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45th GRAMMY AWARDS
PAGE 52

PAGE 54

MIX

features

On the Cover: New York City-based Thirteen/WNET, in conjunction with Tonic, has opened two new post studios, designed by Walters-Storyk Design Group and equipped with AMS Neve Libra digital consoles, Pro Tools 24 and Genelec 5.1 systems. For more, see page 22. **Photo:** Robert Waisch. **Inset:** Steve Jennings.

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Mix ONLINE EXTRAS

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

World Radio History

The Universal Translator

The biggest gamble in Vegas isn't in any casino. This year, I lucked out in the NAB hotel lottery and got a room in the Las Vegas Hilton, next door to the convention action. Now, I can get up a half-hour later and be on the NAB floor in minutes! Actually, it's not so close: To get there, I have to walk through the hotel casino and past the *Star Trek* Experience attraction. Clever...

Speaking of *Star Trek*, I spent a sizable chunk of my life living overseas and speaking foreign languages, so I always wanted the Universal Translator used on the series. Unfortunately, it was little more than a cheap plot device so that Kirk, Spock, Picard, et al., could converse with aliens anywhere in the galaxy. These days, the language translator's almost here—at least in software for your PC, Palm Pilot or BabelFish on the Net—but what this world really needs is a Universal Translator for audio mixes.

Way back when audio was simply stereo or mono, figuring out how your mixes *translated* from your glorious studio monitors to some consumer's horrific playback system was straightforward: Make it sound good on Auratone Cubes or Yamaha NS-10s, and you'd be fairly safe. These days, things aren't so easy: Hopefully, we're mixing surround projects on *decent* monitors, but at the same time, what kind of *indecent* speakers are available for surround reference playbacks? The old standbys for stereo music checks—i.e., headphones, boom boxes, Walkmans, car stereos—are inadequate for 5.1 playbacks. And, if guessing consumer playback gear was tough in stereo, it's damn-near impossible with 5.1 systems.

While we mix on carefully matched monitor *pentas* (the 5.1 term of "pairs"), consumer surround systems rarely have matching transducers, typically with a pair of tower speakers for left/right, a tiny (or tinny) TV-top center speaker and some two-ways left from their old stereo for surrounds. Apartment installations require at least dual 18-inch/1kW powered subwoofers. Outside of the 79 people who have well-crafted home-theater setups, all other consumer surround systems are sold in Costco stores as a $149 complete kit with five 2-inch speakers, a 20-watt (total) 5.1 receiver and a 6x9 subwoofer. (Those old mono car speakers had to go somewhere!)

Sound bleak? It's worse: Today's consumer receivers include silly DSP settings (Concert Hall, Action Movie, Jazz, etc.) to further muck up your mix! However, there is a glimmer of hope. Discovering movie DVD releases as a major source of income—some estimates put the DVD payback as high as 50% of a film's total revenue—major studios are mindful of the home DVD connoisseur. Today, more and more films get DVD remixes for the home environment; Philip De Lancie reports on this growing trend on page 54. In this issue, we also review a couple of new surround monitor controllers. More? New Pro Logic II software for Dolby's 563 encoder enables full 5.1 broadcasts via standard stereo carriers and media, while mini-reference monitors such as Alesis' ProActive 5.1 system could become the new Auratones.

Predicting consumer playback systems is no easier, but surround production shows no signs of slowing down; checking out some new 5.1 tools at this month's NAB could be the best bet in town.

See you there!

George Petersen
Editorial Director

BOOKMARK THIS! Check out the all-new *Mix* Website at www.mixonline.com.

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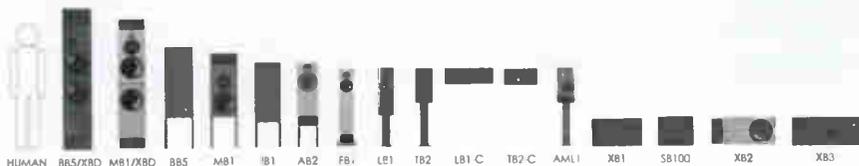
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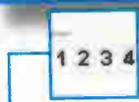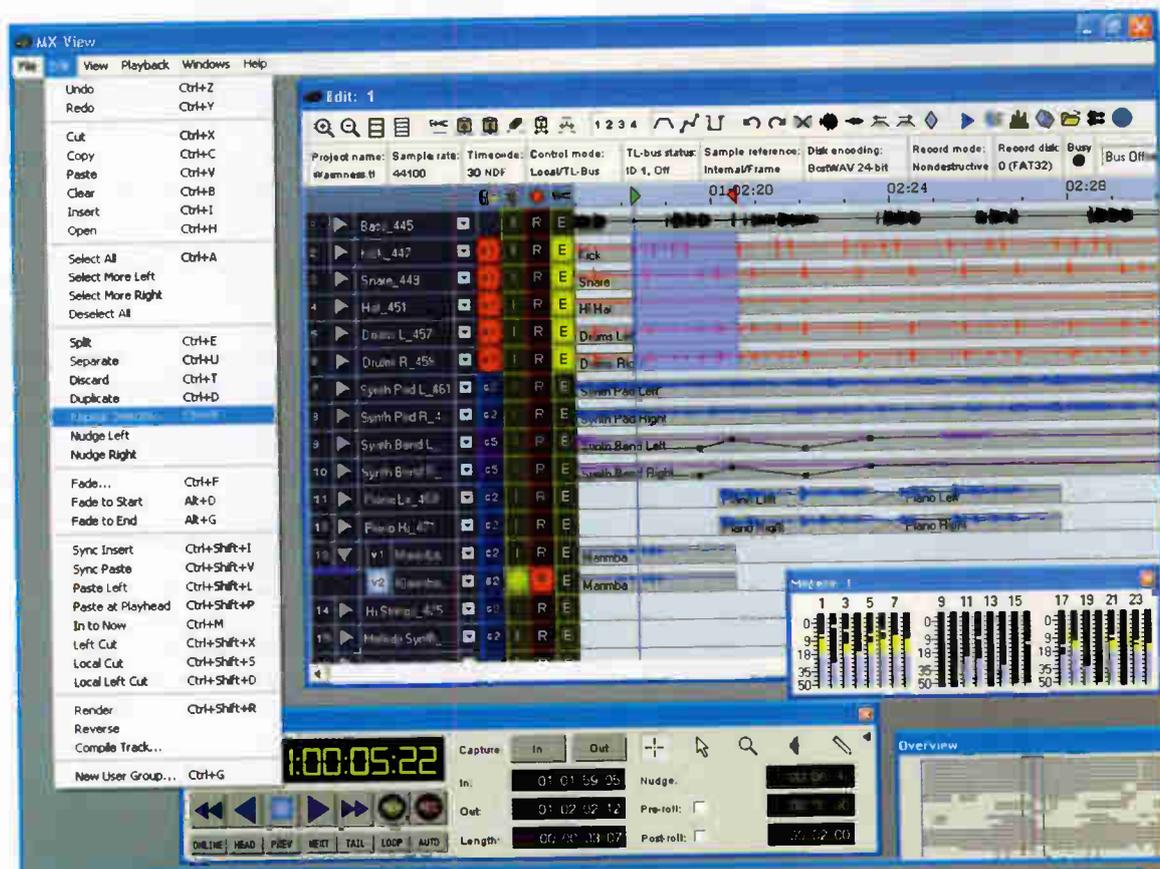
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Allows you to store four separate edits, each in their own clipboard. Convenient for copy/paste creation of song arrangements.

Breakpoint Volume Automation:

Adds automation of track levels without using a mixer.

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Allows you to easily perform edits on groups of individual tracks (such as drums).
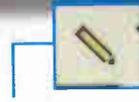
Pencil Tool:

Lets you "draw" clicks and pops out of your audio tracks.

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For performing multiple takes on a single track.

With TASCAM's MX-View, owners of the MX-2424 hard disk recorder now get an incredibly powerful, no-cost solution for sophisticated audio editing on their Mac or PC, directly connected via 100Mb Ethernet. If you're already deep into DAWs like Pro Tools®, Cubase SX™, Logic™ and Nuendo™, the MX-2424 offers the time-stamped audio file compatibility you need to get the job done right. Need more info? It's all available at **www.mx2424.com**.

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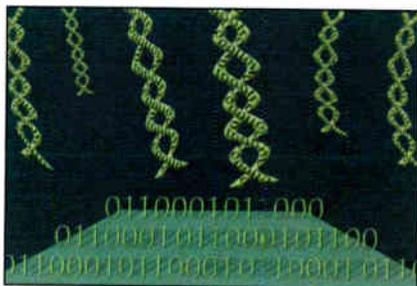
MATH LESSON

I was nappy to see a discussion of fixed-point vs. floating-point math in the February issue, but there seems to be an error in the sidebar on page 92. OMas says there that multiplying by 10 to the power of 1 is the same as multiplying by one. Actually, this is true of multiplying by 10 to the power of zero. As he later implies, multiplying by 10 to the power of 1 moves the decimal one place to the right, because 10 to the power of 1 equals 10. In his second example, 3.1415 should equal 3.1415EE0.

David Pascal
Seattle

DEVIL'S IN THE DETAILS

I would first like to say thank you for the great article on the re-release of the early Stones' catalog on CD/SACD (December 2002). It was very informative and shed some very interesting light on mistakes made with the earlier releases of the catalog. I would like to clarify one thing: Teri Landi noticed that the version of *Let It Bleed* that came out on both vinyl and CD was slightly slower than it should be. This was re-affirmed by Jody Klein when he said, "I remembered that the recording of 'Sympathy for the Devil' had been filmed for the Jean-Luc Godard movie *Sympathy for the Devil*, so we went back to the Nagra tapes, which had to be in sync because they matched the picture."

This is a great way to ensure the proper speed. However, the song "Sympathy for the Devil" was not included on *Let It Bleed* to the best of my knowledge; it was on *Beggars Banquet*. Is it possible that the CD that was slow was not *Let It Bleed*, but indeed *Beggars Banquet*?

D Goettel
New York City

ROCKIN' PNEUMONIA

I can fully identify with Stephen St.Croix's affliction in the February issue's "The Fast Lane." Having caught the Hi-Fi bug in the early '60s at the tender age of 9, I was a full-fledged au-

diophile by 14. Eventually, all of my income and energy were directed toward building and owning the "Ultimate Stereo." My marriage and buying a house put me in remission for a few years, but I relapsed when it came time to put an addition on our living room. The foundation/crawlspace was designed as a massive subwoofer system that was to feed through vents into the new "living room," solely designed to be an acoustical enhancement to my stereo-in-progress at the time. My lovely wife always pointed out to her friends that "My husband is an audiophile." Well, those days are gone; I'm in AA (Audiophiles Anonymous), and my ex-wife is in Aud-Anon. She's got the house and the stereo, and I'm expecting to see her at my AA meetings soon. Like Stephen says, there's no escape. Once you hear good sound, you're hooked.

Gotta answer the door. Might be my new 18-inch powered subs.

Frank Cerny, owner
Precision Audio Devices Ltd.

IT'S MY GUITAR...

I felt compelled to respond to the January "The Fast Lane" column by Stephen St.Croix. St.Croix always manages to confuse, delight and inform me, but this month's installment was a real puzzler. On the one hand, I agree and appreciate that musicianship, craftsmanship and soul are all too rare. Technology has certainly made it easier for people to become lazy about honing their skills. *Mix* can share part of the blame for doing in-depth articles about producers and engineers who were involved with artists who are currently the rage, but totally lack substance.

So I am in complete agreement: Learn one instrument and learn it well. Except for the other hand. I run a tiny project studio. I use technology every day to help me make the best tracks I can for my clients. In part, it helps make up for the lack of time and money that separate industry projects from indie projects. In addition to engineering for clients, I am also a musician. I play several instruments, most of them poorly. (Okay, all of them poorly.) This stems in part from the needs of owning a project studio: "Do you have a bass I can use?" "We could use a piano part here; do you have any ideas?" In order to get the best recording of an instrument, you have to have some idea of how it works, don't you?

I don't have delusions about being a rock star. I know that I will always be one of the millions of obscure and mostly lousy musicians

who pollute our musical landscape, but I do have a passion for the rotten songs that I write, and I give my crappy performances all I've got. I know that if I play guitar for the rest of my life, I will never rival Les Paul. It's not that I don't try; it's just not in me. It's not in most musicians; otherwise, Les Paul would not stand out.

Sir George Martin once said something similar in a *Mix* interview; in effect, that people like me shouldn't bother. In my heart I know he's right. I also know that he was lucky to be part of one of those rare occurrences when the right performers also happen to be the right songwriters, right musicians and work with the right producer. Most of us will never be that lucky. Does that mean we should quit? It would be hard on the entire industry if we did. People like me are the bread-and-butter of the equipment manufacturers, music publications and instrument retailers.

So now I don't have a clue if wasting my time is the right thing to do or not. St.Croix wrote a compelling column that both fills me with hope, because he acknowledges that something is missing in today's music, and despair, because I doubt my ability to improve the situation. At least he's got me thinking.

Todd Zimmerman
Studio 139

...AND I'LL PLAY IF I WANT TO

I have to call foul on St. Croix's column in *Mix* ("Lest We Forget," January 2003). He spends the first 12 paragraphs of his article describing all of the incredible, intelligent, meaningful things he's done in his life. (Many of them were, of course, to make our miserable little existences a bit more enjoyable.) And then tells us that the point he's trying to make is that we should not play more than one instrument until we've mastered the first one. Does his ego have no limits? While he does say, "Do as I say, not as I do," what he really means is that we're not bright enough or enlightened enough to handle it (as he obviously is). And he writes it in the same patronizing way as just about everything else he writes. I'll play as many instruments as I choose without a care in the world as to what St.Croix thinks.

Jeremy Santos
Huntingdon, Pa.

World Radio History

EDWARD GERMANO, 1942-2003

Edward Germano, owner of the Hit Factory recording complex in New York and Miami, died February 6 in New York following a long illness.

A colorful figure who prided himself on his relationships with his artist clients, Germano was one of the pioneers of the modern studio industry—a trend-setter who built the most lavish and uncompromising rooms in the world.

"He turned the recording studio side of the business into a real industry," said Troy Germano, Ed's son, and CEO of the Hit Factory. "He made something that had been a hobby into a real business. That legacy will live on."

Troy Germano attributes his father's success in part to his sensitivity to the artistic process.

"He really knew what it was like to offer the right kind of creative environment when people came into the studio," he said. "That goes back to his being a singer and a producer."

Ed Germano's career in the music business began in 1961, when he made the rounds in the New York circuit as a singer who had brief contracts with RCA, Decca and ABC Dunhill. He soon migrated to the production side and, in 1970, joined RCA as a staff producer/ A&R.

In the early '70s, he helped negotiate a buyout of the Record Plant from Warner Seven Arts and joined the studio as one of its 17 partners. Then, on March 6, 1975, he purchased the Hit Factory from original owner Jerry Ragavoy.

Under Ragavoy, the Hit Factory enjoyed major credits and a reputation for sonic excellence. However, Germano elevated the studio to a multiroom power-house on an unprecedented scale.

Germano's first client as the owner of the Hit Factory was Stevie Wonder, who initially booked a three-day session but stayed for nine months and recorded his magnum opus, *Songs in the Key of Life*. The studio's streak continued through the late '70s and '80s, with credits such as John Lennon & Yoko Ono's *Double Fantasy*, the Rolling Stones' *Emotional Rescue*, Bruce Springsteen's *Born in the U.S.A.* and Paul Simon's *Graceland*.

In 1989, the Germano family entered into a joint venture with Sony to form the Hit Factory London, which operated until 1993. Also in 1993, the Hit Factory opened a 100,000-square-foot recording complex at 421 West 54th St., which became its flagship location. (Recently, the studio consolidated all of its New York operations in the building, which the Germanos own.)

In 1999, the Hit Factory made news by purchasing the storied Criteria Recording Studios in Miami. The Hit Factory retained most of the staff and the vintage flavor of the Miami rooms, but undertook a remodeling that brought the facility in-line, technologically and design-wise, with the company's New York rooms.

Commenting on his father's uncompromising commitment to quality, Troy says, "Nothing was ever the best; it could always be made better."

Ed Germano is survived by his wife, Janice; his son, Troy, and daughter, Danielle; and two grandchildren: Jacob and Nicolas.

—Paul Verna

TODD-AO REVAMPS POST STAGES

Pictured in the new Stage 3 at Todd-AO West are, from left, Bill Johnston, Todd-AO senior VP of engineering; Visioneering's Ron Lagerlof; and Dan Shimioei, Todd-AO chief digital systems engineer.

Todd-AO (Los Angeles) has completely renovated its two identical stages at the Burbank and Santa Monica media centers. Pro Tools/Focusrite Control 24s replaced the Neve VR in Burbank's Stage D and the Otari Premiere in the Todd-AO West Stage 3. Each room has four Control 24s that drive five Pro Tools|HD systems with Otari PicMix, Martinsound MultiMax and MIDI control. Ron Lagerlof's Visioneering Design Co. provided the two stages' integration packages.

MIX FOUNDATION UPDATES WEBSITE

The TEC Awards recently updated its Website and changed the Web address to www.mixfoundation.org. Complete information about the Mix Foundation for Excellence in Audio and the TEC Awards (including a database of past nominees and winners), as well as the organizations supported by the Foundation's activities, can now be accessed quickly from the site.

DATE SET FOR MIX L.A. OPEN

The Eighth Annual Mix L.A. Open, sponsored by the Mix Foundation, is scheduled for Monday, June 9, 2003, at the Malibu Country Club. Along with the contest holes, the tournament will once again feature a special Hole-in-One contest with the winner driving away with a two-year lease on a BMW Z4 roadster. Space is limited, so make your reservations early. For information about sponsorships or entry fees, visit the new Website or contact Karen Dunn at 925/939-6149.

COMPILED BY SARAH BENZULY

PEAVEY—A HIGHWAY MAN
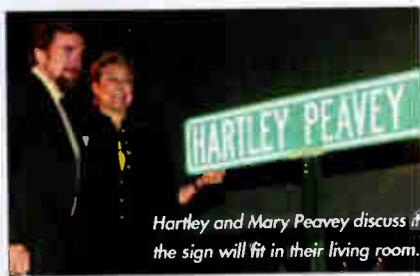
Hartley and Mary Peavey discuss if the sign will fit in their living room.

Meridian, Miss., has renamed a portion of Mississippi Highway 493 to be Hartley Peavey Drive in honor of the founder and CEO of Peavey Electronics. The new Hartley Peavey Drive runs in front of Peavey International headquarters. Mayor John Robert Smith paid tribute to the company's contributions to Meridian and Lauderdale County: "Thousands of our residents depend on Peavey Electronics for their livelihood, education and future."Take a drive-by at www.peavey.com/news/hartleydr.cfm.

ROURKETOWN STUDIOS HOSTS FLETCHER

Chris Pelonis-designed Rourketown Studios (Northridge, Calif.) recently hosted Fletcher vocalist John Bennett, who was in working on his *Demonstrations of False Momentum* release. Studio owner Jeff O'Rourke handled producing and engineering duties. Recording was done direct-to-hard

Inside Rourketown are Fletcher manager Tommy Hughes (left), John Bennett (center) and Jeff O'Rourke.

disk using Pro Tools|HD at 48 and 96k with ProControl. Mics included models from Soundelux, Neumann FETs, Audio-Technica and AKG.

THIS IS ME BEHIND THE BOARD

Independent producer/engineer Bruce Swedien recently stopped in at Hit Factory New York and Philadelphia-based The Studio to work with recording artist and actress Jennifer Lopez on her latest Epic release, *This Is Me…Then*.Grammy Award-winning Swedien said, "What attracted me to Jennifer's album project is, first of all, I love the sound of her voice, but equally important is that I heard that she is not afraid to work hard on a

Don't make Ben mad: Jennifer Lopez embracing Bruce Swedien during a break at Philadelphia's The Studio.

project. With that kind of commitment from an artist, I felt that I could help take Jennifer to a new level of musical and sonic excellence."

Swedien shipped his personal set of Studio Traps from the Hit Factory to the Philly Studio, because, "Jennifer fell in love with the vocal sound space inside the Quick Sound Field of my StudioTraps. She insisted that I use them again."

ON THE MOVE

Who: Matt Ward, president of Universal Audio

Main Responsibilities: Oversee all aspects of the company's business

Previous Lives:
- FluxNetwork, July 2000-June 2001
- Liquid Audio, November 1998-June 2000
- E-mu Systems, August 1994-October 1998
- Otari, 1992-1994
- Studer, 1989-1992
- Audio Images, 1985-1989
- Leo's Pro Audio, 1980-1985

The one profession that I would like to try is…Successful author—I'd like to see if it is more fun than begin an unsuccessful author. (*Eds.' note: Ward published a novel titled* Blackout.)

If I could have been a fly on the wall for a recording session, it would have been…When Henry Kaiser and David Lindley flew to Madagascar and recorded *A World out of Time* with a bunch of great musicians who had never been recorded before. I would have loved to see those amazing musicians respond to hearing themselves recorded.

If I could impart advice to people entering the industry, it would be…Do it for love, because you're not going to get rich.

Currently in my CD changer: Peter Gabriel's *Up*, Patty Griffin's *1000 Kisses*, Was Not Was' *What Up Dog?*, Dixie Chicks' *Home* and Everything but the Girl's *Temperamental*.

When I'm not in the office, I'm usually…playing with my sons, Jake and Carl, or falling off my motorcross bike.

LA AUDIO JOINS AUDIENT

Audient plc and LA Audio have merged their operations under the Audient name. The merger is expected to be completed by June, when Audient assumes LA Audio's production and product development. LA Audio principals Steve Buchanan and Jean-Claude Lecocq will relocate to join the rest of the Audient team; a joint sales and marketing team was also created, headed up by

The new Audient/LA Audio crew.

Luke Baldry, director of sales and marketing. Joining his team are Anne Liversidge (marketing) and Neil Saunders (operations). Julian Blythe, owner of the LA Audio brand, joins Audient's board.

B1 GOES B5.1

Design and production studio B1 (Burbank, Calif.) has added a 5.1-capable suite for sound design, mixing and mastering clients, as well as for its core projects: DVDs. Working as facility manager is newly added sound designer/mixer Phillip A. Kovats.

The new room features a Pro Tools|HD system with Version 5.3.1 software and Avid A/V Option XL Digital Video System; the 5.1 system features Blue Sky System 5.1 monitored by the Tascam DS-M7.1. Video playback is handled by a 42-inch plasma monitor.

RICHIE MOORE, 1948-2003

THE "DOCTOR" WAS AN EARLY *MIX* COLUMNIST

The audio world lost another great one on February 16, when Richard "Dr. Richie" Moore died in his Orcas Island, Wash., home at the age of 55. A fixture on the Bay Area recording scene for much of his distinguished career, Moore was an engineer, studio designer, educator and writer; indeed, he was a regular contributor to *Mix* during our formative days, writing a column called "Sound Advice."

According to David Schwartz, *Mix*'s co-founder and original editor, "Dr. Richie Moore made an important contribution to the spirit and substance of *Mix* in its early years. He brought a sweet and loving consciousness to his mastery of studio technology, which he passed along generously to *Mix* readers. Richie's early columns were notable for his original approach to audio problem-solving and creative tenacity in the face of challenges. Richie was respected as a top-caliber studio engineer, having worked with some of the most important and popular artists of the '60s and '70s. His many contributions to professional audio will be long remembered and his presence sorely missed."

Moore's list of credits includes the Beach Boys, Led Zeppelin, the Rolling Stones, Eric Clapton, Huey Lewis & The News, Country Joe McDonald, Tom Waits, Cold Blood, the Neville Brothers, Pablo Cruise and many others. Later in his career, he became more involved in studio design and room tuning: Dr. Richie tweaked many a control room up and down the West Coast and beyond. During the past three years, he served as technical director for the Children's Discovery Center of Orcas Island. He leaves behind a wife, Annie, and daughter Daphne.

—*Blair Jackson*

FROM THE CREATIVE SOUND FILES

Senior audio engineer Holly McEllroy (pictured) and Creative Sound Studios (Orefield, Pa.) owner Helena Schwoyer have been doing audio post for *Forensic Files*, which begins its fifth season on CourtTV. The show is mixed and encoded in Dolby Pro Logic Surround using Digidesign's Pro Tools 5.1 24|MIXPlus. Creative Sound handles cleanup, Foley, sound effects and final surround mix of the show; their work has been acknowledged with a certification from Dolby. Visit Creative Sound Studios online at www.creativesoundstudios.com.

Industry News

Eric Anderson of Apple Computer has been elected the 1394 Trade Association's (Dallas) chairman; Max Bassler of Molex is vice chair...Arie van den Broek has resigned from his post as Behringer (Willich, Germany) CEO. Filling his shoes is Michael Deeb...Coinciding with the news that TC Group has combined the TC Electronic (Westlake Village, CA) and TC Works brand names, John Maier has been appointed to TC Electronic's newly created VP of sales for North America. Also part of the TC Electronic restructuring are Ed Simeone, board of directors and president, and Dave DeLeon, live/install market manager...New promotions at Sony Pictures Entertainment (Culver City, CA) post-production facilities: Richard Branca, executive VP of sound, video and projection operations; Tom McCarthy, executive VP of theatrical and television sound editorial; and Mark Koffman, senior VP of engineering... Andy Trott heads up the Soundcraft Group (Hertfordshire, England) as the new managing director...Overseeing all business, sales and distribution operations for Megatrax Production Music (North Hollywood), Benjamin Trust fills the newly created general manager position... David Moulton, owner of Moulton Laboratories (Groton, MA), joined the New England Institute of Art & Communications' (Brookline, MA) board of trustees...Continually expanding, Fluid (New York City) added multi-award-winning composer Andy Mendelson to its roster.

Michael Deeb

Andy Trott

DONALD L. KLIEWER, 1937-2003

Donald L. Kliewer, 66, died on January 9. Kliewer, who holds more than 30 U.S. patents for acoustical products, began his career at Telex Corporation, working on headphone design, specializing in plastics and acoustical products. His acoustical expertise included loudspeaker enclosures, electrostatic transducers, crossovers, etc. He worked with loudspeaker companies E-V, JVL, Altec, Sound Tube and Koss Electronics.

During the past decade, Kliewer started his own manufacturing business, Winslow Industries, an OEM manufacturer of crossovers for specialty loudspeaker manufacturers.

GENTLEMEN PREFER *platinum*

World Radio History

RETAIL COMPANIES FORGE ALLIANCE

Best Buy, Hastings Entertainment, Tower Records, Trans World Entertainment, Virgin Entertainment and Wherehouse Music have banded together to become the industry's first retailer-driven digital music consortium, dubbed Echo (www.echo.com).

Created through an investment by Los Angeles-based Echo, the group plans on obtaining licenses from the majors so that the independent retailers can legally deliver digital music products and services through individually created or Echo co-branded offerings. Participating companies will be able to build on their in-store marketing experience, distribution capability and existing trade relationships with content owners.

Find out more at www.echo.com.

Dan Hart, Echo CEO

WAL-MART BUYS LIQUID AUDIO

liquid audio Wal-Mart has agreed to purchase some of Liquid Audio's assets. Anderson Merchandisers, a privately owned company and magazine wholesaler, is buying Liquid's technology and other assets for an undisclosed sum. The new unnamed company will be run by Liquid founder Gerry Kearby, who told *The New York Times* that the company had licenses to distribute over 350,000 songs. (The company has relationships with all of the majors.) According to the *Times* report, Anderson hopes to distribute music downloads through retailers' Websites, including Wal-Mart, though no deal has been worked out.

SPEEDY DELIVERY OF AMERICAN IDOL

Fox Broadcasting has chosen Speedera Networks Inc. for its SpeedSuite (pictured), an on-demand streaming, content delivery and analytical service. The online counterpart to the TV version of *American Idol*, it can be viewed at www.idolonfox.com. Speedera's content-delivery network is distributing the streamed content using Windows Media 9 Series.
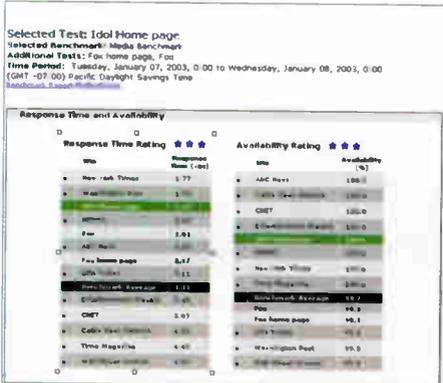
CORRECTIONS

In this year's *Mix Master Directory*, Night Sky Production's phone number was printed incorrectly; it should read 212/779-MIDI.

In "It All Starts With Guitar" (February 2003), the studio name is Studio 58A, not 52A. Also that month, the Soundelux E47 Tube Condenser Mic "Field Test" ran the incorrect band name; the correct name is Goldigger.

The February "Virtual Instrument Plug-Ins" feature incorrectly stated that Ilio Entertainments develops Spectrasonics' plug-ins. It also incorrectly stated that Big Fish Audio develops Plugsound products, which are developed by Ultimate Sound Bank. Ilio is the North American distributor of Spectrasonics' Virtual Instruments. Spectrasonics' products were incorrectly described as being based on the Plugsound engine. Both the Spectasonics and Plugsound virtual instruments are based on the UVI engine developed by Ultimate Sound Bank in France. *Mix* regrets the errors.

Send your "Current" news to SARAH BENZULY at sbenzuly@primediabusiness.com.

World Radio History

WNET/thirteen

by Tom Kenny

Production for public television. It brings forth images of dingy rooms with frayed carpet and exposed wires, perhaps a leftover radio studio, where somehow a stellar production comes out because the dedication to the art of sound surpasses all of the budget limitations. No more.

In a unique public/private arrangement, WNET/13 of New York City, producer of nearly 35% of the original programming on the PBS network, and Tonic, a post-production facility headed up by composer/sound designer Peter Fish, have partnered up to offer the best of nonprofit content and commercial enterprise. WNET/13 is the primary client in the facility, bringing in roughly 70% of the work. The other 30% is taken up by a combination of long-form TV, promos and a smattering of music dates brought into the mix by Tonic. Consequently, the audio suites must handle live broadcast, high-end post, music, special events and just about anything audio.

"There are the pure music rooms of the world," Fish says, "the Hit Factorys and the Right Tracks. They've done it, and I respect them. But then there's this room, which is both a great post room and a 'Music Room 1A.' The only real difference is the mindset of the engineer. It's a far superior room for post, and whatever sacrifices the room might make for music—piece by piece— we can sure turn out a damn good-sounding record."

Central to that philosophy of being all things to all clients is the selection of console and the surround monitoring environment. Fish, an early adopter of Euphonix technology, maintains a System 5 at Tonic East for ad agency clients, but went with the AMS Neve Libra for WNET.

"About three to four weeks a year, WNET/13 takes over Studio A [the mirror image of Studio B, on the cover] and does their live pledge event," Fish explains. "So when I was at NAB three years ago putting these rooms together, I was looking for a console I could trust that had the redundancy and features of a live broadcast console and could do post, as well. There was only one I had confidence in where if a bucket went down in the middle of a show, another bucket could be plugged in with-

Tonic composer/principal Peter Fish, left, and WNET/13 VP and chief technology officer Ken Devine

out power going down. I'm a fan of a lot of consoles, but there was only one at the time that did that."

The two main rooms are identical in their makeup, with Libra boards, Pro Tools and a relatively unique Genelec 5.1 monitoring system where the rears rise up out of the producer's desk when needed (ghosted on the cover image). That makeup is central to Fish's mandate that engineers be able to move from one environment to another on demand. Studios A and B share a live recording space, and they are both tielined to WNET's two soundstages (each with 48 mic inputs to the control rooms), as is a ProControl/Pro Tools MIDI edit suite. Each room holds a DigiBeta and D2 machine. Every other video option comes off of the 128x128 Grass Valley router.

Fish says that not a day has gone by this year when there hasn't been some sort of 5.1 work going on at WNET/13 or at Tonic's East Side location. "We have a mantra here at Tonic, and that's, 'Stereo is the new mono,'" Fish says. "We are aggressively pushing the surround market from the back end, and broadcast clients are buying into it because of the DVD after-market. The West Coast is still way ahead of the East Coast, but we're trying to push it."

"Surround rooms can be divided into two categories," says facility designer John Storyk, whose partner, Beth Walters, designed the interior finishes. "There are special-purpose rooms, such as DVD authoring suites, audio mastering rooms, gaming industry environments, etc., that typically are trying to adhere to stricter speaker placement configurations. These are often—not always—larger rooms with minimum console and equipment requirements. The other type is for those people who need to continue to be in the music or commercial audio post business. Larger consoles, more equipment, a producer's desk for clients, keyboard rigs, and it must handle 5.1. In the WNET/13 audio suite, we had two things that needed to be in the same place but, luckily, not at the same time, which is why we came up with the 'rising monitor' scheme coming up out of the desk. We tried ceilings, walls, but this seemed to work the best.

"The other creative challenge here was that we had to rotate the room with respect to its orientation in the building column grid," he continues, "about 15 degrees off that axis. This allowed us to make the space wider and deeper as well as create symmetrical glass on both sides of the room's acoustic center line. This approach gave us excellent line of sight to both talent and machine room, while maximizing the space we were given. Finally, the lower circular ceiling cloud allowed us to install active low-frequency absorbers to correct for low-frequency build-up." ∎

Tom Kenny is the editor of Mix.

BY STEPHEN ST.CROIX

And Now...

For Something Completely Different

Ladies and gentlemen, I wish to take this opportunity to offer you a unique, one-time chance to get in touch, get back or even get even. Get down, get funky. Get crazy. Get serious. Get this...

For the very first time—and the very last time—I am asking all of you to reach out and talk to me directly. (Well, not talk exactly; more like e-mail.) For free.

Try to view this not as a case of an egomaniac gone wild or as a lonely hermit out on a mountaintop longing for contact with his fellow man. If you look at it either of these ways, then nobody is going to get anything out of this.

Picture, instead, a man, a simple writer, sitting by the fireplace in a house surrounded by snow in the deep woods of Maryland, wondering about his readers, his feet pleasantly warmed by a roaring fire and his lap painfully warmed by the blazing heat from a 15-inch slab of nearly melted titanium Macintosh laptop/workstation/toaster. Yes, it's *negative 10°* outside right now, and even I can't see firing up the Harley for a romp in the salt today—even to go to the office to see if my new 17-inch Apple Burner/serving tray has arrived.

So, dear readers and your immediate families, please write me directly at stephenstcroix@hotmail .com. This account is set up for this one event, and all mail will go directly to me—not through *Mix*. All e-mails will remain confidential, unless they contain anything cool enough to show my friends or bad enough for me to strike preemptively.

So tell me what you like, what you don't like. Tell me when I've hit it or when you've wanted to hit me. What made you smile, what was a pile. What do you want to read in the future? Old friends, get back in touch; old enemies, go back to hell.

Maybe you thought I was too hard on TDK for making all those lousy CD-Rs that self-erased over the weekend, or maybe you thought I was too forgiving. Maybe you simply got arrested for playing a CD player on an airplane and want to share while you wait for parole. Or perhaps you disagree with my positions on artificial pitch correction or on actually learning to play an instrument. My own brother called me last week and told me he was in a session where he had just finished a track with one instrument and was taking a break before laying down a track with another type of stringed thing when he saw that January '03 column, got spooked and changed his mind. The sad thing is that he is actually quite good on several weird strung *objets d'noise*. The even more sad thing is that

last night I heard the song, and my first thought was, "Very nice, but I really feel a hole where that Sarod should have been."

And you ex-relationships, say hi and bring me up to speed. No, not *you* (and *you know who you are*, though you certainly did dress the part and I have decided to use your real name in my book). But everyone else...

This is an important detail: This offer is good for this month only. And note, as well, that this paragraph already has the word "this" in it five times, with the sixth and seventh ones coming up. In 30 days, this e-

> If you send a demo, I will find you and ask a couple of the boys from the local chapter to pay you a visit. I will not listen to the demo, nor will I read the e-mail.

mail address will self-destruct and never be reactivated. This is not a joke.

So speak now or forever hold your peace. And in deciding whether or not to speak up, keep in mind that I may well continue to speak for some time, and as many of you know, I do not respond to the normal reader mail that goes to *Mix*.

Oh, wait. There are a few rules: Nothing arbitrary or too annoying, just a few things that have to be in order to make this work. You see, *I actually plan to read every e-mail*. Now if three of you write, that won't take me too long, but if 30,000 of you do, it is going to be a considerable undertaking for me to read each one.

Rule 1. No enclosures over 100k. You can see how things could get out of hand real fast if you all send me 5-gig movies of yourself jumping a Harley over your 128-track studio. You can send pictures, but make sure they are under 100k.

Rule 2. No freakin' demos. If you send a demo, I will find you and ask a couple of the boys from the local chapter to pay you a visit. I will not listen to the demo, nor will I read the e-mail.

Rule 3. Please do not expect personal answers to every question asked. I hope that you can see how this could easily become impossible. I will answer the first 100 reasonable, rational and answerable e-mails.

Roland
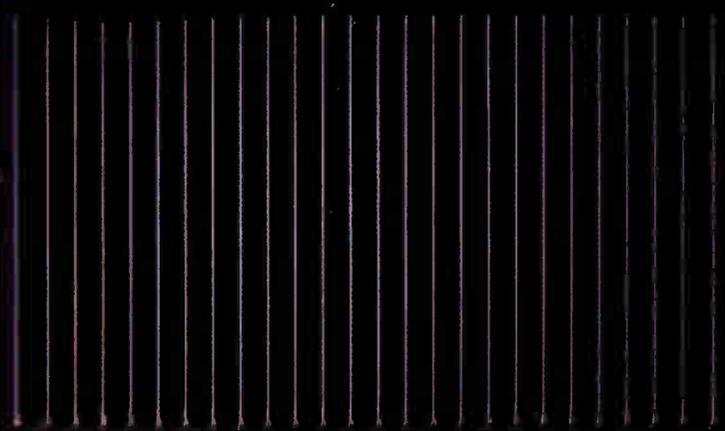
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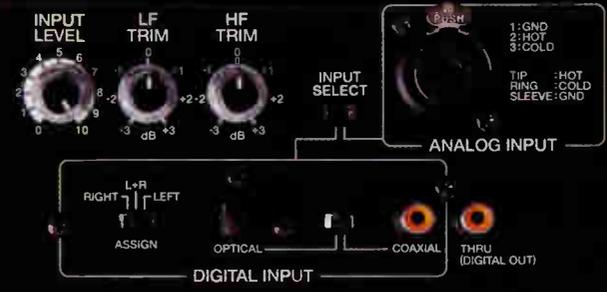
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After that, I will respond to as many as I can before this whole thing drives me to some horrible self-destructive act, like bringing my biker buds over to watch *Priscilla*.

If you have a simple question like, "Didn't I see you playing harmonica with The Band With No Name at the Outrigger Yacht Club a decade ago?" or, "What was that weird sound on Stevie's vocal in *Songs in the Key of Life*?", I will probably answer—mostly determined by whether or not I know the answer. If you pose an interesting question or request, it may well become the foundation for a future column, and this whole experiment will end up sort of a weird semi-detached request line.

I offer the following preemptive answers in the interest of saving some of your time: Yes, that was me. No way, that was some other guy. I have heard that there is somebody running around who looks so much like me that he has actually fooled a couple studio and hotel receptionists. I was medicated that day. I was in the Islands that entire month; it could not have been me. Who knew a laser could do *that*? And last,

yeah, Seattle laws are pretty strange: Who knew it's fine to carry a concealed weapon but *that* was illegal. Well, now I know.

And, please understand that I can't respond individually to requests for Time Modulator schematics or advice on reducing that wicked buzz in your monitors when you dim these 20 overhead lights in the control room. But, if 500 of you ask about the same sort of thing, it may result in a column.

Rule 4. Please label all threats as such in the title, so that I may group them into one big folder and read them on days when they best fit my mood.

Rule 5. E-mails from anonymous addresses will be summarily trashed by several technical tools before I ever see them. Don't bother.

Rule 6. No ads, no hype, no press releases. I choose what I write about based on what I think is cool and helpful, not on what is sent to me.

So, take a moment and drop me a line. Let me see your studio, your bike, your beach chair. Tell me how my advice totally ruined your entire career and left your studio a glowing pile of ash and

spent carbon rods with a half-life of 6,000 years.

Or maybe tell me about that time when you were so sick you thought you were gonna die and you read my column while waiting for the Reaper, and I said something so outrageous, so fundamentally incorrect, that you jumped up and screamed in rage, thereby dislodging a cocktail weenie that had been partially blocking your lungs for five weeks while sapping your strength and will to live.

Or that time that you finally met the girl of your dreams and brought her into your studio to impress her, but she saw a copy of *Mix* on the table and ran out of the building screaming and changed her number, and you have never been able to find her again. By the way, she would be the one who knows who she is…

Tell me what I have done to you and what I can do for you in the future. And remember, I will *never* make this offer again. ■

SSC awaits your e-mails with bated breath. Well, he is waiting, though he is probably breathing more or less normally.
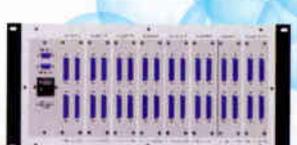
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audio-technica.

BY PAUL D. LEHRMAN

Posting and Beaming Into the Future

Grumpmeier Builds His Dream Studio
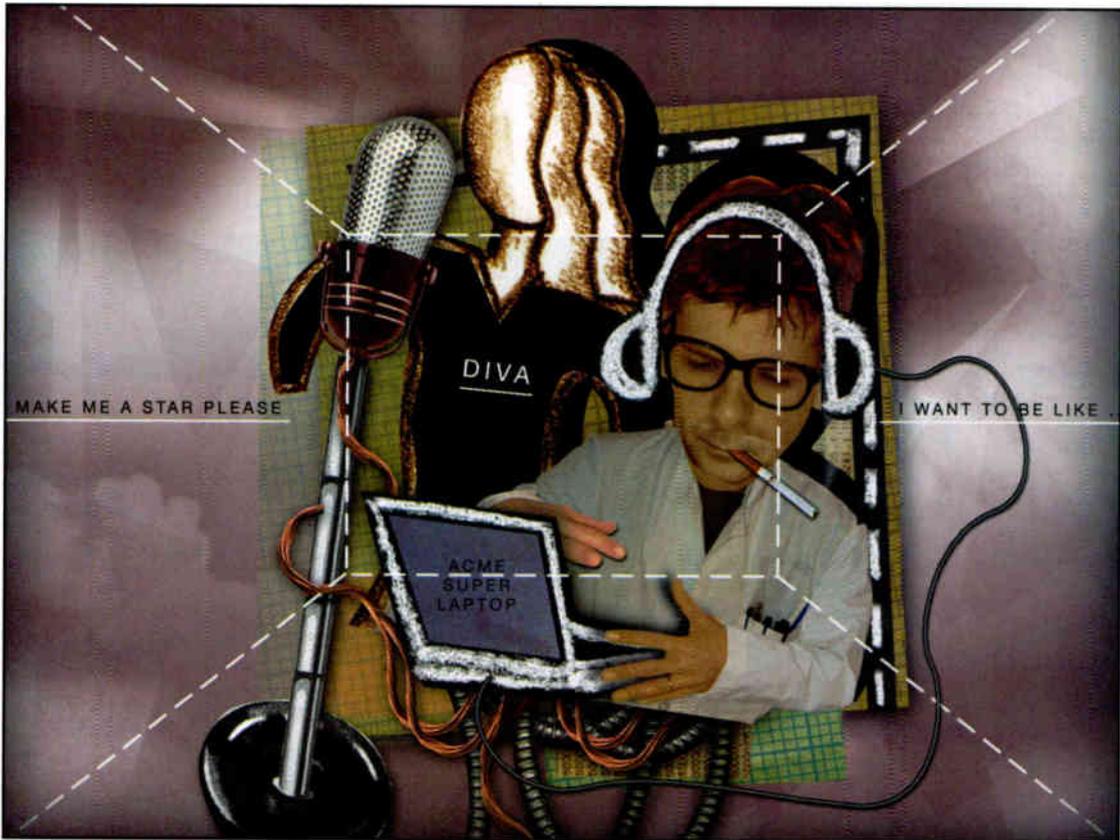
ILLUSTRATION: LARRY GOODE

"Welcome to the GSPoT!" the kid grinned at me. "Mr. Grumpmeier told us you were coming. We're really happy you're going to write about us in *Mix* magazine. Around here, you know, we don't only look at the pictures, we sometimes even read it!"

Well that's nice, I thought, and smiled back at the young assistant. His purple hair matched the plush, yet hideous, heavy-duty indoor/outdoor carpeting that ran on for what seemed like miles, under which you could still smell the glue drying. I was amazed by how fast this place had gone up. Four recording rooms, three control rooms, a post suite, a screening room, a CD/DVD duping operation, a tape-baking kitchen, a sushi bar and a Starbucks were now occupying what had just a few months ago been the tire and automotive section of a busy department store.

"There you are." Grumpmeier came out of a doorway, giving me a hale-fellow-well-met grimace that was the closest he could ever come to a smile. "You found us!" "It wasn't hard," I replied. "The Big Red K in the parking lot helped a lot. But tell me again what you call this place."

"The GSPoT!" he said triumphantly. "Stands for 'Grumpmeier Studios Post and Transformation.' I figured that would get people in here faster than if I named it after some drink or the godforsaken part of town we're in. But you can't beat the rent. That discount chain's stuck with a 30-year-lease that they can't get out of, and with the commercial real estate market in the dumper, they were desperate."

"So you got a good deal on the rent?"

"No, we got *no* rent. All we gotta do is pay the utility bills so the pipes don't freeze and the landlord doesn't sue them. 'Course, I'm working on getting out of that, too." It's comforting to know that no matter how successful my friend Grumpmeier gets, he'll always be the same cheap S.O.B. who once tried to sell me a Mac SE for Pro Tools, saying it was better than a new one because of its "vintage sound."

"So, show me around," I said, pulling out my notepad. "This is quite a step up from the place you used to have in your basement. And that fallout shelter in the yard your kid was using for a while. What have you got here, like nine rooms?" "More or less," he waved his hands vaguely. "We're constantly chang-

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ing things, so it's hard to say exactly. But I'll tell you all about that later. Right now, I want to show you some of these really cool new products I've discovered." Grump loves to go to trade shows that no one else seems to know or care about, like the Kirghizstan Broadcast Union and Winter Wheat Farmers Fair, and has been known to come home with some pretty strange stuff.

"I found this really tiny company in Colombia called Morningside Hockwerks," he said as he opened the door to a control room that bore a striking resemblance to the main room in the old Power Station. "They've taken a vocal processor and a reverb simulator and combined them into what they call a 'Vimulator.' They give you this whole library of FIR analyses of the nose, throat and chest cavities of famous singers who are retired, or should be, like Grace Slick, Diana Ross and Tony Orlando. Then you can apply those algorithms to any vocal track, and they'll come out sounding like the model. In tune, out of tune, tight or sloppy, dynamic or condenser mic, whatever you like."

"But don't those singers object? I mean,

> This was deviousness
> beyond even what
> I thought Grumpmeier was
> capable of. But,
> it turned out, I hadn't
> seen anything yet.

didn't Bette Midler win a lawsuit against some 'soundalike'?"

"Yeah, well, Bette's not in here. And neither is Springsteen, nor Tom Waits, but if you take Louis Armstrong and turn up the 'smoke' parameter, you can get pretty close. The company pays royalties to all the singers they model, and most of those folks are happy to get them. See this thing that looks like a parking meter? You drop a quarter in there and you can use any of their models for 15 minutes. At the end of the day, someone from the RIAA comes by and empties it.

"But it isn't just for that. They also

throw in a set of nasal and esophageal probes, which you use to make your own models. Of course, if you've got some kid who wants to sound like Eminem or Snoop Dogg, you have to get special probes that go into different body cavities. And there's beginning to be a big underground market—literally—for models of singers who aren't with us anymore. Hey, want to hear me sound like Jim Morrison? *This is the end…*"

"Uh, no, that's fine. I'll take your word for it." I cut him off. "But that doesn't sound like something a lot of clients will use. I mean, besides Harry Connick, how many Frank Sinatra wannabes are out there?"

"Oh, no, there's tons of ways we can make money with this sucker. The government keeps us real busy. We have profiles for a lot of political types in the can, and whenever one of them says something really idiotic, they send us the videotape. We bring in an actor to redo the voice and replace the dumb stuff with something more innocuous. Do you know how many ways there are to mispronounce the word 'nuclear'? Since our audio quality's usually much better than

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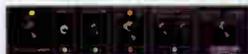
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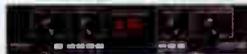
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Digital Consoles 2003

NEW FEATURES, NEW BOARDS

2003

BY RANDY ALBERTS

n alternate headline to this article might've read "Old Dogs Learn New Tricks," but calling a 24-month-old digital console "old" just didn't feel right. Legacy mixers and brand-new releases alike made significant strides in the past year thanks to numerous operating system upgrades, new add-on options and the ever-expanding power of silicon processing chips in general. So maybe "New Dogs Join the Digital Mix Team" would be more appropriate.

Costing from under two grand to over a quarter-million dollars, one of the following digital mix consoles with live and/or recording applications is sure to grab your interest. Mix queried 35 digital console manufacturers about their new mixers and existing boards that have been significantly upgraded over the past year, and here's what we found.

AMS Neve (www.ams-neve.com) announced the U.S. release of Logic MMC, the latest successor to the company's classic Logic 2 digital console, at last April's NAB show. Designed for post, music, film and DVD production, the new Logic MMC adds up to 96kHz capability, a new suite of hardware I/O options, the fourth-generation XSP DSP engine, and direct compatibility with the company's DFC, 88R, Encore for V Series and Libra consoles automation. MIOS I/O 96 options (Modular I/O System) are accessed via a 4U rackmount hot-pluggable I/O box that connects via dual-fiber or dual-coaxial MADI to the MMC console. Five-hundred signal paths are available at 48 kHz (250 paths available at 96 kHz). Logic 1, Logic 2 and Logic 3 automation import is supported, and an automated 8-band graphic EQ option is available.

Behringer's (www.behringer.com) 32-channel **DDX32-16** ($1,629.99) is the company's first compact digital console, packing a lot into a small footprint. Each channel sports full parametric 4-band equalization with sweepable highpass filter. Audio can be routed through one of 16 internal buses to eight aux sends, and the board's first 16 channels offer channel delay. Four onboard effects processors, extensive synchronization options, 17 100mm motorized ALPS faders, and two ADAT- and TDIF-ready expansion slots are included. The DDX3216 picked up a 2003 *Electronic Musician* Editor's Choice Award.

Calrec (www.calrec.com), of Yorkshire, England, has been busy in the digital console arena this past year. The **Alpha 100** (call for pricing) features an assignable digital control surface and up to 48 multitrack and matrix outputs and 20 aux buses. New additions include input delay, 5.1 surround joysticks, cue director and bird beater and reverse-interrogate functions. The latter two features were also added to the Sigma 100 console last year, but Calrec's biggest news is its new Zeta 100 digital console at this month's NAB convention. Targeted at the company's C2 analog console user market and priced at about the same, the Zeta 100 offers powerful standard features: dynamics on every channel, 16 multitrack sends, 99 Flash ROM setup memories, and full 5.1 surround mixing and monitoring capabilities. Zeta 100, which houses all of its DSP and I/O in a single 7U rackmount space, is offered in 24, 32 and

Zaxcom Cameo II

Sony DMX-R100

Behringer DDX32-16

Yamaha 01V96

SSL MT Production

48-fader frame sizes, and DSP allocations of up to 56 channels.

Digico's (www.digiconsoles.com) **D5** Live digital consoles now come in two flavors: the **D5 Live 56** and **D5 Live 96**. The same control surface and feature set adorn both consoles; the D5-56 has 64 channels of full processing, while the D5-96 provides 96 channels. The D5 Live 56 comes with one remote (stage-end) DiGi-rack containing the A/D converters and is connected to the console via optical fiber cable. A local DiGi-rack sits next to the console, offering an additional 40 external I/Os for inserts and effect sends. The D5 Live 96, with AES/EBU and MADI digital I/O, comes with two stage DiGi-racks and one local rack to provide its 96 inputs. Any D5 Live 56 can be upgraded to a 96 by adding a second remote DiGi-rack and an additional DSP card in the console. At press time, Digico was preparing to announce major upgrades to the D5 systems, including a new FOH/monitor package and the DiGiTRACS Soundcheck/Show Recorder, at the Musikmesse show in Frankfurt. See our report on page 44 for details.

The Euphonix (www.euphonix.com) **System 5-M** (starting at $250,000) received a Version 2.6 upgrade last fall, resulting in enhancements for music recording, mixing and post-production functions. Each of the four EQ bands per channel now covers 20 to 20k Hz (with a gain of ±24 dB), and the console's notch filters have been updated with new algorithms for enhanced precision. Users can now include post-fader dynamics, pre/post-fader metering and post-insert delay in their console setups. Mix automation-conform enhancements with insert, move, delete, copy and other functions in System 5-M now allow complex mixes to be more easily adjusted after last-minute video edits. Other new surface enhancements include dimming of rotary controls that are not in circuit. The platform's added features also include a

new graphics display that allows operators to see EQ and filter windows simultaneously, user-definable names for MADI ports for better I/O control and an extended 48-millisecond channel path delay time. Find out about Euphonix's new EuCon Networking technology in the "Technology Spotlight" on page 102.

Part of Fairlight's (www.fairlightesp.com.au) DREAM family of digital audio technologies, the DREAM Console is a full-featured digital console designed to operate as a stand-alone system or as a processing hub with other DREAM components. Used with the DREAM Station, for example, the console offers fully automated mixing with an integrated 48-track disk recorder and editor, plus plug-in support. Signal control is via a central assignable panel (four can be fitted in the largest chassis size); the console delivers 96 channels of mixing into a 48-bus mix matrix, with each channel offering full 6-band EQ plus two-stage dynamics processing. The DREAM Station offers a smaller configuration of 56 full channels, mixing into a maximum of 24 mix buses. The main Station

unit incorporates an assignable parameter control pad plus a single master fader, and may be expanded with 12-fader "Sidecar" fader packs. Controls and faders are identical to the console system, and all titles and projects are compatible with the console. The two systems can be networked with Fairlight's MediaLink networking system. Both systems incorporate Fairlight's 48-track hardware-controlled disk recorder and editor, which is also available separately as the DREAM Satellite editor. The recently released Version 2 software includes Bus Reduction (which allows the operator to create multiple simultaneous mixes for different output formats) and support for Fairlight's Plug-Ins Manager.

A full-blooded analog board until last fall's AES, the fully altered LPC-D from Harrison by GLW (www.harrisonconsoles.com) now sports a digital soul. A joint effort between Harrison and live sound leader Showco, the LPC-D was designed as a comprehensive solution for theater and fixed-venue sound installations. Proprietary IKIS event-based automation provides motorized VCA faders and full automation control over every setting and channel, and the same Harrison digital.engine architecture used with the company's existing SeriesTwelve and MPC

Harrison by GLW LPC-D

control surfaces is now incorporated into the LPC-D console. Based on 40-bit SHARC DSP chips, the third-generation digital.engine environment provides up to 768 full channels of audio per core unit, 1,344 inputs and outputs, and 176 console-wide summing buses—all controlled by a 2,240x2,240 matrix router. Every LPC-D channel contains complete dynamics processing, 4-band parametric EQ (8-band with IKIS), high- and lowpass filters, dynamics, 32 aux sends and panning facilities to support all surround formats. The LPC-D offers 96 main recording buses, 24 reassign buses (32 with IKIS) and 16 listen buses.

Developed by Digigram and distributed in the U.S. by Sennheiser (www.sennheiserusa.com), the Compact Sy40

less ohms.
more aahs.

($32,229 base without I/O modules; $64,766 fully loaded) is a new high-performance digital mix console for live performance from InnovaSon (www.innovason.com). The Compact Sy40 sits in the same chassis and offers the same

InnovaSon Compact Sy40

number of faders as the Compact Live console but packs more punch; as a standalone console, the Compact Sy40 supports 40 inputs and 16 outputs through 47 faders. But, configured with 40 input channels and 27 mix buses, the new Compact offers the ability to expand up to 72 inputs and 48 outputs if linked to the InnovaSon Stage Box. Compact Live owners can upgrade to the Compact Sy40's new features through an upgrade kit that includes a new DSP engine and enhanced Sensoft control software.

Mackie Designs (www.mackie.com) beefed up its popular D8B ($6,995) digital console platform with updated dynamics and EQ algorithms, several new built-in production tools, an enhanced GUI and a HUI-layer-enabled way to now use the D8B as an automated control surface with I/O for a number of DAW environments. The new D8B Version 5.0 update is a major upgrade that also includes surround monitoring control and the ability to daisy-chain up to four D8B plug-ins per channel send. Users will appreciate the new EQ and dynamics views, expanded metering controls and the ability to export track sheets and channel notes as HTML files. Among other changes, most notably the improved user interface, is the addition of Mackie's 4-band EQ, compressor/gate/expander and FatChannel tools to the D8B's onboard processors menu. Version 5.0 is free to anyone who purchased a D8B after November 15, 2002, and is currently available as a download to all others from the Mackie Website for $299.

The Qolle izm125 Portable Digital Mixer from Tamura (www.qolle.com) was introduced at the Los Angeles AES last year. This very compact yet uncluttered 8-

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The Ultimate Multi-Channel Mic Pre with 192kHz Conversion

An established industry classic, the Rupert Neve-designed transformer-based ISA pre amp is at the heart of a new Focusrite package that combines vintage Class A attributes with the ultimate in digital technology.

The new ISA 428 Pre Pack features four ISA mic pre's with selectable impedance including the famous ISA110, eight line inputs, four instrument inputs and Focusrite's latest eight-channel, 192kHz A-D converter option protected by our new optical Soft Limiter circuit — the perfect future-proof interface to your DAW or digital console.

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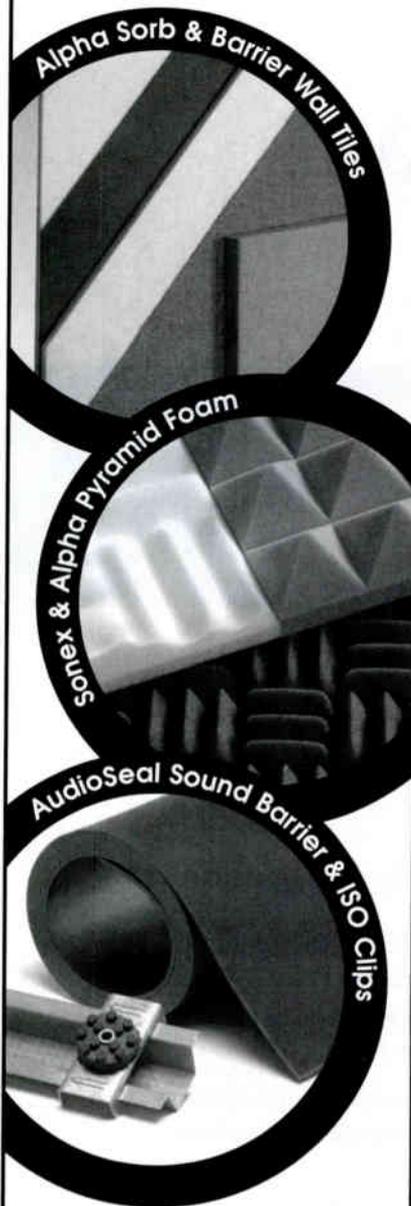
Digital Consoles 2003

channel mixer was designed in partnership with top film composer/sound designer Frank Serafine, who made sure that the design addressed the needs of remote recordists and 5.1 surround sound engineers. Tamura, long-known in Japan for its analog broadcast consoles, offers users the choice between +4dBm master analog and AES/EBU, FireWire and TDIF digital I/O options. High-quality mic preamps, compressors and highpass filters are included on each of the Qolle izm125's eight channels. A bank of RS–422/Sony 9-pin and MIDI connectors and a timecode reader/generator round out this porta-digi mixer. Tamura also released its cascadable Qolle izm806 System Controller, an advanced audio/video edit controller, and the motion JPEG Qolle izm821 Video Hard Disk Recorder/Player to complement the Qolle izm125.

Sony Pro Audio's (www.sony.com/proaudio) DMX-R100 mixer has been enhanced with a trio of flexible new R100 expansion products. The new SIU-100 ($3,425) System Interface Card can expand the DMX-R100's digital I/O capability to up to 72 AES/EBU, TDIF or ADAT-formatted channels, and it allows users to remotely share resources between two DMX-R100-equipped rooms. For live applications, the SIU-100 can provide 48 remote-controlled microphone inputs and eight outputs for monitors when used on-stage, and also be connected at the FOH mix position with up to 300 meters of fiber-optic cable. Sony's new DMBK-S101 8-Channel Mic Preamp Board ($2,175) offers eight balanced inputs, remote 48-volt phantom power and pad-on/off switches per channel. Rounding out the new digital console add-on offerings is the SIU-RM101 Remote-Control Unit ($2,275), a
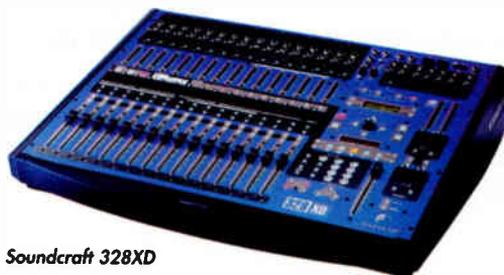
Soundcraft 328XD

dedicated remote for the DMBK-S101 preamp that provides the same physical knobs and buttons as the DMX console. Also new is the ability to cascade two DMX-R100s with a new DMBK-R109 MADI card upgrade option ($2,500). The

DMX-R100's price has been reduced to $16,000 MSRP.

Joining its 324 Live Digital console in 2002 was Soundcraft's (www.soundcraft .com) dual-personality music recording and post-production mixer, the Soundcraft 328XD ($5,000). This slick, compact digital console—which can also operate as a MIDI controller for a number of supported DAWs, synths and devices—accepts up to 42 inputs at mixdown and features eight groups and 16 direct outputs. Standard features include Soundcraft EQ and dynamics processing on each channel, 16 mic/line and five stereo inputs, and 16 digital inputs or tape returns via ADAT, TDIF, S/PDIF and AES/EBU formats, the latter without adding an expansion card. Dual high-resolution Lexicon effects units, 100mm motorized faders and 56-bit internal processing are also included in the 328XD, as is Soundcraft's E-Strip technology.

The newest boards from Soundtracs (owned by Digico, www.digiconsoles .com; distributed in the U.S. by Fairlight, www.fairlightesp.com.au) are the DS-3B and D4 digital consoles for broadcast.

The DS-3B is available in either 64- or 96-channel frame sizes, with 32-bit floating-point digital processing. Each channel has four-band EQ and full dynamics capability. The worksurface, available in either 24- or 32-fader layouts, incorporates touch-screen technology in conjunction with 25 motorized faders. Operating at 96 or 48 kHz with 24-bit conversion, the console is equipped with 40 output buses, each with limiters for stereo, LCRS and 5.1 formatting. Other features include subtractive mix minus GPO, GPI and full redundant PSU's. The DSP processing can be mounted in the console's central leg assembly; or an external 7U 19-inch rack-mounting DSP unit can be installed up to 12 feet away from the console surface, with Digital TFT touch screens and redundant PSU on the console surface. The D4 combines Soundtracs' touchscreen worksurface topology with a powerful digital engine, for up to 320 full audio channels and 124 output buses, all controlled by an intuitive automation system. The D4 is available in various frame sizes from a 16-fader frame up to 96 faders via optional rack expanders. Users can cascade multiple consoles for multi-operator requirements. Soundtracs is scheduled to launch the secret "DS-00" at this month's NAB show in Las Vegas. There were few details at press time, but a representative from Soundtracs owner Digico says "the

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board will impact the studio market, in much the same way the [Digico] D5 has penetrated the live arena. The concept is to refocus the studio market with a console system that can be molded to meet any studios user requirement," at a new price point.

SSL's (www.solid-state-logic.com) MT Production (MTP) console has been known solely as a broadcast production tool, until Celine Dion sang the first note of three-year run at Caesars Palace in Las Vegas. The Colosseum, built specifically for Dion's epic production, is where the first SSL digital console is being employed as a live sound FOH mixer. Last year, SSL released new V. 6.0 software, which drives the MTP and the company's MT Plus consoles. Version 6 adds enhanced channel and main bus dynamics algorithms options to the MTP and MT Plus consoles, and both are now available with a selectable moving or nonmoving fader control surface. The latter improvement allows users to set a balance on a group of faders, assign those faders to a master and then close that master while still view-

Tascam DM-24

ing the balance "under" the master fader. For late-breaking SSL console news, see the Technology Spotlight on page 100.

New V. 2.03 software is now available for Tascam's (www.tascam.com) popular DM-24 Digital Mixer ($2,999). Over 20 enhancements include a new HUI Emulation mode, improved internal signal routing, direct surround-panning capabilities, new footswitch-control capabilities and more. The OS upgrade, available free from the Tascam Website, also allows DM-24 users to control DAW software such as Pro Tools and Digital Performer and fully control faders, pans, mutes, aux sends, track arming and transport controls with the DM-24 work surface. New 5.1 surround mixing features and direct sound-panning capa-

bilities have been added, and a lowpass filter on the boom LFE channel now allows users to send select frequencies below the LPF point to a stem recorder. The new Center-Channel Percentage parameter regulates the center-channel input signal levels and how much of the channel's signal is sent to the center channel of the stem recorder. New circle and square-panning patterns are driven by the data dial, allowing for continuous motion circular pans. Additional V. 2.03 features include an internal MTC generator, a post-A/D converter direct out that is ideal for live recording situations, transport lock, tape return capabilities and a pre-aux muting function.

Showing up with more than five times the processing power of its popular 02R predecessor certainly helped squelch any doubts that Yamaha's (www.yamaha.com/ proaudio) 02R96 ($11,397, includes meter bridge and wood side panels) could top its predecessor and then some. Fifty-six channels of 24-bit/96kHz audio and a range of new 32-bit internal effects are now included, including many specifically designed for surround mixing, as are other

surround panning, joystick, monitoring and bass-management features. The 02R96 integrates with digital audio workstations and provides extensive support for Pro Tools. Expansion options are supported with four I/O slots that accept 24-bit/96kHz-capable Mini-YGDAI digital and analog I/O card options.

Yamaha's **DM1000 Digital Production Console** ($5,000 base) delivers 48 channels of 24-bit/96kHz audio, surround production features and integrated control for DAWs and automated recording within one small 23x8x17-inch, rackmountable footprint. Integrated tools for surround processing, panning and monitoring include a mini joystick and a graphic multichannel surround pan/position display. Individual speaker mutes and attenuation and stem mix monitoring facilities are also included.

Also just announced from **Yamaha** at NSCA 2003 is the company's new **01V96** ($2,499), a new digital mixer in the PM1D, 02R96, DM2000 and DM1000 lineage. An ideal mixer for small to medium permanent or mobile installations, the rackmountable 01V96 offers improved sound quality and new computer and ADAT interfaces. The 01V96 offers 40 simultaneous mixing channels at full 24/96 resolution. Inputs 1 through 32 feature fully independent gating/compression, 4-band parametric EQ, delay and two pre-EQ/post-delay insert points per channel. Stereo inputs 1 through 4 feature parametric EQ, and up to four of the built-in effect processors (two at 96 kHz) may be used simultaneously.

Last and certainly not least is the **Cameo II Digital Recording Console** ($12,950 start) from **Zaxcom** (www.zaxcom.com), though it certainly appears to be the smallest digital recording console in our roundup. The Cameo II is the company's second-generation Cameo LRC console and is designed primarily for use as a location recorder for films, TV and other high-end audio applications, including music recording. This potent little easy-to-use, high-performance digital mixer-to-go offers upgraded mic preamps and multiframe output audio delay for use in high-definition motion picture and television production. Additional features include Deva, plasma display, wireless mic control, lots of built-in effects and GPI control in a 12x14-inch footprint. ∎

Randy Alberts (au-dio@pacbell.net) has launched EveryOne Jam Project, a non-profit music-for-peace effort to record and release improv jam discs between musicians from directly combative nations.

World Radio History

Product Hits of

BY GEORGE PETERSEN

Anyone who's never attended the annual Musikmesse/ProLight+Sound show (Frankfurt, Germany) would have difficulty imagining the scope of what certainly is one of the world's largest trade shows. For five days, some 16 exhibit halls are filled with technology, as manufacturers from around the globe hawk their wares to dealers, distributors and—on the weekend—the public at large.

This year, March 5-9, with a dismal economy and spectre of an Iraqi war looming in the background, Messe attendance seemed to drop by 20% or so. However, there was plenty to see—and hear. Many of the hot music products, such as the Roland V-Synth, the Open Labs eKo and Creamware's Noah were covered in our NAMM report last month. Here are a few new items that caught our attention.

HIGH-END TOURING SYSTEMS

Last year, new software and virtual instruments were everywhere. This time, mics, interfaces, mixers and pro touring speakers took center stage.

After extensive road testing with top acts such as Tori Amos, the Nexo (www.nexo-sa.com) Geo T was officially launched. Designed for vertical or horizontal arrays, the Geo T is based on the T4805 and T2820 high-output loudspeakers and a new dual-18 CD18 Controlled Directivity Sub-Bass in a scalable system that handles audiences from 1,000 to 100,000-plus. The full-range boxes both use 2-inch HF and 8-inch cone mid/lows, with a Hyperboloid Reflective Wavesource (HRW™) acoustical reflector for coherent coupling between multiple speakers, even those with different dispersion angles. Flying hardware and GEOSoft Array Design Software complete the package.

Meyer Sound (www.meyersound.com) expands its M Series self-powered line arrays with the MILO High-Power Curvilinear Array Loudspeaker. The enclosure offers 140dB SPL peaks for arenas and sheds, yet is small enough to fly in mid-size theaters. MILO as mains can be combined with Meyer M2Ds and integrated with M3D-Sub Directional subwoofers. The four-way system has dual 12-inch neodymium woofers, a 4-inch compression mid with CD horn and Meyer REM™ (Ribbon Emulation Manifold) for smooth mids; for highs, three 2-inch compression drivers (also coupled via REM) on a 90° horn. Over 3,900 watts of onboard amplification with active signal processing are standard, as is Meyer's RMS™ remote monitoring system.

The KF730 Small Line Array Module (SLAM) from EAW (www.eaw.com) packs a six-driver, horn-loaded KF Series design into a mini enclosure that can be scaled to handle venues from 50 to several thousand. It uses unique side-firing 10-inch woofers, so the enclosure is only 29x18x13 inches (WxDxH), including the wide 110° horn pushed by twin 7-inch cone mids and two 1-inch HF drivers. Flying/array hardware and a matching dual-12 sub are also offered.

A year ago, several Stage Accompany employees formed Alcons Audio (www.alconsaudio.com). Alcons' debuts include a number of high-end creations based on 8- and 12-inch woofers in trapezoidal boxes with a proprietary RBN601 ribbon driver mounted to 90°x40°, 60°x30° or 90°x10° waveguides. The massive RBN601 has neodymium magnets, weighs 5.5 pounds, extends to 25 kHz and has a 70W RMS rating with 1,000W peaks.

Turbosound (www.turbosound.com) showed its passive TXD loudspeakers, designed as portable systems for the live music, club and DJ markets. With built-in rigging points, the TXDs also work in fixed installs. The series includes the compact two-way TXD-121 and TXD-151 (with 12- or 15-inch woofers and a new 1-inch HF compression driver), and subwoofers with single or dual-15s or single 18-inch woofers and a TXD-12M compact wedge.

Peavey (www.peavey.com) offered a new twist with its Trans Lite Series, offering

DiGiCo DigiTracs

The Guitar Hall

Meyer Sound MILO

molded two-way boxes in transparent colored and clear enclosures—ideal for installs in trendy restaurants, bars, clubs, fitness centers, etc. Outre!

With all of these cool speakers, you gotta protect your investment. Drawmer's (www.drawmer.com) SP2120 Speaker Protector is a single-rackspace box that takes the company's 25 years of dynamics expertise and creates a brickwall analog limiter that keeps the sound system's volume under an absolute max preset level specified by the installer or client. A front-panel keyswitch gives new meaning to the phrase "control lockout!"

CONSOLES!

DiGiCo (www.digiconsoles.com) poured on the new features for its high-end D5 Live touring board. Also new was DigiTracs—the world's first soundcheck/show recorder—with 56-track, disk-based recording based on the Merging Technologies Pyramix platform and Mykerinos DSP card. Housed in a rugged 4-rackspace chassis, DigiTracs connects to the FOH D5 Live via two BNC MADI cables; the front panel has USBII and FireWire ports.

Yamaha's 01x (www.yamaha.com) is a small-footprint mixer for computer music production, but sporting 28-channel capacity, DAW control with moving faders, Mac and Windows drivers, dual 32-bit effects processors, 24-bit/96kHz multichannel mLAN (and MIDI) I/O interfacing and more. Price? About $1,700 when it ships this fall.

Interfaces? They wuz everywhere! Tascam's (www.tascam.com) US-122 ($269 MSRP) is a Mac- and Windows-compatible USB audio and 16-channel MIDI interface with two XLR mic inputs (with phantom) and inserts for placing EQs, compressors, etc., into the signal chain. Edirol's (www.edirol.com) UA-1000 is said to be the world's first USB 2 audio/MIDI interface, and ESI (www.esi-pro.com) offered an entire new line of rackmount and compact 192kHz FireWire interfaces.

All of TerraTec Electronic's (www.terratec.com) pro audio and musician audio cards and I/O products will now be marketed under the name TerraTec Producer, and U.S. distribution remains with Fostex (www.fostex.com). The line now offers audio/MIDI products with PCI bus, USB and FireWire interfacing.

A major buzz at Messe? TC Electronic's (www.tcelectronic.com) PowerCore FireWire puts nearly twice the power of its PCI card PowerCore version into a single-rackspace chassis that's ideal for laptop or desktop users. The rack and PCI versions can be used simultaneously for even more DSP horsepower; as a bonus, PowerCore FireWire ships with nine high-quality plug-ins.

MIKROPHONEN!

Schoeps (www.schoeps.de) expanded its acclaimed Colette modular system with the CMC6 xt, a microphone amplifier for

AKG D3700-M

any MK Series axial capsule, providing bandwidth beyond 40 kHz. Oktava (www.oktava.net) unveiled the MKL5000, its first multipattern tube mic with a large-diaphragm capsule mounted above the mini-bottle-style housing. Intended for 5.1 surround recording, Microtech Gefell's (www.microtechgefell.de) new INA 5 support is a multimic mount for five cardioid mics. MG recommends its low-noise M930s, but it works fine with any studio cardioids. Mics can be placed anywhere along the INA 5's arms for adjusting the field.

New versions of AKG's (www.akg.com) popular handheld mics (the D3700, D880 and TEC Award-winning C900) are all now available in versions with "M" suffixes, equipped with a removable, wired XLR module that's interchangeable with wireless TM40 transmitters, instantly converting the mics to wireless operation. By allowing wired mics to become wireless, the system permits rental houses, tours or musicians to maintain smaller inventories: If a big wireless job comes in, existing mics are easily converted; likewise, musicians don't have to buy two mics when they go wireless. Brilliant!

There were more cool products at Musikmesse/ProLight+Sound, and we'll present these in our new-product sections in the months to come. Meanwhile, *auf wiedersehen!* ■

SIX HITS YOU MIGHT HAVE MISSED

Harmonix (www.harmsol.co.uk) owner Richard Smith has developed wireless harmonicas using AKG WMS 40 transmitters built into the instrument. No hot spots and no having to hold the mic and harp at the same time. Freedom!

Samplitude (www.samplitude.com) is now at Version 7.0, and this solid authoring/editing/mastering software for the PC just keeps getting better, with ASIO and VST support, on-the-fly CD burning and a ton of hip effects. Super!

Sound Performance Labs' (www.spl-usa.com) $599 Surround Monitor Controller (SMC) is exactly that, providing multiple surround/stereo source selection, one-knob volume control, muting, mono checking, dim switch and more—in a desktop case!

Vox (www.voxamps.co.uk) packed all of the groovy sounds of its Valvetronix modeling amps (along with modulation, fuzz, delay and reverb effects) into one compact box with a real tube and real knobs to get *that* sound fast! Can it do an AC-30? Yeah! Yeah! Yeah!

Whirlwind's (www.whirlwindusa.com) DLSI Digital Laser System can transmit Ethernet or Cobranet data/audio (up to hundreds of channels) in real time over a laser beam. Perfect for those impossible installs or portable setups. Amazing!

Yamaha held a *very* early showing of Vocaloid, a singing synthesis software technology that allows users to create lifelike—or otherworldly—lead and BG vocal tracks by typing in the lyrics and merging them with a MIDI file for melody. Watch for this debut in 2004!
—*George Petersen*

Networking
n p r
W E P S R T

by Mel Lambert

National Public Radio, headquartered in Washington, D.C., needs little introduction. Established in 1970, NPR has grown during the past three decades to become a well-respected multimedia outlet employing more than 700 reporters, producers, editors, and online and administrative staff. Today, NPR programming airs on 709 radio stations operated by close to 300 member organizations. At a time when many news companies are reducing operations, NPR News has expanded and today extends over foreign and domestic bureaus.

But until earlier this year, an important part of the jigsaw was missing: NPR lacked a substantial presence on the West Coast. "Given the importance of the West Coast as a news source," says Bud Aiello, NPR's director of engineering technology, "we realized that a full-service facility was required within the Los Angeles area."
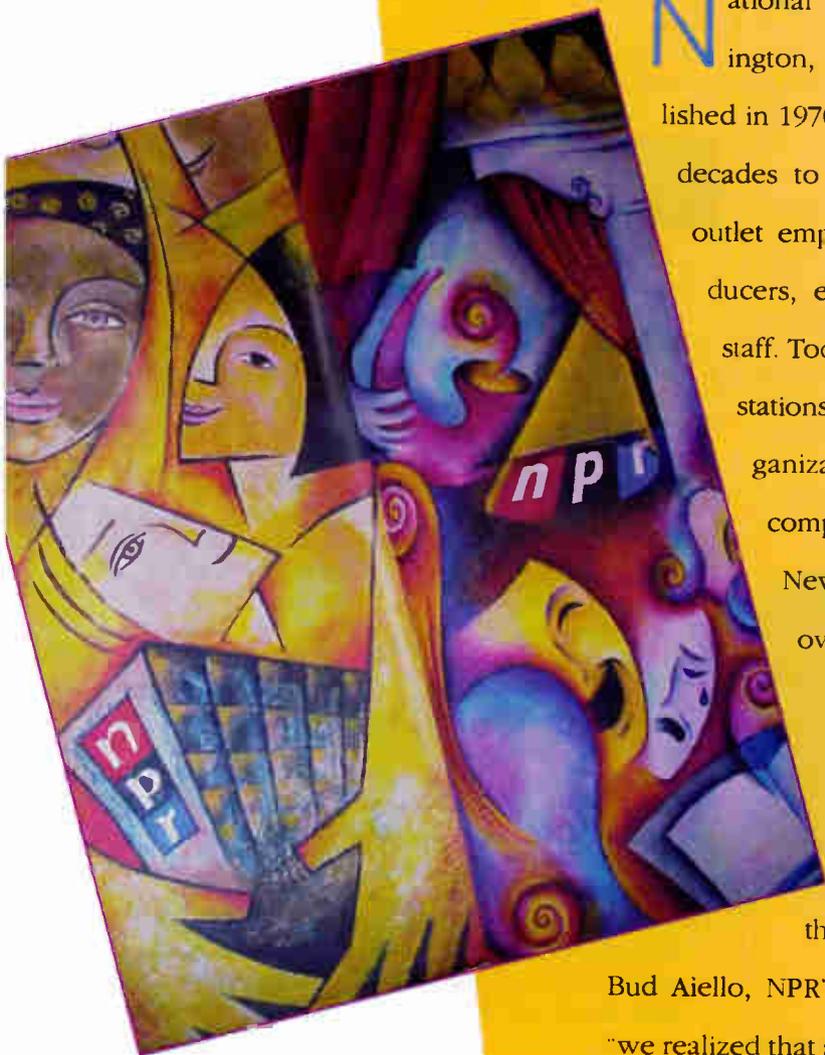
Radio Production Goes All-Digital

Above: Production Room 5
At right: Studio B

A building was located in Culver City, just south of Los Angeles, in a space that recently housed an Internet video production and teleconferencing firm. It came complete with production suites, support systems and technical build-out. The presence of an existing technical infrastructure that included a high-power UPS, large-capacity AC, generator transfer switch, a central facilities room and provision for satellite dishes dramatically streamlined the conversion for radio production.

"Because this building already offered a number of areas that we could modify for production and broadcasting, we could save a large amount of money," notes Aiello. The 25,000-square-foot facility is the first large-scale production center NPR has established outside of Washington, D.C. Eventually, NPR West will house a staff of 90, including a Los Angeles News Bureau. It opened officially on November 2, 2002, just in time for coast-to-coast coverage of the fall elections. Reported cost for the NPR West project, including the $8 million purchase of land and a two-building facility, was $13 million.

As NPR's second-largest facility, NPR West also provides backup to the network, which produces, acquires and distributes some 120 hours of programming a week to stations around the U.S. "September 11th made it apparent in a very urgent way that we need another facility that could keep NPR going if something devastating happens in Washington," says Jay Kernis, NPR's senior VP for programming.

DESIGN AND MODIFICATIONS

The new complex comprises five self-contained production suites, plus two on-air studios with companion control rooms. A central Technical Center links all of the areas via control and audio data networks, and provides access to incoming and outgoing satellite and related circuits to Washington and other locations, as necessary. (A 40x40-foot area with associated control room is currently under consideration for use as a large recording studio or video production stage.) Architectural design for the conversion project was by studio bau:ton of Los Angeles, with principal Peter Grueneisen serving as lead architect/acoustical

designer and Charles Irving as project manager. Virginia-based TGS Inc. provided system design and integration services.

According to Grueneisen, "[NPR's] architectural plan called for serious acoustical improvements, which were accomplished with floating floors and new, heavy room shells in the two larger studios and with isolation cuts in the slab around the smaller rooms. Although the layout of the building did not need substantial changes, the rooms essentially had to be rebuilt." To provide enhanced sound isolation within the three edit suites and pair of production areas, modular, prefabricated broadcast booths from Wenger Corporation were assembled inside the existing areas.

"For the larger control rooms and on-air studios, we decided to raise and float the concrete slabs," adds Irving. "For acoustical room treatments, we used three products that were selected for their economy—not only as material, but also for ease of installation. On the walls, we used a combination of Bonded Acoustical Fabric Pad (BAFP), which is a Fiberglas-free material produced from recycled cotton rag, and Porous Expanded Polypropylene Panels (PEPP). These panels were either bonded directly to the gypsum board surfaces or, where we needed to cover acoustic wall and ceiling cavities, we employed a system of wire-mesh backing or exposed wood battens. On the ceilings, we specified a combination of PEPP and Sonex, using similar attachment methods." Acoustical Surfaces Inc. supplied the BAFP and PEPP products, plus Sonex. TGS Inc. supplied the various studio desks and control room furniture.

In terms of the new facility's production equipment, NPR went with what it had in Washington and New York: Dalet Digital Media Systems networked hard disk editors and asset-management systems, and the Klotz VADIS II Audio Network, with a variety of control surfaces tailored to the specific needs of each production and on-air studio. This way, staff can move freely between these locations and control of critical functions can happen remotely.

High-speed DS3-level connections to Washington provides wide area networking of the Dalet playback and Klotz routing systems, in addition to enabling real-time digital audio transfers. "A reporter will be able to enter

[NPR West's] Production 4 or 5 and have a technician in D.C. handle the interconnect from 3,000 miles way," Aiello explains. "A total of nine MPEG Layer-2 [data-compression] codecs operating at 384 kbits connect [NPR West] to Washington. Codecs 1 through 4 are normaled to the stereo outputs from the main on-air studios A, B and C [A is currently under consideration], plus the Tech Center. The remaining five ports are used for various mono/stereo feeds." At the Washington, D.C., facility, the outputs from NPR West's studios and Technical Center appear as dedicated inputs on the routing switcher, which connects to the facility's various production areas and satellite distribution network.

The use of close to 60 Dalet workstations for audio recording, playback and asset management, plus eight Klotz digital consoles for level control and routing, dramatically streamlines the networking process. Dalet playback ports are normaled digitally to Klotz inputs, and outputs are routed to recorder inputs; various system topologies have been developed to let radio journalists run the five production suites by themselves, while conventional operators are used in the large-format studios.

"We designed the five production suites so that reporters and producers could handle everything from a central, self-contained location," Aiello explains. "Suites 4 and 5 are slightly different since they also house a Telos Zephyr system that can feed material directly to Washington, for example, via a [bidirectional] ISDN network connection. In this way, we can also go live to the network from any of these rooms, if necessary."

DIGITAL CONTROL SURFACES

NPR West's Klotz digital mixing engines comprise a series of DCII Control Surfaces linked via high-speed Ethernet LANs connected to VADIS (Variable Audio-Distribution Interface System) processing cores and routers located in a number of technical areas throughout the complex. "NPR West's central mainframe houses the VADIS 880 DSP controller/router that handles assignment of the control surface's various shaft encoders and programmable switches," says Karl Schoning, Klotz's director of engineering, adding that the system is configured with a number of mic preamps, analog inputs, AES/EBU and S/PDIF digital inputs, MADI, ADAT optical, RS232/422 serial control and other ports.

"By creating a two-layered system in VADIS, we have separated audio from control," stresses Klotz project leader Jonathan Burtner. This configuration allows for the routing of logic/machine control information, audio signals, serial information, program-associated data information and digital sync, while eliminating approxi-

The Klotz VADIS 880 mainframe

mately 90% of traditional inter-room cabling. "And our TDM [Time Division Multiplex technology] has allowed us to design a system with scalable DSP that results in an unlimited bus structure."

While audio is distributed from one VADIS frame to another via fiber-optic cables, logic/machine control information travels over a closed Ethernet-based LAN between individual consoles so that operators can create a customized logic control topology. VADIS frames and controller engines can be located remotely or in the same room as the DCII surface, or both, depending on the user's requirements. The combination of TDM and fiber optics means that an unlimited number of virtual control surfaces can be connected to the system.

The universal VADIS 880 mainframe accepts a variety of audio, data and DSP modules without limitation to inputs or outputs. All VADIS frames can act as a master digital audio sync, but can also slave to external house clock references, including the facility's NVision NS5500 Universal Sync Generator. The frame comes standard with a dual fail-safe power supply and dual-redundant digital audio sync modules.

Each of NPR West's five production suites features 4-fader VADIS DCII console surfaces, while the two on-air studios and the Technical Center were supplied short-loaded with 20-fader surfaces. Any source connected to any console surface can appear on any fader; entire console setups of sources, mix-minus, dynamics, EQ, bus assignments and so on can be recalled at the push of a button. Typical mixer layouts provide source selection per fader or several fader channels connected to the external router. TFT screens in each room display system settings and graphics for EQ/dynamics parameters. Each DCII can address four stereo output buses—PGM, AUD, UTL and Mix-Minus— plus various mix-minus DSP options, each with an individual talkback feature and stereo/mono configuration.

"Because of the VADIS system's dis-
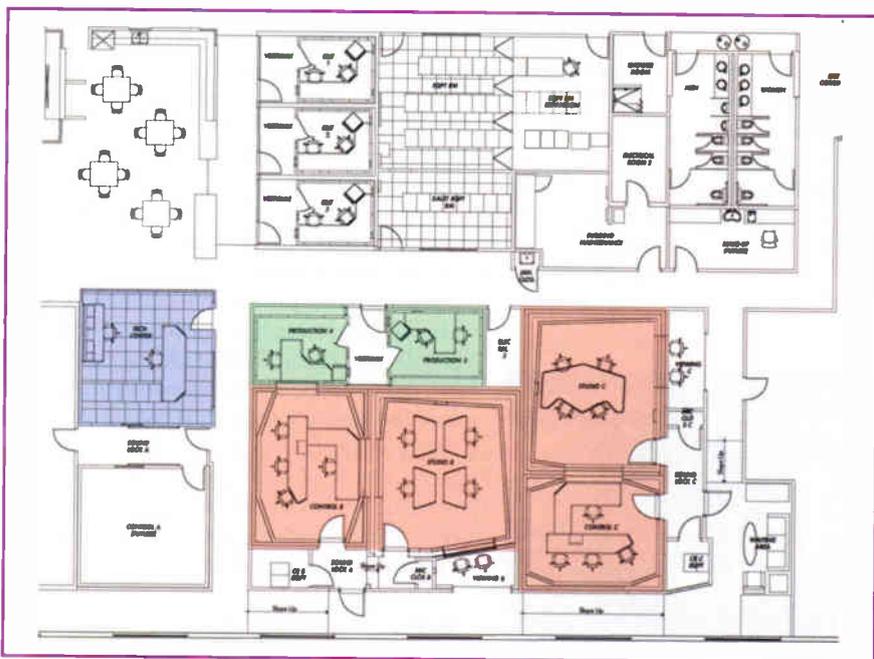
Roughly one-half of the NPR rooms, with Technical Center in blue, Studios B and C in red, and production rooms 4 and 5 in green. All rooms in this portion of the building can connect to Washington, D.C.

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Networking NPR WEST

tributed processing and closed LAN topology, there are no slaves and masters as such," says Greg Mensching, former Klotz digital sales engineer and system/technical designer for the NPR project. "Any console surface, in theory, can control any processing element anywhere in the building or, with access to the L.A.-to-D.C.-wide area network, anywhere in the NPR system. Integrating consoles, audio routers, logic-follow capabilities and distribution of digital audio sync can be a formidable proposition; VADIS networking is designed to dramatically streamline that process for NPR West."

NETWORKED DAWS

As with the New York and Washington facilities, NPR West features Dalet Digital Media Systems editing workstations, along with several high-capacity digital audio servers. The Dalet 5.1 Advanced Pro System comprises an array of 55 workstations connected via a 100-megabit Ethernet LAN to five servers that communicate with central hard drives via a high-speed Fibre Channel topology. (NPR has also installed 280 Dalet workstations throughout its main Washington, D.C., facilities.)

According to Ken Tankel of Dalet, "The system provides real-time sharing of all digitized media files that NPR [journalists and producers] generate for their programs. For high-demand systems requiring a terabyte of more of storage, we specify IBM Series FASt-T500 storage [arrays] configured in RAID-5 topology to ensure instant recovery from any hardware failure." Windows-based PCs are used for desktop editing and programming. A dual-loop Fibre Channel connection to each of the arrayed hard drives provides additional network redundancy. A total of 5 terabytes of digitized audio and metadata can be stored in the NPR West facility. "This is not the largest Dalet server array [being used by] a radio customer," notes Tankel. "XM Satellite Radio, for example, which provides 100 channels of [U.S. satellite delivery programming], features 28 terabytes of data—some 1.8 million songs—shared by a total of 350 workstations."

Dalet's system uses a client/server architecture to provide real-time audio playback at any of the networked workstations, reading/writing audio files directly to NT/2000-based servers arrayed

on a TCP/IP-driven LAN. Dalet's media asset-management system provides an integrated digital audio environment for recording, editing and storing audio, plus log creation and automated/live playback. All of NPR West's production studios, voice-over rooms, news preparation areas, producer areas and central control rooms are networked through the media asset-management system. Industry-standard TCP/IP and FTP protocols are used for most data transport within the network and to/from external sources.

Sybase SQL Professional ASE Microsoft SQL serves as the database for digital audio files and asset management; a single database references audio, text, multimedia files and other program-associated data. The Dalet system can edit and play out linear PCM, MPEG Layer-2 and MPEG Layer-3 data-compressed files, in stereo or mono, interchangeably.

"Our editing software handles eight stereo tracks simultaneously," Tankel explains, "and eliminates multiple transcodings. The Dalet editing software generates EDLs that are executed when a 'project' is saved. The EDL is executed on the MPEG files in dedicated DSP or using the workstation's CPU." Transcodings only occur if the finished format is different from any of the formats in the project.

Various software components handle specific functions within the Dalet server and workstation network. For example, manual recording; automated recording; 2, 4 and 8-track editing; and manual and automated play-out are all modules that can appear on the desktop. A flexible user rights-management system allows user access to specific tools and desktop environments tailored to specific needs and skills.

"NPR West is the one of the most significant developments in NPR's capacity to provide programming services to stations and listeners in the past two decades," says Kevin Klose, NPR president and CEO. "Years of thoughtful analysis, months of careful site selection and detailed facility planning have gone into NPR West. This means a huge expansion in our capacity to bring timely, comprehensive news of the West to our national newsmagazines, newscasts and cultural programming. The unique sounds and energies of this storied region and its people will be heard in lively new ways from NPR West."

Mix ONLINE EXTRAS

Mel Lambert heads up Media&Marketing (www.mel-lambert.com), a full-service consulting service for pro audio firms and facilities.

45TH ANNUAL

## The Norah Jones Juggernaut, a Telarc Sweep and Other Tales

By Blair Jackson
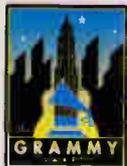
There was something for almost everybody on the marathon 45th Annual Grammy Awards telecast, held February 23 at New York City's Madison Square Garden. With music spanning six decades and a dozen different genres, the program offered numerous sensational performances and unusual pairings: The stark, poignant opening with Simon & Garfunkel singing their classic "The Sound of Silence"; the Dixie Chicks' haunting version of Stevie Nicks' "Landslide"; Faith Hill, looking like an escaped go-go dancer from a '60s nightclub, sounding surprisingly raw and real as she belted out "Cry"; Kid Rock and Sheryl Crow rockin' together, the New York Philharmonic's ex-

plosive selection from Leonard Bernstein's *West Side Story* (as well as their dramatic union with Chris Martin and Coldplay); Yo-Yo Ma and James Taylor dueting marvelously on "Sweet Baby James"; Eminem fronting The Roots on his hit from *8 Mile*; *NSync sounding sweet and soulful on a medley of Bee Gees tunes to honor the late Maurice Gibb; Bruce Springsteen & The E Street Band reprising their post-9/11 anthem "The Rising"; Springsteen, Elvis Costello, Steven Van Zandt and Dave Grohl fronting a kick-ass group for a stirring tribute to fallen Clash leader Joe Strummer; and, of course, fine live renditions of last year's ubiquitous hits by Norah Jones, Nelly, Avril Lavigne, John Mayer and others.

The awards themselves—the bulk of

which were handed out in a ceremony before the telecast—covered a broad spectrum of artists and styles; it only *seemed* as though Norah Jones won everything! For a complete winners list, as well as dozens of great onstage and backstage photos, go to www.grammy.com.

But as has become our tradition, we take a moment now to salute some of the technical winners—engineers and producers—and talk about the projects that brought them those coveted gold gramophones.
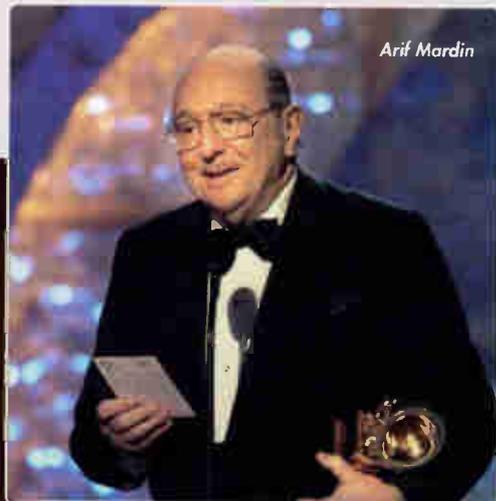
Arif Mardin

Album of the Year and **Best Engineered Album, Non-Classical:** Norah Jones' *Come Away With Me*. Produced by Arif Mardin; engineered by Jay Newland and Husky Huskolds; mastered by Ted Jensen. **Producer of the Year, Non-Classical:** Arif Mardin. **Record of the Year:** Norah Jones' "Don't Know Why" (Mardin; Newland; Jensen).

When legendary producer Arif Mardin was given a special Lifetime Achievement Award at the Grammys two years ago, he was worried "that it means that you've done your best work and you're on the other side of your career." So winning this year for his work on newcomer Norah Jones' album was particularly sweet.

Mardin says that he was brought onto the project by Blue Note Records president Bruce

Norah Jones

GRAMMY AWARDS

Lundvall after Lundvall was dissatisfied with some initial sessions completed by Jones and her band. At first, Jones was understandably intimidated to work with the man who made hit after hit with Aretha Franklin, Chaka Kahn, Bette Midler, the Bee Gees and countless others. "But we had a meeting, and I said, 'Look, I'm working for you. It's your record. It doesn't matter what I've done. It only matters what you're going to do.'

"So in August 2001, in a very pleasant three weeks, we finished almost the whole album at Sorcerer Sound [in New York City], mostly recording live," Mardin says. "Then in October, we did the finishing touches, mixed it [at Sear Sound on a custom Avalon console] and then it was mastered at Sterling by Ted Jensen."

"The approach was pretty organic," adds engineer Newland, "sort of like a jazz record, although it's not really a jazz record. It does have the upright bass and the quiet drums and the acoustic piano—it has the elements of a jazz record—but it has a pop and singer/songwriter feel to a lot of it. She plays and sings with the band [when she's recording], and a lot of those are the keeper takes, vocally."

Newland says that the album was cut in Sorcerer's smaller upstairs room on the custom Acoustilog console to a Studer 2-inch analog machine. "When they first hired me, they hired me to do the demos and we did 13 songs in two days; we mixed them in like two hours. The take of 'Don't Know Why' that won the Grammy actually came from the demo session, which was one take. She sang it so beautifully; it held up and that was it. I think we added a harmony voice and a second guitar, and that's all."

After some experimentation, Jones' vocal was cut on a Neumann M49 mic. "It was magic the second we tried it on her voice," Newland says. Mic pre's on Jones and the band included Neve and Manley models.

Mardin has signed on to produce Jones' next album, and the material is apparently already written and ready to go.

Classical Producer of the Year: Robert Woods

Telarc producer Robert Woods practically owned this category in the 1980s, winning the award in 1980, '82, '85 and '87 through '89, but this is his first victory since then. "I was very
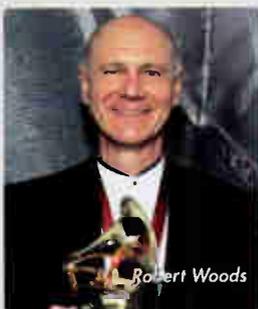
fortunate in the '80s, because I had a lot of success with various crossover [classical/pop] albums, and I was very early getting on the bandwagon for the digital recording process, and I guess I became sort of associated with that in some people's minds."

He's still making albums that draw both hardcore classical fans and more casual pop-classical listeners. He earned this year's Grammy for a wide range of recordings, including *A Celtic Spectacular*, which brought together the Cincinnati Pops Orchestra with The Chieftains, James Galway and others; *Scary Music*, another Cincinnati Pops "theme" production; the L.A. Guitars Quartet's *Latin* album; the Cincinnati Symphony's take on Sibelius' Symphony #2; and *Sounds of Glory: Hymns of Faith and Adaptation*.

Telarc CDs have always been known for their exceptional fidelity, and now the company is jumping with both feet into the world of surround sound: All of Telarc's current classical productions are recorded both in conventional stereo and in the SACD format, with hybrid releases; in fact, the LAGQ *Latin* album was also a winner at last fall's Surround Awards. "That's a beautiful-sounding album," Woods notes. "It was made with four close-up mics for the detail and four mics above to capture the room in its dimensions—a nice combination of perspectives."

A week after the Grammys, Woods was still basking in the afterglow of his triumph: "It's the only time I've actually brought my family to the ceremony, so I had my 16-year-old son and my 19-year-old daughter with me. Really, the most rewarding thing about it is being a parental hero—even if it's short-lived!" he says with a laugh.

Best Engineered Album, Classical: *Vaughan Williams' A Sea Symphony*; Atlanta Symphony Orchestra and Chorus (Robert Spano conductor/Norman Mackenzie choir director); produced by Thomas C. Moore; engineered by Michael Bishop.

This album, which features the words of American poet Walt Whitman set to British composer Vaughan Williams' music,

was a triple victory for Telarc, also picking up trophies for Best Classical Album and Best Choral Performance. Engineer Bishop says that everyone involved in the recording knew that they were on to something special from the beginning: "It's an extraordinary performance; it's obvious right from the very opening bars of the music," he says. "And as soon as the chorus opens their collective mouths, it's *really* something. We all got goose bumps. It's just such a beautiful work."

It was recorded simultaneously in surround and stereo at the Woodruff Performing Arts Center in Atlanta (home of the Atlanta Symphony) in three three-hour sessions. "It was recorded to a Sonoma workstation with Genex 8500s as backup," Bishop reveals. "We had EMM Labs converters, and the main mic pickup for the front of orchestra was the Neumann binaural head KU-100. We had Sennheiser MKH20s as the flanking mics and more Sennheiser MKH Series mics used in the surround pickup; then across the front of chorus was the B&K DPA 4023 miniature cardioids. We also had four MKH 20s for pickups of the two soloists."

Although obviously thrilled with having won the Grammy, Bishop says, "The biggest honor for me is just having been there for this performance of this particular piece because it was absolutely magical. [Producer] Tom Moore worked everyone very hard. He demanded a lot from the orchestra and the singers because he knew they could deliver a lot. And we were recording in the day and they were also performing in the evening, so it was a *lot* of singing and playing. But they really gave their all and it was obvious on the finished album.

Remixer of the Year: Roger Sanchez for No Doubt's "Hella Good."

2003 Technical Grammy Award: Geoff Emerick
Fresh from his induction in the TEC Hall of Fame (see the October 2002 *Mix*), the man who engineered The Beatles' late-'60s albums, as well as works by many other top artists, gets another well-deserved honor.

2003 Technical Grammy Award: Shure Inc.
Kudos to the venerable microphone manufacturer, in business since 1925, and still making some of the best and most popular microphones in the world.

Roger Sanchez
Robert Woods
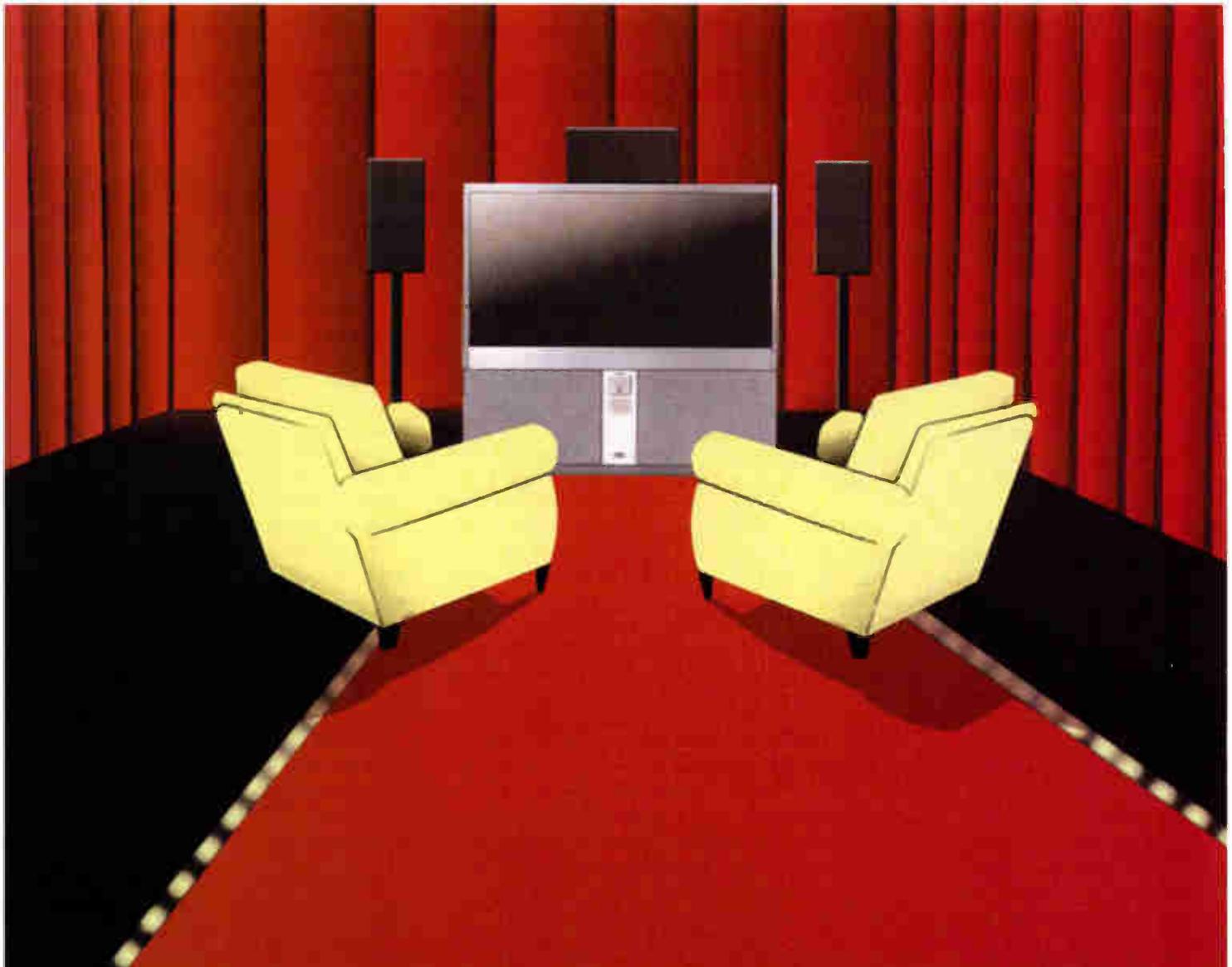
Mastering for DVD
Optimizing for Home Theater in a Film-Mixing Environment

Looking back two decades ago to the launch of the Compact Disc, it's easy to forget how iffy the carrier's prospects were in its first few years. Players were too expensive for anyone other than "early adopters," and labels—smarting from a post-disco implosion—weren't ready to spend much on production for a format whose sales appeal was still unknown. In that climate, many CD masters—particularly for catalog releases—were simply transferred from EQ masters that were made during mastering sessions for LPs. Reflecting mastering engineers' responses to the characteristics and limitations of an entirely different playback medium, the sound of these early releases often falls short of the CD's potential.

by Philip De Lancie

When DVD-Video came along, many of the same factors came into play. In the DVD scenario, the role played by the EQ master in the record industry was filled, instead, by the theatrical print master. Often, the culmination of weeks or months of work, it embodies the production team's judgment of how a film should sound when exhibited in a theater. At first, it seemed safe to assume that DVD, given its digital audio capabilities, could adequately convey this sound to the home-theater viewer. So, once again, a source optimized for one medium was often transferred straight across to provide audio for another. And, once again, this expedient proved less than fully satisfactory, this time because the theatrical and home-theater listening environments are such different worlds.

With DVD now firmly established, it's become increasingly common for films to undergo a separate remix to optimize the sound for home-theater playback. "If the job is done well," says Jerry Steckling, acoustic engineer at Skywalker Sound in Marin County, Calif., "the sound translates to the home-theater environment as well as it does to the big theatrical environment. The filmmaker sat down and said, 'That's my movie,' on those big theatrical speakers, so the whole job in making the DVD is to try to give that experience on small speakers."

Home-theater systems, however, are not only different from theatrical sound systems but also far more varied. That can make it difficult for film mixers to tailor their remixes for DVD with the same level of confidence that they are used to from their theatrical work. What's needed, Steckling says, is "a more formal industry standard for mixing DVD. We're not that far apart from exhibition cinema standards, or even from music and computer game mixing environments. With small pushes and shoves we could all be on the very same page."

APPLES AND ORANGES

The starting point when optimizing sound for any delivery platform is the question: "What's it going to be played back on?" When the target listening environment is home theater, that's not an easy question to answer. "There's a big rainbow of things going on," says Brian Vessa, technical audio supervisor in the Post Production Services department of Sony Pictures Entertainment in Culver City, Calif. "Some people just took their hi-fi speakers and then built out from there. Other

people went the opposite direction and went to Good Guys and bought the little tiny speakers all around or a Bose system. You've got apples and oranges there. There's no standard in home theater."

Of course, THX has established a standard through its certification programs, but the reality is that there is still a very broad cross-section of systems out in the field. That puts technical staff, Vessa says, in the position of "trying to get to a common denominator that will translate on one side or the other of what we have set up on the mixing stage. It has to work both for systems that tend to be more warm and boomy and systems that tend to be thin and bright, both of which you find in the home."

Compounding the issue of speaker response is the fact that the speakers are so much closer in the home than in a theater.

"When you bring something into your home and you hear it on near-field speakers, you immediately get different sensations out of the sound," Vessa says. He also points out that the screen itself affects the sound in a theatrical environment. So a crucial part of setting up the mix is "getting the speakers out from behind the screen and up-close: Appreciating what's really coming out of the speakers, as opposed to what it's sounding like from a distance behind a screen—that's a lot of it right there."

Even with near-field monitors arrayed up close, substantial questions remain regarding how best to calibrate the system for a home-theater mix, including both high- and low-end response. In large part, that's because theatrical playback systems are set up to the "X-curve," a response curve defined in ISO 2969 and SMPTE 202M. "On the top end," Steckling says, "the X-curve
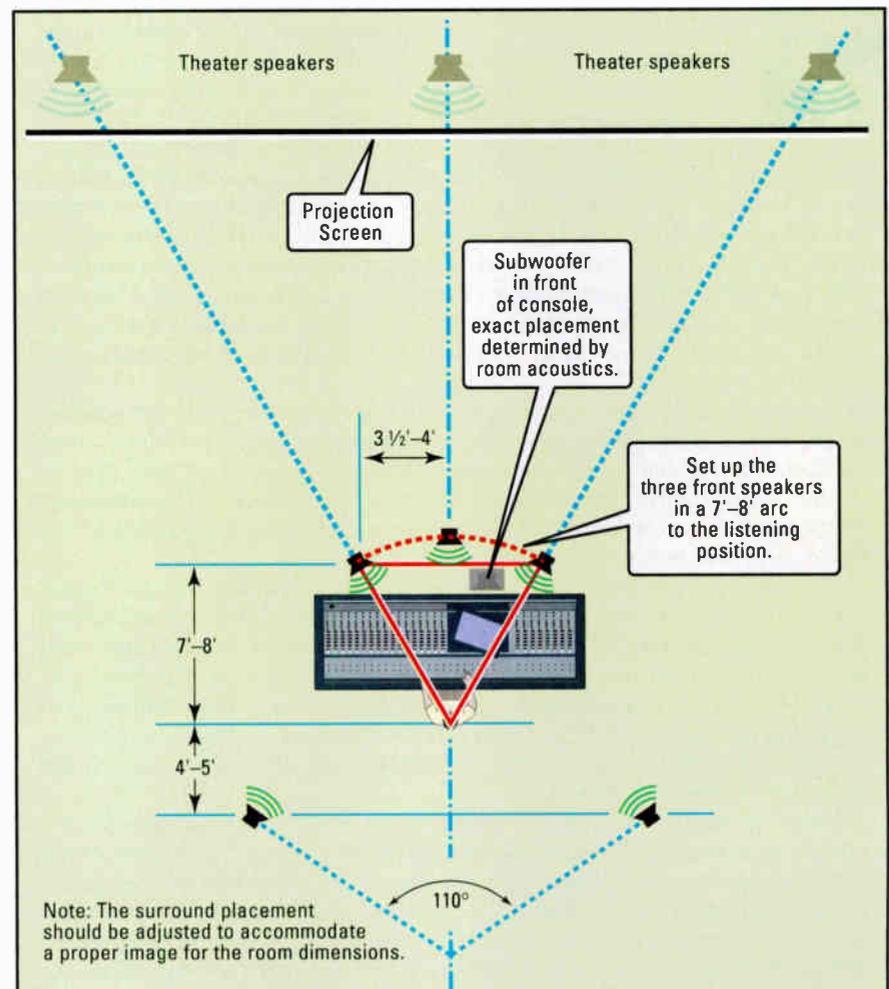
Near-field speaker setup in a film dubbing theater: L, C, R speakers are arranged in an arc 7 to 8 feet from the listener; surrounds are behind and to the side of the listener. The subwoofer is in front of the console at a distance that minimizes standing waves at the listening position. Overall monitoring level is 80 dB SPL.

starts at 2 kHz and is attenuated 3 dB per octave going up the spectrum. So when you're tuning for a big theatrical mix, your display should show 3 dB per octave going down in a nice line from 2 kHz. There's an X-curve for the bottom side, as well: 3 dB per octave going down from 63 Hz."

While the frequency response of home-theater speakers is all over the map, it's rarely as attenuated on the high end as the X-curve. So a mix made to sound good on an X-curve playback system—in theaters and dubbing stages—is unlikely to sound the same on a home-theater set-up. "It can be really bright in somebody's home," Vessa says. "And we're not talking about that nice, silky high end that's way out there; we're talking about something in the harsh register, 4 to 8 kHz. Dialog can be in there; sibilances can be in there; and effects, especially metallic-type effects, can trash your ears in there."

Because of the closeness and brightness, playback of an X-curve mix through a home-theater system also tends to reveal imperfections that were not noticeable on an X-curve system. "You hear all kinds of things that no one ever heard from the speakers in the theaters," Vessa says. "Punch-ins, for example, and also distortion. There's a tendency for people in the theatrical environment to push a lot of level. They got used to the way mag forgave that to some extent with kind of a soft compression. In today's world of digital recording, there is a finite ceiling past which the results are unpredictable and vary on different playback systems. In a theatrical environment, these 'overs' are not noticed or they are forgiven. But we have found that when you put those same levels onto DVD and hear it near-field, it's not forgiven."

BASS-MANAGEMENT LOWDOWN

Another potential problem in working with theatrical tracks for DVD is undesirable low-end activity, because of differences in the way the two environments handle low end. In multichannel theatrical systems, the sound reproduced by the subwoofer comes exclusively from the Low-Frequency Effects (LFE) track, meaning that the sounds have all been explicitly assigned to the sub during the mix. At the same time, says Steckling, "the frequency response on a typical theater system drops off like a rock at about 40 Hz, sometimes as high as 45, 46, 47 Hz. So when a film is mixed, there is easily information below 40 Hz that was not heard on the mixing stage and you don't hear it in the theaters. Nobody has heard what's down there below 40 Hz in the screen channels."

Home-theater systems, meanwhile, use "bass management," in which low-frequency sounds (typically below 80 Hz) from the front and surround channels are "crossed-over" and routed to the sub, where they are mixed with the LFE channel. The idea is to prevent these signals from overloading small limited-range satellite speakers and instead direct them to a transducer capable of low-frequency reproduction. But Vessa says that the results can be unexpected: "If you've got front-channel information on the print master in that 20 to 40Hz band, in a bass-management system, that will get redirected to the subwoofer. You've never heard it before, but now it's coming out in the sub, which already has everything that was steered directly to the LFE channel. You may be very surprised at some of the buildup that you get down there; all of a sudden, the sub's really talking."

One fix, Steckling says, is to filter the energy below 40 Hz on the theatrical print master except in the LFE channel. "That way, if the theatrical mix will translate better to the DVD, you're not going to get real surprised with all of this stuff under 40 Hz suddenly popping out." Vessa advocates a different approach, based on the fact that not everybody has a subwoofer or has bass management engaged. "Initially, I'll do my printing without lis-

THE SONY SETUP

Sony Pictures Entertainment's "SPE Specifications for the Creation of Home Theater Printmasters" covers the creation from theatrical stems of both 5.1 and Lt/Rt (for Pro Logic) print masters that "optimize a film soundtrack for home presentation." The specifications define requirements and setup for a home-theater remix on a full mixing stage.

In terms of near-field speaker placement, SPE calls for the three front speakers to be set in an arc 7 to 8 feet in front of the mix position, with Left and Right each 3.5 to 4 feet out from Center. The speakers are placed on stands adjusted to 6 to 8 inches above the console meter bridge and angled down toward the mix position. Left and Right Surrounds, meanwhile, are placed 4 to 6 feet behind and to the sides of the mix position at an angle of 110 degrees. The front and surround speakers are each calibrated fo 80 SPL, C-weighted, using a spectrum analyzer. As for the sub, it generally goes in front, but may be positioned as needed to achieve the desired response. Subwoofer calibration is +10 dB higher in its passband, relative to the average spectral balance of the near-fields.

Regarding the speakers employed, SPE's spec requires Genelec 1031A self-powered speakers and a Genelec 1094A self-powered subwoofer, or similar. The 1031As are to be used with the -2dB roll-off switch engaged on the tweeter only, with all other switches in flat position. "The -2dB switch," says Sony's Brian Vessa, "puts a gentle shelf on the top. It doesn't let the response just go wide open out to the sky, because you would never have that at home."

Skywalker's Jerry Steckling agrees. "There's no such thing as flat," he says, "except maybe in Nebraska. If there's a speaker that measures flat at 1 meter in an anechoic chamber, when you set it up at 8 feet in a typical living room with a little absorption and all that sort of stuff, it's not flat anymore. The -2dB EQ on the Genelecs does a shelf that starts to roll off at about 6 kHz, and we believe that this is what is happening at home. Our own approach is to leave that switch in flat and apply a nice, smooth curve. But we're within spitting distance of Sony's spec on actual high-end response. We just arrive there a little bit differently."

Vessa says that it is "a perfectly reasonable approach" to use quality near-fields other than Genelecs. "I did Final Fantasy through M&Ks," he says, "and it came out just fine." He suggests, though, that M&Ks be used without any roll-off because "M&Ks out-of-the-box aren't as bright as the Genelecs." As to why he specified Genelecs in SPE's requirements, he says it's because of "the detail they give. If there's something that can be heard—if there's a bad punch-in, an odd sibilance, a weird panning, anything like that—you're really going to hear it. Because everything's very detailed and very image-oriented in those speakers."

—Philip De Lancie

World Radio History

Mastering for DVD

tening to bass management," he says. "Then I do an entire playback with the bass management on, and I make notes. If anything is popping out that shouldn't be, we'll go back in and catch it on a fix pass."

However you handle it, Vessa says, "you have to be very careful about the low end." Not only can unintended low-end activity be distracting, but it can also throw off the mix's spectral balance, reducing intelligibility. "If you put too much in the sub or too much is being redirected there, it actually works against the people at home being able to turn it up to a volume where the mixer would like the dialog to be. Low frequencies, as we know, travel out, back, through surfaces and everything else. The subwoofer is the first thing that's going to get the neighbors coming after you to turn down the system."

DVD ON THE STAGE

Given all of the unwelcome consequences, it's clear that a simple transfer of the theatrical print master is not the ideal approach to DVD sound. From fairly early in the format's life, efforts were underway in various quarters to find a better way. One approach has been epitomized by Robert Margouleff and Brant Biles, whose aptly named Mi Casa Studios brings the audio-for-DVD mastering process into an actual home environment. (See "Mi Casa Studios," *Mix*, December 2002.) Others—including Don Eklund, who was chief engineer at Sony's Digital Authoring Center in the early days of DVD—have viewed DVD optimization as a process that takes place on the mixing stage as an extension of a film's theatrical mix.

Vessa recalls the *Men in Black* DVD as the first opportunity for Eklund to put his ideas into practice. "A special mix was created to see if they could resolve some of the issues they were noticing with the theatrical print master," he says. "In doing so, they were able to repair some of the problems and also optimize the soundtrack for the DVD release."

Vessa says that the approach "started off really simple: 'Let's set up some smaller speakers; let's put it to digital tape instead of mag.' Then when I started in '98, Don handed it over to me and said, 'Run with it.'" The result is a setup specification that has grown into an 18-page document guiding audio master preparation for every Sony Pictures Entertainment film destined for DVD. (See "The Sony Setup," page 56.) "You keep listening," he explains, "honing in on something that allows you to say, 'If I use this environment, it'll translate.' That's really what you're looking for."

Vessa's specification, admittedly, is oriented toward working on a theatrical stage with a near-field monitor setup. Monitor volume is reduced to 80dB SPL "to more closely simulate a realistic home-listening level," and compatibility is checked on a standard television. The suggested overall mix strategy involves "a moderate reduction in the dynamic range compared to the theatrical presentation...Soft sections are raised, especially music and dialog, but often background effects and soft Foley, as well. Very loud sections may need to be pulled back." The priority is that "the home listener should not have to continually adjust their volume up and down to hear the detail clearly."

If the idea is to simulate a home-listening experience, one might wonder about the need for pages of detailed requirements for the components and calibration of the monitors. Why not run down to the nearest electronics superstore and pick up a $300 surround system? "Because then you really don't trust it,"

Vessa says. "You need a good enough system," Steckling agrees, "to be able to tell the difference between what's on the track and what's happening in the monitors. So if something's distorting, you know it's on the track."

"The mixer needs to feel good about the fact that they're listening to something that's not totally different from what they're used to," Vessa adds. "It's been hard enough even to get some mixers to just sit down to Genelecs or M&Ks. They've just come off of months with a movie at very loud volumes, and everything's very large. And then, regardless of what the system is,

DVD REMIX AT ZAENTZ

"We definitely believe that it is essential to remix films for the DVD release," says Jim Austin, chief engineer at Saul Zaentz Film Center in Berkeley, Calif. "It's not a major remix, but when the changes are done properly, the result really allows the film to play properly in the home environment."

Austin describes four main reasons why DVD releases can typically benefit from additional optimization. "Because the DVD will almost always be played back at a lower volume," he says, "you want to reduce the overall dynamic range of the mix. You can also change the mix level and/or equalization of certain elements because the DVD is played through speakers with a high-frequency response that extends flat an octave or more beyond that of a dubbing stage. Because home-theater systems use bass management, you can change the low-frequency content as needed in both the main channels and the LFE. And due to the closer placement and less-dispersed sound of the surround speakers, you can change the mix to maintain the desired spatial effect."

To create an appropriate environment for home-theater sound on a mixing stage, the Zaentz facility's setup procedures are based largely on guidelines developed by Brian Vessa of Sony Pictures Entertainment. (See "The Sony Setup," page 56.) "We use five Genelec 1032s set 10 feet away from the mix position," Austin says, "and a home-theater REL Stendor III subwoofer with system management by Studio Technologies. The monitor level is set at 82 dBC. We also check the 2-track stereo mix on a television with decent built-in speakers set to 78 dBC."

Austin

Despite Austin's conviction that tweaking the mix for DVD is a must, making the case to the Center's largely independent clientele can sometimes be a tough sell. "The studios actually releasing the DVDs mostly seem to understand the need for a DVD pass," Austin says. "But quite often, that is a different company at a different time, not the clients who mix the original. Most independent producers are still reluctant to pay for a separate DVD mix."

—*Philip De Lancie*

Mastering for DVD

when you go near-field, a lot of them are like, 'My God, I don't know quite what to do with this.' So you've got to give them good enough quality that they can start to fiddle and go, 'Gee, I really do hear that little move I'm making.' Then they can start really getting inside the speakers and trusting the results."

This last point underscores the importance both Vessa and Steckling place on

Jerry Steckling, acoustic engineer, Skywalker Sound

engaging a film's theatrical mixers in the DVD-optimization process. "The director and sound designer are often off to something else," Steckling says, "and they want to feel that the DVD is in good hands. So they are happier that a mixer from the film—someone they trust and that knows the film—is dealing with the DVD."

Vessa agrees that if you stay with the same mixer, "you're going to get a translated product—the experience that the original mixer has with the movie is key to maintaining the integrity of the film's vision. I know that the mixers from the films that I've worked with have certainly appreciated the opportunity to have a listen in this environment to see if they want to do anything to it and to do the tweaks themselves. Sometimes, however, the mixing team is on to another project directly and is not available. But as long as you've got the participation of someone else from the production who knows the original intent and sound choices of the film, it doesn't necessarily have to be the same mixer." The main point, as he writes in his specification, is that "the end results will translate well to the home environment, where the film will be enjoyed long after the theatrical run."

Philip De Lancie is Mix's new-technologies editor.

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BY MAUREEN DRONEY

Jim Scott

From Rags to Faders

When you're tired of sound-alike mixes and you want your music to sound like your band instead of some over-EQ'd, overcompressed, generic dreck, who ya gonna call? Well, lately a lot of people have been calling Jim Scott. Don't let his quiet demeanor fool you; in this case, still waters run very deep. Scott is known as much for his unique perspective as he is for his wicked sense of humor. He's technically demanding (ask any studio tech he's worked with), fearless, honest and direct. He expects things to be done properly, and if they're not, he doesn't tolerate excuses. No doubt, his classic from-the-bottom-up, Record Plant-style education contributed to his M.O., but you get the feeling that Scott has always been uncompromising about quality.

That trait has served him well throughout his career. He had early success and a Best Engineered Album Grammy nomination for his work on Sting's first solo project, *Dream of the Blue Turtles*, and a Best Engineered Album win for Tom Petty's *Wildflowers*. His prolific body of work includes projects with Santana, the Rolling Stones, Johnny Cash, Robbie Robertson, Matthew Sweet, the Foo Fighters, Matchbox Twenty (*More Than You Think You Are*), numerous Tom Petty CDs (including the 2002 release, *The Last DJ*) and the two most-recent Red Hot Chili Peppers releases.

I found Scott ensconced at Hollywood's Cello Studios, where he was mixing for RCA's punk/pop group Eve 6. He works at Cello often and has Studio 2 set up just the way he likes it: a custom Neve 8028 console, two integrated Neve BCM10 sidecars and plenty of vibe.

You're known as an engineer who thrives on working with bands. Did you start out doing live sound?
During college, I had a P.A. and worked with a band. My job was mixer, manager, roadie and producer. We did a lot of gigs and had a lot of fun.

How did you happen to own a P.A.?
My roommate was in a sort of folk-rock band. They were actually really good, with original music and great harmonies, all stacked and syncopated and interesting—sort of like CSN meets Yes. They'd rehearse in the apartment, and I'd be hanging out and listening. But when we'd go to the coffeehouse where they were playing, it never sounded right. You couldn't hear who was singing lead; sometimes, there was only one mic—all sorts of things were wrong. I knew how it was supposed to sound, and it just wasn't happening. So I went out, bought a P.A. and said, "Okay, next gig we're going to get it to sound right." And that spawned me working with them and getting more involved on a musical level. The P.A.s got bigger, the group got bigger, and the gigs got bigger.

*Back up a minute. When you bought that P.A., did you know anything about it?*
Just what every other kid who was ever in a band knew—that you needed one. In high school, I played in bands; I was a drummer. Actually, I was the best drummer in Kirkwood, Missouri. Of course, when I came out to L.A., I tried to get in some bands and realized that I was really terrible. I wasn't used to that.

But you didn't come to L.A. to study music.
No. I got my B.S. in geology at USC. Graduation and the band breaking up all happened at the same time. Adulthood was suddenly upon me, and I ended up getting a job as a geologist, which was enjoyable, lucrative and professional. My parents were ecstatic.

My son, the geologist!
It was perfect. The only problem was that it felt like
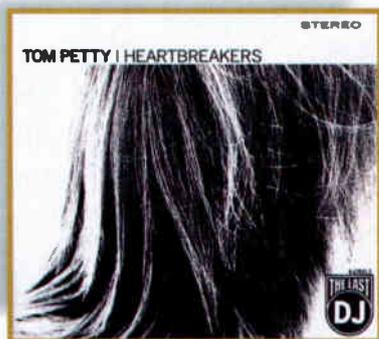
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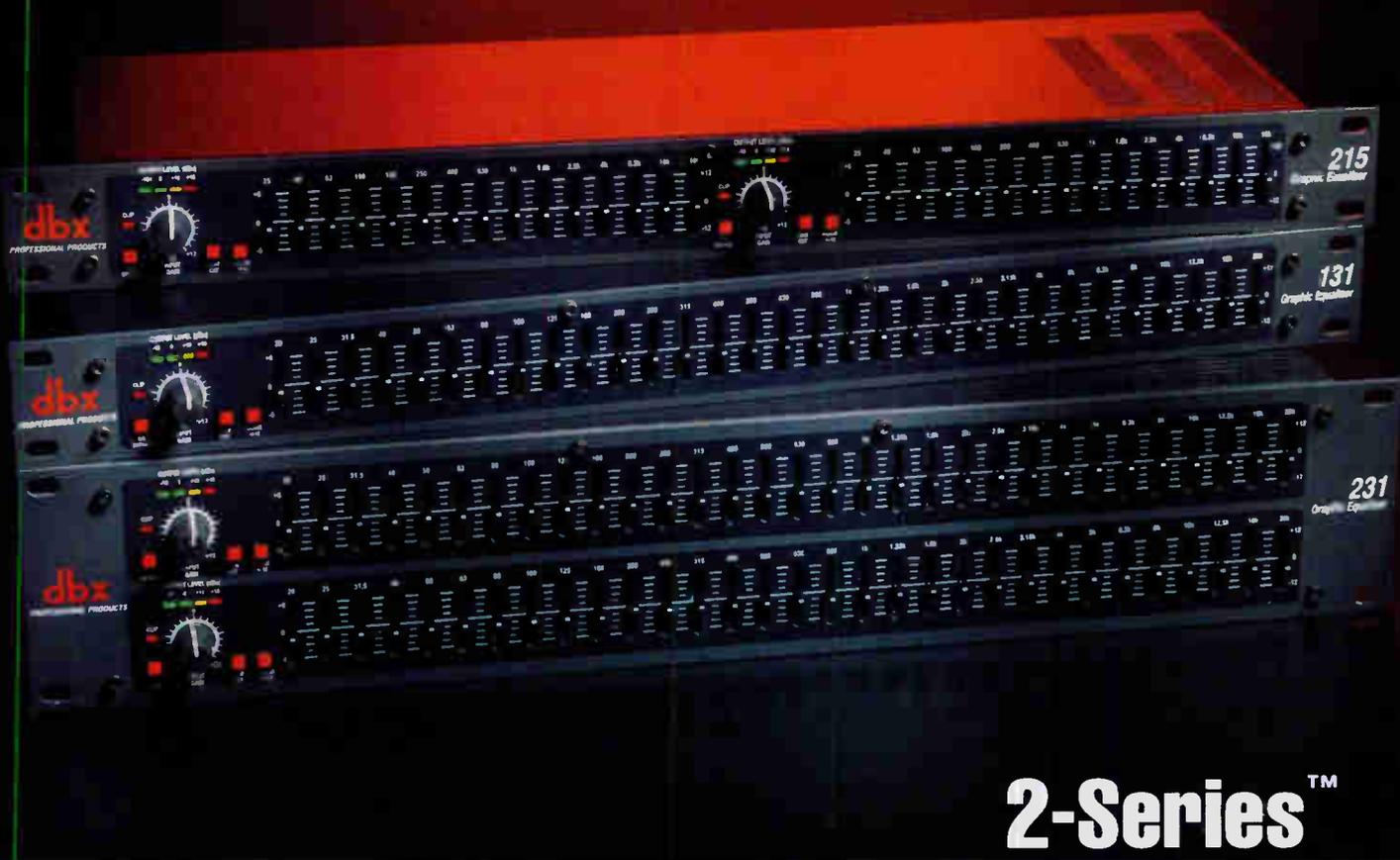
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an older person's job, and I didn't then—and still don't now—feel very grown up. And for a lot of other reasons—some of them having to do with the fact that the work I was doing involved massive developments on land that had been pristine and beautiful—I ultimately decided it was not the right thing for me to do. So, I ended up getting back into music where I'd always been happy.

How'd you make the change?
The girlfriend of my roommate was a bookkeeper at Record Plant. She told me there were guys who came in as runners and janitors and worked their way up—sort of like going to school. It took me awhile to face the reality of leaving my professional, money-making job and going back to minimum wage; but, ultimately, I did it. And the day they gave me my Record Plant T-shirt and the keys to the studio station wagon, I felt like Rocky Balboa: I'd done it. I was now the master of my own destiny.

You just walked in and got a job?
[Laughs] Not exactly. My friend set up an interview for me. Now, I had a college degree, a professional resumé and I was going in to get a minimum-wage gofer job. [Record Plant owner] Chris Stone looked at the resumé, and it only took him a couple of minutes to say, "I'm sorry, I can't hire you. You've got the wrong education, no electrical engineering degree and you're too old. You're going to work for six months, get dissatisfied and quit. That costs me money. I need a guy who's going to stick with it."

How did you feel?
I couldn't believe I didn't get hired. I went to the bar next door, where they actually had a direct phone extension to the studios. So you could call, say, Rod Stewart and tell him it was time to come back to his session. I went over there and had a beer, and I was telling myself, "This is crazy. What is he thinking?" I picked up the phone and called him. I said, "Thank you for the meeting. I thought about everything you said, and I'm still available to start Monday." And Chris said, "Okay. Come on in." I think he was just waiting to see what I'd do. I mean, there was no shortage of resumés; I had to convince him.

How'd it go once you started?
There were a lot of guys who worked there who didn't make it. They were offended that they had to clean toilets and sweep the hallways, wash the fish tank, clean the Jacuzzi and make up the beds in the bedrooms. To me, it was easy. My

parents had raised me and my brothers right: We washed dishes and swept floors; I knew how to work. So it was easy to be better than a lot of the other guys who didn't want to do those things. I just made sure I was walking down the hall with a rag and a bottle of Windex whenever…

Chris Stone walked by.

Chris, or Lee DeCarlo, the chief engineer, or [manager] Rose [Mann]. And one thing led to another. How hard is it to be a runner? Well, more challenging for some than others, but I was a great runner. And then I was a great night phone-answering guy.

Your route up was the traditional one.

You run for six months, then you janitor for six months. Then you become the head janitor and schedule the other janitors. And if toilet paper doesn't get bought, it's your fault; if the coffee and the cocoa don't get ordered, it's your fault. After being head janitor for a while, you graduate to the setup department. And if all of the mics that you bring into the room don't work, it's your fault; if the cables don't work, it's your fault. At Record Plant, the intimidation factor kind of separated the men from the boys. It was really important that your session went well,

> **Suddenly, I was a recording engineer, flying to Barbados, making a big record with a guy that I had done a good job for.**

and it was up to you to make sure that it did. It was a good training system, and you had to be dedicated to endure it.

Didn't you get involved with live remotes also?

Other than actually getting hired at Record Plant, that was my luckiest break. I missed the setup and the maintenance and the real assistant kind of training, but the training that I got in two years on the road was the best. Every band was starting to need a video, and the quickest way to get one was to record the gig. The Record Plant trucks went on the road and, for a long time, never came home. They needed bodies in the seats, and I had a truck-driving license. Also, I was a little older and able to be

trusted with a briefcase full of hundred dollar bills. So, I went on the road, and we did over 500 gigs in two years.

What did you learn from doing remotes?

I learned how to align the tape recorders, how to set up 60 mics and get them all checked and ready to go at 8 p.m., and how to get a balance going out on a broadcast—like that! Over and over and over. Making a rough mix was easy. Doing it all became easy. It was just the job, and it was great fun.

Why did you stop?

I met my beautiful wife, Carol, got married immediately and decided to stay home. I was then put into the studio as an assistant, which I did for about a year, until I was exhausted and broke. I'd made more money on the road; in the studio, I was earning five dollars an hour. I was working around the clock, regularly 100 to 125 hours a week. [Laughs] In fact, for Chris Stone's birthday a couple of years ago, his daughter called and asked if I'd make a page for a book for him. I sent him one of my old pay stubs showing those hours and wrote, "Thanks a lot!"

They wouldn't pay you more?

I'd gone in to get a raise after I'd worked

myself up to being the top assistant. You didn't move up until someone above you either got fired or quit, but finally, I was the top guy and I knew it. I knew everything, and I'd been working on all of the big gigs. I went in to get a 25-cent-an-hour raise. And Chris said, "You're at the top of the pay scale. I'm sorry, but that's the way it is." So I said, "Well, here's my notice. I need to find a better job." And he said, "Great! That's good! *Now* you're a recording engineer. Go out and bring me a client."

Then you were on your own. What did you do?

I did demos and "super-assisting" for Record Plant. They would call me back when they had a problem. And I got another big lucky break. They called me in and said, "We've got a guy here from England who's on the scoring stage trying to do a cinema release of a Police *Synchronicity* video. He's locking up three mag machines and two multitracks over there with the union guys and it's not working. Will you go over and straighten everything out?"

I went over and met [producer] Pete Smith. I got everything bused and straightened out, and I told him to just do his thing and that I would make sure everything was going good technically. After that job, six months went by, then Pete called and said, "I've just been asked to produce Sting's solo album. Would you like to come to Barbados and engineer?"

Suddenly, I was a recording engineer, flying to Barbados, making a big record with a guy that I had done a good job for, which just goes to show, if there's anything to teach assistants, it's that you've got to be great. I mean, you never hear anybody say,

"Hmmm, I'm double-booked and I need somebody to do these vocal overdubs. Get me somebody who's not very good to do it." No one ever says that. You've got to be on your toes—every day, every job.

That record was Dream of the Blue Turtles *and you were nominated for a Grammy.*
Yeah, and after that I thought, of course, every record I did was going to get a Grammy nomination. Instead, I didn't work for a year. I was totally under the radar. I didn't have a manager; people didn't know how to get in touch with me. Eventually, though, one thing led to another. You keep meeting people, doing a good job, you don't get fired too many times, and the next thing you know, you're getting interviewed for *Mix* magazine.

You're mixing today, but you don't have many cables in the patchbay.
Sometimes there are more patch cords than at other times. But I'm not into that school where every channel has to have a Pultec or an 1176 on it. In general, I use a few pieces that are very powerful. And the record that I'm working on right now [for Eve 6] came to me in good condition. It already sounds really good.

What are some of those powerful pieces of equipment?
It's the most obvious stuff, really. I have an old 1176 from a Record Plant remote truck that I like to use on lead vocals. It's the best one I've ever heard. I use a slap machine for delay, a ¼-inch going really slow, 3¾ ips. I have a Gates [Sta-Level] compressor and a Fairchild stereo compressor that I use like reverbs: I return them to the console and send different things to them.

The Gates is a very powerful com-

World Radio History

pressor, in that it's only going to get so loud. [Laughs] But then you can just keep cramming things into it until they excite the speakers the way you want the record to sound. It's mono. I put it right up the middle, and I put everything in it that needs to be bigger, deeper, wider, fatter—whatever needs some strong centering and more apparent volume. You can put the kick and the snare and the bass guitar into them a little bit, in different amounts, and really lock them together, really bring them forward into the mix without making them louder.

Something else about the Gates: A mono Fairchild has 12 tubes in it, and it costs $15,000. A Sta-Level has the same front six tubes as the Fairchild, but it only costs $1,000. They're slow, of course; they take forever to release. Slow release is in 24 seconds; fast is 12. It's not as all-purpose as the Fairchild, but it has such a strong sound, and for the money, it's a great compressor. You really need a Neve board to pull it off, though. There's an incredible amount of level coming through that thing, and other consoles just don't hold it.

You can also do things like that in stereo with the Fairchild. If there's something wrong with the way the guitar on the left is, you can stick it in the compressor a bit and it might get a little fatter, a little louder and just sort of become "more," rather than just turning it up or EQ'ing it a lot. Really, it's all about balance; everything else is way less important. Especially with everything being digital now, you have to figure out a way to make things both really loud and really dynamic at the same time.

What's some other favorite gear?
The things I've collected the most are compressors. I have a couple of United Audio 175 tube compressors. They were the precursor to the 1176, the tube version. They do both the tube thing and the 1176 thing. They're slow, but they're fat and they distort really beautifully.

I'm also the proud owner of a lot of guitar amps. I have them around for my clients, plus I love looking at them. I've gravitated toward the '60s Fender stuff: Princetons, Bassmen, Bandmasters, Tremolux, Vibrachamp. I actually think if you get a half-dozen of those amps in the room, the vibe gets better.

The equipment-collecting thing started when I was an assistant. It would be three in the morning, the guitar player would break his last pick and there wasn't another anywhere. So, being the incredible assistant that I was, I started having my own personal supply of picks and strings and straps and cords and snare drums, and drum sets. Along the way, it turned into everything.

Speaking of electric guitar amps, what mics do you rely on for them?
[Shure SM] 57 and a [Neumann] U87 on the same speaker. I put the 57 kind of right in on the cone, and I put the 87 just slightly off between the cone and the rim. You can't get them too far apart because of phasing; you have to listen carefully. That gives you a "good mic, bad mic," "bright mic, dull mic" combination you can play with without having to engage an equalizer.

How do you pick which speaker to mike?
One way I do it is to turn the amp on at the volume the guy's going to play at and listen to the sound—the hum or buzz—it makes at idle. Then I'll put on headphones and take a mic around, speaker to speaker, on different parts of the speakers, until I find the sound that's most like the sound the amp makes without any signal going through it.

You were collecting old gear long before

everyone got into it, like the Neve BCM 10 you got back around 1986.

Well, the sound of these [Neve 80 Series] consoles is so good and so fat—it's the most important part for me. It's what everybody talks about. It's loud, bright, sweet, warm, big. They distort in such a beautiful way; it's the whole sound of rock 'n' roll.

But your first big record was done on an SSL.

Yeah, there was an SSL at Eddy Grant's studio in Barbados, and an SSL at Morin Heights in Quebec where we mixed. So it just goes to show it doesn't really matter what you're working on: If you've got hit songs and a great singer, no one cares what the console is.

> I'm also the proud owner of a lot of guitar amps. I've gravitated toward the '60s Fender stuff: Princetons, Bassmen, Bandmasters, Tremolux, Vibrachamp. I actually think if you get a half-dozen of those amps in the room, the vibe gets better.

I learned on APIs and on SSLs, and they sounded great. But at one point, Daniel Lanois was producing Robbie Robertson's first record and I got hired to engineer it. We were at the Village in Studio A, when it had an SSL. We were trying to get drum sounds, and Jeff DeMorris, who was my assistant on that project, said, "We've got this sidecar; you might really like the sound of it." Now, I'd never worked on a Neve, never even seen one. He brought it in, hooked it up, and the tom went *boom* and the snare drum went *boom*. I was, "Okay, what is this magic trick?" The next day, I called Dave Hadler. He brought one over, and I bought it for $6,000.

I feel that [the Neve sound] makes my job easier. Because when people say, "Can you give me some more bottom?" and you're working on an SSL, at some point, it says, "No, I'm done here." And then

you've got to actually be talented and figure out some kind of way to get some kind of incredible booming bass when the equipment you're using is sort of getting full. It's not really a criticism; everything has different limits. For me, with these Neve boards, the limits are just more expanded.

I see you have a very colorful pair of KRK E8s. Are those your main monitors?

I really love them. I also like the ProAcs. Rick Rubin, at the moment, is a big ProAc fan, so the Chili Peppers record was mixed on them. Everything takes a bit of adjustment. I don't go switching back and forth all day long. I like the E8s. They get loud, they also sound good quiet, and they take a beating and don't break. And I like the paint job. I saw Bette Midler had a pair of leopard-painted ones, and when I bought my two sets, I got this set with flames and another set that's like a purple metallic Mopar kind of color—very sexy.

The last time I was here, you were recording to an ancient 1-inch Scully 8-track recorder for [Chili Peppers' guitarist] John Frusciante's record.

We did a lot of different things on that record. John wanted to create a mood so that when the music started, you were al-

ready in a certain space. He didn't want to make a '60s or an '80s record; he just wanted such a sound for some of the songs, so we used old tape recorders to create it. I'm not saying that the Scully is great; it's just unique. If you want a certain kind of sound, you have to use the equipment that created it. So, with [Cello chief engineer] Gary Myerberg—who thinks that kind of thing is fun and interesting—we were able to resurrect those old tape recorders. We used the 8-track on, I think, eight of the songs. The others were recorded on 24-track, except one, where we recorded the basic track to a Scully 2-track and then bounced it to a 24-track for overdubs.
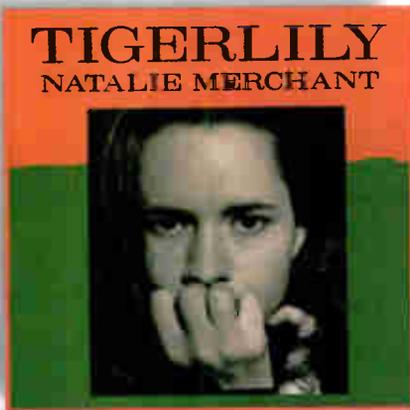
John's record is a really great combination of sounds: Organic beauty recorded in a sort of old-school style, all mixed together with modern, very creative digital sound. He's also going to knock people out with his singing. I suspect people have no idea how good he is.

You've been doing this awhile. What keeps you going?

I have a great time at work every day. After all, it's something I did for free for the longest time. The band I worked with in college? We're still friends. Back then, I recorded demos for them in every possible situation: in garages, houses, through the P.A., at gigs. I had a huge collection of tapes in all kinds of formats. This year for Christmas, it was all compiled into Pro Tools. We transferred and mixed, and put everything I'd ever recorded for these guys together into this 13-hour, 11-disc anthology. All of that music, for all of those years, I did for free because I loved it. Now I get paid to do it, and I get to work with some of the biggest bands in the world. I still love it. ■

Maureen Droney is Mix's Los Angeles editor.

BY BLAIR JACKSON

Bob Brockman

The Education of "Bassy Bob"

There are nearly as many different routes to becoming a music producer as there are producers. Some are born into musical families, where choosing a career in music seems like the natural and normal thing to do. Some become musicians and later find that they have a knack for production. Some attend recording schools to learn the nuts and bolts of the record-making machine. Some become engineers and mixers and later make the transition to producing. In the case of Bob Brockman, his route was choice "e": All of the above.

Brockman is probably best known as an engineer and mixer, having worked on hundreds of albums, singles, dance sides and remixes during the past 20 years for such artists as Debbie Gibson (all of her early hits), Surface, Mary J. Blige, Toni Braxton, Craig Mack, the Notorious B.I.G., Babyface, Christina Aguilera, Aretha Franklin, Al Green, The O'Jays, Brian McKnight, Heather Nova, Jodeci, Faith Hill, Korn, Laurie Anderson, Linda Eder, Vanessa Williams, and many, many more. But through the years, he's also had the opportunity to produce a number of acts, and though he continues to be one of Manhattan's first-call mixers, he clearly relishes the opportunity to expand his production opportunities. His resumé already includes credits for producing or co-producing Black Uhuru (*Mystical Truth*), Kirk Franklin (the Grammy-winning *Nu Nation Project*), Soulive (*Doin' Something*), Ali (*Crucial*), Babyface (*Face2Face* bonus import), his band Brooklyn Funk Essentials (two albums), Norman Brown (*Just Chillin'*, winner of this year's Grammy for Best Pop Instrumental Album), Wicked Queen and others. The past couple of years, with producer/engineer Yaron Fuchs (see sidebar, page 76), Brockman has spearheaded a production company and studio called NuMedia NY, which is developing and producing a roster of acts, including ghetto funkster G.T.O., Indian singer/songwriter Sanjay, New Yorican R&B singer Lugo, female singer Maya Azucena and budding emcee Sneakas.

"I'm really excited about producing records, because for me, that's the closest I can get to playing in a band," Brockman says. "I'm sure you've spoken to other mixers who tell you that mixing is a lonely job. It gets to a point after a while where they send you the reels and the artist and producers don't even show up. There you are for like three weeks in a room by yourself with a tape machine. And that's not what I signed up to do when I first moved to New York to try to be a mixer. I wanted to be in the mix and involved in making records. But because the industry is so producer-driven now, it's more about the mixer than the recording engineer these days, so the talent tends to move in the direction of mixing as opposed to recording, which is the opposite of the '60s and '70s. Back then, the producer was the guy."

Born in 1962, Brockman has been around music his entire life. "I'm from New Orleans," he explains, though he doesn't have even a hint of an accent. "My dad was and still is a jazz pianist in the French Quarter. The first couple of years of my life, I was raised in a jazz club called the Gaslight, which my mom and dad owned. For whatever reason, the club didn't work out. I moved to the D.C. area when I was 7 with my mom. I started playing trumpet when I was 5, and then when I was 12, I started playing bass. My dad had been a trumpeter, too, but became a pianist because it was easier to make a living that way."

Brockman excelled at the trumpet during his high school years, playing in a jazz group and entering numerous competitions. Whenever he could, he'd check out the groups that would come through the D.C. jazz club One Step Down; meanwhile, he was digging albums by jazz trumpet greats such as Miles Davis, Clifford Brown, Freddie Hubbard and Lee Morgan, even

transcribing solos he liked. For college, he enrolled in the University of Miami's vaunted music and engineering program. "It had a lot of electrical engineering, which I hated," he says, "but it also involved a lot of recital recording, which I loved. I did a lot of recording while I was there: Everybody's classical recitals, jazz recitals, big band. I actually won a couple of *downbeat* awards for recordings I submitted. There was a recording studio there, of course, and I'd sign up for late-night recording time. I remember sitting around with my buddy Jerry Placken, who had the best stereo system of anyone in school, and we used to sit and listen to Bill Schnee recordings, and Mick Guzauski and Elliot Scheiner and Roger Nichols. We'd sit there for hours trying to figure out how [Nichols] got the drum sound on [Steely Dan's] *Gaucho*. We had all kinds of questions on how records were made. That's how we spent most of our time: picking apart records. In addition to that, Jerry was a bad-ass drummer. So we had a little funk ensemble. I was playing trumpet, and we had various other guys who were really great players; in fact, a few of them have gone on to do big stuff."

After college, "I came to New York," Brockman remembers, "and although I was totally unemployable, I did have a semblance of [an idea of] what I wanted to do. I sent out 175 letters to different studios in New York, and I got like two letters back: One was from VCA Teletronics, which is a post house, and another was from Tiki [Studios] out on Long Island. I went to the Hit Factory and the Power Station and all of the big rooms, and they were all interested in putting me on as an intern for free. But I didn't have that option; I had to work. Ultimately, I ended up getting a job in Brooklyn at a studio called Ralston Recording in the heart of the ghetto. I worked for Charlie Ralston, who was a big Caribbean promoter. I went in for an interview, and he took one look at me and said, 'You sure you want to work here?' No white person had ever worked at that studio, and I'm not sure that many white people had even entered that neighborhood. But I wanted and needed the job, and they offered me to start that night. They offered me a hundred bucks a week, and that was my first real gig."

Like most "runners" (the exalted euphemism for "gofer"), Brockman spent a lot of time making coffee and answering phones and doing odd errands: "They used to send me out at two in the morn-ing for fried chicken, which was always an adventure. I was pretty much living there. I loved it. It was where I wanted to be."

It also exposed Brockman to an entirely new universe of music. "Working there was my introduction to African music—Soca—and the other thing I learned about quickly was hip hop. Doug E. Fresh was recording there. The Fat Boys were there. Slick Rick was there. Grandmaster Flash and [Grandmaster] Melle Mel were there. It was a very exciting time to be there, as it turned out, and I graduated from coffee boy to assistant to engineering within a matter of weeks because the studio was running 24 hours a day and they needed guys to cut sessions. I was getting bombarded, because I was working at Ralston and also hanging out at the clubs in New York. I'd never heard dance music before; I'd never heard hip hop before. Prior to that point, I was listening to Michael Brecker solo records and ECM records. But I loved it all. I was instantly impressed with rap when I heard it done by guys who could really do it."

I ask Brockman if having received a recording education in college prepared him for the self-consciously low-fi world of early hip hop. "Yeah, it took some adjustment," he replies. "I didn't understand why guys were showing up with an 808 drum machine and guys were taking a turntable and dropping the same bar over and over again across the groove; this is prior to samplers being common. It's

YARON FUCHS
NUMEDIA NY'S OTHER SIDE

There are a number of parallels between Bob Brockman and his NuMedia partner, Yaron Fuchs. They were born the same year; both studied the trumpet as kids; they established themselves in the New York recording scene in the '80s; and they have remarkably similar outlooks on what a given project needs and how to best achieve it. Of course, there are many differences between them, too. Fuchs was born in Israel, spent most of his youth in suburban Palo Alto, Calif., and then served in the Israeli military for a while before moving to New York and attending Columbia University, where he got a degree in music and computers. While Brockman was working with hip hop and R&B bands, Fuchs was cutting his teeth professionally, working with New York rock, industrial and jazz bands "doing engineering, sound design, production—whatever was needed on the record."

He opened EastSide Sound in 1990, in part because he wanted to move into production and having his own studio would give him more opportunity to work with his own acts.

"Mine was probably one of the first studios to have Pro Tools locked up to 2-inch tape machines, working the way everybody makes records now. I used to edit all of my drum tracks on a 4-track Pro Tools, locking up all sorts of invisible tracks and throwing them back in. That's how I made my records."

He echoes Brockman's sentiments about the ease and flexibility of their partnership: "If it's a production call, we divide and conquer. Like on the [still unreleased] Wicked Queen album, he did all of the vocals and I did all of the tracks. On this punk band we're doing, called Mommy and Daddy, Bob is doing programming, while I'm working with the live band. It's really sort of like who feels like doing what. Creatively, it's really loosey-goosey. But then, on top of that, I run the business and Bob does more outside mixing than I do.

"These are tough times in the music business, and you can't ignore that," Fuchs says. "But what we're doing is, number one, we're doing what we have to do to make our business grow. And number two, we're building our catalog for when the changes come in the business—whether music's going to be sold through downloads, through labels or through independent promotion; it doesn't matter. Music will always be bought somehow, somewhere. And we're going to keep doing what we do."
—Blair Jackson

World Radio History

BY GARY ESKOW

Rick DiFonzo

Drumming Up a Life at Home

You've played screaming guitar solos before the largest audience in entertainment history, tracked some tasty acoustic solos for a picky client named Jagger and survived the vagaries of the New York jingle business. What's next?

Rick DiFonzo's answer can be found by twisting up a narrow flight of stairs to the third floor of his Roselle Park, N.J., home. When he decided that touring with the likes of Roger Waters and Cyndi Lauper and commuting daily to Manhattan were taking too much time away from his family, DiFonzo took a look around and decided to settle in.

His project studio—which features Mac and PC, Pro Tools and Logic, all routed into a Mackie 32x8 console—is nestled comfortably in 500 square feet. He now composes about 20 pieces of music each month for the BRG Library, which is owned by Clear Channel, America's largest radio conglomerate. He's also the key player behind Discrete Drums, one of the best-selling sampled drum libraries in the business.

"Most of the rock libraries I heard were limp, and the one or two that actually rocked seemed to be swimming in reverb," DiFonzo says. "Faster chips and machines with tons of RAM made me realize that multi-tracked drums were the way to go. Every Discrete Drums performance includes eight tracks of drums, like you'd find them laid out on a multitrack, plus a stereo mix. Each user can customize the sound of the kit and make it sit in a track just the way they want. The response to *Series I* was so good that we released a second, and we're just about to put out a third."

Series I was recorded at Nashville's Hum Depot with Steve Marcantonio at the console and drummer Greg Morrow on the kit. *Series II*, recorded at Sound Kitchen, featured drummer Chris McHugh and percussionist Eric Darken, who is also spotlighted on the recently completed third release, along with Morrow.

While he books acoustic spaces for his drum library work, most of DiFonzo's composition career is based out of his studio. "I engineer all of my stuff, which I'm not thrilled about, but I'm okay," he says. "Everything goes through the pair of Daking mic pre's. I also have a pair of Daking compressors, and both pieces are fantastic. I did a lot of jingle writing in the 1980s at a New York house owned by Louise Messina. Geoff Daking was her husband at the time, and he taught me a lot about engineering. Geoff was the drummer with the Blues Magoos, and he really had a feel for recording drums."

For critical near-field monitoring of his mixes, DiFonzo chose the Mackie HR824s. "Like everyone else, I used to monitor through NS-10s," he explains. "But
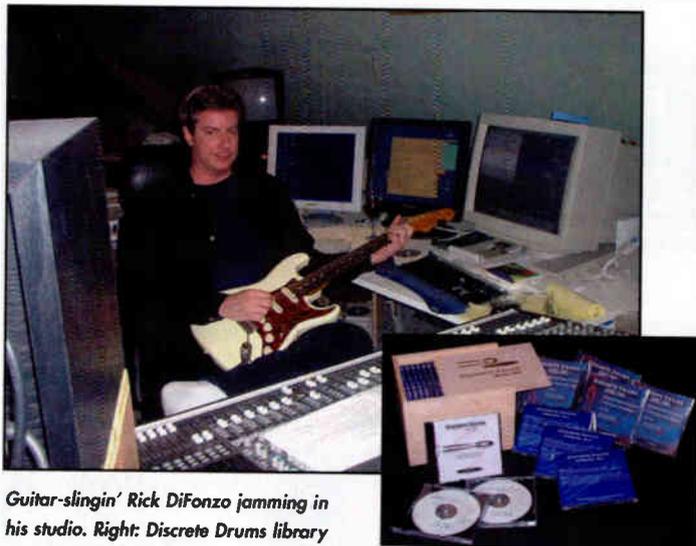
Guitar-slingin' Rick DiFonzo jamming in his studio. Right: Discrete Drums library

I recorded the first Discrete Drums library down in Nashville, and it seemed like everyone had either the HR824s or Genelecs. The Mackies were cheaper, so I went with them, and added a JBL powered subwoofer to beef up the bottom end a little. I strap an A&D Compex Limiter across the console's stereo bus and mix down to a Tascam DA-80 Mark II DAT machine."

Although he has found comfort and creativity at home, DiFonzo does look back fondly on his days as a guitar-slinging rock 'n' roller. "I recorded guitar tracks on Roger's [Waters] album *Amused to Death*," he recalls. "That led to my appearance with him at The Wall concert that celebrated the falling of the Berlin Wall in 1990. It was just amazing. We played before almost half-a-million people at the site and a broadcast audience that included every country in the world except America and Albania! Thomas Dolby flew in on wires; there were marching bands and choirs and the largest stage—and crane—in the world! I'll never forget it."

With his music-production and sample library businesses thriving from his home base, DiFonzo has found the time to watch his 16-year-old daughter's high school volleyball games, help out his wife with chores and tend to his family's dog and cats. But the fire still burns: "Cyndi Lauper's management recently asked me if I wanted to go out on tour," he says. "The timing wasn't quite right, but there's nothing like ripping off a screaming solo in front of 10,000 people. I need to get that rush at least one more time!"

For more on Discrete Drums, visit www.discretedrums.com.

MIX ONLINE EXTRAS

Gary Eskow is a contributing editor to Mix.

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FIRST WE LISTEN

And the Award Goes to…
Hi-Def, 5.1 at the Grammys

By Paul Verna

Music fans will remember the 45th annual Grammy Awards as the one where jazzy chanteuse Norah Jones stole the show, beating out such veterans as Bruce Springsteen in the prestigious Album of the Year category. But the professionals in charge of the audio for the CBS broadcast will recall the 2003 Grammys as the first ever to deliver discrete 5.1-channel audio—and high-definition video—to the home.

Phil Ramone, chairman of the Recording Academy's Producers & Engineers (P&E) Wing, says, "Doing the Grammys in 5.1 had been a passionate goal for a lot of us. I've always been after trying to make something happen quicker rather than later, and this time, we were able to do it."

Hank Neuberger, advisory council member of the P&E Wing, says, "Phil Ramone, Murray Allen [audio advisor for Grammy Production company, Cossette Productions], myself and others had been talking about doing the Grammys in 5.1 for at least three years. We weren't ready then, but we started the brainstorming process. At the Recording Academy, we're the natural ones devoted to pushing the envelope. This year, the planets lined up and we had great enthusiasm on the part of Cossette Productions to do it. CBS was open to it, and we got Dolby involved, because the Dolby E audio-compression process was a vital part of the signal chain."

In order to achieve the 5.1 mixes without compromising the stereo broadcast signal, mobile recording company Effanel Music set up separate monitoring environments for each mix. Both the stereo and 5.1 mixes were created in Effanel's flagship L7 truck, which is equipped with a Neve Capricorn digital console. Mixers John Harris and Jay Vicari would toggle back and forth between stereo and surround during rehearsals and downtime; their surround mixes were then sent next door to the On-Site Recording (OSR) truck, a smaller vehicle that houses a Yamaha DM2000 console. Inside OSR, Effanel owner Randy Ezratty—who developed the dual-

"London Calling," New York picks up: Steven Van Zandt, Dave Grohl, Tony Kanal, Pete Thomas, Bruce Springsteen and Elvis Costello pay tribute to the late Joe Strummer.

monitoring concept and served as sound designer for the broadcast— would fine-tune the 5.1-channel stems and collate them with audio from the podium and audience mics that were sent to him by mixer Ed Greene. OSR owner Joel Singer worked alongside Ezratty, focusing on the technical aspects of the Yamaha console and the signal chain within the unit.

Although Harris and Vicari generated the 5.1 mixes, once the show began, they turned off their center and rear speakers and concentrated on the stereo broadcast. At the same time, all the 5.1-channel information from the Capricorn was being sent to Ezratty for monitoring and tweaking.

"The mandate on this was, 'Don't compromise the stereo so it's like we're doing two simultaneous productions,'" says Ezratty. "Prior to the show, I wrote everybody an overview of this, which Murray, Hank and Phil really embraced. In my overview, I said that the 5.1 production should be ambitious: It should sound like we're trying to do something interesting. It should have real spatial content. However, the novelty of it shouldn't overshadow the content."

In order to make the surround and stereo mixes exciting and consistent with each other, Harris, Vicari and Ezratty were in constant communication between the two vehicles. Just prior to show time, Harris commented, "At first, we came up with some basic concepts for surround and sent those mixes to Randy, but we weren't even listening to them. Randy was the only one hearing the 5.1."

Vicari added, "It's an ongoing process. Whenever we're doing something in here, Randy's monitoring what we have bused out. Then we combine our thoughts and come up with a plan."

Before the 5.1 mix could travel from the OSR truck to the CBS Operations Center, it needed to be encoded in Dolby E, the company's newest digital audio-compression technology. To that end, OSR was outfitted with two Dolby DP 571 encoders—a primary one and

The 45th Annual Grammy Awards 5.1 Dream Team, l to r: Jimmy Jam, Randy Ezratty, Hank Neuberger, Murray Allen, Phil Ramone and Leslie Lewis.

a backup—as well as a DP 572 decoder for confidence monitoring.

Once the Dolby E-encoded signal arrived at CBS, it was decoded, run through the network's control room and re-encoded into Dolby E. Then, it was sent via satellite as a hi-def MPEG transport stream to the networks' affiliates, which, in turn, extracted the audio signal from the MPEG stream and decoded it again into discrete 5.1. Finally, each station would run that discrete 5.1 mix through a Dolby Digital (AC3) encoder and send it to people's homes. Dolby E can be encoded and decoded many times "without losing audio quality," says Rocky Graham, Dolby manager of DTV applications.

"We've been involved in 5.1-channel broadcasting before," Graham continues. "There have been lots of TV programs that are 5.1, and some have been live events, like last year's Super Bowl and a Britney Spears show on HBO. Also, the Tournament of Roses Parade and NASCAR racing are broadcast in 5.1. But the thing that's unique about this is it's the first awards show—and by far the biggest musical production—ever done this way. For Dolby, it's exciting because we've

been such a big part of the music industry over the years, and to have that come together with 5.1 broadcasting, which is a relatively recent phenomenon compared to Dolby's history, is a thrill."

There were technical challenges, however, mostly in the realm of audio and video synchronization. Because of the many stages that the audio signal went through—from the digital mixers in L7 and OSR to the CBS control room and affiliates' studios—the audio crew and CBS' engineering team were especially vigilant about latency. After extensive testing, they determined that a delay of 53 milliseconds needed to be compensated for in the audio stream, so they took the appropriate steps, according to Ezratty.

Working out the synchronization issue was the last obstacle in an enormous production that pushed every crew member to his and her limits. Ezratty says, "This show is over-the-top, technologically. I mean, we had the New York Philharmonic with Coldplay out there, and we had six minutes to set it up! It's not that I'm intimidated by the Grammys, because we've been doing the show for more

Taming RF at the Super Bowl

James Stoffo on Helical Antennae

By Mark Frink

The Super Bowl is a great testing forum for wireless products. On the field last January, in San Diego's Qualcomm Stadium, upward of 2,000 active frequencies were allocated on game day: The stakes are high, and there is potential for a lot of adversity. "RF-wise, it is as bad as it gets," says James Stoffo, principal at Professional Wireless Systems and frequency caretaker for the past seven Super Bowls. "You have an enormously popular venue into which every imaginable form of interference is just dying to be introduced."

A few years back, while testing the range of the wireless in-ear systems used for the pregame and halftime entertainment, Stoffo discovered something interesting: A helical antenna with less than 200 milliwatts going into it performed better than a Yagi with a full watt. In other words, with one-fifth of the power, a helical still outperformed a Yagi. The Yagi started dropping out at the far side of the field, while the helical worked well *outside* of the stadium on the far side. "I'm looking for usable range," Stoffo comments. "As soon as you take one single hit, it makes a system unusable in my opinion."

It turns out that this advantage is not from the forward gain supplied by the helical antenna, because the Yagi antennae have similar RF gain and directional

Gwen Stefani and Sting delivered their "Message in a Bottle."

characteristics. Because a helical antenna causes the RF signal to spin though space, it covers all 360° of the possible RF polarization, whereas a Yagi antenna is either horizontally or vertically polarized, depending on how its cross-spines are oriented with regard to the receiver's antennae. This is the reason for the old RF folklore of having a wireless mic's diversity whip antennae at 90° angles: They are each looking at a different polarization of the transmitter. Any polarized antenna—whether it's a Yagi, a paddle, a log or a whip—is sensitive to the RF signals it's tuned to through a single plane of incidence. A helical antenna, by nature of its design, looks at every possible angle of polarization in the direction it's aimed at.

Most wireless in-ear manufacturers sell log periodic antennae, also called "paddles" or "shark's fins," which only cover one polarization. Usually, these antennae will be oriented vertically, which offers the best performance because the belt-packs tend to be

James Stoffo at the monitor mix position.

oriented up-and-down, with their antennae also oriented in that direction. Often when you take hits on a stage, it's because of a mismatch in the polarization between the transmitter and receiver, not because of a low RF level. While it's possible for the antenna's orientation to physically change from its vertical orientation, something else is even more likely. When a performer sweats or the antenna touches his or her body, it distorts the polarity of the receiver. Simply having an organic presence, like a human body, close to the receiver's antenna causes the polarization to distort, which means you can never guarantee that the signal will be correctly polarized for a belt-pack. The 360° spin on a helical covers every possible polarization.

On game day, Bon Jovi's post-game performance took place at the opposite side of the field from Professional Wireless' antenna farm at the monitor mix position. At the same time, hundreds of reporters and newscasters were turning on their RF mics for their end-of-game sideline stand-ups, raising the level of background radiation. "I had to give the Bon Jovi in-ear receiver every possible advantage," Stoffo says. "Without a helical antenna, as soon as the belt-pack goes off-polarity for a fraction of a second, it

opens up to all of the background RF and will take a hit." The same characteristics of bandwidth, polar pattern, gain and polarization for transmit antennae also apply to receive antennae. This is called "reciprocity."

Another advantage to helical antennae that Stoffo points out is that they are tuned for a wider band. "Unlike a Yagi—where you can only cover a 30-meg band—with a helical, it's better than 150 megs," he says. "We were going into one of our custom four-way power combiners and using Shure and Sennheiser wireless mic systems in two completely different bands over a range of 100 megs."

He points out another trick of the trade: When you have transmitters and receivers in close proximity, you can reduce interference by placing paddles or Yagis out-of-polarization with each other. "Helical antennae have either a clockwise or counterclockwise spin—what we call left- or right-handed." This cross-polarization minimizes interference in tight quarters. For diversity receivers, Stoffo says, having one of each orientation ensures more complete diversity and better coverage.

A final advantage of the helical is its 14 dB of forward gain, which means it can

be used passively on receivers, without amp combiners, reducing intermodulation and interference. Most paddles only have about 6 dB of gain, and so they tend to be used with amplifiers, which are amplifying any problems along with the signal. "I don't use amps on receivers," Stoffo exclaims, "but amps on transmitters is an entirely different story."

Professional Wireless makes its helical antennae out of a heavy-duty, transparent, polycarbonate material that can literally be bounced off of the floor, as Stoffo was eager to demonstrate. He's been using helicals since Super Bowl 33 in Miami, but mentions that Tampa was the toughest so far, RF-wise, even though there are some unlisted military transmissions in San Diego. Stoffo knows about these because of his background as a Navy Seal working as the RF tech on nuclear submarines. "For mission-critical applications, there's no antenna better than a helical," he sums up. "I won't use anything else when I have a choice."

Readers wanting a quick overview of the various antenna types can go to www.professionalwireless.com/antennas.html. ■

The Grammys

than 10 years. But because this show has so many other things tugging at it in terms of time, technical needs and gravity for the artists, it's an especially intense experience."

After the show, the crew received overwhelmingly positive feedback for its stereo and 5.1 mixes, suggesting that the bold gamble of broadcasting a program as complex as the Grammys in surround and hi-def had paid off.

Ramone says, "You feel insulated when you first start these ideas, but the e-mails and compliments back and forth have been amazing."

Neuberger adds, "We've had surround in movie theaters, we've had surround in our homes for five years, and now we're at the beginning of 5.1 broadcasting. There have been a few shows here and there done in discrete surround, but the Grammys are pushing the envelope and showing that it can be done creatively and technically. Television producers all want to create content in HD 5.1 because they realize that more and more people are going to have that capability in their homes." ■

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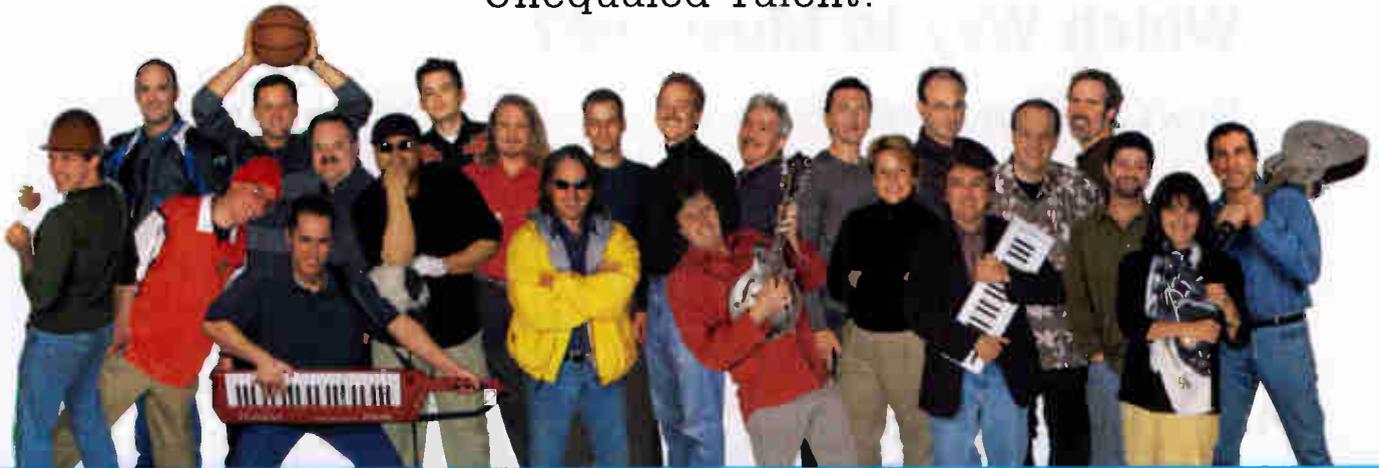
BY OLIVER MASCIAROTTE

Which Way to Moscone?

News and Notes From Macworld

B ecause my editors have things covered in the audio realm, this month's column looks at the other new stuff happening around the latest Macworld conference (January 6-10, 2003, San Francisco) in my astonishingly overpriced pueblo by the bay. All you Windows kids out there, don't tell me it's "…just a bunch of Mac weenies!" I've got some info for you, too.

By now, you've probably heard the buzz regarding the new PowerBooks, both big and small. Two unique features of the big PowerBook should be of particular interest to engineers, namely the display and the keyboard. One word about the display says it all: *large*. More of your DAW will fit on the 17-inch screen—all visible at a glance. As for the keyboard, it has a brilliant innovation: An auto-sensing backlight that's perfect for that dank cocoon you call your office.

MadWaves MadPlayer

But what really excites me most about these puppies is their new I/O; the technology formerly known as 1394b has finally arrived. This points the way toward FireWire 800, as it's now known, showing up everywhere in the next generation of computer peripherals, hi-fi/home theater and home networking gear. So far, only the copper implementation of FireWire 800 has come out of Texas Instruments, the leading PHY chip vendor, so we'll have to wait for UTP, plastic and glass optical-fiber versions in future silicon. Speaking of which, the wizards at Oxford Semiconductor are also ready for FireWire Deux. Their former 1394 performance leader, the model 911 chip, must pass the torch to the new 922, which combines USB 2.0 and 1394b bridged to IDE. All of the serious FireWire vendors—LaCie, Century Global, SmartDisk, Wiebe, etc.—are using the 922 in their ATA-6/FireWire 800 bridges and PCI HBAs, so ask for it by name.

Also in the storage department, I talked with the folks at Exabyte about the new FireWire 400 version of their VXA-2 desktop drive, along with some compact and affordable library products based on that format. They're looking forward to migrating the current crop of 1394 gear over to FireWire 800 as parts availability improves. Also working the FireWire 400 angle, LaCie got an award for the Big Disk, a 400- or 500GB cross-platform drive in a slim, 5.25-inch aluminum case. The 400-gig version has an 8MB buffer and 7,200 rpm

Exabyte FireWire version of VXA-2 drive

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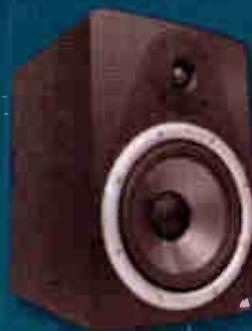
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speed, so it should be great to serve up those fat multitrack EDLs.

A month after the Macworld announcements of the stunning new PowerBook, Apple also unveiled a new display and potent new Xserve-based Power Macs. The same FireWire 800, 54Mbps AirPort Extreme (802.11g) and optional Bluetooth features that appeared in the jumbo PowerBook are now part of the tower line, as well. Storage, too, has been bumped up with a 180-gig Ultra ATA/100 drive option, which supports a choice of a single 1GHz, dual 1.25GHz or dual 1.42GHz G4 processors. Also new is a $1,299 20-inch Cinema Display, while price drops across the entire flat-panel display line means Apple's 23-inch Cinema HD Display is now $1,999, and the 17-inch Studio Display is just $699.

Tascam showed all of that stuff we've come to know and love, but it also hosted a guest product line in its booth. Better known for (rapidly disappearing) floppy drives, parent company TEAC Corp. showed a USB2 disk drive, among other stuff. As the Incredible Hulk would say were he a marketing executive, "It's re-brandin' time!"

Another technology I've mentioned recently is the 802.11 Wi-Fi standard. Linksys showed the first 802.11g gear at last November's Comdex, and Apple is shipping 802.11g technology in its new Airport Extreme line. 802.11g is an umbrella standard that encompasses both the original 802.11b and the much higher-speed 802.11a versions. So, Airport Extreme can interoperate with both, and Apple's base stations include a bridging feature to seamlessly roam from one zone and base station to another. The Dr. Bott crew had two external antennae for those wanting to modify the RF transceiver pattern of their base stations, extreme or otherwise. Also, the Airport Extreme base stations have USB spigots for a whole new level of easy printer sharing.

Say, if you're cheap—er, if you're into adapting commodity hardware to save some dough—the propeller heads at Macsense have written a driver for Intersil's Prism-based 802.11b PCMCIA cards. This lets you use PC cards from Intel, IBM, HP, Dell and 20 other vendors under OS 8, 9 and 10. The company also showed an 802.11b-equipped D/A, the HomePod, which lets you stream your MP3 files to any hi-fi gear within range.

Seemingly just for fun, Mac gaming continues to grow in scope and sophistication, so some of you may just see good

Mac PowerBook

production work coming from this expanding market. I purchased my first game in a long while, *BG II*, and damn if it isn't complicated! Uncomplicated is a seeming bit of fluff that goes by the name of Mad-Player from MadWaves. The MadPlayer is a portable, digital embodiment of "…two turntables and a microphone," along with an algorithmically driven MIDI sequencer, sampler, mixer and MP3/WMA player, with an FM tuner thrown in. Could be a new product class: the portaMuse.

In the alluring furniture department, Marathon had a new really nice brush chrome-look rack solution, the M•Rack, and Bretford displayed a handsome work surface, the "Digital Hub Workspace," with a silky crank handle to adjust the table from sit-down to standing height.

For those of you called upon to create the occasional multimedia deliverable, eZedia has the goods. The company showcased its range of products that extend your reach, whether it's enhancing the capabilities of iMovie or creating cross-platform, interactive content, all without having to learn a mind-bendingly complex application. The company's Mac and Win apps are easy to grasp, well-documented and priced right.

I finally got a chance to test drive the hoopy SpaceShuttle USB controller from Contour A/V Solutions. With a jog/shuttle knob and 13 transport/edit buttons, it ships preconfigured for Acid, Cakewalk, Cubase, Digital Performer, Logic, Nuendo, Pro Tools and Sound Forge. It also works with more than 24 other apps, including video and design stalwarts like Final Cut and Photoshop. By the way, it's nice to have for those off-hours Quake tournaments, as well.

From the same family that brings us Studer, Lexicon and the sound system for Porsche's new Cayenne, the Harman Multimedia division debuted the JBL INVADER, its first 4.1 speaker system. With a PoMo chrome look (isn't everything?), it'll

cost you one-and-a-half large and give you a kickin' surround experience in return.

At the keynote, Steve Jobs announced a new, fast native browser, spelling the death knell for Chimera, my current default. For those of you in the Win world, I recommend you try Chimera's sister browsers, Mozilla and Phoenix. Mozilla is especially great if you're a current Netscape user: It's the same code base, but with a much lower bloat factor.

Also on the Windows front, Intego Inc.—maker of a wide range of security applications for Mac and Palm users— enters the Windows marketplace with Intego NetBarrier 2003 for most flavors of Win after 95. This personal firewall with privacy protection, traffic monitoring and access-control features joins the company's family of content screening, encryption, virus protection and personal backup software for Classic and OS 10.

I've always recommended FWB Software's stuff, and now the company has two new members in its stable of utilities: Privacy Toolkit and Partition Toolkit. Privacy Toolkit provides easy-to-use encryption and shredding, while Partition Toolkit lets you create, delete and modify drive partitions. FWB also rolled out a new cross-platform, hot-swappable, dual-bay, 1394-attached RAID. Now *that's* a mouthful, but it's good to see them back in the hardware business after a long hiatus.

Finally, those 1GB Flash memory fobs that I mentioned in last April's USB2 column have started to ship in quantity. They've also picked up some new functionality, but that'll have to wait until next month! See ya then. ∎

This month's attempt at platform parity was created while under the influence of DJ Cheb I Sabbah's Krishna Lila *and Pentangle's classic* Light Flight: The Anthology. *Head on over to www.seneschal.net for other useful stuff for work and play.*

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TASCAM DM-24 v2.0: Now with HUI™ emulation and much more.

With its new version 2.0 software, TASCAM's DM-24 becomes more than just an incredibly powerful digital mixing console. It adds control surface capabilities for software DAWs like Pro Tools®, Digital Performer™ and Nuendo® via HUI emulation, with external control of levels, mutes, pans, track arming and aux sends, in addition to standard MIDI control of DAWs like Cubase®, Logic™ and Sonar™.

But that's just the beginning. DM-24 v2.0 is a great front-end for your DAW, with 16 high-quality mic pres, 24-bit converters,

4-band parameteric EQ, dynamics processing and more. Plus, with standard interfacing like 24 channels of TDIF and 8 channels of ADAT, it's a perfect companion to DAW interfaces like Digidesign's 001™ and MOTU's 2408™.

Version 2.0 adds over 20 exciting new features to the DM-24, including 60 inputs at mixdown, new 5.1 surround panning, nearly unlimited signal routing, and much more. For all the info on the world's most powerful small-format console, visit your TASCAM dealer or www.tascam.com.

*MU-24 Meter Bridge optional
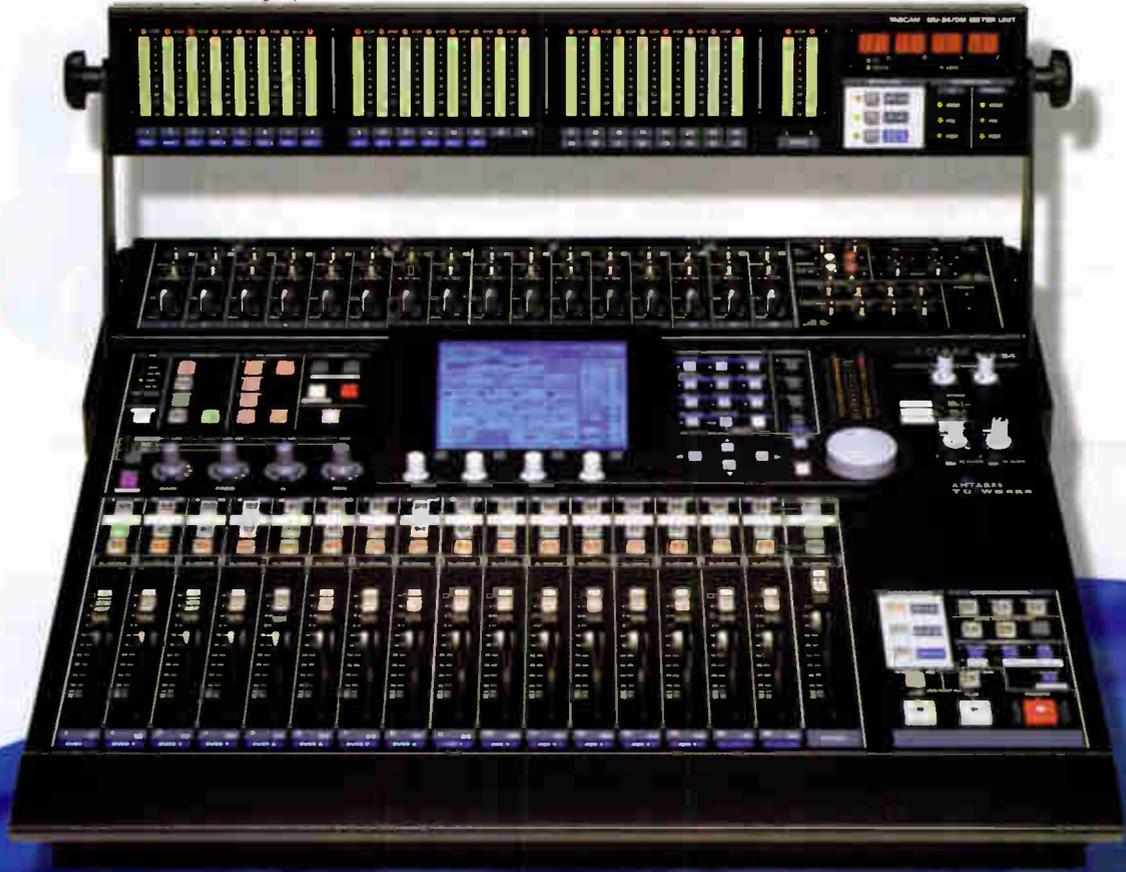
TASCAM®
a whole world of recording

www.tascam.com

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all-new, large-diameter cardioid condenser element and large coupling transformer for improved linearity at low frequencies are also included. The AT3060 operates on standard 48-volt phantom power, so it doesn't require a separate power supply and multicore cable. List is $599, including an AT8458 shockmount.

DAKING MIC PRE/ EQ AND COMPRESSOR

Geoffrey Daking & Co. (dist. by TransAudio Group, www.transaudio group.com) has redesigned the Daking Mic Pre/EQ and Daking FET Compressor. Patterned after the EQ circuitry of the Trident A range consoles, the $1,995 Daking Mic Pre/EQ employs all discrete transistor circuitry and transformer-balanced I/Os. Features include five stepped frequencies per EQ band, with continuously variable boost/cut at all frequencies. Also $1,995, the Daking FET Compressor has discrete transistor circuitry, transformer-balanced I/Os and Class-A amps. Compression ratios are 1.5:1, 2:1, 3:1, 5:1, 10:1 and 20:1. Threshold is adjustable in 2dB increments. Attack can be set from 250 μs to 64 ms, and the unit offers customized Neve 33609 Auto, A-D Compex Auto and Fairchild 670 #5 and #6 release settings.

MBHO CONDENSER MIC

MBHO microphones (www.mbho.de) has upgraded its small-diaphragm MBNM 440-CL condenser microphone. Now designated the

440-CLS, the mic features a switchable -10dB pad and stereo bundle includes free mic clips and a vintage-style mic case. The 440-CLS lists at $439.
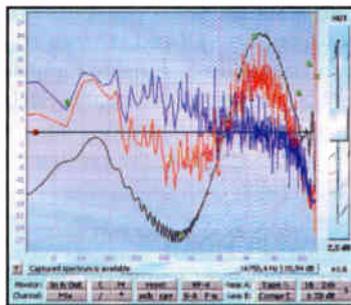
VOXENGO CURVEEQ

Voxengo CurveEQ (www.voxengo.com/ curveeq) is a linear-phase equalizer VST plug-in that offers spectrum matching among its features. CurveEQ displays actual filtering information, including input and output FFT spectrums. A SpectruMatch function can transfer a spectrum's slope from one recording to another, and GearMatch technology transfers impulse responses of high-end analog audio gear to your digital audio while allowing frequency-response adjustment. Other features include a Vintage Processor that adds "presence" and a compressing saturator. All sample rates are supported.

M-AUDIO USB GEAR

M-Audio (www.m-audio.com) introduces three new USB products: The OmniStudio

USB is a rackmount, USB audio/ MIDI studio interface ($499.99) based on M-Audio's successful Quattro USB and Omni Studio, combining their features into a single 24-bit/96kHz interface. The 4x4 architecture is software-configurable for 4x4 operation at 16 bits, or 2x4 or 4x2 operation at 24 bits, and includes an on-board mixer, numerous I/Os, effects sends/returns and M-Audio's Maximum Audio Tools software bundle. The $179.95 MobilePre USB is a USB bus-powered 2-channel mic/instrument preamp with a built-in audio interface. Audiophile USB, built on the Audiophile 2496 ($249.99), is a combination audio/MIDI interface with 24-bit/96kHz fidelity, Mac and PC drivers and 109dB dynamic range.

SPECTRASONICS TRILOGY

Spectrasonics (www.spectrasonics.net; dist. in the U.S. by Ilio, www.ilio.com) released the Trilogy Total Bass Module, a MAS/RTAS/VST plug-in instrument that comes with a 3GB library of 1,000 bass sounds and an interface to create custom patches. As two different bass sounds can be layered into a new patch, over 1 million sound combinations are possible. Other features include analog synth-style legato triggering and Glide, plus a Zone editing feature that lets users create distinctive synth parameters for each key. Retail: $399.

GROOVE TUBES DITTO BOX

A DI box/instrument preamp for both stage and studio, the DITTO (Direct Input, Tube Transformer Output) Box from Groove Tubes (www.groovetubes .com) features dual-triode tubes—

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12AU7 and 12AX7—and a custom, nickel-core output transformer. It provides up to +30 dB of all-tube gain (no op amps or transistors), while offering an isolated, balanced low-impedance output for all instruments: vintage keyboards, electric bass and acoustic/electric guitars with internal transducer-type pickups. MSRP: $399.

ANTARES
TUBE MODELING PLUG-IN

New from Antares (www.antarestech .com), Tube is an analog tube-modeling plug-in. The software models the effect of a high-quality tube peamplifier, and has two tube models: A "blue" tube adds the warmth of a classic tube preamp, and a "fiery orange" tube re-creates the warm distortion of an overdriven tube amplifier. The interface features a realistic visual representation of a tube, allowing the user to easily determine

which effect has been chosen. An Omni-Tube mode will apply the tube effect to the entire signal at all levels. Tube is DSP-efficient enough to be used on dozens of tracks simultaneously. For Mac RTAS, MAS or VST systems, and PC-based RTAS, VST and DirectX systems.

DIGITECH
MODELING
PROCESSOR
DigiTech (www. digitech.com) released the Vx400 Modeling Vocal Processor with USB computer interface, a modeling effects processor designed for recording or live performance use. In

addition to a USB port streaming 24-bit audio, the Vx400 features direct speaker-compensated P.A. outputs, all in a rugged metal housing. Retail: $374.95.

UPGRADES AND UPDATES

Zencase custom CD/DVD jewel cases are lightweight, hinge-free, circular "yin/yang" designs that come in a variety of colors. Visit www.zencase.com and check 'em out...TC Works (www.tc works.de) introduced a Mac OS X driver for the Powercore card; this update also adds Apple AudioUnit Plug-In support and enhanced system performance...Denon announces its second set of plug-in software releases for the DN-D9000 dual-CD player. Six new plug-ins and software support for MP3 playback are free to registered users. Visit www.usa. denon.com...Cakewalk (www.cakewalk .com) announced that support for ASIO hardware has been added to Sonar as

part of a 2.2 update, free to all registered users... The Native Instruments Traktor DJ Studio 2.0 Bundle includes the Ego•Sys GIGAPort AG USB interface. Available exclusively through the NI Online Shop and for $349; for more information, visit www.ni-traktor .com...X-Vision is now the exclusive North American distributor of Samplitude and Sequoia. For the latest info, go to www.xvisionaudio.com...Ableton (www. ableton.com) announces a free version of Sonomic Online Library Card with the purchase of Live 2. The card enables Live users to search, audition and download 10 samples or five sound effects from the Sonomic Online Library...Eastwest's new libraries include the Quantum Leap Symphonic Orchestra, Stormdrum, Hardcore Bass and Percussive Adventures 2. The titles each include a Native Instruments audio engine based on Kontakt. Surf to www.eastwestsounds.com...Bitheadz (www.bitheadz.com) announces a new synthesis add-on for Unity Session. The new software, Unity Synth Ex-

pander 1, includes six plug-ins including FM-1 eight-operator FM synthesis, BR-1 Brass physical model, EP-1 Electric Piano physical model, GL-1 Glottal/Vocal physical model, VS-1: Vector synth and WS-1: Wave-sequencer synth...Digidesign (www.digidesign.com) announced its support for iLok.com, a Web portal that allows you to manage your iLok USB Smart Keys and software authorizations, providing instant, up-to-date details on plug-in-authorization status. With the release of Pro Tools 6.0 software, Pace's iLok secure protection solution will become the sole means of authorizing many plug-ins running on Pro Tools 6.0 systems. Visit www.ilok.com for more details...A free software upgrade for the Tascam MX-2424 adds new features/functions, including Pencil Tool Editing and advanced crossfades, plus updates for Mac and PC versions of the powerful MX-View waveform-editing software. Download MX-OS 3.10 at www.tascam .com...Westone's Elite Series ES1 and ES2 in-ear monitors are now available with custom faceplate images. The company's custom art shop offers 35 designs or can use customers' artwork. Check it out at www.westone.com/music/custom_ art.html. ■

Solid State Logic C100

Compact Digital Broadcasting Console...and More

Mention the name Solid State Logic in audio circles and images of large, high-ticket, state-of-the-art consoles immediately come to mind. However, since the debut of SSL's new C Series boards at last week's AES convention in Amsterdam, the "large" and "high-ticket" terms are being removed from the equation.

Designed for fast-paced, on-air work and live-to-tape studio production, the new-generation C100 is a scalable, small-footprint digital console that takes an innovative approach to assignability.

The C100's key design elements included flexibility in the size of the control surface, as well as making the processor space as efficient as possible. "In certain applications, especially in broadcast where we're looking at smaller rooms," explains SSL's Niall Feldman, "control surface assignability is essential, and digital console users have been asking for a platform where they could specify the number of physical channel faders, independent of varying the amount of processing to meet their channel count requirements."

With these criteria in mind, the C100 system comprises a virtual control surface with a DSP rack that can be located some distance from the worksurface. The processing rack uses a mid-plane approach that plugs the DSP cards from the front and the I/O cards on the back, so a single 15-rackspace chassis has the capacity of up to 128 channels of operation. Channel capability can be expanded via 32-channel plug-in DSP cards, and the back plane can handle more than 500 inputs and outputs.

The control surface itself can range from a compact—under a meter wide—version with 16 channel strips and a master section using bank switching to control as many input channels as necessary. However, the controller's physical size can be deceiving: "With the C100 control surface, you can assign control of multiple channels to a single fader, so a 6-channel feed could be under the control of a single fader," says Feldman. "Using a

couple of stereo channels, a couple of mono channels and some 5.1 channels, you could have the equivalent signal processing of a 40-fader console, each with a single fader controlling levels—all done using a 16-fader frame, although most users will probably opt for the flexibility of having 24 channel strips. Alternatively, users can spec a console with one-fader-per-channel functionality."

The console can be ordered with 32, 64, 96 or 128 fully featured input channels. A dedicated N-1 bus, two program buses, eight groups, 24 utility and 24 aux buses are all standard, as are per-channel direct/N-1 and utility outputs. The C100 has a 24-bit/48kHz design I/O architecture, although with future formats in mind, the 40-bit, floating-point DSP core design is independent of sampling rate and can handle up to 96kHz signals. Available I/O cards include MADI, AES/EBU and analog I/O, with onboard sample-rate conversion standard on all digital input cards.

Going beyond the board's redundant, dual power supplies, the C100 incorporates innovative techniques, including a self-healing mechanism. The latter self-monitors all of the DSP in the processor; if a fault is recognized, it automatically resets the specific segment of DSP without impact to other mix processes occurring in the system. Rounding out the package are rapid reboot times, hot-swappable components and remote diagnostics.

Other broadcast-specific features include Control Linking, which can link a range of configuration functions to a specific input or output, such as fader-start GPIs to cart machines. Audio-follow-video (AFV) functionality is standard, as are comprehensive GPI options to ease the physical integration of the console into the existing studio control infrastructure.

One of the C100's unique aspects is a Conceptual Central section, offering fast access to routing and dedicated output processing. "A main challenge in designing a broadcast console is handling multiple audio sources—not only inputs, but many outputs and feeds going out," Feldman says.
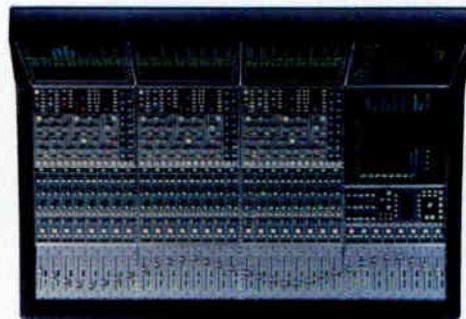
"Traditionally, broadcasters deal with this by surrounding themselves with meters on all important studio outputs. For example, if you're mixing a live 5.1 sports program and have multiple output feeds going to multiple destinations, the question is how to control and monitor those feeds quickly, and know what's going on on each bus output. Our solution was a dedicated, central touchscreen control section allied with interactive metering of console buses. The other key to fast ergonomics was placing dedicated *and* assignable controls below that screen for those tasks."

In addition to the main touchscreen, high-res TFT screens above each group of eight faders are used for channel metering and status information. Below the screens, dedicated one-knob-per-function channel strip controls (EQ, dynamics, etc.) can be assigned to any fader(s) within that section.

One innovative option is the C-SB Stagebox with up to 48 remote-controlled mic preamp inputs in a single 14U chassis that connects to the C100 DSP core via up to 500 meters of fiber optics. The Stagebox also has some outputs to return foldback feeds, as well as GPIs to control on-air lights on the stage, etc.

The first C100s are already in delivery, and pricing is said to start "well below" $200,000. But perhaps the *big* news is that at press time—just days before the C100's AES launch—we heard that SSL was also going to unveil the C200, a compact music production board based on a similar processing architecture. Details are sketchy at this point; we'll provide more on this development next month.

For more information, visit www.ssl-broadcast.com.

MIX ONLINE EXTRAS

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Euphonix Control and Operating Network

15 Years Later, the Innovations Continue

In 1988, a team of young designers working in a garage in Silicon Valley founded Euphonix to develop new and different approaches to audio console design. The company's first product, the CS-1 Crescendo—a high-performance analog console controlled by a digital mixing surface—debuted at AES L.A. two years later. Euphonix has since become a leading manufacturer of large-format digital mixing consoles, disk-based multitracks, and peripherals for live broadcast, TV/film audio post and music production.

At last fall's AES, one of the more intriguing sights was at the Steinberg booth, where a Euphonix System 5 digital console controlled a Nuendo DAW. Besides underlining the new strategic alliance between Euphonix and Steinberg, the demonstration introduced the Euphonix Control and Operating Network. Known as EuCon, this open architecture network is capable of fully integrating a workstation with a full-function, high-channel-count mixing console. Perhaps more significant, EuCon also offers a relatively painless way to integrate a wide range of audio and control products from different manufacturers in large-scale multiroom applications.

Workstations and large-format consoles have been working side-by-side for years. But the traffic is all one way: The console does not control the DAW itself, only the levels and routing of the workstation's outputs. If the DAW submix needs to be rebalanced, then the engineer must bring up the DAW interface and tweak as necessary.

"When workstations are connected to big analog consoles, the analog console is generally used only as a monitor mixer; all the processing happens in the workstation," says Martin Kloiber, Euphonix's executive VP of technology.

DAW developers have long acknowledged the limitations of a point-and-click mouse interface for sound mixing, and most manufacturers provide either their own hardware controllers or interfaces to those of third-party vendors. But none of the current stand-alone controllers is real-ly practical for large channel-count applications, such as film mixing. Even the best integrated DAW/controller systems face the constant threat of obsolescence as versions get upgraded; keeping all of the integration software current is a coding headache that nobody wants. As a result, most DAW controllers are underfeatured and inflexible, at least in comparison with current digital control surface technology.

This is one of several problems addressed by the Steinberg/Euphonix pact. "Between Euphonix and Steinberg, we have the best of both worlds: a professional control surface with high-quality hardware I/O and a world-class workstation software package," says Kloiber.

The Nuendo/System 5 integration is made possible by EuCon, which the company offers as a standard feature on its System 5 installations, of which there are now more than 100 worldwide. "EuCon was developed out of necessity to solve particular problems that we ran into as the company grew," says Euphonix's director of software engineering, Robert Clayton. As a manufacturer of analog and digital consoles, digital multitrack recorders and a host of ADCs and interface products, Euphonix and its developers know firsthand the pitfalls of point solutions that don't include an overall connectivity and integration strategy. "When we decided to develop the System 5, the decision was made to solve the problem up front and make that solution scalable," explains Clayton. "We wanted to know that if the hardware changed, we could easily adapt to that." The EuCon network architecture, which Euphonix plans to make available to other manufacturers, is therefore set up to recognize and incorporate its various components—mixers, audio sources, record and playback devices, effects units, synchronizers—in generic terms rather than specific ones.

"Each node on a EuCon network has a copy of an image of one or more models, and what EuCon does is assure that
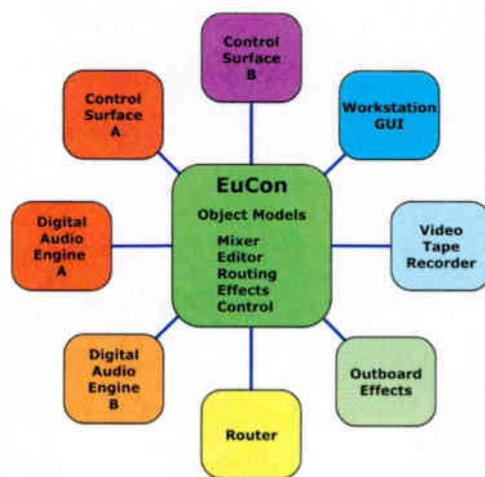
Under EuCon, the console becomes the main studio controller.

the state of all those images is kept identical," says Clayton. "For example, any changes in fader values are added to the model constantly. There are various models for mixing, editing and control surface functions. If you attach another control surface, it will just add more strips to the console surface model. Another example might be to add a Nuendo system; EuCon would simply create another, say, 16 channels in the mixing model."

Running over Ethernet or FireWire, EuCon can manage and coordinate very large and complex network implementations. And because of EuCon's open architecture, many integration scenarios are possible: Once a model of a type of device has been loaded into EuCon, any future device that performs the same functions can be automatically added to the network. Whatever features the new device has to offer—input channels, record/playback tracks, effects, converter channels—are made available to the other nodes on the network, which map the newcomer's relevant features to their own inputs and outputs. "With EuCon, multiroom post studios can share processing," notes Kloiber. "They don't have to put DSP for 200 channels in each room in order to cope with the worst-case scenario. With EuCon, they have movable DSP resources."

For more information, contact Euphonix, 650/855-0400; www.euphonix.com. ∎

Chris Michie is a technical editor of Mix.

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Studio Network Solutions SANmp

An Answer for Multiplatform, Networked File Sharing

Founded in 1998, Studio Network Solutions celebrates its five-year anniversary with the launch of SANmp™, an extension of the company's successful A/V SAN and A/V SAN PRO Storage Area Networking (SAN) systems for the audio, broadcast and video post communities.

Today, facilities from the largest studios to smaller project rooms are looking at multiple-CPU installations, not only to maximize the efficiency of the entire system via shared tasking over several processors, but also as a means of running different platform-specific programs, such as Merging Pyramix and Sonic Foundry Vegas Video on the PC, or Final Cut Pro and MOTU Digital Performer on Macintosh machines. Even with multiplatform applications—such as Digidesign's Pro Tools or Steinberg's Nuendo—there are advantages to operating a shared PC/Mac system. For example, in my studio I have a Mac-based Pro Tools rig (handling most recording functions) alongside an AMC/Win2000 machine with Cubase for sequencing, hosting virtual instruments and VST plug-ins, and Sonic Foundry Acid Pro for looping.

In my single-user system, data-management requirements aren't complex. However, when multiple workstation users on several platforms need simultaneous, network-based, high-density file access, the situation can become at best quirky or difficult. The situation worsens considerably when numerous operating systems are figured in, such as combining Windows XP and/or 2000 with Mac OS 9 and OS X workstations. Switching an entire facility over to a sole OS and platform set is not viable in most cases, but one innovative answer to this dilemma comes from Studio Network Solutions' SANmp.

Studio Network Solutions originally developed its A/V SAN and A/V SAN PRO networking systems specifically for the size-intensive file requirements of high-resolution digital audio and video storage/access. SANmp (the name comes from Storage Area Network, multiplatform) lets users configure, manage, share and access
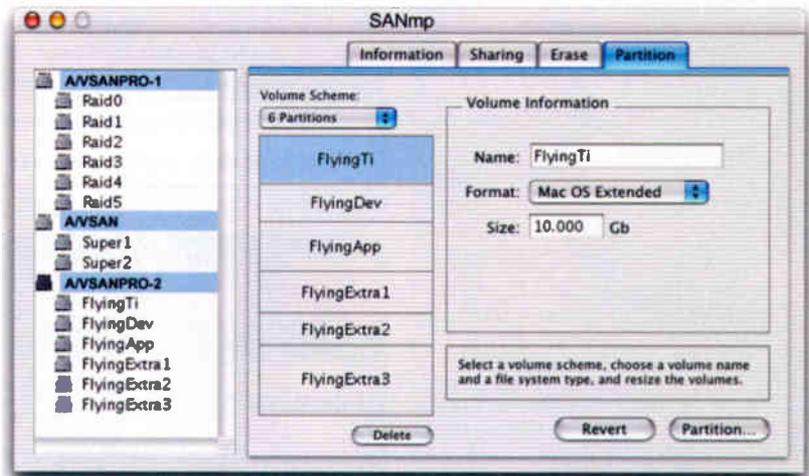
SANmp lets you optimize shared volume space.

SAN resources, create RAID sets and set access privileges at the user level. With SANmp, users can upgrade to the latest operating systems or add Windows workstations to Mac environments; Mac and Windows versions of SANmp share a common user interface for ease of use on either platform. As the application itself does not require a server or Ethernet connection, SANmp implementation and maintenance is straightforward.

"There is such a wide array of professional audio and video software available," says Eric Newbauer, Studio Network Solutions' director of operations. "Facilities are finding that it's nearly impossible to commit to a single OS version or platform. At best, it is difficult to reliably make the myriad hardware and multiple operating systems work together, particularly when it comes to storage systems. With SANmp and our A/V SAN and A/V SAN PRO, we have provided a truly multiplatform solution that isn't proprietary to a specific DAW, NLE or operating system."

SANmp's standard feature set includes: HFS, HFS+, NTFS and FAT32 support; multiterabyte storage capability; multiple shared volumes per disk; RAID support; multilevel password protection; and mounting/unmounting of shared volumes. Administration can be performed from any workstation in the system, and operational parameters and status are in-

stantly available at a glance: Informational panels display active users, shared volumes (and their current status), along with available storage space and more.

In order to deliver the performance necessary to take full advantage of data-intensive applications like Pro Tools and Avid, Studio Network Solutions has focused on Fibre Channel technology, which offers data transfers over wire or fiber-optic cables at rates in the gigabit/second range—fast enough to handle even the most demanding production chores. In addition to file sharing, SNS networks may be used for centralized backup, storage, maintenance and archiving services. "Engineers have enough to deal with while in session. Let us take the storage and networking problems out of the studio," comments Gary Holladay, the company's chief systems designer.

Studio Network Solutions will feature SANmp at this month's NAB show in Las Vegas in booth SL2636. SANmp is slated to begin shipping in the second quarter of 2003 and is available with new A/V SAN and A/V SAN PRO systems; existing users should contact the company regarding updates and upgrades.

For more information, contact Studio Network Solutions, 1986 Innerbelt Business Center Dr., St. Louis, MO 63114; 877/537-2094; fax 314/733-0537; www.studionetworksolutions.com. ■

DP563 Dolby Surround/Pro Logic II Encoder

Bringing 5.1 Audio to 2-Channel Delivery Systems

Working in 5.1 can be both tremendously exciting and %@#@!! maddening. In the early 1990s, the film industry pushed that excitement into theaters and later handed off the thrills to home viewers via its progeny, DVD. Nearly a decade later, the music industry began to feel the buzz, and despite the internal battle over formats, has now upped the launch cycle for new surround music titles to hundreds a month.

Broadcast? That's the maddening part.

HBO, Showtime, Starz and other premium channels have been sending out 5.1 signal for some of their hit shows and many of their movies. ABC has tapped in with top-end dramas like *NYPD Blue*. Meanwhile, others have grabbed the 5.1 spotlight with high-profile, hi-def specials like the Grammys telecast and the Super Bowl (see page 84 and 86, respectively). But how many consumers have *really* heard 5.1 over their cable or satellite system?

The problem is that NTSC television is still largely a 2-channel analog medium, and it will be for quite some time, the FCC mandate for conversion to digital TV notwithstanding. The solution, Dolby feels, at least for the interim, lies with Pro Logic II, which can matrix-encode six channels of audio and send it down any analog or digital 2-channel pipe.

"Dolby Digital is still our premier multichannel audio technology for DTV broadcast," says Tom Daily, Dolby marketing director for professional audio. "But in an analog TV station or a stereo cable system, Dolby Pro Logic II allows broadcasters to deliver an enhanced signal. We will always have stereo sources; this is a way to make them sound better."

Development of Pro Logic II began with the decoder, which was introduced a little over a year ago and now resides in more than 4 million consumer units across the U.S. All A/V receivers shipped with Dolby Digital—virtually all A/V receivers shipped to the States—are now also shipping with Pro Logic II, and Dolby expects penetration to reach 12 million units by the end of the year. Pro Logic II is, as ex-

pected, backward-compatible with the nearly 100 million Dolby Surround Pro Logic receivers currently in U.S. homes.

That rapid growth and acceptance prompted discussions for a professional encoder. Last September, the algorithm turned into a concept. By December, it became a project. This month, the encoder makes its debut at NAB.

"What really drives all of this is the DVD, and everybody has to catch up with it," says Dolby broadcast applications engineer Jim Hilson. "Consumers have 5.1 audio in the home; they go to a theater and have 5.1; they turn on HBO and they get 5.1. In situations where you can't get

the Dolby Digital bitstream, Pro Logic II offers something closer to what consumers already have."

Hilson adds that, given Dolby's history with surround processing, "It's not that much harder to get the extra channel in back. The biggest obstacle," he says, "is getting enough sound sources from wherever you're working. You have to put up a few more microphones, put in a bit more time, add a few more faders on the console; basically, some more thought into pre-production and how the elements come together."

DP563 owners will note that, other than some silkscreens, the unit's front panel hasn't really changed. On the back, however, there are six digital ins and two

outs (Lt/Rt), 75-ohm unbalanced. Word length on input is 24-bit (when sample-rate converter is turned off), output is adjustable from 16 to 24 bits. The big difference, besides the obvious steering capabilities for the rears, is that the left-surround/right surround are full-bandwidth down to 100 Hz, and the LFE channel ranges from 20 to 120 Hz, ±1 dB.

The immersive effect of 5.1 audio from any 2-channel delivery medium has obvious benefits for the PC market, car audio, radio, CDs, VHS tapes. But perhaps the biggest potential market is games, a multi-billion-dollar worldwide industry that is only getting bigger. At the March Game Developers Conference in San Jose, seven of the top 10 titles had multichannel Dolby-encoded content. And because of the way games are produced—where audio is allotted a very limited share of the real estate, drain on the CPU is of big concern, and editors are sometimes the "final" mixers—a matrix-encoded 2-channel delivery system seems to be the ticket. Toward that end, Minnetonka Audio (www.minnetonkaaudio.com) has licensed the Dolby Pro Logic II algorithm for release in a $495 standalone PC application or as a VST plug-in, SurCode for Dolby Pro Logic II.

"The beauty of Dolby's Pro Logic II is that nearly every surround receiver out there has a decoder built in," says Minnetonka director of marketing John Calder. "It's like surround for nothing and checks for free. Surround ambiences, sound effects and music stems can all be pre-encoded for delivery within stereo cues, and the resulting mix is stereo-compatible and very effective at engaging the audience."

The Dolby Pro Logic II software upgrade for existing DP563 owners will be $400. New units with Dolby Surround and Dolby Pro Logic II encoding, expected to ship around August 1, will sell for $3,700. After NAB, Dolby will make white papers, mixing tutorials and equipment setup recommendations available on its Website, www.dolby.com. ∎

Klark Teknik DN9340 Helix

Bringing Digital EQ to a Whole New Level

Klark Teknik's initials have long been synonymous with quality EQ, and most engineers in the live sound world are familiar with many of the successful KT equalizer models—from the DN27 to the DN3600—that have appeared during the past three decades. When KT began shipping its latest product, the DN9340 Helix Digital Equalizer, I had to try it out.

Initially released at last fall's AES convention, the two-rackspace Helix features 24-bit/48kHz processing. With a dynamic range of 115 dB, it is quieter than a DN360 and sounds clean enough to place in line with any signal chain. The graphic display on the front panel's left side is similar to that of the old DN3600, and can show either the graphic fader positions or the composite EQ curve. Below the graphic display, a red, highlighted touch strip allows quick selection of filters, and an entire section of sliders can be selected by touching the strip in two places. There are four keys to select the EQ page and Bypass and channel-select buttons. The rest of the front panel is thoughtfully laid out, and the interface is intuitive enough that the user's manual is only needed for advanced features. There were a few minor things that I didn't like: The front panel display range is only ±12 dB, and I was not keen on the response of the touch strip. But because the Helix is flash-upgradeable, future enhancements can easily be provided via operating system updates. While I had the Helix, new firmware—Version 2.02—was published on the KT Website and I easily downloaded it into the review unit.

The Helix graphic display features two pairs of 12-segment input and output LED meters. Above the meters are three rotary encoders—artfully highlighted in blue when active—that allow adjustment of parameters whose names and values are displayed in the 20-character, two-line display. Each "side" of the 2-channel Helix is controlled in four pages, with parameters for each page shown on the interface display. Graphic and Parametric pages need

no explanation; a Filters page features notches, shelves and delay, and there is a new Dynamic EQ section, which I'll discuss more later. In addition to the main-channel bypass, each of the four sections can be bypassed separately, allowing the effect of each layer of EQ to be auditioned individually. The hard-wired main bypass and AC fail-safe mean that the unit is completely out of circuit when bypassed *or* powered-down, a mission-critical feature for any full-mix processor.

COMPREHENSIVE FEATURES

As one might expect, both channels of the Helix offer 31 graphic EQ filters with 12 dB of cut or boost on standard ISO centers. As in the DN3600, Helix's graphic EQ section offers two familiar choices of filters: either the overlapping DN 360-type or the DN 27-style filters, which overlap less at low cuts. One benefit of this feature is that it becomes easy to compare the behavior of the different EQ filter types. You can learn a lot about filter-width behavior by just sitting down in a control room and spending a day with the Helix.

Each channel also offers a dozen fully parametric filters. The parametric filters can be displayed one filter curve at a time, with all of the individual curves layered or as the composite of all the curves added together as a single curve. When the composite curve is selected, the display shows the total result of all filters, including those in other sections. This approach gives a whole new meaning to the term "graphic EQ." As with all digital parametric EQ, there's a certain amount of quantization. Twenty choices of frequency per octave may seem like a lot until you realize, for example, that between 800 and 900 Hz, there are only three frequency choices. Level settings for each filter are in 0.1dB increments; I would've traded a bit more

frequency precision for less resolution of depth.

The Helix also provides three general types of filters, with the graphic's Q being user-selectable. In fact, the four filter pages can have their type of filter behavior selected by section. The Proportional mode provides wide, low-Q filters at smaller cut and boost settings, while gradually narrowing the filter to higher Q at larger amounts of cut and boost. Thus, the Q becomes proportional to the filter's depth. Only at large cut settings are these filters narrow enough for feedback control. At lower amounts of cut (and boost), adjacent filters overlap and interact. Ever wondered why it sometimes seems like you're wrestling with the DN360s in a monitor rig? Proportional Q equalization may be the reason.

Constant Q, on the other hand, maintains the same bandwidth at all settings. Because the definition of Q relates to a filter's width at its 3dB down points relative to maximum gain, this term is often misunderstood and misapplied. In boost, the 3dB down points are the "shoulders" of the filter (3 dB down from the peak), while in cut, they are the edges of the valley (3 dB down from 0 dB). Filters that are truly constant Q go from wider cuts at first to deeper, steeper notches that aren't symmetrical to the boosts.

KT addresses this quirk of constant Q terminology with what it calls symmetrical Q filters, which is what most manufacturers mean by constant Q. Symmetrical filters are constant Q in boost, while providing identically shaped filters at cut settings. Because users mostly employ cut filters, it's worth noting how the behavior of each type differs in Cut mode. Symmetrical filters maintain the same width at all cuts, and so are the most "graphic" in their representation of EQ.

Tascam DS-M7.1

Digital Surround Monitoring Controller

Before the 1980s, there was very little cross-pollination between the monitor features of music recording and film re-recording consoles. The former assumed two basic modes: recording to multitrack, followed by a 2-track mixdown, with both modes employing standard stereo monitoring, although a few '70s music consoles made allowances for "quad" mixing.

Film consoles, on the other hand, are total "mix" creatures and, instead of mic preamps, have elaborate monitoring sections to accommodate the variety of speaker and recording formats. The act of mixing involves punching into multiple "stem" recorders that document the final mix as separate food groups: dialog, music and sound effects. Not only are up to three mixers (as in people) working simultaneously, but they separately have to be able to compare off-tape to console bus, or PEC/direct in film sound parlance. Further complicating film mixes is the presence of surround encoding and decoding devices, which might be needed for monitoring, recording or a combination of both. All of this is clearly beyond the scope of normal stereo mixing.

The first full-featured device to bring the capabilities of film-style monitoring to any multitrack console was Otari's PicMix, which allowed a maximum of 32 tracks to be matrixed across eight speaker channels. (There are actually 64 inputs, as each track is represented both by the console bus and the recorder return.) PEC/direct switching and track arming of individual tracks (of up to eight groups of tracks) is elegantly handled by a separate console-mounted controller.

PicMix addresses most film sound monitoring needs, yet it has three notable shortcomings: It doesn't deal gracefully with the five screen channels in the 7.1 format or the three surround channels in surround EX format, especially with regard to downmixing to 5.1 and 4:2:4 (matrix-encoded) playback. Secondly, multiple speaker systems are not accommodated. (While this is the norm for film mixing, it's unacceptable for television or music multi-

channel situations.) Finally, bass management is not considered: There is a send to the speakers, and they are left to fend for themselves.

At my facility in New Orleans, Swelltone Labs, we were faced with the first of these issues for the mix of *Ocean's Eleven*, which I wanted to do 7.1. The solution lay in our purchasing the Martinsound Multi-MAX EX monitor controller that specifically addresses PicMix's shortcomings, and we now use both units in series, with the PicMix handling 32x8 matrixing and allowing us to mute and solo specific output groups. The insert send goes to the MultiMAX, which then controls the downmixing and surround encode/decode processing before sending the signal to the speakers.

This combination of devices works quite well in our current situation, yet they are both lacking in one key, simple feature: the inputs, outputs and insert points are *analog only*. (Note: These aren't the only monitor matrices manufactured; merely the ones I'm most familiar with.) Anyone using digital consoles or workstations has to enter the analog world earlier than should be necessary—that is, before the send to the B-chain (equalizers, cross-overs, amps and speakers).

ENTER THE DS-M7.1

Last year, Tascam introduced a digital monitor matrix, the DS-M7.1 Digital Surround Monitor Controller, filling the void in the marketplace and creating a rough digital equivalent of the Martinsound MultiMAX's downmixing and multichannel monitoring capabilities.

Housed in a three-rackspace chassis

(with a removable front panel that doubles as a remote control), the DS-M7.1 adds multispeaker monitoring control to digital consoles that only have eight output buses. The DS-M7.1's main market is the thousands of music, broadcast, video post and gaming/multimedia studios that need to upgrade for surround production.

The DS-M7.1 is set up to receive eight console buses (either from the stock TDIF connection or via an optional AES or analog I/O card). With the MultiMAX or PicMix, you must mult the analog console outputs to go both to the recorder and to the direct side of the inputs. The DS-M7.1 skirts this issue (for digital consoles and recorders) by allowing the user to send the console outputs to the DS-M7.1, which then distributes them to both a "tracking" recorder and to three flavors of digital "master" recorders: ADAT, TDIF and AES. They are simultaneously connected, with one of their outputs selected as the "return." The output send to the tracking recorder exists primarily to allow the studio to patch console outputs 1 through 8 to the tracking multitrack while recording, and to the DS-M7.1 during multichannel mixes, without having to repatch in between. (Outputs 9 and above from the console presumably go direct to the multitrack recorder, as they aren't needed for 5.1 or 7.1-channel mixdowns.)

Since 1998, I have spread the dialog, music and sound effects stems across 32 tracks on most of my larger films, going to less than 16 tracks only a handful of times. The DS-M7.1 does not offer the summing and matrixing of the 24-plus stem channels that are recorded at a final mix these days. One would never expect

this feature for the price of four DS-M7.1s, much less a single unit that retails for $1,899. However, there is a need for Tascam—or someone else—to build a digital matrix that would take up to 48 or 64 console outputs (the 32-track barrier is a bit conservative these days), sending them both to the recorder and the "direct" input side, matrixing them across the multichannel speaker assignments. This would eliminate the need for the console's outputs to use a digital router to get them to the two destinations. The output of this mythical unit would then go to the input of the DS-M7.1, much as we currently feed the MultiMAX from our PicMix at Swelltone today.

The DS-M7.1 back panel offers three I/O expansion slots.

The DS-M7.1 has three slots to expand its I/O capabilities, and in the case of the IF-AN/DM analog I/O board inserted into slot 3, provides connections for analog surround encoding/decoding. This setup cleverly allows the user to simultaneously send to both analog encoder/decoders (such as the Dolby SEU-4/SDU-4 units) and to their digital equivalents. Obviously, the DS-M7.1 will accept the return from only one of the decoders. Both the sends and returns to/from the encode/decode inserts are extremely well-designed and flexible. The send is after the direct/playback ("bus/return" in DS-M7.1 terms) switch and can be pre or post the Input Summing Router.

As the DS-M7.1's insert points are placed in front of the downmix options, there's no level control of individual channels in the Input Summing Router, only control of which channels go to the insert send in the "post" mode. While the unit is designed to downmix very flexibly from 7.1 and 6.1 to 5.1, L/R stereo and mono, those downmix coefficients can't apply to the encode/decode insert point. Furthermore, the insertion-enable/disable switch is a knob turn in a menu, rather than an always-accessible switch on the front panel as it should be.

I was glad to see both the DS-M7.1's analog and digital monitor output connectors; the digital connections are particularly useful when hooked up to a multichannel digital meter bridge. Connecting the Logitek UV71-B in this manner on our mix stage lets us quickly confirm that the level we're printing is exactly what we're hearing. Another nice touch? Tascam lets the user place the digital monitor output before downmixing and bass management, in addition to muting and soloing.

I wish the unit had a calibrated pink-noise level. "Calibrated" means different things to different people, but the film industry uses VU metering to obtain its numbers. In this manner, pink noise hovering around -20 dBFS (using VU meter ballistics) should measure 85 dB/c for each primary screen channel. Tascam made no effort in this direction: It intends for the pink to be used for relative channel balance settings, which is just fine for game, multimedia, broadcast and music production, rather than an absolute "film 85," although this could possibly be added in future software revisions.

Among the more "modern" calibration tweaks offered by the DS-M7.1 is the ability to compensate for speaker delays. While delays for the surround channel have been around since the beginning of stereo mixing (initially applied to the program, and in later years available in cinema processors, such as with Dolby Digital and SDDS), the use with respect to the main front channels is a relatively new approach. The DS-M7.1 offers up to 50 ms of delay in each channel, in 0.1ms steps. (The large amount of delay offered would primarily be of use in setting up surrounds, where 20 ms would be the average for smaller theaters, and 50 ms for the largest.)

Speaking of film sound history, I am thrilled that the DS-M7.1 supports the 7.1 format with five screen channel speakers. A scattered few folks (like yours truly) will take advantage of those features, although most users won't have any idea of what it's for.

The most serious omission of the DS-M7.1 that might be of concern to some users is its very limited options for alternate speakers. Its lone ability in this area is having an LR downmix go to the Lc and Rc speaker outputs. This feature is useless in a film studio, which would have left-center and right-center speakers; even in a normal three-speaker configuration, it only offers an additional stereo pair rather than a second multichannel set. In comparison, the (admittedly more expensive) MultiMAX has separate outputs for a second 5.0 set—sharing the same subwoofer—plus stereo near-field and "small mono" speakers. Some users will find this lack of options on the DS-M7.1 disconcerting, to the point of wishing that the unit had cost more in order to include these features.

Overall, the DS-M7.1 functions as intended, and the control panel functions follow a logical and intuitive setup path. The previous comments and reservations notwithstanding, the unit offers an extensive and flexible value in all areas, including bass management. Muting and solo functions, essential parts of any multichannel monitor controller, are very clearly defined.

The removable front-panel controller is connected via up to 60 feet of shielded twisted-pair cable. I give the overall ergonomics of the front panel a high mark, yet its long, flat and thin design, with the cable coming out of the side, might be awkward in some situations. (The more compact footprint of the Martinsound remote is much more practical to either fit on top of or in a console.)

The unit supports sample rates of up to 96 kHz, which is good for most users, although many will wonder why Tascam didn't go all the way to 192 kHz, considering the amount of gear supporting that rate.

When I first read of DS-M7.1's capabilities, I guessed that it would sell for a street price of around $3,500. When I heard that the street price was a little more than half that, I was amazed. While its abilities to be used in a film final-mix situation are limited (because of the lack of stem matrixing abilities noted above), I cannot imagine any multichannel edit or mastering room where a DS-M7.1 would be welcome and an essential addition. The one I purchased will be an integral part of my edit room for years to come.

Tascam, 7733 Telegraph Rd., Montebello, CA 90640; 323/726-0303 www.tascam.com. ∎

Larry Blake is Mix's film sound editor.

BY GEORGE PETERSEN

Blue Sky Bass-Management Controller

Getting a Handle on Volume

I t's hard to believe, but console manufacturers still build surround-capable mixers with no provision for 5.1 monitoring control. That's like building a car without a steering wheel. However, if pressed for details, console-makers explain you can assign buses or auxes to control your studio playback levels. If you have an 8-bus console and you've used five or six as a volume control, then you end up with a 2- or 3-bus board. Scary.

A number of companies build third-party systems that address the volume issue, but many of these also include busing and stem-routing features that increase the product's complexity and pricing. Aware of this situation, Blue Sky—manufacturer of the acclaimed Sky System One and the new ProDesk monitors—offers the Bass-Management Controller (BMC), which addresses the need for 5.1 bass management and volume control in a simple, $725 system. I used the BMC with Blue Sky's Sky System One, although it's important to note that the BMC functions just fine with any monitors (self-powered or amp-driven) with balanced +4dBu XLR connections. I also used the BMC on a number of other monitors, including Meyer HD-1s, JBL LSR28Ps, Mackie HR824s, Event 20/20s (powered via Bryston amps) and a variety of subwoofers: Mackie HRS120, Event 20/20 S250, JBL LSR 12P and the Blue Sky Sub 12.

The BMC's single-rackspace controller offers a Spartan front panel: Just an AC switch and power LED. Rear-panel connections are simple, with balanced XLR in/outs for the five main (LCRSS) channels and an XLR LFE input and two parallel XLR outs to feed one or two subwoofers. In addition to the removable IEC power cord, the back panel also has a standard 6-conductor RJ-11 jack that connects the unit to the console-top remote.

The 6x8-inch remote links to the BMC main unit via an included 25-foot RJ-11 cable (the standard phone-type cable available everywhere). For longer runs or custom installs, users can substitute any RJ-11 cable (phone, not data) up to 100 feet long. As the remote gets its power feed via the RJ-11 line, no wall wart or external power is

required. The remote also includes a second RJ-11 jack labeled Aux. The manual mysteriously notes that it's "reserved for future expansion."

The remote's top panel is deceptively simple. There's a large rotary volume control, switches (with LEDs) for selecting a preset reference level or speaker playback muting, and a set of menu keys (up/down, yes/ no, select and cancel) to tweak parameters. The remote also has a two-line LCD screen that shows operational status, menus and settings, and indicates all parameters during setup. The screen is fairly small, but you don't use it much, other than during the setup/calibration period. In operation, the LCD screen shows the exact amount of system gain.

Speaking of gain, the volume knob sets overall gain from -50 to 0 dB in 0.5dB steps; this is handled entirely using analog circuitry under digital control. The system boasts impressive specs, such as a 20 to 20k Hz bandwidth (±0.25 dB) and 0.002% THD (1 kHz at +10 dBu). However, to optimize performance and keep any possible noise to a minimum, it's best to drive the BMC as hot as possible and keep the level going to the speakers as high as possible; necessary attenuation is best done at the speaker.

The menu-driven calibration routine is straightforward and offers a ±6dB trim adjustment on the mains. Users can choose between 80Hz (12 or 24dB/octave) high/lowpass Linkwitz-Riley filters and a 120Hz (24dB/octave) lowpass filter or neither. The final selection will depend on whether you require bass-management functions or plan to use the BME with five full-range speakers and no sub at all.

The calibration procedure mostly consists of matching the five main monitor levels among themselves and with the sub, and requires a 0dB pink-noise source. If you don't have a noise generator, a decent audio test CD—such as the *Mix Reference Disc* from www.artistpro.com—will suffice. Blue Sky also recommends using an RTA and an SPL meter to calibrate an 85dB reference level setting, but as long as all of

your monitors/amps are the same model and you're not fussy about needing an *absolute* reference level, the system can be set up without the meter/RTA. Bass levels can be tweaked to taste: There is a +10/0dB setting on the sub outs in addition to the ±6dB trims on the mains. In any case, the BMC's menu access to mute the sub and the individual speakers greatly simplifies setups, and the entire procedure is much easier to perform than described.

After using the BMC on several systems, I'd like to see a few tweaks. For instance, the volume knob does not have a dot or line indicating where it's set. To be fair, the LCD screen does display the current gain level, but when you're across the room (or console), it's not always visible. Also, although individual channels can be muted via a few keystrokes, it's a lot of work for quick production muting, such as soloing the sub or rear surrounds to check panning and mix levels. Perhaps that second RJ-11 jack on the remote could come into play for a future add-on bank of solo/mute switches for the 5.1 outputs. Hmmm…

Overall, the BMC does exactly what it promises. Unless your system has unruly gain problems—such as a feeble output requiring *lots* of maximum gain boost—the BMC's audio output is clean, quiet and essentially transparent. The bottom line (pun intended) is that the BMC rocks. It's a simple, affordable solution to a problem facing a lot of people in the industry, whether you're mixing on a traditional console or going console-less on a DAW. Thumbs up on this one!

Blue Sky, 200 Sea Ln., Farmingdale, NY 11735; 631/249-3662; www.abluesky.com. ■

The Time Tunnel

Taming Vintage Noise for a Digital World
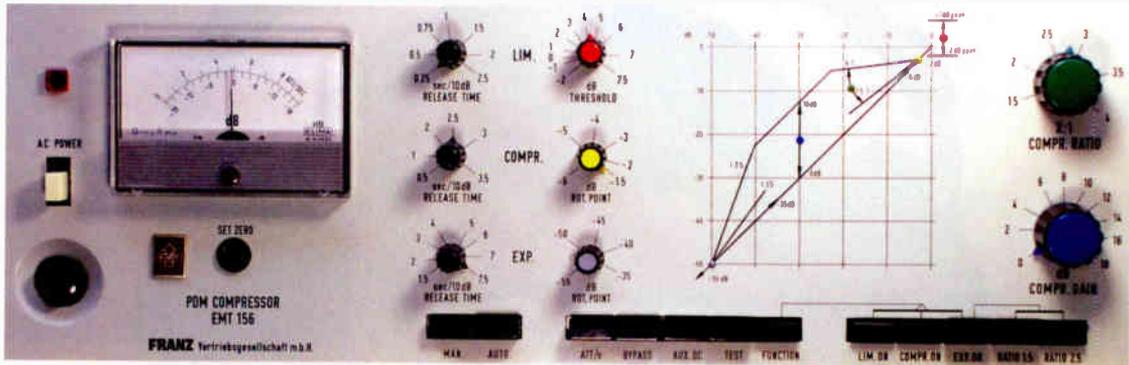
The EMT-156 Stereo Dynamics Processor, circa 1972

My first encounter with the EMT-156 dates back to 1982, when I was wrapping up a project with Bay Area band The Mutants (as produced by the late Snakefinger) at the Fantasy Studio complex in Berkeley, Calif. Restoring two of these beasts, along with several other vintage compressor/limiters in the past three years, has proved both intriguing and challenging.

A simple maintenance or "repair" job on a piece of 30-something gear can quickly evolve into a restoration project, and component age and previous repair history are just two (of many) considerations. Once hidden by analog tape hiss, the noise of vintage devices may be excessive by digital's standards, leading older gear to fall off of the ledge of acceptability. There are several disciplines applied to any vintage

restoration: achieving (and accepting) original performance and making improvements that minimize obvious flaws without sacrificing the "coolness" factors.

For example, repairs and upgrades to the power supply and attention to power and ground distribution can reduce power-related noise without significantly altering desirable sonic characteristics. I'm not squeamish about this from a restoration perspective, but it is a sensitive subject for those attempting a faithful reproduction. In the case of Universal Audio's 1176 reissue, the new version retains the original shunt-style Zener clamp for voltage regulation. Modern products typically use a TO-220 (case-style) three-terminal regulator, boasting better regulation, lower noise and greater efficiency. Many a vintage 1176 has darkened its printed circuit board under the resistor that feeds the Zener. Shunt regulation ain't about pretty: It's brute-force-effective and hot-hot-hot!

MUTE ANT

Originally intended as an FM broadcast processor, the EMT-156 is itself a mutant, being neither optical, FET nor VCA, but instead using Pulse-Width Modulation (PWM) to control the amount of audio passing through a diode bridge! While not the cleanest solution, it is quite agile and surprisingly well-behaved when working properly. As unusual as its topology may seem, Dave Hill at Crane Song saw the strengths
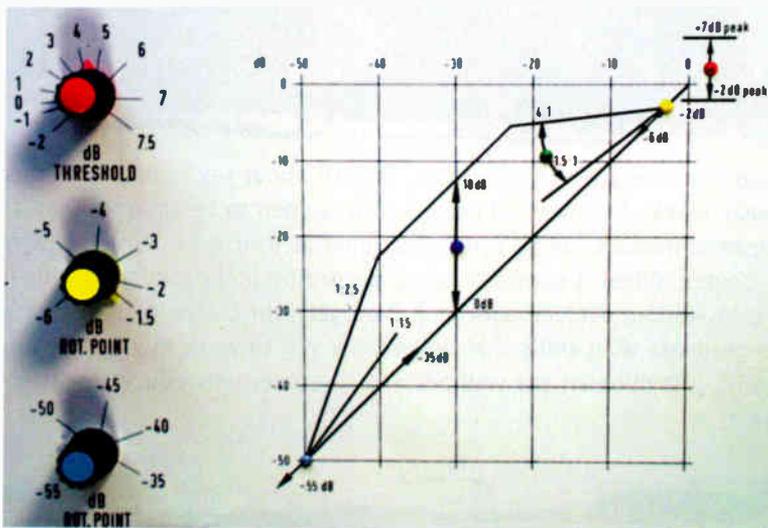
Figure 1: The EMT-156's highly educational front panel includes a graph that details the effect and range of its controls.

Plugged In or Plug-In

Universal Audio Announces Plug-Ins for Pro Tools|HD

LA-2A Optical Compressor
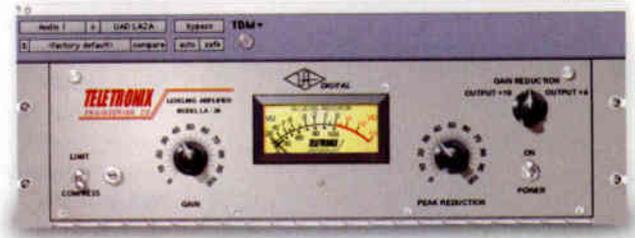
LA-2A TDM plug-in

1176LN Limiting Amplifier

1176LN TDM plug-in

The LA-2A Optical Compressor and 1176LN Limiting Amplifier have been used on countless recordings over the last fifty years. Producers and engineers working with acts ranging from Sinatra to The Stones have relied on these classics for their timeless sound. These two legendary pieces of gear are now available from Universal Audio in two forms: traditional hardware units you can rack up and TDM software plug-ins for your Pro Tools|HD or Pro Tools|24 MIX systems. Plugged in or Plug-In, UA delivers true classic sound. And if you're working with a VST, MAS or Direct X system, don't feel left out, these same great-sounding Universal Audio plug-ins run on the Mackie UAD-1 DSP card.

analog ears | digital minds

UNIVERSAL AUDIO

Figure 2a: Spectral analysis of the EMT-156 noise floor in "as-is" condition.

Figure 2b: Spectral analysis of the EMT-156 after power supply upgrade and modification.

of PWM, substituting high-speed video FETs for the diodes in his STC-8 and Trakker designs.

The EMT-156 is at least 30 years old: The date code from its single Pulse-Width Modulator IC is 1972; the rest of the unit uses discrete transistors. (Who says time travel isn't possible?) Even though the EMT-156 is over-engineered to ensure a long, trouble-free life, it was also built with consideration for the service technician, as are the company's Reverb amplifiers. The card-cage chassis has slots for application-specific subassemblies—power supply, input amp, output amp, compressor-limiter, expander, Pulse-Width Modulator. etc.—which explains why the unit eats up the real-estate equivalent of its weight. The power and output transformers are massive.

As shown in Fig. 1, perhaps the most endearing and educational feature of the EMT-156 is the Transfer Function graph on the front panel: an X-Y plot with color-coded dots corresponding to knob caps, a pictorial explanation of the function and range of controls. It's something you expect in a user's manual or laminated cheat sheet, but this is back in the day when rack real estate was cheap!

The first EMT-156 arrived for repair in 1999 (from David Glasser of Airshow Mastering) suffering from an intermittent Pulse-Width Modulator, poor signal-to-noise performance and between 2% and 4% distortion—yikes! The manual specifies distortion between 0.6% and 1.0%, depending on settings; S/N is 70 dB on its best day. The second unit arrived DOA

(along with an Eventide Omnipressor) from Dave Russell, manager/engineer of Walter Becker's Hyperbolic Studio in Maui. Its power supply was traced backward from its output terminals, which revealed the transformer was suspect—dead as if the secondary was shorted but the fuse was still good. A very service-oriented product, the EMT-156 supply can be run outside of its card cage.

SHIP SHAPE

Temporarily connecting an external power transformer to the diode bridge confirmed that resurrection was possible. While removing the old transformer, I noticed that most of its legs had sheared off: a process that began whenever the unit had been shipped—a round trip from Maui to New York City and then to the Twin Cities. The importance of ade-

quate protection for shipping can not be discounted. In lieu of the original packaging, use fat bubble-wrap around the device in question and put that box in a larger box with several inches of peanuts all around. Too often, gear arrives with insufficient packaging. Some are lucky, others are not.

THE SKINNY FACTS

Each EMT-156 has unique problems in addition to its "genetic" faults. Both units needed to be recapped. Over time, modules get swapped or technicians focus on repairs more than performance. Especially with any stereo unit, it's important to have identical parts in each channel for phase integrity. I used Panasonic FC aluminum electrolytic capacitors to replace all of the electrolytics.

The Pulse-Width Modulator is a high-frequency (HF) square wave oscillator modulated by a DC control voltage (CV),

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INSIDER TRADING

Inside nearly all dynamics processors is a control voltage (CV) that, when probed with an oscilloscope, sheds a much more revealing (green) light on the effects of the front-panel controls than looking at metering. While this kind of insider information is usually only available to geeks, the EMT-156 provides access to this via a rear-panel DIN connector, allowing the user to optimize the processor for maximum efficiency.

For example, some dynamics

Figure 3: The Eventide Omnipressor can radically expand and compress. Note the 30dB swing (in each direction) on its zero-center meter face.

processors do their best work at the "knee," while others continue doing respectable work while being slammed. The dbx 160 Series is an example of the former: A pair of LEDs labeled "Above" and "Below" encourage the user to find the knee's center, a comfort zone where the unit does its most efficient work. Conversely, the UREI 1176 allows massive gain-reduction meter swings, maintaining its deserved reputation; although like any processor, combined "fast" settings of attack and release controls will narrow the window of tolerance.

I also put the equally obtuse Eventide Omnipressor on the bench. Like the EMT-156, it also has a zero-center gain-reduction meter. (See Fig. 3.) The Omnipressor is the archetype for VCA compressors. Based around a dbx discrete transistor VCA, it has every possible control you never thought of such as separate limit controls for gain and attenuation.

The key to coaxing good sounds out of Omnipressor (or any dbx compressor with this feature) is to set threshold so that the above/below LEDs are always toggling. This centers the processing at the knee where the compressors do their best work. Make small moves and the Omnipressor is more usable than I ever thought possible. But be forewarned: Twist knobs with wild abandon only after taking out insurance on your monitors!

—Eddie Ciletti

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7

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External Remote Control - Realtime Room Simulator with Convolution

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One of the strongest suits in the Samplitude family is absolute sound neutrality – Comparable in fact with high end analog consoles. The sound always remains full and transparent, retaining its depth without tingeing. Highly developed digital algorithms, absolute phase stability and constant use of floating point computation ensures that the sound retains its positive sound nuances during intensive digital editing. These are: transparency, neutrality, preservation of transients and stereo field, best possible receipt of the signal form.

Samplitude 7 now comes with POW-r, a high-quality dither algorithm. Developed and patented by the POW-r Consortium, it reduces word lengths of 20, 24 or 32 bits to the standardized 16 bit CD format with a high degree of perceptible signal dynamics and low noise level.

Comprehensive Editing Functions

Samplitude offers a huge range of professional editing functions. Recorded samples can be arranged in any way, cut, and be reworked into soft crossfades. Dozens of tools are available. Precision volume and pan envelopes that can be automated while remaining true to the original sample round off the tool pallet. Of course, editing is performed virtually – and therefore non-destructive – so that every parameter can at any time be altered without losing valuable material.

Unique Object-Oriented Editing

As an enhancement to the traditional concept of mixer-supported editing of complete tracks, all versions offer countless possibilities for direct real-time sample editing. Recorded audio tracks can thus be cut into as many objects as you wish. Every object can be edited with individual fades and effects, such as Equalizer, Timestretching, Pitchshifting or plugins. Samplitude also offers Aux-Sends on the object level, the well-known linearphase mastering effects, and a widely variable signal flow.

First Class Effect Setups

From mixing to mastering, all production needs are met: Award-winning equalizers, various dynamic processors, Timestretching, Pitchshifting, Reverb and Delay, plus the high-end mastering effects: Multi-tape compressor, Multi-band stereo enhancer, FFT filter with over 30,000 bands, Amp Simulator, Vocoder, room simulator with folding principle, Denoiser (utilizing the noiseprint method) and Dehisser for real-time noise reduction. Besides routing possibilities for all effects that allow a freely configurable signal flow, these possibilities are not only available to the object level, but also in each mixer channel.

Further features: improved solo effects, unlimited routable busses and Aux-send busses, VST and DirectX plugin support, flexible routing of all integrated and plugin object effects and mixer channel effects.

Burning CDs

It couldn't be easier: Red Book-compatible audio CDs can be burned on-the-fly from the arrangement, without having to take any destructive intermediary steps. The continuously updated support makes sure that even the latest models burn perfectly with Samplitude.

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Intelligent cache management means that the harddisk installed will be used to its fullest capacity – confining to history the old problem of too few tracks while producing with 24 bit/96 kHz. Stable playback: Arrangement playback has priority over all other operations such as opening menus. No more crashing or bumping playbacks!

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The Windows WAV file size limit of 2 GB is history. Now you can record up to 2 billion stereo samples. That means 10 hours of sounds in just one file with 44,1 or 48 kHz. Complete radio broadcasts can now be recorded in one take.

Further Features

- Easier handling: Work area presets offer interface clarity whereby only the pallet of the function being used currently is displayed
- 5.1 Surround capability (only Samplitude Pro /Sequoia)
- Midi and VST* instruments (Samplitude Pro/Sequoia)
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MAGIX

representing dynamic changes in the audio signal. Probing inside the unit with a scope revealed HF noise radiating into everything, but suppressed at the output transformer by a serious series resistor-capacitor (RC) shunt as termination. High frequencies tend to travel on the outside of the wire—solid in this case—and bundled, a phenomenon known as "the skin effect." On the first unit, I spent some time rerouting cables and redistributing the ground with some improvement. On the second unit, the focus was on filtering the power as it entered each module and revamping the power supply.

The EMT-156 power supply is unconventional by modern standards. The unit derives bipolar 10 volts by dividing a single regulated supply in half. This means that the "ground" or power common is virtual, explaining the vulnerability to accidental shorts when probing for clues (and slipping). The solution for the first unit was to upgrade and heatsink one critical transistor to improve fault tolerance.

Once the transformer was removed, repaired and re-installed (on the second unit), a quick check of the system revealed basic functionality, as well as all of the noises documented with the first unit. The Pulse-Width Modulator was a major concern when considering the supply options. As the only (and ancient) chip in the system—in a circuit that is very dependent on power regulation and calibration—any drifting affects gain, gain reduction and distortion.

THE GROUND FLOOR

Noise sources can be identified with the help of spectral analysis. Sure, you can jack up the gain, but who wants to listen to noise for extended periods, risking monitors and hearing with one fell glitch? Instead, a handy little NTI Minilyzer zoomed in on the noise. To the left in Fig. 2a are three spikes, the obvious family of power-related noise components: 60Hz, 120Hz and 240Hz hum (in the U.S. and other 60Hz countries). Rising slightly to the right is amplifier hiss. Figure 2b reflects the same device after surgery—quite an improvement, so here's the story.

PCB traces from the output of the original power supply were cut to allow connection from an external DC regulator. I then built up a little prototype board with LM317 and LM337 (positive and negative adjustable regulators, respectively). This board now lives in the power supply area that is externally fed

World Radio History

by a regulated, bipolar 15-volt supply. Because the EMT-156 runs on bipolar 10 volts, protection from the outside world was an important consideration in the event that any of its components are sensitive to excessive voltage. I also wanted some guarantee of cleanliness, no matter what external supply was used.

Reducing the hum components by 18 dB was rewarding. Similar changes occur when experimenting with ground distribution; keep in mind that it's just as easy to make things worse as it is better. The beauty, of course, is real-time observation via Spectrum Analyzer. Power supply source-impedance can also affect high-frequency noise, as I learned while experimenting with "bypassing" the supply vs. local cleanup at each of the cards. A series resistor and parallel cap were not as effective as a series inductor and the cap. Understand that all of the PWM noise was beyond audible range, while hiss overlapped three audible octaves.

While attempting to calibrate the unit, it became obvious that many of the pots and switches were scratchy. Trim pots were replaced, rotary pots disassembled and cleaned, and switches were lubricated and exercised. On the switches, I used Caig Deoxit D100L in the pinpoint oiler bottle rather than make a mess with a spray. On the pots, once the oxidation was removed from the silver, a Caig paste was used to lubricate and protect.

Both units eventually came together and made some cool, and funky sounds. The EMT-156 is very much the unconventional box from stem to stern, so using it is equally twisted. Gain-reduction metering is the "zero-center"-type: To the left is compression, and to the right is limiting. The unit operates completely in reverse of most compressors, with 18 dB of attenuation until the compression gain control is rotated clockwise. This moves the meter to the left, increasing gain until the threshold bumps into the signal.

The compressor, limiter and expander are independent circuits that become interactive when any or all are engaged. The compressor has both ratio (1.5:1 to 4:1) as well as rotation (fine-tuning threshold from -1.5 dB to -6 dB). The expander rotation control operates in a similar way, plus it has two front-panel ratio switches. Attack for all modes is internally set, while release is available on the front panel. The limiter can also be viewed in a special meter mode called (dB) ATT/sec. Because peaks are faster than most meters can respond to, a capacitor is added to elongate the impulse, allowing more accurate setting of the peak-threshold control.

ANALOG CHIC

We think of the 1950s as the golden era of the vacuum tube. Like the gradual evolution of digital (and our acceptance of the same), the transistor was only approaching the *knee* of its maturity in the early '70s: a time when ICs were still in their infancy. Sure, API and Neve were doing some cool stuff, but there has been considerable progress since then, especially with power supplies and components. Then as now, large consoles have remote power supplies; the distance pretty much eliminates the transformer as noise source. This was not a luxury for most vintage outboard gear, although now, toroidal (round) transformers can easily be positioned to minimize radiation. Welcome to the ground floor of noise awareness! ∎

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CELINE DION AT CAESARS

Many live sound mixers are in a position to specify a preferred live console (as long as the production manager approves the budget, of course). Some mixers swear by the Midas XL4; others are partial to the Yamaha PM-4000. Soundcraft, InnovaSon, Harrison, Cadac and Crest are some names that appear on carnets and bid proposals around the world. But very few, if any, concert sound system designs call for an SSL MT Production (MTP). Perhaps that's not surprising because, unlike most of those other boards, the MTP is designed primarily for recording and broadcast applications.

Yet, it is a 96-input, all-digital MTP that occupies the custom-built FOH paddock at Caesars Colosseum (Las Vegas), a brand-new, $100 million 4,000-seat auditorium constructed and equipped specifically for one artist—Celine Dion—who will be appearing there exclusively for the next three years. Dion will perform five days per week for 40 weeks during the year, and, with 200 shows per year at the Colosseum adding up to a potential 800,000-ticket box office, one can assume that the sound portion of the budget was more than adequate. Highlights of the installed system include the 48kHz, 24-bit-capable MTP, a 150-speaker 5.1 surround system comprising Meyer Sound self-powered cabinets, plus an extensive in-ear monitoring system for the show's eight musicians, three backup singers and various performance artists. The enormous stage features a Diamond-Vision backdrop on the upstage wall and 100,000-lumen video projectors for front-scrim projection. When not in use for *A New Day of Celine Dion*, the room will be available for other productions.

FOH engineer Denis Savage

It's Live! It's High-Bit-Rate Digital! It's In 5.1!

Any other details on the show's actual production would be highly speculative, because rehearsals were cloaked in secrecy until the show opened on March 27th, after press time. However, the fact that the show's artistic director is Franco Dragone, creator of *Cirque du Soliel*'s long-running and spectacular "Mystere" and "O," should give some idea of the levels of artistic and technical accomplishment that will be on display. "If you've seen Dragone's shows, there's always something in the background, as well as the foreground," points out FOH engineer Denis Savage. "But it's still a Celine show with a full band, so it's a nice integration of two worlds."

Anyone familiar with Dion's record as a concert artist knows her reputation for quality sound. (See *Mix*, January 1999 for an account of Dion's use of the Soundcraft Broadway digital mixer.) It therefore comes as no surprise to learn that the sound design at the Colosseum was largely the result of a collaboration among Dion's veteran sound team: FOH engineer Savage, monitor engineer Daniel Baron and system tech and SIM operator Francois "Frankie" Desjardins. Solotech of Montreal, which has supplied touring sound for Dion during the past two decades, was contracted to provide and install the equipment, in conjunction with Audio Analysts.

by Mark Frink

Paging Perfected

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COLOSSAL REQUIREMENTS

The Colosseum was designed to meet an important requirement: Dion had expressed the desire that the audience be close to the stage; in fact, no seat is farther than 120 feet away from the stage, which, at 120 feet wide, 40 feet high and nearly 100 feet deep, is larger than the stage at Radio City Music Hall. In fact, the sheer size of the stage required the development of a microclimate air-conditioning system to control ventilation and humidity at the front of the stage. Arranged in a 120° fan, the audience is distributed among the generous orchestra level plus two relatively shallow balconies wrapped around the room above. The FOH mix position is centrally located on the orchestra level.

Savage has worked with Dion since early in her career and is also the managing director of Studio Piccolo, where Dion recorded several albums. "At first, I wasn't thinking of using [the SSL MTP] at all," Savage says. "I was recording a French artist in Paris with one of Le Voyageur's remote trucks and the show was moved," recalls Savage. "They said, 'Here's our newest truck and the assistant is great and if you're not happy, you don't have to pay for it.' I was blown away by the console. It really didn't feel like a digital desk."

Another primary requirement for *A New Day of Celine Dion* was for a total surround sound experience, with a precise and controllable mix for the audience. It turned out that the MTP, last year's TEC Award winner, was the only suitable desk that could provide a 5.1 mix of vocals layered on top of a second 5.1 band mix while also providing stereo mixes. Twelve aux sends, 12 stereo effects returns and 12 mix buses are configurable in any combinations of mono, stereo, LCR and/or surround.

As Savage explains, the dual-layer 5.1 mix is necessary because instruments and vocals need to be treated differently in a live surround mix. Whereas instruments can be placed in the mix in isolation, cueing the listener to a given location, the vocals must be widely spread. And, because of the complexity of correctly adjusting EQs and delays for such a large room, the only way to correctly balance all of the surround system zones is by playing back prerecorded tracks late at night. "The show that we're putting together is something you could never tour with," Savage wryly admits.

As with any high-profile theater show, production space in the house is at a premium, so the FOH board had to provide for a high number of inputs in a relatively small footprint. Because the MTP accesses its 96 stage inputs in two layers, bringing each to the surface as needed, it is effectively half the size of a comparable analog desk. And, because the MTP included studio-quality dynamics processing on every channel, its hefty price was offset by savings on unneeded equipment. "When we started adding everything up, the MTP was actually a bit cheaper than an analog desk with moving faders, *plus* all the outboard we would have needed for dynamics and surround panning," Savage says. "The service we've gotten from SSL has been amazing. Most people don't think about that."

Stage inputs connect via three pairs of send-and-return "HiWay" co-ax cables, which deliver multiplexed digital signals from the stage box to the board's processor. Each of the eight remote mic preamp stageboxes contains 12 inputs for a total of 96 inputs at the stage, of which 24 inputs are multiplexed onto one HiWay, 36 each onto the other two. The mic pre's can be controlled remotely via Ethernet control cables in each HiWay cable set.

Savage's outboard equipment needs are modest, largely due to the availability of excellent onboard EQ and dynamics facilities. Savage has, however, a couple of XTA SiDD processors, a Lexicon 960, a TC Electronic M-6000, two Eventide Eclipses and a TC FireworX. Each effect can be controlled from the console; patches are recalled and adjusted from SysEx commands, which map each unit's parameters to labeled buttons and knobs on the MTP's surface.

MEYER SURROUND SYSTEM

The elaborate sound system is made up of more than 150 Meyer speakers. Arranged in a 5-channel surround design, the system features identical eight-box line arrays of M3D speakers, which are flown as L/R sources on either side of the proscenium. The system's sub-bass is delivered by two side-by-side columns of six M3D cardioid subwoofers flown above center stage, which are framed by two eight-box M2D columns, which are fed center-channel information and splayed to properly cover the theater's width. UPA-1P and UPA-2P speakers placed around the sides and rear of the venue deliver rear-left and right-surround channels; underbalcony speakers are UPMs.

Monitor engineer Daniel Baron

Ensuring proper front-fill coverage for the VIP seats in front of center stage called for a creative solution: "With a 40-foot-high proscenium, the P.A. is quite high above, and the front of the stage is very low, so to cover the front row was a challenge," comments Savage. who used Meyer SB-2 parabolic Sound Beam speakers mounted on each side of the stage on the sidewall, facing sideways, to cover the front seats from about 100 feet. "This brings the image down so it's not coming from directly overhead for the first few rows," says Savage. "I think we are the first to try that, but it works extremely well."

Because all of the Meyer speakers are self-powered, there is no need for external crossovers, but the entire system is controlled with BSS Soundweb processors, which are used to delay and equalize line-level feeds to each speaker zone. An Ethernet-based Meyer Sound RMS system provides control and monitoring facilities for all of the individual amplifiers.

MONITOR WORLD

Monitor engineer Daniel Baron has worked with Dion for the past 15 years. Located offstage in a room one flight up, Baron mixes on a Yamaha PM-1D, which he augments with a Lexicon 960, four Lexicon PCM91s and four Eventide Eclipses. All cast members use Sennheiser wireless in-ear monitors and microphones, including the SKM-5000 with Neumann MK-105 cartridges for vocals.

shakira

Shakira sings into a Sennheiser 5000 Series wireless microphone with a Neumann KS 105 capsule. Shakira and her band use Future Sonic in-ear monitors.

Shakira's rise has been unstoppable. A star in her native Colombia since her early teens, the singer/songwriter has garnered multi-Platinum hits throughout Central and South Americas and Spain. Now aged 24 and with a Grammy and two Latin Grammys under her belt, Shakira is out on tour promoting her first English-language album, *Laundry Service*. Scheduled to hit 50 cities in 30 countries this year, the Tour of the Mongoose passed through the San Francisco Bay Area in February; *Mix* caught the show at the Oakland Coliseum Arena.

PHOTOS AND TEXT BY STEVE JENNINGS

Sound crew (L-R): Gene Phillips (audio crew chief), Vish Wadi (monitor engineer), Mike Mason (system engineer), Rob "Cubby" Colby (FOH engineer) and Tom Ford (sound tech)

At Oakland, the sound system was a Clair Bros. I-4 line array supplemented with flown Clair I-4B bass cabinets and S4 subwoofers on the arena floor. Frontfill was provided by Clair P4s. System control is accomplished via Clair's new iO system controllers, which are manufactured by Lake Technologies.

FOH engineer Rob "Cubby" Colby is using the Clair/Showco Show-console and mixes 78 stage inputs via 16 VCAs. "The Showconsole has fantastic dynamics," notes Colby, who is using all internal gates and compressors. For effects, Colby is using a TC Electronic 2290 for vocal delays, plus an Eventide Harmonizer H3000, AMS reverbs and TC 3000 for multi-effects.

Monitor engineer Vish Wadi is mixing mainly for in-ears, using a Midas H3000 console with an XL extender. "I've got about 56 inputs," says Wadi, who is running nine stereo mixes for in-ears and wedges. For dynamics, Wadi relies on dbx 160X and 900 compressors.

McCoy Tyner

The Surprise Challenges of Mixing a Jazz Trio

Christian McBride

J azz piano legend McCoy Tyner's annual two-week residency at Yoshi's is one of the Oakland, Calif., jazz club's most anticipated events—the shows sell out months in advance. The program for Tyner's ninth annual residency was a mega-star lineup, hand-picked exclusively for Yoshi's: The first week featured Tyner with Bobby Hutcherson on vibes, Cecil McBee on bass and Jack DeJohnette on drums; the next week, Tyner teamed up with bassist Christian McBride and drummer Lewis Nash. *Mix* came down for the second week to check out the trio's performance, and learned that there's a lot more to getting the right acoustic jazz sound than might appear at first glance.

A MAJOR ONE-TIME EVENT

Dan Pettit, Yoshi's sound manager, has worked at the club for nine years and has an even longer association with Tyner. "I've done pretty much every set McCoy has done for Yoshi's since 1994," says Pettit. "He's a special guy; he's a great play-

by Sarah Jones

er and a good person to be around. I used to work with him back east, and when I was preparing to move out here, he said, 'Go to Yoshi's and tell them I sent you.'"

Pettit explains that the biggest challenge in setting up for a two-week show—as opposed to the typical one- or two-night gigs that Yoshi's usually books—is coping with the various artists' instrument and equipment requirements. The arrangements can get especially complicated when these particular ensembles are assembled for a one-

Lewis Nash

time event. "For week one, I got McCoy's rider, I got Jack De-Johnette's rider, Bobby's rider and Cecil's rider, and had to come up with all of their individual needs," says Pettit. "McCoy is a Steinway endorsee, so we got a hold of the local rep at Sherman Clay and said we wanted a good Hamburg German Steinway. Then I got a hold of a drum kit for Jack DeJohnette, who endorses Sonar drums; so you have to work with all of these artist relations people, and say, 'Hey, I've got your guy coming in, these are the dates, work with me.'"

AN EVOLVING SOUND SYSTEM
Yoshi's has adapted over the years to accommodate a broad range of acts, expanding the Meyer P.A. and adding equipment. "We were designed to put on jazz trios, and as soon as the room opened, the then booking agent decided to go after more pop-based groups. We had a two-week residency with Bruce Hornsby. Our P.A. for Bruce's eight-piece band was not going to work, so we had to bring in different mixing consoles and

all sorts of rack gear and a lot of extra monitors and such. And the more we did that, the more I realized that we really need to re-tool. In 1999, we started re-tooling; we're still doing that today."

One example of the system's growth is an expansion into separate FOH and monitor consoles. "We have a Crest X8 40-channel FOH and a Spirit 32x12 console for monitors, so we can throw 12 mixes onstage. We've taken the approach that—much like the experience of doing sound—you have to be able to handle anything they throw at you. You have such a complete arsenal that you can say, 'What do you need? Okay, give me a minute.'"

MIC SETUP: IT ALL STARTS WITH PIANO
"Since McCoy is the marquee guy, and he has probably the least amount of projection, he needs the most help," says Pettit, who places a pair of AKG C411s contact pickups right on the soundboard in a symmetrical line: One on the low end and one on the high end. "We use that as kind of a power-booster, just to get more isolation and overall sound into the system, and we use a trio of open-air microphones over the strings and hammers of the piano. Those consist of a Neumann KM 84 on the low end, another Neumann KM 84 in the mid-section, and then something I like to do is put another condenser—an AKG 535—on the very top two octaves of the piano. That's an undampened section that's very quiet, so I just like to bring that out a little bit. So when the pianist goes all the way up the keyboard, you don't have that dropout like you normally hear with acoustic pianos and the way they're miked in situations like that."

Pettit says that this is a standard piano setup: "I work with pianos for well over 200 days a year, so a lot of experimentation has gone on, and that's pretty much the most consistent setup I've found. And it's really just a matter of keeping the piano up and heard in the house, and we don't mike the drums very often, if at all in that house, because they project quite well."

One of the challenges during the first week was miking the vibes, and Pettit came up with an interesting solution to an isolation problem. "It's usually a problem having him so close to the drums and having the microphones about 2 feet above his bars," he ex-
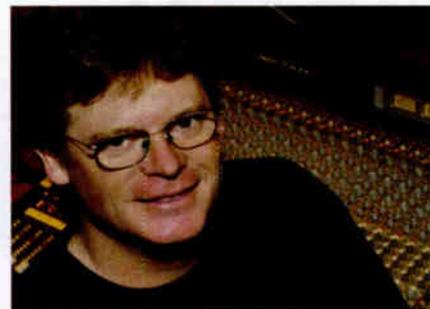
Yoshi's sound manager, Dan Pettit

plains. "For that particular run, I used an AKG 535 on the very high end, and I used a stereo Audio-Technica 822 on the low and mid sections. I was getting a lot of bleed from the bass and some of Jack's cymbals. So I did a first for myself: I took two Shure 57s and put them on short stands and put them right underneath the bars inside so that they were kind of shielded by the projection tubes underneath the vibes. It worked very well because I got more isolation; one of the main factors on a stage like that is getting isolation with your microphones, because everybody's right on top of each other. I was sitting there, scratching my head, thinking, 'Okay, how can I deal with this?' One night I put one mic under there and I liked the results, so the next night I put another one under. I ended up with basically five microphones on the piano and five on the vibes. It may sound like overkill, but it's like spices: If you blend them just right, you get a good balance."

For the second week, Pettit took two lines from McBride's bass, an Electro-Voice RE-20 on the bass amp and McBride's own instrument mic. Pettit says that he rarely uses effects on a standard jazz ensemble, with the exception of occasional compression on bass, to eliminate some of the boominess on the low end. "Very rarely do I use reverb, because Yoshi's acoustically has a great decay time, but say for a lush ballad where the vibes lead, I may put a little reverb on the vibes just to expand them a bit."

Yoshi's is already scouring the books for Tyner's tenth annual residency, and Pettit plans to be around for that event. "McCoy is pretty much become the go-to guy. We know those are going to be a couple of really good weeks."

Sarah Jones is a technical editor at Mix.

New Sound Reinforcement Products

SOUNDCRAFT MH3 LIVE MIXER

The MH3 multipurpose live performance mixer from Soundcraft (www.soundcraft.com) is a dual-mode console with eight groups, 12 aux buses, eight VCA and eight mute groups, plus snapshot automation and true LCR panning/outputs. Usable for FOH or monitor duties, the MH3 features a modular construction, and is available in 24/32/40/48/56-mono channel frame sizes. All boards include four additional stereo input channels, plus stereo FX returns with 3-band EQ on each output section; a 12x8 output matrix is optional. Prices range from $15,495 for the 24 mono-input frame to $28,995 for a 56-input model.

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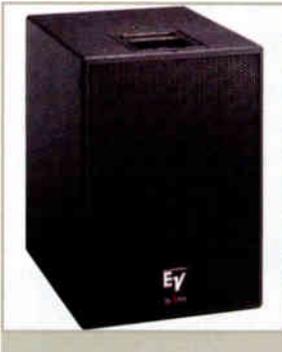
complement E-V's powered SxA100+ and SxA250 loudspeakers. Featuring an integrated Class-H, 750-watt amp with a PowerMax™ stereocrossover and a patented Lowpass Notch filter to compensate for transient distortion, the SbA750 offers a 45-150 Hz response. Additional features include XLR input connection, a highpass output, integrated pole mount and a rugged exterior finish.

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Crest's (www.crestaudio.com) Pro 200™ Series 2-channel amps feature 25-pound chassis and two-rackspace enclosures. The $2,630 Pro 8200 offers 1,450 watts/channel (4,500W bridged) into 4 ohms; the $1,970 Pro 7200 delivers 1,000 W/side (3,300W bridged); and the $1,600 Pro 5200 has 525 W/side (1,800W bridged). All feature Automatic Clip Limiting, automatic impedance sensing (for short-circuit protection and 2-ohm load handling), AutoRamp power-up circuitry and variable-speed DC fans. The front panel has input attenuators and LED status indicators. Inputs are balanced XLR; outputs are Speakon and binding post.

TC ELECTRONIC LIVE EQ SYSTEM

Consisting of the EQ Station-8, EQ Station-4 and MotoFader, the EQ Station from TC Electronic (www.tcelectronic.com) provides system EQ in demanding monitor and FOH applications. The 8-channel EQ Station-8 and 4-channel EQ Station-4 are two-rackspace units offering AD/DA and

DSP processing functions, with 6-band parametric, 29-band graphic, 3-band dynamic EQ and delay on each channel. Internal 48-bit processing allows wide headroom and analog EQ modeling. Each EQ Station can run directly from its front panel, which features quarter-VGA-resolution color display and direct-access knobs and buttons. EQ Stations can also be controlled using PC/Mac editor software via Ethernet. The optional 4U MotoFader remote directly controls up to 32 channels of graphic EQ.

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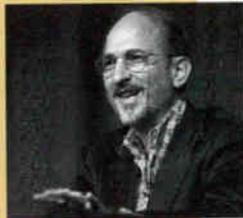
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Sound designer Abe Jacob, considered by many to be the "godfather" of contemporary sound design, will serve as creative consultant to the Broadway Sound Master Classes. He got his start in San Francisco mixing sound for such 60s rock stars as Jimi Hendrix, the Mamas and the Papas, and Peter Paul and Mary, and designed the sound system for the Monterey Pop Festival. Jacob is a legendary sound designer for theatre and opera, a tireless champion of union representation for his fellow artisans, and a 2000 EDDY Award winner.

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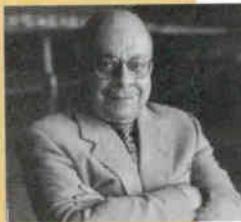
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SUSAN TEDESCHI
HAPPY WITH THE BLUES

By David John Farinella

Apparently, the two-time Grammy Award-nominated blues-rock artist Susan Tedeschi has never heard the term "keep it simple." How do we know that? Consider these simple facts: She started recording her sophomore release *Wait for Me* in November 2001 when she was five months pregnant and was planning a December wedding. "It was pretty crazy," she says with a laugh. "I'm always multitasking to the maximum." No kidding.

Engineer Nate Dubé uses different words to describe the recording sessions' pace. "It was like kamikaze recording," he reports. "Sometimes we had to pin her down to get stuff done because she had the new baby. It was kind of like the military: Hurry up and wait. So, I'd get everything ready, and then wait. Then we'd throw down a lot of tracks, take after take, and did everything we possibly could. I sorted it out later."

Actually, this is Tedeschi's second attempt at recording this album. The first began three years ago in Louisiana. "I did record a whole record, but I didn't release it," Tedeschi explains. "The reason why was that I was doing a lot of Tom Hambridge songs and not my own. He wasn't producing it, and he was trying to get producing credit for it. It was just a big mess. To make a long story short, I scrapped it and decided to hold out until I knew it was going to be right."

So, the *Wait for Me* sessions started again in Jacksonville, Fla., with the late legendary producer Tom Dowd in charge. Production credit on this release is spread from Dowd to Tedeschi to her husband, guitar phenom Derek Trucks. "Tom did all the pre-production and did the basics with us," Tedeschi says. "So, he was the producer on a big chunk of the tracks. Then my husband produced the two tracks with his band. Then we went back in the studio after I was pregnant and we did a bunch of those other tracks, and I produced it. So, I became the producer in the eyes of the record company. It's listed as both, but I thought Tom did a significant part before he passed away. I was hoping that he would be around for the release and all that, but he didn't make it. We are very sad about that."

The sessions with Dowd were recorded at Made in the Shade Studios in Jacksonville by engineer Peter Thornton and then brought to Rear Window Studios in Brookline, Mass. (Tedeschi is Boston-based), via Pro Tools disks. Once at Rear Window, Dubé reports that most of the dates were recorded live to 2-inch tape on a Sony 24-track, except for Tedeschi's vocals and guitar tracks, which went straight to Pro Tools. "That kind of disturbed me," Tedeschi admits, "because I really wanted to do it on the live tracks. I usually think it sounds a bit warmer, sounds a little bit better. But Pro Tools is so good now that you can't really tell too much. I was pretty impressed with that."

COUNTING CROWS
CLASSIC EAR "CANDY"

By Gaby Alter

It's been 10 years since the Counting Crows' first single "Mr. Jones" hooked listeners with its Van Morrison-esque "Sha-la-la" opening, and introduced the world to the distinctive songwriting of Adam

Crows frontman Adam Duritz (center, with dreadlocks) and L to R: Matt Malley, Ben Mize, David Bryson, Charles Gillingham, Dan Vickry and David Immerglück.

PHOTO: PEGGY SIROTA

Duritz. The Crows' sound, which distilled influences from the classic rock canon, grounded Duritz's heart-on-his-sleeve lyrics with music you already felt familiar with, and associated it with authenticity.

Hard Candy, the Crows' most recent release, is no exception to the rule. From the opening Byrds-like electric 12-string riff, to the literal evocation of The Band on "Richard Manuel Is Dead," to the CSNY-style backup vocals on "Why Should You Come When I Call?" the album is a delight for classic rock lovers. But there are also some surprises, too: "New Frontier" is an homage to new wave, complete with analog synth solo; and the album's hidden track, a cover of Joni Mitchell's "Big Yellow Taxi," combines acoustic guitars with a hip hop beat. For his part, Duritz continues to tackle the anatomy of heartache. His honesty and emotion, matched with the sunny guitars of a track like "Hard Candy" or the propulsive rock of "American Girls," make for the same great chemistry found on other Crows' records.

PORCUPINE TREE
PROG PAST, PROG FUTURE

By Bryan Reesman

It is rare these days that a band hits the mainstream combining the power to rock ferociously with an intellectual, arty vision. Yet, for more than a decade in the underground, England's eclectic Porcupine Tree has done just that, recording and performing frontman Steven Wilson's innovative amalgamations of rock, prog and electronica. Now, the quartet is making bigger waves with their latest epic, *In Absentia* (Lava), a memorable collection of songs that continually shifts and mutates, yet ultimately weaves a cohesive aural tapestry.

"It's long overdue that we have some progressive music with the kind of depth that it's had in the past, but without so much of the noodly stuff," declares engineer Paul Northfield, who worked on *In Absentia* right after tack-

From left: Colin Edwin (bass), Richard Barbieri (keyboards), Gavin Harrison (drums) and Steven Wilson (guitar/vocals)

ling Rush's impressive *Vapor Trails*. He notes that while the progressive rock genre is creative, it can sometimes also be ostentatious, yet he believes that Wilson has "managed to avoid that and make something that's a nice hybrid of the best things about progressive music and what's going on these days."

In an era when the term "progressive" is shunned by many music listeners who think it implies over-indulgent, highly

THE POLICE'S "EVERY BREATH YOU TAKE"

By Robyn Flans

Police drummer Stewart Copeland still can't listen to *Synchronicity* without thinking of the last tough days he spent recording with The Police. The band had burst onto the scene with its unique sound—punk/new wave energy infused with ska and reggae—on *Outlandos d'Amour* in 1978, but as the band's popularity grew, a power struggle within the trio ensued. While Copeland says the mood going into the 1983 release *Synchronicity* album was upbeat, there was trepidation, knowing that there would be battles fought with group leader Sting over creative direction.

From left: Stewart Copeland, Andy Summers and Sting

"We could see the way the trend was going, and we knew the next album would be harder than the previous album," Copeland says, referring to Sting's growing control over the music. "It was, 'Shall we try this idea?' 'No, we won't. We'll try this idea, and there will not be deviation from this idea.' That was the origin of the argument, which turned into an atmosphere of anger and confrontation. I don't hold anybody to blame for that point of view. That is a natural personality trait: To be self-contained and to have a full vision, artistically, of what you want to do. Mozart didn't collaborate. There are many musicians who have a clear picture of what they want to say, particularly if they wrote the song and lyric. So, even though I had these big battles with Sting, I don't hold them against him," says Copeland, who says that he and Sting get together whenever Sting is in L.A. these days, but he doubts they could get to a place that would make it possible for a Police reunion tour (although they were scheduled to reunite for the Rock and Roll Hall of Fame show in the spring).

Copeland says that engineer/producer Hugh Padgham was ineffectual when it came to the creative battles, but "what he was good at was he knew where to put the microphone. He got a big sound. He got the ambient recording of the drums, but this is a perfect example of where putting the microphone in the right place clashed with making the band dynamic work: The big studio that George Martin built [AIR Montserrat, in the Caribbean] was at one end of the building, and I was upstairs in the old house in the dining room, all by myself with a television monitor

connecting me to the studio downstairs across the way.

"The first thing you have to do when you record music is lay down a drum track, but we were making it up as we went along, and I wasn't in the room with them. So, instead of finishing playing and going, 'Hey, that was good there, and that went there,' there is silence. I can't hear what one of them is saying unless one of them presses the talk-back button. They aren't pressing the talk-back button, but I can see that they are talking and I assume it's bad. The drums sounded incredible because that was definitely the place to get the best sound out of the drums. Inarguably, the drums sounded brilliant in that room."

Padgham, who also produced *Ghost in the Machine* with the band, says that he felt his hands were tied when it came to dealing with the personal dynamics within the band: "It was difficult for me to do anything about the fighting, because when I would try to say something like, 'Come on guys, do you have to kick the shit out of each other?' they would say, 'You don't know anything about us.' Relative to their being a band, I knew them for a very short space of time, and their attitude was, 'You can't tell us what to do. Stay out of it.'"

Copeland says that AIR Studios was an appealing place to record the album because it was a long flight from the nearest record company. He recalls that during the making of their third album, *Zenyatta Mondatta*, executives were constantly present, "looking for the hit" since the band's profile had grown so. The Montserrat retreat was also better for the band because. "The closer the confines, the better we got along. The minute there was a life outside the group, the group just seemed like the place you didn't want to go back to."

Copeland says that he knew instantly upon hearing "Every Breath You Take" that it was The Big One. "The demo was Sting singing over a Hammond organ, which was rare at that time, because by then, we all had home studios, so we'd show up with these fully mastered demos. In the case of 'Every Breath,' what he brought to the band was

World Radio History

which Copeland says generally took a day, "Every Breath" took a week because of the *simplicity* of the song. "We couldn't do a lot of stuff because that would ruin it, so the stuff we did had to be the right stuff. We tried this, we tried that, such as a reggae version, which didn't seem important enough. We tried a more rock track and I can't even remember most of it because it was so unmemorable.

"When Andy came up with that guitar part, I felt personally that I didn't have to

Andy went away and worked out that guitar part, and suddenly it all made sense. We knew it was a big song, but it sounded too pedestrian, in spite of the great lyric, and it wasn't until Andy came up with the guitar part that it clicked in.

—Hugh Padgham

come up with one of those interesting rhythm turn-arounds, like in 'Can't Stand Losing You' or 'Roxanne,' because it seemed like the guitar part was the trick. So we had the song and we had the trick, and all we had to do was make your foot tap to it. The drum part is very simple: The kick drum is from a drum box—an Oberheim—and I overdubbed the snare drum, which is actually a snare drum and a Tama gong drum played together, one in one hand, one in the other so you get a really heavy, but cracking, backbeat. Then the hi-hat was overdubbed as a separate track. For the swooshes into the choruses, I overdubbed the gong drum with a cymbal swell played with soft mallets. The drum part was completely assembled with overdubs.

"The drums were miked with BBC ribbon mics—Coles 4038s—on the overheads on the cymbals," Padgham adds. "Those have become very popular now in America, but weren't then yet. Then we used the normal Shure SM57 on the snare

drum, which was only miked from the top. We used Sennheiser 421s on the tom-toms and I believe a Neumann U47 on the kick drum, and part of the sound was the room mics. Stewart was in a dining room with a wooden floor, which was much more reflective than the studio, which was quite deadened, having been designed in the mid-'70s. We used Neumann 87s about 10 or 15 feet away from the drums. Quite often, we had Stewart's hi-hat digital delay line, which gave it that hi-hat sound that drummers have tried to emulate but can't. I recently told a drummer who was mortified that there was a 300-millisecond delay on the hi-hat, so there was no way that even Stewart played it, because the polyrhythm came from the delay time." Padgham notes that Copeland took the Korg digital delay line with him on the road to reproduce the effect live.

Padgham also recalls having to gaffer-tape the sticks to Copeland's hands and the headphones onto Copeland's head because of the heat in the area. "Stewart would get quite sweaty," he says. "He would get three-quarters of the way through a take and the sticks would go flying out of his hands. Obviously, we could physically slice the tape with a razor blade, but it wasn't like today with Pro Tools, where it's incredibly easy to do all that sort of thing."

Copeland says "Every Breath" was the most pieced-together of all the songs on the album. "Every other track, we played the track and either cut it up or overdubbed to it or dropped stuff out of it. I think this is the only one where we didn't play the track. We laid down a rhythm box, did an overdub, added some more rhythm, then did another overdub and built it piece by piece rather than playing it. It's a much more complex track than it sounds. There's the piano solo, which Sting played, and the [guitar] power chords in the chorus—20 tracks of those. When Sting got into the vocals, there were another three days of getting every syllable right."

Padgham says that he always had a problem finding the right mic for Sting's vocals. "He's got quite a dull tone to his voice," he says. "I think on *Synchronicity*, we used an AKG 414 mic, which was quite a sort of 'toppy' mic. It might have been a Neumann U47. I think we did a lot of the vocals in the control room. We probably went through a UREI 1176 compressor, which was, and still is, my favorite for vocals."

Recording the bass could be frustrating, Padgham says, when Sting wanted to
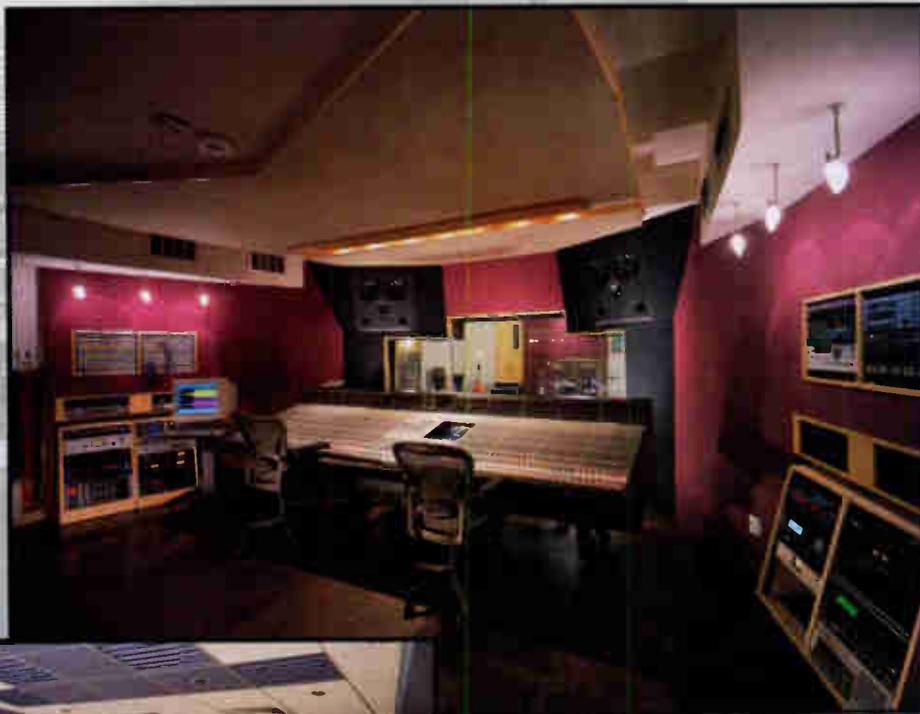
play while jumping on a mini trampoline. "It sounds mad—and I have trouble recalling whether it was during *Ghost in the Machine* or *Synchronicity*, because we recorded them 18 months apart at the same place 20 years ago—but what was really annoying was, even at the best of times, with all due respect to Sting, who is a fantastic bass player, he's quite sloppy. If you solo his bass track, there's all sorts of fret noise and bits of dodgy playing. When he was bouncing on the trampoline, it made it even worse. But, of course, if you said, 'Could you not bounce quite

so much, please,' he'd bounce even more. Nowadays, I'd know to say, 'Could you bounce more please,' and he'd probably get off it! With respect to his sound, whether he was bouncing on the trampoline or not, he always used his old Fender jazz bass, and it was never put through an amplifier. I only ever DI'd it, and in those days, it always had a bit of Boss chorus pedal on it, which made the bass sound a little thicker. Then we would overdub a Dutch upright electric double-bass that was nicknamed Brian. It was, 'Let's put Brian on the track.' He wouldn't

emulate the whole part, just perhaps the first note of the bar."

Padgham says that the outboard effects were minimal: "In those days, there weren't 4 million digital reverbs. We recorded on an old Neve console, so it was all recorded through those lovely, old, Class-A mic pre's, and recorded onto MCI 2-inch machines. I'm pretty sure we used 30 ips, and we might even have used Dolby on some tracks, as well. I had an obsession about tape noise at the time, and on some of the quieter Police tracks, I was worried that people would accuse me of being a bad engineer if there was any noise," says Padgham, who adds that his assistant engineer on *Synchronicity* was Renata, who ended up marrying Elton John. "I think the whole album was done on 24-track analog, which most albums were then, and you'd never think of attempting that now with loads of harmonies going on," says Padgham, adding that they mixed the album in Canada on an SSL.

It's hard to believe that this album, which still holds up so well two decades later, nearly never got recorded. Ten days into the recording, they had nothing tracked, which prompted an executive crisis pow-wow. Manager Miles Copeland flew in to meet with Padgham and the band, and they had to decide if they could buckle down to get the album done or quit right then. "That album was perhaps one meeting away from not happening," Padgham says. "I remember right before that, ringing up my manager and saying, 'I hate this,' because sometimes the tension in the room was so horrible. But in many ways, that tension is what ended up making such a good album."

MIX ONLINE EXTRAS

SUSAN TEDESCHI

Dubé's studio plan, which was admittedly fly-by-the-seat-of-your-pants, boiled down to setting up the band, getting a good room sound and then hitting the Record button. Drums were miked simply, with an AKG D 112 stuffed in the kick drum, a Shure 57 on the snare and either Sennheiser 421s or Audio-Technica ATM25s on the toms. "I think room mics are imperative, especially stereo room mics," Dubé says. He turned to Neumann KM84s (with a Neumann stereo baffle that simulates a stereo field) and then ran the signal through a Neve 9098. "I usu-

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ally never compress my overheads, but the room just demands it," he explains.

The biggest challenge Dubé faced while miking the sessions was isolation, especially when he went to mike the Hammond B3's Leslie cabinet. After much experimentation, he found that the best Leslie mic was a Sennheiser 504: "504s on a B3? Who knew?" he asks with a laugh. "It worked because of the rejection, really. I figured they were small and they would reject a lot, and they did." As for compression on the Leslie, Dubé reports he didn't have to do anything because of the

playing of Kofi Burbridge. "He had such good control over what he was doing, I didn't have to do anything to his tracks," he says. "He was like a volume master. I'm pretty sure I didn't even use any external mic pre's. I just used the Trident [console] mic pre's."

Although Tedeschi says she prefers old ribbon mics for vocals, Dubé turned to a Neumann 47 with a Telefunken V72 and a dbx 165A. "There are a bunch of compressors here, but that always works for me no matter what I try," he says. "It always comes back to the 47 and any

other pre doesn't seem like it has the same midrange as the V72, and any other compressor makes it sound dull to me. There's something about the 165A that just works; I love it. The high end is right *there*; you can't really hear the compression that much, and believe me, the whole compression thing with the way that she sings—there's definitely distortion on that record, but it's not *bad* distortion. You don't even have a choice; as soon as she starts barking, forget about it. She's so dynamic, all I could do was basically set a level kind of close and hope for the best."

One of Rear Window's claims to fame is its extensive guitar collection, which thrilled Tedeschi—an accomplished blues guitar slinger—and Dubé to no end. "If there's a guitar here that was made after 1962, I haven't seen it," the engineer says. "[Owner Milt Reder] has made it a point to try to accumulate a collection that is not like a bunch of museum pieces, but actually things you can use." To prove the point, he reports that the guitar used on the song "Wait for Me" was an early '50s Gibson L5. "It's a big, honking, hollow, awesome thing that she was playing in the control room," he says. As for the outboard chain used on Tedeschi's guitar tracks, Dubé used either a Shure 57 or a Sennheiser 409, and if they were recording an overdub, he would hit an LA-3A for compression.

Technical aspects aside, one of the things that made these sessions a snap for all concerned was the musical talent involved. From Tedeschi's touring band, to husband Derek Trucks' outstanding band, to the guest musicians (including Rear Window's Reder), each player poured themselves into the live performances. One case where the right musician *made* the song, according to Tedeschi, is "Wrapped in the Arms of Another": "I had a few people come in and play piano on it, and I recorded it a few times," she says. "Then I had Kofi play, and his was so beautiful. He's just brilliant anyway. So, I figured that's the one. We did it live. We both had to do it right, so we did it in about three takes. It's live. It's not exactly perfect, but it's good to get more of that live feeling."

Two other instances where they went for the take instead of perfection came on "Gonna Move" and "The Feeling Music Brings," both recorded with Trucks' band. "We ended up keeping the scratch vocal, just because the vibe was all live," Tedeschi says. "I could have sung it better, but we just kept it because it was what

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Tedeschi admits that the newest member of the Tedeschi/Trucks family, Charlie, affected the way she sang on the album's early sessions. "I couldn't sing like I wanted to because I didn't have the breath support with the baby," she says. "So, we had to wait and finish up until after I had Charlie. I had him on March 6th [2002], and so once I started to get back into shape a little bit, I went back into the studio and finished it up in July."

Coming off the Best New Artist Grammy nomination in 2000, Tedeschi feels like she made the album she wanted to make. "I tried to make it a little more dynamic, instead of all in-your-face kind of tunes, which is what the record company always loves," she says. "I was like, 'You know, this isn't always about *you*. You're not buying the record, you're trying to sell them and make money on it. So, let me do my job and do what I think sounds good and then people will buy it.' That was what I was kind of hoping for: Just do a good, solid record with good songs and good musicians. And that's pretty much how I think it came together." ∎

COUNTING CROWS

FROM PAGE 139

Hard Candy is remarkable for its roster of famous guest vocalists: pop diva Sheryl Crow, up-and-comer Leona Naess, retro-rocker Matthew Sweet and recent radio sensation Ryan Adams (who co-wrote one song with Duritz). Duritz, however, says that this impressive collection of guest stars was not assembled by design: "With our records, we tend to be camped out in a house for a long time, and people stop by and end up on the record."

For instance, Adams is a friend of the band and one of the album's producers, Ethan Johns, which explains his presence on the record. One day, Adams brought his friend Naess to the studio. On a whim, they had her try a part on "Black and Blue" that Duritz and guitarist David Immerglück had been singing in falsetto. "I didn't really think anything of it at the time, but when we were mixing, I went and listened to it, and it was so good that we took our vocals off it," says Duritz. "So, it almost accidentally ended up on the album."

For "American Girls," the album's

craftily catchy hit about a failed affair with a fan, Duritz admits that some thought went into the process of selecting Sheryl Crow for the track. Duritz and Interscope president Jimmy Iovine had been listening to mixes of Crow's most recent album, *C'mon C'mon*, in Iovine's office, "and that sort of segued into a conversation about 'American Girls,'" Duritz says, "because I was very dissatisfied with 'American Girls.' We'd fixed a lot of things about it, but the choruses were just horribly anthemic and annoying to me.

> I tend to try and use older, small tube guitar amps, the kind that, if you were playing in a nightclub with a band, wouldn't be loud enough to rise above the drums.
> —David Immerglück

"[Jimmy] said, 'Part of the problem might be that you have all these guys singing these high parts really hard, really loud. What if you got a girl to sing it? She could sing the high part softer, and it could give it a sexier thing.' Because it's not supposed to be an anthem; it's a nasty little song. And Sheryl came up because we're all on the same label, and we had literally just been sitting there listening to her mixes. And everyone knows Sheryl is *the* great backup vocalist. So it was just a no-brainer." Duritz talked to Crow at a party a few days later, and she agreed to do it.

Originally, the Crows thought they would record *Hard Candy* with several different producers, potentially a different one for each track. So during the first six weeks of recording, the band worked with three producers, including Johns (Whiskytown, Ryan Adams) and British pop veteran Steve Lillywhite (XTC, U2, Peter Gabriel). "Once we got into it, we realized that we just loved working with Lillywhite, and so we changed our plans," Immerglück says. He admits, however, that he was hesitant when Lillywhite's name first came up in discussions.

"I was like, 'He's the guy who was responsible for putting up all those bands

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with the funny haircuts, that horrible drum sound that everyone started using and those chemical-sounding guitars. That's what I was thinking before I actually met him and we started working with him. And I was dead-wrong. I think the world of that guy. I'd work with him again in a second."

Contrary to what you might think, Lillywhite wasn't responsible for the album's new wave number, "New Frontier." "'New Frontier' wasn't [Lillywhite] saying, 'I know how to do this '80s sound,'" Immerglück says. "I think it just sort of happened. I had that particular guitar part with the Echoplex on it that sounded like The Police. Charlie heard that, and he says, 'Okay, you're gonna do that and I'm gonna pull out this synthesizer sound—we're gonna go all the way.' Next thing you know, it was full-on Flock of Seagulls!"

While Lillywhite was the primary producer, the Crows did end up working with Johns on several of the album's songs. Duritz enjoyed getting the chance to work with two producers, because it allowed the band to get different perspectives on their music. "Ethan comes at it from a musician's perspective, whereas Steve comes at it from being—well, he used to be—one of those producers who had a 'sound,'" Duritz says.

For the studio location, the Crows stayed true to their tradition of recording in a big house in Los Angeles. "It's just a different kind of environment to record in. You get a vibe for a record," says Immerglück. "I don't like being in a studio," says Duritz. "I don't even like mixing in them, but you have to. I find them to be sterile environments for something that is not in the least bit sterile. I feel creative in houses."

Unlike the recording of earlier albums, the Crows toured during *Hard Candy*, going from the studio to the road and back every few weeks. "I thought it was really good," says Immerglück. "It broke things up. It let us get away from it, let us get into just being a band—playing. I'm not saying that you get stagnant being in the studio, but it can happen. I think for this band, it was really great for shaking things up and keeping things fresh for when we got in the studio."

To create the classic guitar sounds the Crows are fond of, the band has plenty of vintage gear. Immerglück favors a Gibson Les Paul Deluxe guitar, as well as the Fender Stratocaster he's been playing for more than 20 years. When recording, he often uses these in combination with
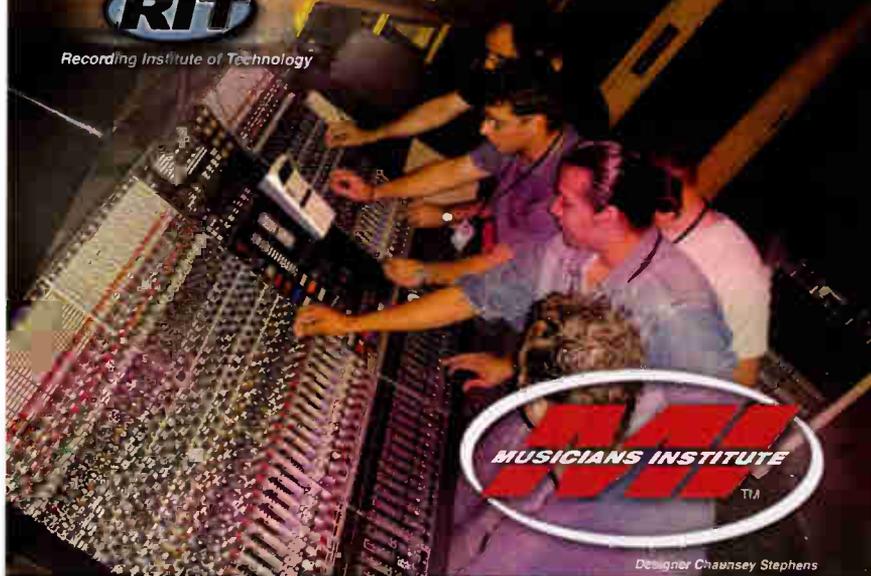
small amps such as a '59 Fender Tweed Deluxe. "I tend to try and use older, small tube guitar amps, the kind that if you were playing in a nightclub with a band, wouldn't be loud enough to rise above the drums," he explains. "But if you record with those kind of amps, you get the best guitar sound, because the mics don't get overloaded by the huge, heavy metal Marshall stack. If you try and record a really loud guitar amp, it doesn't come across loud on tape. It hurts the microphone. You can record with a smaller amp—the mic can pick up a wider range of frequency. Once it's on tape, you can turn it up as loud as you want. It's actually an old Jimmy Page trick: He used tiny little amps for all of the Led Zeppelin records." Immerglück admits, however, that he also used some of his larger stage amps for the recording, including a '63 Fender Pro Reverb and a '72 Savage.

For Immerglück, the key to recording is catching the moment of creativity in the act. "A lot of times, it's the early takes, right after the band gets greased up, but before it's gotten to the automatic-pilot mode. There's usually a window there where you can catch some good stuff,"

he says. "If you can catch yourself coming up with a part while the tape is recording, the recording device responds to that; I really believe that. You can hear a spontaneous thing happening, rather than someone who has worked something out. If you can catch that moment on tape, that's some gold there. I call it lightning in a bottle." ∎

PORCUPINE TREE

FROM PAGE 139

technical rock, *In Absentia* offers a bold rebuttal. Certainly, the record features longer songs and experimental explorations, but it's all wrapped up by Wilson's keen melodic sensibilities: The man understands the value of good hooks.

In Absentia is a departure for Porcupine Tree for a number of reasons. It is the group's major-label debut and, hence, its first with a big budget, which opened up greater recording possibilities. It is the band's first album geared specifically toward the American market. Wilson believes that "American rock records sound

better than any other rock records in the world." (Ironically, the album was engineered by two Brits living in America.) Finally, Wilson notes that the new album has "a slightly harder, darker, more experimental edge than perhaps the two that preceded it," which should let fans know that it is certainly no sell-out. Gone are the obvious homages to Pink Floyd that marked some of Wilson's earlier songs; this is a more distinctive sound all the way around.

Due to financial constraints, Wilson recorded his group's previous albums in his bedroom studio, where he learned how to get the best sound with his limited resources. With Northfield's help on the new album, however, Wilson was able to concentrate more on creating and less on technical matters.

"I've always had to muddle through on my own in the past," the singer, songwriter and guitarist reveals, "and I don't know a lot about which microphone I should use on this guitar amp or on this snare drum. I wouldn't have a clue, and it's always been very much trial-and-error. Now for the first time, I was actually working in a great drum room with a

great engineer that knew how to mike up and get the best out of a drum kit and get a good guitar sound. So, I certainly learned a lot from that. People have listened to our records and have generally agreed that this is the best-sounding sonically that we've ever made. I would certainly hope that's the case because we spent a lot more money on it."

At Wilson's home studio, dubbed No Man's Land, he recorded demos using a Mac G4 with a 24-bit, 48-track Logic Audio system, a couple of valve mic preamps, a Neumann U87 mic and Logic plug-ins. "In some senses, home recording has completely revolutionized the whole concept of recording," Wilson observes. "In previous years, a demo sounded like a demo, but nowadays, demos can sound pretty close to the finished article. And there isn't really a great deal of difference for me between recording at home and going into a big studio. The only difference really is the physical space available and the selection of microphones that a studio facility has. So, when we went into Avatar [Studios] in New York, it was really about the space and the atmosphere and the selection of mics. Plus, having Paul available."

Northfield, who has worked with such prog titans as Gong, Soft Machine and Gentle Giant, was a valuable member of Porcupine Tree's team. One of the reasons he was picked was because of his experience in recording guitars. He encouraged Wilson to rent guitar gear to get a great collection that would augment the guitarist's "good but limited resources," says the engineer.

In a slightly unusual move, most of Wilson's original vocals from his demos were kept, "although he did change some and add backing vocals when he got back home," says Northfield. But all of the guitar, bass and drum parts were recut using the original demos as a guide and template. The whole process mirrored the engineer's work on Rush's *Vapor Trails*.

"If you're happy with stuff in the demo, then why try to re-create it?" Wilson asks. "We worked on top of the

demos, and basically it was a case of replacing the drums, bass and the guitars, and then letting Richard [Barbieri, ex-Japan member] do his thing with keyboards over the top." A few of Barbieri's keyboard overdubs were recorded during rehearsal sessions at the New Rising studio in Colchester, UK, prior to the band arriving at Avatar.

"The one thing I don't try and do much with in the demos is keyboards," continues Wilson, "because I can't possibly hope to come up with the sounds that Richard can. But, generally, I'll have a pretty solid arrangement together worked out long before the band gets in the studio, and it seems to work pretty well. We can work very quickly that way."

In Absentia was recorded in approximately three-and-a-half weeks, during which 16 songs were cut. Twelve made it onto the final album, two others onto a European release, while one more was given to fans free on the band's Website, www.porcupinetree.com. "The reason it was so quick is because the arrangements were very much mapped out," explains Wilson. "I just feel comfortable working that way, not [taking] such a journey into the unknown, which kind of scares me. I don't like that situation: Being in the studio for months, trying to work out how things should go and racking up hundreds and hundreds of thousands of dollars."

The main impetus to record at Avatar was that it has a great drum room. "It's a classic," observes Northfield. "That makes life so easy when you're tracking drums." They first cut drums and bass in the drum room on a Neve 8068, then they moved to an SSL 9000 room and re-recorded Wilson's guitars and added Barbieri's keyboards. "All of the recording in the SSL room was done using Neve 1073s and Apogee AD-8000s," Northfield notes. "AD-8000s were also used for all other recording in New York and for playback at the mix."

Northfield and Wilson recut nearly all of the frontman's guitar parts, except one or two that had real personality. "I always

find the actual miking up of a cabinet pretty straightforward," explains Northfield. "I just use 1073s and usually Shure 57s to mike guitars. I also use those for acoustic guitars quite often, although usually it's a combination of a 47 or something interesting. I always like to try a 57 on an acoustic, because if you have a great acoustic and a really excellent preamp, a 57 can be really quite a creative mic. It gives you a little bit of that distortion texture that helps make an acoustic guitar cut through in a rock track. Sometimes, if you go too hi-fi with your miking on an acoustic, you end up with a beautiful, James Taylor-y guitar sound that

> Home recording has completely revolutionized the whole concept of recording. Nowadays, demos can sound pretty close to the finished article.
>
> —Steven Wilson

never fits properly in a rock track. You can find it overwhelmingly loud, and then you end up putting a lot of compression on it. Sometimes just grabbing a Shure gives you a simplicity and a focus on the sound that really can work quite well. It's a good trick. You probably shouldn't write about that trick because it's top secret."

To record Colin Edwin's bass, Northfield used a number of different Ampeg bass cabinets and amps. "I think the B4B was the main bass amp with an 8x10 bass cabinet," he recalls, "and also various distortion effects sometimes to give a fatness to the bass sound, which is quite handy." For the rented DW drum kit that Gavin Harrison played, Northfield used a 57 on the snare, 421s on the toms, a 47 and a D112 on the bass drum, "with fairly close double-heads on the bass drum but with probably an air hole in it, but not a large one; just enough to get the mic stand through." AKG C12s and B&Ks were used for overheads. He recorded a total of 16 tracks of drums, with one mic for each track.

In Absentia was recorded onto Logic software with a Pro Tools hardware rig, with as many as 48 tracks' worth of audio

on certain songs. Wilson proudly points out that no digital keyboards were used at all. Instead, there was a Hammond organ, Mellotron, Fender Rhodes and Barbieri's collection of analog synths, which includes a Prophet 5 and a Roland System 700. "I do think that gives the record a more organic and hopefully more timeless quality," says Wilson. "It's not going to date in the same way that digital instrumentation tends to date records."

Strings for the album, arranged by former XTC member Dave Gregory, were recorded at George Martin's Air Lyndhurst

studio in London. Extra vocal and guitar parts were contributed by John Wesley and were recorded by Wesley himself in Red Room Recorders in Tampa, Fla. Wilson sent him slave tapes; then, Wesley recorded his parts and sent them back.

The album was mixed by Tim Palmer with engineer Mark O'Donoughue at Larrabee North in North Hollywood. "I had my G4 system sent over to L.A.," recalls Wilson, "and we literally just split out all the outputs. A lot of the sounds already had plug-in treatments set up on the Logic system." *In Absentia* was mixed on a J Se-

ries console at the rate of one track per day for 16 days.

The finished album has proven to have strong appeal to many critics, even those who might not normally listen to progressive rock. The band opened up a North American tour for Yes last fall (and reportedly received a warm reception) and should be returning to the States this spring following an extensive European tour. All of this activity will no doubt further expose their music to American listeners eager to embrace such adventurous sounds.

"The special thing about the album is what's fairly evident from just listening to it: the drama and dynamics and the contrasts," remarks Northfield. "I tend to gravitate toward experimental or indulgent music. I really like it. Rather than get lost in noodly bits, [this album] always came back to the strong, forceful rock base, so that was the most attractive thing about working on it. At the same time, we were able to be more texturally esoteric, as opposed to just sticking with guitar, bass and drums, which I've done a lot of and which is a different kind of aesthetic."

"For me," Wilson adds, "that golden era of experimental rock music that was born with *Pet Sounds* and *Sgt. Pepper's*, and died when punk rock came along at the end of the '70s, is something I really try to re-create with our records to an extent, albeit in a very contemporary setting." ■

Cool Spins, *FROM PAGE 142*

blurry between punks, cowpunks, hippies, white rastas and retro swingers or rockers of all sorts. We were all posers, but really earnest at the same time. All of which gives you some idea of where Camper's music was coming from. The *Cigarettes and Carrot Juice* box includes five albums' worth of the material recorded before their minor modern rock hit with a cover of "Pictures of Matchstick Men," before their contract with Virgin, and before they broke up and lead singer David Lowery kept their date with Virgin by forming Cracker. Some of these early, home-made recordings are pretty low-fi, but it's all spirited, sarcastic, countrified, Eastern European folk, punk, reggae fun. All of the members, especially on the first couple of records, are very talented multi-instrumentalists with broad musical interests. For the initiated, these tracks will bring back memories; for fans of their better-known work, or perhaps of Cracker, these will be newly uncovered treasures.

Producers: none credited. Engineers: Dave Gill, Tom Fox, Wally Sound, John Morand, David Lowery, Woody Nuss. Studios: Samurai Sound Lab (Davis, Calif.), Fox Studios (Felton, Calif.), BBC Studios (London, UK), Bay Street House, Sound of Music and Homework Audio (all Santa Cruz, Calif.). Mastering: none credited.
—*Barbara Schultz*

Ry Cooder and Manuel Galban: *Mambo Sinuendo* (Nonesuch)

So you're probably thinking…"Cooder…Cuban guitarist Galban…cut at Egrem in Havana—*Buena Vista Social Club Volume, 2*, right?" *Wrong!* It's hard to know how to classify this loose, funky, largely instrumental album. The percussion and some of the rhythms are unmistakably latin, but there's an overlay of late-'50s and early '60s pop sensibilities to the whole affair—there are times Cooder and Galban sound like The Ventures after a night of free-flowing pina coladas. It's an intoxicating throwback—guitar effects are mostly limited to reverb, tremolo and the occasional whammy bar; it's as if feedback and fuzz tone still haven't been discovered! But for every breezy tune that sounds like it's floating out of a little seaside bar on the Caribbean circa 1958, or like it should be on the soundtrack of a 1960 Bruce Brown surfing film,
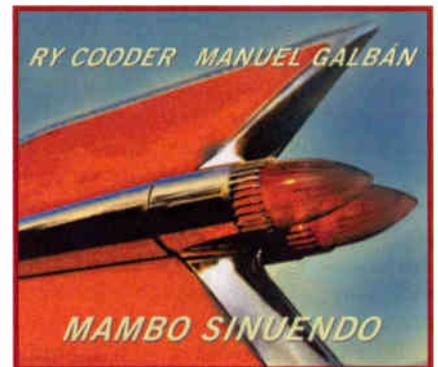
there are others that offer up complex and challenging rhythm changes and unusually juxtaposed textures—there is some seriously *weird* stuff on this CD, and that's a *good* thing. Cooder's contributions throughout show his imagination, his generosity and his versatility. One second he's laying down some classic Waikiki steel, the next he's got an R&B comping thing going behind Galban's lead, or he's switched to a perfectly cheesy organ; he does it all. And then there's the track "Secret Love," one of the most beautiful instrumentals you'll ever hear, with hints of Hawaiian slack-key and other flavors blended masterfully. Breathtaking!

Producer: Cooder. Engineer: Jerry Boys. Studio: Egrem (Havana). Additional recording: Capitol and Sound City (L.A.). Mastering: Tom Leader and Jerry Boys at Livingston (London).
—*Blair Jackson* ■

World Radio History

C O A S T

L.A. GRAPEVINE

by Maureen Droney

Hollywood's Paramount Studios has been hosting a series of *Sessions@AOL* live performance and interview videos that are Webcast for America Online users. Over the past year, Paramount sessions have included The Wallflowers, Bryan Ferry, John Mayer, The Roots and the Flaming Lips. On the afternoon I stopped in, the featured artist was Dreamworks' Boomkat, which consists of Taryn Manning—singer, actress (*8 Mile, Crossroads, White Olean-*

recorded Tommy Lee at his house in L.A., visited Dave Matthews on the road, Paul McCartney in Texas and Britney Spears in Las Vegas."

Sessions is hosted by interviewer Chris Douridas, who's previous live-in-the-studio broadcasts include NPR/KCRW's *Morning Becomes Eclectic* and PBS-TV's *Sessions at West 54th*. For the Boomkat performance, Paramount's Studio C was bustling with producers, coordinators, camera people, publicists, etc., as Douridas and his longtime engineer, Scott Fritz, sorted out the setup. Plans had been for a prerecorded back-

Boomkat prepares for a Sessions@AOL. From left are two backup vocalists, Taryn Manning and Kellin Manning (at the turntables).

der) and Gap model—and her brother, multi-instrumentalist and beatmaster Kellin.

Sessions streams more than a million videos per week on AOL Music, showcasing everything from new material by Paul McCartney and U2 to Alicia Keys, Dolly Parton, P Diddy and Queens of the Stone Age. "The series covers a lot of bases," comments Ann Burkart of AOL media relations. "A lot of unexpected things can happen, like when Aaron Carter brought his backup dancers to the studio. We also go to locations: We

ing "track" show, but the date was evolving as acoustic guitars and backup singers arrived unexpectedly to accompany Kellin Manning's electronic setup.

"Things pop up, and there's really no way of preparing for what's going to come," admits Fritz. "We touch base before the sessions, but the band could come in and say, 'We decided to bring the bagpipes,' and you have to be able to react."

Asked what equipment he prefers to capture performances "live-to-2," Fritz says, "The only things you can really re-

NASHVILLE SKYLINE

by Rick Clark

As much as I try to stay on top of everything happening in Nashville, it always helps to get calls about projects happening in town. I especially appreciate it when I find out that someone I like and who I'd lost contact with is working on a project. Such was the case when I was contacted by a friend who told me that David Leonard was in town mixing a project at East Iris.

I met Leonard in Memphis during the '80s, when he was engineering and mixing a David Kahne-produced Columbia Records band called Human Radio. It was a very cool self-titled album that sadly got buried, but during their time in Memphis, I quickly realized why the band liked him: Not only does Leonard have a great instinct to get wonderful sounds and create musically energetic mixes, he's got a very likable, easy-going personality.

By the time of the Human Radio project, he had already enjoyed considerable visibility as the engineer and mixer for the hugely successful John Mellencamp albums *Scarecrow* and *The Lonesome Jubilee*—projects that blended rock and roots music instrumentation in a way that influenced many artists—as well as albums for Fishbone and many others. Since then, Leonard's engineering credits have included Tony Bennett, Shawn Colvin, Hootie & The Blowfish, Paul McCartney, Santana and Avril Lavigne; production credits include Indigo Girls, Barenaked Ladies' Number One *Stunt* and a particular fave of mine that got lost in the shuffle, the Rave Ups' *Chance*.

This time out, Leonard was mixing the as-of-yet-titled Zoe/Rounder album by the Cash Brothers, which is due out this summer. The album was recorded 24-track analog 15 ips by James Paul at The Rogue in Toronto. The mix took place at East Iris, Leonard's favorite mixing room. "I think it's the best mix room in the world; as good a room as you're going to find," enthuses Leonard, who comes

down from his home in New Hampshire every month to work at the facility. "I keep an apartment in Nashville, and I keep my equipment here, so it is kind of my mixing home. This is where I mixed Barenaked Ladies and Avril Lavigne."

Leonard lived in Nashville full-time for a while after he engineered and mixed Dwight Yoakam's wildly successful *This Time*, but even though the album won awards and great critical and popular acclaim, Nashville was slow to pick up on Leonard. "When I first came down here, I met with a lot of producers and shook a lot of hands and nobody ever called. When I met with [Jimmy] Bowen, he asked if I had ever done any country music, and I told him that I had just done Dwight Yoakam's record. He said, 'No, I mean *Nashville* country. Call back when you've done some Nashville country,'" says Leonard with a laugh. "Having been around here longer, I've met a lot of people and it has opened up bit more."

That said, Leonard is quick to point out that there is so much more to the town than country, largely due to the abundance of great facilities and talent in the area. "You are not going to find any city in the world that has more high-quality studios and more gear than Nashville—in the same square footage. The studio facilities are —*CONTINUED ON PAGE 164*

From left: David Leonard, Andrew Cash and engineer Sang Park

NEW YORK METRO

by Paul Verna

For years, world-class studios in Los Angeles and Austin, Texas, bore the name Brooklyn, confusing would-be clients and rubbing salt in the wounds of Brooklynites who lamented the defection of the Dodgers to L.A. in 1957. Today, the L.A. studio that once had Brooklyn in its title operates under a different name (Extasy), and the Austin facility has relocated to its owner's hometown: Brooklyn.

Simply and appropriately named Brooklyn Recording, the studio is owned and operated by Andy Taub, a Brooklyn native who left home in 1982 to attend college in New Orleans. In 1988, he made his way to San Francisco, where he embarked on a successful career as a studio employee and engineer. From there, it was on to Austin, where he launched his first professional studio, Brooklyn Bridge.

Taub might have stayed in Austin had a series of happy accidents not conspired to lure him back to the place where he grew up and where his parents still live. He planned to purchase the building in which he had operated Brooklyn Bridge, but the owner tripled the price. "It was the height of the dotcom boom, and the price went up to $900,000," he says. "Luckily, I found a good deal on a building in Brooklyn that seemed perfect. It was a better deal than I could have gotten in Austin or elsewhere in New York."

Taub bought a building in the residential Cobble Hill neighborhood of

The spacious John Storyk-designed control room at Andy Taub's Brooklyn Recording, featuring twin Neve 8058s joined together by Fred Hill.

Brooklyn and hired renowned architect John Storyk to help him build his dream studio: A one-room facility with ample tracking and control room space, a Neve 8058 with Flying Faders, two Studer A-800 Mark IIIs (one with 16-track heads), a Pro Tools | HD rig with 32 outputs, and an "A" list of microphones and outboard gear. Other equipment highlights include an Ampex ATR 104 half-inch machine; Genelec 1039 soffitt-mounted monitors and KRK E8 near-fields; a 1904 Steinway B; a Hammond B3 with a Leslie 122 cabinet; and an extensive array of vintage amplifiers, instruments, stompboxes, direct boxes, etc.

Since opening in September 2002, the studio has hosted an impressive list of clients that includes Edie Brickell, Superhuman Strength, Gordon Gano of Violent Femmes, actress-turned-musician Eszter Balint (best known for her co-starring role in Jim Jarmusch's debut film, *Stranger Than Paradise*), the Claudia Quintet and Clem Snide with producer Joe Chiccarelli.

In fact, the Snide project was one of the studio's test sessions, and it came off without a hitch, according to Chiccarelli. He recalls, "Despite the fact that we were the maiden voyage for the studio, the sessions went flawlessly. The tracking —*CONTINUED ON PAGE 166*

SESSIONS & STUDIO NEWS

SOUTHEAST

Kirk Whalum recently tracked songs at Young Avenue Sound (Nashville) for a Warner Bros. project. Production crew included: producers David Porter and Whalum, assistant producer Gary Goin, engineers Hal Sacks and Willie Pevear, and assistant engineer Jennifer Lee.

SOUTHWEST

Vocalist Chandi Clark finished up her demo at Houston-based SugarHill Recording Studios. Chief engineer Andy Bradley produced the project. Also in at SugarHill, country artist Clay Walker laid down vocals for the "I Don't Wanna Know" track on his debut RCA release. His producer, Jimmy Ritchey, worked with engineer Dan Workman.

MIDWEST

Sweet home, Chicago: At United Technique Recording, Atlantic Records recording artist Twista busted a groove recording and mixing tracks for his upcoming release *Adrenaline* with engineer Larry

Honing their lust for recording, Iggy Pop and the members of Green Day recently stepped in Studio 880 (Oakland, Calif.). Posing for the camera are engineer Reto Peter, Chris Dugan, Iggy Pop, bassist/vocalist Mike Dirnt, vocalist/guitarist Billie Joe Armstrong and drummer Tre Cool.

Sturm. Def Jam recording artist K-Fox was in with producer No ID and engineers Rae Nimeh and Sturm working on an upcoming project. Grammy-nominated remixer Maurice Joshua worked on remixes for Mariah Carey, Beyonce, Kelly Rowland and Whitney Houston…Producer Jeff Taylor of Madjef Productions Inc. (Minneapolis) recorded and mixed for hip hop artist Kardel; he was assisted by Chris Langer.

NORTHEAST

If you open it, they will come: Recently opened Studio D at Sound on Sound (New York City) has seen a flurry of activity, including a recording session for Kenji with mixer Steve Hardy and numerous commercial work. Plugging away in Studio A, Bounty Killers (Full Surface) were tracking and mixing with producer Swizz Beatz, and engineers Cortez Farris and Larry Phillabaum…Tony Bennett brought his band into Bennett Studios' (Englewood, N.J.) North Room to track and mix a song for the upcoming Jim Carrey film, *Bruce Almighty*. Dae Bennett engineered and mixed.

Jens Schroeder's Dreamworld Studios (Wales, UK) is the latest UK facility to take delivery of a TL Audio VTC console.

SOUTHERN CALIFORNIA

The Village Studios (L.A.) recently hosted The Randies, who recorded new tracks for their upcoming, untitled debut album. At the helm of the sessions were producer/engineer Rob Hoffman (Christina Aguilera) and assistant Ok Hee Kim. The Village also heard the R&B stylings of Mya, who was recording vocal tracks for her follow-up to *Fear of Flying*. Producer Terry Lewis manned the sessions, with engineer Ian Cross and assistant Matt Marrin.

STUDIO NEWS

Wabejon Entertainment, the production and record company owned by producer and label executive Eric Miller, has added two more Blue Sky 2.1 monitoring systems…Home-based mastering suite Heading North Mastering (Toronto) recently installed a SADiE Series 5…Complementing the highly modified Neve 8058 console, Le Mobile added a Yamaha DM2000 Digital Production Console to the truck's arsenal…Luminous Sound (Dallas) installed an SSL 9000 J. ■

Submissions to "Sessions & Studio News" can be sent via e-mail to sbenzuly@prime diabusiness.com. Photo submissions (JPEG at 300 dpi) are always encouraged, and please include the name(s) of the artists, producers and engineers on the project, and the location of the studio.

World Radio History

COAST TO COAST

ly on are microphones. We use studios that have the kinds we need, which is one of the reasons we're at Paramount. The only things I bring with me are [Shure SM] 58s and a Neumann KMR 82 shotgun mic for the interviews.

"Consistent results for me come with

Manning the board: Chris Douridas (back) and engineer Scott Fritz.

a Telefunken ELAM 251, if I can get a way with it," he continues. "But you always have to assess what else is going on. Is the person sitting down, standing up, playing a guitar? How are you going to fit that 251 in? Because another consideration with video is to make sure that the microphone isn't covering their faces."

Other favorite L.A. studios for *Sessions* are The Village and Record One, but Fritz has high praise for Paramount. "Everyone at Paramount knows the drill," he says. "Adam [Beilenson] and Mike [Kearns], the owners, are very accommodating. Ricky Chao, the assistant, and tech Tom Doty understand the speed we need to work at, which many studios do not. We're supposed to be in and out in three hours."

"We're very flexible when people want to try something different," adds Burkart. "*Sessions* was conceived from the desire to

create compelling, original programming. The goal is to get something really unique from the artist's perspective. They seem to enjoy the format and the fact that they're able to reach so many people from such an intimate setting. We've also gotten major kudos on the sound. Most artists aren't used to being recorded live like this, and they're surprised at how good it sounds."

After working together on live-to-2 recordings for more than 10 years, Douridas and Fritz are experts at the genre. "The beauty of it is capturing the moment," comments Douridas. "It's an on-the-edge performance. If people are live on the radio, they make it work. The second you go away from live-to-2-track, you open the gates to, 'Let me just try…' and you end up with something different. If they know they can go back and fix things, suddenly you're at take 83.

"Live is like walking that razor; you end up with better stuff. I've had people walk out and say, 'That's the best we've ever done that song.' Often, it's the first time they've taken the songs into a recording studio since they made the record; you can come out with really rare moments because of that. They've gone on tour for a year, and that song has morphed into something more than they thought it was when they originally recorded it. After they've toured, they come back and do a session with us, and sometimes that song is richer—a different experience."

Douridas' past focus has been on alternative and emerging artists. He brings that musical sensibility to his *Sessions* interviews, which tend to feature higher-profile, more commercial performers, making for an interesting juxtaposition. "I

Visit AOL.com Keyword Sessions to check out Boomkat's session.

was blown away by what Christina Aguilera did live," he admits. "A lot of times, pop artists aren't given real respect for their music and the amount of work they've put into it. I think she was a little surprised that I was asking her about her

Producer/engineer Warren Riker loves to get behind the skins at Morning View Studios.

music, how she wrote her songs. People don't generally ask [pop artists] those questions. How they put together their music is often a story they never tell because nobody asks."

Archives of *Sessions@AOL* performances and interviews are available online at AOL Keyword: Sessions.

The trend of working outside traditional studio environments is still going strong. A villa in the Malibu hills, dubbed Morning View Studios, has become popular with those into build-your-own; Chicago-based alt metal band From Zero hunkered down there with producer/engineer Warren Riker to record their sophomore Arista release. At Morning View, panoramic ocean vistas, lush gardens, a pool and seclusion have appealed to artists from STP to Incubus, but Riker and From Zero managed to put their own special spin on the surroundings.

A party atmosphere prevailed on the sunny day I dropped in. In the kitchen, friends hung out and the scent of barbecue wafted. The rest of the house was filled with cables, guitars, gear and what looked like every packing blanket in the greater L.A. area.

"We got the gear from Allen Sides' Classic Rentals," Riker explains. "When I gave them the list, everybody was like, 'Do you really want to do that there?' Actually, I had three lists: 'Whaddaya kiddin' me?' 'You must be nuts,' and 'We *might* be able to do that.' I think we came in just a little under 'Whaddaya kiddin' me?'"

Ernie Woody, Classic's general manager, agrees that the setup was unusual. "We've done a lot of location recordings at various places," he says. "We'd previously done three projects at Morning View, but Warren's package was by far the largest and most elaborate. He had us deliver a 40-input Neve 8068 with Flying Faders, a huge 48 I/O Pro Tools system with 24 faders of Pro Control, and a ton of outboard—everything from eclectic vintage stuff to the most modern—along with a Studer A800 and various DATs, CDs and CD-Rs. They also had drum risers and

a lot more baffling than other people had used."

Included in the package mic-wise were, besides what Woody calls the "meat and potatoes," lots of tube and ribbon models along with Audio-Technica ES-943/c lavaliers for toms. Sides himself put together a pair of Ocean Way custom main monitors and came out personally to tune them. A Mytec Private Q headphone system was part of the package, as well as a large P.A. and a video communication system.

Riker, a veteran of the Manhattan recording scene, may be somewhat of a

wild man, but he's also extremely meticulous. Having previously recorded on location, he knew what was required and had mapped things out in detail beforehand. He admits, though, that there were numerous unforeseen challenges. "We spent almost a week getting everything in and buttoned together," he says. "The following week, every other day we were sussing out problems and getting them fixed. For example, we had to get curtains—40-foot-high draperies, actually—because there was a lot of flutter echo in the rooms. But after that, we were all right."

According to Woody, setup for such remotes is usually, "two days of madness and

one day of refining. For this one, we had eight bodies and two professional movers to get the console and the multitrack upstairs. The first day was carrying all those racks of equipment upstairs and getting the console on its feet. Then there were two days of sussing out the console and a day of plugging in the last mics and fine-tuning.

"After that, it's maintenance. Usually, they'll go two to three weeks of tracking, then we'll scale the package back for overdubs. Finally, it's just a vocal setup and one driver as needed, picking up and dropping off. During a week, we'll probably make five trips: They'll want to try a mic or need more outboard or monitors than they'd anticipated. Each time, it's a challenge. We always want to prove what we're capable of doing, so people keep calling us for these kinds of projects."

It's all worth it when the guitar player can rip a solo, with his own stage monitors, on a balcony overlooking the ocean; the programmer has a room with bay windows and a chandelier; and the singer makes his bedroom his vocal booth. Everything except vocals was recorded to 16-track analog on the Studer, then dumped to Pro Tools for editing and mixing.

"I've got a lot of little operations going on at once," notes Riker. "Kid, the drummer, has the huge room with high ceilings all to himself. [Guitarists] Pete [Capizzi] and Joe [Pettinato] have rigs set up throughout the house. [Anthony] Fu [Valcic], the programmer, can shut himself in his room and crank it up. [Lead singer and bassist] Jett has another Pro Tools rig in his bedroom with different vocal mic combinations. We just switch hotswap drives between the rooms."

"We decided to do this, rather than living at corporate housing and traveling to the studio every day," adds Jett. "I didn't want these sessions to be the usual, 'Okay, there's your 12 hours; that's it.' Sometimes we want to sing at one in the morning, and sometimes we want to work till 6:00 a.m. It becomes something different when you make a record in a vibe area like this, living with your producer. If you can make that connection, you become like family. The record turns into something very different than if you just hired a producer who was into your music but who punched out at midnight."

"You really get to know each other when you're sharing the same house for two months and staring at each other at the breakfast table," Riker says with a laugh. "The one thing we all have in common is

the desire to make a kick-ass record. That takes precedence over all. Costwise, working this way comes to the same, or maybe even a little less than booking a major studio, and we save on lodging and eating. Luckily, these guys love to cook—whoever isn't cutting tracks is cooking! It's been great being out here. I haven't worn shoes and socks for two months!" ∎

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world-class, and they pull in a lot of people. Even though my home in New Hampshire is only a few hours from Manhattan, it is more attractive and cheaper to keep an apartment in Nashville and work here than have the cost and hassle of going into Manhattan and staying there for a project. Sometimes I fly here and sometimes I drive, but it is cheaper in the long run."

Leonard noted that the Cash Brothers' music is a vocal harmony-rich blend of Americana and rock. "The unique thing about them is that they sing in harmony constantly: There is a lower vocal part that kind of shadows the lead vocal. It's an interesting mix," says Leonard.

"This is a rock record with tight Simon and Garfunkel-esque harmonies," adds Andrew Cash of the Cash Brothers, who rather jokingly calls it "arena folk" music. "Our early influences centered largely on the West Coast country rock scene of the early '70s where harmony singing played a big part: the Flying Burrito Brothers, Emmylou Harris, The Byrds, Neil Young & Crazy Horse. People rarely comment on Neil's use of harmony singing, but it was really very unique-sounding, especially on records like *After the Gold Rush* and *Tonight's the Night*." Cash also pointed out that the brothers also drew inspiration from artists such as Steve Earle, U2, Springsteen and Dylan, as well as Beck, Grant Lee Phillips, Dwight Yoakam, Pearl Jam and Wilco. Among the album's highlights is a Wilbury-ish track called "You're It" and a dramatic guitar rocker titled "Shadow of Doubt."

"It was wonderful working with David Leonard," Cash said. "He immediately heard the kind of vocal blend we were going after and was able to really bring that out while keeping the tracks rocking. I also really appreciated his work ethic: He would walk in the door and immediately start rolling tape. Then he'd go hard at it for 12 solid hours—sometimes more—every day. Even the NS-10s were crying for a dinner break."

Leonard is also currently mixing some

COAST TO COAST

tracks at East Iris for artist Ashley Wentworth and preparing to do some work with producer/guitar session ace Kenny Greenberg over at Quad.

Also in at East Iris, Japanese pop superstar Namie Amuro was able to be in two places at once: A busy promotion schedule for her single "Wishing Upon the Same Star" kept Amuro in Japan, though vocal mixing for additional tracks was needed. Mugen Enterprises producer "Cobra" Endo and engineer David Z relied on Rocket Network's Internet-delivery technology to help with double-duty. Amuro laid down vocals in Tokyo, then audio and session files were e-mailed to Rocket's Website, which was then downloaded at East Iris.

"Basically, we got the same vocal tracks sent to us via Rocket Delivery for a mix session, then we sent mixes to Japan for some back-and-forth mixing," explains Jerry McBee, project manager for Mugen Enterprises. "The system worked perfectly. It's very secure, and the audio was great. We had no difficulties listening to nuances so that we could judge and mix the vocal tracks."

The Amuro project was mixed on an SSL 9000 console in Studio A with assistant engineer Mike Paragone. ■

Send your Nashville news to MrBlurge@mac.com.

NEW YORK METRO FROM PAGE 159

rooms sound warm and alive, and there are plenty of iso booths. Because the room acoustics were so wonderful and the studio has an EMT plate, I used hardly any digital effects when mixing."

Chiccarelli continues, "Brooklyn has a great collection of old, esoteric mics and tube compressors. There was so much to choose from that I was able to get all of my sounds on tape just the way I wanted them, so the mixing process was very quick. In fact, on some days, we were able to mix three songs per day."

One of Brooklyn's distinguishing characteristics is the large size of its control room. At approximately 800 square feet, it is only slightly smaller than the 1,000-square-foot tracking area and able to accommodate musicians and their gear, as well as Taub's habit of walking away from the sweet spot to hear the mix.

"I'm in the control room a lot," he says, explaining his decision to allot approximately half of the studio's footprint to the control room. "I like having space. It al-

ways gets crowded in the control room. I like to walk around and hear the mix in different spots. I also like to set up a keyboardist in the room and still have enough space for the gear that people bring."

Taub's console consists of two Neve 8058s refurbished and joined together by veteran Neve specialist Fred Hill. One of the boards came from Brooklyn Bridge, where Taub used it on projects by the Meat Puppets, Double Trouble, Marc Ribot, the Squirrel Nut Zippers, Charlie Sexton, Chuck Prophet and others; the second Neve was acquired from an artist manager in Los Angeles. Fewer than 10 such consoles are thought to exist in the world, in such venues as Capitol, Hit Factory Miami, Sunset Sound, RPM, Woodland and Battery London, according to Taub.

Chiccarelli raves about the board: "The Neve sounds amazing," he says. "Fred Hill did a great job putting it together. It is the exact same console as the 8058 in Capitol Studio B in L.A., which is one of my favorite rooms in the world."

For Taub, Brooklyn Recording represents more than the pinnacle of his career as a studio owner and engineer. It also embodies the struggle that he and the rest of the New York recording community endured in the aftermath of September 11, 2001.

"We were in full construction mode when they closed the Battery Tunnel for six months," recalls Taub. "The [Brooklyn-Queens Expressway] turned into a huge mess, and our neighborhood became wall-to-wall gridlock. But we got through it."

Like other Brooklyn Studios, Brooklyn Recording offers a respite from some of the stresses of Manhattan. "The neighborhood is great," says Taub. "It's close enough [to Manhattan] but still off the path. It's got all of the amenities of being in Midtown without the subway running underneath."

Despite the tough economic climate and competition from other commercial and home studios, Taub is heartened by the clientele he has attracted and confident of his ability to stay in the game. "I've got to put my best foot forward and deliver stuff that you can't get for the rate," he says. "This is a nice, aesthetically attractive place. There aren't a lot of places where a band could come in and set up as a band, play and feel like they're in a real place. It's a comfortable room to be in. It's got a lot of windows, and you can sit there for a long period of time without feeling the usual studio fatigue." ■

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World Radio History

—FROM PAGE 30, POSTING AND BEAMING
what the network news shows have—what with those cheap camcorders they're all using now—they're happy to throw out their own tapes and use ours. And so nobody ever has to hear what the jerk actually said. But the networks *really* love us because of the reality shows."

"Huh?" I was getting dizzy. "You mean those, uh, bachelorettes all want to sound like, I don't know, Jennifer Lopez?"

"No, the girls all want to *look* like Jennifer Lopez, but we can't help them there. But think about it: There they are slogging through some swamp, or being chased

> You can make all the records you want without ever recording anything, so what do we need all that expensive stuff for?
>
> —Grumpmeier

down an alley by a couple of cop cars, or hanging on a cliff while stuffing maggots up their nose. How're you going to get a decent audio track out of that? And, none of them know how to loop dialog, so you can't fix it in post, even if they're not in custody. But if we can get them to come in for 15 minutes, even in handcuffs, we can create a profile on them, and then anytime we want, we get a professional to do the looping and it sounds just like them. We've saved a lot of shows that way. And since you never hear the actors' real voices, they don't even have to pay them scale."

I had to sit down. This was deviousness beyond even what I thought Grumpmeier was capable of. But it turned out I hadn't seen anything yet. As I slumped down in a huge leather chair that felt suspiciously like a milk crate, I noticed a dusty sign in the corner that said "Grump Post and Beam." I figured this was a relatively safe line of questioning, so I asked him about it. "Oh, that was a name we came up with for the place a long time ago. Sort of a pun, but not really. We didn't use it 'cause it gave away a little too much."

"What do you mean?" I puzzled. "I'll show you," he snickered, as he pushed through a door marked "Folodeck." All of a sudden, we were in what I could have sworn was the Taj Mahal.

"The simulation stuff we do isn't just audio. It's visual, too. And even tactile. We tell the clients this is our Foley room, but it's much more than that. In this room, we can build any kind of space, from a downtown nightclub toilet to Middle Earth exteriors, and make it absolutely right. Remember the Total Information Awareness program the Justice Department wanted to set up? Well, even though the Senate cut off its budget, they went ahead with it, but they needed to find, uh, alternate means to fund it."

"Don't tell me," I said, "Some colonel in the White House basement is shipping pirated CDs and MP3s to Chinese school kids?"

"Nothing that lame," he scoffed. "Besides," he intoned somberly, "that would be wrong. See, they put tons of surveillance equipment all around the world, tapping into wireless LANs, Webcams and cellphones, and they're using technologies I'm not even allowed to talk about. They got together this unbelievable database that makes Google look like an iPod. Not only has it got complete credit, medical, political, educational and employment histories of every person on the planet, but it also has analysis of every *place* on the planet, with dimensions, colors, lighting data, temperature, humidity, textures, ambient noise and acoustics. So to pay for it, they came up with this brilliant idea of a government/industry partnership. They're selling access to it. It's called the Official Repository of Worldwide Environments and Landscapes: ORWEL."

"How many people know about this?" I gasped. "Not many," he cackled. "They're starting slow. They're only bringing in partners who are absolutely trustworthy and who they know aren't going to abuse the data. I got friends in the Agency." (I didn't know exactly which agency he was talking about, but the capital "A" was unmistakable.) "So, we're one of the first commercial subscribers. The others I know about are a group who are direct-marketing really revolutionary ways to improve your sex life, and a former government minister from Nigeria, or maybe Zimbabwe, who seems to have gotten his hands on a bunch of venture capital and is looking for partners."

"But what do you use it for?" I still didn't get it. "Don't you see?" he looked at me condescendingly. "We can create any setting a client would want and then record in it. We can do music, Foley or ADR. We can make a two-chord garage band feel like they're playing Shea Sta-

World Radio History

dium. A guy doing a voice-over for a wild-animal series can think he's in the Amazon jungle. Last week, we put the Three Tenors on top of Mount Fuji. With all that simulated wind around them, they really had to sing loud. One of 'em, Fiorello or whatever his name is, got pneumonia, but they sounded great! We're booked up in here for weeks in advance."

"That's amazing," I said, truly amazed. "Are you going to expand past this one room?"

"Well, that's what I wanted to tell you earlier," he said, lowering his voice. "As it happens, the whole facility is set up with ORWEL. The last tenants, that department store? They wanted all of the housewives buying the cheap linens and kitchen stuff think that they were in Martha Stewart's house. They had it put in, but they never got the chance to use it. When we turned it on, we realized we could get profiles of some places that *our* customers would like: All of the best control rooms all over the world, or those great old recording spaces that don't exist any more, or a place that's just loaded with gear, like a Guitar Center. So, that's what we did. Thanks to ORWEL, we're literally beaming all those places in."

He pulled a car-key remote out of his pocket that said "Kia" on it. "That's so nobody even thinks of stealing it," he chuckled as he pressed a small button.

In an instant, the entire studio complex disappeared. All that was left was the ugly carpeting and bare concrete walls, stained a sickly blue where the stacks of antifreeze bottles once stood. The chair I was sitting on really *was* a milk carton. On the other side of what was now a huge open space, the young assistant who had first greeted me sat at a bridge table, headphones clamped on tightly, staring intently at a laptop. After a few seconds, he looked up, smiled and waved at us. "Sammy here is taking care of our whole operation. We often have him handling four sessions or more at a time. He's got control over a couple of hundred tracks of audio, more processing than he'll use in his entire lifetime, instant video sync, surround encoding, 20,000 loops, 30,000 sound effects online and 350,000 samples, and all those vocal models. It's all in that iBook. When there are no clients around, we turn off the projectors to save power. That expensive stuff with the dials and knobs and lights? We don't need it anymore. We sold every-

thing from my old place on eBay, and I never bothered to replace a thing."

Of course, I was horrified. "So, the whole place is just an illusion? All those clients think they're sitting in a state-of-the-art facility and it's really a hologram? None of this is real?"

"What's 'real'?" he scoffed. "You don't have to be able to sing to have a hit. You don't have to know jack about music to be a producer. You don't have to play an instrument to write songs or soundtracks. You can make all the records you want without ever recording anything. So what do we need all that expensive stuff for? We've got no overhead, which means we can finally make some money. How long has it been since a client gave you a decent budget to do a project? Everyone's hurting, everybody's low-balling. You pay the bank for the equipment, you pay the staff and the rent and the light bill, and there's nothing left. But get rid of all that stuff, and you get to take something home.

"Go virtual, bucko. This is the future. Get used to it." ∎

Paul Lehrman is recovering nicely, thank you.

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UAD-1 Version 3 is here, with multi-card support and many other enhancements. Run dozens of sophisticated effects plug-ins inside Digital Performer without bringing your Mac to its knees. What's the secret? UAD-1 is a custom DSP-equipped PCI card. It's like adding an extra $20,000 worth of effects gear to the dozens of native plug-ins included with DP. UAD-1 ships with a growing list of powered plug-ins, including Nigel, a complete palette of guitar tones combined with every effect a guitarist could ever need. Authentic vintage sounds include the Pultec Program EQ, a stunningly realistic recreation, and the 1176LN Limiting Amplifier and Teletronix LA-2A Leveling Amplifier, two more analog classics reborn inside Digital Performer. Apply liberally with host CPU cycles to burn.
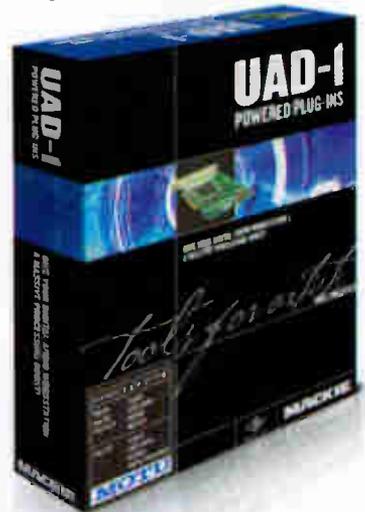
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Universal Audio DreamVerb for UAD-1
### New flagship reverb for DP from the gurus at Universal Audio

DreamVerb's unparalleled flexibility, power and intuitive interface allows you create any acoustic space inside Digital Performer using a huge list of different materials and room shapes. Blend or "morph" different room shapes and surface materials, adjusting the effect of the room materials on the sound space, and even varying the density of the air to simulate different ambient situations. With flexible 5-band active EQ and unique level-ramping for the early and late reflections, you can create sounds ranging from ultra-realistic dynamic room simulations to lush reverb effects. Universal Audio's proprietary smoothing algorithm lets you adjust parameters in real-time with no "zipper-noise" or other undesirable artifacts.
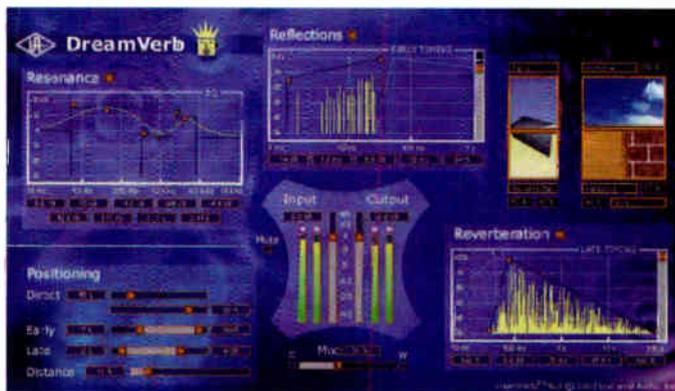
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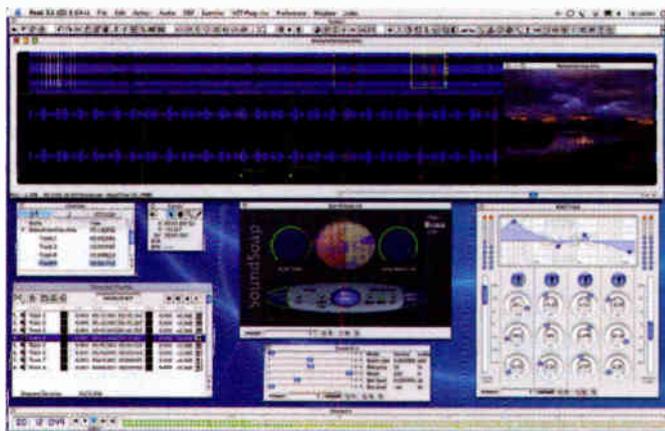
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Digidesign 002

FireWire Tricks, Sequencing Tips

Fighting back with your middle finger: Try to nudge the 002's fader up, and it'll fight you because the front edge of its pad isn't touch-sensitive—that is, unless you rest another finger on top.

Digidesign's latest DAW, the 002, is an integrated recording-to-master control surface and 24-bit/96kHz audio and MIDI interface/software production package. Its sole connection to the host PC or Mac is a single FireWire cable, and it uses a 32-track version of the Pro Tools LE software. Add a pair of monitors and something to record, and you're good to go.

FIREWIRE BALANCING

While most FireWire drives handle way more than the 002's full 32 tracks without breaking a sweat, others may suddenly cause the computer to throw up a "Disk too slow or fragmented" dialog when you know perfectly well that it's neither, sometimes when you're running as few as 16 tracks with no edits. This seems to be a problem plaguing individual drive mechanisms, and it certainly isn't unique to the 002. In fact, it's not even unique to specific drive models. But once you get that dreaded dialog, you can't continue until you curse mightily and restart Pro Tools.

The real answer is to split the audio track load across a couple of drives.

1. After amassing a few tracks (maybe 16?), quit the Pro Tools program.

2. If you've run into the dreaded "Disk too slow or fragmented" dialog, curse mightily. If not, proceed to step 3.

3. On the FireWire drive, create a new folder inside your current session's folder called, say, Hidden Audio Files.

4. Inside your session's folder, drag the files you're going to move from the Audio Files folder into the new Hidden Audio Files folder.

5. Copy the Hidden Audio Files folder over to another drive, leaving the original one intact inside your session's folder. Standard rules about drives suitable for audio apply, except that they're probably less important, because you're only going to be running a few extra tracks on this "auxiliary" drive.

6. Launch your session again. You'll get a dialog from Pro Tools asking you to find the files you've moved. Direct it to the Hidden Audio Files folder on your auxiliary drive (not the original FireWire drive).

You're now firing off two drives, and everyone's happy. Subsequent audio files will be recorded onto the FireWire drive, of course.

7. When you're done, simply move the audio files from the Hidden Audio Files folder on your FireWire drive back into the regular Audio Files folder. Your session is intact; you can now safely delete the auxiliary Hidden Audio Files folder.

USING PRO TOOLS LE WITH A MIDI SEQUENCER ON THE SAME MACHINE

You may prefer to take advantage of Pro Tools' audio production features while using another sequencer program for MIDI. Because there's a Windows ASIO driver for the 002, it can look like a sound card to your digital audio sequencer; you simply import the audio and MIDI files you've created into Pro Tools LE when you're ready. But until the 002 CoreAudio driver for OS X comes out, that's not an option on the Mac.

You can, however, sync the two programs on the same machine using OMS. Your sequencer runs the MIDI tracks while Pro Tools LE runs the audio. You can even trigger soft instruments in the Pro Tools mixer.

Let's use MOTU Digital Performer as the main example; the procedures for Emagic Logic Audio and Steinberg Cubase follow the same principles, so you should be able to figure them out easily.

1. Performer must run under OMS instead of FreeMIDI, which is MOTU's functionally equivalent software. That's set in the FreeMIDI Setup program's Preferences. Check "Use OMS When Available" and "Allow Other Applications." Cubase or Logic must also run under OMS for this to work.

2. If you're using Digital Performer, then set it for MIDI only. Logic can support multiple audio systems, so you could have another sound driver active.

3. Assuming that you want Pro Tools LE to be the master, open its Session Setup window and tell it to send MTC (MIDI Timecode) to port: Digital Performer.

4. Make sure that the start times are the same in both programs, e.g., 1:00.000.

5. Open Performer's Receive Sync window and tell it to sync to any port.

6. Press the Receive Sync button and Play on Performer's transport. It will now follow the 002.

If you want to reverse the setup and have Performer be the master, tell Performer to transmit sync to IAC bus 1 (Pro Tools doesn't appear as an option the way Performer does in Pro Tools), turn off MTC transmission in Pro Tools' Session Setup window and put Pro Tools online.

7. If you want to send MIDI into the Pro Tools mixer, then go into the OMS Setup program, double-click on the IAC icon and define up to three additional MIDI buses. Each of these buses has 16 MIDI channels available. So, for example, the output of your Performer MIDI track and the input of your Pro Tools MIDI track might be IAC bus 1, channel 1. Inside Pro Tools, that IAC bus could, in turn, be assigned to a soft instrument on a Pro Tools aux input or audio track, or you could just put the Pro Tools MIDI track in Record and capture what Performer is sending.

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Nick Batzdorf was the editor of Recording *magazine for more than a decade.*

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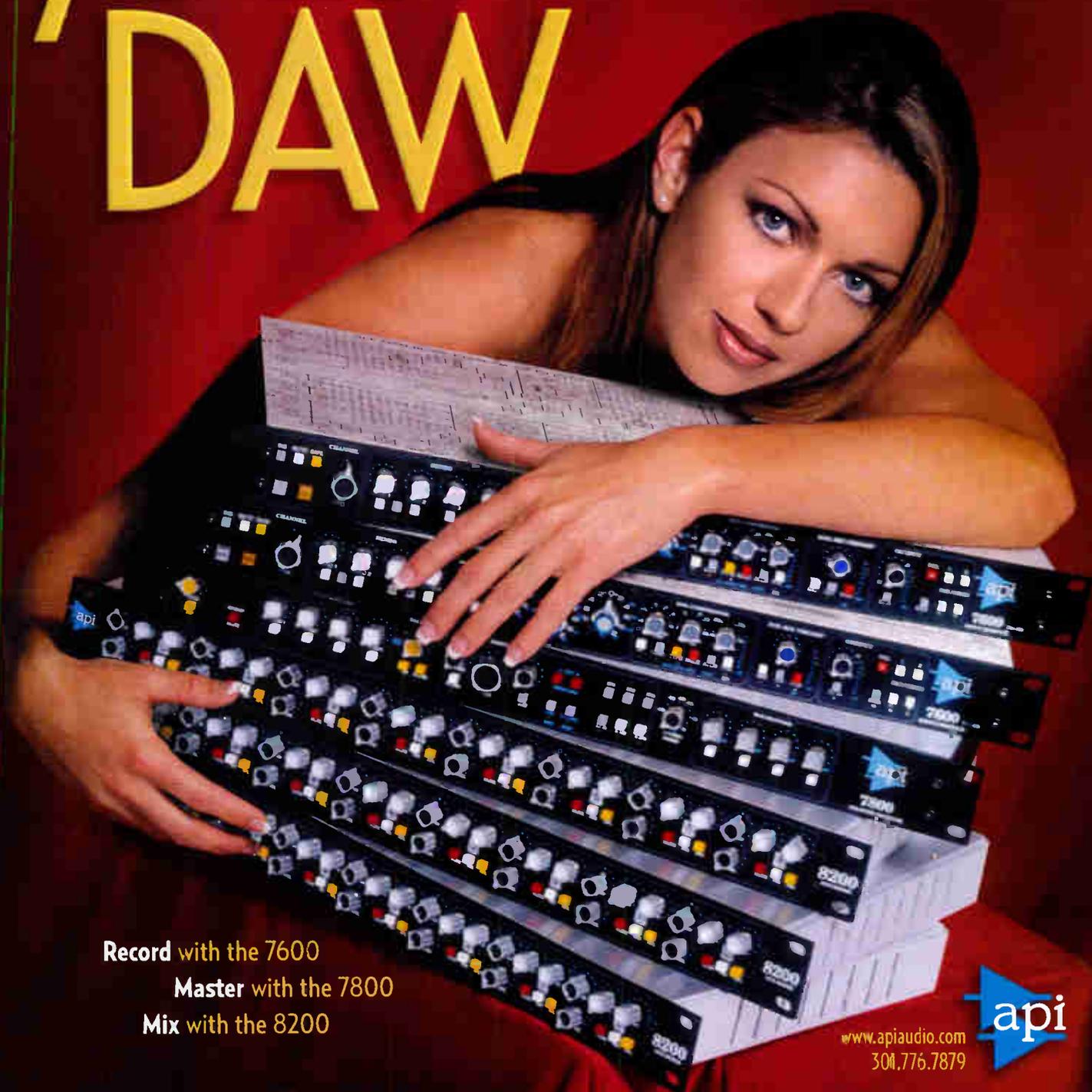
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For sound design, music production or broadcast, MachFive delivers the perfect balance of superb audio quality, speed, advanced features and across-the-board compatibility.

- **Universal compatibility** — imports SampleCell, GigaSampler, Akai, Roland, E-mu, EXS24, HALion and all other major sampler formats.

- **Drag and drop audio import** — supports all major audio file formats.

- **Superb sound quality** — supports sample rates up to 192kHz with on-the-fly downsampling.

- **Surround** — work with true multi-channel samples in 5.1 surround.

- **Fast operation** — enjoy instant access to all parameters in one window.

- **Built-in effects** — apply up to four separate effects on each preset for instant recall in any project.

- **Plug-in convenience** — save everything with your host session for instant recall. No separate application to manage. Supports MAS, VST (Mac & PC), RTAS, HTDM, Audio Units and DXi.

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