change the tonality of the mics' combined sound—anywhere between thin and phase-cancelled to big and fat in which most of the frequencies were in phase and summing together. When panning the two guitar signals left and right, rotating the IBP to about 90 degrees produces a very wide stereophonic image; be sure to check it in mono!

A VERSATILE RECORDING TOOL

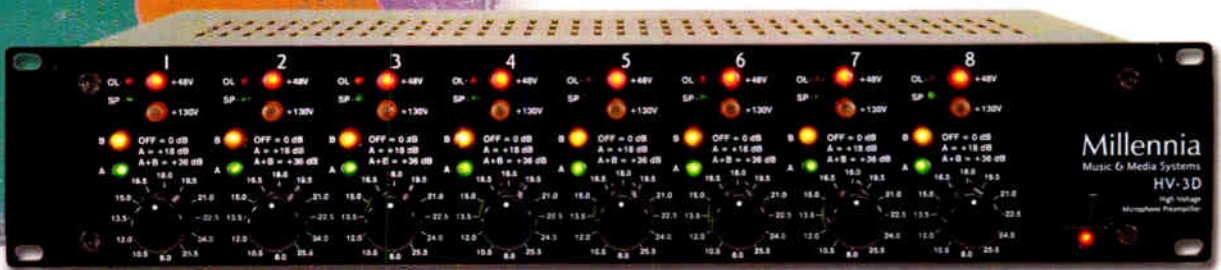
Priced at \$1,680, this unit offers control over sound quality by providing options and customized touches that begin at the circuitry level. With its excellent construction, I'd have no worries about taking it on the road in a tracking rack. And Lmnopre's useful features such as the IBP, dual XLR mic inputs, dual DI inputs, LF resonance control and variable gain staging make it a perfect choice for those who are picky about their signal path.

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JOE ZAWINUL

CHECKING "WEATHER," MOVING FORWARD

By Blair Jackson

Joe Zawinul is not one to rest on his laurels, or even to revisit his past particularly. The one-time co-leader (with sax giant Wayne Shorter) of the great pioneering fusion band Weather Report, he has led his own ever-changing world/jazz group, the Zawinul Syndicate, for more than 20 years now, and he shows no sign of slowing down. Generally speaking, he has left his Weather Report days behind him; he cherishes the memories but largely avoids the repertoire, preferring to look forward. But during the past year, Zawinul has given his blessing to two exciting projects involving Weather Report's music: Last fall, CBS released a comprehensive three-CD/one-DVD retrospective box set called *Forecast: Tomorrow* (for a review, see "Cool Spins," December 2006); and more recently, the Heads Up label put out a superb live disc called *Brown Street*, which finds Zawinul fronting a big band (as well as a few players from the Syndicate) performing Weather Report material (as well as two songs from his post-WR bands and his "In a Silent Way," which predates WR) specially arranged for that configuration.

If you've listened to much Weather Report, then you know that re-arranging the group's songs for a big band is not really much of a stretch: You can almost hear the myriad horn voicings in Zawinul's original keyboard textures (and in Shorter's sax parts). It's a wonder, actually, that no one thought of this before now—although I suppose Zawinul's Weather Report signature song, "Birdland," has been a staple of American college marching bands for years. (That tune is not on *Brown Street*.) Zawinul says the genesis of the *Brown Street* project actually goes back nearly 20 years.

"It really starts with Friedrich Gulda, who was one of the three or four most important classical piano players of the 20th century and, like me, is from Vienna," says Zawinul from his Malibu, Calif., recording studio. "He was a famous interpreter of Mozart's music and Beethoven's piano music. What Glenn Gould was for Bach, Gulda was for Mozart and Beethoven. But he was also a jazz player and he had a festival every year. In 1988, he and I played the 'Hayden Piano Variations for Two Pianos' by Johannes Brahms, and we recorded that in Cologne [Germany]. But during this festival, we



PHOTO: HOLGER KEFEL

also played the piano concerto [Gulda] wrote for two pianos and big band, which was the WDR [Westdeutsche Rundfunk] Big Band of Cologne. I was very impressed by them at that time, and later we did a radio production. When I met them, they'd been together already 10 or 12 years. They've worked with all sorts of people, from Joe Williams to Quincy Jones and Ella Fitzgerald, some of which will eventually be released on my label, Birdjam. Anyway, many years passed and then Joachim Becker, who handles my record company, suggested we get together with the WDR and do some of this old Weather Report music, which, in general, has never been covered by anybody. I said I'd only do it if we came up with something really fresh. So I had Vince Mendoza adapt the songs from my original arrangements from Weather Report, and he did a helluva job." (Zawinul adapted "Procession" himself.)

At first, the intention was just to get together for some live gigs in Europe, "but I wasn't sure if I wanted to record it," Zawinul says, "because, to be honest, I was afraid it might sound a little stiff. So much of my music is in the grooves, and I wasn't sure if we'd get that part of it right at first." He shouldn't have worried: "We rehearsed [the WDR] section by section over a couple of days and then together, and then I put the rhythm section on it—some guys who've played a lot with me: Alex Acuña, with his full percussion setup, Victor Bailey on bass [both are Weather Report and Syndicate alumni] and my regular drummer at that time, Nathaniel Townsley, all great players! We had four or five days of rehearsal in Cologne and then we played my club in Vienna, Joe Zawinul's Birdland,

—CONTINUED ON PAGE 120



THE SHINS

STICKING CLOSE TO HOME

By David John Farinella

The Shins have spent much of the past six years standing near the top of the indie music mountain. Gallons of ink have been spilled extolling the band's sonic virtues, their tie-in to the film *Garden State* and the anticipation surrounding the release of the band's latest, *Wincing the Night Away*.

As with the band's previous releases, frontman James Mercer got the ball rolling by working up songs by himself in a home studio and then bringing a handful of Pro Tools sessions into a proper studio. This time, Mercer and his bandmates—drummer Jesse Sandoval, keyboardist Marty Crandall and bassist Dave Hernandez—headed into Supernatural Sound (Oregon City, Ore.) with producer Joe Chiccarelli and engineer Sean Flora to supplement those home recordings.

Mercer had originally reached out to Chiccarelli for advice on what kind of gear to put in his home studio. Eventually, the singer/guitarist asked for some guidance on



songs. "If I were up in Portland, I would stop in and hear some things and give him some feedback," Chiccarelli says. "He really worked on it on his own for quite some time, and I think at some point you kind of get cabin fever and you lose objectivity. Ultimately, most great artists need some kind of feedback, some kind of objective perspective on things, and I think he had just worked on this for a long time and really needed an outside opinion."



The Shins, from left: James Mercer, Marty Crandall, Dave Hernandez and Jesse Sandoval

The two sifted through Mercer's catalog of ideas, fleshed out some and reworked others during the first dates of the recording sessions at Supernatural.

According to Chiccarelli, Mercer's attention to lyrical quality over quantity drove the song choices. "The thing I love about him is he's so particular about his lyrics and he really takes time with them," Chiccarelli says. "He could have the greatest track in the world, but if he was not feeling great about the lyrics, he doesn't even want to finish the song. It's really important to him that every word, every rhyme really have some meaning, it's not just a word thrown in there. So there were things that didn't get completed, didn't make the album just because he really didn't feel like he had all the lyrics intact."

There were a handful of songs, he adds, where the band demoed a couple of different styles. For instance, "Spilt Needles" was originally recorded with an English Beat vibe. "We ended up feeling that it was kind of too retro," the producer admits, "kind of Cure-sounding, and we redid the whole thing from scratch with a different drum beat."

Much of the early buzz surrounding *Wincing* has revolved around its different sound and use of subtle effects. The song "Sealegs," for example, features a rhythm track built on bottle caps that Mercer recorded. "He did a loop at home that was bottle caps and some other homeniade noises that are the basis of the song," Chiccarelli reports. "Then we added to it in the studio." There was also a

Farfisa organ that the team borrowed from Los Lobos' Steve Berlin, and Chris Funk from The Decemberists added bouzouki, lap steel and hammer dulcimer to a few tracks.

Mercer's drive, Chiccarelli believes, was to make an album that didn't sound like its immediate predecessor, *Chutes Too Narrow*. "That's one of my favorite records, but James just isn't fond of it," he says. "He feels like *Oh, Invented World* [the band's 2001 Sub Pop debut] is much more where he wanted to be. He felt like he didn't want to do *Chutes Too Narrow, Part II*, which I think the world was expecting of him."

"I think that was part of his mind when he got into working at home," Chiccarelli continues. "He had all these ideas to try things and do different arrangements, but he couldn't quite execute them. I think he kind of felt a little stuck and really wanted to experiment. It's pretty much a dream of a project for me when the artist is really open to trying things and has no preconceived ideas or restrictions or fears about going down a certain road. You can try something and everyone knows in 15 minutes if it's working or not. When you are in a place where there's a lot of trust and people are open to at least experimenting, that's a real positive place and great things come from that."

The opportunities for experimentation were many, Chiccarelli points out, including the day when Mercer's guitar part for "Spilt Needles" was tracked. "We put a cheap lapel

—CONTINUED ON PAGE 123

SINÉAD O'CONNOR'S "NOTHING COMPARES 2U"

By Barbara Schultz

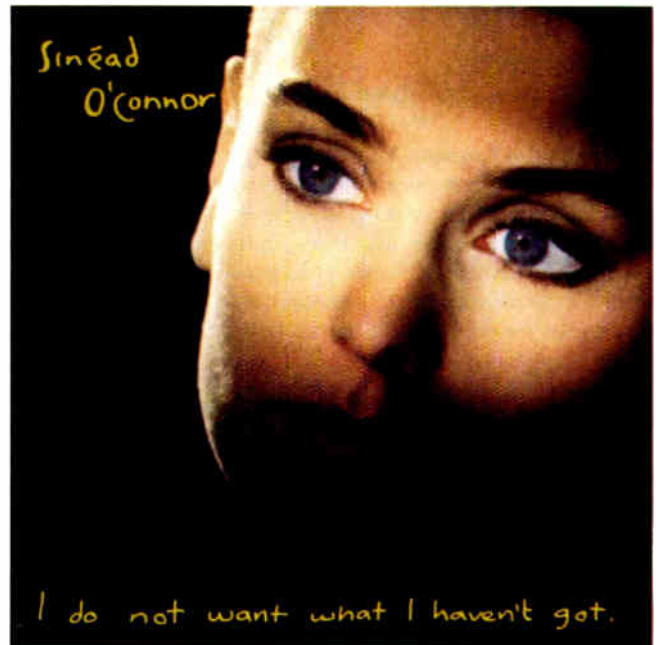
Despite the power of her voice, Sinéad O'Connor is one of those fragile artists whose music is truly emotional. The listener doesn't need to know the details about O'Connor's brutal childhood to know that the singer's personal suffering and earnest beliefs are at the heart of every sound she utters. In the name of spirituality, human rights, love, pain, she has crossed some conventional lines, and she's exposed herself to ridicule—even hatred. I remember watching when she tore up that photo of the Pope on *Saturday Night Live*, turning to my husband, and saying, "She's in trouble now." But, oh, what a voice!

O'Connor made her first album for Chrysalis, *The Lion and the Cobra*, at the age of 19. Included were the shockingly intense songs "Jerusalem" and "Troy," the sexy, sample-heavy "I Want Your (Hands on Me)" and the more radio-friendly "Mandinka," which got heavy rotation on modern-rock and college radio stations. The album garnered rave reviews and, more important, revealed O'Connor's singular sound: a combination of real instruments and electronic drums used for effect, romantic strings, electric guitar and the powerful dynamic range of her singing. Rarely does a young singer debut so well-formed and with so much to say.

O'Connor's music—and no doubt her unusual beauty—caught the attention of the famous and the masses. For a time, she was romantically linked in the press with Prince. Some say their friendship was strictly platonic. Be that as it may, their association yielded one of the most successful recordings of the modern-rock era, O'Connor's interpretation of the Prince-penned "Nothing Compares 2U."

The song appears on O'Connor's sophomore release, *I Do Not Want What I Haven't Got*, which was recorded in London in 1989. O'Connor's manager, Nigel Grainge, originally brought in producer Nellee Hooper, then best known for his work with Björk and U2. (Since then, he's added No Doubt, Garbage, Sneaker Pimps and many more to his credits.) For whatever reason, Hooper's style and O'Connor's rebellious nature did not mesh, and he was relieved of his position after only a few days. However, those few days did include most of the tracking for "Nothing Compares 2U," and he is the co-producer of record on the track with O'Connor.

The consistent presence in the album's production was engineer/producer Chris Birkett, who stepped into the producer's role after Hooper's departure. The multitasking Birkett enjoyed his first successes as guitarist in the European touring band Montana Red Dog, supporting soul greats Rufus Thomas and Ann Peebles in the late '70s. He was also a member of one-hit-wonder bands Love Affair ("Everlasting Love") and Omaha Sheriff ("Come Hell or Waters High"), the latter of which signed with David Bowie's producer, Tony Visconti. The band didn't last, but Birkett went on to make other record-



ings with Visconti, and he says that association was the first step on a path that led him to the other side of the glass.

"After the Omahas folded up, I went back to London as a session guitarist," Birkett explains by telephone from his current home studio in Paris, "and I went to John Kongos' studio where Tony had recorded my first album and asked if they could use me as a guitarist. He said, 'We're building a new studio,' and asked me to help build it. I had an electronics degree from school, so that helped. When I finished building the new studio, which was called Tapestry, and putting in the new gear, John explained that he didn't have an engineer, so they said, 'I know you're a musician, but can you try engineering?' It was a scary way to do it. The first six months, I lost 20 kilos of weight through the stress of learning tape handling. But I became successful, and people began coming to the studio to use me, and that's when I worked on Sinéad's first album. I mixed the two singles, 'Mandinka' and 'I Want Your (Hands on Me).'"

Between the release of *The Lion and the Cobra* and the beginning of *I Do Not Want What I Haven't Got*, Birkett built his first personal studio, CB Sound, where he did much of the tracking and all of the mixing for the latter album. His room was equipped with a Soundtracs console, a Soundcraft 24-track and custom Dawn Audio monitors. Many individual parts, overdubs, sampling and programming happened there. However, to record the orchestral and string parts, real drums, live full-band playing or the rest of O'Connor's vocals, the project spent chunks of time in bigger rooms such as Eden Studios, Westside and Lansdowne. At the end of each phase, Birkett brought all the tapes back to his studio; editing and mixing were ongoing throughout the project.

O'Connor's emotional, reverb-laden vocal for "Nothing Compares 2U" was captured at Westside. "The control room had an SSL, and there was a smallish live area next to the big room that was not too reverb-y," Birkett says. "The whole vocal was double-tracked. She went in and did a one-take vocal



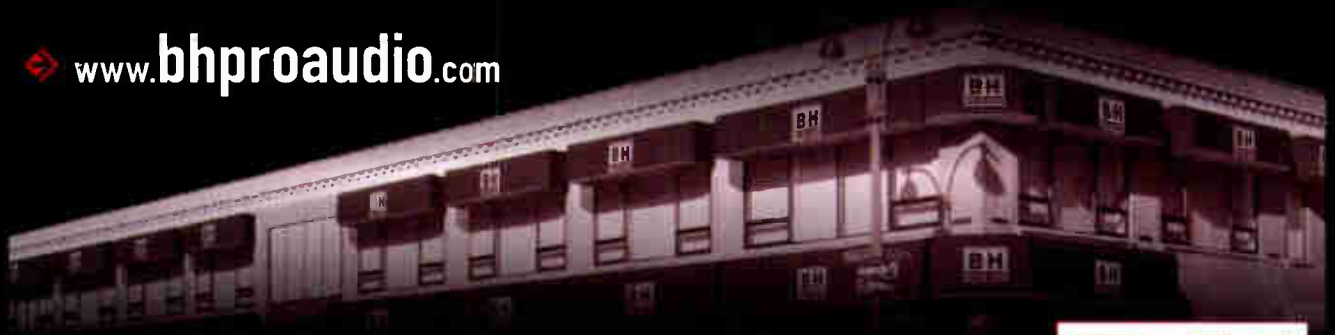
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without stopping. And she said, 'Oh, yeah, I like that. That's good.' And she went straight back in and did a terrific double-track in one take. The whole thing was perfect."

Birkett used an AKG 414B-ULS on all of O'Connor's vocals. "I like this mic because it can handle dynamic singers," he says. "It has incredible dynamic headroom; it can take a lot of punishment and still sound really clear."

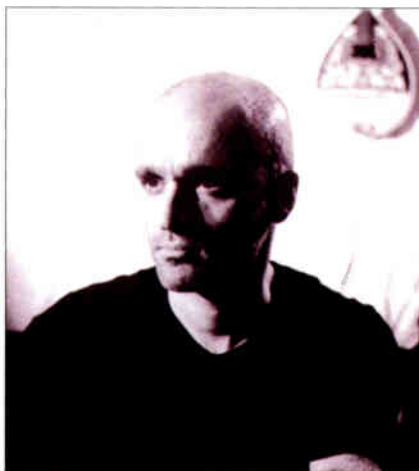
The reverb—an integral part of O'Connor's sound—was a Lexicon PCM 70 Cascade. "I created a custom reverb from that program," Birkett explains. "I saved it and we used it on everything because she liked singing with it. It gave her inspiration, so I used it for monitoring in her headphones, and then we used it on the mix, too."

Birkett says that though O'Connor's singing was sheer perfection from a performance standpoint, she did pose some technical challenges. "She hates compressors," he says with a laugh. "She would come in early in the morning and write me a note, 'No f***ing compressors!' Also, when I used to record her, she had a negative mic technique. Most people, when they sing loud, they back off the mic, but she used to go into the mic. So if you listen to that song carefully, there are a lot of distorted vocals on it because it was impossible to get a clean vocal take. I had to do a lot of automating EQ during the mix to get rid of that distortion."

"She was a rebel at heart," he continues. "Because she grew up in a bad situation, she felt, 'I don't want to do things the way everybody else does it,' and she would refuse, and that gave her a different sound, as well. For example, most producers would have put a limiter on the [vocal] mic so you could get the voice right in your face and you would hear everything. We would never do that. And there were a lot of live takes, which may not be perfect, but are full of emotion."

The real emotion in "Nothing Compares 2U" came across to listeners in the recording and in the video, which shows the artist cloaked in black, close-in or walking among cold statuary, and shedding a few real tears. The song peaked at Number One on *Billboard's* Modern Rock and Hot 100 charts, and was the Number 3-charting song for 1990. "I thought the track was really good," Birkett says, "but I didn't know it would be Number One in every country! Sinéad used to phone me every weekend, and say, 'It's Number 40,' 'It's Number 25,' 'It's Number 10,' 'It's Number One!' It was much bigger than we expected."

Birkett moved to France a few years after the release of *I Do Not Want What I Haven't Got*. He built a studio in a chateau in Bor-



Producer/engineer Chris Birkett now works out of his own studio in Paris.

deaux, which he recently gave up for new digs in Paris. He is currently producing and engineering albums for Buffy Sainte-Marie and Fraser Anderson. In May, he will finish work on his next solo release.

O'Connor followed *I Do Not Want What I Haven't Got* with the Phil Ramone-produced collection of standards, *Am I Not Your Girl?* She has continued to record lovely, and sometimes brilliant, tracks, but unfortunately, her radical Pope-ripping (and other perceived offenses) seems to have left a stronger impression than her later albums. At press time, she was scheduled to release a double-album of new material this spring. ■

JOE ZAWINUL

FROM PAGE 116

and that's where we recorded the album."

Zawinul's Birdland club opened in May 2004 and has quickly developed into one of the most prestigious jazz venues in Europe. "It's a fantastic place!" Zawinul enthuses. "When people are sitting, it holds about 220. It has two floors; it's very classy. We have recording equipment there [based around Logic and M-Audio preamps], but we brought in a remote [and recorded to 48 tracks of Pro Tools]. It's not a large bandstand and we had 14 horn players, plus my band and a guitar player [from the WDR]. The saxophone players were sitting so close together they were practically rubbing elbows!

"I conducted the band the same way I do the small band," he continues. "We had arranged it so that the *tutti* parts, where the whole band would come in, were by clues rather than how the bars were written. So I had the choice of how the solos went, how

the music developed to bring them in and then there were hand signals I gave to the guys. It ended up working out really well. It was like there was a wire going through everybody. It was an incredible vibe."

Zawinul and WDR actually ended up doing two European tours together about a year apart, and though he says the shows got better and better, "Those first shows at Birdland were special—they captured something, so I'm really glad we recorded it," he says. There were also a number of tunes that were performed that didn't make the two-CD set, as well as video of the band in action, so hopefully more will come of this remarkable union.

Some of the post-production on *Brown Street* was done by Zawinul's son, Ivan, at their Malibu studio. "They sent the Pro Tools [sessions] here," Ivan Zawinul says, "and my father and I went through it all, fixed a few little parts and then I edited it, too. There were a couple of minor overdubs at some of the edit points, and on 'Brown Street,' [Joe Zawinul] added some more to the bass line. I did a submix of all of Joe's keyboard stuff here and then we sent it back to Germany with that stereo mix, the fixes and some other sound effects I added here." Joe Zawinul and Becker share the overall production credit; engineers in Germany included Gerald Ernst, Reinhold Nickel and Christian Schmitt.

Ivan Zawinul loves *Brown Street* and even talks of creating some remix versions of certain tunes with a couple of rappers—"not ghetto rappers; international-sounding rappers," he clarifies—but the project that's been taking up most of *his* time recently is a career-spanning three-CD live retrospective from the Zawinul Syndicate, due in June or July most likely. "I did Joe's live sound for about 20 years and I'm producing it and putting it together from my live tapes," Ivan Zawinul says. "It took me eight months to go through all the shows—more than 400 DATs, 20 multitracks, a bunch of ADATs, even some cassettes. This stuff is absolutely Joe! At the moment, there's about 35 tunes featuring 40 different musicians—everybody who's gone through that group."

"And it's not like a regular live album," he continues. "I've done a lot of cutting between shows, rearranging tunes. Some of the [edits] I've done are like four years apart and feature different drummers, but sonically it all floats across perfectly. I've got one song where it has parts from Spain, Germany, Austria and Italy all cut together, but you can't tell."

The Malibu studio is based around an Amek Einstein console and Pro Tools, but Ivan Zawinul says the key to matching performances from different years has been

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"a TC [Electronic] Finalizer and a couple of other EQs; some plug-ins I don't even want to name. I monitor the EQ and analyze them and match them that way. These are straight-off-the-board mixes for the most part, and fortunately the sound stayed the same through the years. The music is really unbelievable! At this point [in February '07], Joe's only heard about 20 percent of what I've done, but he's loving it. He's amazed."

As for the other recent release—the Weather Report box—Joe Zawinul reports that he is satisfied with the way it turned out and believes that it shows the broad range of musical ideas for which the band always strived. "I always knew we had something very special, and we never had a headache about it," he says. "We always wanted the next record to be different from the one before, and we kept that up for 15 or 16 records. We won all the polls [in jazz magazines] every year. Weather Report was one of the great music formations ever."

I mention that the band played "world music" before the genre even had a name and that the Zawinul Syndicate has gone even further in that direction, with its overt African, South American and other influences. "That's true," he replies. "A lot of people



From left: Alex Acuña, Nathaniel Townsley, Joe Zawinul, guitarist Paul Shigihara and the WDR Big Band

who've become known as 'world music' were influenced by Weather Report. When I made this record with Salif Keita [*Amen*, 1991] and worked with these West African master musicians, I learned that they all grew up with Weather Report. 'Black Market' was for 20 years the theme song on Radio Dakar

in Senegal. It was one of the biggest albums in Africa. Some of these guys were later in my bands. I like to get that kind of energy and influences in my bands.

"I feel like American music has lost a lot because so many of the young guys are hanging on with old music. Much of it is



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really great, great music—some of the most adventurous and unpredictable music of the 20th century was bebop—but it became predictable and boring. I spend a lot of time in the car driving around, and I listen to the jazz stations here and it is almost embarrassing how these young people are playing almost note for note these solos that were played 50 years ago—the same notes, the same turnarounds. Even in those days, it was like a repertoire music: interpretive music, not always creative music. Because everyone tried to play like Charlie Parker, Dizzy [Gillespie] and Miles [Davis] and so on, and that's okay—I did, too. But what's amazing to me today is that young people coming up are trying to sound like that. Don't misunderstand me—there are a lot of great musicians out there, some fantastic instrumentalists—but they don't have original personalities, and that is sad. And that's why I can't play the music I want to with those kinds of people. The people in my bands have to have some originality. And that's why I play with people from all over the world.” ■

THE SHINS

FROM PAGE 117

microphone carefully inside of his vintage Epiphone f-hole acoustic guitar,” he says. “It helped give the sound a strong feeling of coming from another decade, sonically.” Then there was the time they put a guitar amp in an iso booth and miked it from the outside. On another day, they used the ceiling fans in the studio while recording overdubs to capture an odd tremolo effect.

Chiccarelli and Flora tried to be creative when it came to recording the drums, too. In addition to the standard complement of mics across the kit, the duo set up Neumann TLM 170s across the room and a mono Lawson L251 in front of the kick drum. “It's a nice, big, wood room with a high ceiling,” Flora reports. “The 170s were across the room set on omni, so it was possible to get a lot of the room sound in there. Once it was compressed, it wasn't so washy as it was the mid-range ‘oomph’ that you get from room mics.” As for the 251, Chiccarelli says, “It provided the best leakage and that tone became most of the drum sound.”

Chiccarelli also points out that songs such as “Australia” and “Phantom Limb” featured additional drum samples. “In some of the more pop songs, samples were added to give the tracks a bit more intensity,” he says. “It's something I try to shy away from unless I'm dealing with very heavy rock that

needs to compete on the radio. Usually, with a band like The Shins, who have so much character in their playing and their tones, I would shy away from this, but I felt like the more insistent songs needed a bit of underpinning. It's simply *more* sound, and who can complain about that?”

“Sleeping Lessons” is a number that took some experimentation before it was right. “James always knew that he wanted that to be the opening song,” Chiccarelli notes, “so initially it started with a kind of keyboard loop that he had done at home. The home version of it was very delicate and it was great; I really loved it. His feeling was that it was really good, but he wondered if there was a way to make a better transition into the rest of the record. It sounds like it's a good first song, but it sounds like it doesn't set you up for the rest of the record, so the trick was to build this and go from this delicate, weird little thing into a full band number at the end. It was tricky in terms of getting the right drum feel and getting it to be raw enough without it sounding like a trick that we're going from delicate to raw.”

The vocal tracks that ended up on the final mixes were a combination of originals recorded at Mercer's home studio with an Audio-Technica 4050 and those that were cut at Supernatural through the 4050 or a BLUE Bottle microphone. The vocal chain also included a Neve 1073, a Summit EQ and an 1176.

The entire record was tracked to Pro Tools and mixed through Supernatural's API Legacy Plus console down to a Mike Spitz-modified Ampex ATR-102 half-inch 2-track recorder. A handful of plug-ins were used across the sessions, as well as an assortment of outboard gear, but Chiccarelli reports that the big secret weapon during the tracking dates was the Echoplate made by Jim Cunningham. “It's basically an EMT 140 copy with quieter electronics,” he says. “We got some interesting feedback and resonances since it was in the studio with the band.”

In addition to his production work, Chiccarelli was responsible for the mix. That job was made slightly easier because he started the project having some idea where it would end up. “Of course, it changes every day and if you have something too rigid in your mind, you end up battling it the whole time,” he says. “That's a good way to go about making a record. It was easy for us to tell when stuff sounded too pop and too glossy or too contrived to the point where you really felt like you were deliberately playing with the listener and wanting them to pay attention to some device. I don't mean an outboard device, I mean an aesthetic device.” ■

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MIX

L.A. GRAPEVINE

by Bud Scoppa

This month, I'm delighted to offer a pair of feel-good stories. On one end of the spectrum is posh Chalice Recording. "It took us awhile to find our niche, to figure out where we fit," says studio manager Stacey Dodds, who came to Chalice from Burbank's Ocean Studios in 2001, a year before the facility opened its doors. Opportunity knocked in 2005, when producer Pharrell checked out the place and fell in love with it, initiating what turned into a parade of high-end clients from the worlds of hip hop and pop, in-

alternative to its "no-expense-spared" neighbor across the parking lot, and the concept must be working: Presently ensconced in Studio E is Emanuel Kiriakou (Nick Lachey, Katharine McPhee), while Brent Paschke, a guitarist who works with Pharrell in N.E.R.D.'s backing band, leases another production space. Studio D is a small Pro Tools suite, and Studio G, the newest operational room that boasts an SSL 4000 G+, has become a new favorite of UK-based producer Alan Moulder, who alternated between G and B while mixing the latest LPs from Nine Inch Nails and Queens of the Stone Age, along with tracks for the new Arctic Monkeys release, bringing Chalice into the rock arena in one fell swoop.

In March, construction began on what will be Studio F, "a new production room on a much bigger scale," according to Dodds. Its centerpiece will be an SSL AWS 900+, a 24-track small-format console and Pro Tools control surface. The board is already on-site, wrapped in plastic and waiting for its close-up. Handling the acoustics and interior design of the 24x19-foot space is Hanson Hsu's Delta H Design ("L.A. Grapevine," November 2006), whose ZR (short for "zero-reflection") technology makes a rectangular space mimic a polygonal room so that it's free of standing waves and resonant frequencies at the mix position after the direct sound has passed the sweet spot. Thanks to ZR, the existing walls are being retained, with an iso booth being built along the rear wall.

"The monitors will be free-standing to give the room an open feeling," Hsu explains. "We're using Augspurger mains with BBI subs, which we're bolting together and then bolting to the slab, angled down at the mix position. And we've designed the ZR wall behind them on the front wall to work as if it were a baffle wall. There will be a plasma screen between them, and they'll have curved black grille covers. The back wall's going to be an open metal weave covering an acoustic cloth with lighting ele-

—CONTINUED ON PAGE 128

NASHVILLE SKYLINE

by Rick Clark

For most of us, the path we take in a music career is a circuitous one. It seems the only way to get anywhere is to learn a lot of different skills and be ready to do it yourself. Maybe you start out thinking you're going to take over the world as a rock god, and along the way you take on various other survival disciplines that lead you to do some songwriting, learn a few instruments, pick up engineering and/or producing chops, and any number of non-music sidelines. Then one day you look at yourself and realize that, whether or not you've made much money, you've just about become your own turnkey creative industry.

Ed Pettersen's (www.edpettersen.com) musical odyssey is a classic example of this. A native of Syosset, N.Y., Pettersen started as a songwriter years ago, with little expectation he was going to have a recording career. Nevertheless, armed with his love for music (The Beatles, Motown, country, etc.) and a work ethic instilled by his family, Pettersen plugged on and figured out that the best way to get his songs out there was to learn the ropes as a singer/songwriter and put out his own music. His first album, *Desperate Times*, was released in 1995. Since then, Pettersen has released six albums.

Pettersen has also become a producer, amassing credits including Devendra Banhart, the Black Crowes, Michelle Shocked, The Mavericks, BR549, the Blind Boys of Alabama and more.

Pettersen had been traveling to work in Nashville since 1995, but decided it was time to make a permanent move in 2002—thanks in no small part to the encouragement of Motown legend Bob Olhsson and music entrepreneur/booker, the late Gerry Livers. "They had both been urging me for over a year, telling me that there were many like-minded people here in Music City and that my talents might be better recognized here," says Pettersen.

"Once I got here, I started just hanging out at Bob Olhsson's house almost every day. He didn't seem to mind and I learned tons of stuff. I haven't met anyone in my 20 years around the music industry who knows more about or cares more about



Studio designer Hanson Hsu of Delta H Design (left) and Chalice studio manager Stacey Dodds on-site at the under-construction Studio F

cluding Kanye West, Christina Aguilera, Gwen Stefani and Mary J. Blige. Business has been so good at Chalice—the former home of Mix Magic, housed in two adjacent buildings on Highland Avenue between Santa Monica Boulevard and Melrose Avenue—that owner Ben Tao has green-lighted a wide-scale expansion under Dodds' supervision.

Chalice North, which now houses two SSL 9000 J Series consoles in Studios A and B, has been the scene of so many high-profile projects in the past year-and-a-half that a security gate had to be erected around the entire complex to keep the paparazzi at bay. Studio C, in the same building, is the home of producer Jonathan "J.R." Rotem, whose hits include Rihanna's "SOS."

The totally renovated Chalice South, where the expansion is taking place, was envisioned as a hornier, more comfortable

NEW YORK METRO

by David Weiss

audio than he does. There isn't one update or bug or fix or trick that he hasn't known or at least tried once. He's striving for a level that only very few know about, and I'm just lucky that he lets me hang around."

Eventually, the two decided to begin working together on projects. "Bob suggested we put our own team together of old friends of his and some new friends, too," he continues. "It seemed to kind of just come together based on who we thought were the absolute most talented folks available and who would be right for the sound we were going for. I wanted one foot in the past, but I also wanted to turn it up a notch based on my pop experiences working in New York. It really feels like the perfect combination of very creative, talented people: musicians, engineers and studio. Before we knew it, we were recording not just demos, but all kinds of projects."

For Pettersen's new album, *The New Punk Blues of Ed Pettersen* (a nod to the titles of two albums—*The Folk Blues of Muddy Waters* and *The New Folk Sound of Terry Callier*), he sought "a mixture of what made the older, classic recordings classic—great arrangements, really well-crafted songs and tight, creative rhythm sections, combined with the edginess and attitude of contemporary music."

—CONTINUED ON PAGE 128

PHOTO: RICK CLARK



Ed Pettersen (left) with Bob Olhsson

Wanna be a part of it? Are you *sure*? Like most illegal drugs, New York City can be exciting, fun and downright addictive. It can also destroy your mind and body if you're not careful. Just ask Bryan Martin, a dedicated producer/engineer/musician who gave to New York until it hurt, and long after. Now happily Montreal-based with his own mastering facility (www.sonosphere.ca), Martin has the perspective to look back at his 15-plus years in the Big Apple and know that leaving may have saved his life.

"I actually think New York City is like this no matter what your profession is: At one point you're putting energy in, but at another point it starts extracting it," he says frankly. "When the flow starts going the other way, that's when it's time to get the hell out."

Martin arrived in New York in 1986 as your typical wide-eyed young engineer/songwriter from Pennsylvania ready to prove himself as a toilet-cleaning intern on the way to Platinum producer status. In the ensuing years, Martin moved up, earning producer and/or engineering credits for artists such as Rufus Wainwright, Tom Ze, Propellerheads, The Swans and jazz phenom Dr. Billy Taylor.

While many of the discs Martin worked on earned critical praise, none of them launched his reputation or earnings into the stratosphere. He was making a living in music, but somewhere along the way, his audio life in New York City started to suck. "When you're young, you can do it," recalls Martin. "You're single and unencumbered—no one even had a girlfriend. We're all passionate people, we were hungry and there's so much competition that if you said [to the studio], 'I want to do something with my family this weekend,' they'd say, 'You go do that—and don't come back!'"

Moving up from runt engineer to producer, Martin



NYC refugee: engineer Bryan Martin

officially became a slave to New York and its reputation as a world music capital. "You reach a level where you're giving more than you're getting professionally, and maybe you don't want to live in the studio 14 hours a day anymore," he says. "And then physically you can't do it anymore. I couldn't do it because making a record that's good takes a huge amount of personal commitment by the producer. Generally, young bands doing their first, second or third record are freaking out and need to be reassured, and the guy who has to hold it together is the producer/engineer. But that's completely draining. If someone's having a nervous breakdown, you have to put out enough energy to support those other people."

In 2001, Martin became a partner in Brooklyn, N.Y.'s technically and aesthetically excellent studio Excella Recording. "I started managing a studio when the studio business went into decline," says Martin. "The digital revolution started, and then there was 9/11. It was the beginning of the end, except nobody knew that at the time."

"The stresses that affect you are insidious. You don't know that your stress level is going up and up. It's not like you went from the farm to the fast lane—you always *were* in the fast lane. You live in a crazy environment; you don't question it. You don't real-

—CONTINUED ON PAGE 129

ERIC TUNISON'S GROOVE TUNES FEELING GOOD ABOUT GIVING BACK

As this special edition of *Mix* focuses on health and well-being, it's worth noting that sometimes the best way to feel good inside your own skin is to use your musical/technical resources to help others.

Case in point: Eric Tunison is an engineer/producer/project studio owner of Groove Tunes, a facility he designed and built from the ground up to his own high standards when he moved from Seattle to Alpharetta, Ga., in the early '90s. Groove Tunes began as a part-time enterprise—a side interest—but a few years ago, Tunison decided he had made enough cash doing his day-job as a project manager to upgrade his studio from Tascam 8-track analog to Pro Tools 7.3/HD Accel and make the leap to full-time studio owner/operator. His facility also includes a balanced selection of mics from Neumann, Soundelux, Royer, AKG, Sennheiser, Shure and Beyerdynamic; preamps from Focusrite, PreSonus, Groove Tubes and others; a large collection of outboard gear and plug-ins; and JBL LSR 6328P powered main monitors—more than adequate tools to serve the musicians of his small community and beyond.

Since making the change, Tunison has recorded some full-rate clients, such as CNN International writer Gustavo Gonzales, who has been making his first Latin CD at Groove Tunes, but he's also offered discounted rates to younger, local bands and charitable organizations that need studio time. For example, Tunison is affiliated with Music for Charities (www.downloaduplift.com), where he gives highly discounted studio rates to members who donate portions of their musical downloads to charities of their choice.

"My affiliation with Open Mic Atlanta (www.openmicatlanta.com/renovation) offers discounted studio rates to Open Mic performers, including some studio time give-aways to winners of Open Mic contests," Tunison explains. "I have a similar affiliation with Gary Stefins of Gary Goodstuff (<http://garygoodstuff.com>), a local promoter of youth bands, by giving away studio time to Battle of the Bands con-



The live room houses a collection of musical instruments and guitar amps for clients' use.

test winners and discounted studio rates to all participants."

Recently, Tunison collaborated (again, for a fraction of his day rate) with independent artist Deborah Lanham on a CD project for a group called Kidini. "They approached me to produce a child-abduction-prevention safety-awareness album," Tunison says. "They conduct seminars where they teach courses live to children and their parents—visiting Cub Scout meetings and things like that—and they have these cardboard cutouts they show to the children with cartoon-type characters, but they were feeling like the children needed something to take home to remember the lessons. The idea was to create a CD of original music that would not only make the lesson plans more real for the kids, but would be fun enough so that parents wouldn't mind listening to it."

Lanham and Tunison—both multi-instrumentalists—played most of the musical parts themselves (guitars, synths, horns, percussion), though they had some help with the vocals: "Deborah sang all the lead parts, but we also had 30 children from the Christian Youth Theater of Alpharetta—aged anywhere from 5 to 15—come into the studio to sing backup vocals on four or five of the songs. I have a very large lounge, and some generous parents came to mind the children. I could fit 10 at a time in the studio proper. I fit them all with headphones, stood them all in a row. Deborah would be in the studio with them and she'd mouth the words and hold up cue cards, and it took several takes for the kids to get the hang of it, but I comped the best takes and they sounded pretty decent.

"You just have to do what you can," Tunison reasons. "Not everybody can afford to record in a recording studio. My rate is very low as compared to the big-time Atlanta studios, but for a lot of people, what I charge is a lot of money. I can't do these things for nothing because this is my livelihood, but at the same time, I understand there are young musicians who just can't afford it. And then, with people who are doing charitable events, I want to give them a deal, too, so they can keep doing something good. All I care about is making enough to keep paying my bills and doing work that the musicians and I can be proud of."

—Barbara Schultz



Eric Tunison's Groove Tunes recording studio is built into the ground floor of his home in Alpharetta, Ga.

BEHIND THE GLASS

FAMILY BUSINESS PINDERS AT PRAIRIE SUN



From left: Mike Pinder Jr., Tony Clarke, Mike Pinder Sr., Ed Ulibarri, Matt Pinder and Paul Rivelli

Prairie Sun Recording (Sonoma County, Calif.) hosted former Moody Blues keyboardist Mike Pinder as he produced his sons' band, the Pinder Bros., on the vintage Neve in Studio C. Pinder was joined by Moody Blues producer Tony Clarke and engineer Tom Size.

DEAR DIARY... AUDIO IN BRICK CITY



From left: producer Alison Oberkrieser, engineer Brad McGrath and Audio Diary bandmember Jamie Richards

Brick City Sound (Chicago) hosted the band Audio Diary, who tracked and mixed their new EP with engineer/producer Brad McGrath in the facility's Studio B.

NORTHEAST

Nicole Scherzinger of the Pussycat Dolls was at Legacy Recording (NYC) tracking vocals for an upcoming 50 Cent album. Dr. Dre produced and Steve Sola engineered... Fenix Studios (Staten Island, NY), where the live room was recently redesigned/upgraded, hosted mixing sessions for a new release by James Blood Ulmer with Vernon Reid (of Living Colour) producing and Matt Rifino mixing. Rifino also tracked and mixed Pork Foot with Joey Martino assisting, and produced/engineered rock band Temporary Grace with assistant Martino...There's always plenty going on at Avatar Studios (NYC). Recent sessions include Celine Dion recording vocals with producer/engineer Humberto Gatica in Studio C, assisted by Anthony Ruotolo. Counting Crows were in Studio A with producer Gil Norton and engineer James Brown, assisted by Bryan Pugh; and Walter Becker and producer Larry Klein were in Studio B with engineer Helik Hadar and assistant Chad Lupo. On the mastering side, Fred Kevorkian mastered an upcoming live album for moe., as well as studio recordings by The National, Ladybug Transistor and Boondogs...Singer/composer/musician Nellie McKay self-produced seven new songs at Red Rock Recording Studio (Pocono Mountains, PA). Kent Heckman engineered...Business partner, Jeff Glixman and Jim Gentile have signed Tyrone Vaughan (son of Fabulous Thunderbirds' Jimmy Vaughan, nephew of the late Stevie Ray Vaughan) to a production deal with their StarCity Recording (Bethlehem, PA) studio and StarCity Productions label. Vaughan will record 12 tracks with Glixman and staffer Zak Rizvi co-engineering.

SOUTHEAST

At Catalyst Recording (Charlotte, NC), Safe Return Doubtful recorded an EP with engineer/owner Rob Tavaglione and assistant Philip Morgan. Tavaglione also produced/engineered Jay Mathey's latest EP and engineered Wolf Cell Solid. The last was produced by Level Up and mastered by Colin Leonard at Glenn Schick Mastering (Atlanta)...Studio B Mastering's Dave Harris (Charlotte, NC) recently put the finishing touches on releases by Two Dollar Pistols, Lejeune Thompson, Lou Ford and Candy Kane...At NPALL Audio (Nashville), engineers Nick Palladino and Brian Straka contributed sound design and mixing for TV and radio ad campaigns for O'Charley's, Cracker Barrel and Bristol Motor Speedway.



Patti Smith with Electric Lady studio manager Lee Foster

PUNK POET AT ELECTRIC LADY

Recent Rock and Roll Hall of Fame inductee Patti Smith was in Electric Lady Studios (New York City) tracking and mixing *Twelve* with engineer Emery Dobyns. The album was co-produced by Smith and her band, and at press time was scheduled for April 24 release. Electric Lady also reports recent visits by producers Brad Wood (Say Anything), Ric Ocasek (Motion City Soundtrack) and Rich Costey (Interpol).

MIDWEST

Mastering engineer Bob Boyd put the finishing touches on the first release from Until June and the second from Dizmas at hi: Ambient Digital (Houston) studio.

NORTHWEST

Punk-rock Elvis Presley tribute band G.G. Elvis & The TCP Band recorded an album at 60 Psycho Hum Productions (Medford, OR) with engineer Doug Hill... At Studio 880 (Oakland, CA), owner John Lucasey continued mixing tracks for Walmart's Soundcheck Series, including tracks from John Mellencamp, Norah Jones, Fall Out Boy and Pretty Ricky. Doug Logan did the mastering.

SOUTHWEST

Odds on Recording (Henderson, NV) has acquired a custom, three-way OWA415T monitor system from Ocean Way Monitor Systems, designed by Allen Sides.

SOUTHERN CALIFORNIA

At mastering facility Sound Bites Dog (L.A.), engineer Hans DeKline mastered releases by Joe Askev (mixed by Malcolm Burn) and Joe Brucato (recorded by Mick Guzauski and mixed by Alan Marino)...At Gavin Lurssen's new Lurssen Mastering (Hollywood) studio, numerous recent clients have included T-Bone Burnett, John Doe, Joe Henry, Loudon Wainwright, Randy Newman and Frank Wolf, as well as the *God of War* soundtrack for PlayStation. ■

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

ments in the back, but all acoustically permeable, on top of a hidden ZR wall behind the cloth."

"We've been in construction mode since the beginning of last year, so it feels like it's never-ending," says Dodds. "Chalice was fortunate to have start-up funding, but it's become a viable company that's self-generating. I feel very lucky to be part of it."

At the other end of the spectrum or, more precisely, in Glendale, I caught up with producer/engineer Mark Linett (best known for his work with Brian Wilson and his impeccable treatment of the Beach Boys catalog)

during a brief stopover at his cozy poolside home studio, Your Place or Mine, between gigs with his bustling location recording business. After recording SXSW sets by the Kaiser Chiefs, The Cinematics, Mondo Diao and the Horrors in Austin, Linett was packing for a trip to the Caribbean island of Anguilla to record a Jimmy Buffett charity concert.

Your Place or Mine Location Recording (www.yourplaceorminerecording.com) completed around 30 jobs in 2006, ranging from nine Santana shed dates up and down the West Coast to the original Raspberries' first show in 30 years at the House of Blues on the Sunset Strip, which Linett did on spec out

of his fondness for the band. Most of the jobs were done for Control Room, which produces concerts for airing on radio, TV and the Internet.

"Business picked up last year, primarily because of these Internet video broadcasts," Linett explains. "But we've been doing more live stuff in general. A large number of these jobs are what they call 'captures'; we're just trying to get it to Pro Tools and then the mix is done later."

Linett has been doing location recording for a quarter-century, starting with a Stephens portable 2-inch 16-track, transitioning through 24-track, ADATs and Tascam machines before purchasing a pair of Genex 9048 48-channel hard disk recorders a couple of years ago.

"So last year, with all these gigs, I decided it was time to build the system up," he says. "We did it from scratch, with Aphex 1788A remote mic pre's, a Mackie dXb console and a 48-channel splitter, and then we added a second 48-channel front end with ATI pre-amps. Several shows we've done recently were live to the Internet. The dXb•200 is great because you can preset everything and bring it back in one click, and the same with the Aphex pre's."

The gear is transported in airpicks; due to all of the activity, Linett is now up to three airpick systems. "That's what I've got waiting for me in Anguilla, and that's why we were hired," he says. "You can't really drive a truck to the Caribbean." ■

Send L.A. news to hs7777@aol.com.

NASHVILLE SKYLINE FROM PAGE 125

Olhsson and Pettersen are very much into using a lot of the older mics in their recording.

"Bob has three or four U67s from back around his Motown days and we often employ his RCA 77s, the Shure ribbons—like the one Johnny Carson used to have on his desk—[and] a vintage B&O BM5 stereo ribbon, which his father bought him over 40 years ago and he never used until recently because his dad didn't bring back the right cable from Sweden. It sounds killer! We used only Bob's mics on the Black Crowes session, which we tracked live with no headphones."

Pettersen is also quick to talk up some newer mics that he is fond of: the Heil dynamics and the Telefunken R-F-T AK47. "We've been using them a lot lately, such as on the Freedy Johnston album I just produced, as well as the Old Crow Medicine Show," says Pettersen. "The only other new gear we're using are my Coil EQs that I co-designed with Robert Derby of Valvotronics. It's basically a passive filter EQ with a few modern twists—kind of a cross between a classic solid-state

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console and a vintage filter EQ."

Petersen's favorite studio to work is The Castle (Franklin, Tenn.): "They have a tremendously talented, professional staff, everything works and they go out of their way to make us and our clients comfortable. I also really dig working with Rich Feaster at The Castle. Rich grew up here but has spent some time in New York City, so we have a common language and he brings experience on mainstream country sessions, and his insight into that market is invaluable during mix time.

"We did the Blind Boys of Alabama sessions there, as well as many others for the *Song of America* project due this September," continues Petersen. "For the Blind Boys we used the U67s and a pair of Coles that belong to The Castle in dual-Blumlein stacked on top of each other. I think we used The Castle's FET 47 as the room mic, which we used as an echo send in the mix. That FET 47 is one of the best mics I've ever heard, period. We also did the Devendra Banhart session at The Castle. Rich Feaster was a wonder keeping up with all the different players and personalities. So many sessions in the last two years! We've been working virtually nonstop." ■

Send Nashville news to mrburge@mac.com.

NEW YORK METRO FROM PAGE 125

ize that it's taking so much out of you until you have a heart attack or stroke, at which point you can change your life or you die. But it's New York City: Everyone's moving, grooving, and everything is faster, more demanding and you're fighting just to keep your business afloat and career going."

A highly trained engineer and perfectionist when it comes to both recording and songwriting, Martin still had his hands on plenty of faders during this period, but other factors were making it harder and harder to focus. "The things that eventually prompted me to leave New York City were my son was born and the good records weren't coming along. The record company would call me up and say, 'They can't play. They can't write. Can you make a record?'"

"Not long after that," he continues "I remember it was my 40th birthday, and a client I was working with said to me, 'So, Bryan, why did you come to New York City?' and I said, 'To learn how to make records.' That's when I thought, 'Yeah, so what am I doing now?!' Two years later, I moved."

Married to a Canadian-born wife, Martin and his family selected Montreal as their safe-haven and moved north of the border in 2002. "I took a year off," Martin confirms.

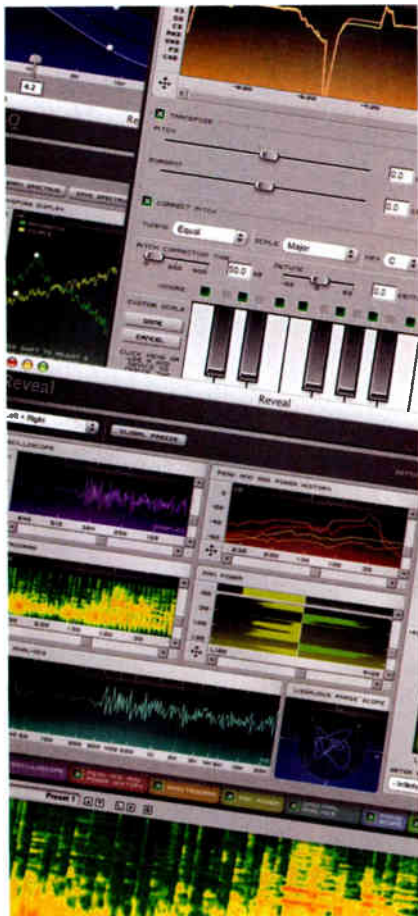
"I was wrecked. I slept for three months. It took me a year to get physically back to normal, and I didn't even know I was screwed up until I stopped living on adrenaline 24 hours a day."

Once he came out of hibernation, Martin looked around the Montreal area and realized that there was still a way he could use his golden ears without driving himself insane. Via mastering at Sonosphere, Martin found he could pour his passion for audio excellence into his projects, but with only the 2-track in front of him, he could give up agonizing over the song structure, vocal signal path and spring reverb pre-delay settings.

"I knew I didn't want to be a producer anymore," he explains, "but I acquired way too much knowledge not to use it. Everyone said, 'Why don't you open a mastering studio? There isn't really one around here.' I also design audio equipment here, whereas in New York City I never had the time or space.

"It's when you get into that chair and you don't want to be in that chair anymore that it's time to think about making a change. In New York City, the carrot, the pull, is, 'You could be a millionaire tomorrow.' But are you happy to be in that chair?" ■

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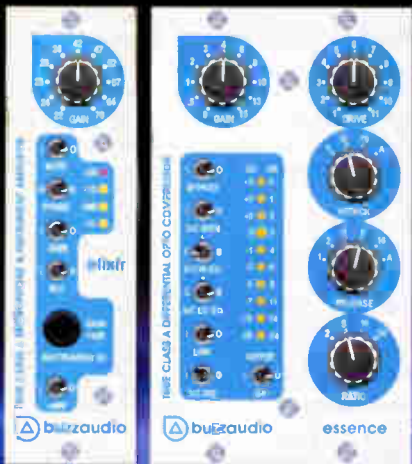
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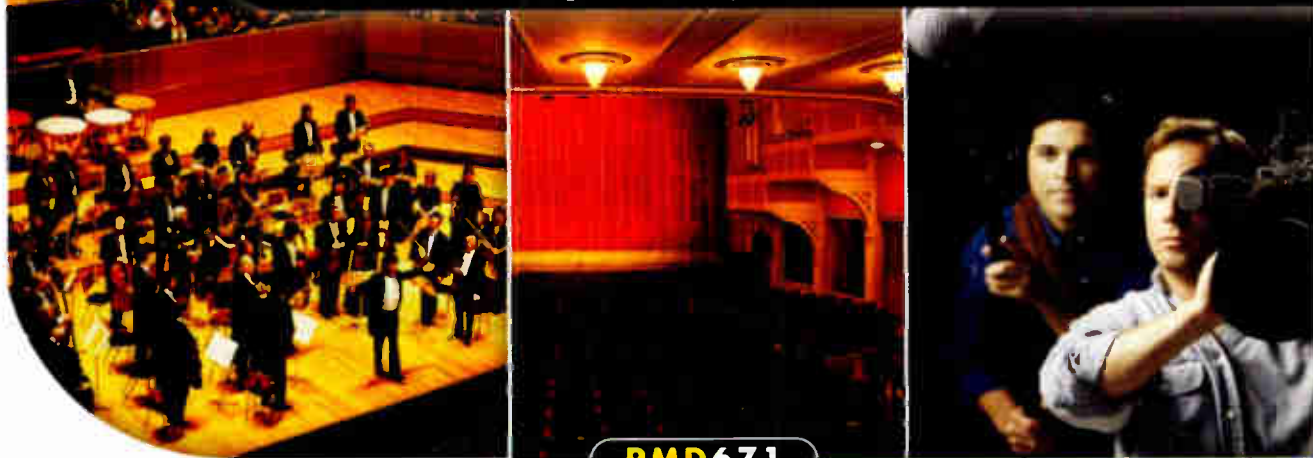
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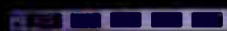
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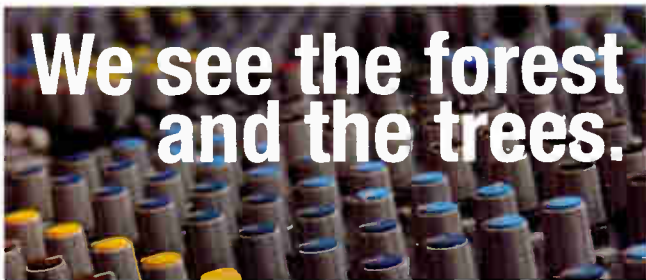
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Sep 28, 2005 12:38 PM by: Bobbin
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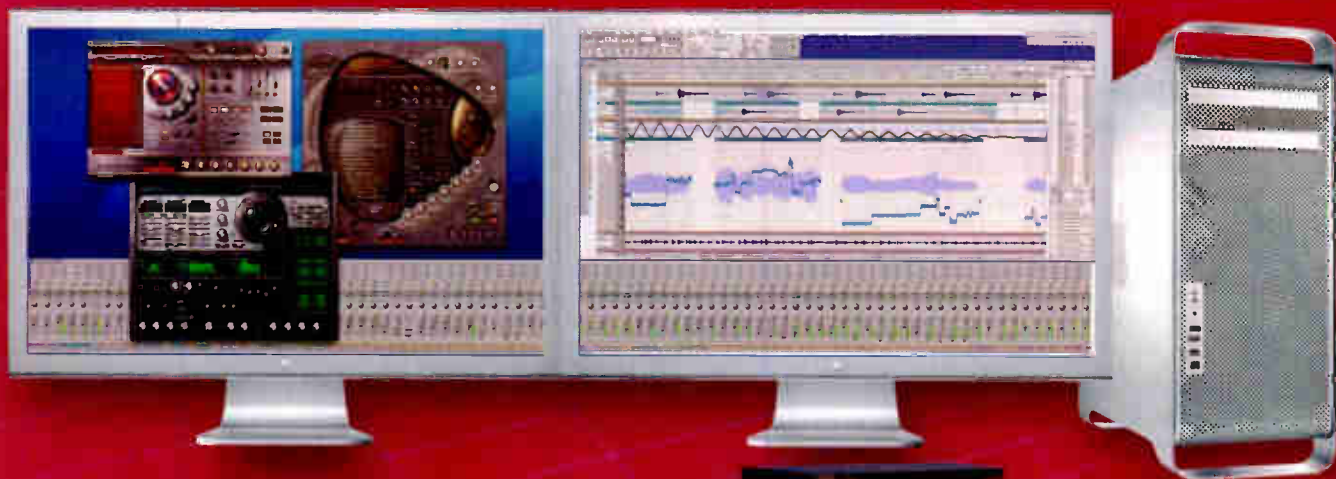
a world-class recording studio designed by Russ Berger and used by top recording artists. Ready to operate and convenient to airport, hotels, and performance venues. Building, land, attractive setting, top-end consoles, Pro-Tools, modern and vintage gear, SNS A/V SAN PRO for data storage and transfer, MANY extras...

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The MOTU Studio: 1,000 plug-ins and counting

With enough horse power to run 1,000 plug-ins, DP5 and your Intel-powered Mac Pro tower deliver your dream Desktop MOTU Studio



Intel-Xeon Quad Core Processing

Running on an Apple Mac Pro tower, Digital Performer 5 can play 1,000 real-time plug-ins—an incredible benchmark that demonstrates just how much native processing power the MOTU desktop studio now delivers. Equip yourself with all the virtual instruments and powerful plug-ins you'll need to sculpt your own, unique sound, such as the unique Ethno Instrument.



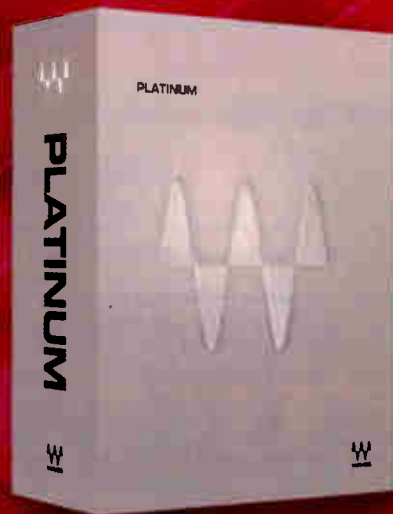
96-channel PCI Express Audio

The MOTU PCI-424 core system lets you connect up to four interfaces to a single card for up to 48 channels of 192kHz recording and playback (shown) or 96 channels 96kHz recording and playback. Mix and match any combination of three interface models to suite your I/O needs. The two-rack HD192 interface provides 12 XLR in/out with AES/EBU digital I/O (with sample rate conversion), 19-segment front panel metering and an incredible measured signal to noise ratio of 120dB. The 24io offers an astonishing 24 TRS analog inputs and outputs in a single rack space, all at 96kHz. And the 2408mk3 provides 24 channels of ADAT optical (3 banks), 24 channels of TDIF (3 banks), 8 channels of TRS analog, S/PDIF and seamless mixing across all connected interfaces.

Waves native processing

Waves has long been synonymous with quality plug-ins, and the Waves Platinum Bundle contains a huge range of top-quality Waves processing for your DP5 studio. The Platinum Bundle now includes Waves Tune LT, L3 Ultramaximizer, and IR-L Convolution Reverb as well as all the plug-ins found in the Waves Gold and Masters bundles. Platinum brings extraordinary signal processing power to DP5, for tracking, mixing, mastering, and sound design. From dynamics processing, equalization, and reverb to pitch correction, spatial imaging, and beyond, Waves Platinum Bundle is a must-have for every MOTU studio.

The MOTU experts at Sweetwater can build the perfect DP5 desktop rig for you. We'll help you select the right components, and we can even install, configure and test the entire system for you. Why shop anywhere else?



FilterFreak and SoundToys

Rejoice! The **SoundToys Native Effects** bundle is now Audio Unit compatible, so DP5 users can experience the incredible sound of **EchoBoy**, **FilterFreak**, **PhaseMistress**, **Crystalizer**, and **Tremolator**. With the focus on fat analog sounding effects, versatile control and easy of use, SoundToys plugs get you great sounds fast. These are the tools the pros use to make a mix into a hit. Trent Reznor of Nine Inch Nails says, "Calling **EchoBoy** a delay plug-in is doing it a disservice. It has become the first thing I turn to for treating a wide variety of sources."



Total Workstation Bundle \$599

- SampleTank 2 XL
- Sonik Synth 2
- Miroslav Philharmonik

Total Effects Bundle \$299

- Ampeg SVX
- Amplitube 2
- Classik Studio Reverb
- T-Racks

Total Studio Bundle \$999

- SampleTank 2 XL
- Sonik Synth 2
- Miroslav Philharmonik
- Ampeg SVX
- Amplitube 2
- Classik Studio Reverb
- T-Racks

IK Total Bundle Series

The IK Multimedia Total Bundle Series offers professional quality production tools at prices every musician can afford. IK's **Total Studio Bundle** with 7 award-winning plug-ins, 90 DSP Effects, 8000 sounds and over 21.5 GB of samples offers a diverse collection of instruments and effects for every mix. The **Total Workstation Bundle** delivers 3 award-winning virtual instrument workstations covering every style of music and genre, powered by SampleTank's advanced sample technology, built-in DSP, and easy to use interfaces. The **Total Effects Bundle** includes 4 award-winning effect plug-in suites for guitar, bass, mixing and mastering, all modeled after the most sought-after hardware gear, with 90 ultra accurate, analog modeled DSP emulations. Musicians First.

On-demand processing

The **RECEPTOR PRO** from Muse Research is the ideal way to run your favorite plug-ins live, and when in the studio it integrates seamlessly with Digital Performer and adds additional horsepower to your host Mac. Available with 400GB or 750GB drives, you'll love the way **RECEPTOR PRO** hosts your favorite plug-ins, making it easy to create or find any sound, then playing that sound with world-class sonic quality. Whether you play keyboards, guitar, electronic drums, or use effects plug-ins for mixing, Receptor gives you a stable, convenient, and easy way to run your plug-ins.



Komplete control

For DP5 users who want it all: Reaktor5, Kontakt2, Guitar Rig 2 software, Absynth4, Battery3, FM8, B4II, Akoustik Piano, Elektrik Piano, Vokator, Spektral Delay and Pro-53 in a unified interface with hands-on control — **Native Instruments KOMPLETE 4** and **KORE** put an infinite universe of sound at your finger tips. Every preset included in **KORE** with searchable musical attributes and hands-on controller assignments. This seamless integration of software and hardware turns Native Instrument's award winning synthesizers and samplers into tactile instruments.



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World Radio History

The MOTU Studio: 1,000 plug-ins and counting



Keystation Pro 88 features

- 88-key hammer-action, velocity-sensitive keyboard
- Powered via USB bus (cable included) or optional 9V power supply
- 24 MIDI-assignable rotary controllers
- 22 MIDI-assignable buttons
- 9 MIDI-assignable Alps faders
- MIDI-assignable pitch bend and modulation wheels

88 Weighted Hammer-Action Keys

Digital Performer 5 gives you unprecedented control over your MIDI and audio tracks. And what better way to take advantage of this hands-on control than the M-Audio Keystation Pro 88. Regardless of whether you're a seasoned pro or just ready to take your music to the next level, these hammer action keys are so expressive

that you just won't want to stop playing! The Pro 88 could easily become your sole keyboard in the studio or onstage. Yet the Keystation Pro 88 weighs only 47 lbs. — half of most weighted-action keyboards! And the Pro 88's extensive features make it the most comprehensive and competitive product of its kind!



Control room monitoring

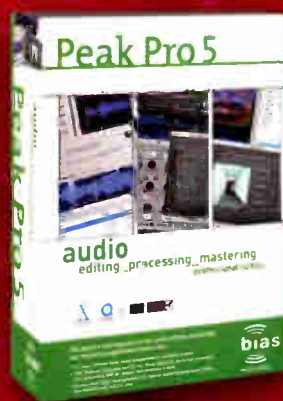
The PreSonus Central Station is the missing link between your MOTU recording interface, studio monitors, input sources and the artist. Featuring 5 sets of stereo inputs (3 analog and 2 digital with 192kHz D/A conversion), the Central Station allows you to switch between 3 different sets of studio monitor 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 music production process.



Advanced waveform editing

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



Professional pad controller

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



The MOTU experts at Sweetwater can build the perfect DP5 desktop rig for you. We'll help you select the right components, and we can even install, configure and test the entire system for you. Why shop anywhere else?



Accurate monitoring

The Mackie HR-Series Active Studio Monitors are considered some of the most loved and trusted nearfield studio monitors of all time, and with good reason. These award-winning bi-amplified monitors offer a performance that rivals monitors costing two or three times their price. Namely, a stereo field that's wide, deep and incredibly detailed. Low frequencies that are no more or less than what you've recorded. High and mid-range frequencies that are clean and articulated. Plus the sweetest of sweet spots. Whether it's the 6-inch HR-624, 8-inch HR-824 or dual 6-inch 626, there's an HR Series monitor that will tell you the truth, the whole truth, and nothing but the truth.

New hands-on control for DP5

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

Power conditioning

The Monster Power Pro 500 is designed for high-performance hookup of digital and analog components to AC power for all your MOTU studio equipment, providing optimized Monster Clean Power and surge protection for AC power lines. Advanced features include Monster's unique Clean Power Stage 1 filtering for high quality sound and Dual Mode Plus protection with audible alarm for maximum protection and performance. For even more complete protection, the Power Pro 5100 features Monster's Clean Power filtering, color-coded outlets, audible and visual indicators for ground and protection status monitoring, extra-long high current Monster PowerLine cords for optimum power delivery, 24k gold plated contacts on grounded plug for maximum conductivity, 12 programmable outlets, a digital volt meter, Clean Power Stage 4 filtering, 5 filters, sequenced AC power on/off, 3145 joule rating, built-in rack mounts and handles. Get Monster Power today.



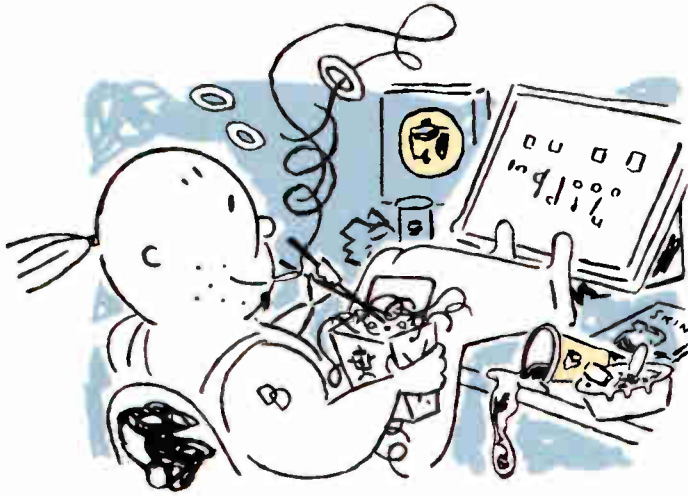
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DOOFUS & DYLAN

Illustration by Ward Schumaker



Doofus displays poor workplace habits.



Dylan maintains perfect posture and tidy surroundings.



Doofus likes to play his mixes really loud.



Dylan protects his hearing and the hearing of his clients.

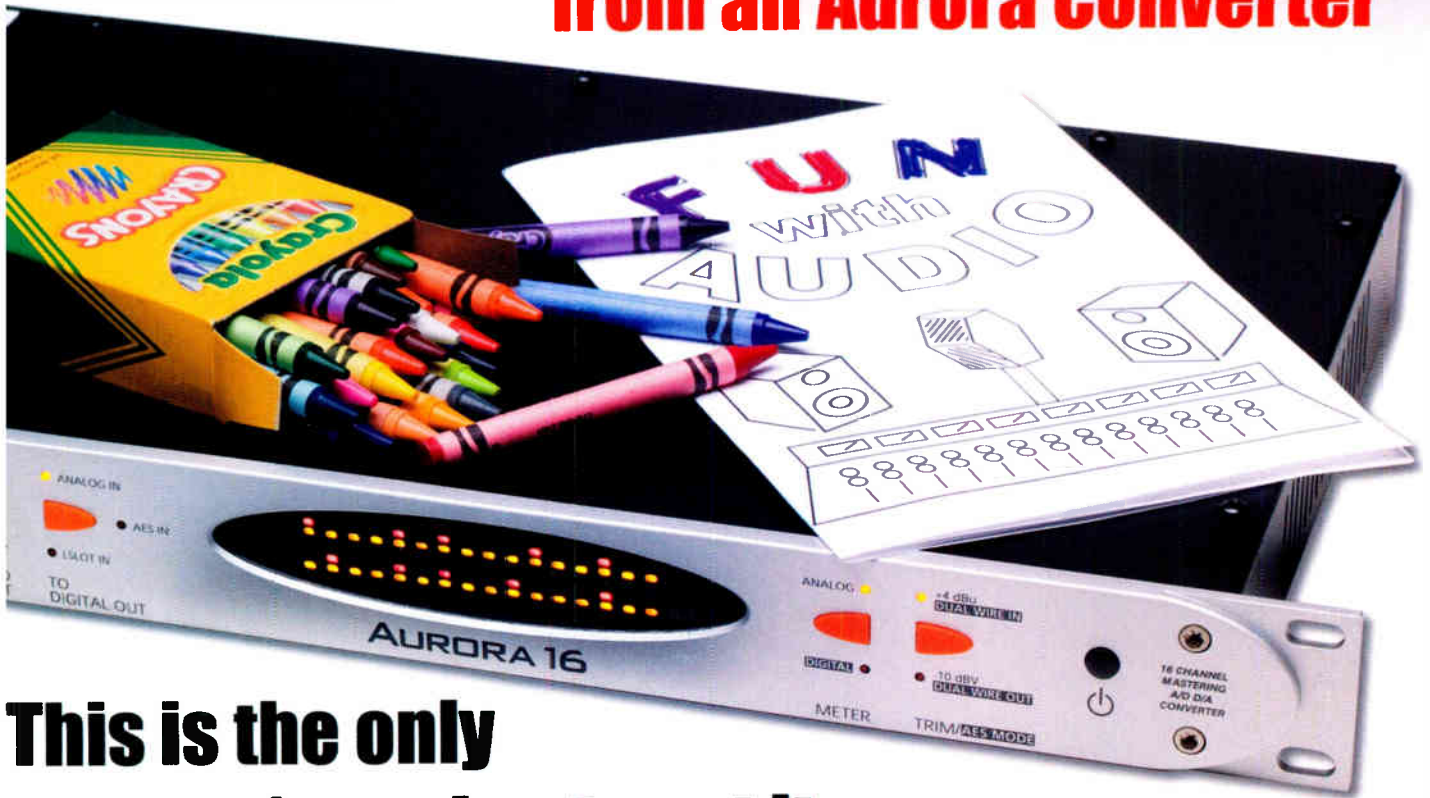


Doofus lets job stress get the best of him.



Dylan's calm demeanor is an asset to the session.

If you're looking for coloration from an Aurora Converter



This is the only way you're going to get it.

When we designed the Aurora 16 and Aurora 8 AD/DA converters, we had a simple goal. Converters with clear, pristine, open sound and no coloration or artifacts. We wanted you to be able to get the identical audio out of Aurora converters that you put into them. From what we have heard from you and the major magazines, that's what we have accomplished.

Aurora includes no compression, no limiting, no equalization. No coloration. Why?

First, if you want or need coloration, you already have that handled. You have carefully selected your signal processing, which you can add to the signal chain at any point you like, or leave it out altogether.

Second, how would we know what processing would fit your needs and your tastes? We could nail it for our tastes and for a few of our friends, and completely miss what you want.

Third, we wanted to build the best possible AD/DA converter – period, not a converter/signal processor/preamp/exciter. Adding these functions would add the price of Aurora, for features you may not want or need.

Instead we packed in features such as our exclusive SynchroLock™ word clock, LSlot expansion port for optional interfaces, and exclusive remote control options into a single rack space format. And, most importantly, world-class audio quality that rivals converters costing many times the price.

Aurora 8 and Aurora 16 from Lynx Studio Technology. We'll handle the conversion and leave the coloring up to you.

Want more information? Go to: www.lynxstudio.com/aurora1

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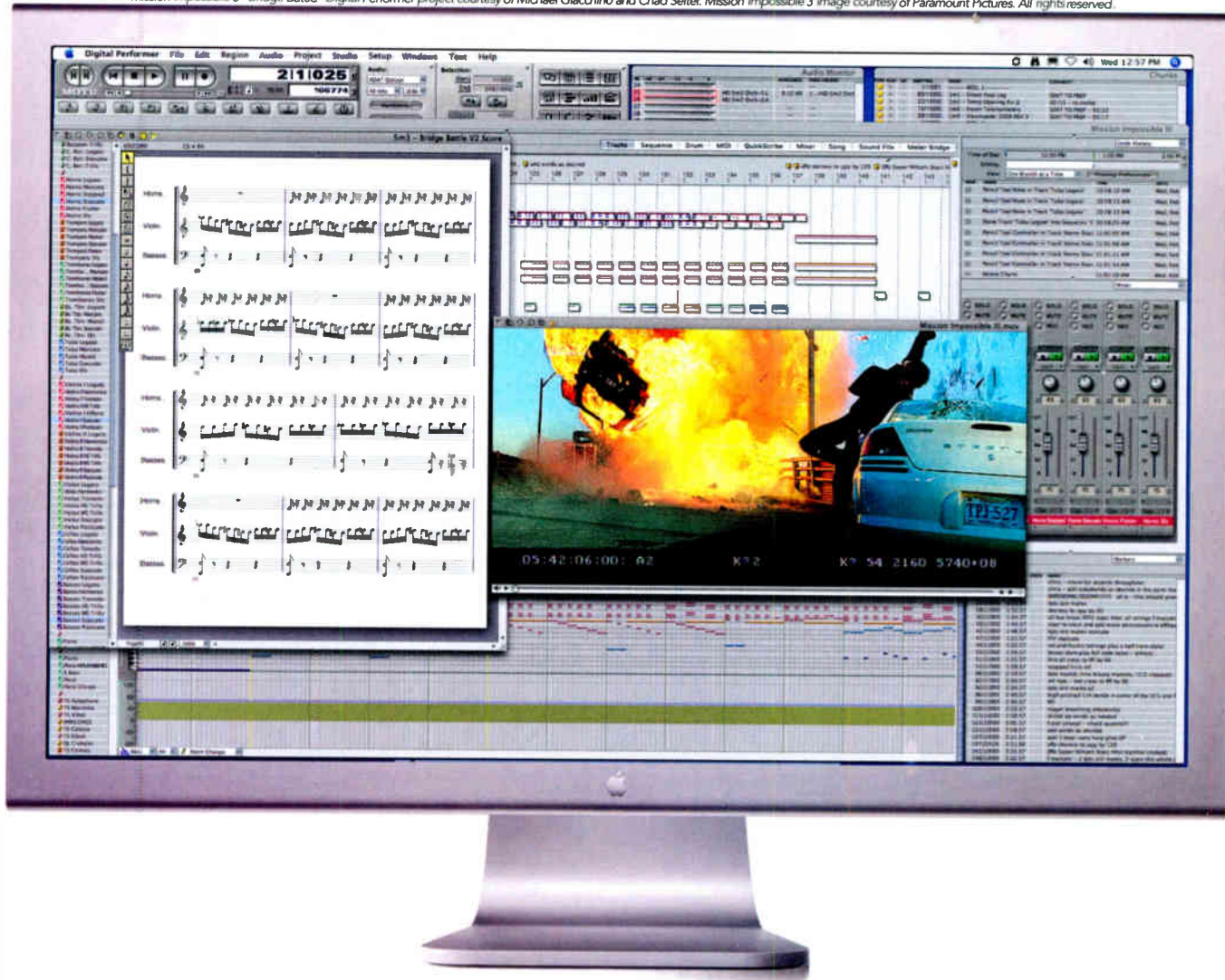
Digital Performer scores **the impossible**

"Digital Performer is a huge part of my scoring process. I do all of my writing in DP. At the Mission Impossible 3 sessions, we had a laptop running DP and a MOTU Traveler to handle prelays and record live stereo stems of Dan Wallin's mix from the main board. DP also drove video to the main monitors and synced the entire 100+ piece orchestra, so that everything was perfectly in line with my composition sequence. I count on DP every day. It performs flawlessly."



— Michael Giacchino
Composer
Original Music for M:i:3

Mission Impossible 3 "Bridge Battle" Digital Performer project courtesy of Michael Giacchino and Chad Seiter. Mission Impossible 3 image courtesy of Paramount Pictures. All rights reserved



MOTU
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