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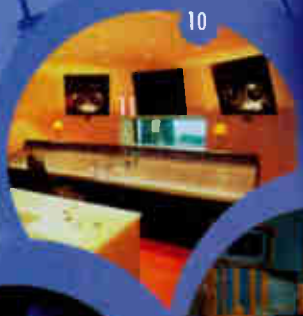
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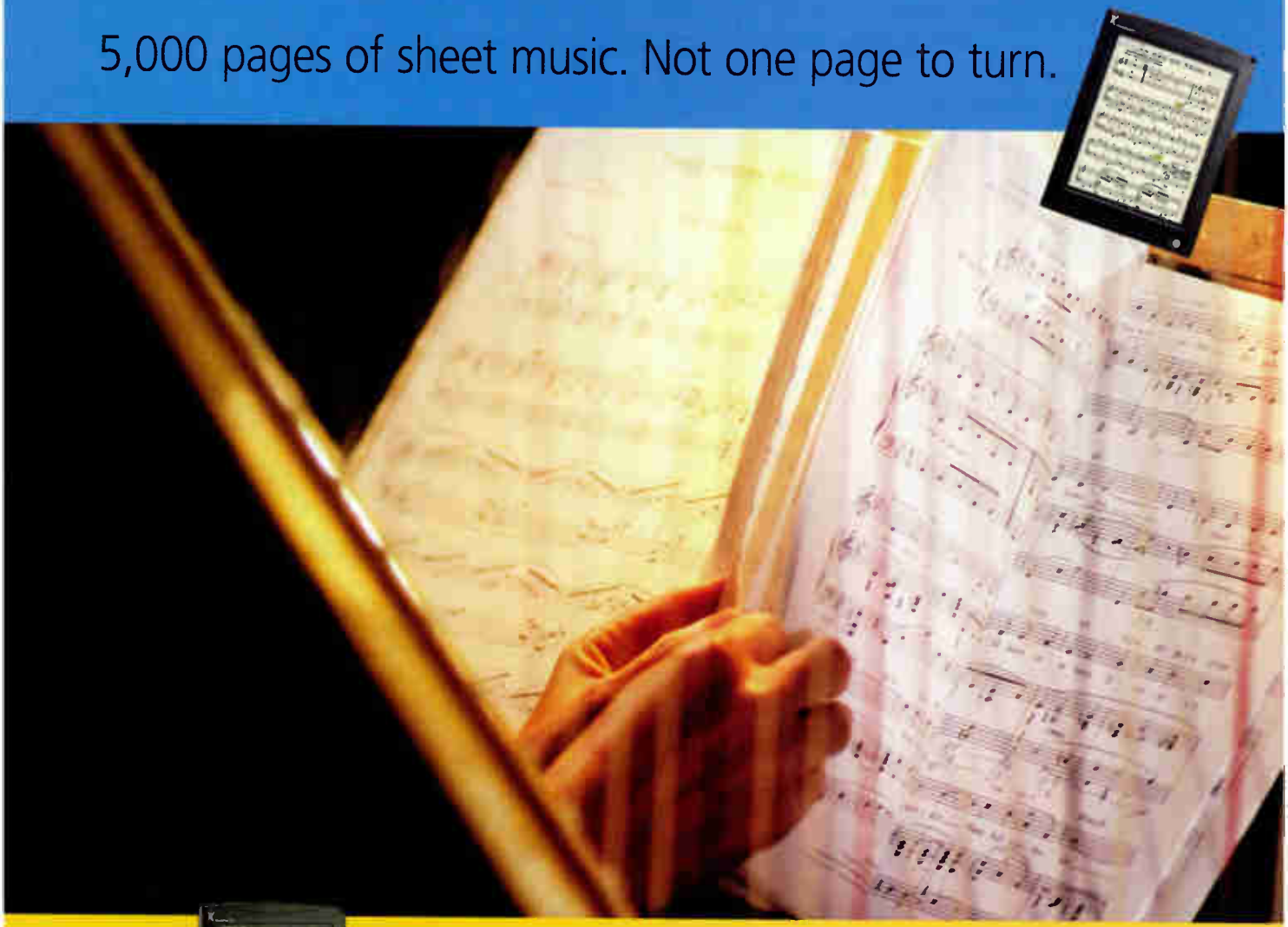

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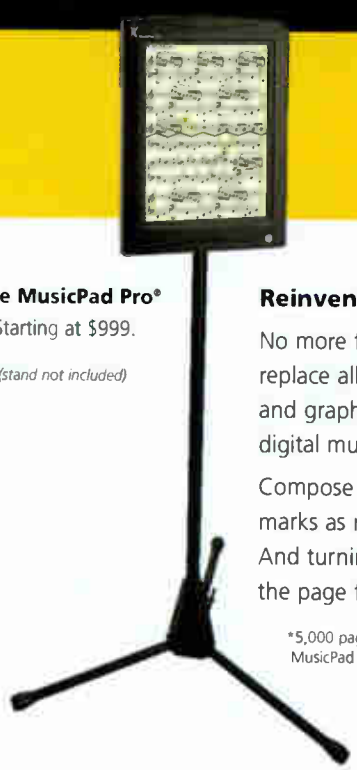

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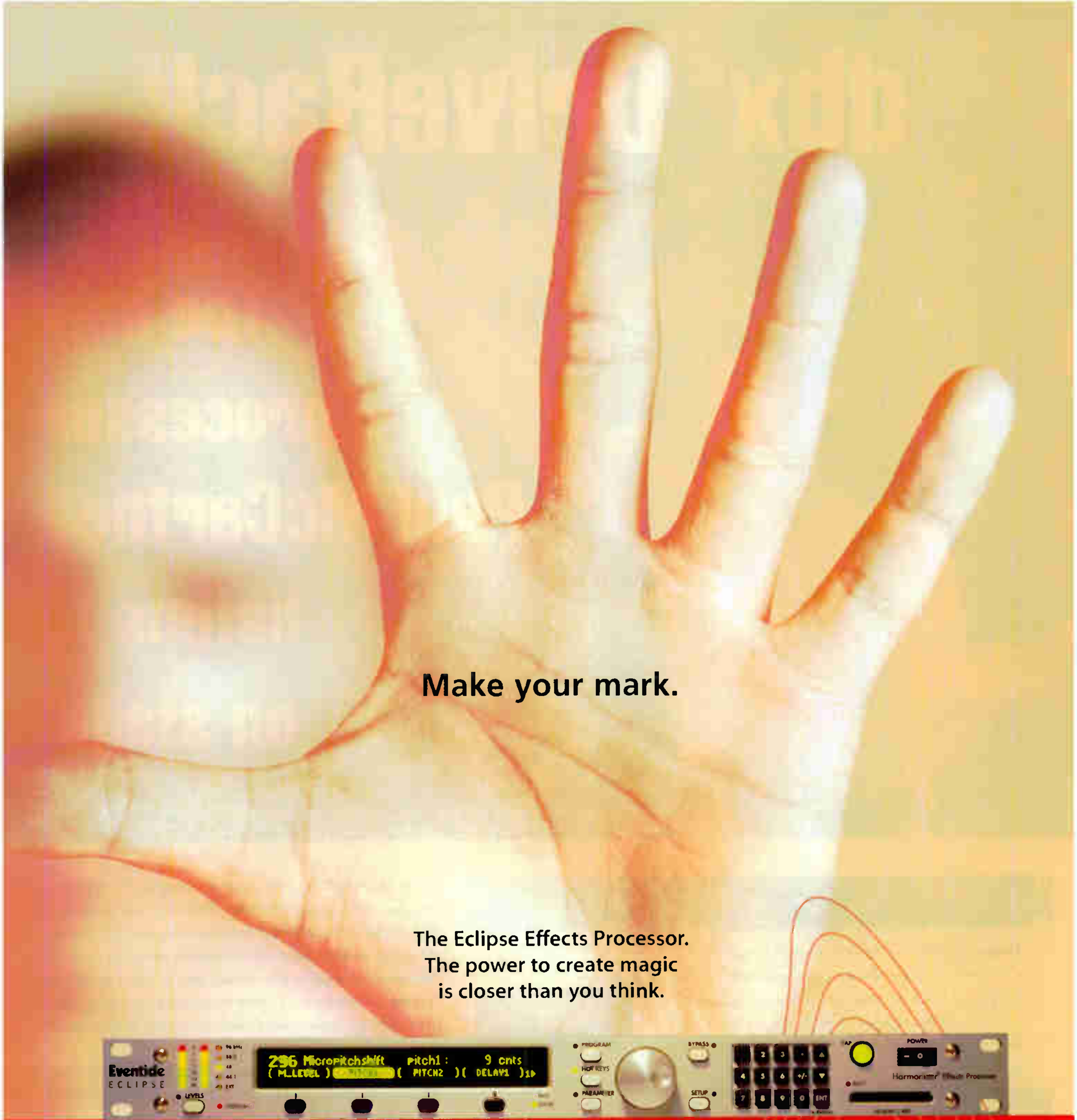

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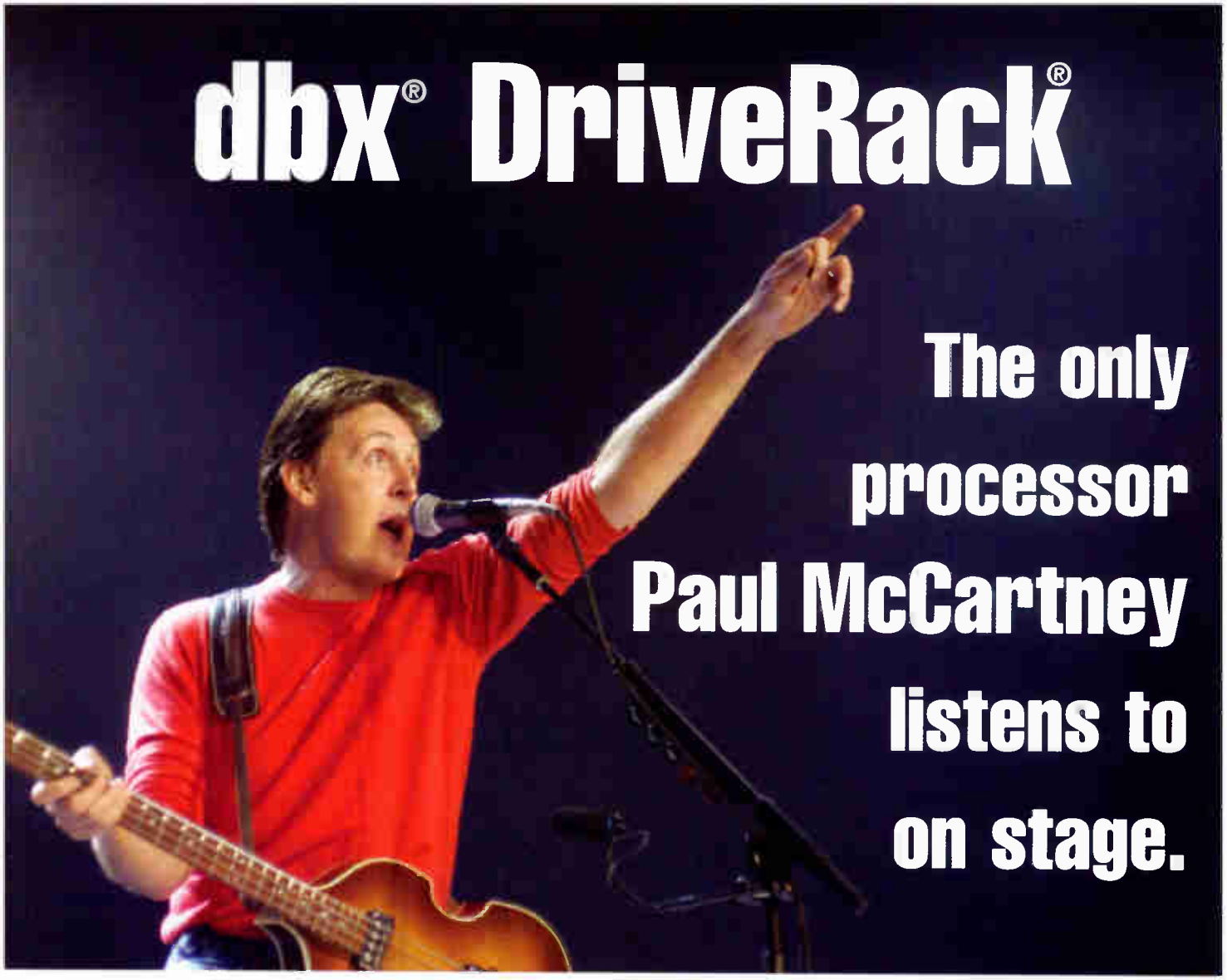

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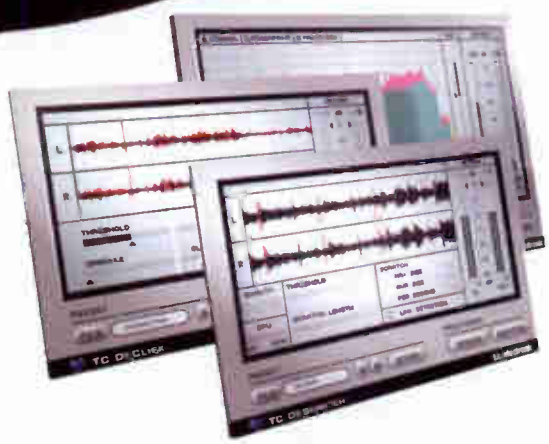

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MIX
PROFESSIONAL AUDIO AND MUSIC PRODUCTION
October 2003, VOLUME 27, NUMBER 11

On the Cover: Studio D, at Sound on Sound, was designed by Larry Swist and features a Pro Tools|HD3 system, Pro Control, custom Swist mains, Genelec 1031As and Yamaha NS-10 monitoring. See page 22. **Photo:** Robert Wolsch.

features

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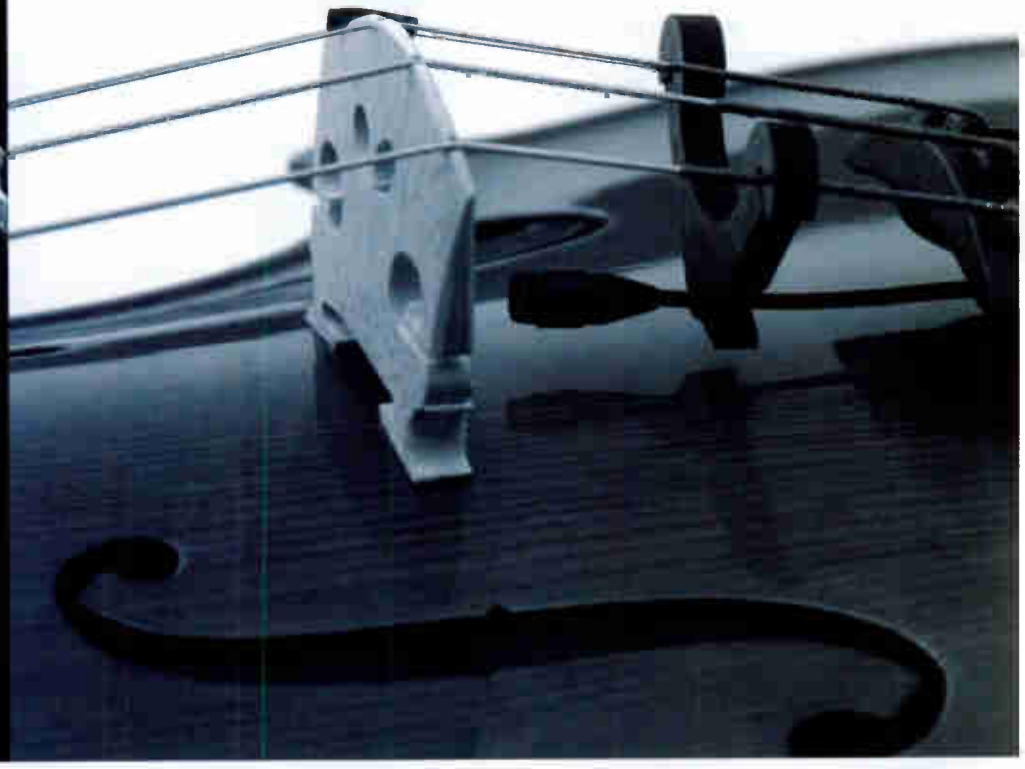

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MIX ONLINE EXTRAS

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

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departments

Pro, Semi-Pro and Quasi-Pro

We're all in an industry called "Professional Audio," but, unfortunately, it ain't always what it seems. Along the way, what was pro audio became entangled in a lot of other "pros," such as semi-pro, demi-pro, hemi-pro and quasi-pro.

Sometimes, the blurring of lines makes a lot of sense, like when exotic, audiophile-consumer amplifiers edge their way into control rooms, or when you find yourself occasionally patching a Mutron Bi-phase pedal into a Neve console to create a certain effect. Besides keeping our adapter drawers well stocked, the increasing amount of "non-pro" gear in our lives requires some creative interfacing in the areas of impedance and level matching. It's enough to make one wistful for the good old days of the all-XLR/+4dBu environment. Any mastering engineer who's attempted to optimize somebody's home-brew mix will yearn for that bygone era when "engineers" understood gain structure, compression, equalization and what those funny lights on the meters actually mean.

On the product side, with shifting customer segments and a dwindling "pro" market, companies specializing in professional audio gear—such as Avalon, DPA, Manley, Meyer and Neumann—are facing increased competition from the semi-pro (and even quasi-pro) side. Meanwhile, computer companies have been buying audio software firms at a rapid clip (see "Who Owns My DAW?", page 40), often to use just part of the existing technology and simply abandoning the rest of that company's line. We're a small segment of the audio production market, and pro interests don't necessarily come first during such acquisitions.

Can pro audio exist in a prosumer world? Absolutely, but with some caveats: Keep an eye on wall warts—the anathema of low-cost gear—as cheap transformers powered up 24/7 (even when not in use) represent a potential fire hazard and should be powered down when your gear's offline. Also, you get what you pay for, so if reliability is an issue, then spend a little more and get something solid, especially with products such as mics or preamps that you may be using 10 or 20 years from now. Here, a couple extra bucks spent for pro gear today could provide an excellent return for years to come.

In our rush to develop pro audio into an "industry," we've developed job titles such as "recording engineer" and "sound reinforcement engineer." Perhaps we should return to the unfortunately now-archaic term "soundman" (or its modern equivalent, "sound-person"), as we exist in one of the few disciplines where anyone with $20 can drop by a Kinko's and print up cards professing themself as an "engineer," with no training or certification. In other industries, with jobs such as "structural engineer" or even "locomotive engineer," unqualified persons using an "engineer" title could be subject to civil and/or criminal action! Who's to blame when some well-meaning but clueless member of a local church (who knows audio, having once been "in a band") saves some money by installing a music store sound system with unsafe rigging, hanging improper cabinets over the congregation?

Is there any relief in sight? Sure, at AES, a show just for us. At this month's convention in New York, you'll actually be surrounded by real products made for pro applications and real pros talking about the craft. Any true audio professional should feel right at home.

See you there!

George Petersen
Editorial Director

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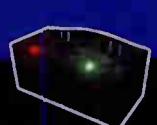

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Letters to Mix

REVENGE OF THE ONE-EARED MONSTER

I was reading Paul Lehrman's July column and couldn't help but laugh out loud. I'd love to be able to say that his experience was uncommon, but I've heard many horror stories about dub houses. I mixed a sitcom pilot episode last month that was being produced by a local comedian. It was a Pro Tools mix, as well, mastered to DV. The guy insisted on using this dub house in New York. We sent instructions that it was a stereo mixed master, etc. The tapes came back overmodulated and mixed to mono, with a 7.5-second audio dropout 26 minutes into the program. Sounded like someone had pulled the audio patch cords for a second and then replaced them. I can probably count on one hand the number of times during the past six years that I have seen any kind of documentation regarding the audio.

Michael Verrette
Composer/sound designer
The Troupe

ONE-EARED MONSTER: THE PREQUEL

I read with interest Paul Lehrman's anguished "Insider Audio" column ("The One-Eared Monster," July 2003) about the perils of making VHS dubs.

Paul brought up a number of good points, but he also made several major mistakes of his own:

1) Don't ever go for the cheapest bidder on a project. Often, when you spend a little more money (and do it carefully), you get better work.

2) Don't leave something important like VHS dubs to an out-of-town dub house and let them do it without any quality control. If it's that important, then I say go there and supervise the work yourself. Be present in the room when the dubs are happening so that you can keep an eye on what's going on.

3) I question your overall levels, particularly for a VHS release. The rule of thumb in the broadcast community is for an operating level at -20 (on a digital scale), with peaks not exceeding -10. This is typically done to avoid creating problems with analog satellite transmissions. In reality, it's not much of a problem anymore, because so many facilities routinely use peak limiting, which explains why so many TV projects sound "squashed." That said, I believe you need a little bit of compression for VHS, simply because a superwide dynamic range isn't always desirable for a program that is viewed on TV.

4) You also commented that MiniDV decks don't have separate digital audio inputs. Actually, some pro decks do, particularly some of the industrial JVCs and the dual-format Sony DVCam decks, which can record standard DV, as well. The reality is, you would've been better off taking your Beta SP master, dubbing it straight across to DigiBeta and then laying back your final Pro Tools audio to the DigiBeta. That way, you would've had zero loss in picture quality, no additional compression for audio or video, and uncompromised audio quality.

5) Instead of going through all of this pain and expense to make substandard VHS tapes, why not send out DVDs? I bet you could have rented a decent stand-alone pro Pioneer DVD recorder for a few hundred bucks and then made your own discs, one at a time, in a few days. I know firms that can knock out 100 DVDs overnight for just a few dollars each.

Marc Wielage
Studio Blue Ltd.
Chatsworth, Calif.

Q: WHAT CAN SAVE THE MUSIC INDUSTRY?
A: MORAL MAJORITY

Though I should start by saying that it's probably too late. MTV has been the end of intelligent music, regardless of style, for some time. When you have to *watch* your music (and you're not reading a score), it's too late.

The solution is to get parents and schools to examine and teach music history so that we can learn where we came from, identify what people are listening to and finally understand (and admit) how much music has to do with American morality. Perhaps if listeners knew, they would demand more from their "artists," who would, in turn, make more stimulating music.

It is the industry's fault for taking advantage of our youth. They are musical pimps. What you can do today is turn a loved one onto something musically different. And support live, local music.

Tim Ornato
Musician

TOTALLY RADIAL

I was reading the article on Justin Niebank ("Mix Masters," July 2003) and was pleased to learn that he uses the Radial JD7 Injector on his latest recording. In your article, this was credited to the guys at Radikal Technologies. This should have been caught by your editorial staff. We are Radial Engineering. We dwell in the frozen northern land of Canada. We build direct boxes, snake systems, funky tube distortion pedals and the Radial JD7 Injector.

Peter L. Janis
President
Radial Engineering

IF YOU LOVE SOMETHING, SET IT FREE...

If radio had just been invented this year, the record companies would be crying, "This will put us out of business! People will just record the music they want off of their radios and stop buying our products. How do we compete with free?"

Why can't the record companies make money in the same way Nabster [sic] and others have become multimillion-dollar companies? They could set up a Website and *give the %$#&ing music away*. Let them supplement their supposed losses of CD sales by selling advertising space on their Websites. This is a time when billions of advertising dollars are being removed from TV advertising and retargeted toward Web surfers. Some of these same companies produce TV shows that are paid for by advertisers' money, and radio airplay (paid for by advertisers) has been generating income for years.

And what will become of CD sales? Remember those things called books? They are still sold by the millions. Why aren't people scanning books and trading them on the Net? Answer: People want stuff—something to hold, artwork and information on the artist. You can't wrap an MP3 and give it to someone as a holiday gift. The record executives need to start listening to their customers (the ones who pay the bills) and stop listening to their lawyers (the ones trying to justify their jobs).

Kip Williams
Abaya Productions

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KAS REOPENS KAS MUSIC & SOUND

Opening its doors on September 20, 1920, as the Famous Players/Lasky, Kaufman Astoria Studios (as it is known now) later went on to be called Paramount Studios, where Rudolph Valentino, the Marx Brothers and Gloria Swanson made names for themselves. Today, it has reopened its doors as KAS Music & Sound and is under the direction of Joe Castellon (pictured). This high-tech recording studio has hosted a range of musicians such as Placido Domingo, Destiny's Child, Tony Bennett, Betty Buckley, Wynton Marsalis and many others.

The new studio will focus on providing independent producers with music for their films: A staff of composers and arrangers are on hand to score the film and record it for producers who do not have the resources to do it on their own. Other recent updates include a climate-controlled storage area to keep tapes and hard drives at ideal temperature conditions, and a studio for dialog replacements and voice-over work.

The road from Valentino to Castellon was a bit winding. In 1942, the property was transferred to the U.S. Army and functioned under the name Signal Corps Pictorial Center; during this time, the army produced films for soldiers about survival on the battlefront, hygiene in the tropics and musical features to keep the troops entertained. In 1972, when the Army declared the site "surplus property," the studio was saved by a nonprofit organization and designated a landmark by the U.S. Department of the Interior. Ten years later, George Kaufman (in a partnership with Alan King and Johnny Carson) obtained the studio lease and renamed it Kaufman Astoria Studios. Continuing with its rich history, in 2001, KAS acquired Master Sound, a recording studio housed in the complex since 1995.

PHOTO: KAUFMAN ASTORIA STUDIOS

For more, visit www.KaufmanAstoria.com.

DIGIDESIGN "ACCEL"ERATION
NEW PCI CARD BOOSTS PRO TOOLS

Digidesign (www.digidesign.com) announced the release of the HD Accel PCI card for Pro Tools|HD. The new card delivers nearly twice the DSP power of existing HD cards and offers 50% higher voice counts across all sample rates (44.1 to 192 kHz). Accel may be added to any Pro Tools|HD system and will provide exclusive access to new, HD Accel-optimized plug-ins and features, including Digidesign's new Impact mix bus compressor TDM plug-in (available immediately). Accel integrates with the entire line of Pro Tools|HD audio interfaces and peripherals, so all previous Digidesign hardware investments remain viable. Pro Tools TDM 6.2 software, now shipping with all Pro Tools|HD systems, is the first release to support the new HD Accel cards. See Digidesign's Website for info on its special limited-time Accel exchange/upgrade program, which ends December 20, 2003. MSRP for Pro Tools|HD 2 Accel (Core and one Accel Process card) is $10,995 and Pro Tools|HD 3 Accel (Core and two HD Accel Process cards) is $13,995.

DOLBY LABORATORIES
DOCUMENTS 5.1 PRODUCTION TECHNIQUES

Now available, Dolby Laboratories' primer, Dolby 5.1-Channel Music Production Guidelines, on creating music in 5.1 channels is available as a free PDF download at www.dolby.com/tech/Multichannel_Music_Mixing.pdf. The publication covers a range of topics such as proper equipment and speaker placement, calibration for proper monitoring, metadata planning and implementation, program-interchange guidelines and more. Mix and mastering data sheet templates for 5.1-channel projects are also included.

Also in the 5.1 realm, this coming football season's pro and college games will be broadcast in Dolby Digital 5.1 surround sound, including ABC's *Monday Night Football*. ABC, FOX and other networks will also broadcast select regular season Sunday and post-season games in 5.1.

LIZ PHAIR PERFORMS AT THE VILLAGE

Liz Phair and her band (pictured) were recently in The Village's (West L.A.) Studio A, performing live for an on-air broadcast for Los Angeles radio station KCRW's *Morning Becomes Eclectic* program. Phair and company were supporting their latest self-titled CD. KCRW's Ariana Morgenstern produced, while The Village's Jason Wormer handled engineering; Greg Imler assisted him.

COMPILED BY SARAH BENZULY

PAMA UNITES PRO AUDIO COMMUNITY

By Paul Gallo

The professional audio community is not the neat, tidy industry it once was. Today, producers, engineers, musicians and manufacturers must deal with rapidly evolving economies, world politics and the dawning of a new age in technology.

Leadership, then, becomes a critical function, and that is where PAMA, the Professional Audio Manufacturer's Alliance, steps forward. PAMA is not a new trade organization; our industry already has the AES. PAMA is not strictly a lobbying organization, though we will lobby on members' behalf. PAMA represents the leaders in innovative design, professional manufacturing and marketing of audio products today.

Paul Gallo

PAMA members feel a responsibility to the customers to always provide the highest performance value so that customers can achieve their most ambitious creative goals. This is especially important today, as professional customers are flooded with product choices, and not all of them are good. In fact, many are not.

As a practical matter, PAMA members will focus on an industry in transition, identifying new product, market and distribution opportunities that can better serve pro audio customers, especially those who are increasingly working in nontraditional environments.

The alliance's mission includes sponsoring executive-level summits and alliance business meetings tied to existing events; monitoring what's going on internally in the industry and reporting on external developments via a Web-based executive-level digest of news/trends; building connections within the industry on common issues; and lobbying to enhance relations with the financial and legal communities and the public sector, providing input and support on standards, education, market intelligence and other industry initiatives, as needed.

In short, this forward-thinking group of manufacturers will bring to bear its investment in the quality brands that support the audio community so that we all, together, may face the challenge of change and navigate a true course to a successful future.

PAMA members include AKG Acoustics, Allen & Heath USA, Altec-Lansing, Audio-Technica, Califone, DiGiCo, Dolby Labs, DTS, Fairlight, Focusrite, Group One, Harman Pro Group, Klotz Digital, Manley Labs, Meyer Sound, Neutrik, QSC, Sennheiser, Shure, Sony, Steinberg North America, Tascam, Telex, Transamerica Audio Group and Yamaha.

Paul Gallo is the executive director of PAMA. Contact him at pgallo@pamalliance.org.

FORMER DIGI EMPLOYEES OPEN MINDLAB

The Mindlab Learning Center (www.themindlab.us) offers Pro Tools software and hardware training, Digidesign Operator and Expert Certifications, and courses on specific audio plug-ins for Pro Tools and Master Classes with recording engineers, composers and sound designers who use Pro Tools in their production work.

The training facility offers two rooms: a Pro Tools 100-level lecture room, equipped with state-of-the-art Mac and Windows XP computers and seating for up to 12 students; and an Advanced Curriculum room, featuring four TDM systems equipped with a 32-fader Pro Control with EditPack, and three Control 24 units for hands-on work with Pro Tools 200/300-level exercises.

"The response leading up to our opening has been tremendous," said Russell Bond, president of Mindlab and the new owner of the recording studio, The Annex, where the school is located (Menlo Park, Calif.). "We've had people asking for many levels of training. The first folks that have gone through the courses are very pleased with their new knowledge of Pro Tools."

Former hardware product manager for Digidesign, Robert Campbell is now Mindlab's general manager and head instructor. "After years of working on the development teams for Pro Tools|HD and Digi 002, I wanted to shift my focus from creating to teaching in order to show people how to maximize the potential of Pro Tools," said Campbell. Other Mindlab instructors include longtime Digidesign employees Tom Dambly, curriculum developer; Mark Kirchner, post-production director; and Tom Murphy, Internet audio technologies.

TAKING REFUGE IN THE WAREHOUSE

Canadian recording artist/producer Matthew Lien is currently at Bryan Adams' Warehouse Studio in Vancouver, BC, recording *Arctic Refuge*. Engineer Michael Harris and Western regional manager for the Sony SACD Project, Lon Neuman, will mix the project to stereo and 5.1 DSD formats.

PHOTO: WHISPERING WILLOWS ECORDS

Engineer Michael Harris (left) and artist/producer Matthew Lien lean back against the Warehouse Studio's Neve console.

ON THE MOVE

Who: Ron Streicher, president-elect of the AES

Main Responsibilities: to provide a "theme" or "agenda" to the various standing committees and the Board of Governors for the society's activities for the coming year. One of my primary goals will be to establish a "Speakers Bureau" to assist local sections in securing qualified and interesting people to present meetings to their members and guests.

Previous Lives:

- 1972-present, owner/operator of Pacific Audio-Visual Enterprises (Pasadena, Calif.)
- 1998-present, audio production member at Aspen Music Festival and School
- 1988-present, staff member at Audio Recording Institute

The one profession that I would like to try other than my own would be... a shoe salesman, because the job requires no lifting of heavy equipment, no expensive technical equipment inventory and no problems to take home—or an orchestra/opera conductor!

The one piece of advice that I would give to students entering this business would be... to be patient. No one starts at the top. Look for a unique approach or an unusual entry, and one in a "smaller market."

The last great movie I saw was... *Chicago*.

The moment I knew I was in the right profession was when... Recording musical events and radio plays has always been the "right fit" for me.

Currently in my CD changer: Anna Russell's first CD, featuring her unique interpretations of Gilbert and Sullivan operettas and Wagner's "Ring."

When I'm not at work, you can find me... at the theater or a concert, at dinner with friends or a Sapphire Group meeting—or at an AES meeting or convention.

OLYMPIC STUDIOS EXPANDS FACILITY

Producers Stephen Street (Blur, The Smiths/Morrissey, The Cranberries) and Cenzo Townshend (U2, Skin, Lightning Seeds) have moved into London-based Olympic Studio's (www.olympicstudios.co.uk) new programming/pre-production room, which was part of a recent studio expansion. Working on an Audient desk and recording to RADAR and Pro Tools|HD, the two producers have also brought in a plethora of vintage outboard gear.

The expansion also included an overdub booth for vocals and guitars, which is adjacent to the programming room, and "The Green Room," a smaller studio that is available for lease.

INDUSTRY NEWS

Courtney Spencer

Courtney Spencer joins **Dale Pro Audio** (New York City) as its COO...Jumping over from AMS Neve, **Tony Langley** is **Euphonix**'s (Palo Alto, CA) new VP of broadcast marketing; he will be based out of the company's New York sales and service office...First joining **M-Audio** (Arcadia, CA) in March 2002, **Isabelle Alran** has been promoted to general manager for the company's UK office, which is located just north of London...Overseeing all contracting and other fixed-application sales across the U.S., **Jon Sager** has been promoted to **QSC**'s (Costa Mesa, CA) manager of installed sound...With 104 online radio streams to manage, **Joel Salowitz** is **SIRIUS**' (New York City) new VP of programming operations...Mixer/engineer **Randall C. Monday** (*Xena: The Warrior Princess, Hercules: The Legendary Journeys, Cleopatra 2525, Brotherhood of the Wolf*) has joined **Yessian**'s flagship facility in Detroit...**Lesa Kinney** has been promoted to **Furman Sound**'s (Petaluma, CA) international sales manager...Spending the past two years with Steinberg as national sales manager, **John Devins** joins **Cerwin-Vega** (Simi Valley, CA) as the national sales and marketing manager for professional products...After six-and-a-half years away from the company, **Richie Rowley** rejoins **BSS Audio** (Hertfordshire, England) as regional sales manager for Europe...**John Garbutt** joins **Inter-M Americas Inc.** (Chester, PA) in the development manager position...Adding to its sound reinforcement and installed sound division, **Mackie** (Woodinville, WA) brings in **Dave Hartley**, northern area sales manager in the UK office...The new sales manager for **Meyer Sound Belux**, the office responsible for sales and support in Belgium and Luxembourg, is **Guy Van Jole**. In other company news, **Antonio Alvarado** has been appointed to the newly created position of sales manager for the Caribbean, and Central and South Americas. Alvarado will be based out of Miami and will work under the aegis of Meyer Sound Mexico...**Christopher Payne**, a founding member of **Tekserve**'s (New York City) audio team, has been named the company's audio sales director.

Tony Langley

FORGING A NEW LOOK

WSDG REDESIGNS STUDIO/REPLICATION PLANT

Forge Recording (Oreland, Pa.; www.forgerecording.com) has moved to a state-of-the-art, Walters-Storyk Design Group-designed complex. Company owner Sheldon Granor reported that the new facility boasts a 400-square-foot, acoustically accurate, floating control room outfitted with a Yamaha DM2000 digital console and Genelec 1038A speakers; a 900-square-foot live room (including two iso booths) can hold a 60-member choir.

Forge Recording offers recording, overdubbing, mixing and mastering services, as well as graphic design and replication in a wide range of formats. The WSDG team included co-principal/interior designer Beth Walters, partner/senior designer Scott Yates and design associate Alex Dixey.

Neumann Invents the Microphone

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Be sure to pick up a copy of the John Pizzarelli Trio's new Telarc release "Live At Birdland" and hear Neumann's Solution-D for yourself.

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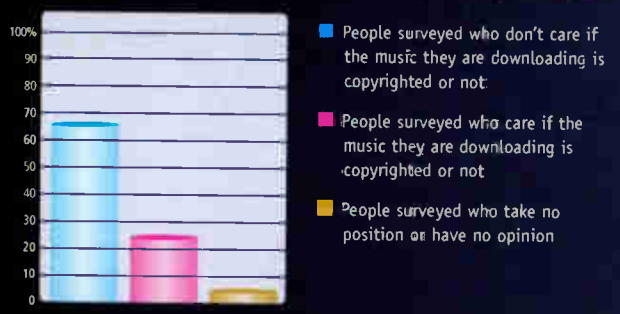
NOTES FROM THE NET

ARE YOU WANTED?

The Electronic Frontier Foundation has set up an online "Subpoena Database" where you can enter in a username or IP address and find out if you have been subpoenaed by the RIAA for illegal file sharing. The information, according to the EFF, is drawn from the Washington, D.C., District Court's publicly available PACER database and is updated when that database is updated. www.eff.org/IP/P2P/riaasubpoenas

35 MILLION ON THE NET—Two-Thirds Don't Care About Copyright



In a recent survey released by the nonprofit group Pew Internet & American Life Project, data gathered from March 2003 to May 2003, 67% of those surveyed said that they do not care whether the music they are downloading is copyrighted or not. A little over a quarter of these downloaders said that they do care, and 6% said that they don't have a position or know enough about the issue. These numbers are up 6% from last published data in August 2000.

While downloading seems to be the most prevalent activity for those surveyed, file sharing was not: Only 21% of current Internet users said that they share files from their computers. Young adults continue to dominate downloading: More than half of all Internet users, according to the findings, between the ages of 18 and 29 have downloaded music, and almost 10% of those in that age group are online downloading music on any given day. Americans between the ages 30 and 49 are also downloading regularly, with more than a quarter of Internet users in that age group reporting that they have downloaded music to their computers.

Visit www.pewinternet.org to find out more.

GO PHISH ONLINE

At livephish.com, Phish aficionados can download the band's concerts within two days of the concert—getting three-plus hours of music from the sound board—for $9.95 (MP3) or $12.95 (higher-fidelity FLAC files, Mac OS X-only).

In addition to the live shows, downloaders can obtain a free copy of the group's soundcheck and a late-night jam session that took place atop an air traffic control tower.

But Phish isn't the only band raking in the online bucks: Pearl Jam offers exclusive MP3 versions of its concerts at pearljambootlegs.com, as well as The Who, String Cheese Incident and Ween (ween.com).

STORMING UP NEW BUSINESS

Pictured, from left, are Bruce Black, design/install engineer; Gary Blufer, head of media operations; and Carl Ware, chief audio engineer

Academy Award™-winning sound editorial house SoundStorm (www.soundstorm.com) has opened a new sound transfer room. Featuring Pro Tools|HD and Fairlight DAWs, a wide array of digital and analog tape machines, digital and analog video and magnetic film, SoundStorm is able to transfer material between virtually any format for feature film, television, game and commercial editorial work.

Motion picture post-production sound engineer Bruce Black (owner of pro audio hardware company, www.blackaudio.com, as well as work for Skywalker Sound, Dreamworks, Twentieth Century Fox and many others) helmed the project.

CORRECTIONS

In the August *Mix*, Larry Cumings was misquoted regarding the name of the monitor engineer he works with at the Strawberry Music Festival. The correct name is Tony Wilson.

On the bottom of p. 16 (August 2003) is a photo with an incorrect caption. The first person (from left) is drummer Dave Weckl and not Bernie Kirsch.

Also, The Clubhouse is located in Rhinebeck, N.Y. (not Germantown).

Mix regrets these errors.

Send Your "Current" News to Sarah Benzuly at sbenzuly@primediabusiness.com.

Sound on Sound

By David Weiss


PHOTO: ROBERT WOLSCH

Dave Amlen, left, owner, and Chris Bubacz, COO, in the back of Studio D at Sound on Sound

Even cornerstones of the New York City studio scene have to make adjustments to their own foundations from time to time. The big tweak at Sound on Sound, on West 45th Street, is the addition of Studio D, a brand-new space built with the acoustics and care of an SSL room, but fully dedicated to a Digidesign Pro Tools | HD3 system.

The new room has joined Sound on Sound's Studios A, B and C, outfitted with two SSL 9000 J consoles and a Sony Oxford, respectively, not necessarily because president Dave Amlen has a burning passion for Pro Tools, but because he knows that many of his best customers do. "Everyone says, 'What's the secret to business?'" Amlen remarks. "The secret is listening to what your clients want: not giving them what *you* want, but what they want. If you can do that, it levels the playing field a lot more."

For Sound on Sound, its full-blown Pro Tools environment—which they say marks the first time that a major studio has built a room from the ground up dedicated to maximizing Pro Tools | HD—is a proactive answer to some record companies' belief that Pro Tools can be used by anyone, anywhere, at any budget to produce a quality disc. "These are real studios, not just offices that people threw Pro Tools into," states Amlen. "They're designed and maintained by our staff. They have plug-ins, peripheral outboard gear, monitoring that's accurate, client services—everything a client can think of. Yes, it will cost more than working in someone's home, but we also didn't have to shell out large amounts for a console and tape machines. There's a cost savings, and that gets shared with our clients. The goal was to have a professional, acoustically designed environment where, to a client coming in, the difference between it and our primary rooms would strictly be the equipment. It's a real room."

Designed by Larry Swist of Lawrence P. Swist Designs (LPS), the inviting 19x18-foot control room, affixed to a 9x11-foot booth, houses a Pro Tools | HD3 system with four DSP process cards and features Pro Control with 24 faders and Editpack for surround panning and mixing. Video capture and an eye-grabbing 42-inch plasma screen make synching to picture convenient.

"One thing that gave us an advantage is that the big control surface [of a large-frame desk] gets in the way of the sound," Amlen says. "In a Pro Tools room, you don't have a huge console getting in the way of everything."

The approach to monitoring was to provide complete consistency with the rest of the facility, as well as the most bang for the buck, using Yamaha NS-10s, Genelec 1031As and custom LPS Designs main monitors with subwoofers, loaded with TAD and JBL components. "We have NS-10s and Genelecs everywhere; we wanted that in Studio D so the client doesn't have to relearn the sound of the monitors," explains Amlen. "The one thing we did here to appease the R&B crowd—because they need a lot of bottom—was Larry designed something that would work, instead of spending a lot on an Augspurger system. It has a lot of bottom, and it's great for basic tracking, so in mixing, you don't all of a sudden ask, 'Where did *this* come from?' Digital does not have the bass roll-off characteristics that analog tape has; if you don't know what's in your low-frequency range, you'll be very surprised in mastering or, worse yet, in the consumer realm."

The iso booth can comfortably fit a group of backup singers or a tag team of percussionists. It won't really hold a drum-set, however, which is perfectly fine with Amlen. "That's not the purpose of it. If you want to record live drums, go into Studio A or B," he says. "Each of our rooms has a purpose it excels in. Studio A is multipurpose, but it's optimized for larger tracking and mixing. Studio B is optimized for smaller tracking and mixing, and Studio C is optimized for mixing and surround. So Studio D filters into the main rooms. They do all this Pro Tools work but realize there are limitations, and when they see that there's an SSL room, it trickles down to some degree. That's been a benefit. Unfortunately, there's not a lot of artists with big budgets who can spend $2,500 a day, so you do what you've gotta do. This Pro Tools room is less than $1,000 a day."

It's all part of a business plan that Sound on Sound has studied and implemented since it opened. "Studio D will never compete with our main rooms; the idea was to supplement them," Amlen says. "You don't want to cannibalize your own business, so you ask, 'What's the hole?' The hole is people would come in and need high-end monitoring and outboard gear for mixing and live tracking, but for overdubs, they needed something more intimate. Now we have a soup-to-nuts equation." ■

David Weiss is Mix's New York editor.

STRAIGHT FROM THE MOUTHS OF PEOPLE WHO KNOW.

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~ Steve Parr
~ Sharon Rose

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BY STEPHEN ST.CROIX

Grab a Beer

The Results Are Here

Welcome back.

Last month, I told you something, but I don't really remember what, as it was three months ago for me, and I have been up in Alaska trying to clear 3,400-foot mountains at 3,415 feet in a tiny float plane. It turns out that you can do it, but it scuffs the paint on the pontoons pretty bad.

But I do remember that I promised real-world test results in the second installment of the in-ear story, so here goes.

Lets start off with the Hearos and get them the hell out of the way.

These things are so much smaller than either of the others that they don't really look like earphones at all. They are beautifully built, but use the most stupid wires imaginable: If you touch them at all or if they drag across your shirt, then a loud, horrible sound is transferred directly to your eardrums. The expensive model does this much more than the other. Pretty dumb.

Both models come with foam and silicone tips. Unfortunately, neither tip-type fit comfortably. In fact, they were by *far* the most uncomfortable, and actually hurt like hell after 15 minutes in my ears.

And audio quality? Both models had an excellent top end, but neither had *any* bottom end at all! None, nada. These things are tweeters. I hope I'm not being too subtle.

But the Hearos did the best job of blocking out outside sound. And I don't mean a little bit, but *a lot.* When I used the aggressive silicone earpieces that came with the super-duper audiophile version, I discovered that with proper insertion (this means shove them in until your brain bleeds and then back off 25 thou), they eliminated *all* outside noise. I think the blood helps to seal them.

As improbable as this sounds, they do seem to essentially render you deaf to outside sound. I used them on a very noisy flight from London to Madrid, and not only was I spared all engine sound—even during takeoff—but I heard nothing when the person sitting next to me talked right at me, nor when the flight attendant leaned over and yelled in my ear to take the earphones out for takeoff. And I missed all of those wonderful announcements; you know, the ones with 90% distortion and a 30dB peak at 2.1k. Wow!

These things definitely take first place for *stopping* sound. Now, if only they could *deliver* sound. But, alas, they can't. Do not buy this product.

BUT WAIT. YOU TOO CAN BE TOTALLY DEAF

As an aside, but maybe a useful one, this company offers an insanely wide selection of disposable foam earplugs, washable and re-usable foam earplugs and even silicone goo plugs. They have the most amazing range of stuff to shove in your ears that I have ever seen, with different amounts of rejection and even different curves! These are the best squishy plugs I have ever used. The wax that disposables are impregnated with is very important, as both its characteristics and amount dictate how small you can mash them. These got good goo.

They smoosh great and stay crushed long enough to make proper insertion a breeze. Then, they slowly expand to eventually block out the noise of any modern man's hectic life. They *are* amazing when it comes to keeping the world out. As they expand, you feel sort of like you are being quietly buried alive or maybe going under general anesthesia, and just when you think they must be done, they do another 6 dB. And each model is better than the last one. The highest-attenuation model is old-man hearing-aid pink and has little tabs to make removal a breeze. I will keep buying these indefinitely.

AND NOW THIS

Ah, but Ultimate Ears will gladly make you *custom*-molded *earplugs.* I chose blue for left and red for right so I could get it right under adverse emergency earplugging conditions, including times when I am wearing red/blue 3-D glasses. These plugs are very nice, fit perfectly and are, of course, washable.

AND NOW THIS, TOO

Future Sonics, on the other hand, has a very nice non-molded, one-size-fits-all, skinned-foam in-ear that sounds great, costs a fraction of the price of custom-molded units and ships immediately from stock. You roll up and squish the foam, shove them in and wait 15 seconds for them to expand and conform to your own twisted ear canal.

They have a monster low end similar to the custom units, but you can't change the LF curve as you can with the big ones. These are very nice, and they have a distinct advantage: You can try your buddy's out for a couple bucks' worth of replaceable foam seals, thereby eliminating the single most daunting obstacle in choosing custom in-ears: You can't friggin' try 'em out!

SO, WHAT ABOUT THE TWO HEAVYWEIGHTS?

First off, I must advise that neither company's offerings have a frequency response curve that you would want to show to your pet turtle, much less publish, but it doesn't really matter. Besides the normal onstage

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applications, these things are way cooler (both socially and *thermally*) on long flights than the giant Bose cans, even if they don't reject as much noise or sound as "hi-fi." On every trip, I am torn between packing a half-cubic foot of hi-fi or 1 cubic inch of stage-fi. The last three, I took in-ears.

They don't stick out of your ears, so you can recline and turn your head without earcups getting in the way. This is also nice when your mate does not share your desire to hear "Stairway to Heaven" in bed at 5 a.m.

Long-term comfort (and I mean long-time and long-term) is excellent for both systems. Eight times a month or so, I find myself in situations where I will cram a set of these things in my ears at 8 a.m. and take them out at 4 or 6 p.m. I have been doing this for many months now, and I can happily report that when fitted properly, you can do this without discomfort or ear canal agitation.

With that said, I should point out that the Ultimate Ears extend *much* further into your outer ear canal (roughly to your spinal cord) and look like they would kill you, but I don't really feel them. They go deeper in order to ensure a tight fit in an effort to preserve as much LF energy as possible.

Interestingly, neither product was actually "air-tight," and when queried, both companies responded with essentially the same rationale: "Nobody really wants them air-tight." They say that their customers don't like the feeling of pressure (or pain) that one can experience when inserting or removing air-tight items into their ears, and that they want to hear some of what is going on around them while performing. Both are valid points. These things go quite deeply into your ear canals, and pressure or vacuum changes could be significant if air-tight, to say the least.

But as some of my applications (extreme speed in open air without a helmet) require total isolation for the suppression of screaming wind noise, and because I personally prefer to perform with absolutely no live bleed-through in my mix, I pursued the point aggressively after I had a couple of months of experience with both systems and got answers.

Again, when prodded, both companies had answers, and again, they were remarkably similar. Future Sonics sells a sheet of thin silicone gel that you can cut into little strips and wrap around the part that you cram into your head. Thickness is controlled by how far you stretch the goo while you wrap it (very little additional size is needed to make a properly fitted system terrifyingly air-tight), while placement is trial-and-error. The goo lasts for many insertions; heat, sweat, physical violence and personal hygiene habits determine replacement schedule.

Ultimate Ears, on the other hand, told me to go to a drugstore and purchase a $2 box of Dental Wax, a goo primarily aimed at teens who are tired of their braces cutting their lips apart during timeless teen activities like getting to second base or hittin' the old bong. You put a bit of this stuff on, stick the thing in your ear, wait a minute or so while your brain's heat softens it, and then it conforms.

Both systems require some precautions and experience. I pull down on my earlobe while inserting the ear pieces to avoid sealing for most of the insertion, and then do the rest very slowly. The obvious sharp pain and onset of vertigo that

—CONTINUED ON PAGE 190

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BY PAUL D. LEHRMAN

Audio Products Go Wild!

The Stuff You Wish You Could See at AES

ILLUSTRATION: JOEL ELROD

It's AES time. Thousands of us will flock to the Javits Center to drink overpriced lukewarm coffee, eat three-day-old sandwiches, lose our voices from shouting over the din and try to figure out which way to jump so as to keep ahead of the competition. And if you wonder why all of the engineers in the booths look like they haven't slept for two weeks, it's because they haven't. They've been working around the clock trying to get their prototypes up and running for the show, or at least working well enough so no one can tell that production is actually still a year away.

But for those of us in the know—and that includes me, as I've been going to these things for more than 25 years (yes, I was there when the New York show was held at the Waldorf-Astoria)—the real action isn't on the floor, or even in the private demo rooms or high-priced hotel suites. It's in the corridors, the cheap motels and the alleyways where you will find the truly revolutionary products, from manufacturers too hip and too cheap to have an official presence at the show. And that's what this column is about: new products that you won't see at this month's AES, because they're simply too revolutionary for the general public. Like the products on the show floor these days, they break down almost entirely into two categories: control surfaces and software plug-ins.

It's too bad that Mackie wasn't audacious enough to trademark the words "user interface" and its attendant acronym, because we're about to see dozens of products that will piggyback on the popularity of its HUI and Baby HUI control surfaces. Most of these will be coming from an Indonesian company well-known for its poor-quality knockoffs of other companies' gear, and its first products, which will follow the tradition of being named after old comic-book characters, will be the "Donald's Nephews" line, comprising "LUI" and "DUI" (pending dismissal of the expected lawsuit by Disney).

WAVES

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LUI® is the Lazy Users Interface. It has but one physical control: a 2-inch-diameter, trackball-like thingie that can be placed on a flat surface, held in the lap, worn on the wrist or put in your pocket. It is accompanied by a 15-inch LCD screen equipped with an eyeball tracking system that determines which parameter you are looking at and assigns the controller accordingly. (If you want to operate more than one control at a time, sticking out your tongue acts like a Shift key.) A built-in speakerphone allows hands-free communication with producers, record company executives and tech support, and a voice-operated automatic dialer connects to local sushi and pizza suppliers (small delivery charge).

DUI® stands for, depending on your predilection, either Drunk or Drugged Users Interface. It's actually a deluxe version of the LUI and comes with cup and can holders, a self-extinguishing ashtray, and an optional mirrored surface and nasal cauterizer. The eyeball tracking system is supplemented with a brainwave interpreter, so the user doesn't even have to be conscious to have full use of the system. The speakerphone auto-dialer has an additional feature: It calls a cab at the end of each session. Another option is a miniature blood-analysis lab designed by a well-regarded government subcontractor; its results are admissible in most traffic courts.

Should these devices prove successful, reliable reports say that there are three more models already in this company's development pipeline: SUI™ is a special workstation controller that will be sold exclusively to record companies. It will operate in conjunction with the Watermarker plug-in (described below) to prepare legal cases against artists and consumers suspected of copyright infringement via sampling, downloading, recording streams or just humming something that they heard on the radio. It promises to be very expensive (most likely charging by the hour) and very mean.

> KABLUI, the KAmikaze BorderLine User Interface, is brought online only when a project is so awful that you wish it would just destroy itself.

SKRUI™—Simulated Kinesthetic Recursive User Interface—is a highly intelligent device that uses the latest force-feedback technology from advanced game controllers. It is so intelligent, in fact, that it knows what it's doing far better than you do, and if you try to make a mixing move it doesn't like, then it will resist hard enough to break your fingers. So while you may think that you're controlling it, it's actually controlling you. (Due to the potential for intense violence, this device is rated M by the Entertainment Software Rating Board.)

The last in the line, for reasons that should be obvious, is KABLUI™, the KAmikaze BorderLine User Interface. This device, which requires an enormous amount of both AC and CPU power, is brought online only when a project is so awful that you wish it would just destroy itself. Like LUI, this device has only a single control, but it's best operated with a long stick or while wearing protective gear. A new concept in warranties pro-

—CONTINUED ON PAGE 191

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Bill Putnam

The Art of Engineering

BY JIM COGAN

There is no Mt. Rushmore of recording, of course. If there were, this guy would be in the Lincoln spot. Or maybe, owing to temperament, the Teddy Roosevelt position. Either way, there should be a wing, a scholarship, an award, jeez, *something* named in this man's memory. What Les Paul was to the electric guitar, Bill Putnam was to the recording studio. Period.

The Clash shouted, "Know your rights!" Well, now we'll amend that: "Know your history!" It's crucial that we stay in touch with our heritage; many of the first great wave of modern recording engineers are approaching twilight. With the death of Tom Dowd last year and Sam Phillips this past summer, we lost two of the other Rushmore faces. Those still with us hand down to us, like the African *griot*, tales of an earlier time, when somehow music seemed to be more fun.

"Bill liked to party. He, um, well, I don't know if you can quote some of the stories..." says Murray Allen, one of the contemporaries with whom we spoke.

M.T. "Bill" Putnam (1920–1989) is figuratively alive and well, his presence apparent in any control room where there is a "vintage" piece of cool-sounding gear. But he was so much more than a retro figurehead. He was a mixer, a musician, a singer, swinger and night owl; a restless tinkerer; an instinctive acoustician and a chain-smoking tube amp visionary. A diplomat, an *über*-mentor and a peerless businessman.

At left: All set up and ready to roll in Universal Recording's main room in Chicago. Above: Nat King Cole directs a session on the main stage. Below: Putnam with Nat King Cole, in a quiet moment in the control room.

He hung up on Sinatra (this, after Frank fixed Bill up with his second wife, Miriam). Co-wrote a song with Ellington. Golfed with Bing Crosby, drank with Nat Cole. Fended off mobsters. Became the first engineer to rival the star power of those on the send side of the mic. If the Rat Pack ever introduced a technical wing, Bill Putnam would have served as its Chairman of the Board.

And, yes, he recorded. A short list: Muddy Waters, Mahalia Jackson, Curtis Mayfield, Hank Williams, Duke Ellington, Sam Cooke, Count Basie, Chuck Berry, Stan Kenton, Sarah Vaughan, Ella, Nat, Frank, Bing and so forth.

A garrulous, barrel-chested, blond-haired bear of a man, he resembled the skipper from *Gilligan's Island*. (Had Putnam been at the helm, the *Minnow* wouldn't be lost.)

"He did so many things so well it's scary," says an acolyte, Allen Sides, one of many who reckon him to be both surrogate dad and the father of modern recording. "He even tuned pianos."

Disciple Bruce Swedien: "Every console, I don't give a damn if it's analog or digital–hell, every mixing situation today–is the brainchild of Bill Putnam."

Right. Let's crank-start the way-back machine...*to a time before mixers had agents.*

Putnam was born smack dab in the middle of the country, in Danville, Ill. (pop. 25,000), just as the roaring '20s had begun. His father, Fred Putnam, was unquestionably the driver who provided young Milton—ahem, *Bill*—with his entrepreneurial template. Owner of coal mining, strip mining and trucking businesses, he also got a foot in the door of the burgeoning media of the day—namely, radio. His father had a radio program on WDZ in Tuscola, Ill., the early home of Gene Autry, the singing cowboy who later became a movie star and American icon.

"My interest in radio and electronics really started while I was in the Boy Scouts," Putnam related to *Mix* in 1983. "I had decided to get a merit badge in something that was called 'wire-

less' and built a crystal set and a one-tube radio, with my dad's help, which got KDKA in Pittsburgh! I built my own private telegraph system, which ran down the block to a couple of my friends' houses, but since none of us knew Morse code very well, we weren't able to handle much traffic."

Crystal set. Morse Code. Merit badge. Get the picture?

Historically, Recording had been the tributary that fed the twin rivers of Film and Radio. There is perhaps no single media outlet today that rivals the importance of radio in the first half of the last century. Not only were many of the first radio stations de facto recording studios, the consoles and the engineers were likewise products of some thin frequency on the dial. And film had always been years, if not decades, ahead of the recording industry's technology (Consider: *Fantasia*, from 1939, was recorded in an early form of surround sound.)

As a teen, Putnam—after flunking the first attempt—got his ham operator's license. At a high school alongside two other showbiz giants, Dick Van Dyke and Bobby Short, Putnam was both singing with dance bands and renting out his own P.A. This balance between music and the means to project and preserve the music would forever be his twin selves, two sides of a very heavy coin.

"My activity in ham radio and my business enterprise had progressed to the point where I then owned my own radio shop," he said. "My dad, who believed in doing everything on a business basis, rented me some space in the back of his office for $7 a month. The radio shop was quite a success. I sold the radio shop for $700 and graduated high school. I knew what I wanted to do vocationally: I wanted to get into radio broadcasting in the technical area."

Seeds were sown. For Bill Putnam, in the decades that followed, like his father before him and his sons after him, pleasure would be business.

SCHOOL DAYS

Performing music as a singer with dance bands continued apace with self-schooling in both business and "high-quality sound reproduction." Formal training came from the Valparaiso (Indiana) Tech Institute. Here, an early influence appeared in the person of Dr. J.B. Hershman, then freshly minted as president. Hershman's expertise was tailor-made for the hungry student: sound acoustics and antennae. "I was absolutely enamored with him," Putnam would later say. Meanwhile, he made the Gary-Michigan City-Chicago circuit as a singer. Putnam was still on the outside of radio looking in, but this soon changed when a series of entry-level gigs as transmitter engineer opened up, first in Champaign, Ill., and then back home in Danville.

Putnam smokin' behind the hand-built board at Universal.

What is interesting to note is how restlessly industrious the man was, no matter his age, qualifications, whatever. Constantly, Putnam was scouring trade magazines, gathering information, sussing out the landscape of radio, audio and music. One story, which is so incredible as to seem apocryphal, must be shared, because it says so much about our hero.

It's 1939. Putnam is 19, working as the transmitter engineer at WDAN in Danville (where Dick Van Dyke got his start on-air). It's a freezing cold January night in the Midwest. Putman noticed that the lights in the tower had gone out. The company policy had been to call the guy from the power company to change the lights in the 312-foot tower. "Three-hundred-and-twelve feet was pretty high in January," he recalled, "especially in the snow and wind, but knowing they paid $25 to change the lights, I decided to be a wealthy hero."

Scaling the tower was "a very scary experience. I climbed the tower with a gunny sack carrying two 1,500-watt lights, and when I got to the top, the tower was swaying back and forth like an upside-down pendulum." It took two hours to get back to Earth. Putnam discovered that he told no one what he was about to do. The phones were ringing. One caller was his boss, who told him he'd been fired.

One week later, he was back at his previous station in Champaign ("at a substantial pay increase"), where he was assigned chief tech duties. Football broadcasts were still in their infancy. Putnam, working with All-American Tom Harmon (father of actor Mark Harmon), conceived of the first-ever device for what is known as spotting, or signaling to the on-air talent who has the ball, etc. The ingenious device gave the broadcasts an immediacy and accuracy never before heard on air.

War time. Putnam was drafted, passed the civil service exam, joined the Army Radio Corps. He worked out of a building where, in just five years, he'd return to stake his claim as a new sort of record maker—Chicago's venerable Civic Opera House. In the meantime, he started another career, that of author. Writing for the publication *Radio and Electronics*, Putnam detailed the workings of a 3-band EQ amplifier, capable of independent boost and cut controls for highs, mids and lows. This was the first time this concept—taken so for granted today that it seems, like music itself, to have always been around—was put forth.

It didn't take the Army long to figure out that they had a ringer in their midst. Soon, Putnam was working with G2, the military intelligence unit, devising mine detectors. Typically, Putnam realized that the status quo could be improved upon. The mine detectors had unusually bulky battery packs supplying enormous vacuum tubes. Why not use hearing aid tubes and more advanced bridge circuits to

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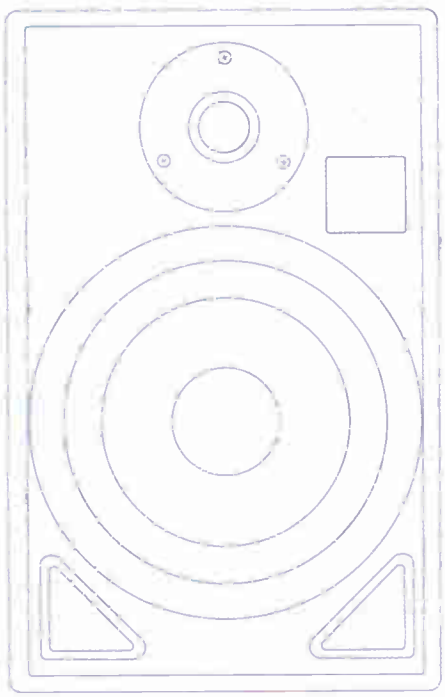

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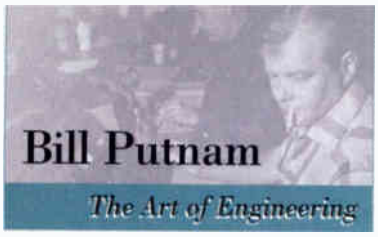

miniaturize the detectors? This led to a visit from the Secret Service. Long story short, Putnam devised a miniature gun detector so the Secret Service could protect FDR. Ho-hum.

It was a low-priority gig that helped push the evolution of recording. Compared to mine detectors and gun detectors, recording big bands like the Wayne King Orchestra for the Armed Forces Radio network was of scant significance. But, for Putnam, who always claimed, "musicians are my favorite people," it charged his world in subtle, yet profound ways. Crafting his own belt-drive turntable, and using mics that had nicknames like the "Bird Cage," the "Salt Shaker" and the "Eight Ball," Putnam modestly recalled, "It was surprising how well we did, considering the equipment we had to work with." Sent to Los Angeles to teach radio broadcasting as the war wound down, Putnam's writings and discoveries in sound and audio had stimulated an interest.

"I knew I would get much more involved in recording once the war was over," he said.

GOIN' TO CHICAGO

Everything changed after the war. No more rationing. An expanding economy, along with an expanded view of the modern world—a view from the top. The GI Bill ensured that ordinary Joes could suddenly buy a home and go to college. In audio, a huge discovery—the tape machine—increased fidelity and flexibility over discs by a mile. This intersected with the rise of savvy, cash-fat consumers, hungry for jazz and "hi-fi," looking for cool toys that they could show off. Recording—the ne'er-do-well stepchild of film and radio—needed a leader, a visionary as bold and hungry as the nation itself. Enter Bill Putnam.

Putnam had set himself up to succeed. He had the business acumen, the broadcast chops and the contacts—via his Civil Service and Army days—to put together his own dream. With two partners and a substantial loan from his family, Putnam had $20,000 with which to work. "This may seem like a lot of money to start a recording business in those days, but it was not. I had a great love for the technical side of the business, and far less affection for the affairs of finance," is how Putnam stated it. "However, I knew that in order to succeed, we had to be innovative in every aspect of the business. In addition to managing the business and finances, my goals were to concentrate on two prime areas: the development of new recording techniques and the development of new technical equipment, which was more specialized and suitable for the specific needs of the recording studio."

Joe Tarsia, legendary architect of the Sound of Philadelphia, puts it simply: "Look, before Putnam, we were working in the realm of broadcast, not recording, per se. He solved problems for himself, and by doing so, he solved problems for the rest of us."

Bruce Swedien: "Every console, digital or analog, is the brainchild of Bill Putnam." Above: the first console built for modern recording, circa 1950.

It was in Evanston, Ill., birthplace of the Hammond Organ, that Putnam hatched what would become Universal Audio (which begat UREI, then Universal Audio again) and Universal Recording. Putnam also had a remarkably keen eye for making the acquaintance of like-minded individuals, guys who were obsessed with getting things to sound better, work better. Two such gents, Jim Cunningham and Emery Cook were credited by Putnam for helping to establish superior disc cutting (Cook), and echo chambers (Cunningham).

In late-'40s Chicago, there was no independent recording scene to speak of. The majors, such as RCA and Columbia, each had studios in town, but only worked with their respective stables. Putnam scored a coup by winning the bid to broadcast shows for ABC (a very lucrative contract, considering that we're talking about 7,000 programs in a two-year run). "It became obvious, however, that a studio located in Evanston was not going to be very successful as a 'live' studio," Putnam would later recall. So he packed up the truck and moved south eight miles, to Chicago, and settled in a place he had already known from his pre-war days, the august Civic Opera House. It was here, on the 42nd floor, that Putnam morphed from broadcast engineer to recording engineer, producer, label owner and manufacturer.

About this time, we see a trio of giants straddling the recording industry like a three-headed Colossus: Les Paul, Tom Dowd and Bill Putnam. From the late '40s through the advent of stereo, 4-track, then 8-track, these guys scored so many firsts that it's kind of hard to get your mind around it all, and it's tough to determine who did what first: using delay in a hit song, sound on sound (overdubbing), drum booths, half-speed mastering, 8-track recording, solid-body guitar innovations, and more. Bill Putnam Jr. relates, "My dad and Les, whom he loved, used to kid each other and say, 'You were first.' 'No *you* were...' So one day, I got to see Les in New York where he was playing and I asked him, 'So, who *was* first?' Les said, 'F--, *I* was.'"

From his Mahwah, N.J., compound, Les, a genius of the guitar, studio and self-promotion, is all grace and affection for his old comrade. "Ah, Bill was the sweetest guy; I sure miss him. He used to come over to my old garage studio [the hallowed garage on Curson Avenue in West Hollywood, where Les lit the world on fire with his still fresh-sounding "How High the Moon," made with the underappreciated Mary Ford] and he would ask me how I did this or that, and I would pick his brain, too. We just liked to get together and try to figure things out."

Bruce Swedien puts the business of "firsts" in perspective: "The first time anyone overdubbed was in 1931. It was a film, *Cuban Love Song,* with Lawrence Tibbet. They overdubbed from optical track [film] back and forth." See, I told you film was way ahead.

Timing, of course, is everything. In 1946, Putnam couldn't have foreseen what the next 10 years of his life would hold. He just knew that he could figure out a better way to run a session, mike a session, mix a session. His business would be plagued by lack of capital, "not because of lack of revenue, but because of constant expansion," he would later recall.

Murray Allen, VP of San Francisco's Electronic Arts, was there at the beginning

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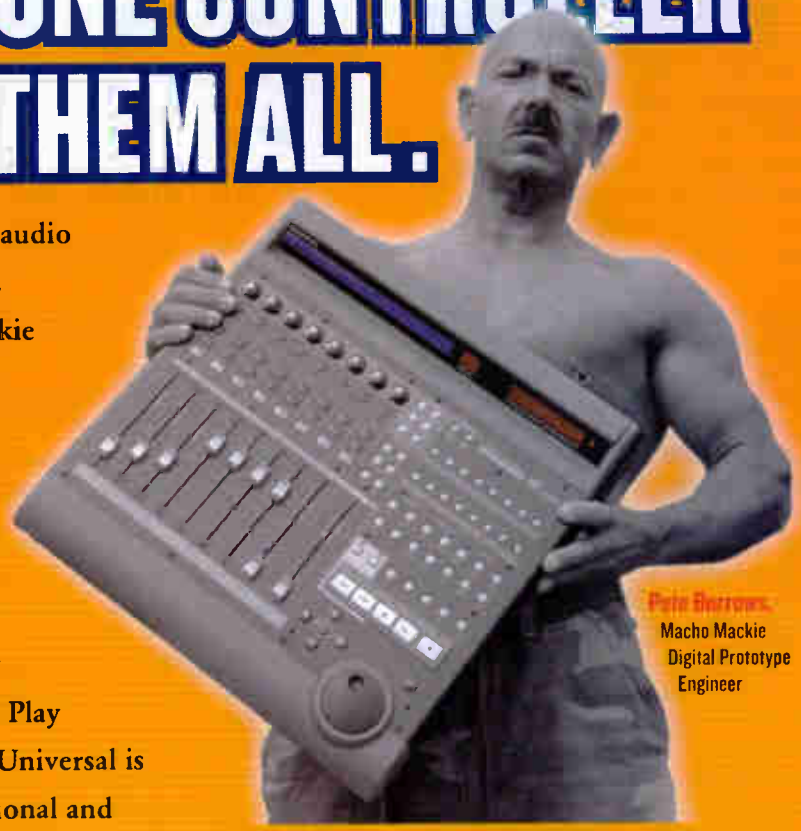

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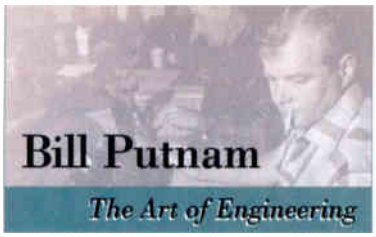

of Putnam's long ride as studio owner/engineer. "In 1946, I did a session at the Civic Opera House with my high school band [Chicago's Senn High, a killer band that included four future members of the vaunted Stan Kenton band]. Bill was just great, so relaxed. He was in charge, but not in any overt way; very laid-back." Allen didn't realize it at the time, but his path would follow Putnam's for the next three decades, eventually purchasing Universal Recording.

Putnam was living the life, full speed ahead, fingers in lots of pies. He lost his beloved father, Fred, who had given him invaluable business—and life—lessons. He got married to a dancer, Belinda, and had two children, Scott and Sue. He ate, drank and smoked on the run. There was simply too much to do, too many worlds to conquer.

One of the "problems" Putnam set out to solve was what old timers refer to as "echo," or reverb—how to utilize it in a modern recording and how to incorporate it in a console. Putnam would figure out both of those problems in the late '40s, and just like that, a new era of recording was birthed.

THAT SOUND

Most great engineers have that one *moment*, that one record that catapults both the room and its operator into the stratosphere. In the case of Putnam and Universal, the sonic epiphany occurred in 1947, on a recording that—much like "How High the Moon"—was so different, so lush, it pricked the ears of both the casual radio listener and every young audio geek in America. The record was by a group that has since faded into obscurity, The Harmonicats, three Chicagoans who played chromatic harmonicas. The song was their version of "Peg o' My Heart." It was pleasant enough, as instrumentals go, but it was *the sound*, specifically—the heavenly sprawl of the reverb—that nailed listeners. One such listener was a young Swede from Minnesota.

"Oh, man, that record, you see, was the first time that anyone used reverb *artistically*," says Swedien. "Up till then, people used reverb only to re-create the sound of the studio, tried to use it in a 'natural' manner. Bill changed all that. That record sounded unlike anything on the radio at that time. I was just a youngster in Minneapolis when I first heard it, and I wore out many, many copies of that record."

"Peg o' My Heart" *was* a first. (On the lesser-known "Good Morning, Mr. Echo," which Bill co-wrote, he devised a scheme by which tape repeats were employed to "answer" the lead vocal, months before Cher was even born.) For "Peg's legendary echo, Putnam utilized neither a high-tech plate nor an acoustically designed chamber. Instead, he made use of the marble restroom at the Opera House. "Bill would put up a sign saying, 'Wet Paint' or 'Men at Work' outside the restroom so they could use it as a chamber," says Swedien. "Sometimes, they'd be recording with a speaker and a mic in there, and people would ignore the sign, and you had the sound of a flushing toilet on a take."

On "Peg," the remarkably smooth, natural decay of the restroom's marble tiles, coupled with the comb-filter cotton candy of the chromatics, combined to transport the listener into the ether. From this million-selling recording, on Putnam's own Universal Records, our man now had some muscle, and there was no turning back.

"People forget," says Phil Ramone, "Chicago used to be a very hot place for music. By the '50s, you see big labels like Mercury and Vee Jay sprouting up there. Soon, Chicago became known as the place to record."

You can imagine the scene as the '40s segued into the '50s: Putnam's was the largest independent studio in town. He had recorded anything that came through the door, but much of it, remarkably, was hillbilly music, played by the itinerant musicians of West Madison Street. However, big band and swing—the rock and pop of the day—were in full bloom. Clubs in Chicago, as they had since the halcyon days of Satchmo and Biederbecke in the '20s, were favored haunts of the Counts and Dukes of jazz. This royalty was beginning to get wind of some of the records coming out of Universal.

It was jazz that Putnam craved to capture. Specifically, swinging, stomping big-band jazz, not the cool bop that was the domain of so much of Rudy Van Gelder's Blue Note and Prestige recordings. As a jazz engineer, Putnam would soon rival Van Gelder's catalog, albeit in a vastly different manner. (In fact, there couldn't be two more disparate personalities in the history of recording than Rudy and Bill: Whereas Van Gelder would be loath to let anyone into his control room, where smoking was *verboten*, Putnam, who "didn't believe in secrets," according to Swedien, would be likely to bum a smoke off you.)

Bill Putnam was more fortunate than he realized. Besides working and hanging with his idols—people like Duke Ellington and Count Basie were suddenly queuing up to work with him—Chicago was host to a home-grown crop of musicians—Quincy Jones, Sam Cooke, Joe Williams, Nat "King" Cole, Mel Torme, Lou Rawls, Willie Dixon, Bo Diddley, Jerry Butler, Curtis Mayfield and more—who would completely change the face of music.

His biggest risks and rewards were spread before him like diamonds and broken glass.

[Stay tuned. Next month, in Part Two, we find out about the rise of UREI and the move west to Los Angeles, where Putnam built United Western and mentored the next generation of engineers.]

MIX ONLINE EXTRAS

Jim Cogan is the co-author of Temples of Sound. *Jim will moderate a Temples seminar on Oct. 12 at the 115th AES. Contact: cogan@aol.com*

> Look, before Putnam, we were working in the realm of broadcast, not recording, *per se*. He solved problems for himself, and by doing so, he solved problems for the rest of us. —*Joe Tarsia*

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Who Owns

Welcome to the New Computer/Video/Audio/Production/Multimedia/Content Industry

Professional audio companies are being swallowed up by big-time computer/video companies, and they're talking about multimedia packages and integrated A/V apps—for professionals and consumers. Can they do both? Or have we finally reached the age of the "prosumer" product?

Listen to a TV program from the next room and you can still understand most of what goes on. Watch the pictures with the sound off and you'll miss a great deal, not only in terms of plot and dialog, but also in the excitement and feel of the show. Anyone who works in audio post knows this very well. But for the companies that make professional and prosumer digital media tools, there has been a firm dividing line between companies that make nonlinear video tools and those that make serious digital audio workstations. That is now changing in a big way, with four major companies in the video software space having acquired audio companies or software in the past 15 months. To understand the dynamics behind the shift, *Mix* spoke to some of the major players now engaged in working in both sides of the post-production media fence: Apple, Pinnacle, Adobe and Sony Pictures Digital.

The precedent for all of this was set in 1995 when Avid Technology acquired Digidesign, looking to provide a credible audio engine and professional-quality audio I/O for its flagship Media Composer video editor product line. Having won the top spot in the emerging digital video nonlinear editing (NLE) market in the early '90s, Avid was the first to see the big picture and realize that the entire ecosystem of film and video production would eventually go digital.

As the DV and DVD revolutions took hold in the '90s, it also became clear that the digital media-tools market would cover the entire spectrum, from high-end Hollywood to the emerging prosumer and home-video enthusiast. Several companies rushed to fill in these down-market niches, focusing first on providing video products, but realizing that, eventually, a suite of applications that covered all of the bases (graphics, titles, DVD, audio) would provide the most compelling offering.

This tactic of providing a single source for specialized video and audio tools capable of working together proved very successful indeed for Avid, so it's not surprising that other players in the video NLE market would eventually follow suit. In fact, what is perhaps most surprising is that it took so long. But now, the strategy seems to have caught on, and at least four other large media companies can boast a growing suite of media tools that includes at least one serious audio application. And there may be more to come. The market impact of these mergers and acquisitions remains to be seen, but it's clear that it promises to forever change the business and creative landscape of audio post-production tools.

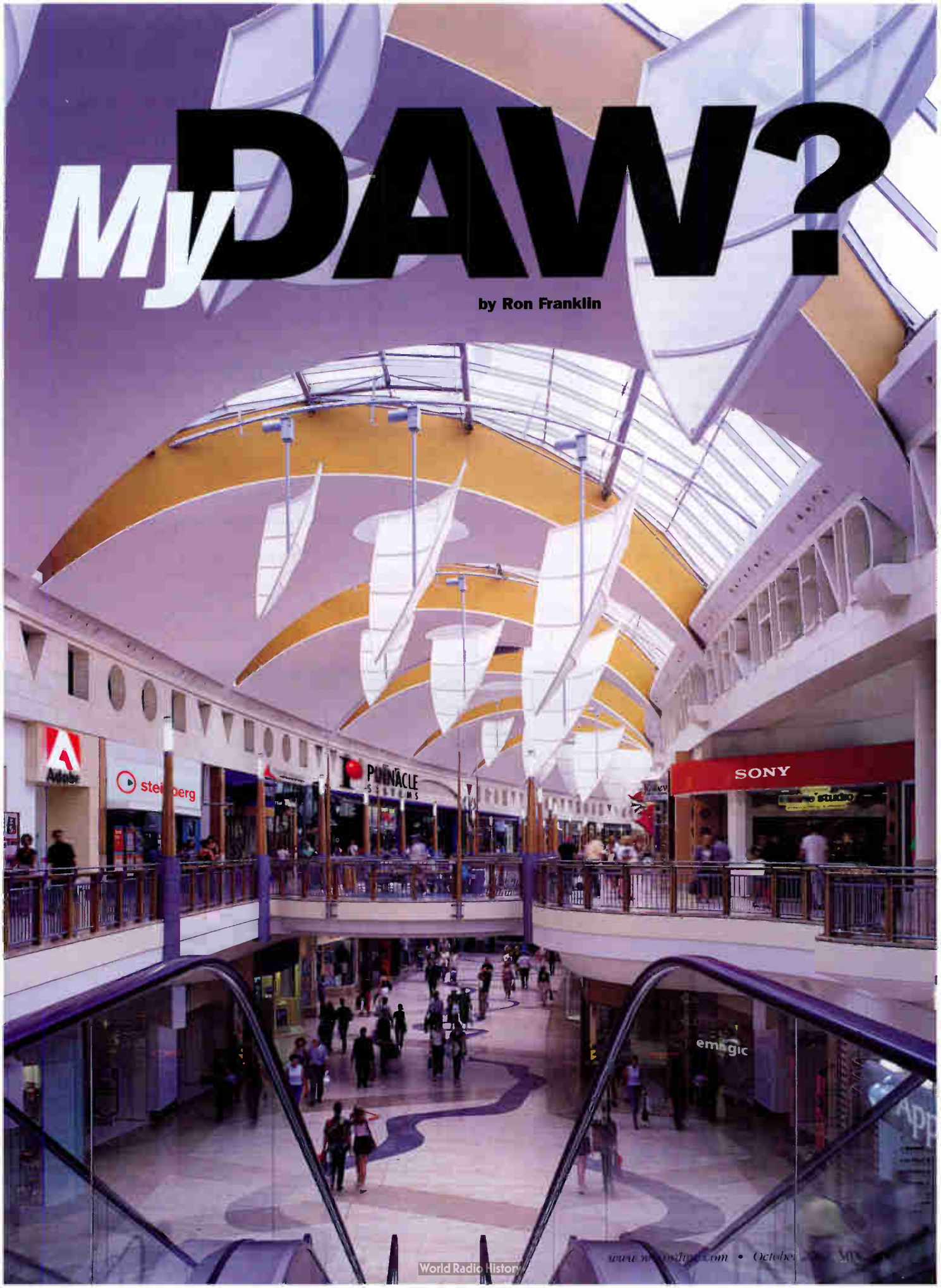
APPLE AND EMAGIC

Apple Computer Inc. acquired a never-released video product, called Key Grip, from Macromedia in 1998 and released it in April of 1999 as Version 1.0 of Final Cut Pro. In the more than four years since, the Final Cut Pro nonlinear video editor has gone on to claim a respected position in the market for video NLE systems. Following that same acquire-and-develop strategy, Apple acquired DVD companies Astarte in 2000 and Spruce Technologies in 2001 to provide the basis for its iDVD and DVD Studio Pro products. In February 2002, Apple purchased the software company Nothing Real and its Shake and Tremor video-compositing applications.

It's not surprising that Apple would understand the need for a world-class audio solution to augment its already considerable

My DAW?

by Ron Franklin



Who Owns My DAW?

video media applications portfolio. Thus, in July of 2002, Apple acquired Emagic Soft and Hardware GmbH, a leading audio software company based in Hamburg, Germany. Apple has maintained the Emagic brand names and is operating Emagic as a subsidiary with its own marketing identity, a very reassuring move for Emagic's considerable user base. Although Apple now features the Logic Platinum 6 application on the Apple Website (www.apple.com/software/pro/logic), Emagic still maintains its own identity and Web presence at www.emagic.de.

One of the first things Apple did was announce that it was dropping support for the Windows version of Emagic's flagship product, Logic Platinum, a move that certainly disappointed PC users. But it is clear that Apple views its strong stable of media applications as a means to garner market share for the Macintosh platform, so it was not a completely unexpected strategic move.

As we'll see with all of these companies, the underlying technology of the acquired audio systems is expected to help add onto audio capabilities of existing video products and to help create new products.

Apple Final Cut Pro, which now features the Soundtrack loop-based audio app as an add-on.

Apple's Soundtrack application is a case in point. First announced at NAB 2003 as an add-on for Final Cut Pro 4, it has now been released as a standalone, loop-based audio application. In the tradition of loop-based software such as ACID, Apple's Soundtrack is de-

signed to allow nonmusicians to quickly and easily assemble soundtracks using premade loops of sound.

According to Xander Soren, senior product marketing manager for audio in the applications group at Apple, Soundtrack began as a tool within Final Cut Pro 4 that allowed video users an easy and relatively inexpensive solution to quickly create background music tracks for their videos. He says, "We've found that as technology enables people to do more, they naturally want to take on more. Previously, video editors would deal with the visual aspect of their video, and then they'd have to handle the audio and music creation separately in a very specialized way. Often, that workflow was very time-consuming. In developing Final Cut Pro 4, one of the things we really focused on was expanding the audio functionality to allow video editors and producers to participate more actively in the music composition and audio production process. Final Cut Pro 4 introduces a completely new audio mixing architecture and includes Soundtrack, a companion application for creating music directly against a video piece. We're seeing video editors use Soundtrack to prototype their audio score before handing it off for composing, but we're also seeing video editors developing their own complete music compositions entirely on their own. Soundtrack is going to introduce a large number of video professionals to the world of audio production, and it is an important part of a larger workflow that includes Emagic's Logic."

The result is a loop-based music-creation product that ships with an impressive 4,000 loops. As an example of the cross-fertilization of Emagic audio technology into Apple products, Soundtrack includes over 30 professional effects plug-ins, some that Apple has developed especially for the product and some that come straight from Logic Platinum. The Logic effects even provide Soundtrack users with a taste of the Logic interface within the context of Soundtrack.

Although the idea originally was to provide the Soundtrack application within Final Cut Pro 4, the product's enthusiastic reception has broadened that original target market. Soren says, "When we saw the reaction of creative users to the Soundtrack product at NAB, we realized the product was attractive to a larger market than video editors...the market interest was great enough that we have now released Soundtrack as a stand-alone application for $299."

As for file and project-level interchange and compatibility, Soundtrack supports .AIFF, .WAV and ACID loop formats, as well as the new Apple loops format and QuickTime. Soundtrack also allows for rendering any of the individual tracks as an .AIFF file so that it can be brought to other applications. Project-level interchange such as OMF or AES31 is not directly supported in Soundtrack; instead, Apple has made an XML interface available for Final Cut Pro 4 so that qualified developers can create bridges between the system and interchange formats such as OMF and AAF. Apple never directly addresses future or unreleased products, but it is clear that pro audio is now a serious market for the company. The products released so far are just the first wave.

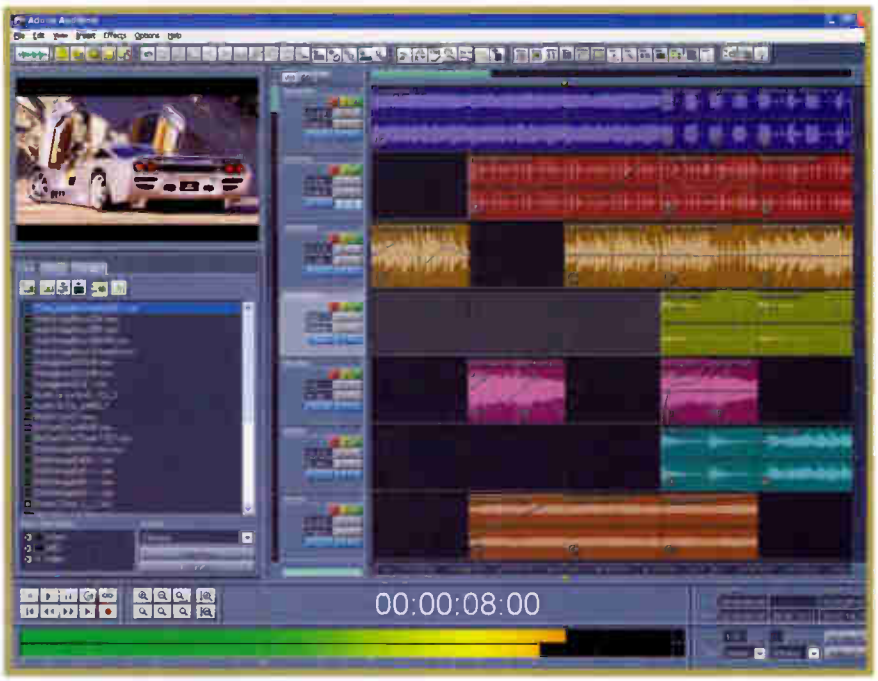
PINNACLE AND STEINBERG

As one of the early forces in digital video for the broader consumer and prosumer markets, Pinnacle has been creating video applications since the early '90s. The company acquired FAST Multimedia in September 2001, and added the Liquid line of professional editing systems to the Pinna-

Who Owns My DAW?

cle roster as a result. Pinnacle also acquired Commotion, a video effects and compositing application in 2000. The need to develop a complete suite of media-production tools brought Pinnacle to German pro audio company Steinberg Media Technologies GmbH. In January 2003, Pinnacle acquired Steinberg as a wholly owned subsidiary.

Bill Loesch, Pinnacle's VP of engineering and product management, explains that Pinnacle did not just acquire audio technology for the sake of its video products: It sees the acquisition of Steinberg as putting the company clearly in the audio market. Speaking about the approach Pinnacle is taking compared to the other companies mentioned here, Loesch says, "We all come at it from a similar point of view: Audio is part of video. You can decide you're going to develop that technology and put it in your video editor, but the trouble with that is that it's not very efficient. You don't get to amortize the development cost of that audio technology over as wide a market as possible. So from a business point of view, Avid led the way, but everybody else has concluded the same thing: You're better off amortizing that development cost by being in the audio market, as well as using the technology in your video products.



Adobe Audition, the software formerly known as Cool Edit Pro

"We've set Steinberg up as a separate division and maintained the management

structure and people," he continues. "What we're working on is gaining synergies from being in both the audio and video businesses. We're providing technology to the Steinberg team to help them integrate video into their application, and they're providing technology to our edition team and our studio team to integrate better audio into those apps."

Pinnacle sees its market as slightly downscale from the major Hollywood feature space where Avid and Digidesign predominate. This means that the average sales price for systems is lower, but the volumes are a lot higher, just as with Steinberg. Another reason that Steinberg was attractive to Pinnacle was its shared philosophy: They both depend on native processing rather than specialized, external hardware DSP. There is a clear understanding that Steinberg knows the market for its products very well, and Pinnacle respects that and supports it. As Loesch explains, "We don't have any plans to do anything different with what Steinberg does; we acquired Steinberg because it's a leading company in its category."

As for file interchange, Steinberg's Nuendo system does provide OMF support, but Pinnacle's video products don't share that capability at this time. According to Loesch, "We don't currently support project-level interchange such as OMF/AAF in the Pinnacle products. We are looking at that, but we haven't decided whether it will be incorporated in the next version."

ADOBE AND SYNTRILLIUM

One of the earliest digital video software applications on the market was Adobe Premiere®, now called Premiere Pro. Since its inception in 1991 as a QuickTime editor, Premiere has brought the price point of digital video-editing tools within reach of many media-savvy consumers and corporate A/V departments. Adobe followed with other video tools, such as the well-respected After-Effects® (1994) and more recently with the DVD authoring application, Adobe Encore™ DVD (March 2003). With a growing roster of media applications, the need for a professional tool to deal with audio resulted in the announcement in May 2003 that Adobe was acquiring the software assets of Syntrillium software. The company's flagship audio product, Cool Edit Pro, has now joined the lineup of Adobe media applications as Adobe Audition.

Dave Trescot, senior director for Adobe Digital Media, says, "We saw this product as the 'Adobe Photoshop' for audio. There are two main reasons for our expansion into audio. First, Adobe has always been driven to provide the high-quality tools that creative professionals use in their daily work. Clearly, audio professionals [especially musicians and broadcasters] were one creative group that Adobe did not address. The acquisition of Cool Edit Pro gives us a great product to offer to them. Second, the audio product completes our digital video workflow offering, including video editing with Premiere Pro, motion graphics with After Effects, DVD burning with Encore DVD and audio production with Audition."

Unlike Apple and Pinnacle, Adobe acquired only product assets and personnel, not the corporate identity of the other company. As Hart Shafer, product manager for Adobe Audition, says, "Adobe acquired all assets of Syntrillium, including Cool Edit 2000, Red Rover and shareware. Syntrillium is continuing to sell its entire product line until the release of Audition in order to ensure continuous availability of Cool Edit Pro/Adobe Audition. However, once Audition is released [scheduled for August 25], the whole Syntrillium

Who Owns My DAW?

product line will be discontinued, and only Cool Edit Pro will live on as Adobe Audition." Trescot adds, "All of the engineering, quality-assurance, designers and product-management teams have come over to Adobe as employees."

Adobe clearly sees Audition as more than just a product for video specialists, and is intent on supporting the product within the pro audio community. Trescot points to some of the software's unique strengths: "In the audio-only space, Audition is the only package that integrates a wave editor, multitrack recording and editing, and loop-based song creation in a single application. Not only does that make it a bargain since you don't have to buy multiple pieces of software, but it greatly improves workflow since you don't have to save your audio to send it back and forth into each application. In addition, Audition is 32-bit throughout all processing, comes with more than 45 high-quality DSP effects, supports dozens of file formats, can be scripted, runs batch processing and much more. Audition is a toolbox that offers something for every audio professional."

The audio technology that Adobe has acquired is bound to enhance the audio capabilities of other Adobe products over time. Trescot says, "One of Adobe's strategic plans is to share its core technologies between applications. This can be seen in other areas within Adobe, such as Adobe PDF, imaging, vector graphics, fonts, etc. Audio is a core technology that will move to other products as appropriate."

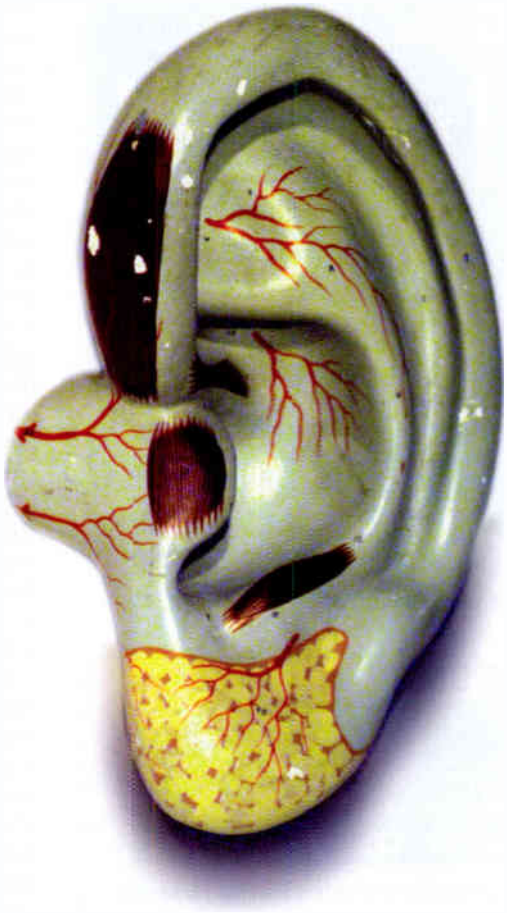
According to Trescot, although Adobe Audition does not currently support OMF or AES31 project interchange, Adobe recognizes the importance of file compatibility, interchange standards and project workflow. He explains, "Audition does not currently support these cross-product project file formats. Adobe is, however, committed to cross-product formats. As an example, Adobe has recently joined the board of directors for the AAF association in order to help promote that standard."

SONY SCREENBLAST AND SONIC FOUNDRY

On July 31, 2003, Sony Pictures Digital completed the acquisition of the desktop software assets of Sonic Foundry. Unique among the companies mentioned in this article, the Sony Screenblast business model provides media tools, but also

Professional Audio Sales:

lis•ten; rec•om•mend; in•te•grate; sup•port



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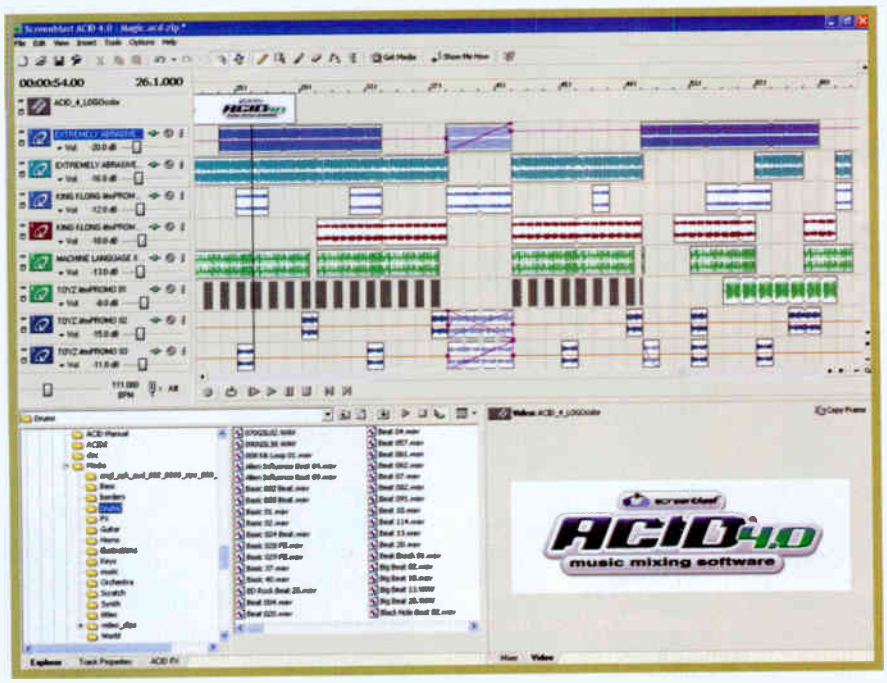
leverages the company's media assets through a significant Web-based component. In effect, the Screenblast project acts as a bridge to connect Sony's consumer electronics business (digital video, audio and computers) and its film and music content groups. The idea is to encourage owners of camcorders, PCs and other devices to interact with content—both their own and Sony's—using the Screenblast media creation and editing tools in combination with the Screenblast Web service. The Screenblast applications provide video and audio editing capabilities, while the Screenblast.com service provides subscription-based content (video, music loops, sound FX, graphics), software tips, interviews with important film and music producers, training, project templates and a user's gallery that allows subscribers to post their own digital creations for all the world to see.

When Screenblast was created, the company entered into a licensing arrangement with Sonic Foundry of Madison, Wisc., to create custom-branded versions of its ACID loop-based audio software and Vegas video-editing application. Sony acquired Sonic Foundry's software group with the idea to start with the original Sonic Foundry apps, modify the feature sets to orient them to the consumer market, add a layer of integrated tutorials and tie the apps directly into the Screenblast.com media services. The result of this collaboration was first released in 2001 as Screenblast Music Studio and Screenblast Movie Studio.

Even before its acquisition, it was no secret that Sonic Foundry's fortunes had declined precipitously. The heady days of the Internet bubble had ended; gone were the days when the company had a market cap of over a billion dollars. With Sony in need of proven A/V software technology and Sonic Foundry in need of cash, the agreement made a great deal of sense for both parties. The deal, worth some $19 million in cash, brought Sound Forge, ACID, Vegas Video and Vegas+DVD to Sony and left Sonic Foundry with its live and on-demand Web presentation product, Mediasite Live™.

Mix spoke with Don Levy, senior VP of marketing communications at Sony Pictures Digital, and Ian McCarthy, director of Screenblast product development. Levy says, "We became familiar with both the products and the team behind them over



With Sony's acquisition of Sonic Foundry Acid, Screenblast will appeal to higher-end customers.

the course of our three-year association on our Screenblast personal media software and service. The opportunity fit in well with both companies' business interests."

Sony plans to keep the development team together in Wisconsin and has already announced plans to hire 12 new software engineers, an increase of 20% in staff. Sonic Foundry will continue to operate its media tools business, focusing on the MediaSite Live application with a team of about 30 people. Although to date, the Screenblast service has been focused on the broader consumer market rather than audio/video professionals, the acquisition of the full range of Sonic Foundry applications will allow the company to move into the higher-end prosumer and professional markets.

Addressing the possible concern that Sony might only maintain the consumer version of the software, Levy says, "We are supporting and continuing development on all of the existing desktop software products. With regard to the ACID product, with over a million applications already in the market, it has become something of an industry standard and a consumer favorite for creating songs and music albums, remixing loops and scoring videos. The Vegas video line's robust features, combined with an intuitive interface, delivers exceptional value to the high-end user."

As for project-level interchange and workflow considerations, Sony has already gone to great pains to provide OMF compatibility in the Xpri, the high-end video-editing system from Sony Electronics. The Screenblast apps currently provide direct import and export of a wide range of audio and video file-types, including the three principal streaming media formats: Windows Media 9, Real and QuickTime. As for project-level interchange and interchange standards, McCarthy says, "Supporting industry standards and enabling both project and file interchange are very important objectives to us as we move forward."

WHO ELSE WANTS TO PLAY?

There are still some notable players in the digital video market such as Ulead Systems (www.ulead.com), Roxio (www.roxio.com) and others that don't offer specialized digital audio applications to support their video, DVD and graphics effects products. They could, of course, write their own from scratch, but given the long development times required to build a robust and full-featured audio application, it wouldn't be surprising if the acquisitions were not quite over yet. The consolidation and attrition in the digital audio workstation market during the past few years may provide one of the best avenues for some of the remaining players to secure a profitable future. Certainly, it puts the phrase "audio follows video" in a whole new light. ■

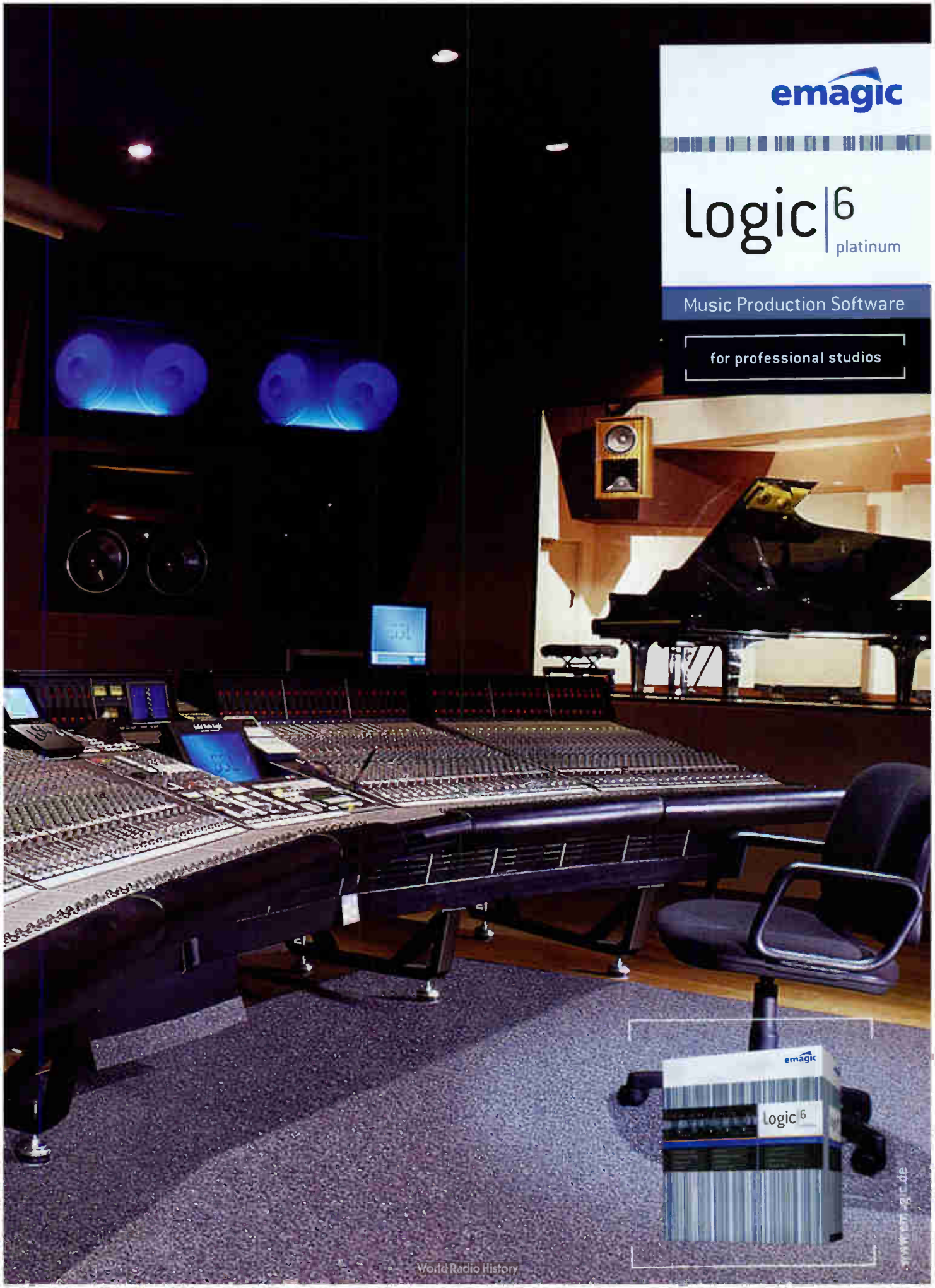
Ron Franklin is a frequent contributor to Mix.

New groups turn up the speed at Studio Méga.

With Logic 6 on any Power Mac.

"With the new options Version 6 offers, such as the Mix Groups and Edit Groups, we save precious studio time. Just as we do with the Channel Strip in the Arrange Window and the terrific Freeze function," says Thierry Rogen, owner of Studio Méga, one of the largest studios in France, where Sting's new CD Sacred Love was produced, among others. "Logic is the ideal workstation for us, and the EXS24 simply the best sampler on the market – the perfect combination." Functions such as Project Manager, Sample Accurate Display in the Arrange Window, or the Marquee Tool also considerably improve work speed at the studio. And those who mainly work on film music will especially appreciate digital video playback via FireWire and Video Thumbnail Track in the Arrange Window. Yet to become part of the world largest studios' basic equipment requires one quality more than anything: absolute reliability. This applies to security both of long-term investments and in daily operation. Logic once again impressively proves that it has that quality, as its Version 6 is used in the largest studios in the world. Move up into the large group of professional Logic users.

Technology with soul.



Downloading Has Its Price

Can I please see a show of hands, *Mix* readers, of how many of you have downloaded and/or "shared" files from sites such as KaZaA, Grokster, Morpheus? C'mon, don't be shy. You're among friends. Everyone does it. Nothing to be ashamed of. Okay...let's see...that's 25, 26, 27....93, 94, 95....

Wait a second! What are those *sirens*?!! Someone's at the door? Oh *shit*!

BOOM! BOOM! BOOM!

"This is the RIAA! All you guys with your hands up. *Keep 'em up*! Cuz you're *busted*!"

No! Y-y-you can't *do* this! These are good people, Sgt. Drebbin! They just wanted a little music...(*sob, sob*)

"Aw, tell it to Carey-Sue Sherman, buddy! In fact, you're comin' downtown, too, Mr. Smart Alec *Mix* writer. Looks like you're *all* going to be doing your 'swapping' in the Statesville Pen from now on..."

...

In the months since we published our May 2003 "What Can Save the Music Industry?" issue, outlining some of the problems—and possible solutions—for the widespread economic (and psychic) malaise, there has been a dizzying amount of activity on a number of fronts.

The most visible—and some would say, most disturbing—recent development in the war between the industry and the "pirates" who steal music (and, increasingly, films) from the Internet has been the RIAA's decision to target people who have shared music files online and threaten prosecution. Copyright laws allow for damages of $750 to $150,000 *per song*, so that could potentially bankrupt many people, if convicted; at the very least, legal fees are likely to be astronomical. So far, the number of people singled out has been infinitesimal in the grand scheme of things—fewer than a thousand, when literally millions of people avail themselves of the free sites—but it has generated a tremendous amount of heat and, of course, publicity. The RIAA is under no illusion that going after individual swappers is going to stop the practice, but the very fact that the prosecutions are happening, and that they seem to be random, has had a chilling effect on many people; no doubt, the main intention of the RIAA move: "Oh, my God, if they're not just going after the big guys, could this happen to *me*?" Answer: Yes.

Predictably, this has created an uproar, not just among the accused and thousands of others who may be sweating a bit, wondering if their previously unassailable online swapping practices might land them in a heap o' trouble, but among civil libertarians, who cite possible abuses of

BY BLAIR JACKSON

WHILE ONE PART OF THE MUSIC INDUSTRY GETS TOUGH, OTHER PARTS GET CREATIVE

privacy laws by the RIAA in their zealous pursuit of names and e-mail addresses of scofflaws. In fact, in mid-August, it was announced that the Senate Governmental Affairs' Permanent Subcommittee on Investigations was planning to hold hearings looking into the record industry's war against online swappers. Senator Norm Coleman, a Republican from Minnesota, demanded that the RIAA provide copies of all subpoenas issued to ISPs, asking for particulars about their subscribers; information about how the RIAA was obtaining its evidence against swappers; and details about privacy safeguards the RIAA employs when gathering information in order to protect "the rights of individuals from erroneous subpoenas."

Coleman said, "Surely, it was not Congress' intent when it passed the Digital Millennium Copyright Act to short-circuit due process protections, relegate a U.S. District Court to providing 'rubber-stamp' subpoenas, enable the music industry to collect information about consumers with little or no restrictions, and place numerous average customers at risk of bankruptcy."

The Senator added that he was concerned that the RIAA campaign could target innocent people—such as parents or grandparents—whose computers are being used without their knowledge for file swapping, and not

Downloading Has Its Price

even aware that they are breaking the law.

Coleman, who was a rock roadie in the '60s, is the latest hero of the anti-RIAA forces, despite his contention that he recognizes "the very legitimate concerns about copyright infringement": "This *is* theft. But I'm worried that the industry is using a shotgun approach [to finding offenders]." Boycott-riaa.com has become a clearing house for information about the fight against the industry organization's efforts; meanwhile, the brazen free online swapping sites continue to grow and even trumpet their success: At the top of Morpheus' homepage in mid-August, a banner announced: "113,170,000 DOWNLOADS TO DATE." What it does not say: "AND NOT A CENT PAID TO ANY ARTIST OR SONGWRITER."

It should be noted, too, that the vast majority of Congress members strongly support the artists' and record companies' complaints on this issue, and some of them are downright militant on the matter, favoring a major crackdown on the file-sharing sites and/or users. Orrin Hatch—a conservative Republican senator from Utah, chairman of the powerful Senate Judiciary Committee and a recording artist himself—noted at a hearing in mid-June that he endorsed a new technology that gives two warnings to a computer user about his/her illegal online activities and "then destroy[s] their computer. If we can find some way to do this without destroying their machines, we'd be interested in hearing about that. If that's the only way, then I'm all for destroying machines...There's no excuse for violating copyright laws." He later modified his comments a tad, saying that "I do not favor extreme remedies, unless no moderate remedies can be found. I asked the interested industries to help us find those moderate remedies."

On the technology front, the PAN Network, which lays claim to being the birthplace of online digital audio (what hath PAN wrought?), recently introduced anti-piracy Web software called Nabster. Once it is installed on a Website, the company's patent-pending Digital Interactive Fingerprinting (DIF) technology imbeds a "digital fingerprint" into a file as it is transmitted to the end-user. According to the Music Industry News Network, the fingerprint is "extremely small and virtually undetectable except by the DIF system as it scans the Internet searching for unauthorized copies of files containing DIF fingerprints. These fingerprints contain a forensic link to the identity of each individual who legally downloads a media file from a site where Nabster is installed. The privacy of each individual is fully maintained unless, and until, a file they legally downloaded subsequently appears on an authorized Website or P2P network." The company notes that Nabster is not, strictly speaking, a watermarking nor a copy-protection system, but they believe that used with other DRM (Digital Rights Management) tools, it can add more protection for copyrighted files.

The other major development since our May issue has been the rise of bona fide, reasonably comprehensive pay-downloading sites on the Internet, several of which appear to be catching on in a big way, even as the free sites continue unabated. The success of Apple's iTunes, which was launched in the spring and available only to the four or so percent of all computer users who have the latest Apple OS, surprised everyone. According to the company, in the first three months of its existence, the iTunes Music Store sold 6.5 million downloads from its storehouse of about 200,000 songs. The cost per download is $0.99 per song, with many albums available for $9.99, well under the price

Digital Workstation?

"I had been looking for mixers for about the last three years, trying to make the decision whether or not to go digital or try to look around for an analog console. The Media 51, especially the 60-input version, was exactly what I had been looking for."

Malcolm Harper
Reel Sound Recording
Austin, Texas

"The idea was to have the sonic quality of AMEK but also have it chat at a high level with Pro Tools so that I could get the best of both analog and digital."

George Petit,
Walkerecording Ltd.,
New York City

"The average project that walks in here is over 40 tracks. We do a lot of R&B and hip hop, and vocal layering is thick, and you've got sometimes three or four low-end instruments that you have to somehow blend in. So they have to bang."

Kevin Bomar
South Coast Recorders, Texas

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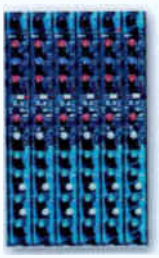

Media 51 features the classiclally inspired Mr. Rupert Neve designed Mic pre and EQ, so you ***know*** you can rely on them to bring your sounds clearly into the digital domain.

Then you can edit in total confidence that you are working with the highest quality source signals, and that your final mix will be just what you wanted.

Various frame sizes up to 136 inputs on mixdown mean you're unlikely to run out of inputs. Add Amek's acclaimed Supertrue™ automation for smart mixing, integrated 7.1 monitoring and 5.1 format mixing capability with optional motorized joystick and you're ready to mix with the best.

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Downloading Has Its Price

of most CDs. Additionally, iTunes has managed to snag its share of exclusive tracks, including a live Avril Lavigne package.

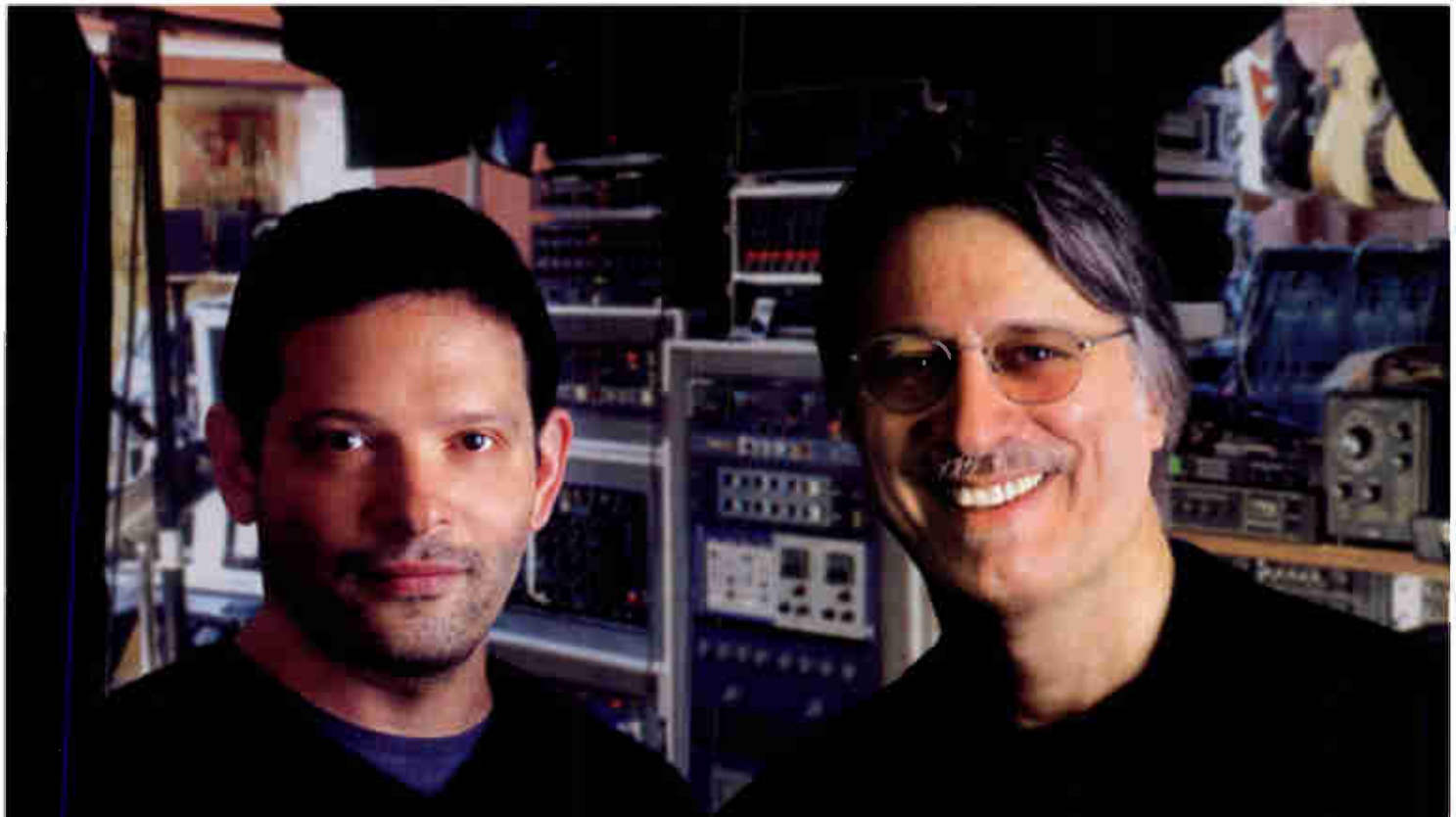
With Apple suddenly raking in big bucks and getting so much great publicity, it's no wonder that the action on the PC side accelerated quickly. Launched on July 22 was BuyMusic.com, which offers PC users the ability to download songs for $0.79 to $1.49 and albums from $7.95 to $12.79. The site boasts 300,000 available songs from all five of the major record labels (as well as many indies); so far, early indications show that it is doing quite well.

RealNetworks' Rhapsody claims to have a catalog of 350,000 tracks (and counting with its recent acquisition of Listen.com), including more songs from independent labels and more exclusives than the other services. However, unlike iTunes and BuyMusic, Rhapsody requires a subscription fee of $9.95 per month for unlimited streaming and the right to burn tracks at $0.79 each. MusicNet@aol has a tiered subscription structure based on the differing usage needs, ranging from $3.95 to $17.95 (which includes access to the greater AOL service).

Though it's too early to predict how things are going to shake out in the pay-downloading arena—and whether, as some suggest, other significant players might emerge—there are several issues that are likely to become flashpoints in the war: What sort of burning rights will users have to the tracks from each service? Will it vary from artist to artist? Device to device? Will the variability of pricing of individual songs become more widespread as different artists start to cut deals with this or that service? Will the battle for "exclusives" eventually drive up the price of downloads?

Those last two issues should be watched carefully, because, already, there is intense jockeying to sign up certain artists whose catalogs have not been available for pay-downloads so far—witness the Rolling Stones, who signed a deal in mid-August to make more than 40 albums and some 500 tracks available exclusively to Rhapsody for a period of a few weeks, before the catalog goes out to other pay services. If this sort of dealing becomes prevalent among upper-echelon artists, then it's easy to envision a world where there are high-priced bidding wars for the new songs and albums of specific artists, and the pay sites will most likely begin to pass on the expense of their "exclusives" to the customer; in other words, you might pay more for a track from, say, a new Bruce Springsteen album than from some unknown indie band. It will not take artists long to determine that they can write their own ticket in this world and eventually restructure their contracts with their record companies to give them more money per download. So if Barbra Streisand thinks that she, personally, should get "x" amount per song, then the downloading sites will have to base their own pricing to reflect that. Maybe on a site where there is a fixed low-price-per-song, those Streisand tracks becomes loss leaders; more likely, though, is that everyone will have tiered pricing, just as there is for live concerts. Right now, the labels are bending over backward to get as much of their catalogs online to cash in on this first rush of pay-downloading euphoria. But just watch: It's going to get very strange, *very* fast. The question then will be: Will pricing policies drive people back to the free sites, which, in case you haven't noticed, still aren't going away? ■

Blair Jackson is Mix*'s senior editor.*



Three-time Grammy®-winning mixer and producer **Frank Filipetti** (at right) has distinguished himself by being an early proponent of digital recording and surround sound. He has over a dozen 5.1/DVD projects (for clients like Billy Joel and James Taylor) on his resumé, which also includes work for KISS, Luciano Pavarotti, Barbra Streisand, Korn, Elton John, Carly Simon, and Rod Stewart.

Musician and producer **Michael Beinhorn**, who got his start as keyboardist for the legendary group Material, has gone on to Grammy-winning success with clients such as Korn, Marilyn Manson, Fuel, Soundgarden, Hole, Red Hot Chili Peppers, Aerosmith, and Ozzy Osbourne.

Whether working solo or as a team (as they've done for Fuel and Korn), these two industry powerhouses have created quite a musical chronicle with the help of 40 Series microphones from Audio-Technica. Take it from Frank: "The A-T 40 Series microphones have become indispensable, especially the **AT4047**. Recording drums, bass, guitars or a swinging horn section, it handles high SPL while retaining the subtle details. I don't leave home without it!" Adds Michael, "A-T mics have become mainstays for me. They offer exceptional clarity and detail, which are crucial to my recordings."

Take a tip from these music industry pros and try 40 Series mics on your next session. Who knows? You might just be making musical history – like they have.

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More Comfort, More Efficiency!

MAKING THE RIGHT FURNITURE CHOICE FOR TODAY'S STUDIOS

BY JOHN McJUNKIN

When the idea of a studio is first conceived, the initial discussion will invariably dwell on the console, recording devices, outboard, DAW, microphones and acoustics. More astute professionals will go a bit further, considering ancillary equipment like cabling, mic stands and patchbays. But what about furniture and ergonomics? Although it may seem secondary, assigning priority to your space's shape and vibe can have a profound impact on the efficiency with which you complete your projects and contribute to the happiness (and sanity!) of the studio's users.

Historically, the recording studio and its equipment were physically arranged to accommodate technology more so than the humans who operated it. Think about it: Why in the world would we deliberately design consoles to have channels 16 feet apart when our arms couldn't possibly reach them simultaneously? During the years, we've developed workarounds like automation to help solve these difficulties that we've created for ourselves. Now, the paradigm shift from the traditional studio to the project studio has yielded the opportunity to redesign for higher effectiveness.

A few examples of how stock furniture designs can help organize a studio environment. Clockwise from right: Crystalphonic's D Room (Charlottesville, Va.), Argosy Studios (Osage Beach, Mo.) and World Wrestling Entertainment (Stamford, Conn.)

THE EXPERTS TALK TRENDS

Mix spoke with three leading authorities of studio design and ergonomics about trends in studio design and how furniture considerations are increasingly becoming part of the big picture: John Storyk of Walters-Storyk Design Group, Martin Pilchner of Pilchner Schoustal Design and Robert Traub of Russ Berger Design Group. According to this trio, the most prevalent trend at this time is, not surprisingly, the shift away from traditional large-format consoles to smaller and more versatile control surfaces.

Storyk says, "My gut tells me that if you start to survey all studios and all production facilities that are being built, more of them are going to be using what I call 'desktop audio' smaller-format production and storage devices. That means smaller physical amounts of equipment and more desire and more ability to have more interesting furnishing, more interesting ambience, more interesting client comfort areas, etc. We've got studios looking like homes now."

According to Traub, "Historically, there were no ergonomics in the studios. In days of old, it was basically 'drop the equipment into a room and work the session.' Ergonomics and the idea of being able to adapt to the human form is a relatively new thing that has been developed not for studio design solely, but in the general world of furniture design."

"When you buy a 12-foot-long console," adds Storyk, "you pretty much have to put the 12-foot-long console where it has to go; there's not much choice. But when your studio is now going to be an assemblage of computer screens and keyboards and wireless devices and much smaller rack equipment there are more choices about how this equipment should be formally positioned in the room, or whether it should even *be* formally positioned in the room. Maybe it should all be mobile."

Also supporting this notion, Pilchner adds, "There is also

More Comfort, More Efficiency!

Companies such as Anthro offer racks and desks, above, for virtually any application.

a need for more interaction between the engineer, producer and artist. This is achieved by providing flexibility in the control room furniture and fittings to allow options in spatial relationships that encourage these types of synergies. Outboard gear, MIDI equipment and keyboards are incorporated into movable furniture elements that allow them to break free from their traditional spatial vernacular."

Traub says, "These rooms are built from the inside out, and we start with the need and build these rooms to create the floor plan to create the building that creates the architecture. It's all such an interwoven process that even the support furniture, the lounge furniture and the sofas that support the working environment are thought of from day one in our office."

The budget for creating a studio can vary widely, but the underlying principle remains the same: Focus in on the central purpose of the room and make the room fit that purpose. As Storyk puts it, "We're spending a lot more time as furniture designers than ever before." When the budget allows it, custom furniture can tremendously promote the usability and comfort of a studio. Pilchner adds, "We usually develop furniture solutions for our clients. We have found that there are idiosyncrasies particular to each situation that require a specific design response to achieve real usability. There are always conflicts between computer keyboards, performance keyboards and mouse locations, as well as control surface meters, computer monitors and loudspeaker locations that require a degree of finesse to make it workable."

In many instances, "off-the-shelf" solutions are not flexible enough to accomplish the design goal. Traub says, "I'd say that 85 percent of the time, we're designing [furniture] from scratch. It allows us to support the aesthetic that we've already created for the room, and because we know what the guts of the piece need to be in order to facilitate the gear in the room, it just makes it a quicker process for us."

Another new idea is the elimination of the division between "control room" and "studio proper." Pilchner says, "[The control room] has evolved from its origins as a 'booth' to become much more pivotal in the performance aspect of a recording event, and as such, has become more of a hybrid production/performance space as compared to its pure-production legacy. The impact of this, when subjected to usability analysis, implies that modern control rooms must do many more things well and accommodate more people. The first evidence of this is that control rooms have become larger to remain comfortable for more people." Pilchner Schoustal recently designed a space in which the traditional "horseshoe" shape of a MIDI/DAW workstation was literally turned around backward at the insistence of the client. "They wanted their clients to be able to gather closely around the center of creativity. The traditional horseshoe shape envelops and surrounds a single creator, but turning that shape around backward enables several people to gather around in close proximity, bringing the clients in with the professionals. These are the clever new things that are happening," says Pilchner.

BASIC CONCEPTS FOR ERGONOMIC ENHANCEMENT

Home studio owners and high-dollar organizations have the same ergonomic concerns when it comes to their workspace, and can apply the same basic ergonomic enhancements to improve efficiency and comfort.

Start with having things in the right places. For example, computer monitors should be at eye level and lighting should help eliminate glare and give warm, appropriate visibility. Also, because the tweeters in your near-field speakers should be at ear level, they often reside on the same shelf as the computer monitors. Having controls within an arm's length is preferable, in addition to installing mixing surfaces and computer and MIDI keyboards at appropriate (and comfortable) heights. Frequently tweaked controls should be closest.

The chair should be as posture-friendly as you can afford. Hardware that's not supposed to move should be firmly attached so it doesn't. Clear and informative labeling of patchbays and other equipment can dramatically reduce visual fatigue. The "permanent" wiring of the room should be exactly that—permanent. Wiring strain-relief eliminates a lot of headaches. Brute-strength grounding is valuable, and simple things like consistent polarity should not be overlooked. Climate should be considered, particularly in terms of temperature consistency. And, finally, a little "vibe" to promote creativity is nice, as well.

WHERE TO NEXT?

As technology and methodology evolve, so will our studio workspaces. According to Pilchner, "The future will see continuing changes to the heart of the production environment, namely the traditional console. In smaller studios, the console has already been replaced by control surfaces surrounded by various other production necessities. This is driving the need for more innovative furniture solu-

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tions. The core of the control room is being defined not only by the means of control, but also by its ability to embrace new production realities." It will be fascinating to see what solutions will serve these realities.

COMFORT AND EFFICIENCY: SOME OPTIONS

There are quite a few wonderful products that help enhance the ergonomic studio environment. The following selection of furniture (and this is by no means an exhaustive list, but rather a few examples) is equally at home in seven-figure dream rooms and basement studios alike.

First, I present manufacturers that offer desk, rack, bench and cart systems that are developed almost exclusively for audio production. **Argosy** (www.argosyconsole.com) has an impressive line of expandable and modular consoles, workstations and racks intended chiefly for audio. Some are custom-designed for specific consoles, but others are universal.

Newcomer **Jaxon Designs** (www.jaxondesigns.com) offers an affordable studio desk and several slick add-ons made from 9-ply or 12-ply pine or birch. Especially creative is the custom-made Amp Table that turns a guitar, bass or keyboard amplifier into a functional and attractive piece of furniture.

My Dog Rax (www.mydograx.com) offers gorgeous racks for any studio that requires something a little more aesthetically pleasing. And although this company's main focus is on striking racks, it also presents beautiful consoles and workstations in both "off-the-shelf" and custom varieties. These products are truly definitive examples of "studio furniture."

Omnirax (www.omnirax.com) presents a line of attractive workstations for keyboards, mixers, audio/video and DAWs, many of them customized for Pro Tools and its many available control surfaces like the Mackie HUI. As with other manufacturers, Omnirax provides workstations that are customized for popular mixers and control surfaces.

QuikLok (www.quiklok.com) offers an array of high-quality products centered around stands for keyboards, mixers, mics, speakers and lighting. Additionally, the company provides high-quality multi-shelf workstations to serve a number of needs.

Raxxess (www.raxxess.com) has solutions for all issues associated with rack-mounted equipment, including a huge array of racks and accessories for the studio and touring, or data and communication needs, as well.

Finally, **Taytrix** (www.taytrix.com) is a New York-based organization that provides not only a range of services including acoustical design, but also "building blocks for your studio." Nice custom racks and cabinets are available, along with things like speaker stands and gobos.

BEYOND AUDIO APPLICATIONS

There are also a number of manufacturers that develop furniture that is not necessarily intended exclusively for audio or music production, but can be easily used that way. **The Anthro Corporation** (www.anthro.com) has an extensive line of bench, cart, rack and other systems that tend toward video editing or multimedia creation, but its "Curved Cart" can easily accommodate a pair of near-field monitors, a computer monitor or two, a MIDI controller keyboard, a tower computer and even a couple of rackmount items.

Contour ShuttlePRO

Another company that develops excellent furniture that's not just for audio is **Biomorph** (www.biodesk.com). It provides a complete line of "interactive desks," which enable instant height adjustment and other modifications. These are tough, welded-steel desks that can support as many as four or five computer monitors or whatever other audio hardware you may have.

Middle Atlantic Products (www.middleatlantic.com) offers a line of customizable and very attractive "edit center systems." Once again, these are at home not only in video editing, post-production and multimedia production, but also very useful for DAWs and MIDI workstations. These sophisticated desks provide useful solutions in terms of rackspace.

THE BEST THINGS COME IN LITTLE BOXES

There are lots of "big" considerations in terms of studio furniture and ergonomics, but the little things are also very important.

Now that DAWs have become king in the studio environment, the computer and its peripherals are among the most important considerations. The venerable mouse, for instance, may very well be the most handled and used device in the entire room. There is a huge range of such products available, from the traditional to the exotic, and there are as many different preferences as there are professionals.

Unfortunately, there is such an array of wonderful control surfaces and aftermarket mice, trackballs and drawing tablets that I cannot cover them all effectively. But I will point out a really powerful device known as the ShuttlePRO Multimedia Controller from **Contour A/V Solutions** (www.contouravs.com). It features a jog knob that rotates 360° and a spring-loaded shuttle ring that provides seven variable speeds for scrubbing. It also sports 13 programmable buttons that can be assigned to any keyboard shortcut or command. Thus, one hand is given a huge amount of control, while leaving the other hand available for the computer keyboard or faders, or other controls. Regardless of your preference, much thought and test-driving should precede your choice of controller.

There are also little things like monitor mounts that cannot be truly defined as furniture. **Middle Atlantic Products** (www.middleatlantic.com) has, for instance, a line of video monitor mounts that can hold displays from 13 to 37 inches. They exhibit an elegant design that can accommodate 16- or 24-inch stud centering, and yield 40° pivot and 355° swivel, so you can precisely set the viewing angle. This is a great solution if you don't have space on your desk for monitors. Likewise, **Omni Mount** (www.omnimount.com), known for its high-quality speaker mounts, also offers a range of high-quality video monitor mounts.

Other important considerations along these lines include products such as antiglare screens for your monitors or even cleaning products that can help you keep your space tidy and efficient. Ergonomic computer keyboards and the like can also help to promote workspace efficiency. When you go about enhancing your workspace's ergonomics and efficiency, don't forget to consider all of these little things! ■

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

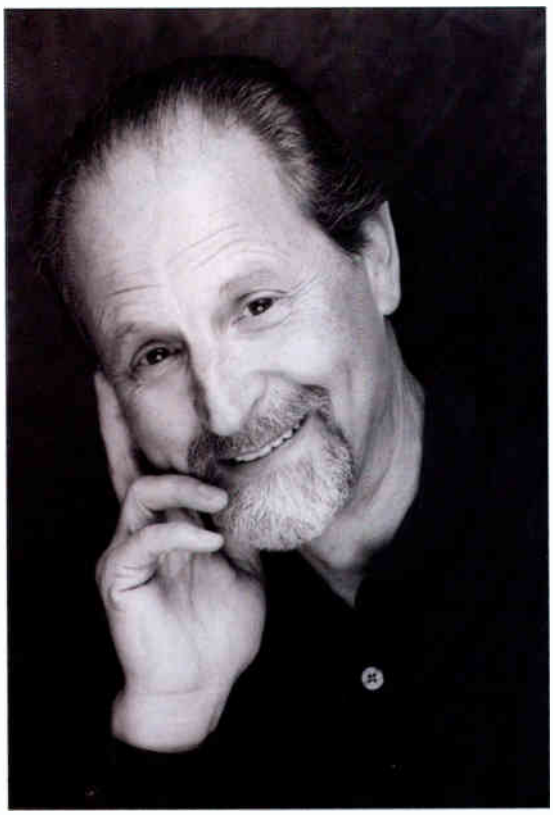
BY BLAIR JACKSON

Eddie Kramer Never Stops

An Interview With This Year's TEC Hall of Fame Inductee

One certainly wouldn't blame this year's TEC Hall of Fame inductee—engineer and producer Eddie Kramer—if he *wanted* to slow down a bit. After all, he turned 61 this past April, and he doesn't have anything to prove to anyone. He's done it all. In the '60s, he worked with The Beatles, the Rolling Stones, The Kinks, Traffic, Jimi Hendrix and Led Zeppelin, to name a few, and he was a principal engineer at Woodstock. In the '70s, he was behind the board for albums by the likes of Derek & The Dominos, Eric Clapton, Peter Frampton, Humble Pie, Kiss, Mott the Hoople, NRBQ, Carly Simon and lots more Zep. He helped build Electric Lady Studios for Jimi Hendrix and then ran it for several years after Hendrix's death. In the '80s, the indefatigable Kramer was still rockin' in the studio with the likes of Anthrax, Alcatrazz, Triumph, Ace Frehley and others. The '90s brought him work with such varied acts as Brian May, John McLaughlin, Buddy Guy and many others. In the new millennium, he's still one busy dude: working on 5.1 mixes for various rock films and DVD projects; recording young groups in the studio (including a solo venture from Matchbox Twenty's Kyle Cook and the maiden effort of the Norwegian hard rock band Hangface); organizing his incredible photo archive into a lucrative business; lecturing far and wide about his experiences in the music business; and, of course, there's all that incredible Hendrix music. Kramer has been the de facto audio curator of Hendrix's legacy, and the releases—both CDs and DVDs—show no signs of drying up anytime soon.

Kramer has been a loyal friend of *Mix*'s for a long, long time, always available to talk about music history and recording. In recent years, we've interviewed him for three "Classic Tracks" articles—Hendrix's "All Along the Watchtower," Led Zeppelin's "Ramble On" and, most recently, Traffic's "Dear Mr. Fantasy"—and discussed his techniques for surround mixing (*Mix*, March 2003). With his induction this month in the TEC Hall of Fame, however, we thought this might be a good time to offer a more general overview of his glorious career. We caught up with Kramer at his Putnam County, N.Y., home in late July. More than 30 years in America have chiseled away at his South African/English accent—and also turned him into a hardcore Yankees fan. (Please don't hold that against him.)



He says one of his oldest memories is, at the age of three, sticking a metal rod into an electrical outlet and being knocked across the room (and then punished by his father), but we pick up his story a little later.

You were raised in South Africa and studied classical music primarily. Was any American rock 'n' roll getting through to South Africa in the '50s?

Plenty. We listened to Elvis and Chuck Berry. But the guy who really turned *my* head was Little Richard, since I was a pianist. I thought he was amazing. I remember being in school and I could hear the sound in my head, and I remember trying to play all those parts. I got thrown out of class one day for playing Little Richard! Actually, I was *attempting* to play it, because even though I could play all of these classical pieces, it was not easy to play Little Richard; those repetitive 16th notes; that's tough!

Was this your typical formal British-style school?

Oh God, yes sir! It was based on the English public-school model, actually. We had these hats called cheese-cutters, or straw boaters. We played cricket

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in the summer and rugby in the winter. We wore blazers and caps. It was very strict. You got caned on the ass if you misbehaved.

Worthy of a Roger Waters song!

Very much so. It was called SACHS, for South African College High School, and it actually was a very good school; it did produce a number of very talented individuals. But it also had a lot of very right-wing Afrikaner-style teachers who were pretty adamant. My father was very left-wing. He was South African and my mother was British.

Did you go to England much?

We kept going back. In '49, we were there for a year. We came back in '56, and were there for a year. Then, after the Capetown riots [1960], my dad said, "We're *out* of here!" I stayed on and finished high school, but in my last two or three years of high school, I actually attended the South African College of Music, so I was doing regular high school but also studying music at the university at the same time. I don't know how I managed to pull that off, but I did.

And you were studying classical music only?

Yes, I thought I was going to become a concert pianist. Then, during my last years of school, I became the chairman of the Music Society and I became very interested in jazz. I used to bring in jazz records by the Modern Jazz Quartet and Oscar Peterson, Charlie Parker and then classical music, as well.

I arrived in England in December of 1960, not quite knowing what to do. I started off as a messenger boy for a fashion magazine, learning the streets of London. Then got into an advertising agency as an internal messenger boy, delivering stuff between floors. On the second floor of the building, there was a television production suite, which had two back-to-back projection booths, with two theaters—one on each side—and they would show the dailies of the commercials that they'd shot there.

I became friendly with the guys in the projection room, and one day, one of them asked if I would help him wire something, so I helped him wire up these pieces of antique furniture, where we put amplifiers and tuners and a really nice turntable. I'd been interested in electricity and sound and all that for some time. Later, I was able to buy a tape recorder that ran at 15 and 7½, and I bought a couple of microphones. I had a nice small grand piano in my place, and I'd invite friends over to my living room to record. I remember wandering around the room and since I only had the one mic at one point, when it came to a solo, I'd have to move the mic.

Jimmy Page and Robert Plant recording at Stargroves, 1972.

Anyway, after a while, I got kind of frustrated working at the agency and I figured, "Music? Electronics?" A light bulb went off, and that's when I decided to try being an engineer at a sound studio. So I opened up this book that listed all of the recording and film studios [in London], closed my eyes and I stabbed at it with a pen six times. I wrote off six letters, and one of them came back and asked me to come in for an interview. That was Advision, and I got a job as an assistant; a tea boy, as they were called in England. I learned a lot there: how to work a projector, record mono, some mastering. And meanwhile, I was still experimenting with my friends—now bringing them into a proper studio. The studio had these great big Painton faders. I'd have to take them apart, clean them every week and put the bloody things back together. We also had a very interesting tape machine called a Magnetophon. It was a version of one of the German wartime machines. It was a nasty thing because it was all DC voltage, and when you'd push the Stop button, sparks would fly out and you'd get a shock. You had to figure out how to push it fast and get your finger away, which ended up being great training for punch-ins later. [Laughs]

Obviously, there was a point when you decided that being a concert pianist wasn't for you.

I gave up that idea in late high school. The idea of practicing endlessly was just too much. But I had a damn good education, I must say. And a very wide-ranging taste in music: everything from jazz to blues to rock 'n' roll to R&B. Popular music. Bach, Brahms, Beethoven. Bartók. Shostakovich. I was interested in all forms of music.

There aren't that many people who get that kind of education anymore.

That's true, and it's unfortunate. Even the guys up at Berklee, where I do some teaching, are so specialized now.

You moved from Advision to Pye, which was more of a music-oriented studio.

Yes it was. My first mentor was a guy named Bob Auger. Bob was building Pye Studios, and it was very unusual in the sense that it was basically an American-style studio. He had a dear friend in New York named Bob Fine, of Fine Recording Studios, and Bob Auger was tremendously influenced by him. So when Bob decided to build Pye, he made it like an American studio with Pultecs, great mics and all. In fact, he went so far as to have an entire room, with big transformers, wired for 110, which was highly unusual. He thought the machines performed better at 110. We had a Neumann mobile board that was plopped down in the Studio A control room; the preamps were down on the floor, and my job was to run down and move the attenuator 10 dB, 20 dB. It was all Ampex 300 3-track. We recorded Sammy Davis Jr. in an amazing first-time midnight session. We'd go down [to Walthamstow Town Hall] and make classical recordings with a portable Ampex 3-track and three Neumann U47s. That was it; you had to figure out how to make it sound good. That influenced me tremendously; in fact, it influenced how I record drums. We did some great sessions at Pye: The Kinks, Petula Clark, all sorts of pop and rock things.

You were still an assistant.

Yes, it took me awhile to become an engineer. It took me from '62 to about '66. It was when I went to Olympic that I became an engineer full time.

How did you end up there? I know you'd worked at your own studio, and at Regent Sound after Pye.

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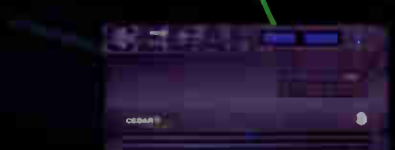

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Well, I just kept hearing about Olympic through the grapevine, and then I kept pestering [Olympic technical director] Keith Grant, who was also a student of Bob Auger's, so there was a heritage there. Keith was an amazing engineer. He taught me how to do so many things. One of the famous sessions we did together was The Beatles' "Baby You're a Rich Man," and I also did "All You Need Is Love." It was a great training ground and the studio was just a magical place. It was remarkable in the sense that it was the up-and-coming independent studio.

"Baby You're a Rich Man" was done at Olympic?

Yes. Of course, The Beatles almost always worked at EMI, but they came to Olympic for the very simple reason that they couldn't get into EMI at the time and they wanted to record. We were the competition and we got the gig. "Baby You're a Rich Man" was recorded, overdubbed and mixed all in one night.

©1967-2003 EDDIE KRAMER/KRAMER ARCHIVES

Jimi Hendrix and Buddy Miles recording "Electric Ladyland" at the Record Plant studios, New York City, 1968.

I'd been recording Jimi and the Stones and that was really cool, but The Beatles coming in was a *very* big deal and I was nervous. You know, for a while, I'd been taking pictures of all the artists I was working with, but this was the one time I chickened out. I didn't think it was appropriate at the time. It would have been nice to have some photos of that, of course. [Laughs]

Speaking of the Stones, you've said that their producer, Jimmy Miller, was another teacher and mentor.

When I think back, the three people that influenced me the most were Bob Auger and Keith Grant as engineers, but as a producer, Jimmy Miller was it; he was the king. He had such a wonderful ability to sense where the band was at, get into their heads, get their confidence, and then fire them up in the studio and get great performances from them. He was able to put such a spark into the cutting of the tracks. I started working with him on Traffic's *Mr. Fantasy* and then moved onto the Stones' *Beggar's Banquet*. He was an extremely impressive individual. He was able to grab the artist by the balls and bring them along with him. He could help them with song structures and be very involved on that level, or be a fly on the wall when he needed to be.

So many of the big albums from that era*—Sgt. Pepper, *the first Traffic album, the Stones'* Their Satanic Majesties Request—*were notable for the amount of musical and sonic experimentation on them. No idea was too weird, it seemed.

We were willing to take chances and *encouraged* to take chances. That was a part of the spirit of those times. It didn't matter, somehow, whether this player or that player could really play some of these instruments. No one was thinking, "Well, they're not going to play a track with a sitar on the radio!" If it sounded cool and it was going to add to the track, we'd try it, and sometimes we'd use it.

When did you first encounter Hendrix?

Well, of course I knew about him already. Jimi had come to London from America [in the fall of '66] and almost immediately, he had a hit with "Hey Joe." The word was out that there was this amazing American guitar player. Anyway, I remember one day, the studio manager [at Olympic]—this lovely, very prim and proper English lady—saying to me, "Oh Eddie, there's this American chappie with big hair named Hendrix coming in. You do all the weird stuff, so why don't you do this session?" At that time at Olympic, I was doing avant-garde jazz, experimenting, trying all of these different things. So I got the Hendrix gig, and, obviously it was a very fortuitous experience. [Laughs]

They'd already recorded "Hey Joe" and some B-sides—maybe three or four songs—so what we did was continued with that work on what became the first album [*Are You Experienced?*]. We re-cut some guitars and then started new tracks. It was a wonderful time. Imagine the excitement of being in the studio with Jimi—he was so incredible! We hit it off immediately. He'd be in there cranking up the guitar and I'd hear these amazing sounds, and I'd think, "Okay, let's see what happens to that sound if I tweak it like this." Then he'd come in the control room, listen and say, "Whoa, that's cool, man! What happens if you do that and then I turn *this* knob?" So he'd try this and try that. He was excited about what I was doing and I would get excited about what he was doing; it was a great feeling of camaraderie, because every time we rolled tape, we were doing something new. Chas Chandler [Hendrix's manager and producer] said it so well: "The rules were, there *are* no rules." I have to quote him, because without Chas, we wouldn't be talking right now! [Laughs] Chas was "the guv'nor." He really helped Jimi tremendously on those first two records.

Was what you did with Hendrix as an engineer that different than what you did with everyone else?

I was much more inclined to take chances. His playing was so different and unusual and had so much depth that it encouraged me to see what interesting things I could do with it: "Let's see how far out we can take this." We experimented with phasing and EQ and compression and reverb, and he was up for it all. He loved that phasing; wanted it on everything. [Laughs]

Did* Sgt. Pepper *affect you the way it affected so many other engineers?

I'm not sure it affected me other than it was obviously a brilliant record. I was so involved with the next session that I didn't really have time to digest it from a technical standpoint, or think too much about how it was done.

One thing that *did* influence a lot of us in England, though, was the sound of the bass on so many American records in the mid- and late '60s. We would study records by Dylan and some of the R&B

and pop artists and we'd hear this bass and wonder, "Damn, how the hell did they get that sound?" I know this for a fact because I came to America in 1968 and figured out how to do it.

And the answer was....?

It was Pultecs and LA-2As and all of the American preamps that engendered that sound. Of course, a lot of it was the playing, too.

It's funny, because while I was trying to figure that out, all of the American engineers would ask me, "How did you get that sound on Hendrix?" So there was a great cross-pollenization of ideas. Plus, you had the great English bands coming over to the States being influenced by the Americans, and vice versa. I think at the time, we had the better consoles in England: the Helios and such. But we didn't have 8-track yet, and we were very jealous of the Americans for that. When I came to the States in April of 1968, I jumped from 4-track to 12-track when I went to work at the Record Plant, and that was quite a challenge.

Once you were here in the States, you still worked with Hendrix on Electric Ladyland, ***and then you also worked on Led Zeppelin's second album. What was it like working with Zeppelin?***

I very much enjoyed working with the Zeps. Obviously, they were a great, great band, and by the time I recorded them, they were already quite a success in both the U.S. and in Europe. I mixed that second album in just two days at A&R Studios on a small, 8-channel board with two pan pots! With Zeppelin, you always knew who was the boss: Jimmy Page. He always had very specific ideas of what it should sound like, what the solos should be, how the vocal fits in with the overall sound. He was very, very much in charge at all times, and very talented.

You got to work with the best rock guitarists of that generation: Clapton, Hendrix, Page. Then later, you worked with bands who had been influenced by those players and were clearly more derivative than they were original, such as Kiss. Was that at all strange?

Not at all. I really liked working with Kiss. You have to look at Kiss in a different light, because they are such a different animal. Gene [Simmons] had this concept about making a rock 'n' roll band with makeup and each member having his own identity. And they played this hard rock that was pretty good, but with them, it was the whole thing: the music and the image. Ace [Frehley] was certainly influenced by Clapton and Henrdrix and Page and all of the great guitar players, and you can hear it, but at the same time, he combined those influences in some interesting ways. I think he's a greatly underrated guitar player. Also, I liked their rawness and directness. Kiss is an anomaly. They're really an entertainment band, like a traveling rock 'n' roll circus. It's theater, kabuki, rock 'n' roll on steroids. It's made for fun.

I remember going in the studio and cutting their demo: a 4-track at Electric Lady. I still have the original quarter-inch. They went off and did their touring and got their record deal. I didn't actually do

an album with them until the live album [*Kiss Alive*]. When I got the phone call from Neil Bogart, who was the head of Casablanca, asking if I wanted to do the live record with Kiss, I had a tape on my desk from Tom Scholz and Boston and I listened to it, and I thought it was tremendous. I called Tom back and I said, "Tom, this record is great, man, put it out the way it is. I can't add anything to it." So I did the Kiss record. I wanted the challenge of working with a band that was leaping around, bombs exploding. How do you make that sound good? They're out of tune, they're out of time…

It's interesting that you were doing that at the same time you were working on* Physical Graffiti *with Led Zeppelin, which is a really bold and sophisticated album through and through.

That's true. I was very fortunate. I went to England and recorded a whole bunch of tracks for them using the Rolling Stones mobile. Again, Jimmy knew what he wanted. I will say this, though: The unsung hero of that band was John Paul Jones. He was very, very bright and knew a lot about arranging and had many good ideas.

Led Zeppelin was one of those groups that went through that interesting progression of becoming really, really huge and having a scene around them that got progressively weirder and druggier. As an engineer, were you affected by those kinds of changes?

Sure, you couldn't help it. With Zeppelin, it became a battle, because they started to come into studio with such an attitude. At one point, they came into Electric Lady to mix one of their albums, the one with "Stairway to Heaven." We started and then one night, the band ordered some Indian food and a whole bunch of it spilled on the floor and I asked the roadies to please clean it up. The studio was brand-new and I had a lot of pride in it. And suddenly, they're yelling, "You don't tell our roadies what to do!" And they pulled out; they left, and I didn't speak to them for about a year! Then later, they called back and asked me to record them again as if nothing had happened. [Laughs]

How did you become Mr. Live Recording? Was it recording Woodstock?

Pretty much. After that, it was, "Let's get that guy Kramer." I did Derek & The Dominos, Peter Frampton, Humble Pie.

What's the key to recording live? You'd never been a front-of-house engineer, right?

No, I hated that. I would never do that. It's a question of keeping the band happy and comfortable. The key is their performance. Really, it's a question of capturing that performance and not getting in the way at all. Even if I have to put a mic in a place where I normally wouldn't, so be it, if it makes the band more comfortable. The most important thing is to get the performance.

When you made* Frampton Comes Alive *did you have any sense that it would be so popular?

How could one? It was the same thing with Kiss: "Ah, we've got a good record here. It would be nice if it sold a couple of hundred thousand." And it took off like a bloody rocket, sold 3 or 4 million. With Peter, we knew he had a fan base, but we couldn't have possibly predicted it would sell 14 million records. Who the hell knew?

When you work with young engineers, as you invariably must, do they all defer to you because of your track record? I mean, you're Eddie Kramer!

[Laughs] Well, I suppose some of them are a bit intimidated at first, but you know, I like working with young engineers because they have a different perspective and they have some cool ideas of their own. It's not like I know everything. I'm still learning. I'm open to new ideas.

That said, there is a certain way I like to record: I have my own methods of doing drum and guitars and my EQ'ing. I suppose I am slightly old-fashioned—I hate to use that term—in the sense that my method of recording is getting sounds *now*. I believe in *committing* to the bloody thing. Get the compression right; get it sounding cool *now*. Otherwise, you're just prolonging the agony. Later on, you're going to have to twist knobs for three hours, trying to figure out how the hell you want to make the guitar sound. I like to get the sound then and there, and everybody's happy. Then, when I get to mixing, it's a much easier job.

I suppose I am slightly old-fashioned in the sense that my method of recording is getting sounds *now*. I believe in *committing* to the bloody thing.

Eddie Kramer at the Empire State Building, 1968

As one who was so good at recording bands live—both in the studio and on-stage—did you ever go through a phase in the '70s or '80s when you would record every element separately one at a time, agonizing over sonics? Spend five hours getting a snare drum sound?

I *never* did that. I made a very strict rule: I walk in the studio and if in 20 minutes I don't have a drum sound, I go home.

I tell [students] that when I lecture at Full Sail or Berklee or the University of Miami, and they're always shocked because they think you're supposed to agonize over it, like you say. But I'm serious. This is not f***ing rocket science. Yes, there is a bit of science to it. There are some technical things you have to know. But, basically, it's about the song, the song, the song, the song. And then the performance. And *then* the sound. Of course, your technique has to be as good as the song and the performance. All of those elements have to come together. But don't belabor it!

One of the unfortunate things about today's music is that everyone has become so perfection-oriented. I have to blame that to a certain extent on Pro Tools and the ability to make things perfect. Don't get me wrong: Pro Tools is a *wonderful* device. It's a great editing tool. But I know from bitter experience that you

give certain people Pro Tools and they'll sit there for *months* dicking around trying to make it perfect. The whole idea of rock 'n' roll music, to me, is going in there and playing like a band and trying to get out some emotion. *Not* making the vocals perfect and the guitar parts perfect. Rock 'n' roll should have some hair on it, if you know what I mean. Now, even hard-rock bands are working that way: They'll play a small section and then they'll time-stretch it and fart around with it, fix notes and all this. C'mon! Let's play this stuff for real! It really pisses me off.

I use Pro Tools myself. It used to be that I'd record on analog and dump it into Pro Tools and work with it. Now with HD, you can record directly to Pro Tools and it sounds pretty good. It's still not as good as analog. If you want that crunch in rock 'n' roll, you still want some analog equipment in the chain. I think the two worlds can coexist very happily together. But don't abuse the digital world or become a slave to those computers! It drives me nuts.

Where do you like to work?

In L.A., I work at NRG a lot. It's a nice amalgam of high-tech 2003 digital recording and vintage analog. In New York, there are a bunch of studios I use. The obvious choices are the Hit Factory and Right Track, and Avatar's very nice, too. But there's a very nice studio called Clinton that I really like a lot. I used to go to Electric Lady, of course, but haven't been back there for quite a while.

You worked with a third generation of rockers in the '80s, bands like Anthrax. You did all these hardcore heavy-metal bands.

I sure did. [Laughs]

How's your hearing, Eddie?

Whaaaat? [Laughs] Seriously, I think the idea is to minimize your hearing loss by using small speakers where possible. Initially, when I'm tracking, I'll use the big speakers to make sure that the relationship between the bass drum and the bass guitar is what I think it should be, even though the big speakers can be horrible; it seems like in a lot of studios they are, which is unfortunate. I like Dynaudio speakers. I can use Genelecs; I think they're okay. Just keep the volume down. You don't have to crank it all the time. If you have it up loud for an hour, you're going to have hearing loss, period. So keep the bloody volume down. I think you get better perspective, too.

Has the basic personality of bands changed during the years?

Nah! [Laughs] It's usually the leader of the band that has the best ideas and is the smartest...

And then the others are resentful of him...

Yeah, absolutely. There's always the next guy who maybe thinks he's as good, and that's where the battles start. But you know what? If the battle is over creativity, hopefully what comes out is a fine product. Because I think if there's no resistance and there's no spark, what the hell do you have? A piece of wet, soggy paper. When you think about Robert and Jimmy of Led Zeppelin, they were knocking heads all the time. Same with John and Paul in The Beatles.

Well, there was always a tremendous undercurrent of mutual respect in those cases.

Undoubtedly. The point is, without that spark, that creative tension, you don't have as much.

What have you done the past few years that excites you, other than the reissues?

What I love right now is the fact that I've been able to go in and do 5.1 surround mixes. What a marvelous thing 5.1 is, particularly for me, because I'm a big fan of

movies and I love the fact that I can get in there with a live recording with a good picture and really work with the sound. It's a great challenge and the results can be amazing. I've just finished this film, *The Festival Express* [a documentary about a 1970 trans-Canada train trip by Janis Joplin, The Band, the Grateful Dead and others] and it was so much fun. The tapes were very old; they sat untouched in a vault in Canada for 25 years. I did *Monterey Pop* and that was quite a challenge. I just finished doing a 5.1 of *Jimi Plays Berkeley* and it's stunning! The "Johnny B. Goode" is just hair-raising!

How much Hendrix stuff is left at this point?

We still have enough material in the library to come out with something completely new for many years to come. That's not including film things we're working on. It's a massive library and it's well-taken care of.

A lot of it is really good, and there are some things that aren't that great, of course. We grade it by the quality of the recording and the performance. There are some things that only the really hardcore fans will like; things that sonically might not be that great, but are great performances. So I'll do the best I can with it, but the buyer has to know that there are limitations. We have some audience tapes like that and also some less-than-great 2-tracks from the board. But the idea is to make it available to the fans on Dagger label at a reduced price. It's not junk; it's EQ'd and mastered properly.

Do you have to bake the tapes?

No. Most of the stuff was pre-'70s, which is when the tapes started going to hell. The saddest thing right now is that BASF/Emtec is no longer; that really hurts because it's been my favorite tape forever. All of the early tapes I did with Jimi in '67 and part of '68 were on BASF LR56, that horrible, sickly green tape that sounded so great! To this day, I've played tapes from those sessions and they track perfectly; no shedding. They sound absolutely wonderful, and I've never had to bake them.

It's still a thrill for me to go back to the master tapes and pull up the faders and listen to Jimi talking to me, or Chas saying something, or Jimi making jokes about Mitch and Noel. And, of course, much of the music is just wonderful. I never get tired of working on Hendrix.

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Blair Jackson is Mix's senior editor.

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BY GARY ESKOW

Joshua Thompson

The Tallest Tree in New Jersey

The sign outside still said Frederic Clements, but it would be removed shortly. Joshua Thompson was in the final stages of transforming the former Clements art gallery into the new home of Tallest Tree Music, and in a couple of days, he would be hosting the release party for George Benson's new record, *Six Play*, which Thompson produced and co-wrote. Benson, we found out later, even stopped into play.

Thompson just might be one of the best-kept secrets out there, with nearly 32 million records bearing his signature style as either a producer, a writer or both. While he may not sport the hip factor of The Neptunes or the flash of P. Diddy, he has the talent and the ambition to work with high-profile acts. His goal for Tallest Tree? Simple: He hopes to create an in-house orchestra of New Jersey's finest, capable of playing in any style, just as Berry Gordy did in Detroit.

Joshua Thompson in the A Room at the Sony DMX-R100

Thompson, who grew up and still lives in Orange, N.J., near the Montclair home of Tallest Tree, is riding high on the contemporary R&B charts. During a 10-month period in 2001, he had written and/or produced a total of 10 *Billboard* chart-toppers, including Luther Vandross' single "Heaven Can Wait," the first release off of Alicia Keys' smash album, *Songs in A Minor* ("Girlfriend") and R&B songstress Olivia's Number One hit, "Bizounce." After a nine-month slowdown, while he concentrated on studio construction, he's back and ready. When *Mix* caught up with him, he was putting the final touches on the Benson album, due out this month.

"Certain things are constant in record production," Thompson says. "It all starts with the material; you have to have great songs. George is an icon. The question is, how do you get people to focus on him in a new way? It was done with Tony Bennett, and I'm sure we can do it with George. We have make him as hip as possible, but you don't want to create an overly edgy sound for him, because it could sound contrived. It's a bit of a tightrope, but that's what makes the job so interesting."

"I'm a listener," Benson interjects. "And you have to stay in touch with what's going on around you. To stay current, I need to speak the language that people know and understand. I knew what he was capable of, but I didn't know whether we would be compatible in the studio. Lining up minds is difficult!

"But working with Josh on this album has been a great experience," Benson continues. "He comes up with tasty themes, and he has a fresh approach to harmony that I find challenging. We're still squeezing juices at this point; every time I listen to the songs, I hear something different. We're in the process of surrounding the vocal tracks with guitar parts, without trying to become too involved with turning the album into a guitar/vocal thing just for the sake of that goal. We have to keep asking, 'Is this a good time to let the guitar shine or will a solo detract from the song?' The new studio sounds great. I'm happy for him, and I think that people are going to respond to the record that we've made."

The new four-room facility is an outgrowth of a deal with Clive Davis' J Records, whereby Thompson plans to be in constant production, focusing on signing and developing new talent for Tallest Tree/J Records.

"I have more work than I could handle at my home studio," Thompson explains. "I can't be running around to different studios. We've just signed a local group called the Art of Soul. They come from Newark [N.J.], and all of the guys are great lead singers. Clive came to see them perform before we had any material tailored for them and signed them on the basis of their performing ability alone. We have most of their album recorded and mixed, but we're looking for the hot single. We've also started working on Olivia's second album and a new project with singer Joe. Then there's the George Benson album, and we're also developing a 16-year-old singer named Corey Williams."

A guitar player since the age of 10, Thompson went

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to the Livingston campus of Rutgers University, where he studied with Kenny Barron and Frank Foster, who served a term as Count Basie's arranger. In the early '80s, Gwen Guthrie recorded one of Thompson's songs. By the end of that decade, he had worked his way up, co-penning the title track of Aretha Franklin's album, *What You See Is What You Sweat*.

The now defunct House of Music recording studio in New York City was a kind of post-graduate environment for Thompson. "That was a great studio," he recalls. "Most people know that Kool & The Gang recorded 'Celebration' and most of their other hits there. I learned a lot about how to produce by watching Deodato work with that band. He did a great job producing their *Ladies Night* album. Deo had a way of sifting through the writing, finding the great melodies and grooves, and thinning out the ideas so that the best elements shined through. I saw that, with him, producing was about not overcrowding the music. Deo also knew how to build an arrangement from start to finish. A lot of producers today overlook this, and it's a critical mistake. Quincy Jones is also a master of nuance and layers. Again, though, it all starts with a great song."

Engineer John Roper, at the PARIS station

Thompson's big breakthrough came when he began writing with Joe. "Joe and I developed a level of writing chemistry back in '95 that I'd not experienced before. Joe came up in the church. He has a lot of melodic skills and innate ability. He's trained on the guitar, bass, drums and keys, and I play guitar and keys. My harmonic concept opened up some of his melodic ideas and we combined on lyric writing. Joe delivers a song so well that he makes writing easy! He can make a B song sound like an A song, like Marvin Gaye could.

"We wrote 'All the Things Your Man Won't Do' for a movie called *Don't Be a Menace While Drinking Your Juice in the 'Hood*," he continues. "Joe didn't even have a record deal at the time, but radio stations started playing the song a lot, and Joe got with Jive Records. That track set Joe up as a solo artist. At this point, we've written about 40 songs together and have had some of them covered by Luther, Babyface and Case. Case recorded 'Missing You,' which was used in the film *The Nutty Professor II*. It spent four weeks on the pop charts last year and reached Number One on the *Billboard* R&B charts."

THE TALLEST TREE

The new four-room Tallest Tree Studios was designed by Gene Lennon, whom Thompson has known for over a quarter-century. "Back in 1976, when I first started out in the business, Gene was an engineer at 9 West, a studio in Bloomfield [N.J.]. He used to give me advice. I've never forgotten the time when he told me that if you have a little bit of talent, you can win by default in this business just by staying in the game and outworking everyone else."

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Once Thompson had roughed out a design that divided the 3,300 square feet into four distinct areas, Lennon took a look and had him open up the design to allow for more square footage in the A room. "We want to track as much as possible live, at least for certain sessions, in order to get that classic R&B sound," Thompson says. "So we eliminated some of the hallways that I had envisioned and devoted that footage to the live room."

From left: the artist Joe, George Benson, Thompson and, in front, manager Jameel Cross

The facility includes a pair of writer's rooms, outfitted with Yamaha 02R consoles and PARIS workstations, and a "whisper" room (Studio C) that sits next to the main recording room. A Sony DMX-R100 console is the centerpiece of Control Room A, and prewiring has been installed in case Thompson wants to network this board with others in the facility at some point. Genelec monitors were about to be installed in rooms A and C, with sets of M-Audio BX-8 monitors used in the two writer's rooms. Four rolling PARIS rigs will be moved around as necessary.

"PARIS is a phenomenal product," Thompson raves. "Unfortunately, the hardware may be going out of business. I've worked on Pro Tools and many other systems, but I think PARIS has the edge on them all. For one thing, it is a great value economically. It also has a gorgeous, transparent sound. Pro Tools has the plug-in advantage, and we may open up a Pro Tools room to simplify the way we interact with other studios. I currently have a four-card PARIS system running on a PC that has a souped-up Athlon processor. We get zillions of tracks out of the system: up to 96 tracks of music and vocals, for sure, with up to 40 plug-ins inline on some mixes. That's very cool!"

Thompson also runs Digital Performer in his writing rooms and manages resources by having the two systems talk to one another, exchanging audio information via Lightpipe. Interfacing with Pro Tools files is not a problem, either, as Thompson's engineer, John Roper, explains, "Generally, I use a .paf [Paris file system] to .WAV converter, which splits a stereo pair of .WAV files into .paf mono files. It's no problem to work with 24-bit Pro Tools files that way."

Thompson and Roper hooked up when the producer was looking for an engineer who was experienced with the relatively unknown PARIS platform. Roper, who lives in Connecticut, operates his own PARIS-centric studio, Digital Dream Multimedia. Besides tracking and mixing *Six Play*, Roper's recent credits include songs for Joe, Tyrese and O-Town.

"We try to get the most out of all our gear; whatever tool works," Roper says. "I like the Digital Performer MasterWorks compressor, so we'll port things over to that platform sometimes to take advantage of it. The Waves package can be run on either platform. All told, a typical track count may top out at over 128-plus tracks. I do have to do some submixing, but running 48 tracks or so with lots of plug-ins in not a problem.

Thompson, kicking back with a guitar

"We also have a TC Electronic 6000 with a Finalizer engine and the color touchscreen controller," he continues. "I can't imagine mixing without it! The depth and clarity of the reverbs is fantastic. I try to leave some room for the mas-

tering engineer, so I don't go crazy with it. I park the Finalizer inline, along with our Manley Massive/Passive, as part of a mastering chain that sits on the stereo bus as an insert. As I say, I am careful to leave a little bit of headroom for the mastering engineer.

"I also love to use our Cranesong Hedd," says Roper. "It's a handmade device that we use as our primary A-to-D converter. It has what it calls a tape knob that imparts a very distinctive analog vibe to anything you run through it, and it can simultaneously handle A-to-D and D-to-A conversions, which is very cool. This 2-channel device has an amazing sound."

What has Roper noticed about Thompson's production style? "He's very intense, fast-paced and demanding! Josh has great ears for pitch and time. I've often heard a singer track something that Josh hears as flat or sharp, or not sitting quite in time with a track when no one else will concur. Nine out of 10 times, when he goes to the piano to check a pitch, he's absolutely correct. 'Just make it perfect' is a favorite saying of his, and he settles for nothing less. I think his records reflect his perfectionism."

Thompson laughs when Roper's comments are relayed to him. "I am a vocals fanatic, it's true," he admits. "I need them to be immaculate. But I find myself becoming more flexible in this area, believe it or not. I'm not so worried about making them as precise as I used to, as letter perfect. Our theory used to be that you could have the character and soul and be in tune. But I now feel if there's a take that has an extreme amount of character, sometimes you have to go with it, even if the pitch isn't perfect."

At the end of the day, Thompson credits his success as a producer with simply being able to recognize a good song. "You have to know when to go back to the drawing board, when to stay with an idea and keep working it, and when to move on. Self-editing is critical. Quincy Jones used to call it polishing crap when you try to take a song that isn't great and add elements to it. It will never get good! Being a producer is all about recognizing good material. When you've got a good song, you can create a simple piano arrangement or give it to an orchestra, do a hip hop arrangement, it doesn't matter. It's hard to mess up a good song!" ■

Gary Eskow is a contributing editor to Mix.

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New York Post

Bad Times Behind, Full-Speed Ahead

By Gary Eskow

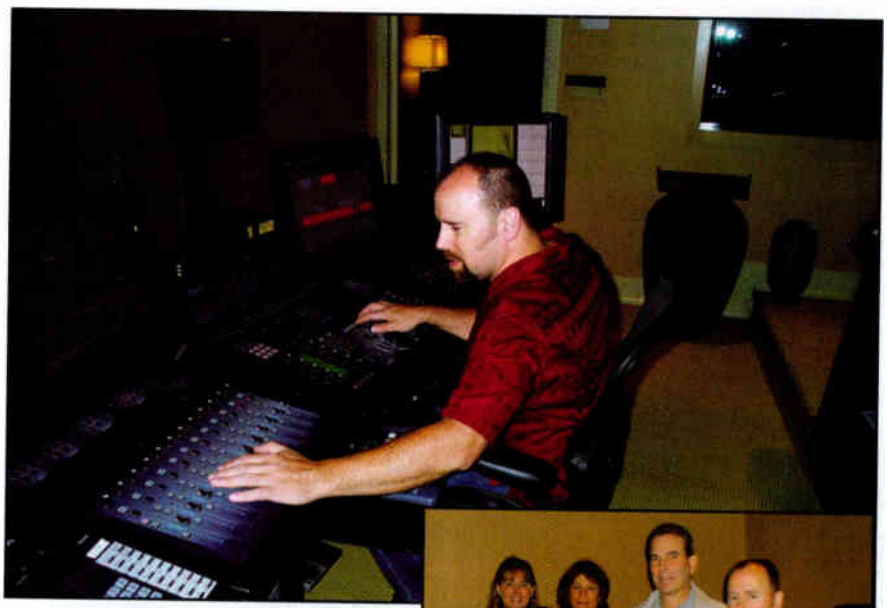
Regardless of the pressures raining down on New York City—and there have been many in recent years, including the strike, 9/11, a general dispersion of production dollars away from the main hubs and, most recently, a blackout—the audio post community has managed to shift with the tides and find ways to survive, and even thrive. *Mix* spoke to several houses, looking for a purely unscientific sampling of how the commercial audio post market has changed in the past year or so.

Marc Bazerman, chief mixing engineer at Pomann Sound Productions, says, "In the past six months, we have seen business improve 20 percent to 30 percent over the previous year. We are not back to where we were a few years ago, but we are seeing the first signs of the industry turning around for the better."

Bazerman says that editing houses and, to a lesser extent, advertising agency personnel continue to keep large chunks of work in-house. As a result, file compatibility, always an important issue, has grown even more vital. Bazerman says, "We are seeing more jobs that start in-house at an advertising agency or editing facility come to us in finished form. File interchange has become more and more important. Clients want to walk over with their Avid drive, pull up an editor's work and use that as a starting point. File sharing has become an everyday practice. Clients want MP3 previews of their radio spots and QuickTime movies of their TV spots so that they can view them from anywhere at anytime."

Gail Nord, general manager at Sound Hound, also sees the past year as a rebounding period in the industry. "2003 has been a really good year for us. In a strange way, all of the mergers, closings and movement within the audio post facilities here in New York have actually helped to solidify and expand our client base. I think there are a handful of other studios that have also done well as a result of the consolidation.

"Our Avid room opened up last year, and this spring, we added our seventh studio, a 5.1 surround mix room for our new mixer, Frank Cabanach," she continues. "The addition of the Avid suite has enabled us to package together our audio and video services for our promo clients. They seem to really appreciate the convenience and consistency of cutting and mixing in the same facility. At the present time, we're building our ninth room, another Fairlight mix room.



Above: Sound Hound engineer Frank Cabanach at the Fairlight DREAM console. At right: Laura Vick, Gail Nord, Jeff Berman and Cabanach

"Our business model has changed in a fundamental way, at least in a sense," she adds. "We hire freelance video editors now on what you might describe as a permanent freelance basis. A person will come onboard for three months or so to work on a project. Right now, for example, we're working on a huge series for USA [Networks] where we're cutting and mixing all of the promos. Once that project is completed, the room where the video editor is working will convert back into a nice voice-over studio until the next Avid project comes in."

Sound Hound has multiple Pro Tools and Fairlight workstations. "We're a mix of the two," says Nord. "We invested a chunk of money into Fairlight, and the guys who are on it really like the system a lot. Fairlights are easy to operate and network, and they're very reliable machines. Some guys like Pro Tools, and more power to them. I'm happy having both systems. In L.A., there aren't too many Fairlights, but there are lots of them here in New York."

Broadway Video and Broadway Sound have undergone some significant changes during the past year, but Broadway Sound's VP and senior mixer Mike Ungar says that talent remains the distinguishing element. "Business is actually pretty good, considering how bad the economy is and how everyone is trying to find ways to cut back production budgets," he says. "For one thing, most of our work revolves around the specific talents of the sound designer and sweetening engineers. All of our suites come

—CONTINUED ON PAGE 86

Video Game Meets Film

Live Orchestra for 'The Hobbit'

By Rod Abernethy

I once heard Buzz Burroughs, director of audio at Sony Computer Entertainment and game audio guru, jokingly say, "The only post-production in video games is the shrinkwrap that's put on the jewel case." It's not far from the truth. Post-production, as most audio engineers know it, doesn't exist yet in video games. Yes, there is dialog, sound effects and music, and they can all be set to pre-determined levels for the final video game audio mix, but unlike film and television, the audio elements in video games are really being "mixed" unknowingly by the player as he or she plays the game, with infinite possibilities and variations.

Orchestra figured prominently in the Bilbo-Smoug scenes.

Writing for video games today, especially for a major release like *The Hobbit*, *can* incorporate the same approach as scoring for film and television. Other times, it's a completely different journey with a different set of rules. Composing and creating sound design for film is a linear process: The visuals already exist and you can see what you're writing for. Instead of writing long-form music compositions, the video game composer must break themes and variations into segments that can be pieced together as the game is played. It's an audio "jigsaw puzzle," and its pieces must have many different and sometimes endless ways of fitting together.

Bringing a sweeping Celtic orchestral soundtrack to *The Hobbit* for Gamecube, Playstation 2 and Xbox was a challenge. Celtic live orchestra? But it's only a game. Well, if you haven't checked in on your teenager lately (or stopped by the Dolby booth at any trade show!), you should know that video games have changed in recent years. With high-resolution video animation, DVD playback and 5.1 surround sound, video games now rival feature films in look and sound, and the gamers now demand it.

From left: Rod Abernathy, Dove Adams and Jason Graves of Rednote Audio

At our studio, Rednote Audio (formerly Slackmates), we have been creating music and sound design for video games for five years, writing in styles ranging from techno/grunge to post-modern orchestral. My team/partners/fellow composers in Raleigh, N.C., include Dave Adams and Jason Graves. *The Hobbit*, to be released November 11, 2003, has been our most challenging, but rewarding, project to date.

From the beginning, we knew that the music had to convey the mood and feel of Middle Earth in this incredible Tolkien adventure. It sometimes had to be intimate and organic, other times bold and fierce: a perfect project to combine vintage gear with modern digital recording methods. We were asked to compose a Celtic orchestral soundtrack and get paid for doing it. What more could you ask for?

Fortunately, Inevitable Entertainment, developer of *The Hobbit*, had the insight and desire to use live orchestra, and we were awarded the project on the merits of a demo we created specifically for it. Intensive planning and direction by Marc Schaefgen, audio supervisor at

—CONTINUED ON PAGE 90

Yuki Kajiura

Channeling the World

By Bryan Reesman

Captivated by music from around the globe, Japanese composer Yuki Kajiura absorbs it all and unleashes it in her work for movies, musicals, video games and, especially, anime, that ever-growing subgenre that is giving American animation increased competition. Kajiura is a perfect fit for the anime realm, for it is a genre that embraces musical eclecticism.

The composer's two most recent anime series are *Noir* and *.hack//SIGN*, the latter of which has aired on Cartoon Network and both of which are available on DVD from ADV and Bandai, respectively. *Noir* is a tale of intrigue revolving around a French assassin-for-hire who is linked to an amnesiac teen who somehow knows about her past and who has deadly killing skills! *.hack//SIGN* is a fantasy tale about a virtual computer game in which its enigmatic lead character has forgotten his identity and is unable to log out like the other players.

The world of anime composing is vastly different from feature films. Unlike those who score for live action, Kajiura does not watch a finished or even a rough cut of the series she writes for. Instead, she receives character sketches and some information about the story, but that is all. "I don't know how the story goes. I don't know if she will live or die," she reveals. "When I look at the pictures, I don't know what she's going to do. When I write lyrics, I don't know what [the characters] will do, so what shall I write? I'm always confused."

Because she does not know what scenes she is scoring for, Kajiura sometimes ends up being surprised at the choices made by music directors. Koichi Mashimo directed both series, and the musical choices were often unorthodox. For example, the main theme to *Noir* incorporates dance beats and operatic female vocal; fast-paced music was often placed in slower-moving, more suspenseful sequences, generating an odd contrast.

"I was surprised, too," admits Kajiura. "Mr. Mashimo is a very interesting person. In *Noir*, he [acted] as music director and chose the music. Sometimes, I was surprised at the music he was using [in certain spots]. It was very fun. Mr. Mashimo uses music for a very long time throughout the scene. I sometimes write very long pieces for BGM [background music] as a soundtrack. Sometimes, I write six- or seven-minute songs, [but] the music is usually not meant to be used for that long." For *Noir* alone, which lasted only one season, as many anime series do, Kajiura composed between 60 and 70 cues of varying lengths.

Some of the *Noir* pieces highlight am accordion to give the score an appropriate French flavor. The ethereal opening to *.hack//SIGN* mixes Indian vocals with Irish-sounding violins. "I have no intention of making this music on purpose," Kajiura confesses. "It just comes naturally. I love a lot of different music. I love pop music, I love world music, I love opera, so I want to do many things, and I don't hesitate to do them. I just listen. I like Finnish music, and I love Romanian music. I listened to them [in the past] and thought that, someday, I would do [something with them]. I feel that anime fans are very flexible listeners. Anime fans like the classics, they are into pop, they love world music."

Kajiura's intuitive approach to style stems from a childhood engulfed by music. Her father loved opera, and when she was young, he would make her play piano pieces for him. "At first, I disliked playing piano for him," Kajiura recalls. "I was an only child, so I wanted to go out and play. But he made me play the piano for him; he liked beautiful music, and I gradually came to love it."

Interestingly enough, she says that she got a late start in the business, quitting the 9-to-5 world when she was 27 to become a professional musician. Given her extensive resume, the 38-year-old composer has made up for lost time. She loves musicals and has written music for five of them. She has also scored movies and video games.

Kajiura uses a G4 Power Mac and records and mixes in Pro Tools. Her main

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keyboard is an Ensoniq SR-76, her main synth is a Korg Triton and her main sampler is an old Akai 3000. She uses Digital Performer as a sequencer. When playing sampled instruments and editing, she records at home, generally working with anywhere between 30 and 64 tracks, then heads to local studios to record live musicians and singers.

"In making music, I just feel [whether] it's good for live musicians or not," Kajiura explains. "It's case-by-case. When I can use live musicians, I do, but sometimes a sampled sound is more effective."

In the case of an accordion in *Noir* or classical guitar in *.hack//SIGN*, those were played live. "I don't think the feeling of an accordion can be done by a sampler," she says. "Classical guitar cannot be played by samplers, I believe, so whenever [I need them], I call musicians to come and play. In the case of strings, sometimes I use sampled sounds when I feel the sampled sounds are good for what I'm using. Mainly, I want to use real strings! The violins are always real."

Scenes from Noir

The bulk of her CD material comes in the form of anime. In Japan, three soundtracks (one of them vocal-oriented) were released for *Noir* and four were released for *.hack//SIGN*. Anime soundtracks are a big business there. Additionally, her work in the pop duo See Saw, who perform the song "Indio" in *Noir*, a tune from her teenage years, is available on disc, as well, including the recent release, *Dream Field*. Kajiura recently released a solo album through Pioneer called *Fiction*, which includes three vocal songs apiece from *Noir* and *.hack//SIGN* sung in English.

No matter what she does, Kajiura throws herself into the mix, so to speak, to create fresh sounds. And the medium of anime allows her to stretch her wings as she has more musical leeway in what she composes. In working on *Noir* and *.hack//SIGN*, she felt no pressure to conform to the director's vision. "He just says, 'Do what you want to do,'" explains Kajiura. "That's Mr. Mashimo's way. He always says that, so I do what I want! I enjoyed this work very much. *Noir* and *Dothack* were so fun for me. I didn't recognize them as soundtracks, I simply made music." ■

New York Post

FROM PAGE 82

equipped with samplers, keyboards and various instruments for cool sound design-y stuff. Each mixer/designer can build his or her own unique catalog of sounds, and the result is a product that is never run-of-the-mill. Our client base has remained strong because the added value our people bring remains very high. You just can't replace high-end chops and out-of-the-ordinary talent and experience with a new box. Our support people also have had to adapt by being very responsive to scheduling needs on a moment-by-moment basis. They have done a great job."

WHERE THE WORK IS

On a percentage basis, Sound Hound's advertising work has dropped dramatically, says Nord. "Our advertising base is not very large anymore. The agencies we did work with have pretty much all gone under due to layoffs and mergers, and many of our longtime producer clients are now looking for work. I don't get the feeling that the industry is going to rebound any time soon. Our ratio has continued to move more toward cable work, both promo and long-format. Our ad work is probably no more than 20 percent of our business now."

The experience at Pomann Sound has been quite different, according to Bazerman. "From our perspective, the advertising business seems to be improving," he says. "I heard that a couple of agencies are going to start hiring again after a two-year freeze. Those were the lucky agencies that didn't have to fire anyone. We are seeing a significant increase in our ad work again. In the last year or so, we have had a huge increase in the amount of promo and advertising work."

Ungar says, "We have moved somewhat into longer formats from commercial and promo work, which is still the bulk of our sales, and have built rooms without the expensive booth part to meet technical and budgetary needs of the new client base, which revolves around smaller series work and indie films and docs. We use top-notch talent both here and on a freelance basis. Many of the freelancers have their own work, so it is a happy meeting. They bring us stuff, and we give them work.

Broadway Sound hosts digital restoration.

Again, the key here is that although you may need to bring down the price of the room, you never bring down the level of service. You don't have to because the overhead is considerably lower in these rooms.

"Although we have avoided dropping rates, we can offer some help to the budget-minded by having such things as direct ISDN hookups with talent and phone patches slide at cost," he continues. "It hurts that profit center somewhat but makes clients feel like they are not getting hit hard on every front. Ya gotta give where you can, but never treat your talent cheaply."

Pomann Sound has also been renovating its space. "We just finished remodeling our lounge and reception area, which now includes an original steel sculpture and several Internet stations," says Bazerman. "We also built a kitchen and a conference room that features antique wooden doors from China. We are in the process of changing digital audio workstations. There are features in all of the major systems that we like, but not one is the 'be all, end all' machine. We are looking forward to seeing what new products are available at the upcoming AES convention."

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Scott Burgess, Pro Audio Review

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Fett, Songwriter Magazine

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Mitch Gallagher, Editor EQ Magazine

"Soundwise, I was very impressed that the V69 could hold its own against an industry standard like the U47. It struck me as very versatile and of higher quality than other budget tube condensers."

Pete Weiss, Tape Op Magazine

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Marc Bazerman from Pomann Sound

NEW MARKETS

Finding additional niches can help keep the cash flow positive. Ungar touts the digital restoration work that takes place at Broadway Sound. "We are experts at the process of digital restoration," he explains. "We have some of the best engineers around doing that work, Grammy™ Award-winners who are now turning their attention to restoring and remastering the movie soundtracks for DVDs that our large duplication department has been going after. That is a great combination. Service from soup to nuts, and the work involves large corporations with some decent dollars to spend. It gives them incredible added value to their 'A' titles at a minimum cost. It is good for them and us, and has become a great income generator that helps us reach a bottom line that continues to be healthy. We have two new 5.1 rooms now that are used in the restoration and remix process. These rooms are balanced to the high standards that our client base now expects."

Broadway Sound's close relationship to Broadway Video is another valuable asset, says Ungar: "Broadway Video's recent successes as a production company have kept us busy in series land, and the two companies are able to create the type of symbiotic relationship that can only occur under the umbrella of one-stop shopping."

Sometimes, reacting to adversity can lead to a healthier business. Nord says that Sound Hound's way of responding to the challenges of the past several years have left the company in a stronger position. "In the days when we relied on advertising revenue, the work was centered around the sweeps. But today, we're catering much more to the cable networks and their work doesn't center around the sweeps. In fact, they work five days a week, 52 weeks a year. In a sense, the cable stations are economy-proof: When people don't have a lot of disposable income, they stay at home and watch television.

"Cable networks are very competitive with one another, and those that survive put real money into promoting their shows," she continues. "We've also found that people who work in promo depart-

Broadcast at AES

While we edit, mix and master in controlled, acoustically correct environments, all bets are off when it gets sent off to air. Audio post engineers would do well to know what is going on in transmission and HD systems. At this month's AES convention, post engineers might want to check out the following programs. For those who can't make it, transcripts will be made available at www.aes.org.

Friday, October 10

1:30 p.m. – 4:00 p.m.

REBUILDING OF NEW YORK BROADCASTING

Organizers: *David K. Bialik*, systems engineering consultant; *Howard Price*, ABC

Panelists: *Joe Giardina*, DSI; *John Lyons*, Durst Organization; *Kevin Plumb*, ABC, WPLJ; *Steve Shultis*, WNYC Radio; *Thomas Silliman*, ERI Inc.

Summary: The effect of the events of September 11 marked the first time in recent history that a U.S. major market needed to redesign an entire city's broadcast transmission system. Transmission facilities existing at the World Trade Center and Empire State Building before and after September 11 will be discussed, and the solutions implemented immediately after systems were disabled that day will be presented. The event will also explore the transmission systems currently in place and feature a look at the new plans for the Empire State Building, 4 Times Square and Freedom Tower.

4:00 p.m. – 6:00 p.m.

1STH ANNUAL GRAMMY® RECORDING SOUNDTABLE

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The 45th Annual Grammy Awards telecast was the first live show of its kind to be broadcast in high definition and discrete 5.1 surround on a major broadcast network. The panel will discuss the unique problem-solving involved in taking more than 1,000 microphone inputs from the stage of Madison Square Garden, balancing them in 5.1—in real time— and delivering discrete surround audio to homes across America. This panel will feature the team that was assembled by the Recording Academy to design this Emmy-nominated and ground-breaking achievement. The panel is scheduled to include surround sound designer *Randy Ezratty*, VP of engineering and advanced technology at CBS *Robert Seidel*, supervising producer *John Cossette*, sound designer *Murray Allen*, *Rocky Graham* of Dolby Labs, music mixer *Jay Vicari*, with additional panelists to be announced. Supervisors of Broadcast Audio for the Recording Academy *Phil Ramone* and *Hank Neuberger* will co-moderate.

Saturday, October 11

11:30 a.m. – 2:00 p.m.

AUDIO PROCESSING FOR BROADCAST

Moderator: *Joe Capobianco* – Cross-Country Communications

Panelists: *Marvin Caesar*, Aphex; *Mike Dorrough*, Dorrough; *Frank Foti*, Omnia Audio; *Rocky Graham*, Dolby; *Leonard Kahn*, Kahn Communications; *Thomas Lund*, TC Electronic; *Robert Reams*, Neural Audio; *David Reaves*, Translantech

Summary: Once audio is mastered and sent to the broadcaster, passes through various audio processors, affecting the presentation of the product. This event will feature discussion by leaders and pioneers of broadcast audio processing on compression, expansion, equalization curves and psycho-acoustics. ■

ments are very loyal. We've kept almost the entire client base of cable people who have worked with us. We began with just a couple of people, and as these kids grew up, they kept coming back to us. Suddenly, we found that we have the Food Network as a client, then Lifetime, Discovery and, eventually, many others as well. It's worked out very well for us."

Audio production houses have long understood that having an in-house composer can make their facility more attractive to clients. For the past three years, Stuart Kollmorgen has worked as an independent contractor with offices at Pomann Sound.

"I had my own studio with a full live room for several years," says Kollmorgen. "I made a percentage deal with Bob Pomann, who's posting the two cartoons [*Stanley*, *Jojo's Circus*] that I'm scoring. Bob brought me in on *Stanley* and I brought *Jojo's Circus* here, so the relationship's been mutually beneficial."

After graduating from the Berklee School of Music in 1987, Kollmorgen came to New York and knocked around in bands for a while, and eventually scored several experimental theater projects on the Lower East Side. "I became involved with some filmmakers who edited commercials for money. I've wanted to do long-form for quite some time, and I feel that I was born to score *Stanley*. My clients say that I do a good job bringing out the emotions in cartoon characters, and I enjoy it a lot.

"These days, clients want as much flexibility as they can get," Kollmorgen concludes. "The beauty of the deal that I have here is that if a client wants a last-minute revision, I can jump into my room, re-score and send them the changes while they're still working on a mix. I produce about 44 minutes of music every week—not including the spots that come in—and record at 16-bit in Digital Performer. Working out of Pomann Sound is a real advantage for me, Bob and, hopefully, the clients we serve." ■

The Hobbit

FROM PAGE 83

Inevitable Entertainment, and Chance Thomas, Tolkien music director for Vivendi Universal Games, led us on our *Hobbit* journey to Seattle for recording sessions at Studio X with the Northwest Sinfonia. This orchestra has been recording music for film and video games for more than 10 years, including hit video games *Medal of Honor*, *Myst III: Exile* and *Total Annihilation*. But before recording the orchestra came the real work.

PRE-PRODUCTION

We began *The Hobbit* with research: reading Tolkien's literature and immersing ourselves in the world of Bilbo, Gandalf and Gollum. Bilbo's enchanting world

needed a music score that was simple, melodic and organic for his adventures through Middle Earth, switching to bold and dramatic for the combat scenes. Reading the literature, one can hear fiddles, wood flutes, bagpipes, guitar, mandolins and bodhrans. And when a fight or battle occurs, one can imagine the pulse of low chugging strings, dramatic percussion and moving brass lines and stabs.

As always, there were many discussions with the developer regarding the game's design, look and feel. The game has been designed for family viewing and has the look of an animated film. The player will control Bilbo from his peaceful Hobbit hole in Hobbiton into the dark and harrowing Mirkwood forest and, finally, to the Lonely Mountain, home of Smaug the dragon. Bilbo is a spry, cute little character, and very skillful with his sword "Sting" as he battles trolls, goblins, giant spiders and other mysterious creatures. As the game progresses, he acquires items, knowledge and the courage to help him complete his quest. Following the original Tolkien story, it's a mix of lushly animated, flowing landscapes and dark, menacing underworlds.

Once the budget was approved for over 75 minutes of original music, Schaefgen at Inevitable created a "cue" list, which detailed every music track for the game and served as our composition's road map. The scores were split into two categories: acoustic instrumental for Bilbo's exploration and live orchestral for the action/combat scenes.

The game is divided into chapters and regions/scenes, with each scene having its own musical requirements, including themes for different characters and places in the story. Most music cues in a scene are normally 20 to 30 seconds long and are rated in levels of intensity. As the scene is played, these cues must fit together in any given order but still sound cohesive. To finish out the scene, there is a "Win-Stinger" and a "Lose-Stinger" to match each level of intensity, depending on where the player stops game play during the scene. This process was carried to produce music for more than 210 music cues spanning over six chapters and 40 scenes.

At the project's beginning, there was no way for us to play the game and get a feel for each scene. With artwork, scripts and weekly conference calls, Inevitable's design team gave us detailed descriptions, but as the game developed, we received rough builds and were able to play it with our demo music in place so we could fine-tune the music before the final scores were completed.

KNOW YOUR HOBBITS!

"There are no marimbas in Hobbiton," said Chance Thomas, the Tolkien music director, after he reviewed one of our battle cues that had a marimba line being played through a combat scene. He was right. We recorded demos for every scene in the game and sent them to Thomas, who kept us on track with Tolkien's Middle Earth moods and style.

We recorded all of the demos at Rednote Audio, which houses a mix of vintage analog gear and contemporary

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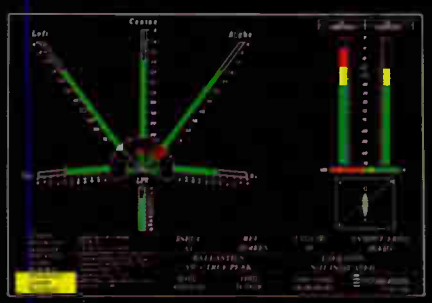

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DAWs. We knew that most of these acoustic instrumental demos would be used in the game if approved by the Tolkien team, so we made the extra effort to record them as final takes. We recorded ourselves and other performers playing traditional Celtic instruments, including six- and 12-string guitar, fiddle, Irish flute, bouzouki, mandolin, bodhran, hammered dulcimer and uillean pipes in our 25x30-foot live room using MOTU's Digital Performer with 896s, vintage API preamps, a silver-faced UREI 1176, two AKG 414s, a vintage Neumann U67 and Oktava MK012s. Our solo takes of the guitars and bouzouki were recorded with the Oktava MK012s in an X-Y pattern, API 512 mic pre's and the Manley Variable-MU stereo comp/limiter. The Neumann U67 and a Neve 1272 mic pre were also used, about two feet behind the Oktavas to help define the center "sweet spot."

The orchestra demos were also written and produced at Rednote Audio using library samples that would later be replaced by the Northwest Sinfonia in Seattle at Studio X. Jason Graves arranged our demos for live orchestra using an amazing music-publishing program, Sibelius, to edit and print out the parts. Manuscript preparation took us from Raleigh to Seattle, printing out scores from Sibelius in the hotel room one hour before the sessions at Studio X. Oh, how we love those last-minute crunches!

RECORDING THE ORCHESTRA

Studio X owner/engineer Reed Ruddy and engineer Sam Hofstedt recorded the live orchestra sessions at their Seattle facility, which has a long history of recording groups like R.E.M., Aerosmith, Nirvana and Pearl Jam, along with major film soundtracks. Simon James of Simon James Music contracted the players for the Northwest Sinfonia and acted as concertmaster. We budgeted for the orchestra using an online tool that Simon has created just for that purpose. You can find it on his Website at www.simonjamesmusic.com/frameset.html.

Studio X has a large live room that easily accommodated the 40-piece orchestra. The sessions were recorded just as they would be for most film scores using a traditional orchestra setup. Gobos separated various sections, and the harpist was placed in an iso booth. Most cues were :05 to :30 in length, and Jason Graves conducted the sessions without a hitch. The Northwest Sinfonia are extremely experienced players, nailing each cue on the second to third time through. We worked at a fairly fast pace through two six-hour sessions with a 10-minute break each hour. The orchestra did not have any problems playing with headphones and preferred to play to a click instead of our original demos through the cans.

We've learned from experience that the orchestra performs better if we string short cues of :05 to :15 together in groups, playing four to five cues in a row with pauses of four measures in between each cue. Having the orchestra play straight through these groups of cues keeps their performance really sharp and also saves time overall. To put it simply, it's easier to have them keep playing than to have them stop/start/stop/start.

To record the orchestra, we used Digital Performer on a G4 PowerBook, recording directly from Studio X's incredible collection of vintage mics, Grace preamps and an SSL board into our MOTU 896 FireWire interface. For the hard drive recorder, we used an Apple Ipod. It was strange seeing everything routed into our little Mac laptop, but it allowed us to come home and immediately begin editing and mixing. Plus, it sounded great.

Back at Rednote Audio, we replaced the demo-sampled orchestra tracks with the live orchestra tracks and mixed the entire game score soundtrack in Dolby Pro Logic II surround sound using Digital Performer 4 on a G4 Mac and a Mackie D8B Digital Mixer, monitoring through self-powered Mackie HR824s and HR624s. A touch of Audio Ease's Altiverb plug-in was used for an orchestral hall, and the Kurzweil RSP8 was used for the overall surround sound mix effects. We also mixed the sound design and surround mixes for music and sound design for the in-game cinematics (short movies that tell the story as game play evolves) and for the film and television ad trailers.

Due to memory restrictions on the DVD game disc, Nintendo recommends 32k for audio playback in the Gamecube Xbox, and Playstation 2 supports audio playback up to 48k. All final mixes for the game were recorded at 16-bit/32k, converted to MP3s for playback on the Gamecube and ADPCMs for Playstation 2 and Xbox. These mixes were sent to Schaefgen at Inevitable, where he and other audio programmers placed the music into the game.

"The gamers want it..." is a commonly heard phrase in game development. Game audio A.I. (artificial intelligence) is becoming "smarter" all of the time, as the demand for better sound, graphics and interactivity grows. There are new audio tools being introduced that will allow game composers and sound designers the ability to mix audio in real time as the game is being played. The gap is narrowing between audio for games and film/television production, but due to the "nature of the beast," games will always require a different technical approach from films and other methods of audio production.

Any way you look at it, audio production for video games has evolved from the 3-track sequenced beeps of the early '80s to today's live orchestral soundtracks. The sound of game music has become so sophisticated and complex that it's sometimes hard to distinguish it from its film-score sibling. At its best, it brings the player closer to a truly interactive experience, something film scores can't do.

If you want to learn more about the production and profession of video game audio, visit the game Audio Network Guild's Website (www.audiogang.org), an organization created by video game audio producers, composers and sound designers to help promote better game audio. ■

Rod Abernethy (rod@rednoteaudio.com) is a game audio composer/designer based in Raleigh, N.C. He would like to thank Dave Adams and Jason Graves for their help in penning this article, and his manager, Bob Rice, of Four Bars Intertainment.

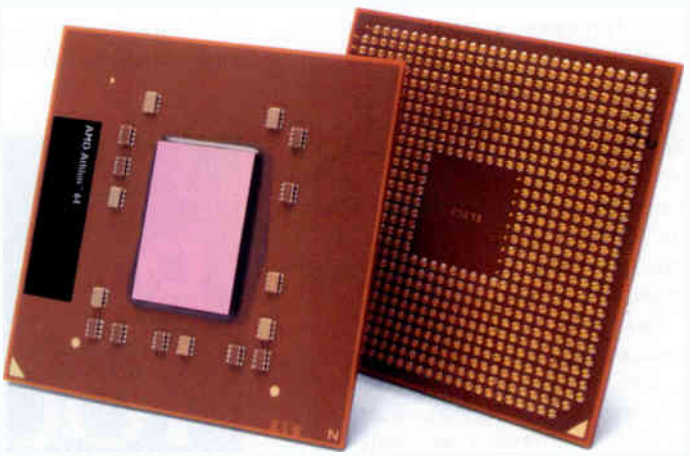
BY OLIVER MASCIAROTTE

Longer *Is* Better—For Computers, That Is

Onward and Upward to 64 Bits

Last month, I looked at the subjects of chips, clocks, word length and DAW power. This month, I'm examining an impending tipping point in desktop computers: the introduction of several new consumer processors that will change the way you do your work.

Let's step back a bit so that we can get our bearings. If you remember from last month, I looked at the inevitable progression from 4 to 8 and then 16 bits, on up to the current crop of 32-bit Central Processing Units, the heart of any computer-based product. All the while, Intel was hyping what the folks at Tom's Hardware refer to as "its self-perpetuated myth that processor performance is based on clock speed alone." Now, with clock speeds reaching the limits of current technology, a feature that mainframes and scientific workstations have long enjoyed has started to make an impact on the Mac and Windows desktop: Processors that crunch true 64 data words are now breaking out of the chip foundry and onto your desktop.



Front and rear views of the AMD Athlon 64 processor

To keep the heavy-duty, "enterprise-class" IT customers happy—and to provide something for mere mortals to lust after—the x86 chip vendors began the migration from 32-bit to 64-bit processors several years ago. At present, high-end Windows users are in the middle of a marketing tug-of-war between Intel/HP and Advanced Micro Devices (AMD), and I'd place my money on AMD. Here's why: Intel and Hewlett Packard's new 64-bit Itanium processor family, the Merced and McKinley chips, and their Intel IA-64 architecture are designed as a clean break from the past. Legacy "x86" code written for the 8, 16 and 32-bit range of past processors runs in emulation on an Itanium, making overall performance for legacy software relatively poor; "relative" translates into slower than the current range of 32-bit CPUs. According to eWeek's technology editor, Peter Coffee, "Intel is betting that on-chip instruction scheduling hardware, which emerged on x86 chips in the late 1990s to inject new life into 1980s-style code, is nearing its limit. With the Itanium, Intel proposes to examine programs when they are compiled into their executable form and encode concurrent operations ahead of time. Intel calls this approach EPIC—Explicitly Parallel Instruction Computing—and it is the genuine difference between the Itanium and AMD's x86-64." Trouble is, EPIC is hobbled with weak backward compatibility for 32-bit code, making it a slowpoke in that regard.

Meanwhile, AMD has seen fit to build legacy support, or backward compatibility, into its AMD64 technology, extending the Intel x86 instruction set to handle 64-bit memory addresses and integer data, while providing a continuous upgrade path as applications are rewritten or recompiled for the new capabilities of 64-bit chips. Dirk Meyer, senior VP at AMD, stated that the company "designed its AMD Opteron and upcoming [it was due out last month] AMD Athlon 64 processors to deliver quick and measurable returns on investment with low total costs of development and ownership; protect investments in the existing 32-bit computing infrastructure and limit the costs of transition disruption by transparently mixing 32-bit and 64-bit applications on the same platform; and simplify migration paths and strategies, allowing customers to choose when and how to transition to 64-bit computing." In a word: value. Right on, sez I!

This nod to customers' real-world needs is something that I, for one, appreciate. I like the fact that, when possible, new and improved doesn't necessitate heaving out your existing stuff. As I mentioned last time, the PowerPC Alliance made the same sensible choice when it built 64-bit compatibility into its family of processors. Alas, the PPC Alliance dissolved in 1998 when Motorola assumed control of the PowerPC chip-design center in Austin, Texas. IBM continued to develop PPC chips for its own uses, and that effort has resulted in the latest member of the POWER family: the 970. Announced at last October's Microprocessor Forum, the fifth-generation "G5" is, like the Itanium and Opteron, a true 64-bit machine, with support for 64-bit integer arithmetic vs. 32-bit for the G4, two double-precision floating-

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point units (FPUs) vs. one for the G4, as well as an AltiVec 128 data-bit vector processor. The G5 has, according to Apple's developer Website, a "massive out-of-order execution engine, able to keep more than 200 instructions in flight versus 16 for the G4."

A much longer execution pipeline, up to 23 stages vs. seven for the G4, means that bogus branch predictions are more costly because of the deeper pipelines. Address prediction—the whole PPC vs. Intel debate, in a way—boils down to prediction and how designers augur upcoming processing requests. Here's why: CPUs are designed to execute or process instructions in a predictable order. Think of a modern factory, with parallel production lines all building subassemblies that are merged into a finished commodity. The output of one assembly line feeds the input of another. Once all of the subassembly lines are filled, an efficient manufacturing engine is created. In the world of CPU design, the assembly lines are called pipelines, and once all parallel pipelines are filled, an efficient data-processing engine chugs along. By the way, Intel's EPIC is that company's answer to efficient parallel execution: Keep the pipelines full with nary a bubble in sight.

In a factory, if a part is missing from one assembly, then it holds up all other lines that are dependent on the output of the suspended line. In a CPU, if the correct datum isn't available for processing in any pipeline, then it causes a discontinuity in the efficient use of the pipeline's program-execution capabilities. That discontinuity, or "bubble," happens whenever the task-scheduling manager screws up in predicting what "part," or piece of data, is needed at the input to the pipeline. It's as if the purchasing manager in a factory didn't order a crucial widget to build a subassembly. The lack of that widget shuts down the whole factory.

Sixty-four bits. Now what, you may ask, does that buy you? Well, how about the ability to address more than 4 GB of RAM and practically manage more than 2 GB? Actually, 1 million terabytes. Far-fetched, you say? Not really, when you consider that, nowadays, 1 GB of DDR PC3200 RAM will cost you only $190, and many applications will happily use as much RAM as they can steal. With virtual memory, more RAM means less disk swapping, which results in significantly better overall performance.

Another benefit is that these new 64-bit puppies are designed explicitly for SMP configurations. SMP, or Symmetrical MultiProcessing, is one of several design approaches that allows more than one CPU to share computing load, divvying up responsibilities among the processors. "Two-way," two-CPU computer configurations are typical for desktops, which means that one CPU can handle all of the UI, networking and other mundane tasks, while the second CPU concentrates solely on your media application's needs.

A third, though indirect, advantage is that 64 bits facilitate more widespread double-precision data handling, which, in turn, means better quality for your data "product." For many media moguls, quality appears to be one of the last things on their minds, but for myself and one or two other engineers out there, delivering a realistic acoustic performance to the consumer is an important consideration, and double-precision processing really helps.

To be realistic, though, 64-bit processors won't buy us squat until software vendors also drink the 64-bit Kool-Aid. Unless your favorite application is rewritten or, at the very least, recompiled to take advantage of these next-gen processors, then you won't see any improvements. Even worse, under some circumstances, you may actually experience crappier overall performance due to your 32-bit application running in "compatibility" mode, essentially emulation, on a 64-bit Itanium. Because both the Opteron and PowerPC families were designed with transparent, low-level compatibility for legacy or 32-bit applications, they'll run your old-school stuff just fine, thank you very much.

RISC and CSIC architectures, once clear and polar opposites, are now both moving toward a common ground.

Another way of looking at all of this 64-bit hoo-ha is that RISC and CSIC architectures, once clear and polar opposites, are now both moving toward a common ground. Distinctions are increasingly blurry, though; it may take a few years before the likes of Digi get around to rewriting its stuff for G5s, Opterons and Itaniums. In the meantime, more agile and customer-oriented concerns will get right on the stick, providing 64-bit-optimized versions of your favorite software. So, save your Euros for that inevitable upgrade, because longer really *is* better! ■

OMas has recently taken many an audio geek across the Divide of Confusion to the blissful land of OS X Understanding. This column was brewed while under the influence of Madredeus' Electronico *and, in keeping with the electronica slant, Björk's* Greatest Hits.

Virtual Memory

Virtual Memory (VM) is a standard method of using slow hard disk space to act as a substitute for fast solid-state memory, typically Random Access Memory, or RAM. Both Mac OS and Windows use virtual memory to optimize RAM usage. In Ye Olde Days, hard disks were far less expensive than RAM, so VM was a viable option for cash-poor, time-rich folks who couldn't afford a boatload of RAM. You'd have to be time-rich, because the time it takes to read and write data to rotating media like a hard disk is orders of magnitude slower than RAM access times.

When an operating system decides that memory requirements are getting tight, it takes the oldest data from RAM and "pages" it out to disk until needed again. If the data is later required to complete some operation, then it's read from disk back into RAM and then used. This "swapping" of data to and from RAM and disk takes—to a CPU operating at several GHz—what appears to be an inordinately large amount of time. Hence, the slowdown associated with the use of VM. Moral of this story: The more RAM you have, the less swapping that happens and the faster your computer will be.

—*OMas*

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BY KEVIN BECKA

API Vision

A Groundbreaking New Surround Console

There is something reassuring when a new console with a lot of fresh bells and whistles still looks familiar. That's the impression I got from API's Vision surround console. Between the meter bridge and the armrest, there is a mix of tried-and-true discrete API components, along with some new innovations that differentiate the Vision from its predecessor: the Legacy Plus. API's intent was to address what it felt were the shortcomings of surround consoles currently on the market. API's Dan Zimbelman sums it up: "We debated LCR versus LR panning, sends versus center pan output, LFE filtering and how to address surround effects returns. We've come up with some innovative results while maintaining the API standard of sonic integrity and quality of build."

BASIC LAYOUT

While API may have redesigned the cart, the company has not re-invented the wheel. The console is laid out in 16-channel buckets, along with a center section, allowing buyers to design their own custom layout in multiples of 16 channels. Just below the meters, Vision borrows from the Legacy Plus with two stacked slots in which any 200 Series module can fit, including the 212L mic preamp, 225L compressor, 235L noise gate, 205L direct input or 215L filter module. Below that is the bus-assign matrix, followed by the EQ section, which can fit either a 550L or the slick-looking new 560L graphic EQ with the slanted sliders. Further south is the input section comprising the 10 aux buses, channel fader ("Fader 2" in API-speak), panning section and Fader 1 (monitor fader).

The center section—from the top down—begins with 7.1 metering, followed by a built-in, 17-inch LCD monitor; 24 multitrack bus trims; and the individual and overall cue send masters. Closer to the operator, various essentials are arranged, such as the folddown matrix, oscillator, monitor panel, solo master, individual monitor solo and cut controls, talkback, the stereo and surround master faders and automation controls.

WHAT'S NEW?

Right off the bat, the twin 100mm faders on the input section catch your attention; no fader on the console is smaller than that. Each fader has an insert and trim capable of +17 dB of additional gain and both carry a highpass filter, one fixed and one variable. Surround panning is achieved via three independent pan pots that address LCR/LR, front/rear and SL/SR.

The bus-assignment section is 16 channels wide and sits across each bucket. It comprises a multitrack bus-assign section, stereo/5.1 bus assignment for Faders 1 and 2 and a Clear button on the far right. To assign a bus, you simply make your choices, adding pan if needed, and then choose the Set button on any channel. This results in your chosen setting being dumped to that channel. This operation can also be performed across a range of channels or the whole console from the center-section's LCD screen.

The center-section's LCD screen is command central for a number of functions, including mix storage and recall, offline editing, group assignments, snapshots and setups. These are stored on a standard PC running Windows, but this PC has nothing to do with the automation. As for automation (aptly titled Vision), all faders and switches on the input and output sections are automated and can be instantly reset. The system uses localized micro-controllers and a master control board that interfaces the timecode and machine-control commands. This means that the console holds mixes even when the control computer host is offline.

Some other nice extras include a front/rear-channel flip button, which puts the rear in the front and vice versa. An L/C/R/SL/SR button to LFE takes a feed from the five channels and sends them to an LFE filter card, which generates an LFE signal from the rest of the channels. A CR Test Points section on the center section provides access to each control room output, facilitating the alignment and balance of the room's surround system. One surround essential is the optional surround return section, which occupies two 200 Series slots. It features a 5-channel panner, LCR on, module on, level pot, solo, solo safe, phase-invert switches and a space-control pot, which adjusts the width of the image.

THE BOTTOM LINE

As you would guess, pricing is based on size and options, but according to Zimbelman, an 80-channel Vision will price around $500k, depending on the fit and range of modules. This equates to about 15% to 20% more than a similarly sized Legacy Plus. As I was writing this piece, API had just shipped the first desk to Galaxy Studios in Belgium (www.galaxystudios.be). I didn't have any hands-on time with the console, but from my experience with the Legacy and other API gear, it certainly must be something any surround production house would be proud to own. If you're at AES in New York, stop by booth #547 or demo room 2D08 to learn more, or visit the company at www.apiaudio.com. ■

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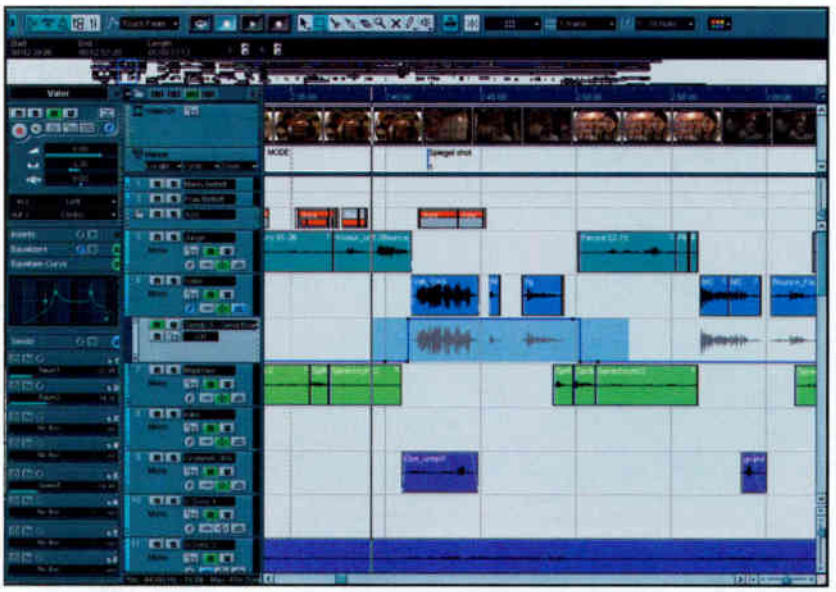

New features in Nuendo 2.0 include enhanced surround architecture, improved effects routing, a re-engineered mixer and a sleek new look.

It hardly seems enough to refer to Nuendo 2.0 as simply an "upgrade." Steinberg's revision of the powerhouse DAW sports 200 new features and a sleek new look with a feature-rich implementation that supports a bevy of optional add-ons. Nuendo packs format compatibility, user configurability and networking into a powerful and flexible native package.

A RE-ENGINEERED MIXER

Kudos to Steinberg for implementing the feature most requested on the Internet by DAW users: automatic plug-in and channel strip delay compensation for the complete signal path, including groups. You can switch it off in the plug-in information window, but most users will simply breathe a sigh of relief.

Nuendo's new mixer has the kind of creative flexibility that makes hardware mixers look like...appliances. Gone are the multiple windows for channels, EQ and VST outputs. In their place is a mixer that looks and feels like a mixer. Although it may take a bit of studying to understand the seemingly hieroglyphic notations on the left side, the new mixer gradually reveals itself to be a multilevel digital network that can quickly be expanded for tweaking or collapsed to take up minimal real estate on the screen. In fact, you can create four different mixers, so you can have, for example, one just for FX tweaking, one for MIDI, one for tracking and VST Instruments, and one with just group and folder channels. You can show selected channels and channel strip sections in narrow, wide and extended mixer views.

New multichannel architecture affords 12 channels through every input, audio track, effect return, group and output, with support for mono, stereo, LCRS, 5.1, 6.1, 7.1, 8.0 and 10.2. (More than 20 different surround formats are supported.) Channel sends can have surround panners, and there are now three stereo panning modes: Balance, Dual Pan and Combined Pan. There's also a handy patch editor for routing plug-in channels inside surround channels. If you want stereo plug-ins routed to the surrounds, it's a snap to patch them by selecting "e" next to the fader to bring up the VST audio channel settings.

The VST Connections window opens for routing between the ASIO device and all system input/output buses. (Note: Nuendo supports ASIO on the PC and Core Audio on the Mac.) Nuendo 2 includes child buses, or subsets, of multichannel buses. Child buses are part of the parent surround bus, so they do not have separate channel strips, but they can be routed as mono, stereo or other combinations. They are most useful for common routing problems like monitoring a left/right stereo pair within a surround channel on the output bus, but you can also use them on multichannel input buses. You can store and recall bus presets in the pop-up menu at the top of the VST Connections window, so you can have multiple output configurations quickly accessible within the same project. This is great for projects that migrate from the large recording facility to the producer/engineer's notebook and back.

Nuendo 2 supports an unlimited number of VST Instrument channels, Rewire 2 channels, audio tracks, MIDI tracks (now available as channels in the mixer), groups and effects returns. Realistically, this means that you can have as many as you want until you overload your particular system and performance becomes unstable. Similarly, physical input and output buses are limited only by the restrictions of your ASIO hardware.

Opening the input/output mixer section allows input gain change to boost the level of poorly recorded signals before EQ and effects. Each channel has a phase reversal switch and input/output pop-ups for selecting input and output buses. (Note: If you add EQ and effects to a channel before recording audio, then the EQ and effects will be printed with the audio.)

Two of the eight channel inserts are post-fader. You can bypass EQ, inserts and sends individually or globally for each channel. Right-click (Windows) or Control-click (Mac) the channel meter to bring up meter options: Hold Peaks, Hold Forever, Input VU, Post-Fader VU and Fast Release. Here, you'll also find the global reset for the VU meters. Hold Peaks, Hold Forever and Post-Fader VU are the default settings for meters.

Automation has been augmented with five new options. Touch Fader initiates automation writing when you touch the

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control and stops when you release the mouse button. Auto-latch starts writing when you click the control and stops when you stop playback or turn off the Write function. X-Over works like Auto-latch, except that it stops writing when you cross a previously written automation curve. Overwrite works like Auto-latch, except that it only affects volume and it continues to write until you turn off the Write function. Trim also only affects volume automation, and offsets the volume automation curve without overwriting previous volume information. Waveform data is displayed as a shadow behind automation curves; you can make automation data move with edited data when you select the "automation follows events" preference or menu choice. You can edit automation using preset curves, jump curves for on/off and ramp curves for continuous multiple values.

New FX return channels provide a convenient way to "premix" effect levels. You can also add processing to the effects returns; FX return channels have inserts and EQ with the same layout as audio channels. Nuendo 2 supports VST 2.3, with improved I/O routing of plug-ins.

RECORDING AND EDITING

Another long-requested feature has been added to the recording area: long-form recording with the 64-bit .WAV format. You can now record without the 2-gigabyte barrier of 32-bit. Assuming a signed integer, 64-bit means more than nine exabytes per file (not the tape format, but 10^{18}, or a quintillion, or a billion-billion bytes; in other words, a lot more room for live recording).

Record files can have up to 12 channels each, and you can specify different folders or subfolders for each audio track. This is useful if you want to manage drums, voice, sound effects and other categories of audio in the project folder. There are new *folder* tracks that allow group-based overviews with better organization. Pre- and post-roll settings are separate.

Loop functions in the audio part editor have been expanded so that you can set up an independent track loop that affects only the edited part.

New record modes include Merge and Keep Last. If you select Keep Last, then the last complete audio take in Cycle mode is kept as an audio event in the project window. You can find earlier takes by going to the Pool and clicking on the plus sign beside the audio file. In MIDI Cycle mode, Keep Last means the last completed lap is kept.

Merge (in the audio recording mode) causes the new audio event to overlap the old audio event (same as Normal). For MIDI, if Merge is selected in the recording mode, then overdubbed events are added to existing events.

You can record locked to timecode and, if you specify the Broadcast .WAV format, recorded files get time-stamped as soon as a valid timecode signal is received.

The transport bar now has a jog wheel for scrubbing with shuttle speed control and nudge buttons. If you want to customize shuttling, then you can set up key commands. In fact, the Key Command window is one of the most powerful aspects of Nuendo 2.0, and it's well worth the time to explore this area if you want to create an operating environment tailored to your needs.

Splitting the Project window into two lists works well if you need to size audio tracks while leaving the video thumbnails alone. The video track is scrubbed along with audio during editing. If you're a Mac user, then you can monitor video directly through the FireWire port. One of the handiest aspects of the video track is that multiple video files can reside on the same track. If you are carving out music tracks to accompany menus for DVD, this makes life much easier than working in DAWs that only support one video file per project.

Nuendo offers numerous synchronization options, too. You can sync to external timecode via MTC, either of two 9-pin devices, ASIO Positioning Protocol (with appropriate hardware) or VST System Link. Although the Nuendo Timebase Synchronizer had not shipped at the time of this review, it includes sample-accurate sync with VST System Link. To sync other devices to Nuendo, you can send MIDI Clock with Song Position Pointers, MIDI Timecode, MIDI Machine Control or Sony 9-pin. (There are two 9-pin devices available.)

Unlimited zoom and view redo/undo allow you to zoom in several steps and retrace all the way to the beginning. Offline process history can be edited, so you can remove some or all processing steps from a clip.

Nuendo 2 offers real-time, nondestructive crossfades, including auto-fades and auto-crossfades with user-definable fade times. The advanced crossfade editor is easily accessible by clicking in the fade area, but stays out of the way for quick editing. There's also a sample editor with hitpoint detection for loop creation.

Project Sharing With AudMorph

Nuendo 2.0 supports AES31, OMF and OpenTL 3.0 for project sharing among DAWs. Software engineer Teeto Cheema, author of the OpenTL Audio Interchange Specification Format, has acquired the rights to TimeLine Vista's TransAudio Pipeline and updated it for the new SCSI-based Audio Format Converter and Utility, dubbed AudMorph.

AudMorph can read OpenTL (Fat-32, HFS, HFS+); Pro Tools 3.2, 4.x, 5.0 (HFS, HFS+); OMF-Sample Based (HFS, HSF+); WaveFrame; Akai DD and DDPlus; and Fairlight .ML Projects (FLFS). AudMorph can write and tape mode-convert to OpenTL (Fat-32, HFS, HFS+), Pro Tools 4.3 (HFS, HFS+) and Waveframe. It can export to OMF sample-based (HFS, HFS+).

Other features include up-to-date compatibility with the Tascam MM Series and MX-2424 multitrack recorders, with the option to align all tracks, choose target format, bit depth and project name. AudMorph can also fix start-time errors between Tascam MMR-8/Pro Tools projects and non-MMR/Pro Tools projects.

Cheema's Website, www.digaudio.com, includes tips from Nuendo power-user Steve Tushar for converting Pro Tools sessions to Nuendo 2.0 and back. We duplicated these conversions at JamSync using a Pro Tools|HD system provided by Clay Vann at VanGo Digital in Nashville. We found that when using Pro Tools|HD (Version 5.3.1 and above), you need to save sessions as 4.3 for the conversions to work, while when using our MIX systems (Version 5.1.3), we were able to save Pro Tools sessions as 5.0 and convert those sessions to Nuendo 2.01. Sample rate for Pro Tools-to-Nuendo transfers is limited to 44.1 kHz and 48 kHz.

When you are working with AudMorph, MacOpener must be turned off, and when you open the newly created Pro Tools session, fades must be re-created. All files must be Broadcast .WAV, and they must have the same bit depth.

Although AudMorph requires a SCSI drive in its current release, Cheema is working on IDE and FireWire drive support for future revisions.

—K.K. Proffitt

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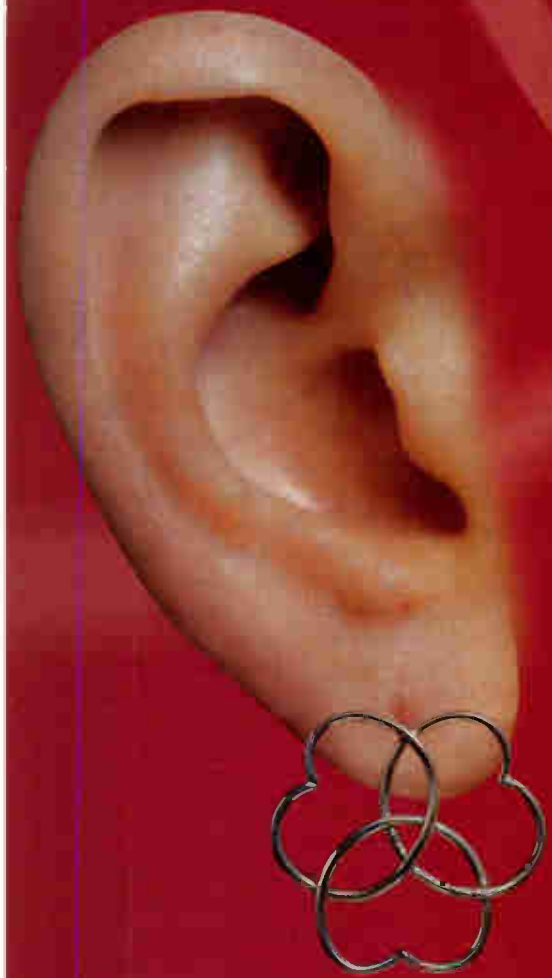

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VST INSTRUMENTS AND MORE

MIDI-related functions abound, and if you're comfortable with Cubase SX, then you'll be happy with Nuendo's key editor, drum editor, list editor, logical editor and MIDI device manager. There's even a score editor that imports MIDI files.

Nuendo 2 has 64 VST Instrument slots. There are some simple VSTi products included, like the Waldorf A1 synth, but to appreciate the power of Nuendo for music and sound effects creation, you'll need to add more. Some of my favorites include Wizoo's The Grand (a MIDI piano sample player), Halion (32-bit sample player) and Arturia's Moog Modular V. Halion 2 supports multichannel sampling, and a 5.1 sound effects disc, *Urban Atmospheres*, is included as a demo from Wizoo in the Nuendo shipping package.

The VSTi area is one of the few minor flaws in Nuendo 2. Instruments are recorded as MIDI tracks, and in order to have audio recorded at the same time, you have to route audio "out of the box" and back into an audio input, losing 32-bit precision if you use a digital pathway. The MIDI track can be exported with audio mixdown (retaining 32-bit precision) and automatically re-imported as an audio track, but this is not in real time. Nuendo enthusiasts will point out that this is simply a workflow preference, but for some engineers, real-time audio printing of VST Instruments is highly desirable, and there have been several requests for an internal bus matrix to be added to Nuendo. [Note: If you'd rather track VST Instruments offline in order to edit in the MIDI domain before printing to an audio file, Nuendo 2.0 includes a macro called Render VSTi to help streamline the process.—*Eds.*]

A BEVY OF PLUG-INS

Nuendo 2 ships with a large assortment of plug-ins, including various dynamics processors, restoration plugs, Apogee UV-22 HR and other dithers, surround scope, de-esser, ring modulator, tube effects and others. The 8:2 and 6:2 plug-ins are especially useful for quick fold-down checking in multichannel projects. For surround work, users will want to buy the Surround Edition, a suite of plugs designed specifically for multichannel audio.

Supported plug-in formats include VST, DirectX (Windows platform only), Universal Audio and TC PowerCore.

Nuendo also has integrated waveshell support for Waves plug-ins. Because there are so many Waves plug-ins, Nuendo's multiple VST plug-in directories really come in handy.

FILE FORMATS AND IMPORT/EXPORT

For those of us who work in post-production and multichannel mixing, communication with other audio and video production platforms is often our primary concern. Asset management and translation of various file formats can take up nearly as much time as assimilating elements into a finished product. Nuendo 2 really shines in this area, and it supports a great number of the file formats you're likely to encounter in a professional setting.

WMA, WMA Pro, WMV and WMV Pro (audio and video) are supported on the Windows platform. Dual-platform support includes Broadcast .WAV, .WAV, .AIFF, AIFC, SDII, Wave64, MP2, MP3, MP3 Pro, Ogg Vorbis, Rex, RX2 and Real Audio G2. Sample-rate import has been enhanced to 384 kHz, and you can export files as multichannel or interleaved. You can also convert multichannel files to mono on import. Cross-platform video support includes MPEG, AVI, QT and MOV. You can also extract audio from, and replace audio in, video files (except MPEG). Project import/export supports Open TL, AES-31 3.0, and OMF 1 and 2.

You can create libraries with drag-and-drop access for quick results in post-production. The import menu is large and includes Audio From File, Audio From CD (with grab points so you can audition and import only parts of a file), Cubase SX projects, Cubase VST songs, Premiere Generic EDL and MIDI files. Track exchange includes everything associated with the Nuendo track: mixer channel settings, automation subtracks, parts and events.

CONTROLLER SUPPORT

While many Nuendo users anxiously await the release of Steinberg's ID workstation controller, Nuendo ships with a Generic Remote feature and several direct device implementations. These include Houston, DM2000, 02R96K, DM-24, MCS-3000, Mackie Control and Radikal SAC-2K. Several manuals are posted on the Nuendo site to help the user in setting up remote controllers: ftp://ftp.steinberg.net/fwd/info_downloads/ps/media_production/nuendo.

WINDOWS OR MAC

The Mac platform is well-supported by Nuendo. I switch between Mac and PC often, and running Nuendo on both platforms is easy, with no associated "look-and-feel" interface problems. That dual-platform Nuendo dongle gets a lot of use.

I often work with other DAWs, too, and it's easy for me to take my notebook home to edit and sweeten audio tracks for video in Nuendo, and then export tracks for import to a client's Pro Tools session.

Minimum PC requirements are a Pentium/Athlon 800MHz computer with 384 MB of RAM, a USB port and Windows 2000 or Windows XP. Mac requires a PowerMac G4 867 MHz with 384 MB of RAM and Mac OS X 10.2.5 or higher.

As with any DAW, you'll get better performance with faster computers, although I've been known to edit sound effects on my TiBook 800. To run some of the latest plug-ins from Waves and others, though, you'll need plenty of CPU to spare.

JUST IN: NUENDO 2.01

At the time of this review, Nuendo 2.01 had just shipped, with most users applauding its quick fix for the bugs in Nuendo 2.0. There were still some things waiting to be finished: DTS and Dolby Digital encoders were on the verge of shipping, and networking with peer-to-peer support using track-lock and permission sets were still being finalized.

As far as feature sets and capabilities, Nuendo is certainly a mature product at this point and a serious contender in the major DAW marketplace. What's really significant, however, is not the current status of the product, but how quickly Nuendo went from concept to tour de force and the rapid growth of the Nuendo user base. Because user loyalty is often a predictor of continuing product development and growth, Nuendo is likely to remain on its meteoric path to gaining market share. Several multichannel audio and major-label stereo releases have been tracked and mixed in Nuendo during the past year, and it is making inroads into the video post area, as well. Moderately priced outboard equipment from Steinberg has, no doubt, contributed to Nuendo's quick establishment in the marketplace, but mastering engineers are also turning to Nuendo, albeit with hardware from other manufacturers.

The most important point about Nuendo is that it works for several areas of the audio community, and it works well. Nuendo 2.0 is a powerhouse of an upgrade, and congratulations are in order not only to Steinberg, but also to the users and beta testers who made the implementation of all these new features possible.

Steinberg, a division of Pinnacle, 818/678-5100, www.steinbergusa.net. ■

K.K. Proffitt is chief audio engineer of JamSync, a Nashville facility specializing in multichannel mixing and DVD authoring.

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BY MARK CROSS

Telefunken Ela M 251

A Classic Tube Mic Re-Issued

The original Telefunken Ela M 251 microphone has quite a history. Telefunken originally contacted AKG in 1958 to develop the 251; the resulting design incorporated the same CK12 capsule, 6072 tube and T-14 transformer as the AKG C 12 mic.

AKG settled on two models: the Telefunken 250 and 251. The two-pattern 250 was designed to compete with the Neumann U47, originally developed by former Telefunken employee George Neumann, and the 251 was developed as a direct replacement for the AKG C 12.

Through the years, many A-list engineers and collectors have responded enthusiastically to these gems and have created a trend for acquisition, as well. The *Wall Street Journal* published an article in the 1990s on the original Telefunken Ela M 251, describing it as one of the best overall investments of the 21st century.

Toni Fishman of Telefunken USA recognized this and decided to develop a reissue. His business first developed identical replacement parts for vintage 251s. A chance meeting with Allen Sides in Nashville resulted in Sides telling Fishman that there was one particular mic in his collection of more than 20 vintage 251s that was consistently used by Joni Mitchell for many of her classic recordings. Unfortunately, there was a small fire in the studio in which this mic was being used, and the 251 was damaged. Sides agreed to sacrifice the mic so that Fishman could literally raise the capsule from the ashes to validate a schematic for use in the development of a world-class reissue: the Ela M 251.

Visually, Telefunken USA's Ela M 251 ($10,000) is identical to the original, right down to the silver logo. The body measures approximately eight-and-a-half inches long and two inches in diameter. It features the familiar three-position, sliding polar-pattern selector, and the mic connects to the power supply unit via a Neutrik 6-pin XLR-style connector. The power supply unit features an on/off toggle switch, a red pilot light and a fuse holder. The old European A/C power cord has been upgraded to a standard IEC socket and removable cord. Every mic is hand built to order, and each 251 is a direct result of more than 200 man-hours of labor.

IN THE STUDIO

In application, the mic was a pleasure to work with. It comes in a vintage-style, humidity-controlled tweed briefcase with form-fit slots for the mic case, cable and power supply. I first used the mic to record a rhythm section; specifically, as an overhead for tom fills. The mic truly shined and captured the performance while complementing the sonics of the instrument in the room. The drum's definition was clear and precise. Later, I recorded an acoustic guitar on the same piece of music. The guitar sounded absolutely wonderful with great personality and color, leaving very little need for compression or equalization.

On another session, I placed the mic above a snare drum that was hit with blast sticks. Again, this backbeat performed in a small room sounded glorious and instantly became the basic rhythm track for the master. I then used it to record additional percussion, including tambourine, djembe, shaker and bass drum. Similar to the drum experience from the previous session, the mic captured the performance, while allowing the instruments to really speak in the track. In both situations, the 251 was sent through a Universal Audio 2-610 mic pre and sent directly to a hard disk recorder. Occasionally, the chain included a Universal Audio LA-2A limiter. Despite any additions, the 251's airy, sonic softness added depth to the recordings.

Next, as an overdub, I used the mic to record a Takamine six-string steel guitar and a classical nylon-stringed guitar. I set the mic to a cardioid pattern and placed it about a foot from the 12th fret. Occasionally, I placed it further away to add a little depth to the sound. Again, the results were stunning.

I should state that I had an original 251 available at the session and often used it as an alternative to measure performance. In all tests, the new Ela M 251 sounded as good as, or better than, the original.

Next, I used the mic to record a vocal, with an LA-2A placed in the chain for some subtle compression. The voice sounded awesome. When the original 251 was used for comparison, you could hardly tell the difference between the two. The brilliant top end along with its full bottom took the vocal performance to a higher level. Finally, I used it to record a violin and harmonica to complete the session. Here, the mic really brought out the tone of the violin with a soft clarity that complemented the mix.

CONCLUSION

Telefunken USA's Ela M 251 is an incredible mic. In every application, it never let me down. From the subtle guitars to the abusive transients of powerful percussion, it rose to each occasion with great results. The $10k price tag can be a bit of a shocker, but you get what you pay for. Regardless of the price, I recommend checking it out, because it is well worth the experience. It appears to have everything; however, you must supply the talent.

Telefunken USA, 860/882-5919, www.telefunkenusa.com. ■

Mark Cross is a producer/mixer in Los Angeles, and has worked with Bill Bottrell, Shelby Lynne, Randy Newman and Jennifer Warnes.

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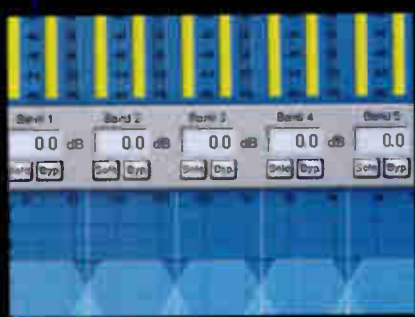

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BY DAVE RIDEAU

Waves 360° Surround Toolkit

Sorting Out Multichannel Processing

Surround-format commercial music is commonplace. There are hundreds of titles available in various formats used to both entice and confuse consumers. As the corporate format wars continue, we cannot forget the chaos we experienced on the production side of surround: ITU vs. other speaker placements, full-range vs. satellite/sub monitoring, 83dB vs. 85dB SPL reference level, the use of the center and LFE channels, and the total sub/bass-management confusion. Forget about what to put in the rears; we don't even know where to place them! The Waves 360° Surround bundle is not the answer to all of these problems, but it at least gives Pro Tools TDM users a set of powerful tools to address a good number of them.

The recently released Waves 360° Surround Toolkit ($2,400) consists of nine well-conceived plug-in components over seven software sets. Each performs specific functions that seamlessly integrate into Pro Tools surround productions of up to 5.1 channels. They include the S360 Panner, S360 Imager, R360 Reverberation, C360 Compressor, L360 Limiter, M360 Manager, M360 Mixdown, LFE360 Lowpass Filter and the IDR360 Bit Requantizer. The concept of the kit is to cover every aspect of calibration, mixing and monitoring, while eliminating the need for any additional software or hardware to produce a professional multichannel master.

CRITICAL CALIBRATION TOOLS

The surround bundle's foundation is the Waves M360 Manager. This workhorse provides the user with critical calibration functions that must be performed in order for a mix to translate to the outside world. Besides phase, subsends, mute, solo, delay and level adjustments for each of the main channels, this plug-in also provides bass management with variable crossover frequencies for sub/satellite speaker-system monitoring. There is a second plug-in component, the M360 Mixdown, which permits either preview or application of fold-down formats from 5.1 to mono, stereo, LCR and LCRS. For more on surround monitor setup and calibration, see the sidebar on page 112.

The Waves M360 not only provides your studio with the tools to align your surround monitors for playback (don't forget your earplugs), but it also provides a very sophisticated bass-management solution. After inserting the M360 on the master surround fader, I followed the M360 PDF manual's recommended calibration procedure with only an SPL meter and the software provided.

The Waves calibration routine was simple and functioned well, but I encourage professionals to research further (I recommend Bobby Owsinski's Website at www.surroundassociates.com or Tomlinson Holman's book, *5.1 Surround Sound—Up and Running*), purchase a set of alignment tones and make their setup as accurate as possible.

As I went deeper into the M360's functionality, the design details continued to impress me. For example, all panning algorithms are based on monitors positioned in the ITU configuration (± 30° fronts and 110° rear). But in order to service troublemakers, such as myself, who refuse to comply with the ITU standard, Waves made it possible to input personal front and rear speaker angles directly into the M360 by using the Send Angles setting provided on the M360 Manager.

Waves' new lineup of plug-ins includes (top to bottom) the C360 Compressor, M360 Manager and the R360 Reverberation.

The visuals of the M360 are informative and easy to read. The display provides a representation of the ITU standard speaker placement and is a clever way to portray your personal speaker setup. I was also glad to see that all six outputs have meters with digital readout that retain the peak level of each channel during the previous playback.

The M360 also provides various target adjustments to preview common variables that can be found in the consumer and professional worlds. For example, Dolby recommends that in some smaller control room surround-monitoring situations, users should reference their mix with the rears at -2 dB. Some consumer surround receivers also have a rear -3dB down default. As another example, in most consumer surround setups, the front speakers

are positioned in a straight line along a front wall. All of these scenarios and more can be recreated and saved as presets using the M360's target adjustments.

PANNING AND IMAGING

The S360 Panner/Imager handles all panning duties in the Waves toolkit, controlling the width and rotation of a mono, stereo, 5/5.1 channel or surround source in your multichannel mix. These two parameters functioned well, allowing me to quickly position a track into the surround landscape. After choosing between panning that employs either speakers in pairs or sets of three, I set the rotation angle to represent where the center of my source image was located. The Width Ratio parameter allowed me to further adjust width/divergence in relation to the image's center. This parameter provides continuous control from equal energy to all five main channels to the final collapse into a mono image. Center-speaker use is specified in percentages: 0% is equal to phantom center L/R image and 100% represents center channel only, with all of the possibilities available in between. The LFE can be sent independently and not be directly influenced by the panning that occurs in the five main channels.

The S360 Imager is another reason to applaud the Waves design team. It contains the same features as the S360 Panner and adds room model early reflections and shuffling, which emulate distance panning and low-frequency width. For early reflections, it is more DSP-efficient here to keep the processing of early reflections and reverb tail separate and to reserve processing specifically for the execution of the R360 Reverberation. This forces you to address early reflections head-on when it is often easier to dial-up your favorite reverb preset, adjust the reverb time/pre delay and call it a day.

S360 Imager offers rotation, width and distonce panning in addition to S360 Panner's features.

The S360 Imager's shuffling level and shuffling frequency parameters create images that have a sharper focus or a heightened "spaciousness" by adding bass frequencies to elements of the mix panned away from center. The purpose of this is to add more depth and life to spatial images by compensating for the fact that stage width is unnaturally narrow at the lower frequencies compared to the mid/high width of the same source. I found the Shuffle function subtle, but quite effective, when used on the appropriate source.

MORE GREAT TOOLS

The LFE 360 Lowpass Filter is a very steep (60dB per octave) filter designed for use on the LFE channel. It is meant to create the same result that most popular surround encoders produce and, therefore, defaults to 120 Hz. You may use the LFE 360 for preview purposes only or, if you prefer, apply it to your master. When used as recommended—inserted just before the M360 Manager—it will affect only the LFE channel, leaving the subsignal untouched.

The Waves R360 Reverb is unique in that its sole function is to create accurate and smooth-sounding reverb tails for the surround environment. After you have "distance-panned" a track using the S360 Imager early reflections, you can complete room emulation by the right amount and type of reverb. The R360 plug provides reverb time, high- and low-frequency

For all your panning needs: the S360 Panner

damping control, high and low EQ, predelay, size, wet/dry and several other parameters more specific to surround use. To encourage users to carefully marry performance between the S360 Imager and R360 Reverb, Waves' programmers provide a starter set of Virtual Spaces presets, which share the same name in both plugs and work well together to create convincing room emulation. Of course, you may want an imperfect room emulation, which can be created just as easily. The R360 also has a "compact" component that is capable of running at true 96k and is available only to Digidesign HD users.

Using the popular L1 and L2 UltraMaximizers as a model, the L360 is a surround peak limiter and level maximizer for 5 or 5.1 channels. Working at up to 96 kHz, it features brickwall peak limiting and five different link modes with three separate sidechains. This allows dynamics processing with the option of preserving phantom images. The L360 is meant to be the last device that your 5.1 mix goes through before you print, but it can also be useful to "hype" individual 5/5.1 elements that need a level boost. The L360 uses many of Waves' software-limiting tricks: look-ahead mechanisms to anticipate peaks, Waves ARC (Auto-Release Control) and 48-bit double-precision processing. If you like Waves' software limiting in stereo, then you'll love it in surround.

The C360 also works on 5 or 5.1 channels with flexible link modes. Its controls are similar to the L360, but with a different sound result: The C360 attenuates the signal before the threshold level is reached and continues to do so after the threshold is passed. This soft-knee design also has an auto-makeup function that compensates gain automatically, no matter where the compressor's threshold is set. The C360 Surround Compressor worked well with 5/5.1 source material that had more dynamic range than desired, and it was easy to "dial in" to taste.

The IDR360 (Increased Digital Resolution) was Waves' original offering of dithering and noise shaping for optimal bit depth re-quantization; it was designed for programs that would inevitably be reduced to 16-bit. In surround, 24-bit is the most common format, but IDR's multichannel version has been provided where bit reduction may still be required.

IN USE

I set up a session for a 5.1 mix at my home studio, which mainly consists of a Digidesign HD3 system, Westlake Audio LC 8.1 monitors and a Velodyne sub. I chose a recording by Ann Nesby—an artist I am currently in production with—who is known for her sheer dynamic power. The S360 Imager was a particular

treat for me to use: It afforded me the power to place a vocal "behind" the speakers in the sonic soundstage, an effect I find particularly hard to create in an all-digital mixing environment. Finally, after I had a basic surround mix that I was pleased with, I inserted the L360 Limiter into the master fader, which tempted me to make my mix as "loud" as possible. This is a great device, but I chose to use it minimally to take advantage of the expanded dynamic range offered by mixing in surround. After a bit of fun, I lowered the gain reduction to a level that my mastering engineer would appreciate.

CONCLUSION

The 360° Toolkit is a serious piece of software and, in turn, requires serious processing power. My Pro Tools|HD3 rig was maxed out after engaging the S360 Imager on 20 tracks (the S360 Panner is 4x more efficient), and that was without the M360 Manager, which uses approximately 25% of one DSP chip.

The good news is, with careful planning, you may not need to run out and buy that expansion chassis just yet. Pro Toolers have been devising ways to conserve DSP since its infancy, and with creative I/O and internal busing setups, you can get further than you might think with this bundle.

The Waves 360° Surround Toolkit completes the Pro Tools production arsenal in a way that could impact the quality of your surround projects. I've listened to previously mixed surround projects monitoring through the preset Target Adjustments available on the M360 Manager, and I'm convinced, for this feature alone, that the Waves surround bundle is a good investment.

Special thanks to Capitol Recording Studios, Westlake Audio Recording Studios, Velodyne, DTS and Audio Den in Los Angeles.

Waves, 865/546-6115, www.waves.com.

Dave Rideau is a three-time Grammy®-nominated recording engineer and producer based in Los Angeles. His work has taken him to Europe, Japan and China, where his artist is currently topping the charts.

Surround Monitor Setup and Calibration

The monitor setup/calibration process for multichannel audio constantly amazes and amuses me. Procedures vary, but this is what I try to achieve in my surround setup: a front monitor array in compliance with the ITU recommendation and a center speaker with ± 30° angles for the right and left monitors. I position the rear monitors as a mirror image of the front in relation to the centerline (no, not 110°) with all monitors at the same distance from the listening position. I then feed each main monitor (one at a time) bandwidth-limited pink noise (from 500 Hz to 2 kHz) at 0 VU and adjust each monitor's gain until I achieve an 85dB SPL reading on my trusty Radio Shack meter (C-weighting/slow response) at the primary listening position. I then feed the sub from the LFE channel bandwith-limited pink noise (20 to 80 Hz) at -10dB VU electrical level (with every other channel muted) and, again, adjust the gain until I reach 85dB SPL.

Even though this method works for me, it is far from perfect. There are several important factors that I'm completely ignoring. For example, like it or not, the vast majority of surround listeners are using systems that have sat/subs using bass managers, so it makes sense that we at least reference this electronic process at some time in production. These managers extract the bass frequencies below a specific cutoff point from all five main channels, the sum of which will ultimately be fed to the system's subwoofer. If this wasn't enough low-frequency energy already, your LFE (.1) production channel is boosted 10 dB and then added to the five channels of the redirected low-end information mentioned above. This signal is the final result of the bass-management process and what is fed to the subs that the good people at home listen to. Some studios provide bass-management hardware, but many do not, my home studio being one of them.

When discussing this point with Lorr Kramer, director of technical marketing at DTS, he agreed that it was important to illustrate that even though many professionals consider their monitors "full-range," they rarely reproduce the lower frequencies that average consumers have available in their living rooms. Even if you use a sub in your surround studio, unless your low frequency is properly managed, you could be doing more harm than good.

—Dave Rideau

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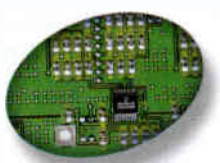

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BY ROB ALEXANDER

Stage Tec Aurus

Forward-Looking Digital Audio Console

With a heritage that includes the groundbreaking Cantus and Cinetra digital mixing consoles, in 10 short years, Stage Tec has significantly influenced both the inward and outward design of digital desks. The company's impressive client list—including ABC-TV in Los Angeles, 20th Century Fox, Skywalker Ranch, Warner Bros. Films and a host of similar European and worldwide users—bears ample testimony to this fact.

When I heard that Stage Tec had a brand-new console that needed to be scrutinized in Berlin, I jumped at the opportunity to be among the first to see what it had come up with this time. I wasn't disappointed.

BRAINS AND BEAUTY

The Aurus console is an extremely lightweight, yet large-framed console specifically designed for work in film, television or live sound mixing. It is the most sleek, 21st-century-looking digital audio console yet designed, and requires more than a second glance to confirm that the slimline, ultrathin chassis can easily be lifted and transported by two people.

This wonderful, slim design is made possible by the use of the Nexus Star digital audio routing and interconnecting system found in Stage Tec's Cantus console. Nexus Star is the superfast "brain" of the Aurus, having all of the DSP cards located in a 19-inch rack. This can be located right next to the console or in a remote position as your needs require. (Even distances of up to 45 miles away can be accommodated.)

Where Nexus scores big over many other exterior rack-based network systems is that it doesn't need specialized cool-room environments or large, cumbersome multicore interconnectivity with the console. There isn't a fan to be found anywhere in the entire system (except inside the external computer running Linux Server, which is required only for storage). This means that the whole Aurus setup runs cool and quiet.

All communication between Nexus and Aurus is passed up and down the dual fiber-optical connector from the rack to the desk; there's no multicore, just the one optical conduit to connect. Upward of 1 Gbit/sec of information can be transferred between the desk and rack, which means that each and every parameter of the control surface can be rewritten in as little as 10 ms.

Housing all of the 24-bit routing capacity that you're ever likely to require, the Nexus Star audio router/network can carry up to 16 boards, each with 256 inputs and outputs. If you do the math, this adds up to a possible 4,096 input and 4,096 output sources at 48 kHz. The Star router and the Aurus console may also work at 96 kHz. The AES/EBU I/Os support sampling frequencies of 32 kHz up to 192 kHz. Included into this network is the console's DSP power, offering 40-bit, floating-point signal processing. By any standards, that is a huge amount of information to transfer around, but it's also the key to the success of the Aurus design. Everything that the control surface requires in terms of DSP functionality is controlled through the fiber conduit, hence the ability to design the console in a slim, lightweight form.

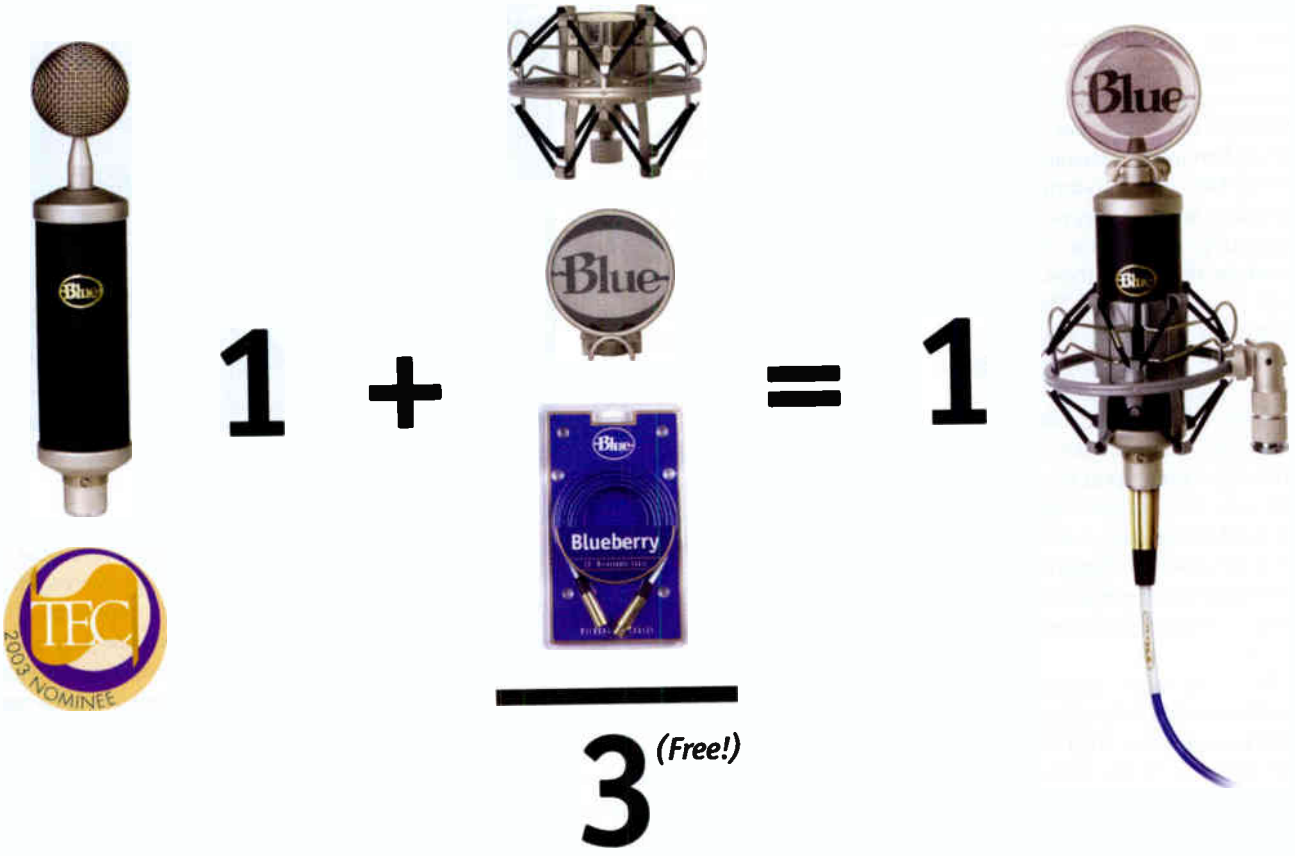
Because all of the DSP functionality is carried out only on the Nexus Star, it's possible to open the fader modules on the desk during use and unplug an entire bay without the need to switch off or even halt the mix. You can even maintain this console without switching it off! When you do power-down, a hard reboot only takes 19 seconds, and then you're up and running again with your audio mix playing. In fact, the slowest element in the entire process is rebooting the external computer; used to store all the mixing data, it takes 37 seconds to boot.

INTUITIVE DESIGN

Visually, Aurus is pleasing to look at. I hesitate to describe it "uncomplicated," as the desk is complex in functionality. It has a striking simplicity that reminds me of the days when exploring new pieces of equipment was fun and something to look forward to. It took me only minutes to find my way around the desk; in a matter of an hour or so, I had it completely figured out .

Constructed to look much like an analog inline desk, the Aurus control surface

Skew the math.



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has seven 15-inch color TFT flat screens, all configurable to user needs. A dedicated master control section, with a familiar Windows XP GUI, displays the matrix, routing and detailed parameter functions. It also serves as an interface for save and recall functions. Each channel strip has 100mm touch-sensitive moving faders with full automation capabilities. These modules come in groups of eight faders, and can be removed and placed anywhere within the frame of the control surface to suit the user's specific requirements.

The channel strips have 11 double-concentric, dual-function rotary encoders; they are touch-sensitive and control everything from input gain to dynamics parameters. Information is displayed on fan LEDs above the encoders or a series of alphanumeric character lines lower down. Like most modern consoles, these encoders are multifunctional and layered; thankfully, due to the sheer quantity of them, the number of these layers has been kept to a minimum. The top four encoders are primarily auxiliaries and the lower five are primarily for assigning dynamics parameters.

Up to 96 assignable channel strips and 300 audio channels (256 buses) are possible depending upon your configuration. Through this design compromise, all of the vital parameters and their indicators are accessible; the designers wisely chose not to clutter the surface with unnecessary function that might detract from performing the job.

Each channel parameter can be tweaked to detailed perfection in the master control section. And this is where the true mastery of the Nexus/optical connection is displayed: A graphic indication of the signal path is shown on the main display screen with each of the modules, I/O, pan, EQ, compressor, fader, etc., designated as a block. Nothing new there, you might say, and you'd be right. But because of the sheer speed of the information throughput, each block can be picked up in real time and moved anywhere in the signal path. For instance, you can place the fader before the insert point, place the mute before the compressor, and so on, and you instantly hear the result of your endeavors.

Virtually any setup can be created, though the signal flow is governed by some basic principles. Signal sources are fed into the respective Nexus boards. These are then routed to the mixing console channels via the input matrix, and then the console performs the parameter processing similarly to an analog console, with the signal routed to different buses or direct outputs. These bus signals can then be edited into various configurations before being fed back into the Nexus audio network via the output matrix.

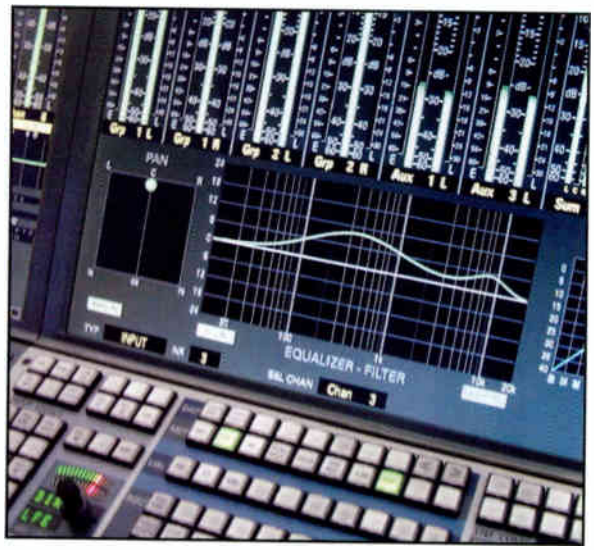
What's more, you can save these configurations as you build them to the external computer that's used to drive the graphics on the display. This gives you virtually unlimited storage and recall of setups for mix situations or different working environments. Configurations can be saved or recalled differently for each channel strip, and then copied and pasted elsewhere within the console layout, building up a project as you go; it's that quick. You can even alter the signal path in real time using this method to A/B a channel or a group of channels, and hear the resulting effect.

But there's more. All of the parameters of each channel strip are displayed either on the TFT screen immediately above the bay where the channel is situated or in detail in the central "master" section TFT display. Each display can then be totally customized to the user's methods of working, showing the name, filter settings, dynamics units or routing information if desired. A quick overview guide of the parameter settings are displayed in each channel; more detailed information can be obtained by selecting a channel and then viewing the enhanced detail in the main section display.

FLEXIBLE MULTICHANNEL CAPABILITY

Naturally, Aurus is a true multichannel processing console, with multiple independent monitor paths supporting a wide variety of formats. This even includes three insert points for external cinema processors, as well as solo and mute functions for individual monitoring paths that are directly accessible via dedicated buttons. The solo bus is multichannel-enabled, allowing routing of up to eight monitor signals to the bus. Surround parameters can be accessed using a variety of controllers from the obligatory joystick, a discrete keypad (hidden below the armrest), jog wheel, tablet and pen.

The Aurus Fibre-channel network even allows for multiple monitor setups to be configured directly from the console itself—no more cumbersome and ugly spaghetti-like masses hanging from the back of the console. Simply plug your monitors—near, mid or room—straight into the Fibre-channel system, and the monitoring buses take over from there. The master section allows user monitor setups to be programmed using several preprogrammed standard options, as well.



The custom-configurable master-section TFT display

CONCLUSION

The Aurus is a truly adaptable digital audio console with just about every variable necessary (and, more importantly, includes those that are required). It is constructed around a simple user interface and control surface, with a lightweight, beautifully designed framework.

While it can be considered inherently dangerous to attempt to create a device that has the potential of matching all of the needs of so many different users, the Aurus really does seem to match up to Stage Tec's assertions. Stage Tec should be applauded not only for listening to end-users, but for also having the courage to build the product afterward. A lot of people will be genuinely surprised at this desk when they give it a closer look. Aurus is not only pleasing on the eye, but it gets the job done with minimum fuss, regardless of your needs or your work environment. And you don't come across that everyday.

Stage Tec, www.stagetec.com.

MIX ONLINE EXTRAS

Robert Alexander is the former executive editor of Audio Media, *a musician, audio engineer, writer, journalist and globe-hopping bon vivant.*

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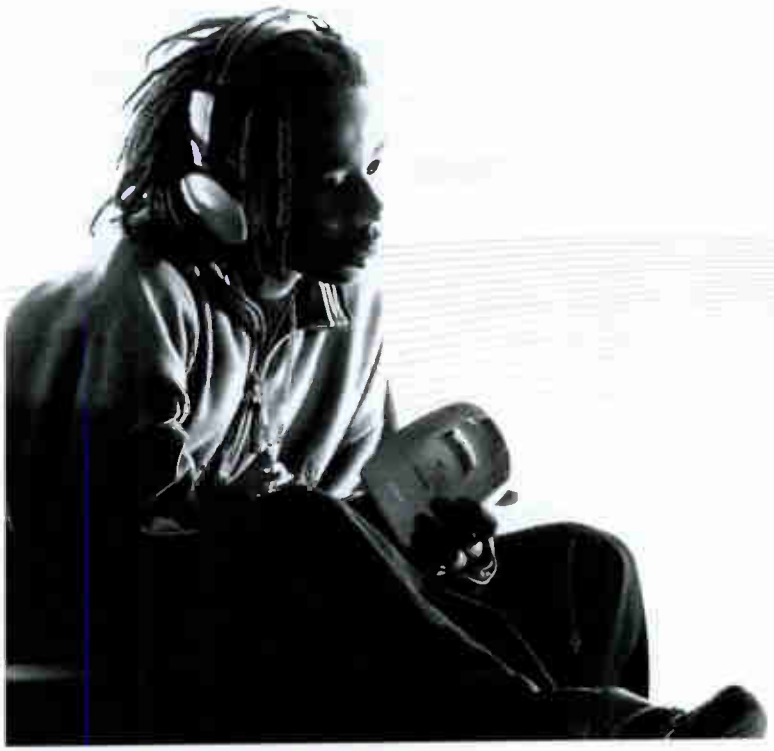

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BY BARRY RUDOLPH

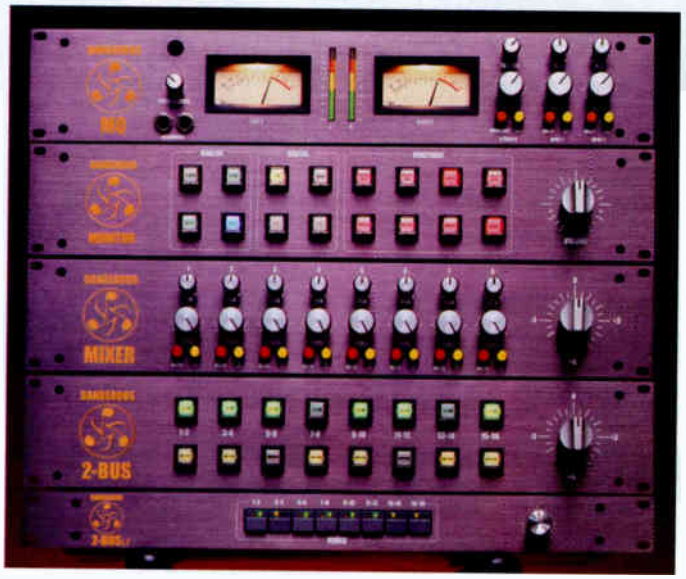
Dangerous Music Monitor, MQ, 2-Bus and Mixer

DAW Summing, Monitoring, Mixing and Metering Systems

Dangerous Music is leading the way to a brave new world with a line of professional recording studio interfacing tools that facilitate the highest-quality sound of music recorded and mixed inside any digital audio workstation.

The product line began as a simple quest for better-sounding music mixes made "inside the DAW box" at Dangerous Music's recording studios, located in the East Village of Manhattan. Chris Muth, designer of the mastering gear for Sterling Sound, set out to design a full line of stand-alone units that would mimic specific functions of high-end analog mixing boards.

During a month-long album mix project, and the subsequent month's sessions, I was able to test-drive four Dangerous units in various situations, using both Pro Tools MIXPlus and PT|HD systems. I rack-mounted and kept all of the Dangerous gear powered up 24/7, and connected to either an Apogee AD8000 or Digidesign 192 HD I/Os.



The Dangerous line: the Dangerous MQ, Monitor, Mixer, 2-Bus and 2-Bus LT

DANGEROUS MUSIC PRODUCT LINE

Dangerous currently makes five products: the Dangerous Monitor, an analog and digital source switcher; the MQ, a combination analog/digital metering, talkback and dual-stereo cue system controller; the 2-Bus, an analog stereo stem summing unit with 16 analog inputs (the company also makes the 2-Bus LT, a lower-price version with fewer features); and the Mixer, a stand-alone, 8-channel stereo line mixer.

All of these units (except for the 2-Bus LT, which is one-space) are packaged in steel, two-rackspace cabinets that are fitted with anodized-aluminum front panels and cast-aluminum knobs. Construction features external power supplies, thick PC boards, hole-through, as well as surface-mount components and hand-wiring. I placed the Dangerous stack at my side, about two feet off the floor, right at my mixing position in front of the speakers. If you get all four units, you'll have four power supplies to connect; Dangerous should come up with a single master power supply to run them all at once.

The internal amplifier circuits in all the Dangerous products use Burr-Brown op amps: BB INA134 and 137 (instrumentation amps), OPA 134 (op amps) and DRV 134 (output drivers). Only relays are used to switch audio in the Dangerous units; hermetically sealed Aromats with silver contacts are used to switch phase (polarity), mute and ground-out unused inputs. All audio resistors are surface-mounted and 0.1% tolerance with low temperature coefficients. Solen capacitors are used in the Mixer and MQ units in critical audio paths that accommodate a wide range of input devices, from D/A outputs to mic pre's to stomp boxes. The lighted switches are made by EAO with internal multichip LED lights; they'll never burn out. Audio cable is Mogami OFC, with ribbon cable used only for DC control voltages to the relays.

The stepped attenuators used for volume and bus master faders are custom-made by NASA-supplier Janco Corp. There is a shield layer between the two wafers of the switch to further isolate and prevent crosstalk between the left and right channels.

The Spec Sheet

Frequency Response	1 Hz to 100 kHz, within 0.2 dB
Total Harmonic Distortion	0.003% in audio band
Intermodulation Distortion	0.002% IMD60 4:1
Converter Lock Range	32 kHz to 96 kHz
Converter THD+Noise	0.002%
Crosstalk @ 1 kHz	-113 dB
Crosstalk @ 10 kHz	-102 dB
Noise Floor	-91 dBu total energy in audio band
Max. Level	+26 dBu
Nominal Operating Level	+4 dBu
Input Impedance	25k-ohm balanced
Output Impedance	50 ohms balanced (600-ohm-drive-capable)
Gain Accuracy	better than 0.05 dB @ 1 kHz
Power Consumption	40 watts

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DANGEROUS MONITOR TOUR

The monitor comes configured to handle +4dBm balanced sources, but there are internal jumpers to reset it for unbalanced operation. Because you can select between seven different stereo audio sources to monitor (three analog and four digital), all rear-panel connections use XLR connectors for both analog and digital (AES/EBU). Each AES/EBU input is buffered and fed through to a male XLR digital-out jack to connect to digital recorders or to your D/A converter(s). The unit comes with an internal, custom Troisi D/A converter that "sees" the selected digital input source and clocks to the incoming sample rate, up to 96 kHz. This common D/A converter resolves level differences and the "different-sounding D/A converter issue" due to sources resulting from DAT, CD or sound card D/A outputs. I found that the converter worked well and sounded fine, although I didn't spend any time doing an A/B. Indeed, it's a nice feature, but I feel that it should be offered as an option. Dangerous offers a custom modification to allow substitution of the Troisi board with your favorite external D/A converter.

The back panel finishes out with XLR line-level output connectors for both small speakers and main monitors. For monitoring, I connected a pair of powered Genelec 1031As and a Bryston 3B power amp to drive a pair of NS-10Ms for small monitors. Finally, there is a special 6-pin analog VU meter output jack and digital meter output jack that connect to the MQ unit. The meter outputs follow whatever source you have selected.

On the front panel, Monitor has the smoothest master volume control; it's actually a 21-step attenuator for recallable volume-level control. I liked the large aluminum knob and knowing that this control will never get scratchy. Unlike a volume potentiometer, an attenuator ensures that the sound quality remains constant: The left and right imaging doesn't shift with different volume settings. There's loads of gain here, and I like being able to return to the exact same volume easily. I just counted clicks or used the panel markings.

Other features on Monitor are represented by well-lighted, large-sized buttons, including a monitor speaker Dim button with an internally adjustable level control that also activates when the MQ's Talkback button is pushed; an alternate speaker switch; a very handy L+R Mono check switch; individual L/R mutes and 180° polarity flip buttons for both left and right channels; and a -6dB offset meter scaling switch that saves the MQ's VU meters when monitoring at hot levels. This feature came in handy when monitoring playbacks from my Alesis MasterLink's hot analog output. I also like using the L/R polarity flip buttons with mono summing to check the side or difference component of my stereo mixes.

Using the Monitor was completely transparent to my mixing process. The source buttons work without effort and without clicks, the volume control is easy to grab and precisely set, and, like the whole Dangerous line, the unit has a solid and rugged feel. I wasn't hurting anything even with my usual rough treatment during the heat of a session.

THE "MUST-HAVE" MQ

The natural companion piece for the Monitor, the MQ has two large Sifam R-22 lighted analog VU meters and a high-resolution (32kHz to 96kHz) LED ladder digital meter made by Prime LED. The digital meter has a three-successive-word-over indicator and a Peak Hold button. Both of these meters get their signals from Monitor via the included cables. I tried connecting the digital meter to the AES/EBU digital output of my MasterLink and the digital out of the Apogee and all worked fine.

There are master level controls for the A and B stereo cue systems and each come with their own power amps. I used my 55-ohm AKG K 271 headphones in one of the two front-panel jacks and had more than enough volume. The manual explains that each amp will drive down to 4-ohm total load impedances, equal to about eight pairs of medium-impedance phones like the Sony MDR line, for a total of 16 headphones. The cue output XLR connector is ready for any standard headphone box, like Redco's Little Red Cue Box or a Simon Systems box.

The MQ has complete talkback facilities with a shock-mounted microphone and TB button on an included 12-foot "producer leash" (cable); the TB jack will let you connect a Brainstorm wireless remote, if you prefer. TB worked well: It dimmed the monitor speakers, provided good audio and added no button clunks or pops. There should also be a front-panel TB button for the engineer.

Other features include a Dim command jack to remotely dim the loudspeakers; a Slate out jack for routing the talkback mic's audio to a separately recorded track and/or to a powered speaker to talk to the orchestra conductor's podium or live room; and two auxiliary mono inputs with pan pots assignable to either cue A or B for injecting external audio feeds such as production soundtracks when doing ADR, metronome click tracks for drummers or "two pops" for the conductor when leading a live scoring session. The MQ is a necessity for professional engineers to fully control and monitor a DAW recording or mixing session. A unit like the MQ will separate your system from the typical home studio rig.

2-BUS INSIDE AND OUT

2-Bus is a 16x2 summing amplifier where high-quality analog circuits sum to a stereo bus from the analog outputs of your DAW's I/O unit. Digital mixing and summing inside your DAW to stereo outputs require that you do not overload the internal digital mixing bus by lowering all mixer faders. When any track fader's level is internally reduced, its digital resolution is also reduced. Spreading out a mix over many stems and direct outputs lets you maintain hotter digital levels for higher resolution, resulting in a better-sounding mix with increased depth, image width and headroom, and less distortion.

Having mixed a lot of music inside of DAWs and also using separate outputs into a large analog console, I prefer the sound of my mixes done on the console. I find the same mix, when summed in analog (on the console) rather than digitally (inside a DAW) was bigger-sounding, clearer and much more "alive," one reason why many record producers and engineers (for the most part and with budgets permitting) still prefer mixing songs recorded in DAWs on large analog consoles.

With the Dangerous gear, you can keep using your "inside-the-box" mixing process (I *love* using Pro Tools' automation and all of the plug-ins) and gain the advantages of analog summing.

All eight stereo stem inputs of 2-Bus are fixed gain. There are no track faders on the unit, as you'll want to make level changes in your DAW's automated mixer. Additional 2-Bus units (as well as 2-Bus LT units and mixers) can be linked by way of a 25-pin D-connector expansion port, where the stereo summing bus of each additional 2-Bus are joined together for as many inputs as you'd like. (For each 2-Bus added, there will be a 3dB increase in the noise floor.) Because the 2-Bus is a simple summing amp without the additional circuitry found in a big analog console (such as pan pots, mute buttons, buses, faders or auxiliary sends that can add noise and degrade the signal), the

sonics and specifications are better.

Hook up is simple: Just connect a standard XLR mic cable from each balanced output of any 8-channel D/A converter—like Apogee's AD8000, Prism Dream ADA-8, Nuendo 8-I/O 96k, Digidesign's 888 or the 16-channel 192 I/O—to the 2-Bus' 16 balanced XLR input connectors. There is an extensive tutorial in the manual about unbalanced setup and operation of the 2-Bus if needed. The 2-Bus will accept hot levels with an input clip point at +26 dBu.

The 2-Bus has two sets of balanced outputs: main for connection to your stereo master analog or digital recorder and/or A/D converter, and Mon to connect to the Monitor. The stereo master output fader is actually a trim control and has a range of 10 dB in 0.5dB steps, with the straight-up 12 o'clock position as the optimal operating point. Using precision and temperature-compensated resistors, this control is left/right-matched to within hundredths of a dB. But this is not an appropriate fader to use for "board fades." You'll have to do those inside of your DAW by grouping all stem submasters together.

2-Bus' front-panel controls are few and simple. The eight +6dB boost switches jump the analog level of any stereo stem input up to 6 dB. If you need to do this, as I did for each mix, it's sonically better to boost using good analog amplifiers than opting to do it digitally inside your DAW. Each stereo pair input has a Mono button for summing the left and right channels to mono. Any tracks you desire in the center of your mix are routed (inside your DAW) to direct outputs. Direct outs sound better and save DSP resources, bypassing pan pots and additional digital mixer nodes. When you push Mono on one of the eight stereo pairs of the 2-Bus, the two mono sources routed to that pair are sent straight up the middle of the stereo field.

2-BUS IN ACTION

Applications of the 2-Bus might include using the Mono button feature for kick, snare, bass and lead vocal tracks that you want in the center of your mix. You would route them each to separate DAW direct outputs: 1, 2, 3 and 4, respectively. The rest of your tracks could be mixed to stereo stems like this: Use outputs 5/6 for keyboards, 7/8 for backing vocals, 9/10 for guitars, 11/12 for drums, 13/14 for remaining percussion and 15/16 for stereo effect returns. Push the Mono button on the first two stereo pairs and the kick/snare will come in on 1/2 and bass/lead vocal 3/4 because you want them in the center of the mix.

I would say my only adjustment to using this system is the process of stem mixing itself, but once basic levels are set, it's the same as mixing down a stereo pair inside Pro Tools except you'll have more headroom and dynamic range, a wider stereo spread and clearer sound—just like I find when mixing PT track outputs on an analog desk. And just like on an analog board, I found myself having to work a little harder on plug-in settings, effects, mix moves and minutia because of the increased clarity and transparency.

If you like mixing separate outputs of your DAW on a large analog mixing console, but owning one or paying for studio time is out of the question, the 2-Bus with its minimal signal path electronics accomplishes the same summing process.

I followed this example exactly and set up an A/B comparison between the Dangerous units and a large '70s vintage API console. I carefully matched levels (using an oscillator) coming from a Pro Tools|HD system so that the console's fader levels (the PT outputs were already normaled to the board) were all electrically equal on the board's mix meters even though their actual fader positions

were not. The same set of outputs was also routed to the 2-Bus. I toggled the same Genelec 1031A monitors back and forth between the monitor output section of the board and the Mon jacks of the Dangerous Monitor. After matching volume, the mix out of the Dangerous rig and the API ended up essentially sounding the same. A very subtle difference does exist: The Dangerous 2-Bus produces a slightly cleaner sound in the bottom end with a more open top end.

My only request would be to add an insert path and an in/out switch in the master fader section to use a stereo compressor and/or EQ. But like analog processing of the individual stereo stems, this could easily be done by connecting your outboard gear externally in front of 2-Bus' inputs and/or the output sockets by way of a patchbay.

MIXER

Mixer is a simple 8x2 companion line mixer to the 2-Bus, but with level fader knobs, pan pots, lighted phase flip and mute buttons. With eight XLR mono inputs, Mixer has the same expansion port as 2-Bus, used to enable stacking other Mixer units for even more inputs. You can also connect it to the expansion input of the 2-Bus for eight more mono inputs to your final mix. Mixer will run stand-alone for any number of applications, from mixing the outputs of many vintage mic pre's you have on a drum kit to a cue mixer or for external effect returns. One very good use is for summing MIDI keyboards running in virtual mode into the mix. You can set an internal jumper for unbalanced operation to match synth outputs. Like 2-Bus and Monitor, Mixer has the same high-quality stepped attenuator for the stereo output bus level.

ANALOG ANSWER

Dangerous Music makes elegant, easy-to-use systems for analog bus summing, mixing, metering and monitoring of any DAW system. These units are of high build-quality and offer superb sound, are strictly professional and are built to mastering studio standards to maximize the sound of your DAW. Prices: Monitor, $4,999; 2-Bus, $2,999; 2-Bus LT, $1,499; MQ, $2,999; and Mixer, $2,599.

Dangerous Music, 212/533-4197, www.dangerousmusic.com.

MIX ONLINE EXTRAS

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

BY MICHAEL COOPER

TC Electronic Native Bundle 3.0

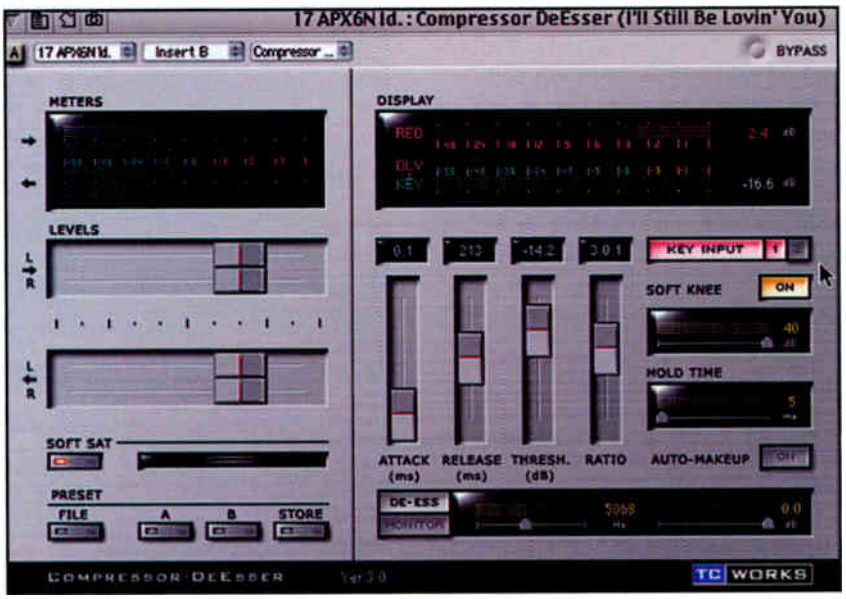
Dynamics, EQ, 'verb and Something Totally Wild

TC Electronic's Native Bundle 3.0 adds an adventurous plug-in called Filtrator and new functionality to the suite of production tools previously offered. In addition to Filtrator, the MAS/VST plug-in bundle includes a graphic equalizer, parametric EQ, compressor/de-esser (with companion sidechain plug-in), limiter and an improved version of TC's Native Reverb (now dubbed Native Reverb Plus). Version 3.0 also adds user-friendly functionality, such as A/B-preset comparison and outstanding preset storage/recall organization.

Minimum system requirements for the bundle include a 233MHz or faster Mac G3 with at least 128MB RAM, running Mac OS 9.1 (or higher) or Mac OS X. PC patrons can use Native Bundle 3.0 with a 500MHz or better Pentium III, 128MB or more RAM, and Windows 98 SE/2000/XP. Of course, you'll also need a MAS, Audio Units or VST-compatible audio application on either platform. I reviewed the bundle using Digital Performer 3.11 and an 867MHz dual-processor G4 loaded with 768MB RAM.

Installing and using Native Bundle is a breeze, as long as you take one important precaution: If you've installed FreeMIDI 1.48 and use Digital Performer, then make sure you pull the Raditec SAC 2.2 FreeMIDI driver V. 1.0.10 out of the FreeMIDI folder that resides inside your System folder. A conflict between the SAC driver and the TC plug-in shell (installed with Native Bundle) causes Digital Performer to freeze when quitting the program. Ditch the Raditec driver, and everything will be hunky-dory.

A quick overview of common parameter controls and metering is in order before we dive into each plug-in's unique features. All of the plug-ins, except the sidechain plug-in SideChainer, offer I/O level controls and meters. (SideChainer offers only input meters, which is logical.) I/O meters feature a defeatable peak-hold function, and you can also manually clear the meters. All of the plugs, except the SideChainer, Limiter and Native Reverb Plus, also include TC's defeatable SoftSat™



Native Bundle's Compressor plug-in features a separate de-esser section and provides access to one of two key inputs (see pointer).

function, which subtly emulates tube gear's saturation characteristics. With the exception of Native Reverb Plus and Filtrator, which are stereo-only, all of the plug-ins can process either mono or stereo sources. Finally, all of the plugs will work at 44.1, 48, 88.2 and 96kHz sampling frequencies. With that, let's explore what each plug-in has to offer.

SQUEEZE ME

All of the usual parameter controls are included with the Compressor plug-in: Attack, Release, Threshold and Ratio. Additionally, a Hold-Time control allows you to delay the onset of the compressor's release phase. You can also adjust the compressor's knee continuously from hard to soft, access one of two possible key inputs (sent from the SideChainer plug-in, which I'll discuss shortly), enable/disable the above-mentioned SoftSat function and/or activate auto makeup gain.

Auto makeup gain automatically maximizes the compressor's peak output level to be 0 dBFS before the plug-in's output fader, a real time-saver compared to manually applying makeup gain. I found that auto makeup shaves off transients and brings mic bleed up significantly in level, which is not always appropriate, especially on drum tracks. It's a very useful and flattering tool, however, for processing vocals and electric guitars (including bass). You can always disable this function when you don't want to use it.

Without auto makeup active, the Compressor delivers very transparent dynamics processing. That said, I found the Compressor to be far more effective and flexible when used on nonpercussive sources such as vocals, bass and electric rhythm guitars. Although its Attack and Release controls are fairly wide-ranging, I could only make kick and snare tracks pop a little bit using the Compressor. I couldn't coax extreme 1176- or Distressor-type drum sounds out of the plug-in.

The Compressor also features a user-friendly and transparent de-esser section. Its Threshold control is really a Range control, as the de-esser's processing is level-independent. A Monitor function lets you listen to the sidechain signal, making it a snap to fine-tune the de-esser's corner frequency.

When you instantiate the SideChainer plug-in on a track and choose it as a key input, the track's audio output serves as a sidechain input to any Native Bundle Com-

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Center for New Media

pressor plug in. This makes it easy, for instance, to duck instrumental tracks under a lead vocal. Native Bundle offers two key inputs, and multiple compressors can key off the same SideChainer. You can also mute the audio path output of the track that SideChainer is instantiated on so that the track serves strictly as a sidechain signal that is not heard in the mix. Nice!

Native Bundle's Limiter plug-in offers Threshold, Attack, Hold and Release controls, plus a defeatable, automatic make-up gain function similar to that used in the Compressor. A histogram shows the average level of your audio file—either on input, output or both—over time. The Limiter worked great when used to maximize lead vocal and electric bass tracks that had a wide (unprocessed) dynamic range. Used during a mastering session, the Limiter's action reminded me somewhat of the Waves L1 and L2: taming runaway transients and maximizing the output level to produce a much louder mix. However, the Waves L1 and L2 sounded clearer, and the TC Limiter tended to pump ever so slightly when pushed moderately hard (unlike the Waves plugs). For these reasons, I much prefer using TC's Limiter on single tracks.

TONE CONTROL

Native Bundle also provides two high-quality equalization plug-ins: Parametric EQ and Graphic EQ. Parametric EQ offers a choice of parametric, notch and low- and high-shelving filters on each of seven stereo bands. All of these filters offer 20 to 20k Hz range, providing optimal overlap. Except for the notch filter, which produces a fixed infinite cut, all of the filter types provide up to 18dB boost/cut. Regrettably, high- and lowpass filters are not included in the filter offerings. However, using a shelving filter with maximum (18dB) cut and a 12dB/octave slope will, in most cases, accomplish much of the same thing. (You can adjust the steepness of each shelving filter's slope from 3 to 12 dB per octave in 3dB/octave steps.)

Even when fed mono sources, each of the seven above-mentioned bands features linked left- and right-channel faders. You can unlink the channels to make independent L/R fader adjustments or bypass one or both channels' EQ completely. If you link the channels again, you can move the two boost/cut faders for each band and their offsets will be preserved. One band's parameter values can also be copied to another band.

The Parametric EQ's defeatable joystick control provides additional stereo EQ options: Two shelving filters simultaneously and proportionally boost/cut highs above 6 kHz and bass frequencies below 250 Hz, and a third filter boost/cuts frequencies above 4 kHz.

The SoftSat function should be implemented with caution when using large amounts of EQ boost within the Parametric EQ. Even though SoftSat will prevent the plug's output from exceeding full-scale, driving SoftSat too hard will cause unpleasant distortion. And a more moderate EQ boost often seems unresponsive with SoftSat engaged, as the latter's compression effects fight the equalization gain.

Native Bundle's Graphic EQ plug-in can be configured to provide seven, 14 or 28 bands of equalization. The plug-in features a slick graphic interface in which you can click or click-drag the mouse in each band to set its boost/cut. Alternatively, you can draw an EQ curve with your mouse by command-dragging (Mac) or right-clicking and dragging (PC). A very useful scalar-fader acts as a multiplier to expand or shrink the degree of boost/cut on all active bands simultaneously. (You can also use the mouse to create smaller groups of contiguous bands under scalar-fader control.) You can even use the scalar-fader to create an inverse EQ curve to your original settings.

Parametric EQ and Graphic EQ both provide very high-quality equalization. Their high-resolution parameter controls let you fine-tune spectral balance. Parametric EQ is especially noteworthy for its ability to adjust critical bass-range center/corner frequencies in ultrafine (as low as 0.7Hz) steps.

GIVE ME SPACE

Native Reverb Plus gives you a choice of three different room shapes—round, curved or square—and provides independent controls to edit parameters for those rooms. Parameters include dry/wet mix, room size, diffusion, color (timbre), low- and high-frequency damping, and decay time. You also have independent control over pre-delay times and initial levels for both early reflections and subsequent diffuse reverb. The plug-in's graphic user interface makes custom tweaks an intuitive affair. But, unfortunately, the reverb tails sound fluttery, ringy, grainy and/or fizzy unless you keep their decay times very short. As a secondary reverb used for creating low-level ambience (emphasizing early reflections), however, Native Reverb Plus sometimes comes in handy. Overall, this was the only plug-in in the bundle that I found to be subpar in quality.

WILD THING

Native Bundle's Filtrator can process any stereo audio source in real time with highly programmable, synthesizer-style filters. The plug-in's filter and amplifier sections can both be modulated by an LFO (synchable to MIDI clock) and/or envelope follower to create a variety of positively *wild* sounds. Using Filtrator, I transformed acoustic drum tracks into percussive bubbles and metamorphosed an electric bass guitar track into a rhythmic, pitched chainsaw. Filtrator is not the kind of plug-in that you'll reach for often on traditional music productions, but if you ever want to turn Debbie Gibson's sweet string pad into a disturbing synth patch from *Blade Runner*, then this is your highway to the dark side! I love plug-ins that dish out unique sounds that jolt me out of creative malaise, and Filtrator does just that.

SAVE ME

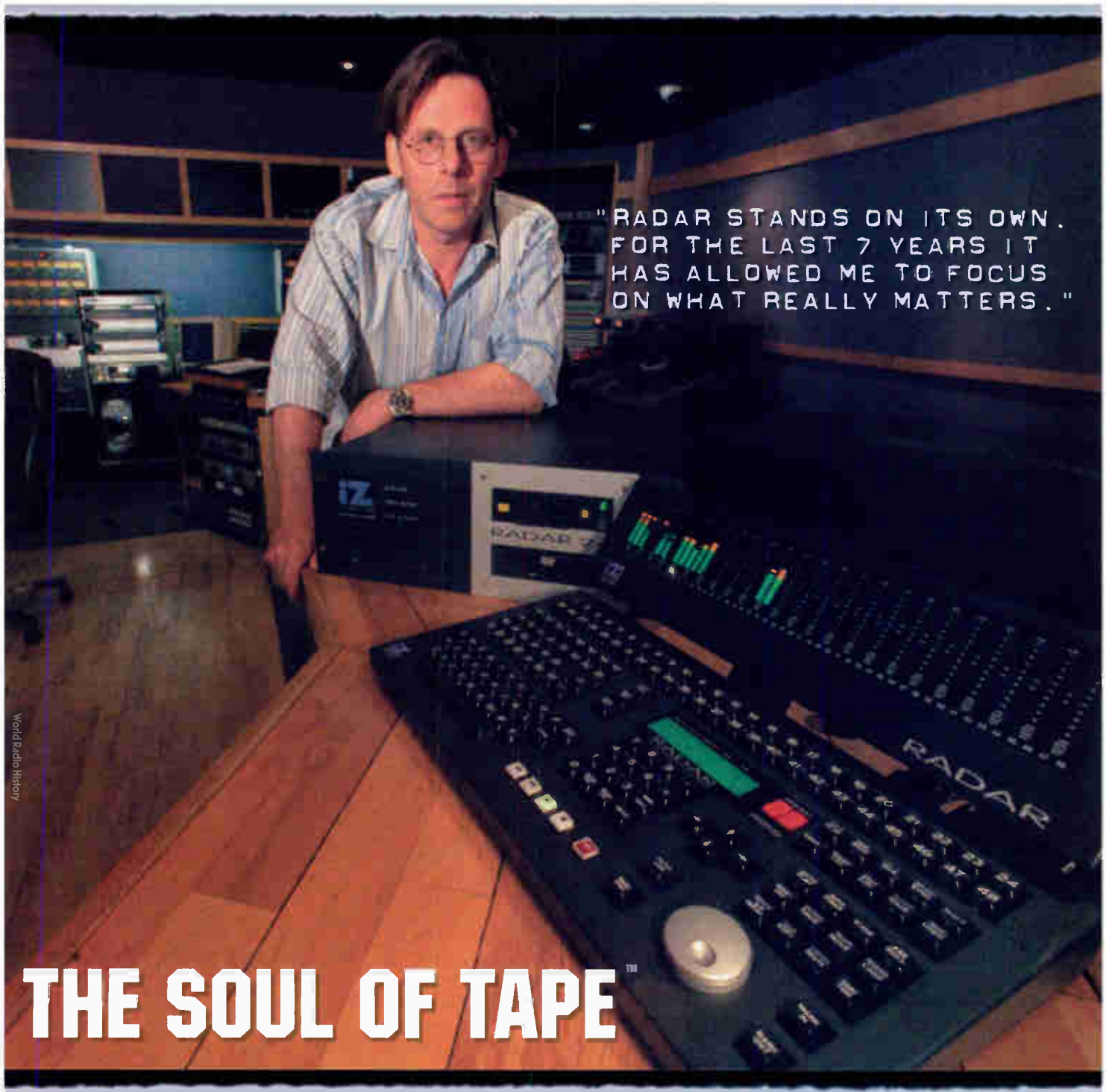
You can store your custom presets for all Native Bundle plug-ins in folders and subfolders (for example, to group together reverbs of the same type or save each of your client's presets seperately). When you're ready to load a preset, Native Bundle will navigate the directory's hierarchy directly from a drop-down menu in the plug-in! I wish more plug-in manufacturers would offer this level of ease to save and load presets. That said, it's unfortunate that the title of the current preset is not displayed and there is no indication of whether or not it's been edited since it was last recalled.

Aside from the lack of an Undo command and a few other minor interface issues, TC's Native Bundle is very user-friendly. The plug-ins are also very efficient: I could instantiate many Native Bundle plugs with very minimal drain on my CPU. The owner's manual—available only in .pdf form—is fairly good but omits important information (mostly regarding various displays and specifications) that TC promises will be added in the next release.

Costing only $499 list, Native Bundle delivers a really good bang for your buck. If you're looking for a wide variety of production tools in a cost-effective package, then be sure to check it out!

TC Electronic (formerly branded as TC Works), 805/373-1828, www.tcelectronic.com. ■

Mix contributing editor Michael Cooper owns Michael Cooper Recording in beautiful Sisters, Ore.



HUGH PADGHAM

PRODUCER/ ENGINEER

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BY KEVIN BECKA

AEA R84 Ribbon Microphone

Wes Dooley's New Baby

AEA's slick, retro-looking R84 ($1,000) is the newest mic in designer Wes Dooley's product line. Sensitivity of the R84 is -52 dBV/Pa, and unlike its big (and much heavier) brother, the R44, the R84 exhibits an impressive frequency response that gets up to 20 kHz (±3 dB). What it does share with the R44 is a 0.185x2.35 inches by 1.8-micron, pure-aluminum, low-tension ribbon capable of handling better than 165dB SPL above 1 kHz. The R84 comes in a durable and functional foam-lined case and includes an integral shock-mount and 10-foot cable that terminates to an XLR. The mic is a svelte performer that weighs in at less than two pounds and measures 8 inches tall and 2.7 inches in diameter. The mic's weight and compact nature, along with the fact that the shock-mount allows it to swing freely on two axes, make it a breeze to set up and tuck into relatively tight spots.

IN THE STUDIO

Right out of the box, the mic is a looker. At first, the heavily padded, zippered "sock" that houses the mic seems a little odd, but on further inspection, its usefulness becomes apparent. It comes with a carrying strap, a small pouch and a fastenable loop to keep the cable in order. The case sports blatant reminders to keep phantom power and dust as far away from the mic as possible. The mic itself is solid, and its bullet-like styling garnered "oohs" and "aahs" in the studio. The screw adjustments for the shock-mount and cable attachment are of high quality and are sure to stand up to years of use.

I used the mic on a number of acoustic instruments with great results. First call was on a dobro overdub at 96k using a Pro Tools|HD system. The song was heavily layered with guitars, mandolin, fiddle and vocals, and I was wondering where the dobro would fit in the mix. It was immediately clear that the R84 would make my job easier. The dobro cut through the mix without EQ and sounded, for lack of a more appropriate word, perfect.

Next, I tried the mic on a Martin acoustic guitar. This particular guitar is fitted with the Buzz Feiten tuning system and sounds fantastic. The R84 captured the Martin beautifully, rounding out the transients and presenting a balanced track that only needed a bit of the low end tucked in.

The most revealing test for the mic was when I used it to record a less-than-inspiring 6-foot grand piano. I was concerned about using the instrument because it was going to support a lead vocal with only a synth pad as a companion. The instrument was tuned just before the session, and I placed the R84 right at the middle of the soundboard, pointing straight down at the hammers. The R84 offered the perfect combination of frequency and transient response to tone down the inconsistencies in the piano, producing a track that was more than usable.

Next, I had the R84 at moderately close quarters with a guitar amp at blazing levels. It was shut in a small bathroom about two feet back from the twin 12-inch speaker cabinet. I guessed on the best position and then threw my hands up when I got back to the console. It sounded wonderful.

I thought the mic sounded so good on-axis that I never tried recording using the back end of the mic, but after talking to Wes Dooley, I will certainly do so at the next opportunity. Dooley revealed that the internal screen is doubled up on the off-axis side of the mic. Because of this, the rear of the mic exhibits its own particular personality. In addition, this protection would also be a "safer" way to use the mic for more plosive, ribbon-killing situations like vocals.

CONCLUSION

I'm always wary of market-speak that surrounds a product of any kind, audio or otherwise. But when AEA states that the R84 produces "a pure, natural sound, just as you hear it when you're placing your mic in the studio," the company is absolutely right. The one caveat is true of all ribbons: Make sure your preamp is the correct recording companion. You'll need plenty of clean gain, especially if you're using the mic on quiet acoustic instruments.

At this price, you should have at least one R84 in your locker, especially if you're looking to put some life into your digital signal chain. When using even high-quality condensers with a DAW, you forget how good things can sound and end up settling for "really good" instead of "excellent." A quality ribbon like the R84 can take a production to the next level, injecting some butter into a margarine world.

AEA Microphones, 626/798-9128, www.wesdooley.com. ■

Kevin Becka is a technical editor at Mix.

Snapshot Product Reviews

SPL MODEL 2380
Surround Monitor Controller

Sound Performance Labs has a long history of providing slick new products that do something completely different, such as its acclaimed Transient Designer. Now, SPL offers an elegant solution to the mundane, everyday issue of multichannel monitor management with the Model 2380 Surround Monitor Controller (SMC).

Housed in a single unit, the SMC is a multichannel volume control and source-switching selector for 5.1 and stereo listening environments, especially those where playback is from a DAW or console that lacks playback level control of 5.1 material.

The front panel is dominated by the large volume control and also has surround/stereo input selectors; in/out switches that double as Solo/Mute buttons for any of the individual 5.1 (and stereo) speakers; -20dB attenuator/dim switch, switches for summing either the L/R stereo fronts of Ls/Rs rears to a single mono playback; and a Mute-All switch that doubles as a panic button.

On the rear are the connections for the 5.1 speaker outputs (all balanced ¼-inch TRS), the surround "A" and stereo "C" inputs (+4dB balanced on D25 subs in the 8-channel Tascam DA-88 format) and a "slave" D25 sub mirroring the "A" and "C" inputs to connect to a recording device. Input "B" has six RCA jacks for monitoring unbalanced sources, such as a reference DVD player, and input "D" is stereo unbalanced on RCA jacks. For ease of hookup, SPL screened the IDs for all of the connections both rightside-up and upside-down (for looking over the unit)—nice!

In the studio, the unit's maximum of 16 individual lines, two D25 sub snakes and IEC power cord can make for a messy setup when used as an on-console controller. Mine was much better in the classic "sit on meterbridge" and "set off to the side" modes, allowing for cleaner cable management.

But the best part about the SMC was its sound, or rather lack of sound. Instead of taking the easy, lo-fi route of using VCAs or DCAs to control volume, SPL opted for a discrete, six-level potentiometer with a minimalist approach to components throughout to maximize transparency. Frequency response extends to 100 kHz (-3 dB), the action of the pot was smooth and the essential switching of the individual speaker buses was glitchless. At $769 retail, this could be the solution you need right now!

Dist. by SPL USA, 866/4-SPL-USA, www.spl-usa.com.

—George Petersen

M-AUDIO TAMPA
Mic Preamp/DI/Compressor

TAMPA is M-Audio's entry into the land of rackmount signal processing, and the result is a great-sounding unit at an affordable $799.95 price.

Combining a mic preamp, ¼-inch direct box input, compressor and analog/digital outputs, TAMPA is packed with features. The preamp uses Temporal Harmonic Alignment™, which supposedly aligns the phase of the desirable even-order harmonic components in a signal with the main signal itself, resulting in a tube-like sound from a solid-state circuit.

The front panel is straightforward, with toggle switches for power, phantom power, instrument/mic select, polarity reverse, low-cut in/out, compressor in/out, a 20dB input gain boost and a 20dB output level pad. Retro "chicken head" knobs select input impedance (300/600/1,200/2,400 ohms) and digital output sampling rate (44.1/48/88.2/96 kHz). There is no switch for output select; the XLR and ¼-inch TRS analog, and both S/PDIF co-ax and XLR AES digital outs are always active. Rotary pots handle input gain and threshold/ratio/attack/release parameters, and illuminated VUs display output level and compressor gain reduction.

I used TAMPA to track background vocals with a Royer SF-1 ribbon mic: a low-

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output, but extremely wide-bandwidth model that can really put a preamp to the test. Sure enough, I needed every bit of the preamp's gain, but was pleased by the clean signal, even when it was turned up to 11. However, had I been recording extremely soft Foley effects, I would have needed more gain than TAMPA could deliver.

During another session, using an Audio-Technica AT4033—a mic with a "typical" condenser sensitivity—I had more than ample gain, from pin drops to close-miked rock toms. As far as the "effect" of the Temporal Harmonic Alignment goes, it's hard to say: There's no Defeat switch to A/B the processing, but the sound of the Class-A preamp circuit is sweet, not overly colored and pleasant overall. The input impedance matching is another nice touch not often found on preamps in this price range.

I was impressed with the action of the compressor, with its servo-controlled, dual-passive optical attenuator. The output was smooth and did the job without pumping or breathing artifacts, whether used on vocals or DI'ing a Fender Jazz or Hofner Beatle Bass.

Overall, I enjoyed using TAMPA. The unit lacks some functions (probably to keep the price low) that would be great on TAMPA II, such as a line input for accessing the compressor alone, a rear-panel mic jack that paralleled the front input, preamp inserts, an internal power supply and wordclock input to sync multiple TAMPAs with the digital outs. Still, at this price, TAMPA rocks!

M-Audio, 626/445-2842, www.m-audio.com.

—George Petersen

ROLAND M-1000
10-Channel Digital Line Mixer

Roland's M-1000 is a flexible and versatile unit that fits into all sorts of studio-niche applications.

The M-1000's "10-Channel Digital Line Mixer" subhead is somewhat of a misnomer: The unit is a digital mixer (although in a very "analog"-looking chassis) that does have 10 inputs, but it's set up with an analog stereo pair (+4/-10 dB switchable) and four digital stereo pairs, all with S/PDIF co-ax jacks. Additionally, one of the digital pairs can be switched to an S/PDIF TOSlink optical input source and another pair can handle a USB digital input from a computer.

As a bonus, the M-1000 provides stereo analog monitor outs with level control for driving headphones and/or studio monitors (via 10dB ¼-inch jacks)

and a digital master output fader (with balance control) that feeds the dual seven-segment LED meters and the USB output, S/PDIF (co-ax and optical) outs and balanced +4dB XLR analog outs. The back panel has BNC wordclock I/O with switches for Clock Thru and 75-ohm termination.

Keeping track of all of this on the front panel are 13 status LEDs indicating wordclock lock from each input, clock sources, sampling frequencies (44.1/48/96 kHz) and USB activity. And if you need more, multiple M-1000s can be cascaded for additional fun. Somehow, all of this is packed into a single-rackspace enclosure, but the layout is clear and uncluttered, making operations a snap.

The M-1000 ships with a CD-ROM of Mac and PC drivers for WDM, MME and ASIO, and Roland provides updated drivers—such as the new M-1000 Mac OS X USB driver—on its Website's support section.

The audio is sparkling, thanks to its 24-bit/96kHz operation, and with 56-bit internal processing, headroom is never an issue. The M-1000 also includes automatic sample-rate conversion (32 to 96 kHz) on all of the digital inputs. The unit's main drawback—not being able to simultaneously send 96 kHz in and out of a computer via USB—is actually a USB limitation rather than the M-1000's.

Although the M-1000 was originally intended as a digital keyboard mixer, it can do much more: acting as a simple A/D converter to the S/PDIF or USB outs; an aux mixer combining audio from a computer with external analog or digital sources, and then returning the mix back to the computer; a USB I/O interface for routing audio or returns from virtual instruments or real-time plug-ins to/from the analog and/or digital domains; a TOSlink-to-co-ax (and vice versa) converter; a monitor station to connect studio monitors to your DAW; and more. At $795, the M-1000 is a versatile and powerful adjunct for the modern studio, project or pro.

Roland, 323/890-3700, www.RolandUS.com.

—George Petersen

CHANDLER LTD-1
Mic Preamp/EQ Revisited

In my recent review of Chandler Limited's LTD-1 Enhanced Neve Mic Pre/EQ (*Mix*, August 2003), for the purpose of a quick A/B comparison, I used a Whirlwind IMP Splitter 1X3 box—a popular sound reinforcement tool—to connect a Neumann M149 microphone to the inputs of both the LTD-1 and one of Brent Averill's refurbished Neve 1073 mic pre/EQ modules at the same time. It is a resistive splitter and was handy at the studio. While I know about splitting transformers, it didn't occur to me to seek one out. Because the M149's output impedance is 50 ohms, and both the LTD-1 and Averill's 1073 were set to 1,200 ohms input impedance using the same exact input transformers, I reasoned that both preamps' first transistor input stage would "see" the same signal, impedance and level.

Upon publication of that review, I received some e-mails that were critical of my testing setup and I decided to retest; this time, using a Jensen model JT-MB-E four-way mic-splitting transformer for the simultaneous connection of the mic to the two preamps. Chandler Limited loaned me another LTD-1, and I procured the same pair of Averill/Neve 1073s used in the original review.

After setting both units to a -40dB mic gain setting and with both output controls full-up, I again found that both units delivered exactly the same output level. I had two Averill Neve units to compare to the single LTD-1. Neve number one was only slightly warmer in the low frequencies but muddier than the LTD-1, which was more open in the high frequencies. Neve number two was thinner than the LTD-1, and both Neves had a slightly boxy sound quality when compared to the LTD-1's seemingly flatter and more open sound. I compared both singing and speaking voices without using either unit's EQ sections.

Using the transformer splitter, I could hear much "deeper" into the subtleties of all the units. In general, all of the aforementioned differences are extremely subtle; and as a practical matter, the retested A/B results were the same as before.

—Barry Rudolph ■

BY GEORGE PETERSEN

Pioneering Companies Celebrate at AES

For many audio companies, 2003 proved to be a significant year. We decided to spotlight a few of the companies celebrating anniversaries at AES.

EASTERN ACOUSTIC WORKS: 25 YEARS

In 1978, EAW founders Ken Berger and Kenton Forsythe and a handful of employees set up shop in an old automobile plant in Framingham, Mass. From the start, their intent was to create high-quality touring loudspeakers, but at the time, the duo had no idea how influential their products would be in helping change the direction of an entire industry.

In a few short years, EAW succeeded in developing stock products that regional and national sound companies could use right out of the carton. The days of a sound company needing to build all of its enclosures were numbered. This trend was accelerated with the 1985 debut of the hugely successful KF850, a three-way, tri-amped, horn-loaded, Virtual Array™ system that five years later appeared on more riders than any other loudspeaker.

EAW founders Ken Berger (left) and Kenton Forsythe in the early days

At the time, consumer interest in the new CD format brought increasing requirements for better sound in performance spaces, whether in concert halls, houses of worship, clubs, live theater and stadiums, or racetracks and other sports venues. In 1989, EAW's first major installation—a complex system for the Anaheim, Calif., baseball stadium—both presented EAW as a capable, on-time supplier in the fixed-install market, and also fueled the movement toward hi-fi/high-SPL sports venues, driven by EAW's creation of new application-specific products. This approach was also successfully carried forward with the company's entry into the cinema market in 1995, with THX-approved, three-way products that were far ahead of the traditional two-way designs found in most cinemas.

In 1999, EAW purchased SIA Software, creators of the SMAART audio measurement/analysis system. EAW itself was acquired by Mackie Designs in 2000, but the innovations continue unabated, such as its Digitally Steered Array Series that was shown earlier this year and is based on technology derived from its large-format KF900 system.

GENELEC: 25 YEARS

Finland may not be the first (or second or third!) country one thinks of when considering a pro audio supplier. However, during the past 25 years, Genelec has definitely been doing something right, leading to a long list of industry accolades, including an unprecedented six TEC Awards wins in the category of excellence in studio monitors, in 1992 (1031A), 1993 (1038A), 1995 (1030A), 1996 (1039A), 1997 (1029A/1091A) and 2000 (1036A).

Based on the shores of Finland's Lake Porovesi, Genelec was founded in 1978 by Ilpo Martikainen, Topi Partanen and Ritva Leinonen, who still run the company. Genelec's first project was to supply monitors for the Finnish Broadcasting Corporation complex in Helsinki. At the time, the term "powered monitor" referred to a speaker with an amplifier that was built-in for convenience rather than performance. But from the beginning, the Genelec philosophy was to create active monitors, where high-quality onboard amps were precisely matched to the speaker components to optimize system performance.

The concept gained popularity with broadcasters throughout Europe, and in the mid-1980s, Genelec expanded, offering products for the music studio market. The company then started developing a large main control room monitor, the Model 1035A, unveiled at the 1989 AES in Hamburg. The 1035A—and its proprietary Directivity Control Waveguide™—provided the foundation for other Genelec monitors, large and small, which also shared the active powered approach, from the near/mid-field (1031A and 1030A) to the near-field satellite/subwoofer (1029A/1091A) system, to the large mains with external amp racks in the 1038A and 1036A monitors.

Genelec co-founder Ilpo Martikainen with Genelec's gargantuan 1036A double-18 monitor

A more recent Genelec breakthrough is its Laminar Spiral Enclosure™ (LSE) subwoofer technology, which removes acoustic nonlinearities from port turbulence for a smooth "laminar flow" of LF energy from a rigid, tuned enclosure. Yet today or 25 years ago, the company philosophy remains unchanged, says president Martikainen: "At Genelec, we simply design monitors that speak the truth of the recording."

PEAVEY MEDIAMATRIX: 10 YEARS

Exactly 10 years ago during AES, in a penthouse suite at the New York Hilton, Peavey Electronics and Peak Audio debuted a joint venture known today as MediaMatrix. Described by Hartley Peavey as an "Audio Erector Set," the system combined an I/O connection box with an IBM PC and plug-in cards providing DSP horsepower for mixing, gating, EQ, compression, crossovers and delay. Users could create a system merely by dragging icons of various components (gates, preamps, etc.) into the de-

sired configuration and drawing connection lines using a mouse. In those days before DSP plug-ins, the MediaMatrix was so far ahead of its time that many attendees at the unveiling left thinking that it was simply a CAD program for documenting systems rather than a radical approach that could create the equivalents of hardware boxes simply by allocating DSP reserves.

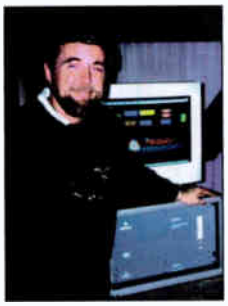

PHOTO: GEORGE PETERSEN

Hartley Peavey unveils MediaMatrix at the 1993 AES show in New York.

A well-established manufacturer of hardware, Peavey had some initial concerns that the technology could make obsolete a major portion of his livelihood, but went forward with the project under the insight that if such a product could exist, it would be better to be first than try to play catch-up later. He was 100% right. News of the announcement spread like wildfire, and within a matter of months, installations followed at prestigious venues such as the U.S. Senate and Disney's Epcot Center, giving MediaMatrix a strong foothold among contractors and consultants.

Later MediaMatrix systems—such as the X-Frame and the X-Frame 88—brought prices down to even lower levels, making the technology accessible to much smaller installs, as well as world-class venues like Tokyo Disney, the Sydney Opera House, dozens of major-league football and baseball stadiums, almost every casino in Las Vegas, the Sydney Olympics, the Opryland Convention Center and the Grand Mosque in Mecca—more than 2,500 worldwide.

SENNHEISER ELECTRONIC CORP.: 40 YEARS

SEC—the U.S. wing of Sennheiser—began in 1963 by Thomas Schillinger as a small independent distributor, selling MKH shotgun mics and the (still classic) MD421 dynamic to a few dealers, mostly in the film biz. Now headquartered in Old Lyme, Conn., SEC serves more than 1,500 pro and consumer dealers in the U.S. and Latin America, with lines including Sennheiser, Neumann, Turbosound, Chevin, True Audio and InnovaSon.

But unlike a typical "distributor," SEC takes an active role in developing specialized products based on customer feedback. "We maintain an ongoing relationship with our customers," explains current SEC president John Falcone. "We utilize their input as a resource, and match products and services to their specific needs." One such example is the only selective-distribution system on the market, the SAS 432 wireless mic antenna splitter system, which can feed 32 wireless receivers from a single pair of antennas. It's been used in award-winning Broadway productions such as *The Lion King*, *Beauty and the Beast* and *Sunset Boulevard*, but has since found use in NFL Football broadcasts and the Grammy™ Awards.

This company-wide commitment to listen, combined with top-end customer support and great products, has earned Sennheiser the distinction of being the only pro audio manufacturer to receive the "Triple Crown" of Oscar™, Emmy™ and Grammy Awards. These included a 1987 Scientific and Engineering Award from the Academy of Motion Picture Arts & Sciences for the industry-standard MKH 816 shotgun mic; a 1996 Emmy for developments in RF wireless technology; and a 1999 Technical Grammy Award for Neumann. Today, SEC faces an increasing number of uncertainties, whether it's the tough economic environment, increased competition, higher technical standards or the seemingly endless maze of wireless regulations, so the next Oscar, Emmy or Grammy will not come easily. But since 1963, Sennheiser Electronics Corporation has never done things the easy way.

Company founder Fritz Sennheiser (left) and Thomas Schillinger, the first president of Sennheiser Electronic Corporation

YAMAHA CONSOLES: 30/15

When it comes to consoles, everyone in pro audio knows the Yamaha name, and 2003 marks the dual anniversary of the company's PM Series live boards (30 years) and 15 years of its digital consoles. Combining solid construction and high-quality audio, more than 9,000 PM Series live consoles and 110,000 digital mixers are in use worldwide.

The first PM mixers, such as the PM200 and PM300, were simple 8-input boards for portable applications, but Yamaha really stepped up with its 1976 PM1000-32 and 1978 PM2000, with enough flexibility for club and concert work. The defining moment came with the PM3000 in 1985, which added VCA control and became a workhorse in the touring industry for years. The tradition was continued and refined in 1992 with the PM4000 and the 1996 PM3500; both are still in use in concert venues everywhere. The PM1D all-digital console (2000) addressed the needs of modern sound reinforcement with its modular configuration, built-in effects and complete recall capability. Earlier this year, Yamaha showed its new flagship PM5000 analog console, combining high-performance analog with some of the control convenience derived from the PM1D.

Yamaha's digital console program began with the 1988 debut of the DMP7, followed by the DMP7D (digital I/O version). There were other Yamaha mixers in the meantime (i.e., the DMC1000, DMP9 and ProMix 01), but the 02R changed everything. In 1995, the under-$10,000, 20-bit, digital, 8-bus 02R took off, offering 24 analog inputs and 16 digital tape returns (40 total inputs), moving faders, reset of all parameters, dynamics on every channel and two internal effects processors. Paired with a couple of MDMs, the all-digital studio was no longer a fantasy.

Followed by its 1997 03D and 1998 01V, Yamaha thoroughly established the genre of the affordable digital console. And with debuts of the DM2000, DM1000, 02R96 and 01V96 during the past year, offering full 96kHz performance with DAW integration and surround mixing, Yamaha is set to continue its role in defining the modern console for years to come. ■

Yamaha's 02R broke the rules of traditional console design, showing up in both small project rooms as well as high-end studios such as New York's Photomag, pictured here.

Mix *editorial director George Petersen is also the co-author of* Crazy Campsongs, *a whacked collection of sing-alongs for kids of all ages. Check it out at www.crazycampsongs.com.*

The Geeks Speak

Tech Experts Share Their Secrets

The technician's path is one of evolution, from repair and installation to modifications, design and, for some, manufacturing. This month, in lieu of my regular column, I've invited several techs to share their specialized perspective. After all, who better to design gear (or replacement parts) than those who have stared death in the face? Here, capacitor and power insights share the spotlight with the many disciplines embraced by tape recorders (and reproducers). So dig in!

—Eddie Ciletti

IN SEARCH OF THE MAGNETIC HOLY GRAIL V-3A

By Michael Spitz

Michael Spitz

The process of converting an Ampex ATR-100 Series transport into a 1-inch 2-track required a priority shift: In order to realize the full potential of the wider format, a greater emphasis was placed on mechanical stability because azimuth error tolerance is considerably narrowed. (Azimuth is to high-frequency response as focus is to photography; in this case, the depth of field becomes very shallow.) This heightened scrutiny can be applied to any tape machine, initially by simple visual inspection combined with the familiarity that comes with the process of playing and recording test tones on a regular basis.

When tape machines were *the* capture device, alignment occurred once or twice daily, not due to drifting issues but in order to accommodate multiple sessions. Now, the process is foreign to many end-users and with it, the experience to interpret a tape or machine idiosyncrasy. Awareness of the three pragmatic issues below will improve your chances of capturing and reproducing every single breath and nuance in chilling detail.

Tape path is the composite of mechanical parameters that dictate how tape passes over the heads. All items must be "true and square"—that's azimuth and zenith—plus height. Tape thickness is approximately 1.5 mils (0.0015 inches) and tape path component tolerances are in the 0.0004-inch range.

The end-user should perform regular spot checks to keep the machine on track. Put soft, nonglaring light on the head assembly and closely observe how the tape passes over the heads and through the guides. Watch what happens from stop to play. Does the tape ride up or down? Is there any curling at the guides? If stability is not quick and consistent, then alignment will be a bear. Any misaligned or worn component in the path can be at fault.

ALIGNMENT

An analog tape machine that is not frequently used may require more than an alignment. Before applying a tweaker, apply a low-frequency tone (40 Hz to 100 Hz) while exercising all external pots and switches, as well as punching in and out of record several times, on non-critical tape stock to exercise any relays and demons. If the machine is still a contender, then the easiest way to check azimuth is to play back the 10kHz section of the test

by Eddie Ciletti and Friends

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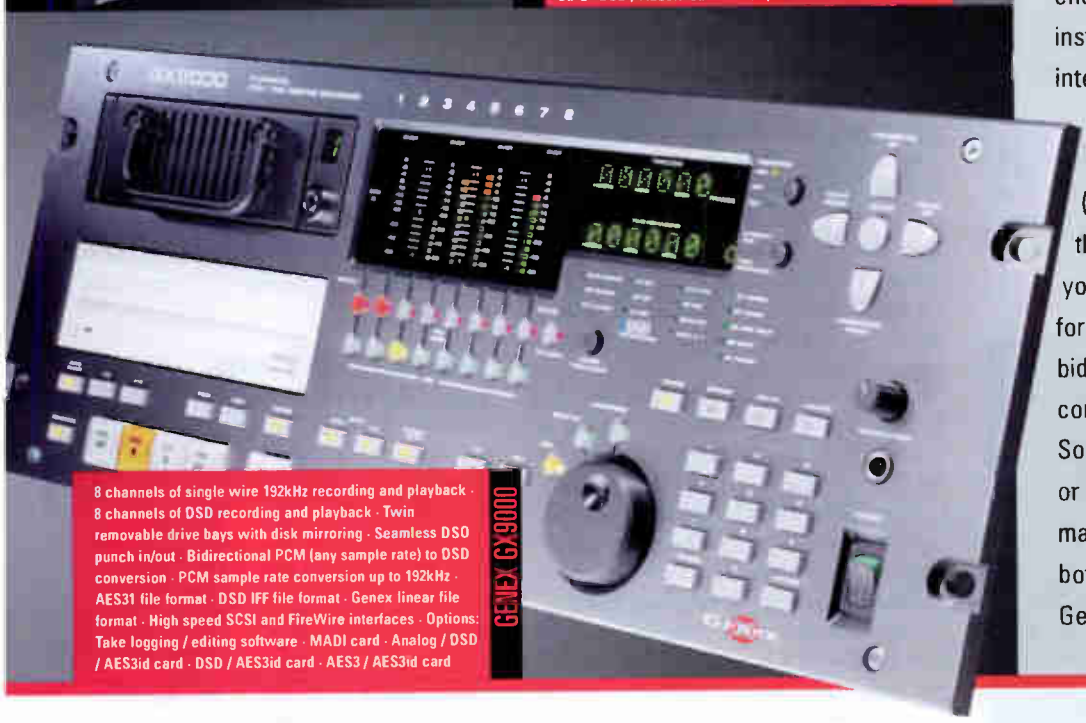

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tape from two adjacent tracks, on two faders, panned to mono; each *individual* fader level should be 6 dB down from 0 VU (or nominal). The combined level should be 0 VU *with no wavering*; the record head is similarly calibrated. Consult the manual for machine-specific details. No magnetized tools near the head block, please.

Once playback and record are aligned, create a "tone reel" using the same stock as the session tape. If possible, recording a slow bass sweep from 200 Hz to 20 kHz is useful for adjusting the low-frequency playback response and at the mastering stage.

TAPE SATURATION AND COMPRESSION TECHNIQUES

On a multitrack recorder, finding the "limitations" of tape and head performance (saturation) can be used as a form of "artistic expression" on a track-by-track basis. However, hot record levels on stereo tracks will kill definition, "air," stereo separation and center-stage depth, undermining any noise-reduction system (if applicable) in the process. One-inch, 2-track recorders like the ATR-102 were specifically developed to provide improved definition at lower recording levels (and speeds) without any noise reduction. ■

Mike Spitz is chief mechanical disciplinarian at ATR Service Company in York, Pa. (www.atrservice.com). Alignment seminars are offered on a regular basis at a low cost.

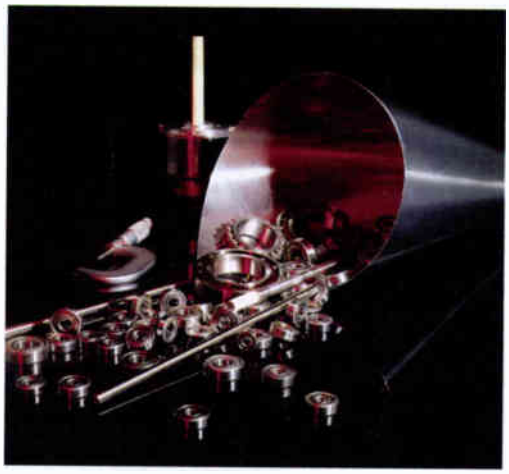
Ampex ATR-102 tape machine upgraded to be a 1-inch/2-track

THEORIES, MUSINGS AND UNDENIABLE TRUTHS

by Jeff Gilman

Jeff Gilman

After 25-plus years of studio and technical endeavors, I've seen the best and worst of analog. When people want to hot-rod an old Ampex 351 that they purchased on eBay for a mere $55, my reply makes it hardly seem like a bargain: "Thousands later, you will indeed own a *very good* Ampex 351, but it will forever be "dinosaur" technology. When you want a Ferrari, if at all possible, buy the Ferrari!"



An assortment of bearings used in the fabrication of tape-transport motors and roller guides

OLD ANALOG ≠ GOOD ANALOG

"But it has tubes!" Tubes in a tape recorder usually come attached to an old AC transport, and with that, plenty of mechanical baggage. Wow, flutter and scrape flutter in a recording system, in tiny percentages, can be your friend. The sum of these "undesirables" is randomly subtle and yet still a part of that obscure, undefinable analog "feature set" that folks seek from digital gear. Good luck trying to model this stuff; then again, if you can't get enough, then try using a cassette deck!

Any rolling part can do it, but the major flutter-maker in your tape recorder is likely to be the capstan. The larger its diameter, the lower the negative mechanical contributions. The Ampex ATR-100 (my choice for the "Ferrari") has the single largest capstan in the business. For every 30 inches of tape that zips by the heads in one second, the ATR capstan rotates just four times! Thus, the major flutter component is $f = 4$ Hz. You might get an occasional complaint from a whale or an elephant, but not from a pianist.

For many, analog tape is still the preferred way to record music. How long that lasts is uncertain. One thing, however, is sure: A quick survey of major studios and mastering rooms will show a clear preponderance of "Ferraris" parked in the control rooms.

CARE AND FEEDING

Motors have two types of bearings. Ball bearings that make an awful grinding noise cannot be helped with oil! In low-speed applications (i.e., tape recorders), ball bearings are lubed with grease. Oil dissolves grease, as well as some motor-winding insulation! What might seem like a quick fix can actually ruin that very expensive, irreplaceable motor. Motors that use sleeve or sintered bearings—i.e., the Studer A-80/A-800, Otari MX-5050s, MTR-10s, MX-80s and others—*do* require oil. Manufacturers don't always make this clear, unless you crack open the manual. Use the right stuff! Oils have very different chemistry. No oil, or the wrong oil, means no motor.

Electric motors are not created equal. The "motor guy" up the street may tell you it's $70 to repair, and I'm telling you it's $370. Is it worth a shot? Try this simple test: Put a Studer 800 and a Kirby vacuum side by side. Do they look at all similar? A word to the wise: Do it on the cheap and the re-fix will be more costly. ■

Jeff Gilman, chief alchemist at Precision Motor, works in Hudson, Mass. (www.precisionmotorworks.com) and specializes in the undead: the afterlife for tape-based recorders.

TROUBLESHOOTING ELECTROLYTIC CAPACITORS

By Peter Florance

Peter Florance

Electrolytic capacitors fail or gradually degrade in one of two ways: They either short or open. Checking a shorted part is easy: Just connect an ohmmeter, and if it never charges up to an open circuit, then it's either leaky or shorted. Testing for open electrolytic capacitors is a little different.

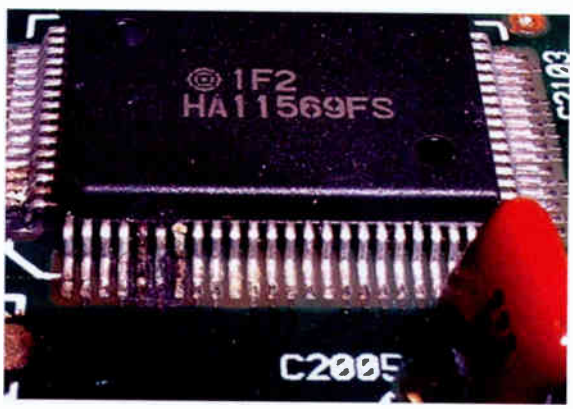
Real-world capacitors aren't perfect; it's better to think of them in complex terms as an amalgam of passive compo-

nents (resistors and inductors). The internal resistance of the capacitor—called Equivalent Series Resistance (ESR)—is due to design and construction limitation, as well as heat and aging effects. An electrolytic cap contains a wet chemical to increase its effective value while decreasing the ESR—that is, until the chemical degrades by drying or oozing out.

THAT DRY, FLAKY FEELING

Heat dries the chemical, let me count the ways. Locating a capacitor near a hot transistor, resistor or IC will shorten its life span to a couple of years. In old equipment, it's the first place to look. Capacitors used in high-frequency power supplies (more and more common in digital devices) must pass a lot more current than an audio path capacitor. This current creates heat via the capacitor's "internal resistance," its ESR.

Leakage is another issue that affects newer compact capacitors, causing some surface-mount types to fail at the rubber seals. The chemical ooze is corrosive and conductive enough to darken copper-printed circuit board (PCB) traces to a black patina. It can also destroy the plated-through holes on PCBs and even



A capacitor has leaked onto the legs of a nearby surface-mount IC.

penetrate under the green solder mask, damaging copper in a way that is a little harder to discern. It's a real mess that requires thorough cleaning with detergent and distilled water before attempting repairs.

It turns out that high ESR is often the first sign of a dying cap. An ESR meter is particularly useful for checking open capacitors; many testers work in-circuit by applying a high-frequency signal. If not sure whether the ESR is reasonable, then measure a new cap of similar value, beyond which the cap is dying fast. Note that high-voltage caps tend to have much higher ESR values. ■

Peter Florance zooms in on microscopic parts at Audio Services (www.audio-services.com) in Virginia Beach, Va. He zooms out to apply his expertise at www.firstfives.org on vintage BMWs.

AN ELEMENTARY GUIDE TO CALIBRATION TAPES

by Jay McKnight

Jay McKnight

First, locate the "Operation and Maintenance" manual. All tape recorders have the same basic adjustments, but their location and procedures are usually machine-specific. Before tweaking, have the correct test tape on hand, know how to perform the adjustments (in the correct order) and know when to call a more experienced technician.

Second, understand the basic recording parameters. While tape width may seem obvious and easily measured, most recorders can be set up for any combination of widths, speeds, equalizations and levels. As such, the recorder's model number alone may not be of much help and will require some investigation. If you're already using a calibration tape—from MRL, Ampex, BASF (Emtec), Standard Tape Lab, etc.—the label and the voice announcement will provide all of the details. If the tape has deteriorated, the MRL part numbers are still valid. For all other tape types, contact MRL for the equivalent part number.

RECORD LEVEL?

The choice of internal (magnetic) operating level, referred to as "Reference Fluxivity," may be based on several considerations such as the type of program level meter—standard VU, peak program meter (PPM)—blank tape type, whether noise reduction is employed (e.g., Dolby, dbx) or for "tape-compression" purposes. Fluxivity is commonly stated in nanowebers per meter (whose international standard unit symbol is "nWb/m"): 200 nWb/m is typical for older and consumer-type tapes, 250 nWb/m for general studio usage, and 500 nWb/m for the highest output mastering tapes and/or when tape compression is desired. If the calibration tape is not at the desired reference fluxivity, but is otherwise correct, you can easily set your reproducer for a different reference fluxivity.

TEST SIGNALS AND CALIBRATION TAPES

In addition to level, azimuth and preliminary frequency response, a multifrequency calibration tape will include 13 spot frequencies best suited for "first-time" calibration and reproducer troubleshooting.

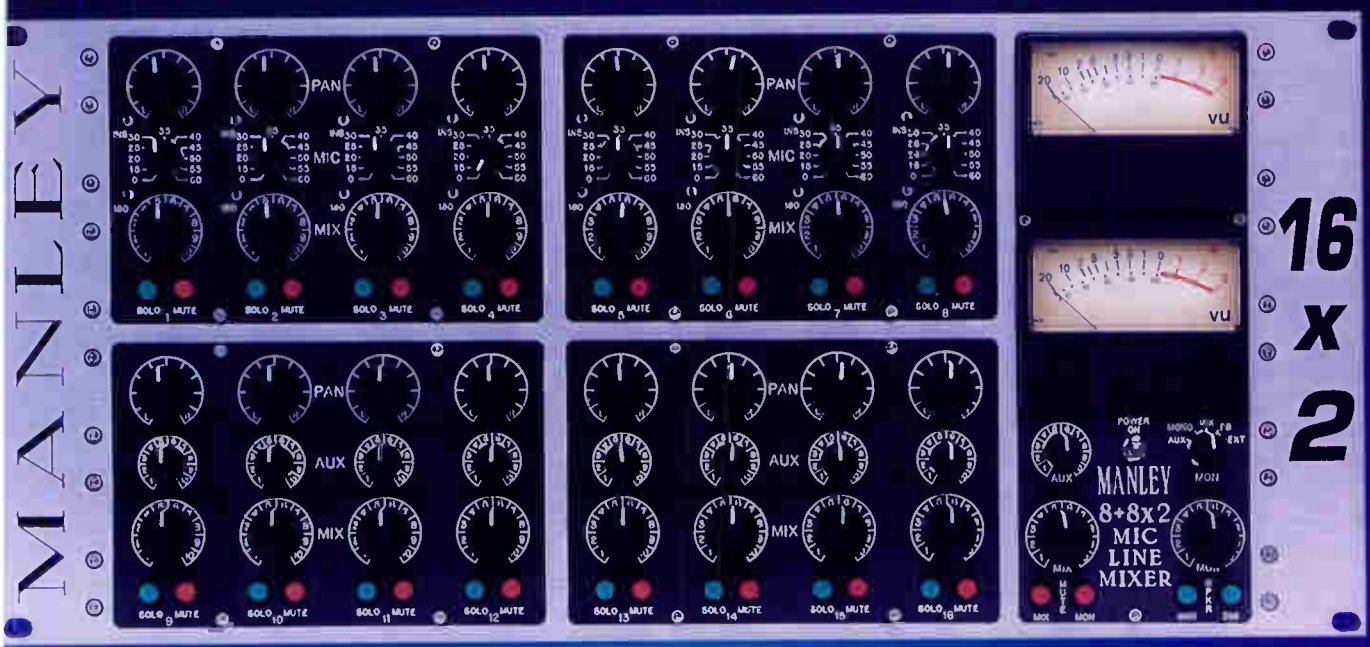
While multifrequency tapes are only available in single-speed versions, shorter tapes are less expensive to purchase, quicker to use (for touch-up purposes) and may be available as two-speed versions. Provided are the minimum two tones required to calibrate a tape reproducer: 1 kHz to set "Reproducer Gain" (also called "Reproducer Level") and 10 kHz (used first to adjust the mechanical azimuth of the reproducing head, and then to set the "High-Frequency Reproducer Equalization" control). An optional 100Hz tone is really too high for accurately setting the low-frequency reproducer equalizer response, but it does provide a quick test that the low-frequency response of the reproducer has not failed. Some tape reproducers do not even have a low-frequency adjustment control.

EQUALIZATION AND SPEED

Equalizations, known by the standardizing organizations names, have changed during the years, resulting in some confusion. The names are: 3.75 in/s, the same equalization is used everywhere for new recordings and is standardized by both the NAB and the IEC so we call it "NAB and IEC"; 7.5- and 15-in/s, the equalizations used are commonly called NAB, which is mostly used in the U.S. and is now officially called IEC2, and IEC or CCIR or DIN Studio (all are the same), which is mostly used in Europe and now officially called IEC1; 15 in/s—narrow-format recorders, that's eight and 16 tracks on ¼-inch tape, 16 and 24-track recorders on 1-inch tape—the IEC1 (IEC and CCIR and DIN Studio) equalization is almost always used; and 30 in/s, the equalization used everywhere for new recordings is AES, also called IEC2.

Note: During the early years of tape recording (1948 through, roughly, 1968), some of the equalizations were changed

MIX IT!



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several times, especially at the slower speeds, as new-and-improved tapes were developed. ■

In addition to standard and custom calibration tapes, Jay McKnight's MRL Website, http://home.flash.net/~mrltapes, is truly a source of reference material on the subject. If you don't see it, just ask.

LAYING THE GROUND WORK FOR POWER DISTRIBUTION

by John Klett

You can build a great-sounding room with the best gear, superb audio wiring and a fabulous grounding scheme, but if the power is not solid, your dream castle is built on shifting sands. Incoming power often has problems, from voltage fluctuations to noise issues and, worse, blackouts and spikes. Each in its own way can slow down or kill a session by corrupting digital data and damaging equipment.

John Klett

In case of a blackout, an uninterruptable power supply (UPS) can keep a computer up long enough to save data. If the UPS is larger and "always online," it can also provide continuous, solid and stable power to your whole studio. There are different kinds of UPS. True "double-conversion" units are always "online" and running "off the batteries." These units fully condition and regulate at all times. Double-conversion online UPS units cost more than "standby and switch-over" types, but when you consider the advantages of having continuously regulated and conditioned power for your studio, the added cost may be justifiable.

HOW MUCH POWER?

Choosing a UPS to condition power for all studio equipment requires knowledge of total current consumption and some idea of how your needs may grow. Uninterruptible power supplies are rated in terms of VA or kVA. VA is a measurement unit equal to the line voltage multiplied by the current draw in amps. One thousand VA is expressed as kVA. In an ideal world, 1 VA would be equal to 1 watt. In practice, you need to add padding onto a wattage figure when converting to VA.

Large commercial facilities with large SSL or Neve consoles (plus associated gear) require between 15 kVA and 20 kVA. At the other end of the spectrum, there are many small workstation-based studios that can be powered from one 20-amp (120-volt) breaker. This is something less than 2.5 kVA (120V x 20A = 2.4 kVA). Exceptionally large power amplifiers and/or multitrack tape machines will significantly increase the power requirements, especially if everything is powered up at once. Typically, two 20-amp breakers are required—just under 5 kVA—which I generally consider the minimum for a small studio.

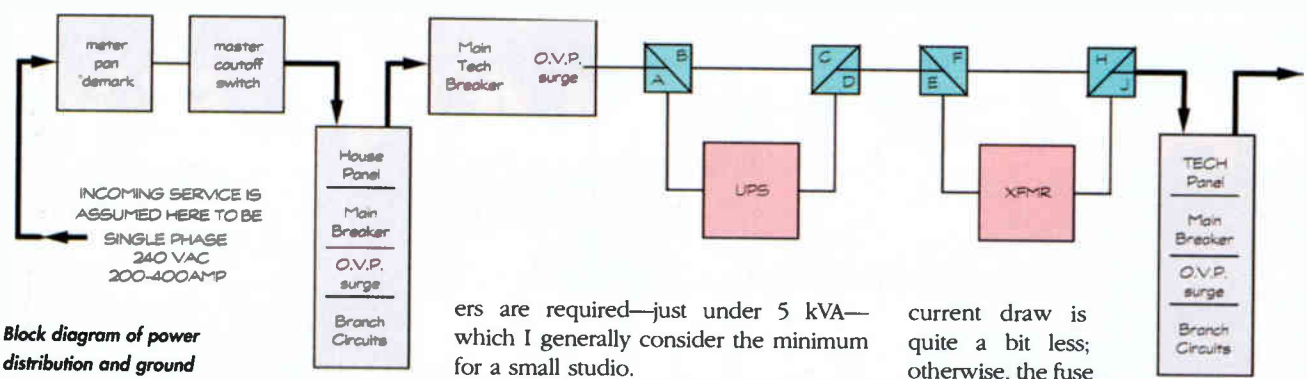
Many recording studios have large breaker panels with a dozen or more 15- or 20-amp (120-volt) breakers for "just" the audio equipment. The majority of these circuits are running far below the breaker rating, so measure actual consumption rather than attempt to count the breakers. The easiest way to measure the load is with a clamp-on current meter that is accurate over a 2- to 60-amp range. Simply clamp the meter around the wire coming off of each circuit breaker and read the current draw. If more than one circuit is involved, then make note of each circuit, adding up the current draws for the total. This assumes dedicated circuit(s) are feeding *only* audio gear. If lights, air conditioning and any other appliances are sharing the same power circuits, power down and unplug everything that is *not* audio-related. (These should ultimately have their own breaker box.) Workstation consumption should be measured while playing back the fattest session, because increased disc access consumes more power than discs simply spinning.

CYPHERING

To calculate the kVA number, multiply the measured current by the measured line voltage. Then, add 30% to 50% to the total kVA to provide headroom for power-up surges. If you plan to add equipment, then allow some room for growth.

Note: Using a clamp-on meter is a relatively safe procedure—one hand in pocket, shoes and socks (no sandals) on, please—but if you are the least bit intimidated by poking around inside of an electrical panel, seek help from a qualified electrician. You *can* get killed by carelessly putting one or more of your appendages in the wrong place at the wrong time. Safety first!

If all of the gear is not present, create an estimate by starting with the published wattage specification and then add 50% to arrive at a kVA number. If only a fuse rating is available, then assume the actual current draw is quite a bit less; otherwise, the fuse would burn out every week or so. Two-thirds of the fuse rating in amps multiplied by the line voltage will provide a reasonable kVA estimate for that piece. As with measuring, after calculating the total kVA estimate, *adding* 20% to the total is a good "minimum" rating—consider it "headroom" for UPS. ■



Block diagram of power distribution and ground scheme incorporating a UPS, isolation transformer with 240/120-volt outputs, plus 60/60 balanced output transformer for compatible gear. Note: The small square boxes with diagonal lines denote "Emergency-Only Bypass" switches.

John Klett (www.technicalaudio.com) is based in Carmel, N.Y., and chases electrons around the world.

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PHOTO: STEVE JENNINGS

Björk

Mix caught up with Björk's FOH engineer Kevin Pruce in San Francisco, when she opened the U.S. leg of her tour. Pruce has worked with Björk for 15 years, starting back in 1988 when she was with The Sugarcubes. "Working with Björk is always a pleasure, and every tour brings new challenges; there's never a dull moment," says Pruce. "I'm using Eighth Day Sound in the U.S., whom I've used for most of my acts since 1986. FOH control is supplied by UK's Wigwam Acoustics. What we hang varies according to the venue, but we are carrying 44 L-Acoustics V-DOSC, 16 dV-DOSC, 16 SB218 subs [flown], 12 d&b audiotechnik B2 subs [floor] and a d&b C6. The frontfills are dV DOSC/d&b C6; the sidefills are Turbosound Flashlight; and the floor monitors are Eighth Day 1x15s.

"I've got Björk on a Shure U2 wireless with an SM58 capsule," he continues. "She has a very distinct voice and a great understanding of how it works, with good mic technique, plenty of level, and a nice, natural sibilance. Having tried various other mics, the SM58 is the choice. For vocal processing, I'm carrying a Lexicon 480L, Tube-Tech LCA 2B and BSS 901, with a Tube-Tech SMC 2A for system compression. All other effects and compression/gates are within the console.

"For this tour, I've chosen a Yamaha DM2000 digital, using 40 inputs from the stage. On the last tour, we had an orchestra with a 90-channel input list, so I used a Yamaha PM1D. The challenge this time was with festivals throughout Europe, so a small-footprint FOH and the simplicity of an analog snake—and A/D conversion at FOH—seemed sensible."

FixIt

Jim Yakabuski

Known for his seven years as FOH for Van Halen, Jim Yakabuski has recently worked for Avril Lavigne and Matchbox Twenty. He is also the author of Professional Sound Reinforcement Techniques, *available from www.artistpro.com.*

"In large halls and arenas, line array systems can help achieve even front-to-back SPLs and frequency response. Here's a tip for smoothing level and tonality when using 'old-school' systems; i.e., horizontally arrayed columns of speakers. Assuming the system can be divided [electronically] into a top [long-throw] and bottom [nearfill] cluster, start your tuning process by balancing and EQ'ing only the top section along with the sub-bass and get that right at the back of the hall. Once that's done, blend in the lower section of speakers [usually at a lower volume and smoother EQ] to make up for what's missing up front."

inside

News

Jennifer Hanson and Wayne Pauly

Touring with country singer **Jennifer Hanson**, engineer **Wayne Pauly** relied on local and regional sound companies. Pauly remarks, "With the significant changes in [venues] that we encounter...it is extremely important to maintain as much consistency as possible; you must prioritize. Number One is always lead vocals [**Sennheiser 94s**], and then I work my way through the input list." The rig consisted of a **Yamaha 2410 monitor console, Sennheiser IEMs** and an array of mics on drums and guitar...ProMix ElectroTec (Orlando, FL) **Bill Daly** was honored for his contribution to *The Wayne Brady Show* by **Peter Baird**, the show's production mixer and recipient of this year's Outstanding Achievement in Live and Direct-to-Tape Sound Mixing Emmy...**Sound Image** (San Diego; Nashville) is now providing audio concert services out of Phoenix to meet local installation demands...Got frequency conflicts? **Shure**'s new wireless frequency finder (www.shure.com/frequency) lists analog, active and planned DTV channels in your area, along with available Shure frequencies... **EAW** (Whitinsville, Mass.) debuted an online resource (www.eaw.com) for APP Program members, increasing access to technical documents and a downloadable membership application...

The Tonight Show With Jay Leno

The Tonight Show With Jay Leno recently added a **BSS Audio Soundweb** setup, comprising four **Soundweb 9088 DSP units**, a **9000 hub** and self-powered **Meyer loudspeakers**. Equipment was provided by **TC Furlong Inc.** (Lake Forest, IL); the project was managed/designed/installed by **Broadway Video Technologies**.

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RM65b HexMix
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RA53b 5 Channel
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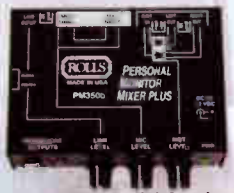
Accessories



PM350b Personal Monitor Mixer
3-Channel Personal Monitor Amp

MX54s ProMix Plus
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MX56s PLAYMATE
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PHOTOS: PAUL NATKIN

On the Road

Tony Blanc

Recognized for his work with David Bowie and Mick Jagger, Tony Blanc is on the road these days at FOH with Christina Aguilera.

Christina is co-headlining with Justin Timberlake. Does this create double trouble, in terms of logistics?

We work together, although there are time constraints. Given the windows of opportunity available, it's a luxury if we get an hour for soundcheck. My chronic concern is making sure that the P.A.'s tonality is correct. If necessary, I'll take most of my hour and make sure that's right and then just do a line check. Then, we'll let the band go up and do one or two songs. If everyone's happy, they jam a bit, and then it's showtime.

What do you try to bring to this show each night?

The crowd has to understand what Christina is singing, so I focus on making her voice as intelligible as if she were just speaking. The people come out to hear the star. Her vocal needs to be as clear, full and in-your-face as I can make it.

What's your choice for her vocal mic?

She's been a Beta 87A user, but in my opinion, she sounds better on an SM58 because of her tonality. She has a spike in her voice at about 2.5k or so that's useful for volume. The SM58 gives her what she needs naturally, and me, as well.

Is there one guiding principle house engineers should live by?

It's not for us to make music; our job is to report it. We're just layering things so the gain structure is correct and the tonality of the instruments doesn't jump out in any way. Our world is a question of balance. The best engineers I've ever watched at work know their proportions.

Now Playing

Bruce Springsteen

Sound Company: Audio Analysts
FOH Engineer/Console: John Cooper/96-channel Yamaha PM1D
Monitor Engineers/Consoles: Monty Carlo (stage left) and Troy Milner (stage right)/two 96-channel Yamaha PM1D
P.A. /Amps: JBL Vertec Line Array VT 4889x120, JBL Vertec subs, powered with Crown MA 5002/AA wedge monitors, 12 FR, 15 F, Shure PSM 700 and Sennheiser 300 Series in-ears
Key Outboard Gear: BSS DPR 901, Summit DCL-200, Midas XL 42, Lexicon 480L, Empirical Labs Fatso Jr., Shure DFR 11
Selected Mics: Shure KSM32, KSM44, SM91, Beta 98; Audix OM-3 capsule on Sony UHF Wireless
System Engineer: Kurt Joachimstaler
Audio Technicians: TJ Rodriguez, Jubal Reeves, Doug Reid
Production Manager: Lyle Centola

PHOTO: STEVE JENNINGS

Matchbox Twenty

Sound Company: ProMix ElectroTec
FOH Engineer/Console: Robert Scovill/ATI Paragon II
Monitor Engineer/Console: Phil Wilkey/Midas Heritage 3000
P.A. /Amps: L-Acoustics V-Dosc, dv-Dosc, SB218 sub/60 Crown VZ5000

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Boosted by a multimillion-dollar donation from the Walt Disney family, the 293,000-square-foot Walt Disney Concert Hall (Los Angeles) encompasses two outdoor amphitheaters, a space for pre-concert events and its centerpiece: a 2,265-seat concert hall where the Los Angeles Philharmonic Orchestra will present more than 150 concerts per year.

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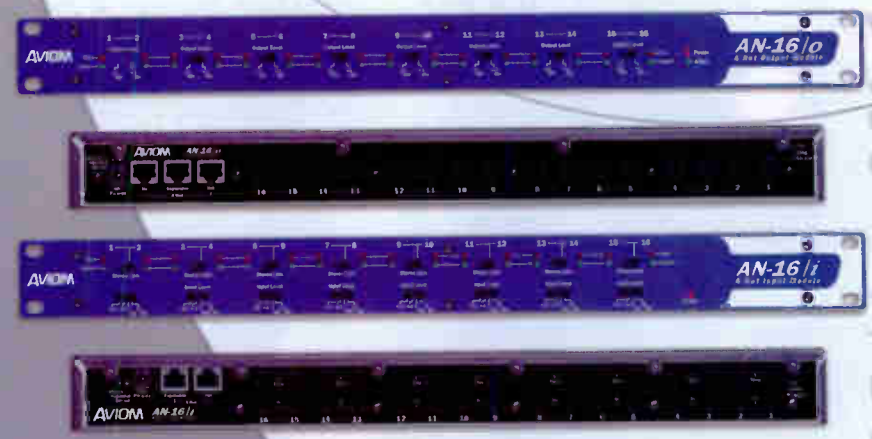

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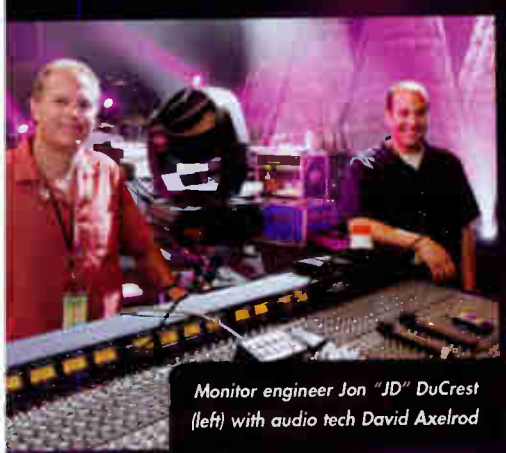
LeAnn Rimes

House mixer Steve Cochran

Mix **caught up with LeAnn Rimes on her visit to Northern California's Luther Burbank Center in Santa Rosa, one of the first shows using LBC's new Meyer system, with 10 M2D Compact Curvilinear Arrays, four 650-P subs, UPM-1P loudspeakers, and front- and sidefills. The tour started stateside in July and moves onto Australia, New Zealand and Hawaii before returning to the U.S. to work on her upcoming Christmas album.**

"At FOH, I have a 68-input Midas XL4 mixing console. I'm running about 38 outputs from my board and I store snapshots for every song," says house mixer Steve Cochran. "I'm carrying my sweetest reverb choice—a dual-engine TC M5000 for vocals and a few instruments—and I want to thank George Massenburg for the M5000's GM Hall; it's my favorite reverb preset." Other goodies in the house rack include a couple TC M2000s; an Eventide H4000; Yamaha D5000, SPX990 and SPX90; Anthony DeMaria stereo tube compressors on Rimes' voice; as well as 10 Aphex Expressors, BSS 901, Klark Teknik Helix and DN360 EQs and a Metric Halo SpectraFoo, a "great metering program," according to Cochran.



Monitor engineer Jon "JD" DuCrest (left) with audio tech David Axelrod

According to monitor engineer Jon "JD" DuCrest, Rimes "owns everything we carry. The monitor console is a Ramsa SX1, with five stereo buses and 12 mono outs. On drums, we're using SM91 on kick, SM57 on the snare top, Beta 57A on the bottom, KSM-137s on hi-hat and ride, SM98s on toms and the KSM-32s for overheads." The monitor rack includes a Tube-Tech CL1B inserted on Rimes' vocal, Drawmer 201s, BSS 402s, Aphex Dominators, a couple Lexicon PCM80s and a Sony R7 reverb. Rimes' in-ear molds are Future Sonics; the band use Shure E5s. DuCrest adds: "I use Shure's UA888 networking interface to scan and keep track of the wireless guitars and the vocal mics. My latest new toy is a WinRadio [PC-based wideband receiver] that I use to monitor the in-ear frequency scans."

Rimes is using a prototype version of a Shure SM-86 wireless capsule. "The SM-86 capsule has sounded great onstage and at various television shows that we hit this summer. Shure mics are the one thing that LeAnn has used from the very beginning and we were one of the first groups to get the PSM 600 systems."

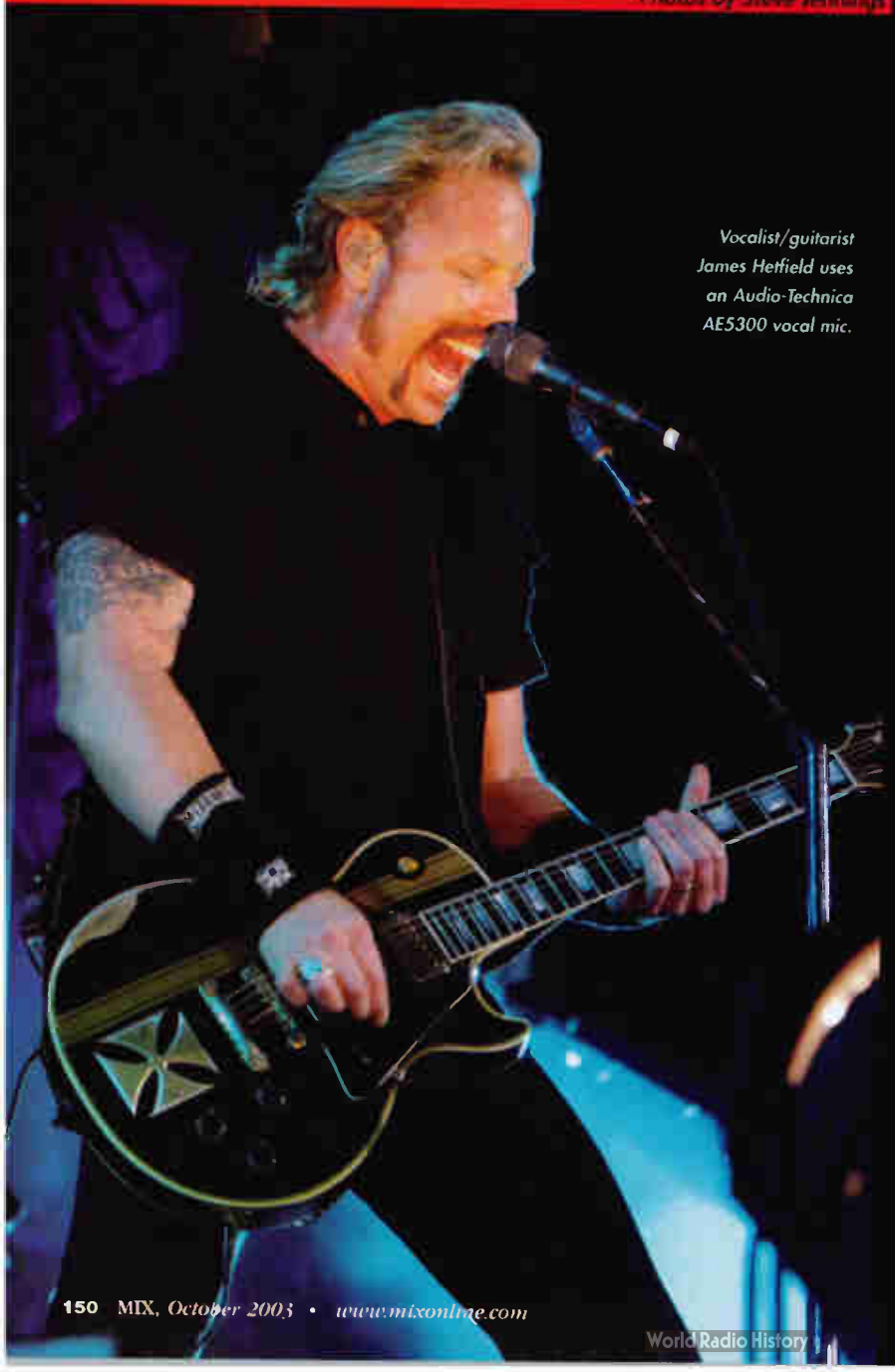
Mix ONLINE EXTRAS

Metallica

By Sarah Benzuly

GODS OF THUNDER RETURN TO THE STAGE

Photos by Steve Jennings



Vocalist/guitarist James Hetfield uses an Audio-Technica AE5300 vocal mic.

The lights go down and the fans in the packed arena at Candlestick Park (San Francisco) know that, soon, their boys will finally hit the stage. Ennio Morricone's theme from *The Good, The Bad and The Ugly*, "The Ecstasy of Gold," booms over the P.A., just as it has before countless Metallica shows before. It is something of a battle cry for this band—a shout in the dark that lets the audience know that for the next three hours, they're at the mercy of screaming, yet melodic vocals, soaring guitars, a pounding drum line and, of course, a slew of amazing pyrotechnics. Coupled with stellar performances from opening acts The Deftones, Mudvayne, Linkin Park—who had such an energetic set that they seemed like they were going to burst at the seams—and Limp Bizkit, it must be said: Stadium rock is not dead.

Ripping through three sets chock-full of "classic" Metallica hits and a handful from their eighth studio album, *St. Anger* (which had just gone multi-Platinum), the band showed that they eat, sleep and breathe live performances. One would think that bringing in new bassist Rob Trujillo would slightly alter the chemistry formed during the past 20-odd years, but Metallica can still bring a crowd to its knees.

IT TAKES TWO

This year's tour marked a new way of working for the sound crew: Instead of relying on one touring company, both Showco and Thunder Audio Inc. were brought in to handle the two stages (each with its own complete production), four opening acts and the headliner. Paul Owen—VP of Thunder Audio and monitor engineer for the band for 17-plus years, as well as head of audio on this tour—says that working with two sound companies has "all of the pluses."

"When we've done it before, we've used one P.A. company and one P.A. crew that worked all day, flat out," Owen says. "It seriously exhausts the resources of most sound companies. [On this tour], the main P.A. system is from Showco, and all of the opening acts are being taken care of by Showco. My crew takes care of everything for Metallica. So there is a firm divide, which works extremely well because it means when the crew gets to do Metallica, they're not burnt out. There are 22 sound guys: I have eight from [Thunder Audio] and 14 from [Showco]."

Guitarist Kirk Hammett

Drummer Lars Ulrich

Bassist Rob Trujillo

The opening acts rely on Digico D5s at FOH, with a Showconsole at monitor world. Both Owen and Big Mick (FOH engineer who has been with the band for 20-plus years) are using Midas XL4s, as they have since receiving the first ones eight years ago.

"We've contemplated [using a digital board]," Owen says. "But it's still nice to be able to grab something. Because I do so many cue changes with Metallica—they're on in-ears and they're on wedges—by following them around onstage, I can't grab things fast enough. The whole digital concept, in my opinion, works well in multiband situations, but I think it scares a lot of engineers off who are not used to the digital world. I've looked at all of the digital consoles—PM-10, InnovaSon, the D5—and they've all got minuses and pluses, but I think anyone who comes out with a digital console where you can actually choose as much analog as you want to—I think that would make it more appealing to a lot more engineers."

Pictured from left: Bill Head, The Deftones FOH engineer; John Boo Bruey, Limp Bizkit monitor engineer; Jerry Harvey, Linkin Park monitor engineer; Paul Owen, Metallica monitor engineer and sound crew chief; Big Mick (sitting), Metallica FOH engineer; Kenneth "Pooch" Van Druten, Limp Bizkit FOH engineer; Wedge Branon, Mudvayne FOH engineer; and Brad Divens, Linkin Park FOH engineer.

IT'S NOT REALLY "11"

Big Mick always chuckles when people equate Metallica with being "loud." But in all fairness, he likes to run at about 106 dB A-weighted at the board; C-weighted, it usually runs at about 120 or 122 dB on peaks. "So I try to lean on the low end more than I do on the high end, makes it less brash-sounding and more powerful," Big Mick explains. "By the nature of the music, it makes the perception a lot louder than it really is. You can't let it just be full-on, it'll be too abrasive, so you have to calm it down a little bit. You avoid certain areas, obviously, anything in the high midband, about 1.8k to 4k. And distorting guitars tends to contain a lot of those frequencies, so you have to keep them tamed a little bit, try to beefen up the other frequencies that are less offensive."

But Metallica still has a monstrous sound, thanks in part to the P.A. This

tour marks the first use of the new Nexo GEO T Line Array. "We've got six a side on the sidefills for the stage; it's pretty impressive!" Owen says. "I think it's the first line array that's come out that you can actually steer with physics, as opposed to mechanics. A lot of thought went into it. I think it's the best line array that's out now, and we've used them all."

LONG ROAD TO "THE" SOUND

Big Mick has seen the band catapult itself from an opening act at small clubs to selling out stadiums across the globe. And during this time, he has had plenty of opportunities to tweak and refine how Metallica sounds live. For example, Big Mick says that the kick drum has posed some interesting difficulties. "You could never hear when [Lars Ulrich] was playing double bass drum. So you have to have the click in the kick drum in order to hear it. And then, of course, you have to moderate the amount of low end to go with that so that the click doesn't sound too over the top.

"We've also done different things over the years, such as modifying guitar sounds so they worked together. We go to Boogies instead of Marshall, and done an awful amount of work on microphones. With a lot of heavier-sounding acts, it is very difficult to get cymbals heard. If you got the cymbals to where they were loud enough, you had too much guitar across them; you'd have a lot of *everything* across them. And it was really ugly. Now, I mike every cymbal from underneath with the Audio-Technica 3525. I extend the gooseneck so it goes further to the edge of the cymbal, so the actual overhead mic sits one per cymbal and nearer to the edge than it does to the center, and then I can position it in the mix left and right.

"Another problem we had as we went along was that there was so much ambient noise onstage that to adjust a noise gate's threshold, you actually turn the tom tom off when [Lars] wasn't using it and then for it to turn on when he hit the tom tom was impossible to adjust. We had D-Drum trigger samples about 15 years ago to help Lars out with his snare sound. It never worked out really well, so I got rid of it. However, I did keep the triggers. So I plugged that into the key input of a noise gate, switched it to key input and flicked it, and the gate worked. So then I taped them to all of the tom toms and the kick drums with these triggers, and that's what we do today.

"Mics that are actually sitting open with no noise gates on are the overheads and hi-hats—that's it," Big Mick continues. "There's no guitar mics onstage; there's nothing. I even gate the vocals because there are 10 of them. With the big reflective surfaces on this particular stage—there are big plastic sheets all around them, which cause vicious reflections—I found that leaving all of the vocal mics wide open just made the whole thing have loads of little echoes within the sound. I don't mean echoes in the sense of a useful thing, I mean it kind of like a slapback that stays as close to the original sound. So we had to start gating the vocals down.

"I've just gone to different microphones on the guitars. I was using Audio-Technica 4050s, but I just got this new mic: an Audio-Technica 2500 Artist Elite for kick drum. It's got a dynamic capsule and a condenser capsule all in one housing. I thought I'd try one on guitar and it sounded *amazing*. I couldn't believe it. I use absolutely no EQ at all. None. I have four channels for James' [Hetfield] guitar: the condenser, the dynamic/condenser

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for the one set of Mesa Boogie—he has a Diesel amplifier—the dynamic/condenser again, and then the EQ switched out. It is incredible. I don't mike the bass. I use a pre-DI and a post-DI. We have a DI straight off the guitar, which is the Gas Cooker to beef it up a little bit, and then we have a DI that comes after the amplifier."

As for Hetfield's vocal, Big Mick doesn't use any EQ switched in. Instead, he sends all eight vocals to two subgroups, and he EQs the subgroups because Hetfield will sing into any of the eight mics onstage. Guitar EQs are switched out, though he does EQ drums.

EARS ALONE NOT ENOUGH

It was only four years ago, during the orchestra dates with the San Francisco Symphony, that the band first wore in-ears. Owen relates that it was evident that the band truly heard themselves when they went on ears, especially Ulrich. "Lars had always worn thick ear plugs and listened to a huge drum monitor. So a lot of the notes they had never heard. So if James questions him, 'You're playing the end of "Master [of Puppets]" wrong,' Lars is like, 'I've always played it that way.' It's just because he's heard it now!"

But the switch to UE5 ears wasn't easy and isn't across the board: Hetfield didn't like the isolation of it (he has 12 dB of ambience in his ears), so Owen still uses a full monitor system because the band plays off of his guitar. "They can't work in complete isolation," Owen explains. "James wants to hear exactly his instrument and where he goes, so you have to follow James' vocal and send it to him. Except you can't have 15 vocals wide open in his ears, and you can't really gate them down: Some guys sing soft, and some guys sing hard. So it's a constant following around. Lars only hears certain parts of James' vocal and certain parts taken out. Same with Kirk [Hammett, guitarist]: He wants to be followed entirely around the 200-foot stage with 24 mixes. Same with Rob [Trujillo, bassist]. Rob had never worn in-ears until he came to Metallica. And he's just on one ear [his left], which is a heavy bass driver. And the rest all follow him around on the wedges onstage, which is similar to what Jason [Newsted, former bassist] was. Bassists are pretty hard to convince to stay on in-ears. They do generate a lot of low end."

The transition to in-ears is a fine example of Metallica's ever-changing sound. In fact, as Big Mick explains, creating that distinctive Metallica sound has been all about "cause and effect": "There's a problem; it causes me to think about it, and then I effect a change to try and fix the problem.

"So, basically," Big Mick concludes, "all we've done over the years is learn how to refine each of the individual sounds to make a cumulative big sound with the topic of music at hand. I don't use any samples at all; the kick drums, snare drums, tom toms, everything is real. I think more engineers need to do more experimenting and thinking about what they're trying to achieve. I just think it is very easy to follow what everybody has always done. If it doesn't work, you have to adopt a plan. I don't mind telling people my plans. It's not a competition; I'm just doing a job. If I come up with a good idea and if everybody can benefit from it, then why not? It doesn't matter. We're all trying to earn a living."

MIX ONLINE EXTRAS

Sarah Benzuly is Mix's associate editor.

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PHOTO: STEVE JENNINGS

A Giant Homecoming for Eminem

By Gregory A. DeTogne

If home is where you go and they have to let you in, Detroit mayor and hip hop aficionado Kwame Kilpatrick was one of thousands holding the door wide open for Eminem's triumphant return to the Motor City for two dates at Ford Field on July 12 and 13 this year. In a video played before each show, Kilpatrick was shown phoning Eminem overseas, appealing to the rapper to come home for the summer and perform at least once. Em put the mayor on hold briefly, then flung a doll into the air on his hotel balcony—a la the baby-tossing Michael Jackson—and when the phone conversation continued, Eminem announced to Kilpatrick: "For you and the city, I'll do *two* shows." Cue wild applause.

Troy Stantan, FOH for Eminem, before the show begins

This rapport between mayor and superstar represented a vast departure from three years ago, when Eminem's tour got into hot water with then-mayor Dennis Archer for trying to play a video deemed too graphic by city leaders. Kilpatrick's larger-than-life video presence at this year's shows—the only headlining appearances made by Eminem in the U.S. this year—served to underscore how quickly political climates can change. Stepping onstage at 10 p.m. both nights, Eminem faced rapturous sold-out crowds, playing to a total of 95,000 fans. Quickly taking command of each evening, he served up 27 songs with seismic delivery on each date, making maximal use of his 90 minutes in the limelight. With opening sets from 50 Cent and Missy Elliott, plus appearances by local heroes Proof, D-12 and Obie Trice, the homecoming event made Detroit crackle and buzz with the energy of what was surely the grandest hip hop spectacle ever hosted by the city.

The set list was heavy on songs from *The Marshall Mathers LP* and *The Eminem Show,* dipping only sparingly into Eminem's 1999 debut, *Luv Me.* For those who caught last year's Anger Management Tour at the nearby Palace of Auburn Hills, this year's shows were basically a repeat, with the exception of songs from the *8 Mile* soundtrack and a few other new stunts. Back again were production elements reminiscent of some evil carnival, complete with a ferris wheel, a master of ceremonies, tents and a giant video screen bordered by

a banner advertising psychic readings. High above the stage, garish neon lights spelled out "The Eminem Show"; in true carny fashion, the "n" sputtered and flickered, on the verge of going out.

Audio for the extravaganza was provided by Eighth Day Sound, with Troy Staton standing at FOH behind a Yamaha PM1D. Onstage, the monitor rig was handled by engineer Sean Sturge (also on a PM1D) with the assistance of tour tech Jimmy Corbin. Crew chief was Eighth Day's Mark Brnich.

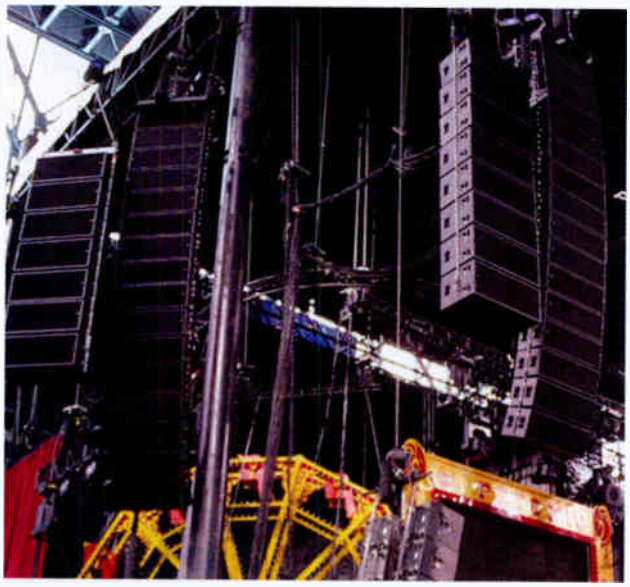
Staton has worked with Eminem for over three years but has been passionate about hip hop for over 25, placing him squarely in the cradle of the music's birth back in the day. Today, with prolific studio time under his belt, including work with Tupac, Dr. Dre, Wu Tang Clan, Jurassic 5 and Cypress Hill, to name just a few, as well as countless miles logged on the road with other major acts, it's hard to believe he shot out of the South Bronx on nothing more than the energy of the street.

"When I was a DJ, my first P.A. was a Shure Vocalmaster," Staton recalls from his adopted home in the Los Feliz district of L.A. "So I guess when it comes to live music, you could say I even started out on a line array system of sorts. The Vocalmaster cabinets were long, tall columns loaded with drivers. I'd hang them on the wall and the music would be bangin'."

Still a line array proponent these days, Staton called upon Eighth Day Sound's V-DOSC inventory to produce a house array for Eminem's Detroit shows, employing 32 full-range cabinets and 16 subs flown per side. Augmenting the low end with a wall of sound surpassing anything emanating from Motown in the '60s, Turbosound Flashlight Series subs were added to the sonic recipe, lined across the front of the stage like a ground-shaking bulwark against anyone daring to get too close.

In theory, the Eminem show's Detroit stage input appeared straightforward: There were no instruments. All musical tracks came from the stage DJ, Green Lantern, who was outfitted with a Technics x1200 turntable, an Instant Replay unit from 360 Systems, Pioneer Scratch CD player and a Vestax PMC-07 Pro D DJ mixer. With the DJ's mix traveling through Countryman active DIs to respective destinations at the house and monitor consoles, the bulk of the musical tracks were stored in the Instant Replay, which was backed up on-site by a second identical device.

"For the Detroit shows, I had a maximum of seven voices coming into my board at one time," Staton relates. "That was during the times D-12 was onstage, combined with Em, his backing vocals and the DJ. This certainly wasn't like mixing a full-on rock show with guitars, a drum kit with scores of mics and whatnot, but nothing's ever as simple as it seems.



Eighth Day Sound supplied a V-DOSC line array for Eminem's two shows in Detroit.

Because the performers swap lead vocals every few bars, I need to follow the changes, putting the lead channel around 5 dB above the others. I know all of the songs by heart, so I programmed the level ride for the whole show verse-by-verse on the PM1D. That way, when Eminem does a verse in a specific song, for example, I simply recall the corresponding scene, and the mix is right on."

The stage side of the input equation included four channels of Sennheiser SKM-5000 wireless and 12 channels of Shure UHF wireless that relied upon SM58-equipped hand-held transmitters. "Eminem and his backup guy, Proof of D-12, were on the Sennheisers; for the most part, everyone else was on one of the Shure systems," Staton explains. "The SKM-5000 works well with Em's voice, and the Shure mics translate well in this application for the others, as they can take the high SPL. Most of these guys are cupping the microphones, shouting into them and generally dishing out hard use. The 58s can withstand that kind of handling without so much as a whimper."

Like any other live gig for Staton, mixing the Detroit shows was a 50/50 proposition: "50 percent about the music and 50 percent about clarity," he says by way of further explanation. "I'm really big on vocal clarity. The beat can be in-your-face and pounding, but if I can't understand the lyrics, you lose half the battle with me. That's why I continually strive to bring intelligibility to every one of my live mixes. One of the guys from Cypress Hill told me, 'Man, this sounds just like the album. I can understand every word.' For me, that's the best thing I could ever hear, because that's exactly what I'm going for."

All of the resulting attention Staton has gained while enjoying the trip is somewhat bittersweet. "Ever since I've been working with Eminem, my phone never rings," he says half-seriously. "People read all of these articles and interviews, find out what I'm doing and say, 'Yeah, he's dope. I know that guy, but we can't afford him, so let's call so-and-so.' My message to everyone is, 'Hey, I just enjoy working. Give me a call and let's do something. No project is too big or small."

In the works since late last year, Eminem's Detroit shows pulled out all stops and spared no expense. Late Friday night before the Saturday opener, Em was still hunkered down inside Ferndale's 54 Sound Studio mixing the video that would open his act. (In addition to Mayor Kilpatrick, Kid Rock made a cameo appearance in another vignette as Eminem's liquor-swilling chauffeur, blasting through the streets of Detroit in a Hummer.) While no one can ascertain how big The Eminem Show will continue to get, one thing is certain: He's at the top of his game and shows no signs of slowing down. He's currently working on albums by D-12 and Obie Trice, as well as a disc of his own. And the fact that he can sell out stadiums...*That* is big. ■

Greg DeTogne is a regular contributor to Mix.

BY STEVE LACERRA

The Changing Face of Theater Sound

Sound Designer Janet Kalas Brings Hank Williams and Baseball to Broadway

After working for more than 20 years in theatrical sound design, Janet Kalas has seen and heard her fair share of productions. Two of her recent projects are critically acclaimed shows: the Tony Award™-winning *Take Me Out* and *Hank Williams: Lost Highway*. Kalas recently spoke with *Mix* to shed some light on her techniques for these productions and her sound design background.

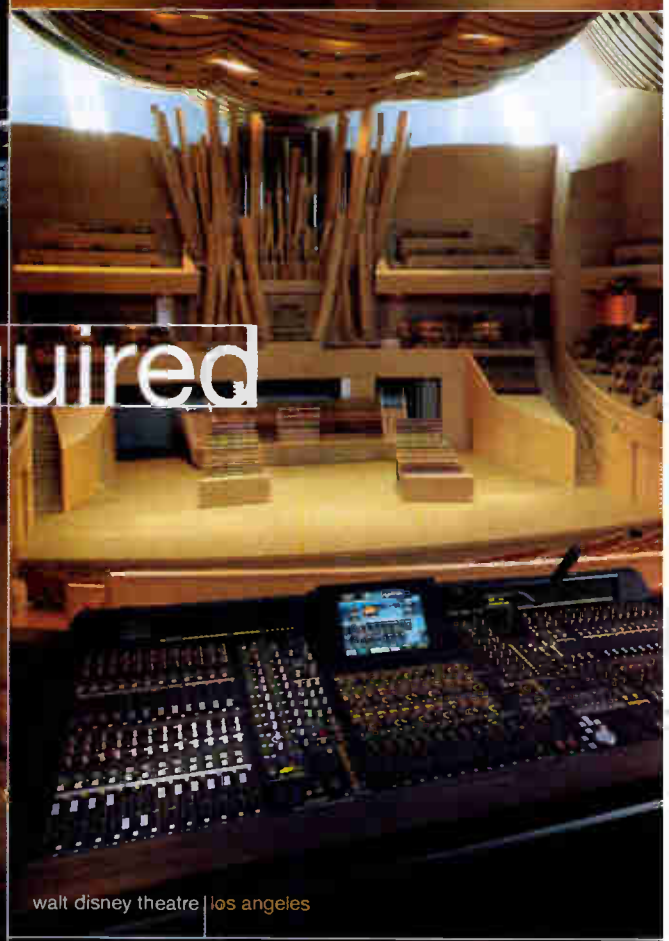
"I started my sound design career in Baltimore at Center Stage," Kalas begins. "I was the house engineer and sound designer for several years. At the time, sound design wasn't really a vocation, so I learned the craft hands-on. During my few months as an audio engineer at the Denver Center for the Performing Arts, sound designers Bruce Odland and Bill Ballou introduced me to the concept of spatial sound by placing speakers throughout the theater house, as well as strategic placements onstage, including building speakers into scenery if need be. Eventually, I moved to New York and began working in off-Broadway theaters such as Manhattan Theater Club and Playwrights Horizons."

As with all aspects of audio production, Kalas' sound design techniques changed with the proliferation of digital audio gear. "In the 1980s, I was recording my own sound effects," she recalls, "because the only available sound effect libraries were on records, and I detested pops and clicks from vinyl. I had a portable, battery-operated Sony TCD 5M cassette recorder and a couple of respectable microphones. I would record the sounds I needed for a production: anything from chickens to bells to trains.

"Later, I would transfer the audio to reel-to-reel tape, leader it and make it ready to use in the show. I was very good with the old razor-blade-and-tape-editing technique. Sometime around the late '80s or early '90s, Software Audio Workshop's [SAW] PC editing software came out and I jumped right into it. It changed my life: It went from all-night editing sessions and sleeping under the console to having an incredible, fast, efficient, versatile tool. I still use SAW, but I am also very familiar with Pro Tools.

the hollywood bowl | hollywood

experience required



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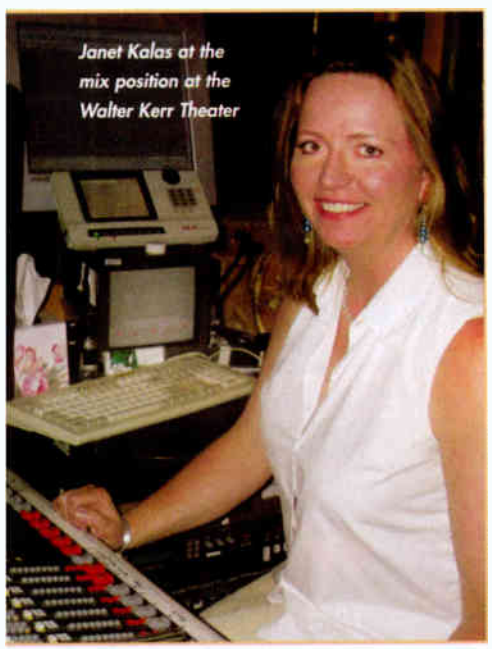
"After sounds have been edited, I load them into the playback system chosen for the show. In both shows, we used SFX from Stage Research, a program used to create playlists with audio cues and/or MIDI triggers. In *Lost Highway*, SFX acted as playlist and playback for the sound effects. *Take Me Out* utilizes SFX as a playlist, which then triggers an Akai S6000 sampler. Samples for *Take Me Out* were exported from Pro Tools as .WAV files and loaded onto the S6000's hard drive. The SFX system has the advantage of being considerably easier to learn. In smaller venues that can't afford sophisticated playback systems, MiniDisc works very well, particularly during technical rehearsals, since you can reorder tracks on-the-spot. CDs are often used as cue playback for the run of the production."

Kalas' cues in *Take Me Out* combine pre-existing sound effects mixed with sounds specifically recorded for this show. "I have collected a fairly extensive library of sounds over the years," she explains, "as well as utilizing commercial sound libraries, which are quite stunning these days. It's a baseball play, so I had to sonically re-create three baseball games. I had to capture the emotions [of a baseball game] based upon specifics in the script. For example, in the second game sequence, the crowd watches as their team begins to come from behind to win the game. I had to capture the anger or frustration of the crowd and the all-out excitement of the moment. Building that into 45 seconds—the duration of 'the big game'—and following the text very specifically was a challenge. That particular sequence has extensive layering to create the emotion of the game. Effects such as the crack of the bat and crowd cheering came from my library. In addition, I recorded actors from the production performing specific cheers and voice-overs using a Sony PCM-M1 portable DAT recorder with a Neumann U87 and/or Audio-Technica AT825 stereo mic."



Janet Kalas at the mix position at the Walter Kerr Theater

PHOTO: WILLIAM BARNES

Riding atop the crowd sounds, effects and music in *Take Me Out* are the voices of two actors narrating the baseball scenes. "It's important that the actors' voices are lifted above the crowd," Kalas stresses, "so that the crowd sounds aren't pulled down in order for the narrators to be heard. They are miked using DPA 4061 miniature omni microphones connected to Sennheiser SK 5012 wireless transmitter packs. The Sennheiser wireless systems are workhorses, have great response and have always been reliable. The DPA mics sound fantastic and don't need much EQ. The 4061s are specifically designed for mounting near the body, and the response varies somewhat depending upon placement. The best scenario is to place the mic at the center of the actor's forehead at the hairline or over the ear pointing toward the mouth. You can place the mic on a lapel, but if there are costume changes, it's better on the actor's head. There are several methods for securing a mic over the ear, such as using a small wire or plastic armature, which is designed to fit comfortably. The mic cable is secured to the armature with tape, which can be colored to skin tone, or floral wire. Sweat-resistant surgical tape can be used to secure the mic cable along the neck. Toupee clips or bobby pins can be used to clip the cable securely into the hair. The most important thing is to get the mic as close to the performer's mouth as possible to overcome extraneous noise."

Kalas has observed that in recent times, many theatrical performances are utilizing vocal reinforcement. "Plays might be reinforced with wireless microphones, shotgun mics, mics placed along the front edge of the stage or discretely on the set, etc.," she notes. "In all Broadway musicals, the performers use wireless mics and the orchestra is miked. For musicals, it's all about controlling the mix; controlling exactly what the audience hears.

A scene from Hank Williams: Lost Highway

"In the past, you could expect an actor to project to an audience. If you couldn't hear them, you'd give a note to the director and the director would ask the actor to speak up. Nowadays, the big draw for a lot of Broadway plays and musicals are film or TV actors who aren't necessarily vocally trained to fill a 2,000-seat house. The challenge often falls to myself and my audio team to make sure that they are heard. But I can only support or amplify what they give me. If they mumble, it is going to be an amplified mumble. There is not much I can do about that."

NAVIGATING THE LOST HIGHWAY

Sound design requirements for *Hank Williams: Lost Highway* were considerably different from those of *Take Me Out*, largely due to venue and the nature of the production. *Lost Highway* played at the Little Schubert Theater, a venue Kalas describes as a "raked orchestra-level theater with no balconies. It is a wider, taller space than the Walter Kerr Theater, and much of the audience is farther from the stage than at the Walter Kerr. *Take Me Out* is an acoustically three-dimensional show. I want the audience to feel like they are a part of the crowd. As a result, sound comes not only from front-, but also from rearfill speakers, and not subtly: It's loud in the rearfill at times. The sound system has many areas or zones, which add depth and dimension. There are many scene changes in *Take Me Out*. One scene opens with a press conference. The sound effect cue for

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that scene change is a series of camera clicks, as if many photographers are taking photos. Those sounds come from many areas of the system so that it sounds as if there are photographers all over the house. The Akai sampler works nicely for that kind of cue sequence because it has multiple outputs that are connected to a Crest console that feeds the various zones.

"*Lost Highway* is more presentational: You are watching and hearing the action in front of you. There are some sound effects such as crickets and bird cues pulled back into the house for depth, but the action is essentially in front, so there aren't as many powerful speakers in the back of the house. The basic arrays are Meyer UPAs with EAW JF80s for side- and rearfill. Like most musicals, *Lost Highway* requires a lot of inputs. Each performer had a DPA 4061 with a Sony transmitter. We placed a wireless mic—a Sennheiser MKE2 red dot—on the upright and electric bass, plus an offstage amplifier for the steel guitar, which was miked. At one point, Jason Petty, the actor who plays Hank Williams, is supposed to be performing at the Grand Ole Opry, so we used an old-fashioned-looking Shure 55SH Series II stand mic: a reproduction of a mic commonly used in the '40s and '50s.

"The big challenge for *Lost Highway* was that I was offered the job just two weeks before the show was supposed to go into the theaters, which doesn't allow for much time for prep or planning. It had been running downtown at a small theater and they wanted to move it up to the Little Schubert. It can be difficult when producers decide to move a show to a different venue because they often think, 'Well, you've done this already, so we can just throw it into this new space.' That is not the case. Every load-in, every new tech requires a lot of time because there are so many different elements to consider. Typically, a production goes into what we call the tech period—technical rehearsal—that can be several days to several weeks prior to the first preview. We tech through the script page by page for the first few days, and then run the show to see how it works and make appropriate adjustments. Then we repeat the process until we get it right or until the show opens. Since theater is live and no performance is exactly the same, most cues are run off a word in the text, cued by the stage manager, to keep the timing correct. Cue timing can be adjusted by editing or remixing the cue, adjusting the cues in SFX or by asking the stage manager to call a cue in a different place. While we are making adjustments, the audio engineer who runs the show has the chance to learn the show and the timing.

"When *Lost Highway* went into the preview period, we were still tech'ing during the day. The preview period was only a matter of days. We negotiated with the previous sound designer to use his sound effects, which was a huge relief because there are a great many sound effects in that show. Then it was a matter of designing the sound system for the space and getting it into the theater while working within a relatively small budget. It was a very tight schedule, but that is the wonder and the glory of theater: pulling together people who have never worked together before and creating something that sounds and looks incredible." ■

Steve LaCerra is a veteran journalist for the pro audio industry and is based out of New York City.

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Pictured from left: Keith Moseley, Michael Travis, Bill Nershi (kneeling), Michael Kang and Kyle Hollingsworth

STRING CHEESE INCIDENT

FINDING THEIR INNER DARK SIDE

By Blair Jackson

The eclectic Colorado band known as the String Cheese Incident has been one of the more popular attractions on the jam-band circuit for 10 years now. With influences that include roots rock, bluegrass, reggae, Latin, Afro-pop, R&B, Grateful Dead-style jamming and space music—really just about any style you'd care to mention—the group covers a lot of ground during their marathon shows. Along the way, they've amassed a great number of fervent fans, who often travel great distances to see the band and collect and trade CDs of their performances. In the past year, the group has even taken to pressing and selling CDs of *all* their performances. (For more about SCI's concert recording techniques, see "Recording the Band" in the July 2003 issue of *Mix*, or visit www.mixonline.com.)

It's not fair to say that String Cheese's studio albums have been "after-thoughts," exactly, but this *is* a group that has made its reputation and its living almost exclusively as a live attraction, so their few studio discs have tended toward a documentary approach: capturing the live feeling of the band in the controlled environment of a studio. On their last album, *Outside Inside*, producer Steve Berlin succeeded fairly well with this approach, though he may have reined in the band's exploratory tendencies a little too much, and the polyglot of styles—one of their great strengths live—lacked cohesion on that particular disc.

Well, SCI fans...prepare to be shocked! The group's just-released album, *Untying the Not* (on their own Sci Fidelity label), is as different from that album as can be; in fact, it sounds nothing at all like the group does live. This is a *studio album* through and through; indeed, it may well be the most thematically ambitious and sonically adventurous album to come out of the jam-band scene to date. It will no doubt have many an SCI fan scratching his or her dreadlocks, but those who invest the time and attention it takes to truly absorb the many layers of sound and music that make up this remarkable collage of songs and effects will be richly rewarded. This time around, the happy jam band wants you to think about some Big Issues: the wonder of life and death, impermanence, love, waking and expanded consciousness, memory, heredity; it's a lot to chew on over the course of about an hour of your life (preferably spent on headphones). This is an album that self-consciously aspires to be epic and—miracle of miracles!—succeeds more often than not.

"We weren't really sure going into this album what we were looking for on the other end," says SCI bassist Keith Moseley, as we sit in a lounge at The Plant in Sausalito, Calif., on a sunny day last spring. "But one thing we decided was we wanted to hire a producer who would have a bigger hand in things, to maybe shape the songs a bit more, and help us deconstruct and reconstruct some of the material. We didn't want to just come in and

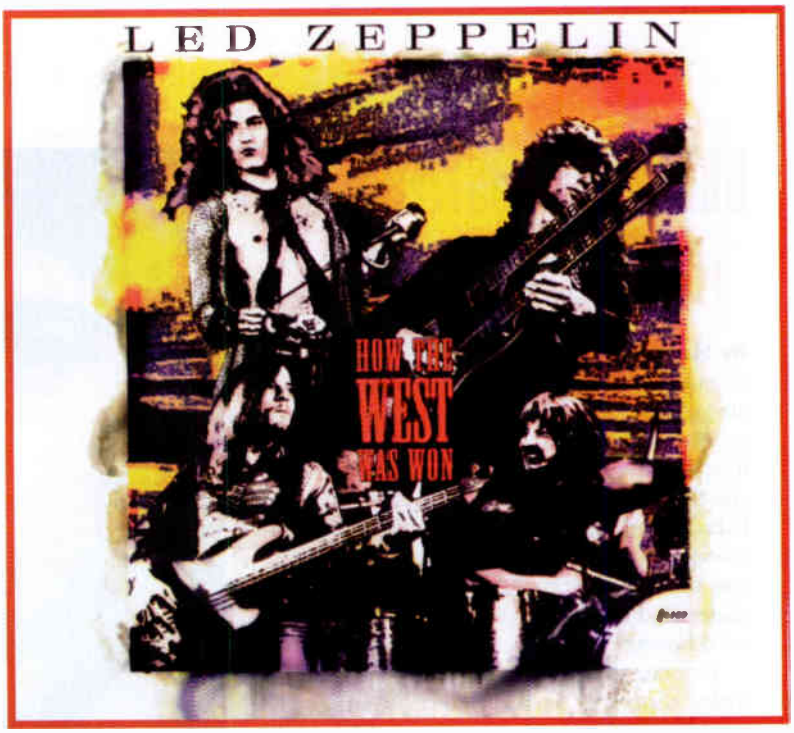
—CONTINUED ON PAGE 172

LED ZEPPELIN

FINALLY, LIVE

By Candace Horgan

During Led Zeppelin's 12 years together, they set the standard for hard rock. So many of their songs have come to be regarded as classics, and you can still hear their influence all over the radio to this day. While Zeppelin were acknowledged masters in the studio—thanks in large part to the expertise and dedication of guitarist Jimmy Page and bassist/keyboardist John Bonham, both veteran studio hands by the time the group started in the late '60s—their live prowess has been somewhat overlooked through the years. After all, aside from hundreds of mostly poor-sounding bootlegs and the soundtrack for their rather uneven concert movie, *The Song Remains the Same*, there has been precious little to remind us what a powerhouse the group was onstage when they were really "on." Finally, 23 years after Bonham's untimely death ended the band, Led Zeppelin has released a bounty of exceptional live material that shows what this band was all about: A five-hour DVD, titled simply *Led Zeppelin*, and a new CD, *How the West Was Won*, have proved to be manna from heaven for Zeppelin fans everywhere. And, considering both the CD and DVD debuted at Number One, it's clear that there has been a lot of pent-up demand for live Zeppelin material.



Both the CD and DVD were mixed by Kevin Shirley, who got to know Jimmy Page while working on the guitarist's *Live at the Greek* CD. "I produced the Black Crowes, and Jimmy joined them for a run of live dates in 1999," Shirley recalls. "I saw the show in New York, and then I went to California and recorded the shows, took the tapes away, and fixed them up a little and mixed them. I did *Live at the Greek* without any input from anyone, as it wasn't originally going to be an official release. But I think everyone was impressed with it; certainly Jimmy said he was. Then, when Jimmy decided to do a new [Zeppelin] DVD, he started looking for someone familiar with the modern applications necessary for surround sound mixing. If you listen to the Royal Albert Hall [concert] opening in 5.1, you can see Jimmy had this audio concept really early on of giving people a sense of the band going onstage and the audience swells around you. We had a meeting to discuss the requirements needed for the DVD project audio, and afterward, he asked if I would be interested in 'helping' him. That completed the circle for me, since Zeppelin got me into the business as a fan back when I was 17."

There were mountains of tapes to go through. Most of what they found was in good condition, though Shirley said they did bake the tapes as a precaution before loading them into a Pro Tools|HD system. "Obviously, after the 30-odd years that have passed, we had to do some kind of work to make them sound competitive in the present sonic environment. We recorded it all at 96k through the Pro Tools 192|HD converters. All of the originals were multitrack, from 6- to 24-track masters. It was a fantastic environment to work in. We spent most of May 2003 baking the tapes and listening to them. We listened to about 15 shows and made notes on them. Jimmy was very involved with both the audio and video. I think it was out of that the *How the West Was Won* CD came about. We loved the performances, but there was no video. This started as a DVD project, but we wanted to get those L.A. [audio-only] performances out, too!"

Shirley mixed the CD and DVD at SARM West Studios in London using an SSL 9000 J. He had dozens of effects at his disposal, including API compressors and EQ, but he says he didn't use too many because he wanted to capture the essence of being at a Zeppelin concert. "I used an 1176 to compress Robert's vocals, a Peavey Kosmos Pro on Jimmy's guitar, and on the drums, I used an old Fairchild stereo compressor. One of Jimmy's comments when we started was, 'I want to hear lots of cymbals,' and I used the Fairchild for that. The kick drum chain was pretty complex, and on the bass and keys, I used a variety of the old compressors, as well as six Fatso compressors chained together for the surround mix

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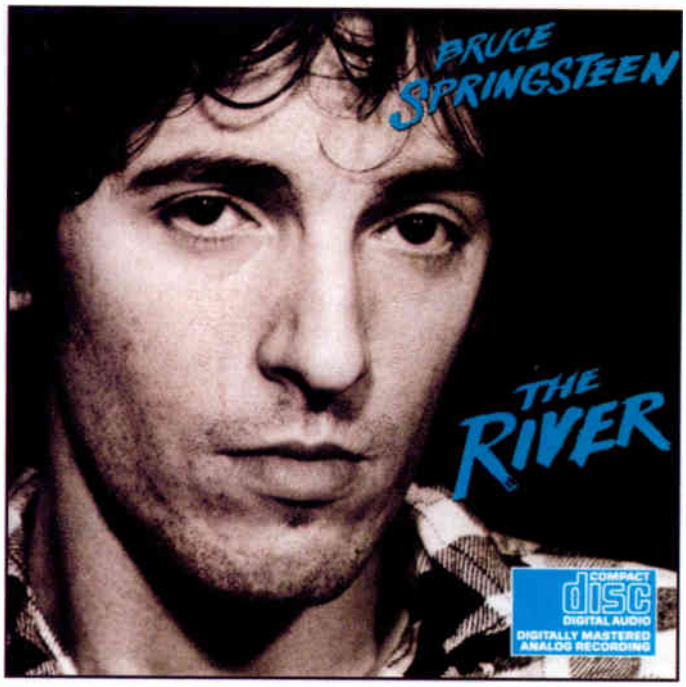
BRUCE SPRINGSTEEN'S "THE RIVER"



By Maureen Droney

Listening to Bruce Springsteen's song "The River" always makes me cry. I used to think it was just me. Raised East Coast and blue collar, I always saw in Springsteen's ballad of failed dreams my family and the people I grew up with. Writing this story, I discovered that I wasn't alone. As it turns out, tears are a pretty universal response to "The River"; you don't have to be East Coast *or* blue collar to understand that our lives often don't turn out as we'd hoped.

Introduced on September 22, 1979, at the *No Nukes* concert at Madison Square Garden, "The River" was never a single. But, a year later, it became the title track of a double album, Springsteen's fifth. Set chronologically between the brooding, working-class vignettes of *Darkness on the Edge of Town* and the starkly hopeless *Nebraska*, *The River* contains such patented Springsteen party songs as "Hungry Heart" and "Sherry Darling." But running through it is an underlying theme of disillusionment that's encapsulated perfectly in the song "The River." A mid-tempo ballad, it tells the story of a pair of working-class teens forced by pregnancy into an early marriage and dead-end jobs. It also showcases the E Street Band at their best. Somehow solid and airy at the same time, the ensemble is masterful in its support of Springsteen's lyrics and folk-style melody, juxtaposing musically plaintive verses against falsely hopeful choruses.

Recorded in New York City at the Power Station (now Avatar Studios) during a 16-month period, *The River* sessions were Grammy®-winning producer/engineer Neil Dorfsman's first real engineering gig. He recalls it vividly: "I was a huge fan of Bruce's from early on," he remembers. "When I heard they were coming in, I went to the studio manager and, basically, begged to be on the date. Bob Clearmountain started the project, did a track or two, then had to leave for a prior commitment, and they gave me a shot. I was so nervous the night he walked in, I was shaking. I was sure the first night would be my last. Little did I know it would go on for something like 16 months."

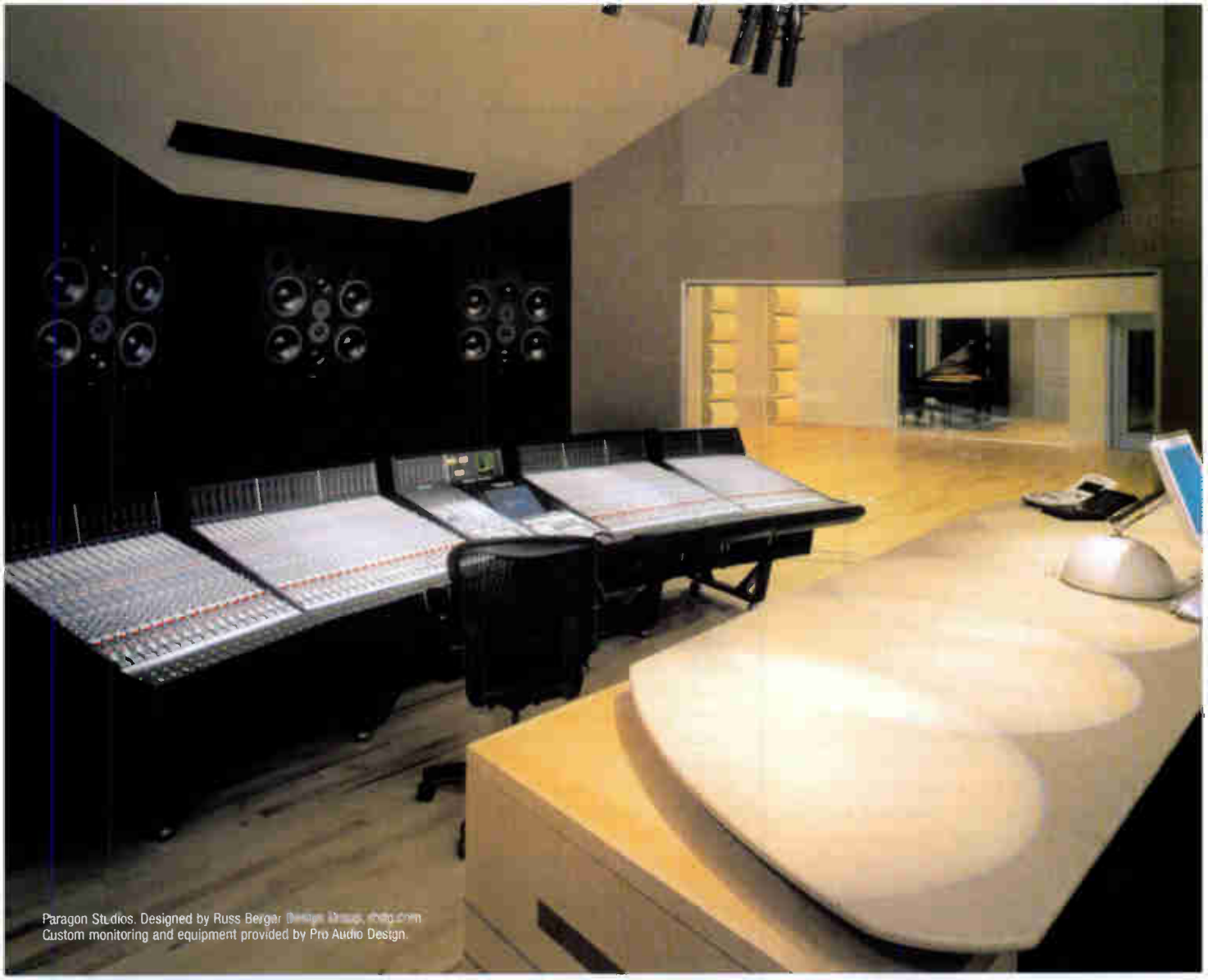
In 1980, Power Station's Studio A was becoming legendary as *the* place to get a big, live sound. However, at that time, studio lockouts weren't the norm; the sessions that became *The River* were cut entirely on the night shift. Dorfsman and his assistants tore down each morning and set up again each evening—six or seven nights a week. "It was recorded live, so it was the same setup every night," he says. "My assistants re-set up the room, and I got to the point where I could walk in the control room, set up the entire console, my patches, four different headphone mixes, all my levels and be ready to roll in 20 minutes.

"It was fun. But tearing down the studios every night was brutal. I'd get to the studio at 5 p.m. and wait for the previous session to end, usually at 6:30. Then we'd go in and hit it. In an hour we'd be done and the band could walk in and start playing. In fact, they'd often start playing as things were still being plugged in. If it sounded okay, we'd get it on tape and go. That was Bruce's sound: immediate and alive."

The setup was a big one, with Bruce and all six members of the E Street Band. Max Weinberg's drums were in the main room, where a vocal booth was also constructed for Springsteen out of goboes, plywood and blankets. Organist Danny Federici with his B3 and baffled-off Leslie, and pianist Roy Bittan were set up in their own iso room, along with miscellaneous keyboards. A second, deader iso room housed the amps: Springsteen's Fender Bassman, guitarist "Miami" Steve Van Zandt's amps and Garry Tallent's baffled bass amp. Saxophonist Clarence "Big Man" Clemons had his own booth on the side of the control room.

Studio A's control room housed a 32-channel Neve 8068 console that was, according to Dorfsman, "totally maxed out." He recalls using either a Neumann 87 or a U67 on Springsteen's vocal, with either a Teletronix LA-2A or a UREI LA-3A limiter and Pultec EQ. "The Power Station didn't have a lot of vintage mics," he says, "and we kept the setup simple in case he wanted to come back later and change something, which, actually, he never did."

The rest of the mics were simple also: two Shure SM 57s for each guitar amp, "one straight and one at an angle on the center of the cones and a Neumann U87 and a couple of Sennheiser 451s" on acoustic guitar. The B3's Leslie was recorded in stereo: two 57s on top, spread left and right, and a Neumann 47 FET on the bottom, mixed up the middle with the stereo tracks "probably compressed with two Neve compressors linked to keep it sort of burbling instead of pokey." Bass was taken both direct and with either a



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Sennheiser 421 or a Neumann 47 FET on the amp. Both DI and mic bass channels were run through the console's pair of 33609 limiters with no EQ.

The piano, miked with two Sennheiser 451s or 452s, wasn't compressed, but it was generally "severely" EQ'd through Pultecs for a very bright sound. "Power Station had 24 Pultecs in the control room," explains Dorfsman. "That was a lot of the sound of that record. Everything pretty much ran through them whether they had EQ or not. There was a patch between the console and the tape machine, and Ed Evans, the chief tech, had done a mod so you could go through the tubes of the Pultecs without going through the EQ stage."

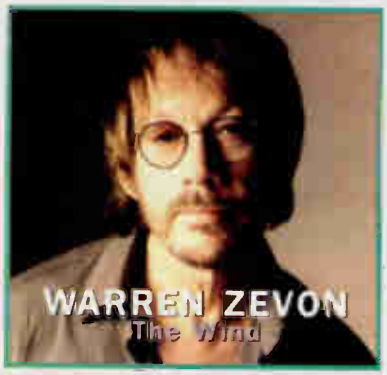
The drum mics were classic Power Station: an SM57 on snare, a Sennheiser 421 and an RE20 on the kick drum, which was housed in a tunnel made out of a packing blanket. On the toms—top and bottom—421s. For hi-hat, a Sennheiser 451 with a 20dB pad; for the overheads, 451s with 10dB pads. Room mics were two U87s, "up pretty high, sometimes facing away from the drums toward the wall for more reflection and longer delay, or, depending on the tune, sometimes low to the ground and facing the drums, about 20 feet away. It was fairly well squashed with a pair of LA-3As—nothing crazy—just to give them some punch. There was a moderate amount of console EQ used, but no real outboard EQ. The sound was the room, the board and the band. The hallmark sound for recording this record was the ambience and the brightness. When you were monitoring in the control room, you could almost never have too much ambience; Max loved it."

Dorfsman recalls cutting several versions of "The River," trying out different tempos and a more embellished rock 'n' roll arrangement. "I don't, in general, remember the specifics of each song," he admits. "We were doing multiple takes of every song 20, 30, sometimes 40 times, so things really blended together. Bruce cut something like 50 songs, with multiple—at least 15—takes of each tune. We had over 400 reels of tape. But I do remember, when we first heard 'The River,' I looked at my assistant and went, 'Wow, this is great.' It had a special vibe and everybody—at least everybody at my end, in the control room— knew it was a special tune when we cut it."

The album's final mixes (except "Hungry Heart," which was mixed by Bob Clearmountain at Power Station) were

Cool Spins

The Mix Staff Members Pick Their Current Favorites



Warren Zevon: *The Wind* (Artemis)

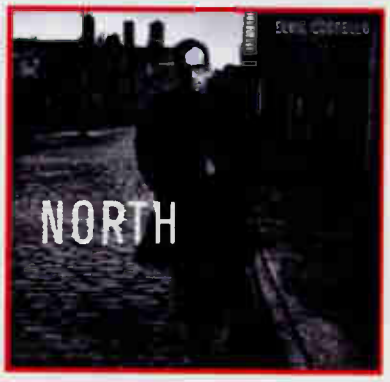
Even if this were not the "final" work by one of the most intriguing songwriters rock has produced, it would still be considered among Warren Zevon's very best work. As on most of his albums, the songs are relatively simple and direct, with minimal ornamentation. An astonishing cast of famous friends stopped by to help out and, alas, to say goodbye, and each adds an interesting stamp to the affair, whether it's the raucous good-time energy of Bruce Springsteen, dueting on "Disorder in the House," the always-evocative guitars of David Lindley and Ry Cooder, or the distinctive backup vocals of folks like Jackson Browne, Emmylou Harris, Don Henley, Billy Bob Thornton, Dwight Yoakam, Tom Petty and others. The powerhouse rhythm section of Jim Keltner and Jorge Calderon never falters, even when an obviously weakened Zevon does, on occasion. Of course, it's impossible to separate this CD from its real-life subtext—that Zevon was dying of cancer sooner than later—and that adds a heartbreaking poignancy and drama to the album's many ballads, as well as an urgency to the rockers. This is genuine tragedy: When he sings "Sometimes when you're doing simple things around the house/Maybe you'll think of me and smile" in "Keep Me In Your Heart," it isn't the usual lament of a departing lover; it's look ahead to (and back from) the grave. And Dylan's "Knockin' on Heaven's Door" has never sounded more powerful, as Zevon demands "Let me in! Let me in! Let me in!" over an elegiac chorus of friends. Still, there's plenty of Zevon's trademark humor, irony and self-deprecation to offset the enveloping darkness that's blowing through this album...like the wind. A classic album, and highly recommended!

Producers: Warren Zevon, Jorge Calderon, Noah Scott Snyder. Engineer: Noah Scott Snyder. Additional engineering: Jim Michell, Greg Hayes, Steve Churchyard, Joe West. Studios: Cherokee, Anatomy of a Headache, Sunset Sound, The Cave, Groovemasters, Henson Studios, Fancyboy Studios, Masterlink. Mastering: Stephen Marcussen/Marcussen Mastering.

—Blair Jackson

Elvis Costello: *North* (Deutsche Grammophon)

When Elvis Costello signed with PolyGram five years ago, it was because he would be able to record in all of the different genres that his eclectic muse dictated. Rock 'n' roll, jazz, pop, classical. He is, after all, a musician of many moods. Though it wasn't long before PolyGram was sucked up by UMG that Costello's deal stuck. So, while his last effort, *When I Was Cruel*, was a looped up rock 'n' roll triumph, *North* is a string of moving ballads, as sensitive as they are passionate. Musically, this album has jazz and pop/classical



leanings, with contributions from members of the avant-garde Jazz Passengers and the Brodsky Quartet (with whom he made *The Juliet Letters*), as well as longtime Attraction and collaborator, keyboardist Steve Nieve. And *North* is Costello's quietest collection to date: a soft, elegant arrangement of strings, keys and horns that evokes subtle jazz masters like Chet Baker and transports you like a moonlit night.

Producers: Elvis Costello and Kevin Killen. Recording engineers: Kevin Killen, Bill Moss, John Bailey. Additional engineering: Pete Doris, Pro Tools editing (one track):

—CONTINUED ON PAGE 175

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cakewalk

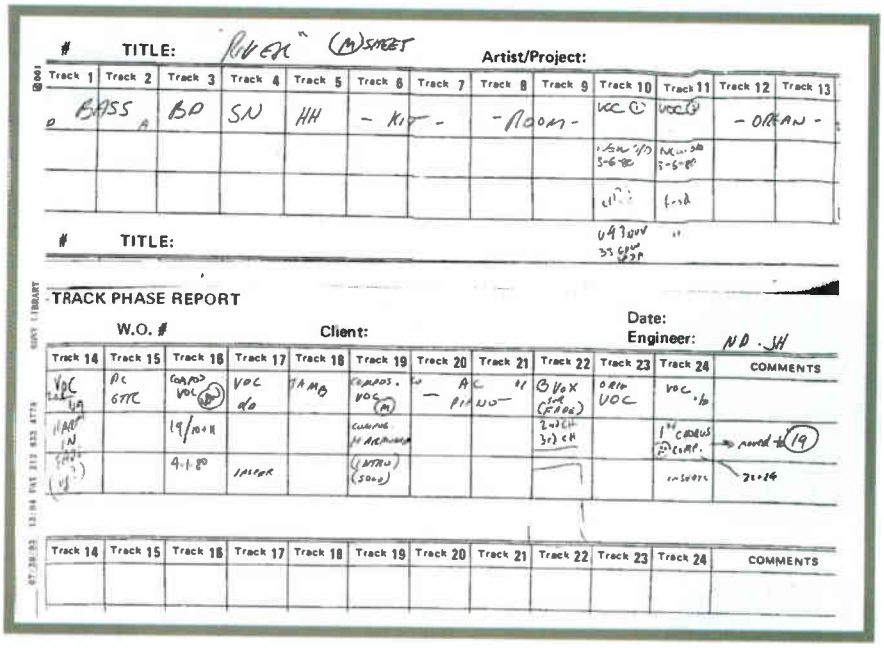
done by Toby Scott. Although Scott has worked in various capacities with Springsteen for over 20 years now, "The River" was also *his* first Springsteen project. In 1980, he was manager and chief engineer of producer Chuck Plotkin's Clover Recording in Hollywood.

"Chuck helped out on the mixes for *Darkness at the Edge of Town*," Scott explains, "and they [Springsteen and manager Jon Landau] called him in again when they had trouble getting the mixes for *The River*. They'd had Bob Clearmountain mix about a dozen songs on two different occasions, and they'd done mixes with Neil Dorfsman. When they ended up calling Chuck, he got me into the picture because we worked together. He said something like, 'Toby's my right-hand man. Let him mix it, and I'll just refine his mixes.'

"So they gave me a song. I worked on it for two or three hours, then Bruce listened and said, 'No, that's not it. Where are the room mics? I want it to sound more like this!' He shoved the room mics way up on the faders so the drums sounded like they were in a basketball court! Obviously, that was going to be integral to the sound of the band. They left, I rebalanced, and when they came back in, they said, 'Sounds good, let's try another song.' I mixed a few more, things were going well, and then they said, 'Okay, now let's *really* mix the songs.' Because Bruce, at that time, was into very meticulous control of everything. He took as long as was necessary."

A lot of what Scott spent time on was getting the room sounds and reverbs right. "I had to figure out a way to control the room mics," he explains. "They had a lot of cymbals in them so that when you turned them up loud, they washed out the drums. It ended up that I used a couple of Eventide 910 Harmonizers to create a multitapped delay, which I popped the drums into, and then sent out into our studio through [Altec] 604E speakers, recorded into a couple of 87s. Our studio wasn't very live, so I nailed plywood boards on the walls."

Wanting the mixes to be "great," as Scott says, he and Plotkin auditioned a prototype Sony 1610 digital recorder and settled on it as their mix format. Working on Clover's 32-channel, 8-bus API console, and taking approximately two days to get what Scott calls the "sound picture" for each song, they laid down mixes and variations of mixes. "There wasn't any automation," Scott points out, "so the mixes were really a performance. We did hundreds of variations: with backgrounds and without; lead up, lead down; more echo; more slap. Once we started taking mixes, I think we averaged 75 variations per song."



For "The River," room sounds were integral, but the added reverbs were also striking, especially noticeable on the first entrance of harmonica and vocal. As Scott recalls, they comprised an EMT 250 digital reverb and Clover's two EMT 140 plates, which he had damped and made less "metallic-sounding" by gaffer-taping the sides. Those plates also had a unique trait: Set in a separate room against a cinder-block wall, they would heat up during the day and give off a softer, more mellow sound. At night, the plates were tighter and brighter. "You'd bear this in mind," Scott says. "Most of Bruce's mixes were laid down in the middle of the night."

For Roy Bittan's piano, which leads much of the track, Scott used two Eventide 910s, "one spread so that the harmonized, delayed side was on the left, and the undelayed sound was on the right, and the other set at the reverse, so that the delays and harmonizing weren't the same."

Scott's favorite vocal limiter on the sessions was an EMT 156, which, even at that time, was a rarity. "Virtually no engineers knew how to work it," he admits. " It was unity gain in and out, so it was all based on gain structure. When we first started, Bruce said, 'I don't like my vocal compressed; don't do it,' but I stuck it through the EMT and it worked incredibly well. He never noticed it. If the level you were sending in was right, and you followed the chart on the front panel, it carefully compressed to where it was seamless."

Scott's format for mixing was—and still is—to get the rhythm section going first, then to put up the vocal and begin working the chordal instruments around it. When he opened up Springsteen's vocal on "The River," he was surprised at his reaction. "I listened to the track a couple of times," he says, "then I put up the lyrics, and it really got to me, the story of this kid who got a girl pregnant and trapped them both into a miserable life. I was sitting there, actually sobbing away at the console. And I was thinking, 'Geez, how am I going to do this?' Finally, it was, 'I've got to get on with the job at hand,' and I went on and mixed it. But even then, a couple of days later when I would listen back, I'd be sobbing again...it really was the most emotional song."

I was lucky enough to catch Springsteen live twice before he turned superstar. It's not that his performances changed; he's still an incredible communicator, one of the few who can hold riveted a packed stadium. It's just that those huge stadiums sometimes seem to be filled with Top 40 fans and clueless yuppies shouting out "Dancing in the Dark"! But, on the night in 1980 when I saw him perform "The River," the crowd was still full of believers, and the shows were still gut-wrenching, emotional and intimate. As Springsteen and "Miami" Steve sang the last wordless notes to "The River," as it slowly faded out and the stage went black, there was only hushed silence, the crowd too stunned to react. Driven to tears, if you ask me.

Mix ONLINE EXTRAS

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STRING CHEESE INCIDENT

FROM PAGE 164

record a bunch of songs. We've done that. So our record company—actually Kevin Morris [manager/president of Sci Fidelity]—came up with a list of six or eight different people, and we looked at resumes and interviewed some people, and certainly everyone was well-qualified."

To the surprise of many in the SCI camp, the person they eventually chose to produce the album was a British man who goes by the name of Youth, the one-time bassist of the group Killing Joke; he's been a top producer and mixer for the past decade, helming discs for the likes of Crowded House (many projects), Art of Noise, Alien Sex Fiend, James, The Orb, System 7 and The Verve—not a hippie band in the bunch.

"We met Youth after he came out to one of our shows," Moseley says. "We just really liked his vibe. Frankly, I was kind of scared by his resume. I looked at it and I didn't recognize anything. And the things I did recognize I thought, 'What does this have to do with String Cheese?' But he had a great attitude, and we were into making a departure from the way we'd worked before. We wanted to shake things up. And we did, that's for sure. We wanted to make something you could sit down and listen to start to finish. We had the grand idea of 'Let's make a classic album, not just a collection of songs!' So, we tried to narrow the focus of what we do, instead of trying to do everything we can do onstage on one record: 'Hey, we can play bluegrass! Hey, we're a jazz band!' This time around, we went in more of our rock direction.

"Basically, we came to the collective decision that we were willing to give up some of the ideas we have about ourselves and what the band should sound like, and trust in Youth's vision a little bit. It's been a struggle at times, but it's working out."

With the arrival at the studio of Moseley's band mate, Michael Kang (who plays an assortment of electric mandolins that sound exactly like guitars), the interview moves down the hall into the control room of Studio B, where the group is doing some vocal work using the Neve 8068 console recording directly to Logic Audio, through Pro Tools hardware. Most of the preceding five weeks of recording have been in the larger Studio A, which has an SSL 4064 G+ in the control room and a famously good-sounding, 1,200-square-foot live room; and in the beautiful Garden control room, primarily a mixing space (equipped with an SSL 8096 G+), but with ample room for musicians. There's already quite a crowd in B when we show up: Youth and his engineer on the project—another Brit, named Clive Goddard—and the rest of SCI: guitarist/singer Bill Nershi, drummer Michael Travis and keyboardist Kyle Hollingsworth.

I ask Youth about the appeal of working with a band so far outside of his realm of experience. "Well, I listened to the tapes and the demos and I was intrigued *because* I thought it was very unlike any project I've ever been asked to do. And I was very surprised a band like String Cheese would be interested in working with a producer like me. And I wasn't wrong!" He explodes with laughter, and the room follows. Then Kang cracks, "We were confident Youth's pagan-druid side would come out, and we'd make a good album together."

When laughter subsides, Youth adds seriously, "There are a number of things I liked about String Cheese Incident. They're very American; their cultural influences are very American and I wanted to work with that. Two, they're very highly accomplished musicians; they're all *really* good. And I liked where they were coming from both musically and as people. I thought, 'Now, how can I make this work?' Because I'm not going to record jams and endless solos, and they have this *huge* repertoire. Live, it works very well. They have a great vibe onstage, and the relationship between them and their fans is fantastic. They're part of a great tradition that I admire: I think what happened starting with Chet Helms at the Family Dog in the '60s, through Grateful Dead and all that, saved the planet and still *will* save the planet in a deep way. So tapping into that energy—I love that! As soon as I heard the demos, I thought, 'This could be a fantastic opportunity to make the last great American album, an American swansong, an American *Dark Side of the Moon*.' The songs are melancholy and deep enough for that to be possible."

So the songs fit into that vision? "They do now!" Youth shouts with a laugh, and again, the band collapses in gales of laughter. "He took a chainsaw to them!" Kang says.

"We did some work on the songs," Youth says. "But the story is revealing itself through the songs in a very clear and direct way. They might not have been linked coming in, but they do make sense together as we're constructing it."

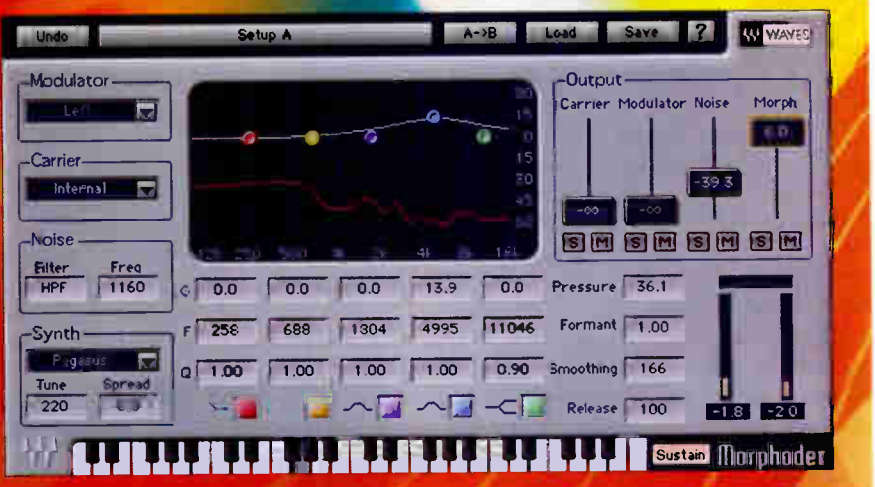
The comparison to *Dark Side of the Moon* is no idle boast. The album is redolent with Floydisms: the blend of crisp acoustic guitar, drone keyboards and Kang's bluesy, but melodic, echo-laden leads; the snippets of spoken-word dialog drifting in and out as in a dream; and the booming drums propelling the songs through sometimes dense soundscapes of effects and ambient fields. At the same time, though, it's still very much String Cheese: the optimism that creeps through in most songs, the countrified harmonies, the fiddle breakdown (though this time, it's set against what sounds like a rave beat).

"Youth has a background in electronic, psych-trance, ambient things," Moseley says, "and that's something we've been interested in, but we've never had anyone who could show us how to do it before."

"I think the band was expecting us to do a more electronica, Afro-Celt Sound System-type project," the producer says. "We did some of that, but most of it's actually quite traditional, just recording the band playing. There was a lot of time spent working on arrangements and getting the songs to where they needed to be. To bring me in and let me have that role was an incredible challenge. Most bands in their situation wouldn't allow it."

"We're used to having songs and then each of us adding parts until they're done," Kang says, "whether good or bad, just to fill out the sound. But Youth had us really working on the songs together, figuring out choruses and parts in a very deliberate way. Like on Keith's song 'Sirens,' he originally had that as sort of a reggae song, but Youth heard something in the bass line that made him want it to

WAVES



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go in this whole other direction, and it worked out great. He'd say [imitating Youth's British accent], 'Give it a bit more Zeppelin!' 'What does that mean? Like *this*?' [he mimes a power chord] 'Yes!' So then the melody changes and everything changes to fit that, and then you have a totally different song."

"Youth had so many great ideas," Moseley adds. "He's a bass player, and he had a lot of good suggestions for me: 'Try going up an octave here. End on a high sustain here. Double the guitar part here.' More often than not, his ideas improved the songs."

Though basics were cut live for the most part in Studio A, there are layers and layers of overdubs and effects, some of which were added during the group's six-week residency at The Plant and others during the mix at Olympic Studios in London on an SSL 9k.

When we talked in Sausalito, engineer Clive Goddard noted that "at the mix, we'll probably bump some things back from Logic Audio to tape to warm them up. I do like the sound of analog tape." Goddard also favored such traditional warm-sounding gear as 1176s on vocals and ribbon mics for room sounds. And Youth suggested touches such as a Mellotron part for Hollingsworth on a song and having Kang play through Marshall amps here and there.

"Still, no matter how hard we try to make it British," Youth says with a chuckle, "we can't because they're *hopelessly* American!"

He turns serious again: "Everyone's had such an emotional commitment to this album. I think it's one of the best albums I've ever worked on. Personally, I can always gauge a session by how much I feel like I'm learning from the band. And I've learned an incredible amount from them. They're really quite an amazing bunch."

"And for us, it was something totally different," Kang says. "Youth could see the end of the road from the beginning of the road, which I don't think the rest of us could. So we had to trust him. We're a band that's basically done everything our own way since day one, and as a result, we've become this kind of isolated bubble in a large sea of musical possibilities. I think this project is going to be one avenue for us in; hopefully, a long string of collaborations that push us to do things that we would never think about doing. Because that's where you're going to learn the most in life." ■

LED ZEPPELIN

FROM PAGE 165

and the SSL console compressor for the 2-channel mix. They sound great; they are clean and variable and dynamic.

"I had API EQ over the stereo bus. Sometimes, I used a Drawmer 1961 tube EQ on the guitar. Part of my philosophy is to not do anything except closely replicate how they may have sounded onstage. When you stand onstage, you can hear this massive thump on Jimmy's guitar, and in the studio, it can sound more like a buzz, so I used the Peavey to try to keep that thump in there."

Kevin Shirley: "Part of my philosophy is to not do anything except closely replicate how [Led Zeppelin] may have sounded onstage."

One of Shirley's goals with the DVD was to give the viewer the sensation of being in the fourth row at a Zeppelin concert. Most of what is in the rear channels is the audience, though there are some exceptions. "I didn't want to make the surround too tricky since we only have three instruments onstage. But I did a little bit of stuff with the instruments in the rear channels on 'Dazed and Confused' and 'What Is and What Should Never Be,' where the panning is part of the song, and 'Dazed' has that violin bow section where Jimmy creates this very ethereal sound, this otherworldly feeling.

"One problem was just trying to capture the essence of Zeppelin, like that big king drum thing Bonham had on 'When the Levee Breaks,' which I think is a definitive sound of Zeppelin. But I think consistency was the biggest problem. The band had changed by the Knebworth concerts [later on the DVD set], and all these shows were played in different environments, so maintaining sonic consistency from the small halls to the large outdoor ones was the big challenge."

In putting together the DVD, Shirley and Page always put the audio first: "We didn't mix anything to picture; the picture was done to the audio. We did the mixes first. Sometimes, we had to go back and adjust the audio, depending on what happened visually. Technically speaking, I think it was pretty straightforward. George Marino at Sterling Sound in New York mastered a lot of it, except for the Royal Hall stuff, which we did with Tim Young in London. I don't think there was an awful lot that had to be done to the tapes. I think that I mixed with a sub that was a little big for the mix room, so if you turn up the sub in your surround system, it will be a little more like I meant it to be. I didn't use a sub on the stereo mix. I used KRK 6000s for monitoring everything and a big Augspuger sub on the surround, which really was too big. It sounds phenomenal in the room, though. The kick drum sounds about 12 feet high."

Another important part of the audio for Shirley was offering a 2-track mix in addition to the 5.1 mix, because not everyone has a surround system. Shirley is also working on expanding the *How the West Was Won* CD into a 5.1 DVD-Audio mix that will come out later this year. "That 2-track mix on the DVD is a whole separate mix. There will be a surround DVD-Audio mix of *How the West Was Won* and will also have a Dolby Digital and DTS mix, as well as uncompressed high-resolution stereo and surround mixes."

Shirley found working with Page to be very rewarding. "Jimmy is amazing to work with. He is the producer of *Zeppelin*, and I think he is very happy with what we did and what we ended up with. There is more from the concerts, but if it isn't on the DVD, there is a reason for it. For instance, there is a wonderful performance of 'Ten Years Gone' at Knebworth, and for whatever reason, I didn't have the benefit of the audio. There was no guitar on the multitrack we had. I tried to pull it out from other pieces, like the vocal mics, but we had to let it go, which was a big pity. Suffice it to say, the CD was meant to be a very good overview of a single Zeppelin concert. As anyone who followed Zeppelin knows, they played differently every night. All through their career, every time they came out onstage, they were a slightly different band." ■

Cool Spins, *FROM PAGE 168*

Andy Snitzer. Mixing engineer: Kevin Killen. Studios: Avatar and Nola (both in New York City), Air Studios (London). Mastering: Bob Ludwig/Gateway. *—Barbara Schultz*

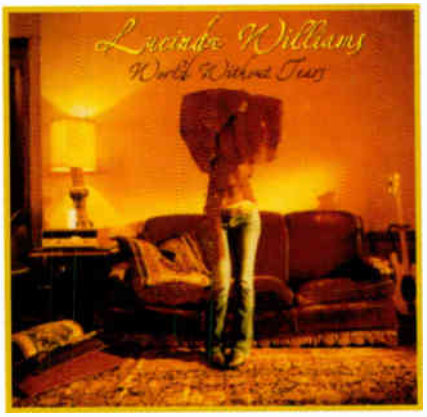
Robert Randolph & The Family Band: *Unclassified* (Warner Bros./Dare)

On the surface, it might seem strange that the "sacred steel" movement of gospel groups featuring pedal-steel guitarists would find such a receptive audience among the jam-band crowd. But what the heck: Jamming is jamming and when it's hot, it makes you move. Robert Randolph & The Family Band have actively courted this audience and done quite well on the basis of their incredible, sweat-inducing live performances; check out last year's *Live At Wetlands* CD if you want to hear some scorching steel work. At their best, the group is like a gospel version of the Allman Brothers, with Robert Randolph in the Duane Allman role. The new album emphasizes shorter songs, a wider variety of styles (many with secular themes) and a tighter interplay among the musicians—it's proof-positive that there's more going on here than *just* jamming. That said, I miss the abandon of the live performances: the feeling that solos are spinning out of control and may keep going until Randolph—or my brain—might explode. But as an introduction to an interesting and different-sounding band, *Unclassified* is still a fine piece of work.

Producers: Robert Randolph & The Family Band with Jim Scott. Engineer: Scott. Additional recording: Ryan Hewitt. Studio: Cello (L.A.). Mastering: Gene Grimaldi/Oasis Mastering (Studio City, CA) *—Blair Jackson*

Lucinda Williams: *World Without Tears* (Lost Highway)

It takes neither a country music devotee nor a skilled musician to truly appreciate Lucinda Williams and her songs. No, all you need is an hour or so without distraction, and *World Without Tears*, her newest creation, will invariably burrow itself into the dampest, reddest earth of your body. The depth of *World*'s subject matter—child abuse, suicide, lost love, depression, isolation—is evoked in part by her intelligent, poetic lyrics and a talented cast of supporting musicians. But the true power in this album is that she laid the tracks down live and left them that way. Raw and nuanced, Williams' voice antagonizes us—a reminder nagging our emotional wounds. From opening track to last, she defines the depths of her love—shows us what we're capable of—while pulling the arrows from her heart.



Producers: Lucinda Williams and Mark Howard. Mixed by Mark Howard. Studio: Real Music Studio. Mastering: Joe Gastwirt/Oceanview Digital Mastering. *—Breean Lingle* ■

L.A. GRAPEVINE

by Maureen Droney

Even in the maverick world of recording studio owners, Conway's Buddy Brundo stands out as contrarian. For one thing, Conway, which Brundo and his wife Susan bought in 1976, doesn't look like any other recording facility. As a matter of fact, unless you're actually in one of the control rooms or recording spaces, it doesn't look like a studio at all. The complex feels more like a tropical hotel, with three studios hidden along winding paths behind lush greenery and private patios. Conway was also one of the first recording studios to incorporate natural light

PHOTO: MAUREEN DRONEY

Admiring their new SSL 9000 are Susan Brundo and Buddy Brundo.

and—back in 1978—when everyone else was building acoustically dead control rooms with compression ceilings, Brundo had acoustical designer Vincent van Haaff of Waterland Designs come up with a more live, expansion ceiling design that was conducive to the sound of rock and pop. Most recently, while many studio owners have postponed major equipment upgrades, Brundo purchased a new 80-input SSL 9000 K Series console.

The Conway operation occupies a big chunk of real estate—approximately 48,000 square feet—just a stone's throw from the Paramount movie lot and the Raleigh Stages. Brundo's been adding to the property during the past couple of years, with the goal of building a fourth studio. Instead, with business tight, he's invested in new consoles for the existing rooms and leased out a portion of the compound. Now, at the opposite end of the property from the studios are offices occupied by Brundo's friends and collaborators van Haaff and technician/equipment designer John Musgrave. On the day I visited, Peaches and Herb's single "Reunited" kept running through my brain. Musgrave, before going out on his own and forming Mad Labs, was for many years the chief engineer at Conway, where he developed and implemented the patented Neve VR upgrades that contributed to Conway's reputation for high-quality sonics. Now, Musgrave's moved Mad Labs on-site and has also entered into a maintenance agreement for the Conway studios.

While Brundo is well known for his colorful personality, he's also recognized as an astute and conservative businessman. Some have been wondering if, after 30 years in recording and with the studio business uncertain, he'd be tempted to throw in the towel and sell his now extremely valuable property. Instead, he's purchased a new console, a particularly strong statement considering that more than a year ago, he took the leap of buying a Neve 88R console, with remote 1081 and "Air Montserrat" preamps, for Studio A.

"The Neve VRs we had were getting old," he says matter-of-factly. "But I have to buy things right. I was the very first to sign on the dotted line for an 88R, so I got a good deal on it. With business in general not so great, I was also able to get a great deal on the K Series. Our SSL J Series in Studio C has been very successful, and I got good reports about the K. It's a big step up from the J: improved sonics and speed of operation. And there were no issues with installation. SSL has ironed out any problems. You just plug it in and it works."

With state-of-the-art consoles and the recent acquisition of Pro Tools|HD systems, Conway is set for big-ticket items, and Brundo's hunkering down to weather the economic storm. "I guess you can

—CONTINUED ON PAGE 182

NASHVILLE SKYLINE

by Rick Clark

Most people reading *Mix* will probably know of Tony Brown as one of Nashville's most influential music industry execs and producer heavyweights. Beginning with his career as keyboardist for Elvis Presley and Emmylou Harris, through his years making MCA Nashville one of the most successful imprints of any genre in the world, to his current position as senior partner at Universal South (a joint venture between Brown and highly respected former president of Arista Nashville, Tim DuBois, and Universal Records in New York), Brown has always displayed an uncanny instinct for great music and artistry. Since the early '80s, Brown has been credited with producing or co-producing almost 150 albums (ranging from Gold to septuple-Platinum), as well as almost 100 Number One singles.

One of the things that enabled Brown to succeed is that he has always been a rather down to earth, approachable guy with a good sense of humor who has treated people with respect and a sense of fairness.

On April 11, 2003, as Brown was leaving a dinner with producer Garth Fundis at the Casa Del Mar, he slipped and fell on the marble staircase, resulting in a life-threatening head injury. During the past five months, Brown has undergone a stunning recovery that is nothing less than miraculous. When I heard that Brown had returned to work and was beginning production on female singer Amanda Wilkinson, I popped over at Starstruck and had a late-morning visit to catch up and listen to his latest new project.

It's good to see you back. You have been in a lot of people's thoughts and prayers. I really appreciate it. I think that is the thing that got me squared-away again. Even the doctors said that there was only so much that they could do. I could not believe all of the people who called me

and wrote all these notes and cards. It makes you feel glad that you treat people as right as possible.

You are currently producing Amanda Wilkinson, who is part of the family trio The Wilkinsons, at Starstruck.

Everybody is really excited about her. She's really been great. She's 21 years old. It is the first thing that she has done outside of her family. I love her voice. She has great chops, but I wanted to make sure that we didn't try to go to a place where we were tempted to "show-pony" her voice. I also wanted to give her songs where she could actually go to that place and sing soft and still have the emotion. We've cut five sides on her so far.

I wanted to work here at Starstruck for two reasons: It's a great studio and I wanted to be in the building. I like to have the heads of the label come just an elevator trip down and have them feel as though they have some ownership of the project, because they were there when we were cutting.

I've found that people are always going to offer their input—whether you want it or not—because everybody, once the record is finished, becomes an A&R person. You might as well go ahead and let them buy into the project early. Sometimes, they say things that you should take to heart and you can actually turn the ship one way or another, if it is early on. I thought it was a pro-active thing on our part, and Amanda was happy to do it. Personally, I think that they will like what

—CONTINUED ON PAGE 186

PHOTO: RICK CLARK

Amanda Wilkinson and Tony Brown at Starstruck

NEW YORK METRO

by David Weiss

Even though the calendar says that it's fall, it feels more like springtime to me. Why? Because with this column, I kick off what has got to be one of the best jobs in the world: writing for *Mix* about the recording scene in New York City. There have never been more amazing possibilities for sound creation in the five boroughs and beyond, or more agonizing doubts about the economics involved. I'm looking forward to letting you all know how things are unfolding here, month by month.

First off, allow me to give a shout-out to my predecessor in this post, Paul Verna, who did such an excellent job covering the New York City scene in these pages for the past four years before leaving to work for Avid Technology. I was a serious and longtime follower of Paul's writing, and he stands as one of the premier journalists in the audio field. It's an honor to follow in his footsteps.

No question, it's been an interesting road for me on the way to this point. When I left my hometown of Detroit 10 years ago for New York City, my objective was to be a hot-shot session drummer and pen the occasional record review. Somewhere along the way, however, I got hooked on more than just holding a pair of sticks and trying to outdo Stewart Copeland. I started writing about drums, audio technology, music production, HDTV, fiber optics and software. Next, I got my first sampler, took an audio engineering course and put together a personal studio in my apartment. Recording, which had always seemed like such a magical process to me, became an art, a science and a personal obsession.

These days, if I'm not writing, I'm recording. Or is it the other way around?

Business is improving, according to Kirk Imamura, president of Avatar.

At this moment, my tastes and career guidance are inspired by artists like Moby, Mozart, The Melvins, BT, Bach, Fela Kuti, They Might Be Giants and a smattering of Gregorian monks. Composing, recording and performing as my electronic-music alter ego, Impossible Objects, has taken my musical skills and engineering chops to extremely satisfying places that would have been unthinkable if I'd just stayed planted on the drum throne. In addition to my next album, I'm at work on my first CD library of music for television, an arena where the competition is intense and your signal path had better be clean.

Like a lot of people, I hit a full-fledged studio when I can, but when I can't, I'm having a blast with what I've crammed into my Manhattan one-bedroom pad. It's now packed with some standard tools and a few secret weapons that are perfect for an electronic artist flying solo. I'm in love with my Yamaha AW16G recorder, a Roland XV-5050 synth, Roland HandSonic, Yamaha A3000 sampler and Korg Electribe serving as hardware sound sources, plus a lovely Electrix Repeater for live looping and TC Electronic M300 and Aphex Aural Exciter 104 for effects. Once inside

—CONTINUED ON PAGE 187

Bennett Studios

The SSL room, with tracking space

Let's get it over with, he is Tony's son. But Dae Bennett is also an engineer who tracked and mixed Naughty By Nature's hit *OPP* and a number of other successful rap and R&B projects. And he's been a studio owner for a while now, first with Hillside Sound Studio and now with a beautiful three-room facility that operates out of a modified train depot in the leafy suburb of Englewood, N.J. He's part of a new breed who understands that, these days, relying on sessions alone is a dicey game plan.

"We're operating on a new business model," says Bennett. "Project studios have obviously changed the way larger facilities like ours work. But my experience at Hillside also taught me that a single-room facility that does one thing—record and mix music—has a limited growth potential. You can be doing sessions around the clock and there's still only so much income."

After interviewing several of the most highly regarded designers in the industry, Bennett asked Andy Munro of London to design the new space. "Besides getting along with him personally, we wanted to offer an alternative, both sonically and visually," Bennett explains. "I've done a lot of work in Europe, and the feel of the studios there is different. The rooms are thicker and more domestic-feeling.

"We ended up with a pseudo-Victorian feel in our large room that I love," he continues. "It's more like a music conservatory than a studio, and it has a sound that everybody loves. Andy's acoustical treatments are handled in a modular way. He designs them in a computer and then frames the interior treatments with beautiful mill work."

Based on his experience doing location recording, Bennett knew that quick repatching was going to be critical to his new studio, which takes in lots of projects that start in the field, as well as records that are tracked and mixed in-house or in the nearby Harms Theatre.

"I designed the machine room like a remote truck," Bennett explains. "Everything terminates there, and we can quickly patch from one session to another. For example, our entire fiber-optic connection from the Harms Theatre to either our Neve or SSL console uses just a pair of Elco connectors. We can make that hookup in just a minute or two. Working with outside studios means that we have to be able to take in Pro Tools, analog tapes and DA-88s, as well. Regardless of format or where a Harms Theatre project needs to be patched, we can flip the two studios around in about five minutes."

Built in the 1920s, the John Harms Theatre (used to track the Grammy®-nominated Tony Bennett/k.d. lang album) has acoustical properties that would be almost impossible to duplicate.

"When we first started working on the room, we went up to the oculus—it is high!—to throw up a microphone and realized that we could hear people talking in a normal voice on the stage. The oculus is a great place to pick up the room's natural delay. We put everything up there, from an AKG 414 to a Coles ribbon mic. Depending on the project, we might want a mic that sounds a bit warmer or one that gives more detail. Either way, feeding a signal from a microphone placed in the oculus gives a real audio picture of the size of the space.

"For example, we recently made a live recording of the Bacon Brothers in the theater. This project will be released on DVD, and we wanted to capture the audience reaction. We chose a 414 because it gives lots of the high end. On the other hand, we needed a much more smokey sound on the record that my dad made with k.d. T Bone Burnett was the producer, and he wanted a darker sound to help keep the album moody. We went with the Coles in the oculus, and we also used a bunch of AEA 44s: these retooled versions of the old RCA 44 ribbon mics that are made out in California by Wes Dooley.

"Teddy Riley was in here recently," Bennett adds. "He used the Harms Theatre for string work on his *Black Street* record, which he and I engineered together. Jay Newland was also back in here for the third time this week. We're gaining a reputation as a studio that has a great sound. Coupling that with Andy's design work has given us the opportunity to create a unique profile in the music business."

Bennett also has put some money and effort into nontraditional studio services. He is offering clients, and those who make their recordings elsewhere as well, the opportunity to sell their wares through the Bennett Studios Store. "Artists send projects to our central system and generate sales through our page," he explains. "Our only criteria is that the act must be working, since that's how product is supported.

"Eventually, we'd like to be able to deliver content directly from our site, either for promotional purposes, studio-to-studio session work or sales. I've set up the Internet part of our business much like the machine room, with an open-ended architecture. I believe that for a studio to survive in these times, management must be flexible."

MIX ONLINE EXTRAS

By Gary Eskow

Gary Eskow is a Mix *contributing editor.*

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-Adam Kasper, Producer/Engineer, Cat Power, REM, Pearl Jam, Soundgarden, Foo Fighters

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SESSIONS & STUDIO NEWS

NORTHEAST

Electric Plant Studios (Brooklyn, NY) hosted Slick Pelt guitarist Mike Louis, who was in recording *The Rollup*. The effort was tracked and mixed by chief engineer/manager Vin Cin...HarariVille Recording Studios' (Weehawken, NJ) Rob Harari edited and mastered tracks from a live performance by Israeli singer/songwriter David Broza. Jersey rock band Kilgore Trout was in mixing songs for an upcoming Sundried Records release. Matt Sietz engineered while the band handled production duties...Over at Indre Studios (Philadelphia), the DNA Project were in the studio's B room with engineer/producer Bogdan Hernik. Also in B, BMX star Kevin Robinson cut demos with Mike Richelle recording...Sound on Sound's (New York City) Cortez Farris has been busy tracking for such artists as Dr. John, Governor, Keith Murray, True Life and 54th Platoon. Richard Furch has also been busy mixing for Christina Aguilera's MTV live appearance, and tracking with Andrew W.K., 24K and Melissa Auf der Maur.

MIDWEST

Rapper Ice Cube was in Chicago Recording Co. (Chicago) recording and mixing with engineer Jeff Lane; Mac 10 produced and Derek Downing assisted. Eve was in recording with engineer Manny Sanchez, while Mavis Staples tracked vocals with Mat Lejeune for an upcoming Los Lobos release with lead singer David Hidalgo producing...Alt-rock Local H recorded their brand-new EP *No Fun* (Thick Records) at Million Yen Studios (Chicago) with producer/engineer Andy Gerber....Align stopped in Oarfin Studios (Minneapolis), where they tracked, mixed and mastered *Blue Book Value*. Todd Fitzgerald, Oarfin's chief engineer, co-produced and tag-teamed with Daryll Hurst on engineering credits.

NORTHWEST

Nettleingham Audio's (Vancouver, WA) engineer Kevin Nettleingham mastered releases for these Portland-area artists: Phil and Gayle Newman, Aric Riley, Seymour, The DelToros, The Jolenes and the Swivel Chairs. MIB Music's Bryce Van Patten came in to master an 18-song metal compilation, while Jim Fischer stopped by to add keyboards, mix and master the new Jim Giger CD, *I've Anchored My Soul*.

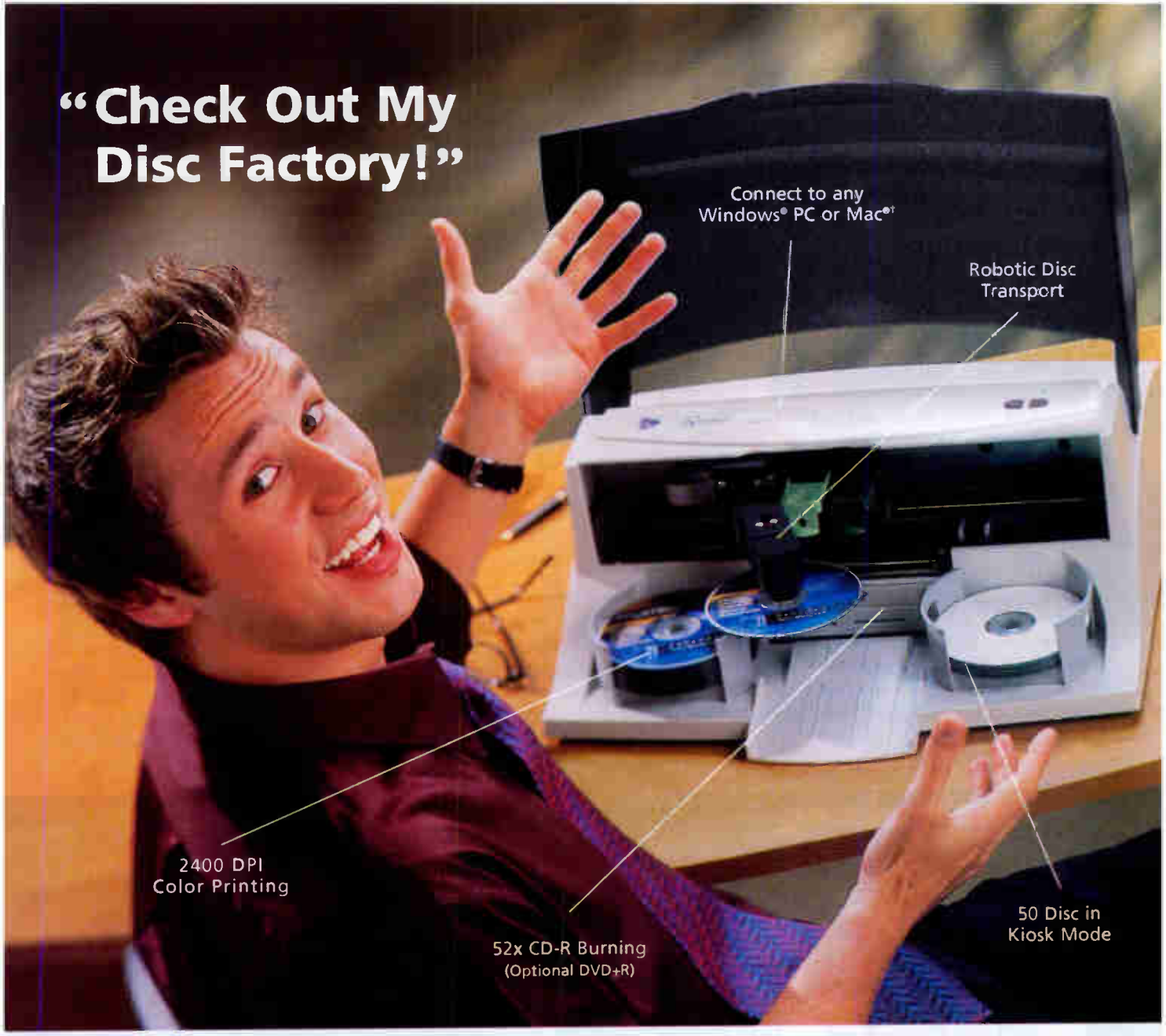
SOUTHEAST

Mastering engineer Benny Quinn has been busy at Masterfonics (Nashville): a bluegrass version of Lonestar's "My Front Porch Looking In," and projects from Dionne Warwick, Johnny Lee, Ashley Gearing, Cornbread and Whitney Duncan...Ardent Records rock band Skillet recently completed their new album, *Collide*, at Memphis-based Ardent Studios. Paul Ebersold produced the effort with engineer Matt Martone...Engineer Scott Ross recorded tracks with Dave Holister for Roy Jones Jr.'s new album at Right Hook Studios (Pensacola, FL).

SOUTHERN CALIFORNIA

John Frusciante, guitarist for the Red Hot Chili Peppers, stopped by Bernie Grundman Mastering (Hollywood) to master his new solo album, *Shadows Collide With People*...Recent artists at Cherokee (Hollywood): Robert Bradley (producer/engineer Bruce Robb, mixers Dee Robb and Bruce Robb, assistant engineers Dave McKenna and Mike Marston), Ronnie Lewis (producer/engineers the Robb Brothers, mixer Dee Robb, assistant engineers Valente Torres and Marston) and Shelby Lynne (producer

Grammy-nominated saxophonist Dave Kaz (left) mastered his upcoming CD Saxophonic with producer Steve Hall at Future Disc (Hollywood). Also in at Future Disc, Laurence Tolhurst, a founding member of The Cure, and Cindy Levinson mastered their new album, Perfect Life, with Kris Solem.



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The Sound Lab (Smyrna, GA) saw producer Lil Jon (left) finish recording Warner Bros. artists Lil Scrappy (right) and Trillville, as well as putting the final touches on TVT Records' Ying Yang Twinz, and Oobie. All sessions were engineered by Jonathan Cantrell and Taj Mahal.

Shelby Lynn with co-producer Bruce Robb, recorded and mixed by Robb, assistant engineer Greg Hayes)...Producer/Klown Records (Santa Monica) studio owner Stevo Bruno has had his hands full with recent projects, including Brides of Destruction, Prong, Mother's Finest, Dino Cazares (Fear Factory) and Pico Train.

SOUTHWEST

Bluegrass band **Sugar Bayou** completed their debut CD, *Nowhere But Gone*, at **SugarHill Recording Studios** (Houston) with chief engineer **Andy Bradley**. Engineer **Steve Christensen** has been busy with recording demos for **Silverleaf** and **Shulton's Youth**, while engineer **John Griffin** was tapped by **Next Best Thing** and **After It All** to record tracks...**Erykah Badu** was recently in **WexTrax** (Dallas), mixing and mastering her new single "Danger" with mastering engineer **Rob Wechsler** and mixing engineer **Tom Soars**. Favored Nations artist **Andy Timmons** just completed mixing a new version of the **Olivia Newton-John** single "Physical" as a bonus track for her latest release, *Duets*. ■

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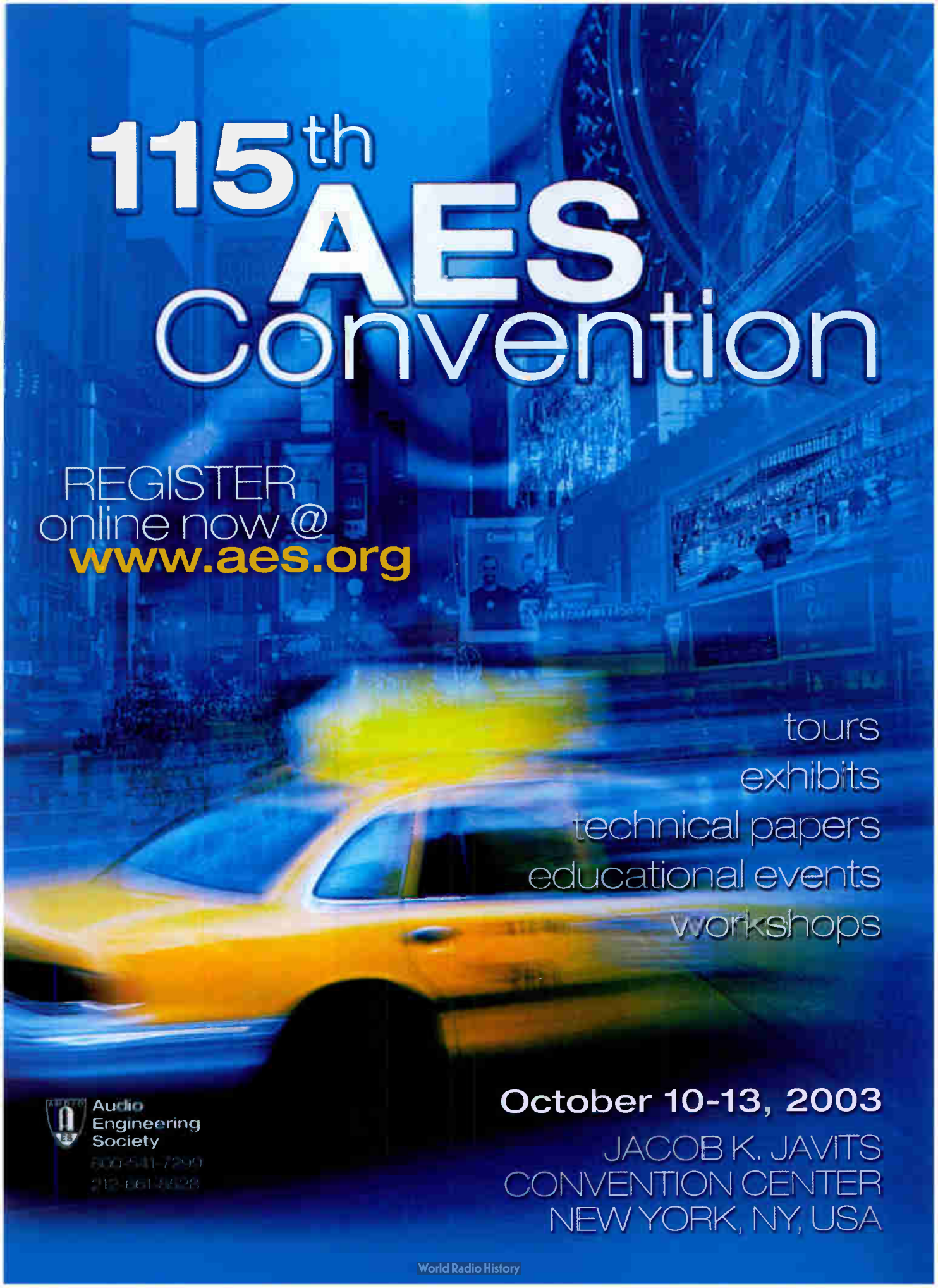
L.A. GRAPEVINE *FROM PAGE 176*

get used to anything," he comments. "I adjusted to the reality of the length of this downturn. I've reorganized my debt to make it more rational, we've cut expenses and we're through for now spending money on the property. When we purchased the additional property, we had demolition, grading, paving, landscaping...It was a big chunk of money. We got through that, repositioned ourselves and now we'll see what happens.

"With John Musgrave back, who was responsible for all of the stellar Neve VR modifications, we want to get into doing the same kind of enhancement to the consoles we have now. They're great, but everything can be improved. I'm interested in doing R&D again, and there are other people who've expressed interest in joining the team. The only thing I'm looking to purchase now is another apartment building where we can put more offices.

"Look," he concludes, "our industry has numerous problems. The battle is not over yet, and this could go either way. But for now, we're still here." And at Conway, there has been a diverse batch of clients: In Studio A on the Neve 88R was Luis Miguel with producer Francisco Loyo and engineer Moogie Canazio; A Perfect Circle with producer Billy Howerdel and engineer Steve Duda; and Vishiss, with engineer Michael Patterson. Engineer Peter Mokran has been locked out in B on the new SSL K Series, mixing for Dave Koz and Avant. And in Studio C, Fuel tracked with



producer Michael Beinhorn and engineer Frank Filipetti; Alien Ant Farm tracked with producers Dean and Robert DeLeo and engineer Dave Schiffman; Blink 182 camped out with producer Jerry Finn and engineer Ryan Hewitt; and Jamiroquai tracked for Santana with producer Lester Mendez and engineer Ryan Freeland.

It was a typical weekday morning at Burbank's O'Henry Sound Studios: By 11:30 a.m., a string session for the day's first of two jingle sessions in Studio A had already come and gone, while Studio B's pop clients were just getting rolling. Owners Hank and Jackie Sanicola and their staff have worked hard to make O'Henry one of the few studios that successfully combines record dates with scoring for film, TV and advertising. Now with the completion of Studio C, O'Henry has become the three-room facility the Sanicolas have always envisioned, and Hank, who has been in charge, is retiring from day-to-day operations. Harold Kilianski, O'Henry's chief engineer for the past five years, has been appointed operations manager for the studio.

The personable Kilianski has the right combination of skills to wear both hats. A classically trained musician, he did postgraduate study at McGill University in the prestigious Tonmeister program (the European educational curriculum for recording engineering that combines study in recording theory, acoustics and physics with hands-on practice). He subsequently worked as a recording engineer for the Canadian Broadcasting Corporation and was a partner in a Toronto studio before relocating to Los Angeles.

Another reason Kilianski is a natural for the job is that, since hired on, he's been through nonstop renovation, design and construction projects at O'Henry. "Within a year of starting here," he recalls, "we renovated Studio B and installed the SSL 9000. That console wasn't even online for a year before Hank decided to begin work on Studio A."

Work on Studio A included the painstaking rebuild and enlargement of its popular custom API Flying Faders-equipped console into a 5.1 88-input mixing and monitoring desk that is one of the largest fully discrete consoles in the world. "It's an amazing console," Kilianski states, "for both tracking and mixing. There will never be another console like it."

At the time of renovation, Studio A's large recording space was also renovated, making it more friendly to rock and pop, as well as to orchestras. The changes paid

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off: There are still plenty of orchestra dates in A, and it's also become popular with acts such as The Eagles, Macy Gray and Lyle Lovett, who appreciate a quality acoustic environment.

"One of the things that Studio A has to offer—and The Eagles sessions are a great example—is that large tracking sessions can set up drums in the big room," notes Kilianski, "with guitar amps, piano, etc., in the glass-walled iso booths surrounding it. You get a sound you just can't achieve by putting the drums in a small iso booth. For the same reason, a lot of string arrangers—like David Campbell and Paul Buckmaster—like to work in A. It's live, but very smooth with great character."

The third room, Studio C, boasts a large control room, like all O'Henry Studios, and is fitted with a Yamaha DM2000 digital console and was built from the ground up in 2002. "Studio C is particularly good for clients who want to camp out on a long-term basis to do vocals or production," comments Kilianski. "It has its own kitchen and bathroom, a separate entrance and even private parking.

PHOTO: MAUREEN DRONEY

An unnatural quiet time for O'Henry's owner Hank Sanicola.

"We made decisions with Studio C to build it in a more economical way, although," he says with a laugh, "construction at the level Hank insists on is always first-rate. Instead of installing another large-format console, we decided on a Yamaha DM2000. We went digital because it's neutral, unlike analog where everyone has their own opinion about which sound they like. It's worked out quite well. We've had a lot of great people in C like Dallas Austin working with Gwen Stefani, and Samantha Ronson."

For Kilianski, a perk of working at O'Henry is that L.A.'s finest session musicians are regular visitors. "I come from the music side originally, where I studied orchestration and composition," he says. "It's still a complete and sincere thrill for me to work on a daily basis with such amazing musicians. It was actually very lucky that I ended up at O'Henry. I knew nothing about L.A. when I arrived; my first job was right here. In hindsight, it's the best possible place I could have landed." ■

E-mail L.A. news to MsMDK@aol.com.

NASHVILLE SKYLINE *FROM PAGE 177*

we've done because she is a great singer.

John Guess was the engineer for this project, and we recorded it Pro Tools|HD. Up until HD, I sort of fought against the idea of Pro Tools. For one thing, I didn't think it sounded as good as 48-track digital. I liked RADAR better, but now I like Pro Tools as much as RADAR. It has the same head room as RADAR. To me, Nuendo is also as good-sounding as Pro Tools|HD.

Ultimately, it's about the performance of the artist, the track and the song. If you captured the performance on any format, it can be great, until you start to study sonically what is happening and then maybe you go, "Oh, I just wish it had just a little more analog tape compression on it." [Laughs]

You know, I don't think that when I first heard "Honky Tonk Woman" by the Rolling Stones, or The Beatles, I sat there and thought what I liked about those records was just the tape compression and what George Martin did with those Beatles records. I think what we liked most about those records were the songs and the performances of The Beatles and the Stones. That is where all of this goes back to.

I think with these new formats, things go so much faster and easier in sessions, especially with those engineers who are really savvy and on the cutting edge of technology. In the end, it just makes it easier for the artist; there is no rewind time. All that down time that usually just bogged down a session is gone. ***That said, the whole issue of delivery and archiving recordings has taken on a new dimension with all of the various digital formats and software that have been implemented in music-making.***

During the '80s, when [Jimmy] Bowen was at MCA, there was this mandate to record on digital 3M, which was like a VHS tape. There aren't really many of those machines around in Nashville anymore. And the ones that are around, how

many of them even work? The frustrating thing is that lot of great records—George Strait and Hank Williams Jr., some of the greatest music Bowen ever did in Nashville—were done on those machines. That is one of the things we have discussed at the Academy when they were making these recommendations for delivery. But it's funny, because this discussion keeps going in circles. Nobody can make a finite decision necessarily. The delivery of records to record labels today is so complicated. What would be considered a no-no 20 years ago happens all of the time, just because people that are getting delivery of the music to the labels don't even know that some engineer has everything on his hard disk back at his house. It used to be that you had the master and the analog safety, and you brought both boxes to the label.

There used to a lady named Dot at RCA who was there with a 9mm [gun] and she would say, "Give me both of those damn boxes or I'll shoot you. [Laughs] If you want your money, give 'em to me right now." And then she would open up the boxes, and if there wasn't a track sheet, she would just give you hell. Now, most stuff is turned in and there is no documentation a lot of times. Nobody knows how to get to the source of what is there, and they don't know what format it is on.

We're going through a new period where record companies now are at the mercy of the producer having an engineer that knows what he is doing, and the producer also sort of having to know that the engineer knows what he is doing; the relationships have gotten more and more important. Man, you think these lost tapes have shown up around the world years ago, they are going to show up a lot in the next few years. It's kind of scary, but you know that technology is moving so fast that it is interesting to see the recording industry try to stay up with it.

What is one of the most important marks of a great studio?

A good maintenance program is one of the most important things. Nothing can destroy creativity like a breakdown. It can destroy an entire project for months. In some cases, the engineer or the artist or some musicians have flown in and it was the only window they had in their schedule for the next four months, and you may never re-capture the groove you were in when something breaks down.

At studios like Starstruck and Ocean Way, there are these people who are always around that just fix it when something happens. At Starstruck, their mission is to make sure that if you work there, it is going to be a good experience, if they have anything to do with it.

I know how hard it is to keep a studio up and going. I have never made it a point of going to studios asking for deals. Jimmy Bowen sort of taught me that if we didn't support the good studios, we would lose them. I would hate to see Starstruck, Ocean Way, the Tracking Room or the Big Boy at The Sound Kitchen go bye-bye, because all of the record companies and us producers poor-mathed them to death.

I've found that most studio rates are pretty much the same. Starstruck is such a gorgeous place that you think that it is going to be three times the rate of other studios, and it is not.

Universal South has been doing well for you, with the success of Joe Nichols, Steven Delopoulos, Dean Miller, Being Strait and Allison Moorer.

When I was president at MCA, people thought I had this little magic dust that I could sprinkle on any record and it would be a hit. [Laughs] That's just not true. I could only do as well as I could do with the artist that I had, the songs that I had and the musicians. I had to be in the zone in the studio.

Cutting a record is hard. Everybody thinks we are in here drinking champagne and yahooing, and on a couple of playbacks, sometimes you pat yourself on the back and go, "I'm a genius!" [Laughs] The truth is that most of the time, you are thinking, "God, I hope this is as good as I think that it is." It is easy to second-guess yourself. There are those moments where you feel, "I think I did something really good here and only I could screw this up." And you know, if you have done it a lot of times, more than likely, you won't screw it up. And if you have a lot of great people with you, you are only as good as the people that you are working with. You can't use mediocrity—when it comes to musicians, engineers, songwriters and artists—and expect to get that magic thing that you are looking for. Unless you just stumble on it, and I don't think that you should go in as expensive as it is to record today and gamble like that. You've got to be as sure as you can possibly be. ■

Send your Nashville news to MrBlurge @mac.com.

NEW YORK METRO FROM PAGE 177

my beloved computers, the audio cycles constantly through Cubase, Reason, Acid,

Recycle and Sound Forge until I declare it baked to perfection, or at least listenable.

Taken together, the unique convergence of New York City's always buzzing undercurrent and the fast-accelerating improvement of audio hardware and software has proven to be an exhilarating combination for me, and I know I'm not the only one. Just like more mystical places such as Sedona, Ariz., I believe New York City is a true energy center, attracting highly ambitious people for highly illogical reasons. But rents are high, the rules of the music industry have dissolved into a haze of unpredictability, and running a recording studio or mastering facility for all of the talented musicians who live or visit here is not the same as it was, or as it will be this time next year.

Staying in business has been a huge challenge for many facilities; impossible for others, and a breeze for yet another group. Happily, the consensus from the studios I checked in with is that after two tough years, business is gradually improving in the Big Apple. "2003 is definitely better than 2002," says Kirk Imamura, president of Avatar Studios. "It seems like there are more projects and more activity this year. Besides a slight dip during the summer, which is normal, the fall looks pretty busy.

"I believe that major or indie labels still need music to put out to the market, and—let's face it—they're looking for something that's going to sell. In some cases, they're experimenting, and in others, trying to bring back some artists that may have been absent for a while. During the past couple of years, our client base has diversified. We have our share of the major-label work, but we also work with a lot of independent labels and people who fund their own projects."

"The year started pretty slowly, and as the year has gone on, the work has grown," confirms Zoe Thrall, general manager of The Hit Factory. "Looking through the fall, it's gotten progressively busier. There are a lot more independent projects: Artists or production companies are booking the rooms themselves."

The outlook is also positive for Lou Gonzalez, CEO of Quad Recording Studios. "I think it's the best it's been since 9/11," he states. "I have the business. There's still dead times, but they're a lot shorter, and the good times are a lot longer. It's still a roll of the dice, but it's better overall."

Freelance engineer Bill Deaton, left, and Lou Gonzalez of Quad Recording

Gonzalez attributes the turnaround to a few factors. "All of this digital stuff came out that made it cheaper for people to have a rudimentary studio at home. The record companies—because everyone's trying to save money—bought into it, and then they realized that the product is not as good, and it's beginning to hit home. We have years of experience with people that know what they're doing, and the record companies are just beginning to figure this out. Also, the piracy issues are being addressed: They're on top of it, with the help of the film industry. Film is starting a new campaign to stop piracy, record companies are hitching a ride, and it's going to work. And people are finally beginning to listen again."

Besides being able to get a pastrami on rye at 3:00 a.m., Imamura points out that running a recording studio in New York City has its own unique bright spots. "New York, first of all, is where all of the major labels are; that's certainly one advantage," he says. "Second, New York City is home to a community of musicians, artists, producers and engineers. There is a critical mass of people here that make it an attractive city to be in. Besides recording, artists come here because they like the 'New York City sound.' John Mayer and producer Jack Joseph Puig came here to do his upcoming album because he was looking for a 'New York City sound.' Puig selected Avatar to do the Mayer project, and John was pretty happy with the sound that he got.

"The challenges are that New York State is tough with the budget deficits and property taxes going up, so there is a reality that expenses will continue to go up. Our challenge is to cover that cost in some manner, and doing business like we have been is probably not enough. For us, it means providing more services, looking at other similar business activities; a specific example is a new separate company that is a record label, 441 Records."

To Gonzalez, the cost of all those square feet is the sole liability that comes with his territory. "The real estate, that's the one that's unique to New York City," he says. "You're trying to make it go when you're paying double or more for the real estate than somewhere else. But if you're somewhere else, you're out of the loop. When you're here, you're *here*. Everything you want is here."

Still, the difference between the New York City studios, large or small, that live to see 2005 may be rooted in some more universal concepts. "The key is just being in tune with the client's needs and being flexible enough to adapt to those, in terms of equipment and service, in general," Thrall points out. "The relationship is still the most important factor: staying in touch before the session and asking what their needs are, and after the session, asking them what they think of the results and making sure they were comfortable. That goes a long way."

Well, I know I'm comfortable here in the New York City seat for *Mix*. How are you doing? If you're in the city, across the river or upstate, with one room or 10, recording sound for human, animal or plant consumption, you should get in touch anytime at david@dwords.com. Thanks! Catch you next month! ■

—FROM PAGE 26, GRAB A BEER

accompanies too rapid an insertion pretty much tells you that you aren't doing it right.

And this brings up another point, no doubt another reason why they aren't actually air-tight and neither company rushes to tell you how to make them so: It is painfully obvious (literally) that you could seriously hurt yourself shoving air-tight electronics into your ears. I am sure that neither manufacturer wants to be on the hot end of that legal poker, and come to think of it, neither do I. So, *never* do this. Leave them as they come, accept a bit of outside sound and never jump out of airplanes. There. I feel better now. I know my lawyer does.

MORE DIFFERENCES

There is another fundamental difference in the two technologies, and there are associated side effects. These side effects may not be an issue for you, but they ended up being a major consideration for me and ultimately determined how I use each system and what I use them for.

Armature systems like the Ultimate Ears are *sealed*. They have no rear (outside) relief port and are usually a more aggressive, tighter fit.

Conventional driver systems like the Future Sonics actually have a small port on the outer surface, and with all other factors remaining equal, the size of this port determines their low-frequency response!

In fact, the Future Sonics come with four sets of ports, including a null or sealed nonport, giving you amazing control over their low-frequency response, but making them less than ideal for use when you really want all outside noise, or killer wind-roar, to go away. Specifically, wind tears through any of the open ports, and though the sealed port does stop this, it turns out that the LF response of the Future Sonics with the sealed port installed is even less than the LF response of the Ultimate Ears. So...

I use the Future Sonics when listening to music in nonhostile environments and for about half of my live work. I am one of those guys who likes to hear a solid bottom in his monitor mix, and man, do these deliver.

The Ultimate Ears, on the other hand, are my choice for any situation where outrageous outside noise must be overcome. For me, this includes many of my chosen death sports and those crazed amp-to-11 live venues. They do not have the low end of the Future Sonics nor will they respond when attempting to achieve it with EQ. There seems to be some sort of LF dynamic compression inherent in this technology, and nothing really compensates for it. But the mids cut through anything, including war games, and the highs are significantly more solid than the Future Sonics.

They are so different that it's as if they were totally different technologies, and they are.

And while I realize that the absence of a simple "winner" or any clear recommendation may be problematic for many of you, it simply turned out that I found valid applications for both systems.

My hope is that those of you who have been considering getting such a system will be able to find applicable information in these observations.

At least we ruled out the crappy Hearos. Now that's something. ■

Huh? WHAT???

—FROM PAGE 30, AUDIO PRODUCTS GO WILD!

tects the product against failure right up until the moment it is used.

Going inside our computers, the best of this year's crop of not-ready-for-the-show-floor plug-ins reveals how comfortable our industry is with both the past and the future: They reflect the new digital realities of the music business, while reaching back to vintage sounds and ideas of yesteryear.

The software instrument ArpIdiocy™ is the first "true" analog synth module to take advantage of recent modeling technology, which simulates leaky capacitors, dirty potentiometers, self-destructing heat-sensitive resistors and other heretofore impossible-to-imitate relics of the pre-IC era. In this model, realistic oscillators and filters produce random drift of master pitch and scale intervals; changing parameters gives rise to random, loud crunching noises, whose levels are in inverse proportion to the signal level (at elevated levels, the crunching sounds are replaced by momentary dropouts); an authentic-sounding spring reverb is triggered by keyboard velocity to produce that famous, annoying "boing" sound; and a patented Human Pitchwheel™ redefines its zero point after each operation. Unlike the original, of course, the plug-in allows storage of your carefully designed patches, with parameter repeatability guaranteed to be "pretty close."

If you're looking for unique processors, check out That70sSound™, a virtual 8-track tape deck that automatically stops every 15 minutes, thinks for a few seconds, executes one of several skull-shattering mechanical noise samples and then starts up again in some random spot. It also slowly, inexorably and not-so-subtly increases wow and flutter over time, requiring the user to periodically virtually smack it with his or her virtual palm. At the end of every session, it breaks opens and spools out the entire session file, leaving it in a virtual tangle by the side of the virtual road.

If you're looking for unique processing, check out That70sSound™, a virtual 8-track tape deck.

Another relic of a bygone era is Gesundheit™: The Tissue Paper Simulator. This package contains two plug-ins: The first will make any speaker sound like a vintage Yamaha NS-10 (worth the price all by itself for studios lusting after an '80s vibe), while the second inserts digital models of a wide variety of paper products in front of the first plug-in's virtual tweeter. The parameters include tissue type (facial, kitchen or bathroom), thickness (one- or two-ply), price (bargain or name-brand), color (white, pastel or patterned), embossing and roll format (regular, double or 1,000-sheet). Users are asked to please not squeeze the software.

Producers who are tired of the "Cher effect" (and who isn't?), in which every note is dead-on in tune whether the singer is capable of producing such notes or not, will welcome the Vocaldroid RS™ (Real Singer) plug-in. Modifying a glitch-filled, over-vibrato'ed, flat or sharp vocal track so that it comes out absolutely perfect is child's play these days in the digital world. But going the other way—making it sound like a real human being produced the sound—is a genuine achievement.

The Vocaldroid takes even the finest classically trained vocalists and brings their level of artistry down closer to what you would expect in a typical session with typical backup singers or bandmembers. Entrance timings are adjustable from one-half beat to three bars, early or late; harmony lines are reconfigurable into inappropriate modes, keys or scales; and a special function does a convincing (but nondestructive) digital simulation of the singer tripping over the mic cord.

"Strike back with the Antimaximizer!" That's the slogan for the marketing campaign behind an ingenious plug-in for pop music producers who are sick of hearing all of the dynamics of their mixes totally flattened when they are mastered by a major label or played on the radio. Because no one at radio stations actually listens to what they're playing anymore, leaving it instead to various machines to make sure that the instantaneous modulation level never drops below 98%, the designers of the Antimaximizer have come up with a way to fake out broadcasters and restore true dynamic levels to mixes.

Their work is based on an algorithm that uses a combination of noise-shaping and psychoacoustic masking, similar to an MP3 but turning it on its head: Instead of detecting frequencies that won't be missed and eliminating them, the plug-in finds frequencies that aren't audible in the first place and raises their level enough so that the whole signal gets continously slammed up to -0.001 dBFS. Because no audible frequencies are affected, the dynamics of the music are maintained faithfully, but anyone glancing at a signal-level monitor will see a barely moving needle or a constant red-plasma glow: a sight to warm the heart of any label or radio executive.

And, finally, some farsighted (and very well-funded) developers who truly understand the future of the music business are about to release The Ultimate Watermarker™: "Protection for your precious assets."

Three versions of the plug-in will be available. The basic version, which is freeware, places a 64-bit digital word into each track every 536 milliseconds. This watermark, which on a 'scope looks like a tiny staircase wave piggybacking on a few audio cycles, is almost undetectable, but when it is audible, it actually enhances the bass response of the track, especially if the track is at 112 bpm. The watermark's data encoding is robust enough to withstand mixing, downsampling, MP3 or AAC conversion, multiple A/D stages, compression, multiband broadcast limiting, Dolby and DTS surround expansion, and being played through a cellphone speaker.

The 64 bits contain a wealth of important musical information: names of the composer, lyricist, publisher, performing rights organization, artist, engineer and producer; and the passport and social security numbers and library card, video rental and voting records of all creative personnel. Also, there's the recording's date and time, studio longitude and latitude, microphone model and serial number, recording medium, the recording computer's IP number, iLok account ID and password, and an analysis of the lead vocalist's DNA.

If you want to *read* the digital watermarks, however, you need to pay for the "pro" version: Watermarker DRM™ ($ classified). Available only in the United States—and only to individuals who have never been subpoenaed by the RIAA—Watermarker DRM automatically extracts the encoded information, displays it and forwards it to the appropriate private or government bodies. For example, author and

publisher information is sent to the Harry Fox Agency, which ignores it for a minimum of six months and then randomly changes the title, misspells the composer's name and passes it along to ASCAP, BMI, SESAC, TAXI, the DEA, the NRA and/or the U.S. Copyright Office. Technical and personnel information is sent to the AES, SPARS and the editors of *Mix* magazine, while information about microphone usage is forwarded to the mics' manufacturers and their respective ad agencies.

But that's not all. With funds from the major record labels and various black-budget intelligence agencies, the developers have also come up with a "stealth" version of the software called Watermarker Mandatory Deployment ("WMD"), which Congress is now considering legislation to require in all consumer-electronic devices. With this software (which incorporates the "SUI" technology described earlier) installed, the IP number of the device playing any recording is transmitted (using 802.11b) to the nearest McDonald's, where it is sent on to a central database that cross-checks it against the ID of the device that created the recording. If this database doesn't show a legitimate sales transaction between the two devices, then the software interrupts playback and erases the file and then issues a subpoena to the user.

If the playback device is registered to a college student, then the software contacts the school's administrative computer (with the school's permission, of course) and changes all of the student's recent grades to "F"s, while revoking his or her financial aid. An RIAA spokesperson says enthusiastically of these features: "We can't think of a better way of increasing customer loyalty to our products."

In addition, any tunes, lyrics or samples that are known to have been created by the Dixie Chicks or Steve Earle, or are in French, or are sung by anyone named "Ahmed" are intercepted, and the offending device's IP number and GPS location are relayed to the appropriate local law-enforcement agency's anti-terrorism unit and to the Department of Homeland Security. A high-placed Washington source explains the rationale behind the system: "Keeping track of what everyone is listening to, everywhere, all of the time, is one of the best tools we can use for maintaining the freedoms that have made this country great."

Have a good show. ■

Paul Lehrman isn't paranoid. Yet.

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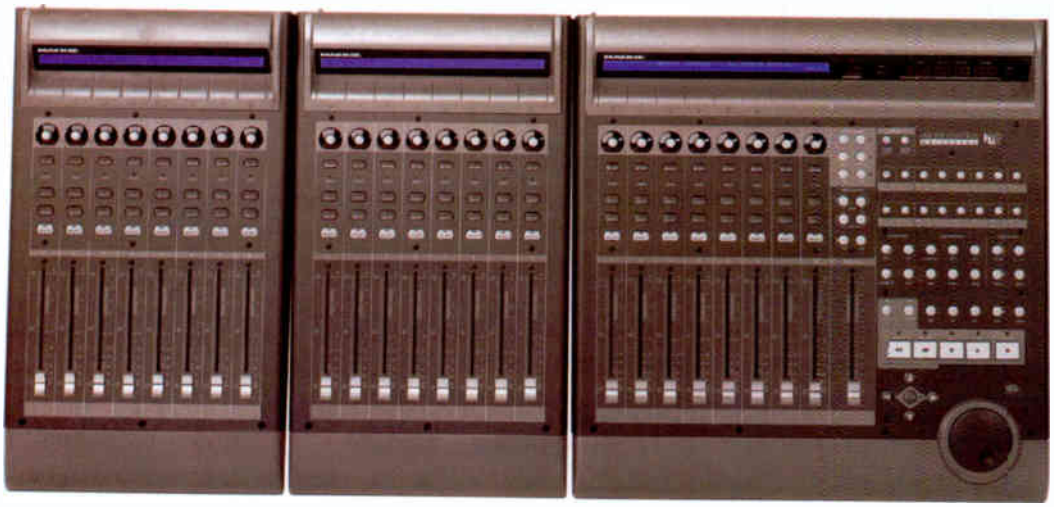

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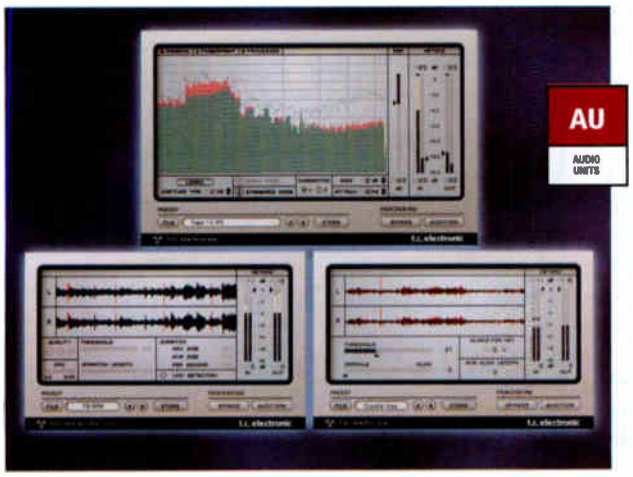

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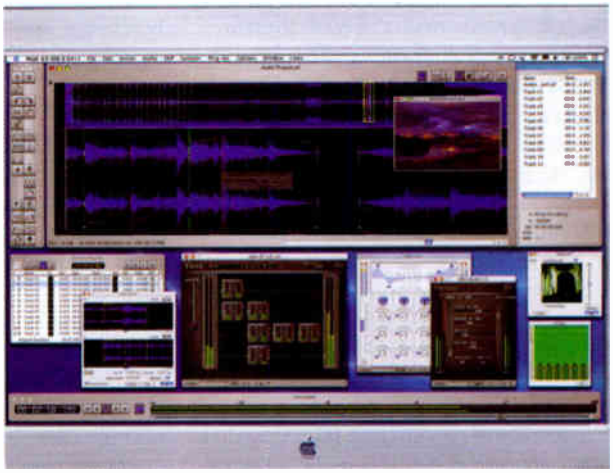

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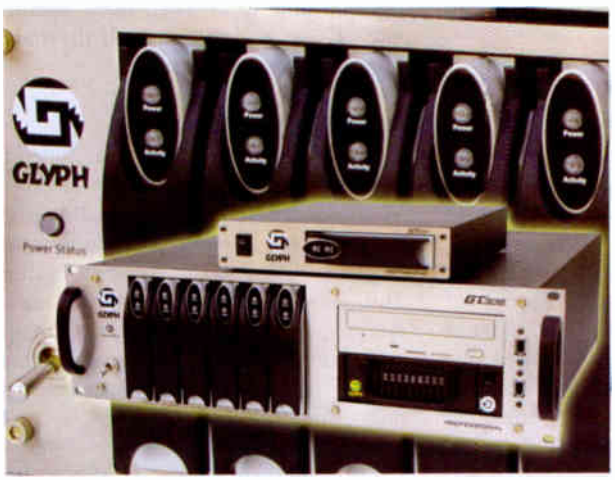

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BY LAURA PALLANCK

Ina-GRM GRM Tools ST

Having Fun With FFT-Based Spectral Analysis

GRM Tools ST (Spectral Transform) adds four exceptional processors—Contrast, Equalize, Freq Warp and Shift—to a plug-in family already packed with winners. Although these FFT-based plug-ins are at their most powerful when used subtly, they practically dare you to attempt the outrageous.

HAVING A BALL WITH A STRING

One of my favorite features of the GRM Tools plug-ins is the ability to interpolate between presets. You can do this manually with the SuperSlider or automatically by clicking a Preset tile. Once you have a few choice presets, you can set the rate of change between them from instantaneous to 30 seconds. But you can also exercise real-time control over the changes for improvisatory adventures in processing. For this kind of work, I often use Shift, an exceptionally powerful frequency-shifter plug-in, which features a controller called the Elastic String.

When you hold down the Command key while moving the mouse away from Shift's Scale/Shift icon, the Elastic String appears between the cursor and the icon. Immediately, the icon will begin traveling toward the cursor's position. The longer the Elastic String, the slower the icon will move. This effect allows you to try out different processing trajectories through space in real time. If you like what you find and want to automate it, then you can save each point as a preset and morph between them.

You can also keep the Elastic String to a minimum and quickly tow the icon around the frequency field on a short leash. When you find a resonant place or sweet spot, the short leash allows you to easily circle around it. Remember to keep your CD recorder going when you work this way, just in case you find something special.

If gradual changes aren't working for you, then you can make the Scale/Shift icon jump immediately to any position in the frequency field by clicking anywhere in the field and moving the cursor slightly. This is a great trick when you have a loop going and you want to radically change its sound to the beat.

COMPARE AND CONTRAST

The Contrast plug-in is a compressor/expander that analyzes your audio input's frequency spectrum. The plug-in's GUI lets you manually determine the comparative amplitude levels of the strongest (the slider marked S), average (the slider marked M for medium), and weakest (the W slider) parts of the spectrum. You can hone in on the frequency area that you want to modify by moving the vertical delimiters around the target spot. Low frequencies are to the left, and high frequencies are to the right (see above). The position of and distance between the horizontal delimiters determine the relative strength of each part of the frequency spectrum.

The Contrast plug-in, from the GRM Tools ST bundle, allows you to pinpoint weak parts of an audio file's frequency spectrum and bring them into the foreground.

Contrast is a great plug-in for mastering-type jobs because you can use it to locate and enhance the weaker parts of the spectrum and bring out lost detail. You can also use it to soften and smooth out edgy and over-the-top aspects of an audio file.

THE SWEET SPOT

Contrast is also a wonderful tool for finding and exploiting resonant elements in a rhythm track or loop. Begin by narrowing the vertical and horizontal delimiters to their extreme positions, as well as maxing out the level of either the weak- or medium-amplitude controls. Next, hold down Shift, click within the vertical band and slowly move your mouse while listening for resonant peaks or interesting rhythmic artifacts. If you find something you like, then save the position of the delimiter bands as a preset by holding down the Command key and clicking on one of the numbered Preset tiles. Repeat this several times until you've built up a bank of presets. Don't forget to move the position and width of the horizontal bands as you work, because their placement is just as important while you are looking for interesting sounds.

Once you have a handful of presets to work with, set the timing slider to a low value so that your presets change quickly, but not quite instantaneously. Now, toggle through your presets in time to the loop so that different aspects of it pop out to the beat. Gradually increase the interpolation time to greater values until the rate of change locks in with the music over large phrase lengths.

RANDOM-NUMBER X

A couple of interesting features added to the native Mac OS X version of GRM Tools ST are the randomizing presets. Preset 15, for example, changes your current settings by 10% in a randomized fashion. This is useful if you're looking for inspiration, but only in small doses. On the other hand, if you're looking for a radical change, preset 16 will randomize your settings completely. ■

Laura Pallanck wishes to thank Ben Chadabe for assistance with this article.

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