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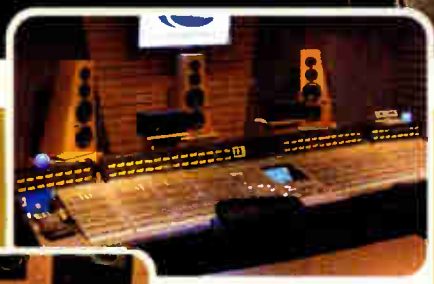

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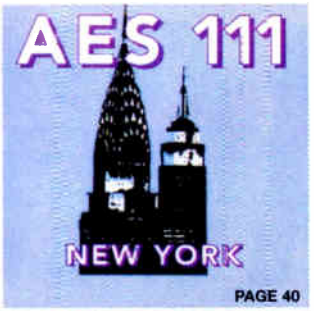

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On the Cover: Trent Reznor performing live in the San Francisco Bay Area during the 2000 Fragility Tour. **Photo:** Steve Jennings.

MIX

PROFESSIONAL AUDIO AND MUSIC PRODUCTION

January 2002, VOLUME 26, NUMBER 1

cover story

features

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The 25-Year Mix

Twenty-five years ago, singer/voice-over artist Penny Riker and musician/engineer David Schwartz looked out over the San Francisco Bay Area and saw that an industry of pro 16/24-track and garage 4/8-track studios was burgeoning—but detailed data about recording facilities was nonexistent. So they came up with the idea of a directory of Bay Area recording studios, and with some help from local music magazine *BAM*, *Mix* magazine (originally called *The Mix*) was born in 1977.

The first issue of *The Mix* filled 72 pages and included profiles on 112 Northern California studios and a few articles on recording techniques. The concept caught on, and the second issue presented Southern California facilities, followed by more California editions, then a new-products directory issue for the 1978 AES in New York City, featuring hot new releases such as the Ursa Major Space Station and Stephen St.Croix's Marshall Time Modulator. As *The Mix* grew, its directories expanded to include studios throughout the U.S., as well as listings of essential audio services, such as mastering/pressing/duplication, sound reinforcement, studio design, video/film post and remote recording.

By 1980, *The Mix* had evolved from a large newsprint directory to standard magazine size, and the name was changed simply to *Mix*. The monthly directories were retained, categorized by region or by industry segment, as *Mix* put increasing emphasis on its role as the trade magazine serving audio production pros everywhere. Eventually, the monthly directories were dropped, in favor of the annual *Mix Master Directory,* presenting all of the facility information in a single volume.

The audio industry has changed greatly since 1977. A studio phrase like "feed the 48k Acid loop through the Lightpipe port, downsample it to 44.1 and route the SRC's AES out to the DAW" would make little sense in those days when analog ruled. These days, it's hard to even imagine a world *sans* Federal Express, much less without PCs, Macs, e-mail, Websites, cell phones, DVDs, DAWs, MIDI or MADI. Yet pro audio is unique among technology-driven industries, in that despite the impressive performance of today's PCs, we still pay homage to ½-inch analog 2-tracks, vintage mics and tube signal processing.

Audio technologies—and *Mix* —have changed over the years, and we share the industry-wide dedication to serving the pro community and improving our product. Thanks to the hard work and creative inspiration of our art staff—Kay Marshall, Dmitry Panich, Liz Heavern, Mae Larobis—you are holding a redesigned *Mix*, with an updated look for the many columns, features and departments. Our goal was to present cleaner, more readable layouts, while offering a quick means to finding the section you want. We hope you find that it works.

Of course, our editorial mission—providing *Mix* readers with reliable, useful and up-to-date information on the industry—is our prime directive. We appreciate your support over the past 25 years and look forward to even better days ahead.

George Petersen

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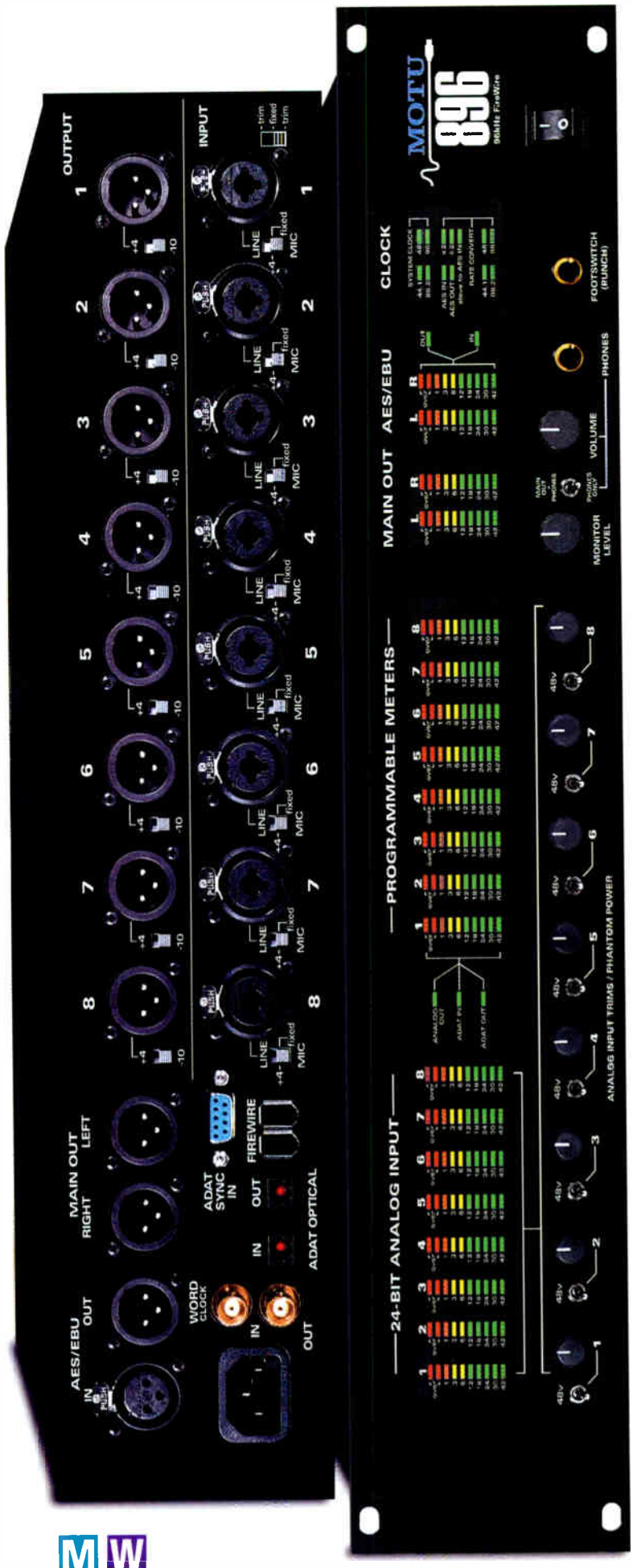

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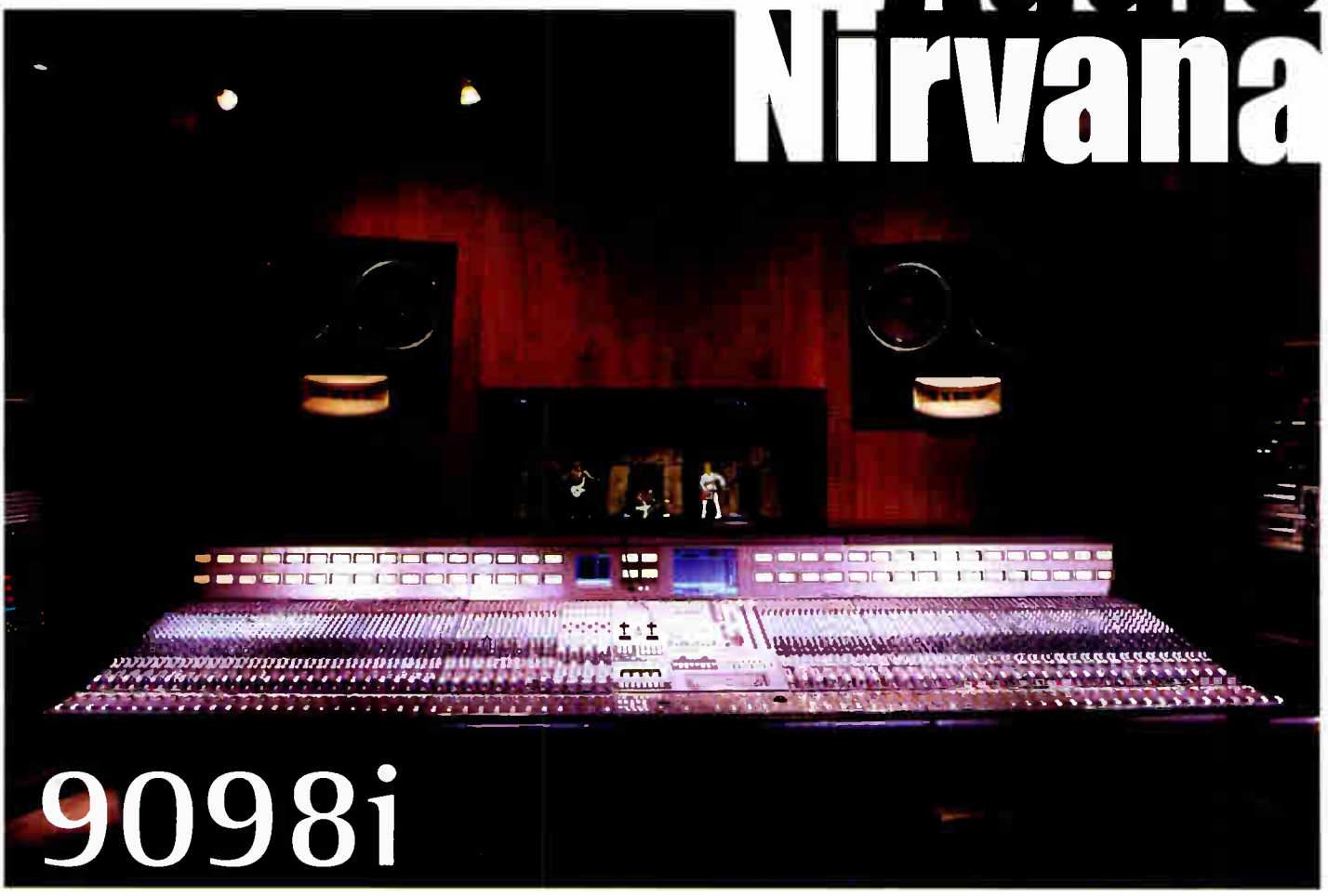

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Letters to Mix

When the Chips Are Down

I have always enjoyed reading your magazine and reading about new products and technologies. Especially interesting to me are the reviews and articles on tube-based equipment. I have been a "filament head" for years and love the fact that tubes have made a comeback. However, your review of the TL Audio VTC console (July 2001 "Field Test") prompted me to write to you and your readers.

According to the review, the console uses an SSM2017 chip in the preamp before it continues on to the tube stages. The SSM chip has been discontinued by the manufacturer Analog Devices, and to the best of my knowledge there is no available substitute pin, compatible or otherwise. One of my clients has a DDA console that uses the same chip in the preamp, and he has been having problems with chip failure and difficulty in obtaining spares. I question the wisdom of using this chip and wonder what purchasers of the TL console will do when their chips start failing down the road. If there were a substitute, I would be very interested in finding out about it.

Brit Fader
President, Brit Fader Amps

More on SAN

I am writing regarding Gerald Robinson's "The Price of Fiber" letter (October 2001 "Feedback") and his comment, "I find the assertion by Ed Bacorn [of Glyph Technologies] that 'Ethernet is very high overhead,' and slow to be silly." I don't quite understand his misgivings. The original article, "Wired for Data—Audio Collaboration in the Network Age" in the June *Mix*, offered options for digital audio. One option was Storage Area Networking, which I was doing for Glyph at the time. I now build SAN for A/V for JEMS Data Unlimited (www.jemsdata.com) with the same resolve and understanding of networks in a pro environment.

In the *Mix* article, I was asked about how a SAN would work as opposed to other solutions in a pro audio environment. As a SAN specialist for six years, I naturally defended my turf. Mr. Robinson seems to think some of the data given was inaccurate and hoped to expand my knowledge with a Seagate Website. I, too, have a URL for him to peruse: Visit www.brocade.com/san/white_papers.jhtml and read "Fibre Channel and Ethernet: Different Approaches Meet Different Computing Needs." He may find it enlightening and develop more tolerance for us poor SAN guys who spend time answering the question, "Why can't we just all work on Ethernet?"

As to the high cost of Fibre, I was referring to Fibre Channel as a solution and *not* fiber (note the spelling), the cable. I agree that fiber-optic cable is roughly the same cost as Cat 5 or similar cable solutions. Also, the comment regarding EMC and STK running hybrid solutions over Ethernet and Fibre Channel is right on the money. Avid runs Avid Unity over both solutions. The Ethernet handles the metadata (information about the information), while the Fibre Channel handles the bulk transactions or A/V files. The downside is its cost and limited availability in an audio environment.

I should address the comment about not requiring a fabric switch for SANs below five workstations. In a non-pro environment, an FC Hub may be used. These are relatively inexpensive, yet not recommended when fault tolerance and stability are required. If your customer runs five workstations and one crashes, which occasionally happens, this results in Loop Initialization Protocol. Essentially, all traffic on the network stops momentarily in order to re-assign addresses to each workstation and each drive on the network. This typically takes several seconds. If editors are running AVR 77 or multitrack sessions when this occurs, then they'll experience an interrupt or just hang altogether. In a pro environment, this is not a solution. This common issue plagued the FC industry until the advent of fabric switches.

All said, I believe we're not too far apart with our views on why Ethernets and SANs should be considered for a shared environment. In many cases, both can and should be utilized.

Ed Bacorn
JEMS Data Unlimited

Production Music Realities

Keep on reviewing production music libraries. Ken Jacobs (November "Feedback") seems to think that using "canned" music is a production sin. Get real Ken. The only sin some producers commit is using some bad production music, and there is plenty of it out there.

For someone to think that they have to, or should, record music for every production is ridiculous and naive.

I produce about 80 radio spots a month, and probably five or 10 TV audio tracks in my studio. If I had to call the writers and musicians every time I wanted to produce a spot or TV commercial, I'd be out of business. My clients couldn't afford it, nor would they have the time for me to finish the productions.

Regarding libraries, I'd say 80% of the production music out there isn't too good. You have to be selective. But the 20% that is good is an asset and a valuable tool to the production business.

If Mr. Jacobs is so gung ho to create original music, he should consider starting a production library himself. Then he can record original music all day and keep his studio busy.

Tom Snyder
Tom Snyder Advertising Productions
Fort Lauderdale, Fla.

Paying To Play

I've just finished reading your article in the September 2001 issue ("Insider Audio: Living on Borrowed Culture"). It is very timely and well spoken. I must say that I have seen this trend developing over quite a stretch of time.

I graduated high school in a Detroit suburb in 1984, and at that time all of the fiscal bosses were beginning to cut expenditures in education, causing turmoil in all of the arts programs, as well as for athletics.

As far as I know, there now exists in the high school I graduated from a "pay to play" system, with which I'm sure you are familiar. This is an abomination. We have public school systems across our country that preach about a "well-rounded education," but eliminate these fundamentals. Anyway, thanks for a great article. I hope it makes some difference.

Steve Fritz
Garden City, Mich.

Send Feedback to Mix *via e-mail*
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NEWSFLASH: TC ELECTRONIC ACQUIRES TGI/TANNOY!

VISIT MIXONLINE.COM FOR DETAILS

SONY, TC WORKS BRING PLUG-INS TO POWERCORE

Sony and TC Works announced in late October that the two companies will collaborate on developing plug-ins for the new TC PowerCore DSP card that will be based on the processing algorithms developed for Sony's digital mixing consoles. According to John Richards, senior manager of Sony Pro Audio R&D, Sony plug-ins are expected to be available for the PowerCore by spring 2002.

According to the release, the Sony plug-in for PowerCore will achieve the same performance as the version for Pro Tools or its consoles, offering the sound of Sony's digital recording consoles to users of computer-based digital audio editing systems and workstations.

Pictured from left to right at the recent AES convention are: John Richards, head of the Sony Oxford R&D group; Rod Densham, plug-in project manager; and Paul Ryder, a senior R&D engineer within the plug-in team.

"TC PowerCore has been designed as an open DSP platform that should provide the user with whatever DSP tool he needs to get the job done, from making music to high-end mastering," says Ralf Schlunzen, CEO of TC Works. "So we are truly excited about having Sony's excellent products available to our users."

For more information, visit Sony's dedicated Website for its plug-in products at www.sonyplugins.com.

ULTIMATE SOUND MACHINE

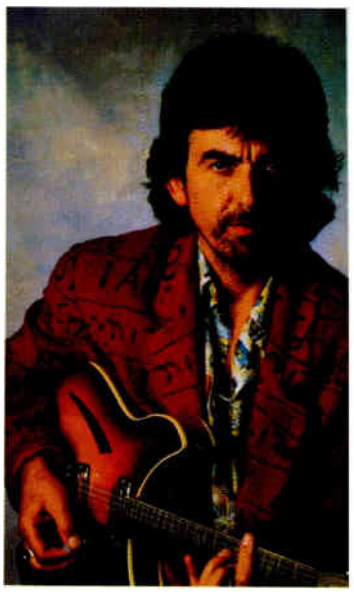
FAST DRIVING IN SURROUND

There's nothing like driving in your new 2002 BMW 7 Series car on a winding road through some beautiful, mountainous landscapes while listening to your favorite album in...surround? Yup! Setting a new standard for car stereos, Lexicon and BMW showcased the new Lexicon LOGIC7 audio system that will be included in the Premium Sound Package option for the new BMW 745I and long-wheelbase 745Li at New York's celebrated Hit Factory on September 25.

Creeping toward the driver-side door to be the first to listen to the LOGIC7 system are, from left, Nils Lofgren, Lexicon president Wayne Morris, and Lexicon chief scientist Dr. David Griesinger.

The event featured a live recording session with guitarist Nils Lofgren, as well as a demonstration of the surround sound quality in 5.1 and 7.1 in the studio.

GEORGE HARRISON: 1943-2001



In the endless post-mortems about George Harrison, I keep reading about his "disastrous" 1974 tour of America. That's not how I remember it: I remember an incredible night at Madison Square Garden where so many aspects of George's genius came to the fore. He was the gracious host, introducing Ravi Shankar, and then the master of ceremonies and leader for his own sprawling set, featuring a cast of dozens of great singers, guitarists, keyboardists, horn players—it was a grand, somewhat chaotic, spiritual revue, where George was more than happy to share the glory with everyone onstage. He seemed like a reluctant bandleader, yet he was unquestionably in charge.

How could you not love the guy who, in the film *Hard Day's Night*, refuses to be talked into endorsing a shirt because he thinks it's "grotty"? He had that Beatles wit in spades—cynical, self-deprecating, and slightly above the fray. He had the arching eyebrows, the sly smile...he could be so serious, yet there he was inserting a burst of laughter in "Within You Without You," and there was the mock grandiosity of "Piggies." It was no surprise when, later in life, his Handmade Films produced *Monty Python's Life of Brian* and the darkly comical masterpiece *Time Bandits*. And who better to be in the Traveling Wilburys, which was sort of an in-joke that turned out to be too brilliant to stay "in." The bookends of that first Wilburys album—"Handle With Care" and "End of the Line"—make a fine epitaph for George.

George was always his own man, and that's a lot of what we loved about him. There were flashier guitarists, but few could say as much with so few notes and with such exquisite tone. His influence on an entire generation of guitarists is incalculable. There were better singers than George, but his voice had his personality, which was perfect for his material. And then, there are the songs, classics and oddities alike, each brilliant in its own way: "If I Needed Someone," "I Need You," "Think for Yourself," "Taxman," "Love You To," "I Want to Tell You," "Within You Without You," "Blue Jay Way," "The Inner Light," "While My Guitar Gently Weeps," "Piggies," "Long, Long, Long." There would be many more high points in the post-Beatles years, from the still-extraordinary *All Things Must Pass* in 1970 to his last major solo release, the superb *Cloud Nine* (1987), which included the fond but winking "When We Was Fab." It's truly a legacy worth celebrating. —*Blair Jackson*

COMPILED BY SARAH BENZULY

NOTES FROM THE NET

It's been two years since the labels first took Napster to court, and after numerous court dates, court injunctions, court reversals and "trial periods," it seems that the court only set a baseline from which the labels and Internet services must work. Case in point, the Internet services and the labels are beginning to figure out a royalty plan. The NMPA, HFA and RIAA did it last month, and this month, **SoundExchange** (the collection and distribution agency for sound recording performance license fees) began making direct deposits into artists' bank accounts—to the tune of $5.2 million. SoundExchange will now be under the joint control of recording artists (and their representatives) and record companies (and their representatives).

Royalty payments are the necessary end result of the collaborations, but isn't the actual service needed to bring in the payments? While MusicNet and Pressplay remain on pause, **Full Audio**, owned by Clear Channel Communications, plans on launching its own music subscription service. To start, the subscription service will be offered on a limited scale, at 30 stations in Chicago, Houston, L.A., Phoenix and Salt Lake City.

Meanwhile, Napster's not rolling over: CEO Konrad Hilbers wants the federal government to step in and create a compulsory standard requiring music labels to license their music at a fair price, rather than waiting for the legislature to pass the MOCA (Music Online Competition Act) that was presented to Congress in early August. And perhaps Uncle Sam will listen to Hilbers' plea now that Napster's going to be serving our country: In the wake of September 11, the Pentagon is considering using Napster's peer-to-peer service (the same one that got Napster in trouble to begin with) to help the military share information across its many branches, agencies, ships, airplanes, tanks and troops.

PRODUCER OF THE YEAR

Carlos Santana embraces KC Porter

KC Porter received the Producer of the Year Award at the Second Annual Latin Grammy Awards. Porter's credits include King Chango's "Brujeria" and "El Santo"; "Una Noche"; Ricky Martin's "Cambia La Piel"; and the single "Un Error De Los Grandes," from Italian diva Laura Pausini.

The Best Engineered Album Award went to Marcelo Anez, Gustavo Celis, Gordon Chinn, Charles Dye, Javier Garza, Mick Guzauski, Sebastian Kyrs, Preddy Pinero Jr., Eric Schilling, Joel Someilan, Ron Taylor, J.C. Ulloa and Robb Williams for Thalia's Arrasando album.

ON THE MOVE

Who: Peter Chaikin
What: Director of marketing, JBL Professional
Main Responsibilities: Developing and marketing products for recording and broadcast applications
Previous Lives:

- 1998-2001, director of product marketing, Alesis Studio Electronics
- 1988-1998, 10 years with Yamaha Pro Audio as marketing manager, pro digital products and overall product manager for recording products

The moment I knew that working in this industry was right for me was... As a kid in New York, I went into the studio for the first time and fell in love with the sound, the equipment, the incredible arsenal of old Neumann/Telefunken mics. Hearing my vocals and guitars, I went crazy for the sound and the process. At that moment, I began angling toward a career in the control room. I hitchhiked cross country—visiting every 2-inch room in the *Billboard Directory of Studios*, trying to get in. I picked up the phone and called Phil Ramone at A&R, and I asked how to get into the business. I finally landed at the Record Plant in Los Angeles and got a job as a carpenter's assistant, building their big Studio C. I wound up working on some amazing sessions with The Eagles, Joe Walsh, Stevie Wonder, John Lennon, Sly Stone, Billy Preston and others.

If I could do any other profession, it would be... I can't imagine!

My best moment since working in pro audio was... When I heard Frank Filipetti had won the Grammy for Best Engineered and Best Pop Album for James Taylor's *Hourglass*. I had loaned Frank a [Yamaha] 02R for James to cut demos. To watch the project progress from demos to real tracks and the multi-Grammy win, that put a sensational touch on the project!

Currently in my CD changer is... I picked up three fun releases at Starbucks. (I don't drink the coffee, but it's a great place to buy music.) One is a jazz compilation, which includes Herbie Mann's "Comin' Home Baby" from *Live at the Village Gate*, Eddie Harris' "Listen Here" and a bunch of other cuts.

I enjoy...when I'm not in the office... Cutting video on the Mac, recording in my studio, listening to music and dancing with my daughters.

CRAWFORD COMMEMORATES 20 YEARS

From a small post-production company created in 1981 to a 5.1 surround sound mixing and DVD authoring facility, Crawford Communications (www.crawford.com) celebrated its 20th anniversary with a reception at its Atlanta headquarters. "We take great pride in what we have accomplished in our first 20 years," says Jesse Crawford, CEO and founder of Crawford. "Our focus, however, remains on the future. Our energy and enthusiasm are directed toward finding new and innovative ways to service our client needs even better."

JOHN TRIPENY, 1960-2001

John Tripeny, 41, a leader in sound reinforcement at Audiotek Corp., died from a possible heart attack or massive stroke.

Tripeny launched his audio career at Studio Instrument Rentals as manager of the pro audio department. In 1988, Tripeny left SIR to help Pete Doctor build US Audio, and then it was on to Schubert Systems, where Tripeny stayed for almost a decade. In the late '90s, Tripeny was offered work with Audiotek Corp.

According to a representative from ATK, "[Tripeny] worked hard, played hard, and he touched a lot of people's hearts and minds. Many of us will remember him when we have a great show day, and maybe especially when we have a rough one and remember how our friend faced challenges without going to the dark side."

In lieu of flowers or gifts, the American Heart Association has set up a fund for donations to be made in his name. The number to call is 800/242-8721.

18TH ANNUAL TEC AWARDS

CALL FOR ENTRIES

The Technical Excellence & Creativity Awards Nominating Panel is now accepting entries for product nominations for the 18th Annual TEC Awards, to be held October 4, 2002, in Los Angeles. To be eligible, products must have been released and in commercial use during the period from March 1, 2001, to February 28, 2002.

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

Companies wishing to nominate products should send complete product name and qualifying category, date first commercially available (proof of shipment may be required; beta test sites do not qualify), and a contact name and telephone number.

Send all information to: TEC Awards, 1547 Palos Verdes Mall #294, Walnut Creek, CA 94596; fax 925/939-4022; or e-mail KarenTEC@aol.com. All entries must be postmarked by Friday, February 1, 2002. For more information, call Karen Dunn at 925/939-6149 or visit www.tecawards.org.

Industry News

Buford Jones

Industry veteran **Buford Jones** joins **Meyer Sound** (Berkeley, CA) in the role of tour liaison manager. In other company news, **Luke Jenks** was appointed director of European technical support...**Euphonix** (Palo Alto, CA) news: The Southeast U.S. division will again be headed up by **Mike Franklin** as director of sales; and **Brian Dorfman** and **Gerard Volkerz** have been added to the Eastern sales division as director of sales for the Eastern region and product support and sales specialist, respectively...Recruited for his 16 years of pro A/V industry experience, **W. Allen Schulte** joins **CDAI** (Atlanta) as a project manager...Coming to **Cool Beans Digital Audio** (New York City) with a well-versed background in radio and TV spot mixing is **Rick Granoff**, new senior audio engineer...**Dolby Laboratories** (San Francisco) welcomed **Andy Smith** to the newly created position of director of global brand marketing...Bringing 20 years of pro audio experience to **Telex Communications** (Burnsville, MN), **Monte Wise** is the new sales manager for USA concert sound...New **NEXO** (San Rafael, CA) loudspeakers dealer **AVA Audio Video Associates Inc.** (St. Louis) will cover Missouri, Kansas, Nebraska, Iowa and southern Illinois...**QSC Audio** (Costa Mesa, CA) announcements: **Jeremy Johnston** has been promoted to systems specialist in the portable live sound division; **Dienna Gamache** was hired as account specialist for the Western region; and **Roger Maycock** was promoted to marketing services manager...Serving seven years at **Sennheiser** (Old Lyme, CT), **Matt Carlin** was promoted to the newly created position of product manager for distributed brands...**FSR** (West Paterson, NJ) appointed these new sales managers: **Lesley Kashey**, Northeast regional sales manager; **Glen Swanson**, Midwestern regional sales manager; and **Glenn Collinge**, Southeast regional sales manager. FSR also brought in **AVCOM** (Cleveland) to represent the company's complete line in Indiana, Kentucky, Ohio, West Virginia and western Pennsylvania... Minneapolis-based **HMR Inc.**, an independent manufacturers' rep firm, hired **Gary Bosiacki** as a partner, where he will focus on increasing the firm's exposure in Minnesota, North and South Dakotas, and western Wisconsin.

Send your "Current" news to Sarah Benzuly at sbenzuly@primediabusiness.com.

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Other reasons to get an MX-2424 for your Pro Tools rig? Since the MX-2424 records to SCSI drives, you can hot-swap them between systems without powering down your computer and recorder. You can record remote performances conveniently, leaving your computer in the studio. You can enjoy a familiar interface with the classic feel of a tape recorder. And perhaps most important, you can bet that the MX-2424 will satisfy your highest expectations in audio quality. If your editing/mixing system is based around Pro Tools or any other DAW, check out the ultimate companion piece – the MX-2424 – at your TASCAM dealer today.

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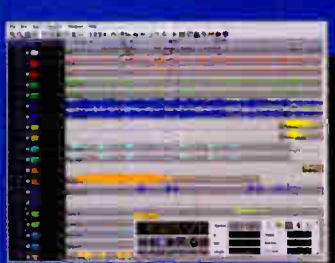

*If you don't have a DAW system, **TASCAM's** MX-View waveform editing software runs in native Mac and Windows versions and connects via a fast 100Mb Ethernet interface. With MX-View, you get sophisticated, sample-level waveform editing, drag-and-drop editing on the fly, click and pop repair with the pencil tool, onscreen metering for up to six MX-2424s, editing across multiple machines, easy management of virtual tracks and much more.*

For all the details on the MX-2424 go to
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MIX LOOKS BACK

For Mix's 25th anniversary this year, we begin looking back at where we started. Here are the Number One albums and singles from *Billboard*, January 1977, the month of Mix's debut, with special props to the engineers and producers who make the magic.

NUMBER ONE ALBUMS

The Eagles Hotel California. *Producer: Bill Szymczyk. Engineers: Allan Blazek, Bruce Hensal, Ed Marshal, Bill Szymczyk. Mixer: Bill Szymczyk.*

Wings Wings Over America. *Producer: Paul McCartney. Engineers: Jack Maxson, Phil McDonold, Mark Vigars, Tom Walsh.*

NUMBER ONE SINGLES

Marilyn McCoo & Billy Davis Jr. "You Don't Have To Be a Star (To Be in My Show)." Producer: Don Davis. Engineers: Reginald Dozier, Ken Sands, Jim Vitti. Remixing: Ellis Bishop. Assistant engineer: Billy Davis Jr.

Rose Royce "Car Wash." Producer: Norman Whitfield. Engineers: Baker Bigsby, Clay McMurray, Norman Whitfield, Cal Harris.

Leo Sayer "You Make Me Feel Like Dancing." Engineers: Bill Schnee, Howard Steele.

Stevie Wonder "I Wish." Produced by Stevie Wonder. Engineers: John Fischbach and Gary Olazabal.

GIBSON BUYS BALDWIN

Gibson Guitar Corporation (Nashville) has finalized its purchase of Baldwin Piano & Organ Co.'s assets from GE Capital, secured lender for Baldwin. The 140-year-old, Ohio-based company has two production facilities in Arkansas, and markets pianos under the Baldwin, Chickering and Wurlitzer brands. Gibson's acquisition of Baldwin keeps the company under U.S. ownership and brings it into the family of Gibson Musical Instruments (which includes Epiphone, Kramer, Slingerland drums, Oberheim keyboards and Maestro effects, among others). Commenting on the acquisition, Henry Juszkiewicz, chairman and CEO of Gibson, said: "We expect Baldwin to achieve new levels of growth and financial success for its employees, dealers and consumers as we make music in the new century."

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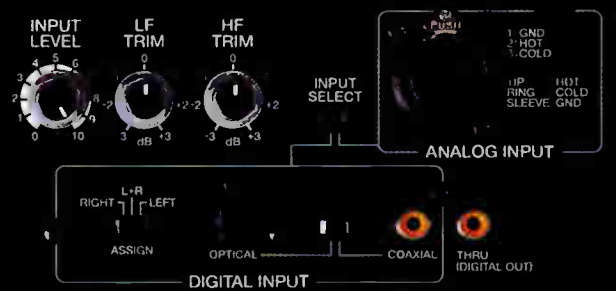

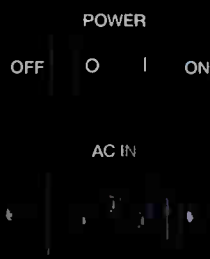

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BY STEPHEN ST.CROIX

I Went to the Animal Fair

The Birds and the Beasts Were There

ILLUSTRATION: DAVE EMBER

I went to a music store to look at—well, to look at *everything*, as I have not been in a music store for some time. I always considered NAMM to be my music store.

I guess I should have known better. I mean, I found out many years ago that if you don't take the leaves out of your pool, they apparently won't leave by themselves. In fact, if you go too long without checking, they embed themselves into the beautiful, illegally high-asbestos-content marble and plaster walls to produce those 30-million-year-old fossils that they sell at trendy "nature" shops in places like Seattle.

Anyway, now that my pool has been re-plastered, I thought I would check on what a consumer actually experiences when he walks into one of the monster chain music outlets. And here is what I learned:

- Guitars now have full-color, backlit graphic LCDs, and synths have strings.
- All kids have recently had bilateral brain surgery but somehow talked the prep-nurse into not cutting the hair on top—just the sides.
- And, apparently, the surgeries were all horrific failures, because *none* of these guys have regained enough mental capacity to tell that they have accidentally put on their 350-pound, 3-foot-tall grandfather's dungarees.

Upon even closer examination, I saw that their operations were partially unfinished, as the surgeon's marks were still on the sides of their heads, and they unilaterally exhibited severe motor control deficits, as evidenced by their inability to play anything beyond thrasher speed-metal.

And the final indicator that their surgeries were unfinished was that they all had money. So they all bought Gothic Samicks.

You can buy a "real" Fender Strat (in original 1956 candy-metallic blue) for about 50 bucks new these days, if you don't mind that it came from some country that doesn't have electricity. And you can get a synth

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that does everything all the other gear in your studio combined does for a couple hundred bucks. It just sounds like crap. A man's gotta overlook some stuff in life.

So I stayed and watched the people come in and play. I watched them push buttons, make incredibly loud, unidentifiable noises, assume the Erkle "Did I do that?" pose, and then look up and scan for redemption. Now, I guess I must have *the look*, because more often than not, they came straight to me and asked questions that I didn't even know people asked anyone...ever.

"Will this (nodding toward the still smoking, frantically flashing orange and purple object with 200 buttons) work with my KZ-201B-128 X 1200?"

And as I open my mouth to say, "Dude, I'm just a guitar player," he interrupts with, "I mean after the memory expansion and the sampler hack from Squiggly Systems?" Well, hearing that, the answer was so obvious that even I could respond with confidence; "No way, you're hosed." "Yeah, I knew it," he came back with a resignation that revealed he has been here before.

But even as he began to walk away, he stops and turns back to me, driven by some deep, misguided glint of hope, looks up and begins to contort his face into the universal expression of, "Is there *anything* that..."

I felt at once guilty for shooting him down and thrilled with the opportunity to do it yet again. I went for it. "You gotta check out that silver and purple thing over here—the one with the infrared sensor that changes tempo when you get your head near it." He scanned, saw it and I could see that hope sprang eternal. He looked at it just like Dudley Moore looked at Bo Derek on the beach in *10*. And with that, I took my leave.

And having done my deed for the day, good or bad, I was left to ponder the meaning of it all. I came up with this.

IT DON'T MEAN A THING
IF IT AIN'T GOT THAT SWING

They want to buy a machine that does everything for them. It's easier than actually learning to play or even going to music school. The line between synths, samplers, drum boxes, sequencers and mixers is now blurred into a faint gray smudge. Kind of like the skid mark that must be out there somewhere from true musical skills slamming into a concrete wall.

There is no question that synths will survive, albeit in a smaller way than they have, because the low-budget lounge lizard market will always, unfortunately, be there. But that market is pretty rough because of a fascinating reality of democratic capitalism as it applies to technology—the lower the price of a Chunk-o'-Tech, the more it had better do.

Think about it. If you are shopping for a good synth to add to your studio arsenal, and you plan to spend 5 grand, you want it to sound good, be stable, have a workable interface, lock reliably and make the fake sounds you need with acceptable accuracy. Hell, you probably won't even get a synth, but opt for a good-sounding sampler instead.

But when a guy goes into a store for a $499 machine, he wants everything you want, *plus* a drum machine with velocity-sensing pads, a fully editable MIDI recorder/sequencer, 400 preset instruments, and even 500 pre-loaded songs and drum grooves. And reverb. And every other special effect he has ever heard. And speakers. Oh, yeah, and a stand.

And he *gets* it. Sort of. The old trading quality for feature-set game has never been healthier, and as these keyboards do more

—CONTINUED ON PAGE 211

INTRODUCING NEXT YEAR'S MODEL

...And the year after that, and the year after that...

Eventide's Eclipse™ Harmonizer® Brand Effects Processor will be the "newest" state-of-the-art effects box for years to come. While other manufacturers obsolete their "flavor of the week" effects boxes with new models every year or so, Eventide Harmonizer effects processors have always enjoyed incredible longevity—several models have been produced continuously for a decade or longer. No wonder Eventide has been the choice of professionals for 30 years.

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Eclipse is so much more than an ordinary processor that you'll find it's an integral part of your creative process. Guitarists know that Eventide makes the only pitch-shifting that can keep up with their blistering leads. Vocalists and front-of-house engineers will be glad to know that our famous Microshift preset is on board. Every one of our eleven reverb algorithms is world-class, lush and enveloping. And every one is true stereo...no mono in, stereo out here.

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Even the back panel says "versatility." Every analog and digital input and output you'll ever need is there... including a port which makes it easy to update Eclipse's software right over the internet. We want to make it easy for Eclipse owners to get the most out of their long-term investment for years to come.

Eclipse offers more in a single rack space than any processor ever before. Audition the Eclipse today at your Eventide dealer. Or check out our website, www.eventide.com. It's going to be a rewarding creative partnership.

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BY PAUL D. LEHRMAN

Hardware, Software, Wetware

Which One Will Survive the New Era?

As we turn over the calendar to another New Year, we in the audio industry find ourselves asking the age-old question: Will we still have a job 12 months from now?

Actually, most of us *don't* usually ask ourselves that question, which is what makes this year so strange. But because we are living in the greatest era of uncertainty in about six decades, no one can really forecast what's going to happen. Let's try to hang on to a positive thought: Even hunkered down in bacteria-proof underground shelters, people are going to need to be entertained, and they will be, even if it means using car batteries to run their brand-new surround DVD systems.

So this month, let's not look at the gloomy side. With the Winter NAMM show right around the corner, let's instead ask ourselves that upbeat question that will be on the lips of everyone gathering in Anaheim: Is hardware dead?

Well, maybe that's not *terribly* upbeat for a lot of people—like the folks who make hardware—but it certainly seems to be getting a lot of attention. There are legions of people, the majority of them under 25, who think that using hardware for synthesizing, recording, processing and mixing music is so, well, so '90s. They've never known a time when computers weren't fast and reliable enough to produce and manipulate untold numbers of tracks of super-high-fidelity audio in real time. They're looking at us old fogies and our racks of processing gear, and wondering why we need all that iron when they can do everything they can even conceive of on a $700 motherboard with a $200 sound card.

The other day, one of my students was describing his home studio to me, and when I asked him what kind of synths he had, he replied, "Oh, I don't have anything like that. It's all software. And I don't play the piano very well, so I never bothered to get a keyboard. Hardware's dead, anyway." A friend of mine, who also teaches college-level music courses, gave a lecture recently to a gathering of the local audio community on "Better Living Through Software Synthesis." "It's viable, it works," he says. "Do we need a box to do DSP or a special chip to do synthesis? Why bother?" Why indeed?

As much as in any field, computers have become "anything and everything machines" in the audio world. Do you want to do location recording? Get a laptop and a PCM interface card, and put it in a corner of that road case with your mics, preamps and headphones. Do you do film scoring or sound effects? Install a software sampler or two and a virtual rack of soft synths and plug-ins on your desktop machine, link them to timecode and mix it all down right to your hard disk; when you're done, burn it onto a CD-ROM and send it to the Avid house. Is your specialty dance records or club mixes? All you need is a bunch of CDs of grooves and beats, looping software and a vocal mic. How about processing, sweetening, mixing and mastering other artists' recordings? All possible without ever turning away from your monitor.

In many ways, a software-based studio makes a lot of economic sense. After all, could you throw out an entire hardware studio that's only two years old and replace it with the next generation of faster, slicker gear—and end up spending only $1,000? If everything's in software, that's not only easy, it's more or less mandatory. (Of course, the disadvantage is that you then have to reinstall all your software and spend a few sleepless nights fretting over whether or not your old programs will work on the new platform. Can you imagine having to do all that with a couple of racks full of hardware?)

> Despite our generally positive attitude toward new technologies, musicians and audio professionals tend to be a fairly entrenched lot, and old habits die hard.

But somehow, there are people out there who aren't getting the message—like the ones who send me those glossy 150-plus-page music and pro audio catalogs every month. Despite my student's pronouncement, lots of areas of the hardware business are still going quite strong, thank you very much.

Roland's disk-based, all-in-one studios have been that company's most successful new product line in years, and now the other usual suspects—Fostex, Yamaha, Tascam and Alesis—have jumped on board. Despite the flood of software synths, the "knobs" craze on hardware synthesizers shows no sign of abating, as musicians rediscover the joys of real-time control and learn that there are better ways to design sounds than tweaking parameters on a

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DJ gear, of course, is going like gangbusters: CD players that emulate vinyl turntables, groove boxes that emulate the crummy drum machines of the early '80s, and nasty high-Q filters you can operate by waving your hands around in the air are flying out dealers' doors. It's an interesting indicator of how the hardware world is evolving by considering that Alesis, which owned the project studio multitrack tape deck market for the better part of a decade, last year somehow managed to go bankrupt and had to be rescued by Numark, a company that has made its money in the club scene over many years.

Guitars, basses and amps are still big moneymakers, and the market for vintage and pseudovintage axes is as healthy as ever. There are so many different variations on Strats, Teles, Les Pauls, 335s and Twin Reverbs that the mind boggles. (Although I still can't imagine that a $1,500 guitar with some rock god's signature on it actually plays twice as nicely as the $750 version from the same manufacturer.) On the other hand, the sounds of the guitars are becoming less distinguishable from each other, as more manufacturers pick up on the "modeling" idea, so that any combination of guitar and amp can sound like any other combination you want. (I have my doubts about this technology, though, especially for live performance. I was at a demo/concert of one manufacturer's electronic instruments recently, and the guitarist, trying to emulate a stack of Marshalls with a little stage amp, sounded as if he was miles away in a completely different hall from the rest of the band. Maybe it was the mix, or maybe it was a latency problem, but it wasn't in the least convincing.)

For those of us who want to use all of our fingers and other appendages to work with sound, hardware is still rather necessary. What all of the devices I just listed have in common is that they offer familiar physical interfaces: knobs, faders, strings, frets, turntables and so on. As we all have discovered during the past few years, moving a mouse around is a lousy way to create music, or edit or mix audio. And so we've seen the rise of "control surfaces" that hook up to our computer-based workstations through serial or USB connectors and emulate the mixing and editing consoles we are used to.

It's not just a gimmick that these devices present a familiar face. Despite our generally positive attitude toward new technologies, musicians and audio professionals tend to be a fairly entrenched lot, and old habits die hard. We learn to use certain types of systems—in the case of musicians, we spend years practicing them—and develop our working style and rhythm on them, and we aren't that interested in abandoning them overnight, even if there are new ways that are immediately and obviously superior. While we embrace new technology, we want it to work like the old, and manufacturers that try to force us out of old habits are taking a risk.

Examples of this are all over the place. In the film world, the widespread use of digital media at the dubbing stage took an amazingly long time to happen, even though the magnetic-dubbing technology they could replace should have been put out to pasture years before. It wasn't until digital dubbers were designed to closely emulate magnetic ones—to become their "analogues," as it were—that they were able to gain acceptance.

For those of us who want to use all of our fingers and other appendages to work with sound, hardware is still rather necessary.

There's a similar situation in radio: Endless-loop cartridge machines, one of the worst-sounding and most finicky technologies I've ever had the displeasure of working with (I spent a year cleaning and aligning the suckers, so I know!), are still in use in many places—you can often hear the "ka-chunk" of the cart deck when the announcer forgets to mute his mic—despite the fact that digital audio systems and servers can do the job much better, not to mention that they don't need cleaning. Many digital systems, in fact, emulate the old cart machines and have front panel slots for removable disks, even though with today's high-capacity hard disks and high-speed interconnects, they are hardly necessary.

But the role of hardware is not nearly the same as it has been traditionally. Perhaps the major change that computers have wrought, in terms of how hardware is used in the audio world, can be described as a kind of paradigm shift: Form no longer needs to follow function. Thanks to the explosion of computing power in cheap, mass-produced chips and motherboards, and the almost total removal of analog electronics from the signal path, what a device *looks like* no longer needs to depend on what it *does*. Barriers between different functions—this box here is supposed to do one thing, while that box there does something else—are no longer necessary, or even desirable. Compressors and equalizers don't *have* to be in racks. Synthesizers don't *have* to have keyboards. Dubbers don't *have* to use tape. And guitars don't *have* to sound like themselves.

Instead, the physical form of a tool can be anything we want it to be. A tool's form may be defined as a result of its function—a hard disk recorder can still *look* like a tape deck—or it may be completely independent. Alesis' new airFX and airSynth look like trackballs from the helm of the Starship Enterprise, but you don't touch them—they change their synthesis and DSP parameters based on the relative x, y and z coordinates of your hand. It's a far cry from knobs and keys. Yamaha's WX wind controllers resemble mutant soprano saxophones, but not only can you make any kind of sound you like with them, you can also play them polyphonically—which heretofore only Roland Kirk could do (and he needed two instruments). With new touch-sensitive fabrics such as those developed by Tactex, which are able to generate data in three dimensions, any kind of surface can be turned into any kind of controller.

Familiar tools can also be "extended"—given new tasks to do that are similar to their traditional tasks, but with a wider sonic or functional palette. One of the most interesting new concepts I've heard about involves, believe it or not, turntables. It's a kind of double-reverse: The turntables aren't doing what turntables normally do (in the post-analog era, that is), i.e., play records in weird ways. Instead, they are acting as controllers for a digital system that, well, plays records in weird ways.

You might have read about it in last month's *Remix* magazine: A couple of clever DJs have figured out a way to have access to hundreds of records without having to carry around heavy crates of vinyl.

—*CONTINUED ON PAGE 243*

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IN YOUR EAR

PHOTOS THIS PAGE: STEVE JENNINGS

Monitor Engineers Offer Tips on Using In-Ear Systems

By Blair Jackson

It's way too early to proclaim stage wedges an endangered species, but there's no question that the use of in-ear monitoring (IEM) systems is rising rapidly, and that what once seemed like a luxury item for the top echelon of bands is increasingly being employed by performers up and down the economic ladder. There are more IEM systems at different pricepoints available today than ever before, and the technology in both the ear pieces and the transmitters continues to improve as the competition among manufacturers heats up.

The main reasons why musicians and singers turn to IEMs are fairly simple: The earpieces offer hearing protection because they block out stage sound to varying degrees (and, if desired and feasible, allow for the removal of amplifiers to an offstage location, further reducing stage volume); IEMs let the user hear his or her own part more distinctly, which is particularly important for singers to maintain pitch; they provide a largely consistent mix even if the performer moves around a lot onstage; and they streamline the overall production process by eliminating the need for wedges and sidefills, making for a more spacious stage and considerably easier storage, transport and setup.

That said, IEMs are not a panacea for everyone. Some musicians don't like the way they feel. Some don't like the way they can isolate performers from their audience. Some love the relatively open sound of wedges and have no desire to change. In some groups, one or two members have switched to IEMs while the others stayed on wedges. Some even use a combination—an earpiece in just one ear, plus wedges. There are no absolutes; it's a matter of preference, as in all things audio.

A year ago, in our January 2001 issue, *Mix* sound reinforcement editor (and professional live sound engineer) Mark Frink wrote an excellent primer on the strengths and weaknesses inherent in IEM technology and some practical tips for navigating through this still relatively new sonic world. His article, titled "All Quiet on the Wedgeless Stage," is easily accessible on our Website, mixonline.com, and I recommend it highly to anyone looking for basic, practical information about IEMs.

This year, for a change of pace, we spoke with four top monitor engineers about some of their experiences using IEMs.

BRENT DANNEN

A Dallas native who lived in Nashville for a decade and now resides in Southern California, Brent Dannen has worked monitors in many styles of music, including alternative rock with Dave Navarro, pop with Enrique Iglesias, country with Garth Brooks and Faith Hill, and jam-rock with Widespread Panic. We began our discussion talking about why Garth Brooks doesn't use IEMs.

"He just isn't an in-ear monitor guy; some people aren't. He's perfectly happy with his 63 wedges," Dannen laughs. "Garth is not about the perfect sound and the perfect mix. He's about the perfect show for the crowd. It's a big stage, and the crowds are so loud; I have yet to experience a louder crowd, and I doubt I ever will. So, those wedges had to be real loud. He said he didn't want to take any chance with that, isolating himself with in-ears.

"There's the right tool for the job," he continues. "Just like a mechanic doesn't use a flat-head screwdriver to screw in a Phillips head nut, in-ear monitors are the right tool for certain jobs, but they're not the right tool for everybody, and they weren't the right thing for Garth Brooks. It is a good tool to isolate from loud crowd situations, but that's not what he's looking for."

As we spoke, Dannen was driving to Los Angeles to be crew chief and mix monitors for an eight-act mini-festival at the Wiltern Theater featuring Sugar Ray, The Deftones, Third Eye Blind and others, and he knew going in that he would be mixing for both ears and wedges. "I'll have four in-ear monitor systems there and a dozen wedge mixes. Some bands are using both. Some bands are using just ears. Some are using all wedges. I own all sorts of different brands, though my personal favorites are Ultimate Ears. If someone comes in with Future Sonics, which are

probably the most popular, I want to be able to work with them, too. For me, there are three companies that are competing, and they're all pretty good: Future Sonics, Ultimate Ears and Sensaphonics."

In reality, of course, there are a number of other players in the field, including the British company Garwood, whose new System 24 was profiled in the December *Mix*, plus there's Sony, Shure, Sennheiser and more. And, as happened with modular digital multitracks, there are now some IEMs being made by one company and licensed to another. "Jerry Harvey [of Ultimate Ears] was on the design team for the Shure E5s," Dannen says. "I mix and match. A lot of times, it's not a question of what I desire; there are budget considerations."

Dannen says that he prefers Ultimate Ears because, "They seal better, and their frequency response is better than the other brands I've used." He notes that, "Future Sonics are dynamic speakers, and there are two problems with dynamic speakers for me, personally, as an engineer. Other people might think these are good things. One, you have to have a port to the outside world; you can't 100-percent isolate, so you get a certain amount of ambient noise. Two, no two dynamic speakers sound exactly the same. No two ears are exactly the same or have the same-sized cavity; the box enclosure is different sizes, so every one is going to sound a little different. When I show up with a set of ear molds in my ears and I stick a set in the artist's ears, I want my ears to sound exactly like the artist's so I'll know exactly what he's hearing. And I don't feel I get that exact replication with dynamic speakers. Ultimate Ears is an enclosed box; it doesn't need a port, and they all sound exactly the same; or if not exactly, so close I can't tell the difference."

That said, it should be noted that some of Ultimate Ears' latest models make concessions to the desires of many musicians to hear some stage sound. "They have these new Ambient molds where you can allow yourself to hear the outside world, and they also have a dual low-end driver and have extended high frequency," Dannen says.

"When I mixed Widespread Panic", he continues, "I was able to contour each system individually. On three of the guys, I put on Ambients and they have different ports, so you can have different levels of bleed.

With Widespread Panic, too, Dannen augmented his regular ear mix for the band "by putting up a few ambient microphones—Audio Technica 4041s—up onstage. I put one downstage left and right pointing toward the drum kit so it's kind of angling across the stage. I put one in front of the stage-right guitar player and one in front of the stage-left bass player, and I put one upstage on a real tall boom, kind of pointing down. Then I panned them around in their ears according to how they were sitting onstage, mixing the live feed from the stage with the direct signal. They liked that a lot; it sounded very natural to them."

Dannen echoes the sentiments of most monitor mixers when he says, "In mixing in-ear monitors, it's very, very important to keep stage volume as low as you can, because it is the number one offender. If you're not taking the amps offstage, you've got to pay a lot of attention to stage level.

> In mixing in-ear monitors, it's very, very important to keep stage volume as low as you can, because it is the number one offender.
>
> —*Brent Dannen*

"You also have to watch your microphones. I was having this phenomenon for a while and I couldn't understand it: We've got ear molds, we're able to get just as much volume with vocal mics as we want, without feedback. But some of the singers I was working with were still having some trouble being on pitch. So, I took some singing lessons—and I don't sing—because I wanted to understand this. And one thing I learned is that if you have a microphone turned up too loud, the singer can't push because it's too loud. They have to sing more quietly, and then there's not enough air passing through the vocal chords, which means they have to tighten their vocal chords more than they normally would if they were singing at a natural volume, to achieve the same note. And that makes it harder for them to achieve correct pitch. So, if your singer is having a hard time keeping pitch, check the volume. Experiment. If they're flat, try turning it down a little bit."

Some artists have taken to wearing just one earpiece and listening to wedges with the other ear. But Dannen doesn't approve of that approach: "I have a huge opinion on that. You can try this experiment: Take a set of headphones and pull your left ear off. All of a sudden, your right ear appears as if it's quieter, so you have to turn that ear up louder to achieve the same apparent volume. That's psychoacoustics, and now you're ruining your hearing."

DAVID "TREE" TORDOFF

One of the top monitor engineers in Great Britain, David "Tree" Tordoff has spent much of the past six years working with the great British band Radiohead. (See the Tour Profile in the October 2001 *Mix*.) He's also done monitors for UK acts such as Lloyd Cole, John Cale, Supergrass, Marillion and others. As of their most recent tour, Radiohead are using IEMs on singer/leader Thom Yorke and drummer Phil Selway, and wedges on the rest of the band, a combination that seems to be working well so far. In this case, both the wedges and the in-ears were supplied by Firehouse Productions: The IEMs are the highly regarded dual-driver Firehouse 6500s, used in conjunction with a Shure PSM700 beltpack.

"I went through a long process before arriving at the Firehouse in-ears," Tree explains. "We tried various models over the years, and Thom Yorke finally settled on certain characteristics he wanted. We felt that dual-driver ones all sound better than single-driver ones. He preferred silicon material to acrylic, because he wanted something slightly softer. And he wanted the shape to be the larger kind, so it held more solidly in his ear. He finds that as he performs, he gets hot and sweaty, and, if it's not the larger shape, it starts to unscrew out of his ear. Anyway, no one seemed to be making something with those three characteristics. I was moaning about this to Bryan at Firehouse, and he suggested we try his Firehouse ones. Technically, it's acrylic, rather than silicon, but it's a softer, smoother version, and Thom thought they were fine.

"I think one of the most important things about in-ear monitors is that they should fit properly and give you a measured isolation so you're actually listening to the in-ear monitor and a fixed mix of other sounds", he continues. "You can have ports and things like that, but it must be controlled. If it's a bad fit, the mix of in-ear sound and leaking sound is never the same from day to day, and you don't have a consistent environment, which

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makes it very difficult to mix for. With some of these systems, it's like listening with the door banging open and shut and the outside noise coming and going. So, the fit is really important, and the best way to get them to fit really well is to use the softer material and a larger mold. For someone like Celine Dion or Kylie Minogue, you might want the smallest, most discreet ones you can get, but if you're in a rock band, it probably doesn't matter as much. I know the first ones Thom ever ordered, he said, 'Oh, can I have them in green?' He doesn't care if people see them. But different people have different priorities.

"Ed O'Brien, who plays guitar and does backing vocals, had a phase of using in-ears when he was very worried about singing backup vocals. It's hard to sing backup vocals for someone like Thom Yorke, who's such a good singer and expects the very highest from everyone around him. I think Ed was lacking confidence, and the in-ears helped him a lot with his singing. Nevertheless, he eventually felt he couldn't hear his guitar amp properly and that's his primary role in the band, so once he'd spent a year using IEMs and increased his singing confidence, he got rid of them and went back to listening to his amp and singing with wedges again. With in-ears, you always win on the hearing of your own voice, but you always kind of lose in hearing the instruments, particularly if you're a guitarist; guitarists always feel like what they hear from the amp is the real sound of their guitar, not what's coming through the P.A. or the wedges. And in the case of in-ears, it's even further removed from the real sound of the amp. To me, it sounds fine, but to the guitarists, they hear more subtleties from the amplifiers."

Actually, Thom Yorke uses a combination of IEMs and wedges. "He uses the in-ears for his voice, but he has all the drums and certain other instruments in the wedges. There are certain things he doesn't want to hear right in his ears, like [keyboardist] Jonny Greenwood for example! It does eat up mixes, though: Yorke and O'Brien use four each [for stereo ears and wedges and reverb sends], and Phil Selway uses three [for stereo ears and stool shaker]."

On the issue of stereo vs. mono for IEMs, Tree comments, "Some people think that doing them in stereo is a waste of time, but I think it's quite useful to separate things left and right. Obviously, if the singer turns around, the left and right image doesn't change with him, and it can be a little disorienting. I don't think you want to necessarily pan things spatially to match things on the stage, but I'm a firm believer that if you put the guitar on one side and the keyboard on another, you can psychologically mix the two things yourself in your head if you hear them coming from a separate place, and that gives the singer more control. Others say if you do it in mono, you get a stronger radio signal, because the two channels back each other up and all that, but I haven't had any trouble with that. The stereo obviously gives you a little more space to work with, and that's important when you're talking about putting sound directly in a person's ear. It's more natural that way and, I suspect, easier to sing to."

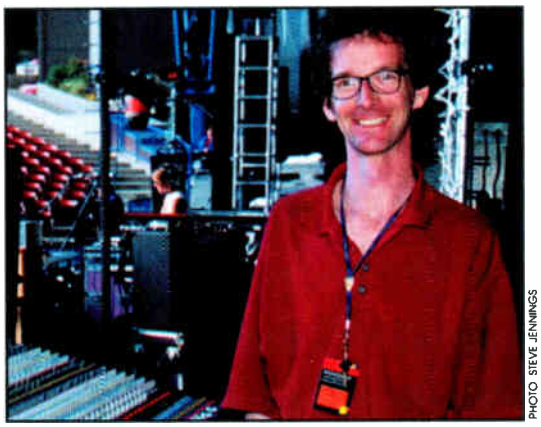

PHOTO: STEVE JENNINGS

David Tordoff

BLAKE SUIB

Blake Suib has been using IEMs since the late '80s, when he helped the Steve Miller Band become the first major group to eliminate stage amps and go entirely on ears. Most recently, he was the monitor supervisor and a mixer on Madonna's recent tour, worked with Axl Rose, and did a number of different segments of the Concert for New York City show, including songs by David Bowie, Mick Jagger, Eric Clapton/Buddy Guy, the Backstreet Boys and others.

When he and I spoke, he had just returned from Madonna's Drowned World Tour, which, as you might imagine, was quite an undertaking from every perspective. Originally, Madonna was wary of using IEMs, "But once we went into rehearsals and she saw that it could almost be like a recording studio situation, and that she could have anything she wanted with all the effects just like the record, she changed her opinion. So, when she saw the capability of these things, she invited most of the producers and engineers she's ever worked with to come down and critique my work. When they all went to her and said it was great, don't change a thing, she decided she wanted one of her producers—Pat McCarthy—to come on tour, so the end result was a combination of what I, the live engineer, would do, but also what her producer would do, because she was looking at it like a studio situation. So, Pat McCarthy and I did her ear mix, and we took my third man, Marty Strayer, and made him the band's monitor guy.

"The biggest mistake a lot of engineers make is to give the artist in-ear monitors before the mix is completely dialed," he continues. "And what I mean is, take an artist like Madonna or Axl—you want to make sure you have the band in a rehearsal or soundcheck situation for a while before the artist ever comes in, so when you go and hand them their in-ear monitors and beltpack, you've got your mix 100 percent dialed, so they either say, 'This is great,' or 'This sucks.' You don't want to get in a situation where the first day they have to say, 'Turn up, turn down, do this, do that.' It gets to the point where, after they've gotten used to the initial great sound that you can give them, then they can go song by song and say, 'On this one, I want a little more drums. On this one, I want a little less,' and so on and so forth."

Suib has long been an enthusiastic user of Future Sonics Ear Monitors, but he likes Ultimate Ears also. "What Marty has is a really flat, good-sounding in-ear monitor, and on top of it, his shell is very comfortable," he says. "It's a hard shell, and it doesn't have the suction cup effect in your ears that completely cuts you off from the real world. That's good and bad: It's good because the artist doesn't feel cut off, but with a really loud band you are going to get a fair amount of bleed coming through. The Ultimate Ear monitor seals you off a lot more, and you can change the sound of the ear piece a lot more, so it depends on the situation as to which in-ear monitor I have my artist use. It's pretty much the same way you pick a microphone: What's best for what you are trying to do?"

Suib says he's keen on the new Sennheiser beltpack transmitter system adding, "It just sounds better than anything out there. The other thing that's important is to be listening at the same level. For example, with Madonna, whenever she or the musicians changed their volume, they had to give me a signal to let me know they were turning up or down so I could

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turn up or down, because if they're listening at 6 and I'm listening at 4, everything translates differently, and they're going to wonder why they've got a different mix. She understood that, and she always made sure she was at the same volume I was at so we were hearing the same thing."

He also notes that the mix that any engineer creates for musicians using IEMs is also affected by the room and the P.A. "Probably the best-sounding arena in the country is Madison Square Garden, and it's for one reason only," he says. "The ceiling height is about half of most of the new arenas. There's that much less reverb time on your mix. It's very simple. A bad arena means you make a lot more changes. Any live mics on the stage need to be turned up and down a lot more in an ambient room than they do in a dead room, especially the vocal mics. The one thing you can use, EQ-wise, to control bad rooms is usually in the low midrange, from say 200 to 500 cycles; it's usually not high end or extreme low.

"A lot of times, you want to boost some high end on your band mix," he continues. "Then when you turn the vocal mic on, you get so much sizzle that you kind of have to go back and forth. So, we used a matrix out for Madonna's ear mix. That means there were four sends going to her ear mix. Two of them were a band mix, two of them were the vocal mix, and then I inserted an EQ on the band mix so I could then boost the high end I wanted to boost on the band mix without having it affect the vocal mics, which is where the bleed comes from. All of a sudden, I could now get a crisp, bright ear mix without hurting someone, and have the sizzle come through.

PHOTO: STEVE JENNINGS

Blake Suib

"You've got to keep an open mind, because it's like records: If people went in and only made records in one way, we'd never hear different kinds of music. I'm always learning, always experimenting."

KRIS UMEZAWA

Kris Umezawa got his first break in 1996 while he was a P.A./stage tech for Maryland Sound and was called upon to mix Patti Smith, who was opening for Neil Young. She called him back to go to Japan and Australia, and the following summer he worked on David Byrne's year-and-a-half Feelings Tour. Next came Everlast, then FOH for up-and-coming singer/songwriter Leona Naess, and then back to monitors with Widespread Panic. For much of 2001, he's been back out with David Byrne, who is supporting his *Look Into the Eyeball* album with a nine-piece group that includes six string players. (See *Mix* "All Access," September 2001.) Two recent tour breaks have allowed him to work with both Cyndi Lauper and the Beastie Boys.

The shows on this David Byrne tour were relatively modest productions—mostly 1,000- to 2,000-seat venues in the

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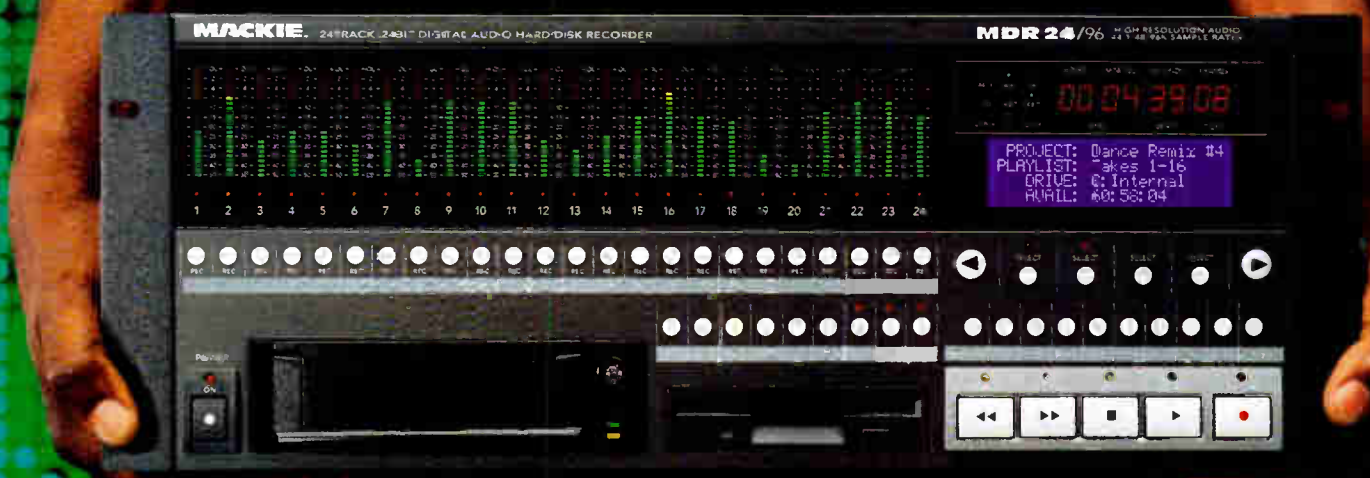

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U.S. and Europe—but notable in part for how good they sounded and smoothly they ran, despite inherent budget limitations. Byrne has used in-ears for some time, but he has eschewed the higher-priced models, preferring to use "molds with Sony buds in them," Umezawa says. "They're off-the-shelf Sony headphones that sit in your ears. We have each performer's ears molded, and then a piece is made from that mold that the bud sits in. On the Feelings Tour, we started out with Firehouse units and David also tried the Ultimate Ears at that time. He thought the custom pieces had better isolation but preferred the fidelity of the Sony buds. David's been comfortable with this for several tours now, and his attitude is, why spend $800 or more [for IEMs] when this sounds fine."

Getting the rest of the band on ears was a bit more of a challenge, however: "The interesting thing about this band is that it has a four-piece rhythm section: drums, percussion, bass and David playing guitar. And then there is a six-piece string section—three violins, a viola and two cellos—which, at first, we hired locally every day. The new strings would get the parts Fedex'd to them the day before, along with a CD, and then we'd show up and have to do a two-hour rehearsal/soundcheck. They were top-notch players, usually from the local philharmonic.

"Most of them had no previous in-ear monitor experience; in fact, they'd often show up wearing ear plugs," Umezawa adds with a laugh. "It was pretty difficult training them each day, but I'd let them know I was on their side trying to make a space for them to perform in. And I would tell them that IEMs were a better alternative than having a wedge screaming at them. They went through the typical learning curve [with IEMs]: 'Okay, turn me up, turn me up, turn me up!' And then, once they were secure with hearing themselves, I would start adding the rest of the band. The problem with that is that when someone is only listening to themselves, they have a tendency to float in their intonation, so I told them I'd always keep at least one other thing in [the ear mix] that they could lock into for tuning. Usually, I gave them bass guitar or keyboard, some rhythm instrument that's locked into solid tuning. So, I'd work with them on how to listen to each other and themselves as a section, as well as this instrument that I added for relative pitch. Usually the drums are bleeding,

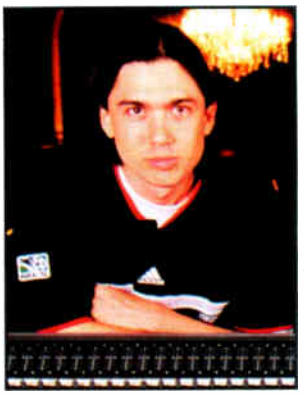

PHOTO: STEVE JENNINGS

Kris Umezawa

so there isn't a time issue. In fact, at the beginning, they'd always be saying, 'Turn the drums down!' and I'd be saying, 'There are no drums in your mix at all; it's all coming through your instrument mics.'

"The first half of the tour, we had a different string section each night, and I felt like making an instructional video so I didn't have to say the same things every single day. Then we went to Europe the second time, and we carried a Spanish section for a week, and a group from England about two-and-a-half weeks, and then an Italian section for the final week. This, aside from the language barrier,

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Dave Cline, Seventeen Grand

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made things easier since every day wasn't their first day. They soon understood, 'Okay, this room is a little different than last night,' and would start to figure out the limitations and the possibilities. When we came back to the U.S., we started carrying the same string section, a group from Austin called Tosca. From that point, everyone got up to speed and we had no real problems. As long as you're communicating with them and they've figured out how to communicate with you, you can always work it out. They're usually a little nervous about it the first couple of gigs, but that's like any other new situation."

Budget considerations also affected Umezawa's choice of monitoring console, but again, everything ran smoothly for him. He used a Mackie Digital 8-Bus, which he called "a good-sounding desk, with a lot of firepower for the money. You've got four bands of parametric EQ, compression and gating on every channel. It's a little limited in terms of inputs and outputs—you've only got 12 auxes—but you can have 48 analog inputs, and it's got a very, very small footprint, which was important for us on this tour. I mix on the Mackie similarly to the way I would mix if I had a [Heritage] 3000. I take a snapshot at the beginning and end of each night so that, when I turn it on, it's exactly where I left it. That way, I have my moves and I tweak as the show goes along, but I don't have a bunch of per-song snapshots that I use."

Though most monitor engineers who use IEMs like to wear the same pieces that the musicians wear, Umezawa prefers to mix on some favorite Sony 900 headphones. "It's been awhile since I've checked out the different systems," he says. "I'm thinking of listening to them all again sometime soon." But what of the notion that what he hears through the headphones won't match what the musicians are hearing? "Well, the isolation is not exact, and because I'm usually sitting behind a huge stack of subs, unless I walk up and stand directly behind or in front of the artist, it's not going to be exactly what they're hearing anyway. As long as I understand what I'm hearing relative to what they're hearing, then I'm comfortable with that. I know exactly what my headphones sound like and how I mix into them, so if I know what I'm giving them and they describe how it affects them, I can make the changes they need." ■

Blair Jackson is Mix's senior editor.

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TEC NOMINEE

Small But Mighty

A Report From the 111th AES Convention

By the *Mix* Staff

Ampex Aria ATR-108C

Earthworks Sigma 6 Point Two

There was no small amount of apprehension in the air when the rescheduled 111th Audio Engineering Society convention opened at New York City's Javits Center on November 30. With an understandable reticence to travel—especially from overseas visitors—and a number of key manufacturers (such as AMS Neve, Digidesign, EAW, Mackie, Meyer, Roland, Steinberg, Tannoy/TGI and Yamaha) canceling their exhibits, no one knew exactly what to expect.

The 111th AES could have been a failure, but it was an enormous success. True, many exhibitors brought smaller booths (maybe not such a bad idea after all), but the aisles were packed with showgoers, and the absence of some companies on the show floor created opportunities for their competition.

The overall vibe was upbeat, and many attendees likened this AES to the smaller shows in years past when the convention was held at the Hilton or Warwick hotels. Even the climate cooperated, with sunny skies and unseasonably warm weather adding to the smiles of the locals who welcomed the return of some normalcy (and visitor spending) to The Big Apple. Walking the AES show floor we found no shortage of cool new products. Here are just a few...

Unlike recent AES shows, where DAWs and MDMs took center stage, the hot news this time was analog recording. **ATR Service Company** (www.atrservice.com) was packed with attendees checking out its Aria Super Analog Electronics, an external package for high-performance analog tape transports. Designed by Crane Song's Dave Hill, the Aria 2-channel or 8-channel-plus-timecode record/playback electronics are compatible with most late-model transports from Studer, Ampex, Otari and MCI/Sony. ATR also showed the Ampex/Aria ATR-108C, a convertible multiformat machine that supports 16/8/2-track recording on ½, 1 or 2-inch tape, for tracking rhythm sections or as a monster stereo (or multichannel) mixdown machine.

Anyone on a budget looking for a *big* sound and warmth that only ¼-inch 2-track can deliver should look into the MX5050 BII Phat from **JRF Magnetic Sciences** (www.jrfmagnetics.com). After years of requests, JRF is now offering the custom transport, electronics and head modification package that allow the workhorse Otari MX5050 BII deck to run ½-inch tape.

Audicon Design Labs (www.audicon.com) and **Flux Magnetics** (www.fluxmagnetics.com) developed the Programmable Padnet for the Ampex ATR-100, intended to simplify the recording technician's job by automating the ATR-100's equalization alignment procedures. A plug-in replacement Padnet with three push-buttons and 18 LEDs allows for a complete set of alignments, or via a simple RS-232 connection to a PC running a Windows application, EQ settings can be saved/recalled, allowing the operator to store settings unique to a given tape or head stack.

SIGNAL PROCESSING—ANALOG RULES!

How high is high enough? **Sequerra Audio Labs'** (www.sequerra.com) Model 1070-A mic preamp has a bandwidth extending beyond 400 kHz! Housed in a 3.5x10-inch aluminum tube, the single-channel 1070-A can strap to a mic stand for short mic-to-pre cable runs, or mount in a rack with space for up to four preamps. The 1070-A module is $1,500; a power supply to drive four preamps is $1,000. **Focusrite's** (www.focusrite.com) ISA 220 Session Pack puts a mic preamp, direct box input, parametric and shelving EQ, compressor, limiter, de-esser and optional 24/96 digital conversion into a single $2,295 unit. **Pendulum Audio's** (www.pendulumaudio.com) Quartet offers a similar package

Sequerra Audio Labs 1070-A

with a tube mic pre/DI, optocompressor, and 3-band EQ and de-esser, but *sans* the digital out. GML's (www.georgemassenburg.com) single-channel Model 2020 is a combo preamp/EQ/dynamics box based on the 8300 preamp, 8200 parametric EQ and 8900 dynamics processor, providing flexible routing and sidechain insertion capability.

Chandler Limited's (www.chandlerlimited.com) line of single-rackspace re-creations of classic Neve circuits includes the LTD-1 (a 1073-type EQ/preamp) and the LTD-2—a 2254-style compressor. The versions are similar, but offer enhancements such as more HF/MF/LF points on the EQ and wider attack/release times on the compressor. Another take on the 1073 theme is the MP-2NV "Mercenary Edition" from Great River Electronics (www.greatriverelectronics.com), which is based on Dan Kennedy's take on the venerable Neve 1073, with some suggestions from Fletcher (of Mercenary Audio) thrown in. The 2-channel unit lists at $2,499. High-performance studio gear from Stella Custom Electronics (www.stellacustomelectronics.com) includes the C1 compressor, a $4,850 four-rackspace stereo compressor designed for mastering, the $1,750 RP-1 Reference Monitoring Preamplifier and the $1,000 HP-1 Reference Headphone Preamplfier. D.W. Fearn (www.dwfearn.com) unveiled the VT-5 ($6,600), a stereo version of its passive Tube LC Equalizer.

Big sound in little boxes? Everybody needs bass, and dbx (www.dbxpro.com) brings back the low end with its Model 120a Subharmonic Synthesizer. This upgrade of the classic 120XP creates a modeled bass note exactly one octave below the bass in the original signal. Summit (www.summitaudio.com) enters the half-rack market with the $495 TD-100 direct box, which combines a 12AX7A/ECC83 tube circuit with a discrete transistor output stage. Summit's TLA-50 Tube Leveling Amplifier ($695) has independent attack/release/gain/gain reduction controls, sidechain access, and is linkable for stereo operation. Also on the half-rack, the $299 PreSonus (www.presonus.com) DigiTube combines a single-channel tube preamp with 3-band sweep EQ and 44.1/48kHz coaxial S/PDIF 24-bit digital output.

Soundelux E47

SPEAKERS!

Earthworks (www.earthworksaudio.com) has entered the monitor market with a truly different approach to near-fields. Priced at $3,000 in matched pairs, the Sigma Six Point Two (Σ6.2) precision speakers emphasize accurate time-domain reproduction, fast impulse response and extended frequency response. The futuristic cabinet keeps the drivers in precise time alignment, while its stepped-port design optimizes LF reproduction and doubles as a handle. The Σ6.2's wide, flat bandwidth extends beyond 40 kHz—just the thing for 96kHz sessions.

Norway's Griffin Audio Design teamed up with noted New York acousticians Francis Manzella Design (www.fmdesign.com) to create the Griffin Mastering Loudspeaker, intended for uncolored, high-level precision reproduction, with max SPLs in the 116dB range. A stereo system with two 440-pound, three-way cabinets and a system controller is $25,490.

We peeked behind the curtain to preview what Genelec (www.genelec.com) has in store, and it's *big*. We can't divulge any details now, but there's gonna be a whole lotta shakin' goin' on at Genelec's booth at NAMM. Stay tuned...

Westlake Audio (www.westlakeaudio.com) followed up its 2001 TEC Award-winning Lc5.75 speakers with the Lc4.75, a mini-monitor with a 4-inch woofer and ¾-inch soft-dome tweeter in a compact cabinet. Retail is $899/pair.

Bag End's (www.bagend.com) INFRAsub-12 powered subwoofer system combines a 400-watt power amp with a 12-inch woofer in a compact, 1.5-cubic-foot sealed enclo-

HITS YOU MAY HAVE MISSED

Neutrik (www.neutrik.com) unveiled a new bend on its industry-standard Speakon connectors, with a plug that converts from straight to right angle—and vice versa—without the need to desolder or disassemble the connection. Awesome!

Priced at $300, Reel Drums (www.reeldrums.com) from Wave Distribution is a 15-CD collection of drum loops organized into multitrack Pro Tools sessions (more platforms on the way). The sessions, performed by Joe Franco and recorded by Kooster MacAllister, range from ballads and pop rock to "slamming double-bass grooves."

For still another approach to rhythm samples, check out The Groove Doctors (www.groove-doctors.com) tracks, which are pre-edited into single-measure "groove," and include both premixed drum fills/grooves and breakout tracks to mix on your own.

SYPHA's comprehensive workstation product reference source, *The DAW Buyers Guide*, is now available online at www.SYPHAonline.com, with more than 250 product listings, searchable by application, host platform, audio quality, cost and system name. Visitors can also access *The NLE Buyers Guide*, which covers computer-based nonlinear video editing products.

EarQ Technologies' EAR Q Reference Hearing Analyzer system allows self-testing of hearing from 60 to 20k Hz. The software will then suggest graphic EQ settings to compensate for your individual hearing response while monitoring. Get a demo at www.earq.net. ■

Small But Mighty

sure. Retailing at $1,670, the INFRAsub-12 also includes highpass filtering for the LCR front speakers and a built-in ELF™ dual integrator providing flat acoustical response way down to 8 Hz.

Miller & Kreisel Sound (www.mkprofessional.com) unveiled multichannel monitoring solutions. The MPS-2525P ($2,999) and 1625P ($2,499) are tri-amplified, self-powered tripole surround speakers with a remote switch for changing from tripole mode to the sound of a dipole or direct-radiating speaker. The LFE-5 Bass Management Controller ($1,000) offers a 6-channel volume control, global/individual channel mute switches, +10/0dB LFE input gain switch for Dolby Digital or DTS monitoring/mixing, stereo/mono surround switching and 80Hz highpass filtering for incorporating a sub into any system.

Coleman Audio (www.colemanaudio.com) has all kinds of useful Swiss army-type products for monitoring. The M3PH DAW Control Monitor ($699) has switching for four stereo sources, L/R muting, a mono switch, a passive level control, onboard headphone amp, and buttons for selecting from three pairs of alternate speakers. The SR5.1 Surround Level Control ($799) has six XLR I/Os with a passive, stepped attenuator volume control and individual mutes for the 5.1 channels.

MICS...AND PLENTY OF 'EM!

You can never have enough microphones. At AES, **Royer** (www.royerlabs.com) introduced Active Ribbon Mics, the world's first active, phantom-powered ribbon models. Based on Royer's current R-121 and SF Series ribbon mics, these models feature all-discrete, low-noise FET head amps, making them as sensitive as condenser mics, eliminating the need for ultra-high-gain preamps. **Shure's** (www.shure.com) $575 KSM27 is a cardioid condenser with low self-noise, Class-A, transformerless preamp circuitry and an ultra-thin, 1-inch diaphragm for extended 20-20k Hz frequency response. **AKG** (www.akg.com) debuted the C 451B, a small-diaphragm condenser based on the transducer from its original C 451 EB + CK 1, but in a cardioid-only (non-interchangeable capsule) version with switchable 10/20dB pads, two-step highpass filtering, and new transformerless, low-noise electronics. Retail: $549.

Now independent of Alesis, **Groove Tubes** (www.groovetubes.com) showed a full line of new mics, featuring the GT66, a 1.10-inch diaphragm, cardioid model with 6205 Triode tube electronics and 20kHz bandwidth. Retail is $1,099, with shockmount and power supply. The GT55 puts the same large capsule in a Class-A FET version that's $599. GT also debuted some cool mid-sized (¾-inch diaphragm) mics with cardioid capules (interchangeable omni or hypercardioid elements are optional), in a choice of Class-A FET (GT33, $599) or tube (GT44, $999) flavors.

Chandler Limited LTD-1

Transamerica Audio Group (www.transaudiogroup.com)—which distributes AEA, Soundfield, Brauner and Soundelux—seemed like microphone central. **Soundelux** unveiled the E47, a large-diaphragm, multipattern tube mic that's modeled to sound like the classic Neumann U47 (retailing at half of the average price of a "vintage" U47). Given Soundelux's success with its Telefunken ELAM 251-inspired ELUX 251, the new E47 will be a hot ticket. **Audio Engineering Associates'** R-440 Stage Prop Mic ($495) is a full-size RCA 44-style mic shell with internal shockmount for inserting a compact side-address mic—it seems live prop use with your own mic can be practical. **Brauner's** Valvet Voice® limited-edition tube mic builds on the popularity of Dirk Brauner's Valvet and VM1, in a cardioid model with Class-A electronics, custom Lundahl transformers and JAN tubes.

Groove Tubes GT66

Studio Projects' (www.pmiaudio.com) B Series of 1-inch diaphragm condenser mics resemble its popular C Series, but at a lower price. The $99 B1 is a solid-state, single-pattern design. The TB1 is a tube version of the B1 at $399 with PS and aluminum carry case. The $199 B3 is a solid-state model with switchable cardioid, omni, figure-8 polar patterns. Designed with a rising 4k to 12k response for diffuse-field orchestra/ambience/choir miking, the omni M960 from **Microtech Gefell** (www.gprime.com) puts a large condenser capsule into an unobtrusive, small body. Retail: $795. Just over an inch in diameter, the CUB-01 Universal Condenser Boundary Microphone from **Sanken** (www.aidinc.com) is ideal for concealed miking in broadcast, film, theater, TV and sports, emphasizing dialog while minimizing background noise. After

—CONTINUED ON PAGE 216

TOP 10 LIVE SOUND PICKS

By Mark Frink

Wireworks' (www.wireworks.com) K2500 Portable Handheld Printer ($299 list) can print on yellow or white heat-shrink in five diameters. It can also print on white self-laminating cable markers, as well as adhesive labels in four widths and up to 20 color combinations. It prints up to six lines of text from six to 72 points, can download characters from an Excel spreadsheet and has 10 resident bar-code fonts.

Crest's (www.crestaudio.com) new XR-M rackmount mixer ($2,600 list) becomes the new standard for IEMs-in-a-rack. It provides 12 mono or six stereo mixes from 12 mono and four stereo inputs, with a built-in splitter and ground-lift switches. Each aux bus pair has a Global switch for level and pan for stereo mixing. Each channel has 4-band EQ with swept mids and highpass filter.

Drawmer's (www.drawmer.com) new DS-501 PowerGate ($900) adds "Peak-Punch" to the classic DS-201.

Midas' (www.midasconsoles.com) new Legend 3000 provides two independent mixers in one for separate FOH and monitor control throughout: two faders per channel and six EQ filters, 12 auxes and 10 VCAs that can be assigned to either fader. With eight subgroups, six matrixes and four stereo effects returns, it comes with 24, 32, 40 or 48 channels

—CONTINUED ON PAGE 200

2001 TEC AWARDS WINNERS

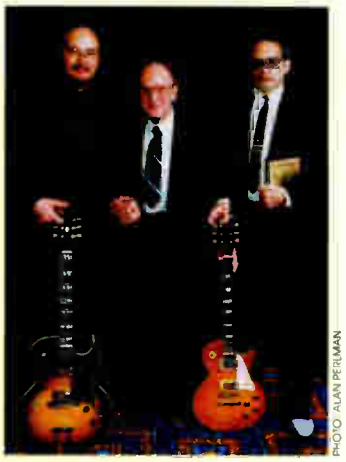
PHOTO: ALAN PERLMAN

Walter, Les and Donald

More than 600 audio industry professionals gathered at the Marriott Marquis on Saturday, December 1, to honor the nominees and winners at the 17th Annual Technical Excellence & Creativity Awards. Highlights of the show included the awarding of custom Gibson guitars to Walter Becker and Donald Fagen, recipients of the Les Paul Award, and a touching tribute to legendary engineer Roy Halee, the newest inductee into the TEC Hall of Fame, presented by Phil Ramone and accepted by Halee's three children. For a complete photo wrap-up, see next month's *Mix*.

OUTSTANDING CREATIVE ACHIEVEMENT

RECORD PRODUCTION/ SINGLE

"Music" *Music*, Madonna
Recording Engineer/Mixing Engineer: Mark "Spike" Stent
Producers: Madonna, Mirwais Ahmadzai
Recording Studios: Sarm Studios, London; Mix Suite at Olympic Studios, London
Mastering Engineer: Tim Young
Mastering Facility: Metropolis Studios, London

RECORD PRODUCTION/ ALBUM

Riding With the King, B.B. King & Eric Clapton
Recording Engineer: Alan Douglas
Mixing Engineer: Alan Douglas, Mick Guzauski
Producers: Eric Clapton, Simon Climie
Recording Studio: Record One, Los Angeles
Mastering Engineer: Bob Ludwig
Mastering Facility: Gateway Mastering, Portland, Maine

TOUR PRODUCTION

Steely Dan
Tour Company: Clair Bros.
FOH Engineer: David Morgan
Monitor Engineer: Don Garber

REMOTE PRODUCTION/ RECORDING OR BROADCAST

"Hotter Than That" with the Lincoln Center Jazz Orchestra
Remote Facility: Record Plant Remote
Remote Engineer: Edward Haber
Production Mixer: Irene Trudel
Music Mixer: Sandy Palmer-Grassi

FILM SOUND PRODUCTION

Gladiator
Supervising Sound Editor: Per Hallberg
Re-recording Mixers: Bob Beemer, Scott Milan
Production Sound Mixer: Ken Weston
Score Mixer: Alan Meyerson
Facility: Livewire Studios

TELEVISION SOUND PRODUCTION

"Jazz: A Film By Ken Burns"
Supervising Sound Editor: Ira Stiegel
Re-recording Mixers: Lee Dichter, Dominick Travella
Audio Post Facility: Sound One, New York City

OUTSTANDING TECHNICAL ACHIEVEMENT

ANCILLARY EQUIPMENT

Furman HDS-16/HRM-16 Headphone Cue System

DIGITAL CONVERTERS

Apogee Electronics Trak2

AMPLIFIER TECHNOLOGY

Crown CE 4000

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BY ROBERT HANSON

Trent Reznor

This Old Twittering Machine

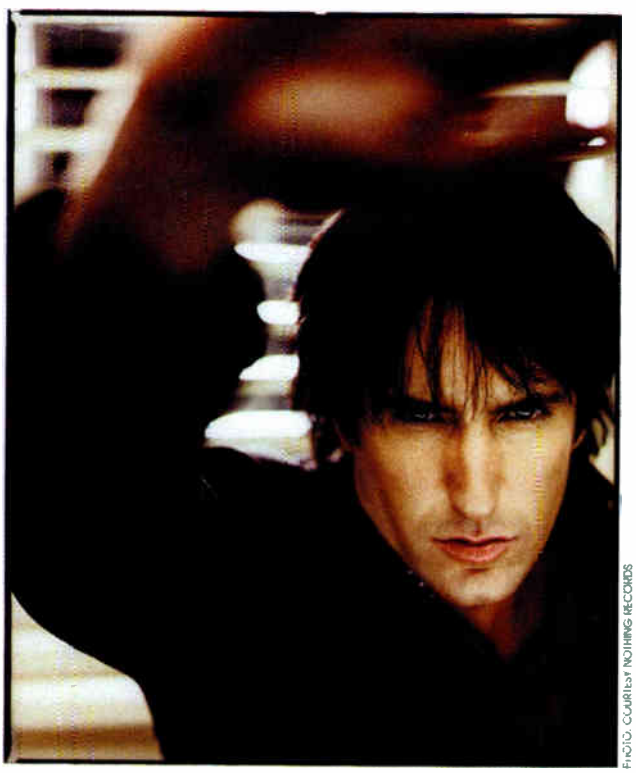

PHOTO COURTESY NOTHING RECORDS

It's truly a rare thing in these times to watch a musician mature. The velocity at which most pop acts are cultivated, marketed and forgotten seems to work off an exponential graph that would appear almost vertical to all but those who created it. Trent Reznor, whose career barely touches the 15-year mark, has managed to make the quantum leap from *Rolling Stone*-cover-hype to seasoned professional. He's maintained a youthful authenticity in the eyes of his devoted fan base, while also exhibiting the kind of cautious and calculating resolve that so many of his now-forgotten contemporaries lacked.

It's difficult to know what to expect when meeting Reznor for the first time. It's easy to conjure up images of a mad man, smashing keyboards with his mic stand and sending his bandmates to the ER. It's true that some of his on-tour indiscretions have ascended to the upper-echelons of rock's sleaziest moments. But upon entering the Manhattan hotel room of Mr. Self-Destruct himself, I certainly wasn't confronted with the expected array of cocaine, tequila and strippers with cell phones. In fact, his modest Midtown suite was barren and unscathed, with the exception of a glowing laptop and the reassuring glow of his omnipresent publicist, Susan.

As I sat down, Reznor strolled in, unshaved and a bit weary from a long day of press, yet his responses seemed extremely candid, his infamously dark wit was in top form and he seemed to be in good spirits. The last, of course, was the most surprising: Inside of the past three years, he's written and co-produced *The Fragile* (easily among the most eagerly anticipated rock albums of the past decade), embarked on an extensive world tour, and managed to survive in a musical climate that is, to say the least, artistically stifling.

Now, Reznor is focusing his efforts on the people who really matter to him—his fans and himself. For his fans, this month, he's delivering a long-awaited live DVD/CD that he hopes will put the bootleggers out of business and set a new high-water mark for production values and ambition. For himself, he's refined his skills as an engineer, embracing the new frontier of surround sound. The man who helped make samplers and sound cards seem cool to the youth of the world isn't content to allow mediocrity to reign supreme.

All right, so take us though the past few months. I assume you nixed the lengthy vacation in the French Riviera and got back to the studio?

We didn't take much of a break. Toward the beginning of the tour, once it started getting up to speed, we had the idea that it would be cool to do a live DVD, and probably a live album. So that started the procedure of thinking, "Well, what would be the primary focus of it?" And I thought that I was very pleased with the way the live show had gone and proud to present it every night. I thought it would be nice to have some kind of document on that. Not what goes on backstage, and not the crowd talking; not the typical live thing. Just about the show itself.

I had used a film company to do the Spiral tour one time, and they did just a shitty job. They did a *good* job, just not the right job. [There were] crane camera shots, and everything was lit up too much, and we looked terrible. We looked like a different band. I

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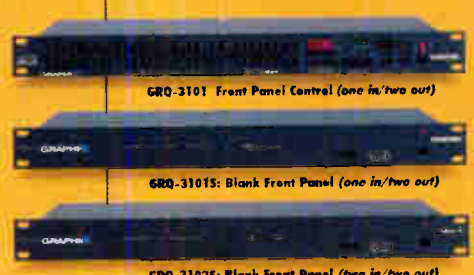
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was ready to quit music when I saw the footage.

So on this tour, I had this attitude of why can't we just do it ourselves? Final Cut Pro had just come out on Macintosh. So I thought, let's film it and then see what we can do. It wasn't much of an expenditure—just a few digital video cameras and tape. And then we went out and did a mobile/location recording on, I think, five nights.

And how were you doing that? Did you bring your own rig?

We used Effanel, and it all went to digital multitrack.

So they just laid down dry tracks, preboard?

Yeah, and I set up different sets of stereo crowd mics. Every time I've done a live recording, the live mics, the room mics, are shitty. Somebody didn't think, and then you're spending your whole time trying to simulate it with reverb and stuff. So I said just get at least three stereo pairs of different mics throughout the space—close, medium and far—which still sounded shitty for the most part, but some of them were better in the different rooms we were in.

So we end the tour. We get all this footage, approximately eight cameras per show, so figure about 20 songs, eight cameras, 25 shows...lots of tape. And with a little bit more research on the video side of things, we found out that we could do it all on a G4 with a bunch of FireWire drives hooked up to it. And there were two guys that were involved in it: myself and Rob Sheridan, who is our Web designer, a 21-year-old kid, who wants to work on stuff and is excited about it.

And you guys just sat down in the studio and got to it?

We just dumped the stuff in and started trying with one song to see if it will even work. Can we get 30 tracks of video playing at once off the FireWire drives? At that point, no one could answer that question. Yes is the answer. Surprisingly. So for a pretty modest sum of money, we had a gigantic amount of footage digitized and ready to roll online.

From there, it was trial and error, figuring out the best way to do video. We decided that we would obviously cut the video to an audio track. So we picked the best take per song from the nights we had recorded and started work in tandem. And we went in with the band and fixed some things, but kept most of it. Having a great drummer is a lot easier than having a shitty one, I discovered. I

PHOTO STEVE JENNINGS

The most recent incarnation of NIN consisted of Jerome Dillon (drums), Charlie Clouser (keyboards), Danny Lohner (guitar/bass/keyboards), Robin Finck (guitar) and Reznor (vocals/guitar/keyboards).

didn't have to change anything on that. And I tried to go at it with the attitude of not turning it into a studio album that just has crowd tracks that don't line up with the new audio.

We also decided that we were going to mix in 5.1. And after a lot of fact-finding, [we asked ourselves] do we want to take the tracks to a studio that was set up to do that, or do we want to attempt to incorporate that into our studio? It seemed that the amount of money it would take to do that in our own studio would be worth it, versus going somewhere that was already set up to do it. And we had [engineer] Ed Cherney—he's a friend of ours—come up. Because he's mixed some DVD live stuff, we had him run us through, for example, what the f— do you put in the center channel? It seemed to be that no one had a clear answer on what is in the subwoofer. I mean, do you mix for that? Does it roll it off itself and put it down there? You know, those kind of things. What not to do.

> The problem in the studio that I have right now is I have too much stuff. Anything that I need is there, and sometimes I don't need those things.

So after talking to people who had some experience mixing in surround, what was your approach?

Well, it's a live concert. Do we want to put the guitars over your head or do we want to not take away from the impact of watching the live show? One of my complaints in listening to [other people's] surround mixes is that the impact of the loud stereo mix was gone, and I don't know why that was. I don't know if it is the sonic inadequacies of Dolby Digital 5.1 versus DTS. I don't know if people don't know what to put in the middle speaker. I don't know if it is everyone is so concerned about putting it around you that it loses its direction and impact.

So our number one rule was we wanted this to seem like you're watching a live concert, so you're going to hear space around you. And, most importantly, it kicks you in the ass. It's gonna punch you in the face. There's a good punch to it. It doesn't lose its focus because we're obsessed with using that center speaker or whatever it is. So that kind of approach and that rule was set in stone, which I agree is not the most radical or experimental thing. For this, we thought what makes the most sense was to be punchy and direct, like you're watching the band and you're immersed, rather than allowing the rear speakers to be distracting and irritating.

Now you've done this big revamp on the studio. What does that entail?

Well, we made it surroundable. I justified

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PHOTO: STEVE JENNINGS

NIN circa 1990, touring in support of Pretty Hate Machine *(l-r): James Woolley (keyboards), Reznor, Chris Vrenna (drums) and Richard Patrick (guitar)*

buying a new Lexicon 960 because, you know, it's fun to do. [Joking] "You gotta have surround reverb if we're gonna do this." And in the budget, I guess we can just slide the other $15 grand in there somewhere. It's interesting; I've seen some DVD-Audio things come out. Missy Elliot has one that is actually kind of interesting. It's made me also aware of how limiting and outdated DVD is already. And it's frustrating.

How so?

You know, sometimes when you're listening to this DAT machine versus that machine, back and forth, and this A-to-D converter versus that one, and you're going back and forth, and in abstract terms, one is more present and clear...When we would switch between DTS and 5.1, it was like, "Did we do something wrong?" It literally was an amazing, obvious difference. Not subtle—a pretty big difference. So, we decided we wanted to put DTS and Dolby options on there. And I think when you see a movie [on DVD], you get French, English, German, blah, blah, blah, 5.1, 4.1, who knows what. But I wasn't aware of all the limitations. As we started to get the DVD authored, to have video and both multitrack audio formats, your video gets all f— up because they have to reduce. I wasn't aware that there is only so much information that can come off of the disc at once.

Then I found out about video compression. I thought it was like audio compression, where it just throws away what it doesn't need or what it thinks you don't need. But as I understand it, with video compression, let's say there's this shot of

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us talking in this room for five minutes, the background can get compressed because it's not changing. So it's looking forward and backward in time, as opposed to audio. Now, imagine a shot where [there's] a strobe light and the camera is panning constantly; it can't compress it because it doesn't have the luxury of a static background. So the guy was saying this is your worst kind of information for video compression, our whole live show because there's no constants there. So I can't compress the video down without it looking like a Quicktime [file]. So we had to make the decision to put just Dolby on one version of the DVD and just DTS on another version. Now, the consumer has to be smart enough to know [to ask], "What do I have?"

And I'm thinking if I'm already hitting a wall right now, shouldn't someone maybe have thought that there should be more information coming through the pipes, or made the format better?

Away from the DVD, what else are you working on?

The last few months, I've been working on a lot of new material for Nine Inch Nails. I was gonna go in and do an album real fast, and did a bunch of music. And then I started wondering if it was the right direction to go 'cause I wanted to make sure that I was in the right frame of mind, and it wasn't just a reaction to other external things. So I kicked in to finishing this, what I'm working on now. Currently, the most interesting portion of it is the CD format—instead of it just being the audio from the DVD, there's a companion disc that comes out with it—instrumental stuff and weird leftover, broken-down versions of some of my favorite songs that didn't make it on the live album. And that's got like five new tracks on it; it's been interesting to work on. It's the soundtrack for a rainy Sunday afternoon, which is a nice counterpoint.

> Record labels have turned into three big companies, and their pipeline for putting stuff out is only so big. And there are 75 Britney Spears going right through it like diarrhea.

What's the sort of thumbnail you have for the next version of Nine Inch Nails at the moment?

At the moment, and I'm sure this will change, it's a fraction of the amount of tracks of information, and it's more kind of low-fi, kind of dark and brutal. A lot of musical tracks I've worked on have been kind of old Public Image Ltd.—kind of brutal, tribal beats, just minimal stuff going on. And lots of my new, expensive reverb. [Laughs.] 'Cause I've got one, and I'm gonna use it on every goddamn track.

In the past few years, there has been this well-documented explosion in home studio technology and kids buying stuff. Do you feel any responsibility for that? I mean, perhaps the popularity you've enjoyed has helped to change a generation of musicians.

Legendary producer and 9-time Grammy winner Phil Ramone is one of the most respected and recognized names in the music industry. From a beginning engineering records for jazz greats John Coltrane and Stan Getz, Phil went on to amass a star-studded portfolio that includes projects as diverse as Tony Bennett, Elton John, George Michael, Luciano Pavarotti, Paul Simon, and Barbra Streisand.

Elliot Scheiner, studio engineer extraordinaire, is no stranger to success either, having worked with some of the most-listened-to artists ever recorded: Phil Collins, The Eagles, Fleetwood Mac, John Fogerty, Steely Dan and Sting, just to name a few.

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I'd love to think I had a hand in it, and I think that since the gear is so affordable now and available to anyone for the most part, I think that that's a great, great thing. And anyone that fears that are usually bloated studio owners or people that didn't want that technology to get down to that level. The same thing is happening now in the video movie-making world, with iMovie and everything else. And now anybody with an iMac can dump their camera in and make something interesting. It puts creativity down to, you know, street level, which doesn't mean that all good stuff is going to come out of it. But it is interesting to know that the tools are now available.

On the flip-side, do you feel any sort of new sense of competition? You know, "I better stay as current as possible, because there's this whole group of kids behind me."

No, I'm not worried about that because...we were sitting around the other day talking about this. I've got an old PPG Wave just because when I was growing up, that was the $30,000 super Fairlight: "Oh my god, if I only had one of those, I could..." And when I saw it—green, giant display—I thought, "Yeah, I've gotta have that!" And then I was just looking at the VST plug-in, and it's better. Now the sound is better, it's reliable and it works, unlike the one I had. And it was like, "Kids these days. If they knew what we had to go through to get..." You know, with Acid and things, everything's in time and elaborate. Like, I was just blown away with Absynthe. It was just amazing. And it's intuitive, and I wish I had that 10 years ago. But it's all jokingly looked at because I've always felt like I've had enough confidence in myself, and I'm just utilizing the tools I have around me to come up with good ideas. I've had people ask, "Aren't you worried about your sounds?" I said, "Take my sounds, because I've used them." If my success was based on the drum sound on "March of the Pigs," then it's time to hang it up.

Do you ever think, "I'm gonna run in a room with a keyboard and a mic and a 4-track, and screw it all?"

I have had that thought, and I usually get that thought when it is time to really begin a new phase of writing. I feel that a lot of times, I know what tricks work, and I know my way of doing things, and sometimes I'll feel, aren't you just doing the same thing 'cause you know how to do it? And I know it'll get this result. Or, what if I just went in with a guitar and no computer? That usually lasts about 10 minutes until, [singing] "I bought my love a ..." [Laughs.] And that can be my own weakness, but it's also...the computer to me is just like a pencil and paper. It's a tool that I've used. I think sometimes of changing sequencers or limiting myself to different things. The problem in the studio that I have right now is I have too much stuff. Anything that I need is there, and sometimes I don't need those things.

PHOTO: STEVE JENNINGS

With regard to the industry and the biz, how have you seen your position evolve over the past 10 to 15 years? Is it ideally what you want? What don't you like about it?

I can't complain. I feel very fortunate to have wound up where I am right now. And it's been a learning process through the whole thing. I thought I kind of knew what I wanted to do when we started out, and then the door started opening and you're constantly faced with decisions to make that, a lot of times, are tainted by external things that aren't the best things for you, like money and fame, and you get a taste of it and it was nice. I can bitch about being on the other side of that velvet rope, but the time you got let in, you know, "It's not so bad in here." So if I do more stuff like this, I can be on this side all the time and I can now have things. I can live in big houses and have cars, and people like me because I have money, I think. Just crazy shit just starts to get in there. And I think I made the right decision. I've had to check myself a few times, but tried to stay on the path and really remember why I'm doing this, which is not to make money. But, because music is what I do, what I love, it's my passion, my art and I'm thankful that I can make money doing it.

But I think in the recent few years, seeing my dream or my interest move...I'd prefer to be Brian Eno instead of Iggy Pop. And I found my tastes changing in terms of just what I need to make me feel better as a person and when I can focus creativity and what parts of this I don't like. I hate the nature of the business right now. I think that it's a very stifling, uncreative, non-artistic, non-musical climate right now. Where the lines between art and commerce dissolved into, "I'm just giving product to a label that will make all the money and discard me when I'm not viable anymore. That's it!" Yeah, I know I'm selling a record to people, but it's not laundry detergent. This is art, this is something that is precious and it should be respected as such. "Um, no, I don't want a commercial on this terrible TV show when you get a free sticker if you buy your record after 2 p.m." F— that.

But now, record labels have turned into three big companies, and their pipeline for putting stuff out is only so big. And there are 75 Britney Spears going right through it like diarrhea, and then there is the square peg in the round hole that's fighting every inch of the way about things that don't matter like your artwork or....

Do you think that a generation of kids is being robbed?

I think that most people will like what they're told to like to a degree, but unfortunately, now it seems like there is less stuff that has integrity, or the art side of things is being underplayed. I don't think record labels, for the most part, care about music. They just want to make money, period. I know that's the job. I know that's the end result everyone's hoping for. But it seems like there are fewer Chris Blackwells and there are fewer Danda Millers, there are fewer Seymour Steins, and there

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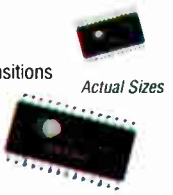

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are fewer people that love music in top power positions. There are more corporate yes-men and guys whose job it is to meet that bottom line. And it's made for a very stifling climate.

For bands like you guys or, for instance, Tool or Radiohead, has playing live become the only viable way to promote your work?

Well, MTV's not an option for the most part. Radio...I don't know what they play 'cause I don't listen to it. When I did turn it on, I heard a Fred Durst-related project the last several times I've been in someone's car, so that's not an option. [And that leaves] playing live or just hiding in the studio. I mean, playing live is always going to be there, 'cause it's an important thing. And the funny thing I realized, which I didn't realize how obvious it was, is a tour is just to sell a record until it breaks even. That's a successful tour. Maybe it's time to shift that around. It's a weird business; it can beat you down, it has beaten me down in the past. But it is always a matter of re-focusing yourself as an artist and remembering why you're doing this.

Okay, last question, If you could create an ideal situation for yourself, what would it entail?

If I could change the world right now, applying it to the fairly unimportant world of the music industry, what with everything that's gone down recently, I would hope that in the near future, there would be an awareness that people are sick of junk food, and that they would like something that they can think about. And it may be that there would be some crumbling of these giant megalotropic giant corporations, including venues, radio stations, record labels. And possibly that artists can be recognized for what they are. And as much as I have my problems with Courtney Love, I applaud her attacking the contractual side of the indentured servitude of these musicians. It's not just rock stars bitching about not making more money. I would hope that there would be a new sprouting up of new record labels, possibly Internet-based distribution or some climate where musicians would be encouraged to be creative, not punished for it. I would love to be involved in that. ■

Robert Hanson, Mix's assistant editor, saw Nine Inch Nails for the first time on September 30, 1994. He purchased Master Trax Pro for his Macintosh LE a month later, and things haven't been the same since.

POWER To Go

XLR inputs, and input attenuators on the front panel detented in 1dB increments. Additional features include mono, stereo and dual-stereo mode switches, and power/signal/clip/limit/protect LEDs. The GT2500 delivers 600 watts at 4 ohms; the GT3800 900 watts at 4 ohms; and the GT5600 produces 1,400 watts at 4 ohms. Frequency response is 20 to 20k Hz (+0, -0.5 dB) for all models.

New from Carvin are the DCM4000 ($2,395 list), the DCM2000 ($1,195) and the DCM1500 ($995). The DCM4000, Carvin's most powerful amp ever, provides 4,000 continuous RMS-rated watts from a three-rackspace enclosure. Outputting 1,400 watts at 8 ohms, the 4-channel DCM4000 incorporates four independent 1,000-watt amps that can also be configured as two 2,000W amps. Powered by redundant toroid power supplies, the DCM4000 also features switchable limiters, bridge modes, subsonic filters, parallel input sources and ground lifts. Carvin's DCM1500 and DCM2000 are housed in identical chassis, and, like the DCM4000, are designed for continuous, rather than pulse, full-power performance, for indefinite times without shutdown. Both amps feature 20 to 20k Hz (±1.5 dB) frequency response and a signal-to-noise ratio above 100 dB.

Crest Audio's LT Series uses a combination of a linear power supply and a Class-D output to deliver Crest power in a compact and cost-effective package. Features include low current draw, variable-speed fan cooling, rear panel circuit break-

MANUFACTURERS OF AMPLIFIERS FOR LIVE SOUND

The following is a listing of companies that make power amplifiers for live sound applications. Power amps have long lifespans and tend to stay in production for years, and there are many older models not included in this article (yet still in production) that are also excellent choices for live applications.

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BGW Systems	310/973-8090	www.bgw.com
C Audio	615/360-0277	www.c-audio.com
Carver	503/978-3344	www.carverpro.com
Carvin	858/487-1600	www.carvin.com
Chevin	860/434-9190	www.chevin-research.com
Crest Audio	201/909-8700	www.crestaudio.com
Crown	219/294-8200	www.crownintl.com
DAS	860/434-9190	www.dasaudio.com
Electro-Voice	952/887-7458	www.electro-voice.com
FBT	860/829-1026	www.fbt.it
Gemini Sound	732/969-9000	www.geminidj.com
Hafler	480/517-3078	www.hafler.com
Inter-M	82-2-2289-8140 (Korea)	www.inter-m.com
JBL Pro	818/894-8850	www.jblpro.com
Mackie Designs	425/487-4333	www.mackie.com
Martin Audio	519/747-5853	www.martin-audio.com
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QSC	714/754-6175	www.qscaudio.com
Samson	516/364-2244	www.samsontech.com
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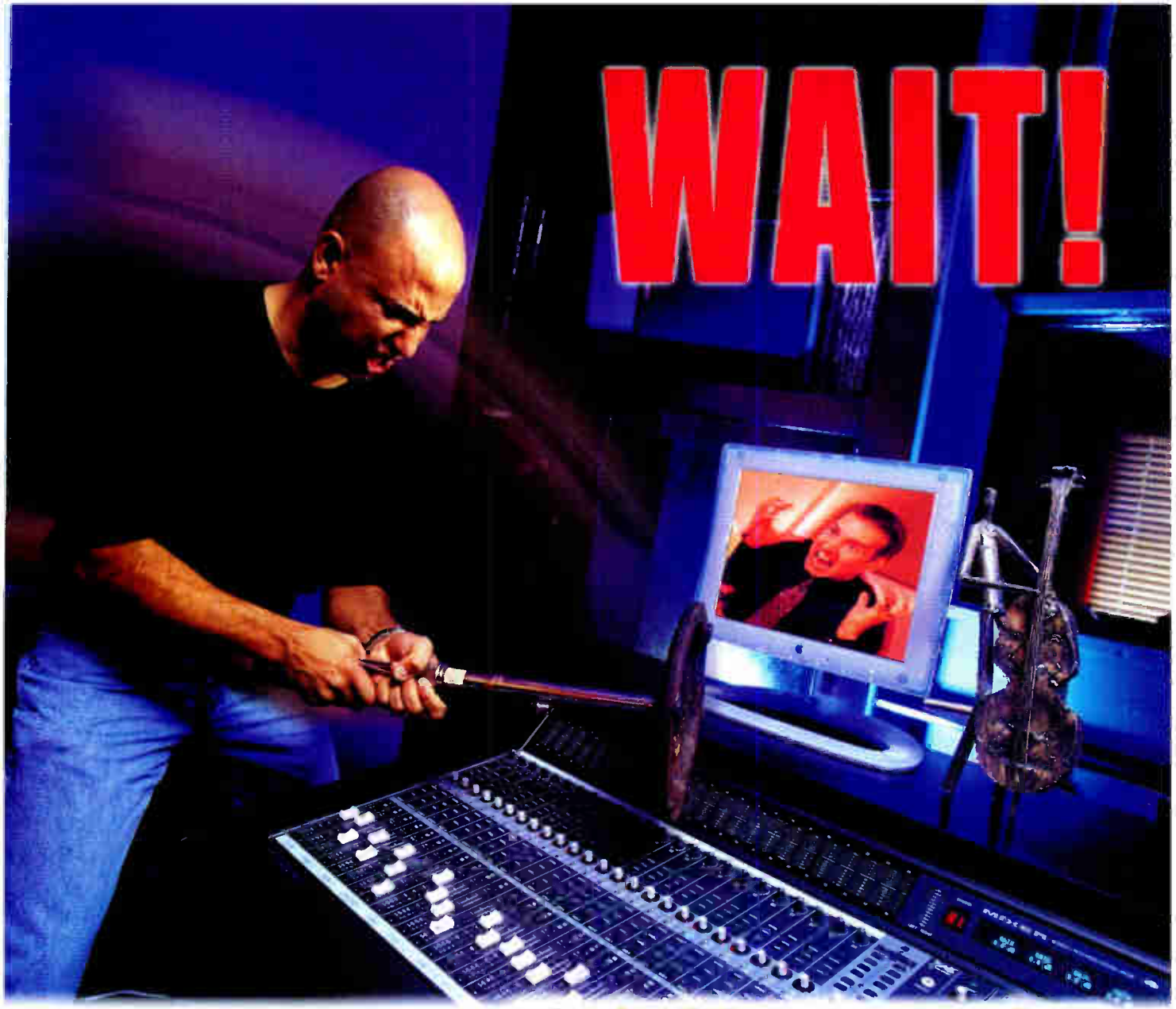

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er and recessed stepped attenuators with removable knobs. Connections are balanced XLR, ¼-inch TRS, and 3-pin Phoenix inputs with Speakon and binding post outputs. The three models (with power ratings at 4 ohms) include the LT2000 (1,000 watts/channel or 2,400-watts bridged), the LT1500 (750 watts/channel or 1,800W bridged) and the LT1000 (500 watts/channel or 1,000W bridged). All LT Series amps have a 10 to 20k Hz frequency response with THD less than 0.05% at rated power. The LT1000 is $739, the LT1500 is $1,059 and the LT2000 is $1,399.

The Power-Tech 1.1 ($869), 2.1 ($999) and 3.1 ($1,299) amps from **Crown Audio** are each housed in a two-rackspace chassis, and feature recessed level controls, signal presence, and input/output comparator indicators on the front panel. Rear panel inputs include balanced ¼-inch TRS and XLR jacks, with outputs via a pair of five-way, touch-proof binding posts. The Power-Tech 1.1 provides 305 watts/channel at 4 ohms, the 2.1 offers 325 watts/channel at 8 ohms, and the 3.1 offers up to 760 watts/channel at 4 ohms and 1,525 watts of bridged mono power at 8 ohms. The XLS 202 ($529), XLS 402 ($629) and XLS 602 ($829) are Crown's new cost-effective live amps designed for mobile DJs and working musicians. Each of these three-rackspace amps have selectable highpass filters (30 Hz/15 Hz/off) and linear optocoupler clip limiters. The amps will drive 2/4/8-ohm loads, and provide from 200 watts (XLS 202) up to 600 watts (XLS 602).

Part of the Eliminator i Series of live sound products, the **Electro-Voice** Eliminator i ($1,258) and P1201 and P1202 ($1,564 and $1,524, respectively) amps were released at last month's AES show. The i amplifier's LPN module compensates for inertial dampening losses for fuller, extended bass response, and the amp is rated at 380 watts/channel at 8 ohms, 600 watts/side at 4 ohms, and 850 watts/channel at 2 ohms. Based on E-V's Precision Series amps, the P Series offers two front panel slots for modules that include filters and crossovers specifically designed for E-V loudspeakers, such as the newly introduced QRx Series. Both the P1201 and P1202 have XLR and Speakon connections (contractor versions are available with Phoenix and barrier strips), and controls for level control, input/signal present LED and voice-coil protection. The dual-channel P1202 can be used in stereo or mono mode (600 watts/side into 4 ohms), and the P1201 is designed to be used as a 1,200-watt mono power block.

The Symbol 16000 ($2,499) and Symbol 9000 ($1,999) are new offerings from **FBT**. Both units feature ultra-linear cascade circuits, dual-channel operation with individual volume controls, XLR inputs, Speakon outputs, thermal, DC and short circuit protection, and twin variable-speed cooling fans. Eight bi-color LEDs indicate all operating modes. The 62-pound 16000 pumps out 700 watts at 8 ohms per channel and 1,650 watts at 2 ohms. The 52-pound 9000 provides 500 watts at 8 ohms and up to 2,400W bridged power output. Both amps are covered by a five-year warranty.

Hafler's TA1100 ($249) and TA1600 ($379) are two entry-level, dual-channel, dual-rackspace amplifiers targeted at the live sound, DJ and permanent install markets. The latest version of the company's trans•nova circuitry appears in the TA1600, and the TA1100 sports Hafler's trans•ana circuitry, resulting in improved clarity and intelligibility. A single red LED signals operating modes and conditions. The TA1100 is rated at 50 watts per channel into 4 ohms (40 watts into 8 ohms);

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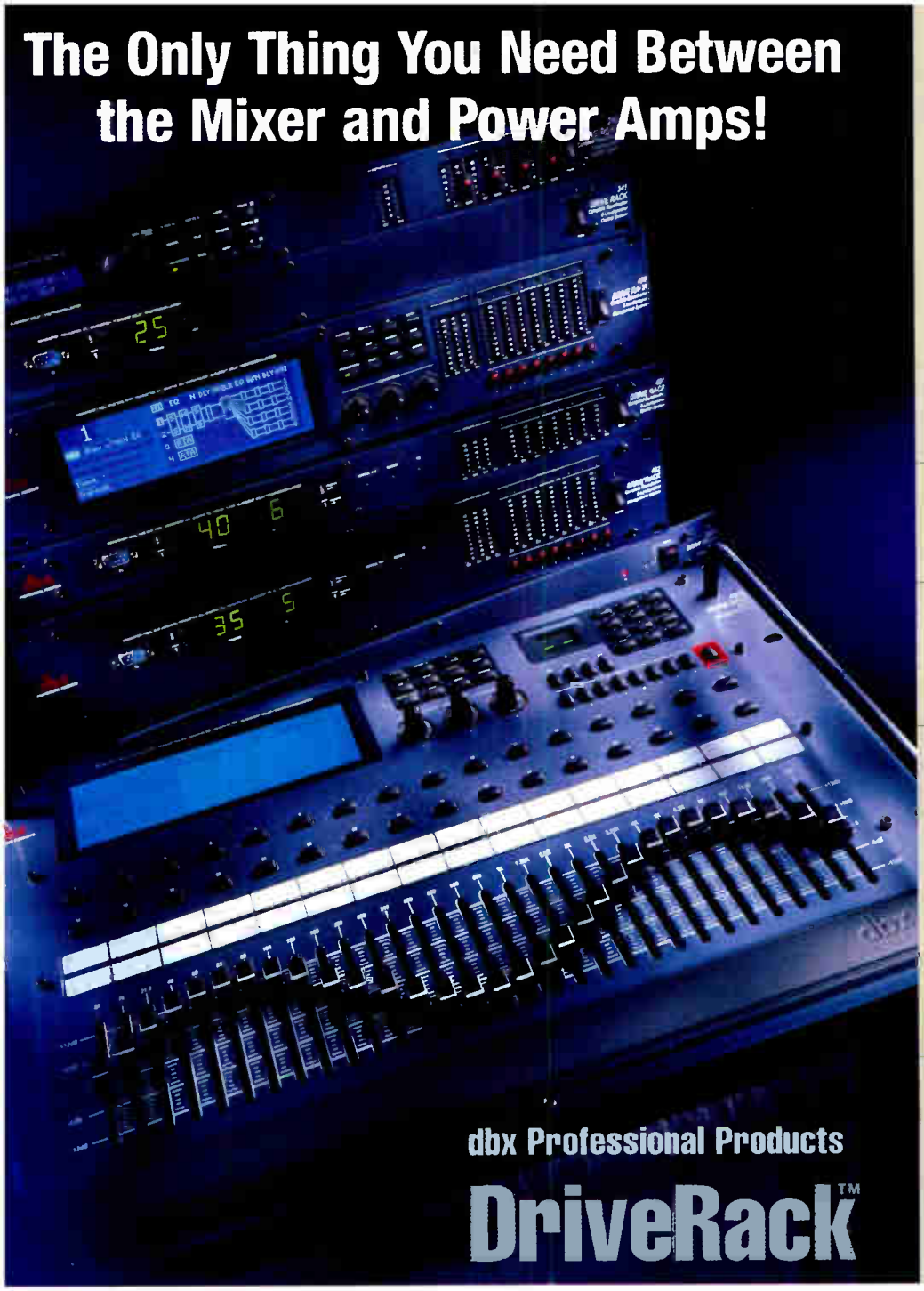

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- Multiple Crossover Configurations
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POWER To Go

the TA1600 rates at 75 watts into 4 ohms and 60 into 8 ohms. Both units' frequency response range is 20 to 20k Hz.

The CM Series from **Inter-M** includes five dual-channel (mono bridgeable) models: CM5.5, CM7.5, CM10.5, CM15.5 and CM20.5. Power ratings range from 175 to 700 watts per channel (8 ohms) and bridged mono output from 550 to 2,100 watts. Standard features include overcurrent and overheating protection circuits, variable-speed fan cooling, Neutrik Combo TRS/XLR balanced inputs, Speakon output jacks and onboard limiter to guard against output overloading.

The flagship of **QSC**'s PowerLight 2 Series, the PL236-A ($2,160) incorporates PowerWave™ switching technology, offering efficient, cool-running performance under demanding loads. All "A" versions provide internal signal processing, including subaudio filter, clip limiter, crossover controls (frequency, delay and attenuation) and CD horn equalization. Other standard features include a DataPort (for network control interfacing), variable-speed cooling and protection circuitry against shorts, open circuits, thermal overload, ultrasonics and RF. The 21-pound PL236-A has full bandwidth (20 to 20k Hz) FTC power ratings of 1,100 watts/channel into 4 ohms or 2,400-ohms mono bridged at 8 ohms.

QSC PL236-A

Sekaku's PSA Series offers five models: PSA-3450, PSA-3600, PSA-3750, PSA-3900 and PSA-31500. All are 2-channel, two-rackspace units with balanced XLR or ¼-inch TRS inputs, forced air cooling, thermal protection, a circuit breaker reset, and front panel signal and clip LED indicators. A rear panel switch selects onboard 30Hz LF filter in/out, and a choice of stereo (parallel input) or bridged mono operation. The top-of-the-line PSA-31500 uses a Class-H topology; the other PSA amps are Class-AB designs. Full bandwidth power outputs at 4-ohms range from the PSA-3450 at 225 watts/channel (or 650 watts, bridged) to the PSA-31500 at 750 watts/side (2,500 watts bridged).

Stage Accompany's ES 40 ($4,047) is a dual-channel power amp featuring the company's own dynamic-damping control sensing for better control of speaker cone movement and improved mid and bass response. Like all Stage Accompany systems, the ES 40 also features dedicated filter/protection modules for improved output and quality without any chance of mechanical damage, an active clip eliminator without compression effects, and two independent power supplies. Total power output goes as high as 2,850 watts at 2 ohms per channel on the ES 40.

Stage Accompany ES 40

The VS34 Power Plus Digital Power Amp from **STK** is designed for sustained high-power applications. Power output is 1,250 watts/channel at 4 ohms, 1,700 watts/channel into 2 ohms. Standard features are XLR and ¼-inch inputs, Speakon

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POWER To Go

and binding post outputs, a 30/50Hz selectable low-cut filter, switchable onboard limiter and a multistage digital power supply. Retail is $1,795.

Weighing in at 60 pounds is the HQ-3.4 ($1,195) from **Tsunami Technologies** with power ratings from 700 watts at 8 ohms to as high as 3,200 watts of bridged power at 4 ohms. Built-in overcurrent detection, speaker protection and DC detection circuits are standard equipment for

Tsunami Technologies HQ-3.4

the HQ-3.4, as are its dual-mode input jacks, binding post and Speakon-type speaker outputs, 21-step detented volume control, temperature sensor and temperature-controlled fan speed. LEDs for power on/off, speaker output signal level, peak level and protection circuit detection are included, and the HQ-3.4 has a frequency response range of 10 to 60k Hz.

The Audiopro A4.4 ($1,799) from **Yorkville** is a "power-factor-corrected switching power supply amplifier" that delivers 1,200 watts/channel at 4 ohms and 750 watts per side at 8 ohms. The lightweight 26-pound A4.4 includes the company's front-to-back fan cooling de-

Yorkville Audiopro A4.4

sign, a highpass filter and advanced protection circuitry. User controls include a ground lift switch, defeatable limiter switch, and stereo/mono/bridge switch. XLR and ¼-inch balanced inputs and Speakon and binding-post outputs round out the A4.4's I/O scheme, and the unit is covered by a two-year warranty. ■

Randy Alberts is a musician, engineer and writer exploring music and recording technology in his Pacifica, Calif.-based studio.

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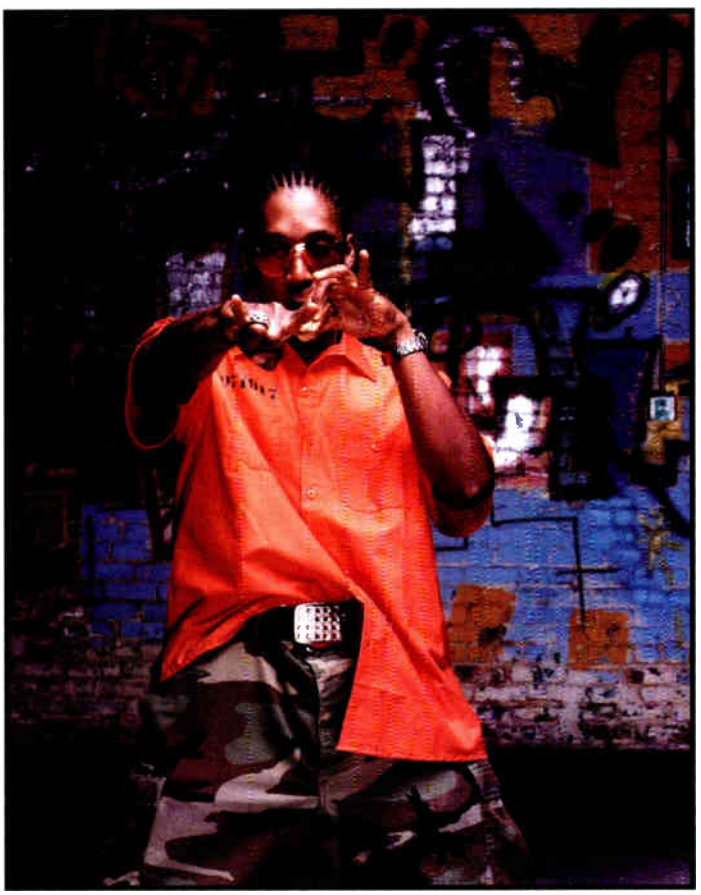
BY DAVID JOHN FARINELLA

Raphael Saadiq

A Touch of Soul, a Blast of R&B



Raphael Saadiq is laughing, recounting a story to his studio mates. Earlier that week, he had flown to Los Angeles to work on some vocals for his debut solo project and walked up to the rental car counter. He gave the woman behind the counter his driver's license and credit card. She looked it over, studying it carefully. She said, "I know your name from somewhere." Trying to quicken the transaction, he answered, "Yeah, I was in Tony! Toni! Toné! and Lucy Pearl." "No," she responded, "that's not it." An awkward silence followed until she placed it. "The Isley Brothers! You worked with the Isley Brothers." Turns out she had seen his name on a commercial for the Isley Brothers' latest, *Eternal.*

That small interaction speaks volumes for the status of Raphael Saadiq, who blossomed into a recording star with Tony! Toni! Toné! before fronting the all-star outfit Lucy Pearl. Even as he works on his solo album, Saadiq has been busy producing artists such as TLC, Macy Gray, the Bee Gees, Snoop Dogg, D'Angelo, Ginuwine, Bilal, Whitney Houston and Toshi Kubota. While he's dabbled in producing since his days with Tony! Toni! Toné!, Saadiq's producing credits have grown exponentially since the demise of Lucy Pearl.

How do you prepare to go into these sessions, because these are jobs where you're not the main producer?

The only projects I did as a whole were the Tonys' and my solo album. The way the industry is going now, people smorgasbord it a little bit and get the pick of the day. You end up doing two or three songs, and, as time progresses, you end up doing whole albums. I don't really like doing whole albums, unless it's my group. But for the learning experience of it and working with other artists, it's fun. It's always fun. I like not being the main producer and then coming into somebody's record, coming off the bench to get a hit.

When you go into a session, do you have definite ideas about where the song should go?

I have an idea about the person I'm working with, and I can hear where it should go. But it's definitely trial-and-error.

Do you go back and listen to somebody's past work?

For the Isleys, you can't help but think about what they did. I grew up listening to them. For the Isley Brothers, I specifically was told to do a track like "Who's That Lady." The song is called "Move Your Body." So, I specifically did a track like that same era; nothing updated. I raised the bar a little bit with technology, but not much. I used the same instrumentation: It was hardcore bass, guitar, and drums and distorted guitars. When you've got someone like Ernie and Ronnie [Isley] around, that's the biggest piece of the puzzle. I didn't have to go and listen to those records, because I know what the Isley Brothers sound like.

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Everybody else? Some people are looking for different sounds and new sounds, and that's when you get a chance to raise the bar and grow and try different things.

What sort of things are you called for?

I get called for more of a soulful sound and commercial radio songs. I guess people I work with expect me to fuse the two, where you can be artful and, at the same time, be credible. That's the marriage that I try to put together.

The Bilal song "Soul Sista" is very soulful.

That's a soul song that is credible, and people like it in a commercial world also. That's the kind of thing I try to do and, more or less, I like to do. I'm glad that it's appreciated. It's not that I put a lot into it; there's nothing to that song, really. I was surprised that they even picked it in 2001, because that's what I grew up listening to, but I try to raise it up a notch. The music that I grew up listening to was old when I started making records, but it's the best. It will always be the best.

How have you approached the different facets of your career—the time with Tony! Toni! Toné!, Lucy Pearl, the solo album and writing songs for other artists?

I'm not the same person I was when I was with the Tonys. If you are, then that could be a problem. I think with the Tonys, I was more or less that kid who idolized a lot of people growing up who were from the same areas that I grew up in. I think I approached it more as a band playing in clubs. Before that, it was playing more blues and slum churches. I like real traditional slum churches, like where Sam Cooke and Bobby "Blue" Bland would have played. I played with men who sing like that. When I got into bands, I had the drive from the older men who I was playing around with when I was a kid. So, I had the drive to push a lead singer further.

When I got in bands, I did the same thing—I wasn't the lead singer; I was the bass player who sang backgrounds, so I was always pushing bands. When I was in Tony! Toni! Toné! with my brother, I was more of a pusher, a supporter, and I've always played that role. If Hendrix was around, I'd be the bass player, I felt like. All my friends used to tell me, "You should go out and start singing. You should lead sing." But I understand my personality; my personality is always to help because my father is like that. You can't shake those things.

As far as producing, I have a relaxed approach. I didn't take advantage of it [for a long time]. After Lucy Pearl, I took advantage of it and made a lot of money in three months and said, "Wow, this isn't bad." Then I started producing and producing and producing. Now I almost treat 'em as an equal. First it was: "I have to make records for myself and perform, then produce a little bit." But the person I am now is more into producing; I've grown to like it. I like the technology of it. I'm more into the technology and keeping the meat and potatoes, which is my bass and my guitar, than doing some strings and orchestra. Scoring is a big thing that I really want to get into one day. So, every day I'm looking at dimensions of studios and trying to build a new studio. How much it would cost me to do this, what kind of debt I'm going to get into, how can I win being a producer? I'm all into that.

As far as technology goes, what are some of your favorite pieces of gear?

The person I am now is more into producing; I've grown to like it. I like the technology of it.

I'm definitely using Pro Tools like everybody else. I'm Pro Tools-driven, but I still like to go to tape; I still like the warm sound. I don't think people give a shit just walking down the street. I can tell, but it took me almost eight or nine years to be able to tell. I think in those eight or nine years, there's probably been millions of digital and analog records out that are huge. But it's been convenient for me, because I come up with so many ideas and I can go to the next one without changing a reel. My mind works really fast, and I'm always hopping to the next thing. I'll be playing guitar and I'll get bored with something, so I'll say, "Okay, pull up a new file." I don't get mad when access has been denied. I just sit back and play until it works out. Technology did that for me, and covering all my sessions, shooting them with film. Everything I do I shoot with film. I'm surprised I'm not filming you right now. [Laughs.]

Did you go through a big learning curve as far as picking up Pro Tools and playing with that stuff?

Yeah, I've been working with it for almost 10 years. I never actually sat down and pulled up files myself until this year. I've been looking at the screen while other people have been doing it, but now I can move vocals around. It's fun, I like it. It's like a game to me. I like PlayStation 2, Dreamcast, so it's all like a game to me. I don't take it too seriously.

How about other tools?

I like the PC-80, the Trident and the Nord Lead keyboards. The ASR [keyboard] is always going to be a dirty, little, funky thing. I think the more you have, like old Prophet 5s and Oberheims, the more you can keep the listeners thinking.

As a musician, was going from bass to guitar to keyboard a way for you to learn more about music and become a musician in a pure sense?

Well, I grew up playing bass and I was around a lot of musicians. I played trombone in junior high, and I was first trombone player in jazz band. I was taking classes at UC Berkeley's young musician's program. So, that was always in me, to be a musician, to be able to compete at the Oakland level, the San Francisco level; wherever you go, you can play. Except I don't think I made it to the fusion clubs. [Laughs.] I think I left that out.

But I always wanted to be a musician. When I got my hands on something, I tried to master it. Bass and guitar were the two things that I stuck with, more bass than guitar. Now I'm playing more bass. I write more. I was fortunate to have a lot of great guitar players around me, and I steal everything that they do; they slow it down and show it to me. Technology is the same way; people slow down and show it to me, and I soak it up.

Do you feel it's important to be book-smart about music?

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I think there are strengths and weaknesses in it. To be book-driven, you can have the advantage of scoring or writing charts. It's something I didn't get all the way into, so I guess I didn't get that book-smart. But I could write out a chart when I was doing it. Now, if I could go back and brush up a little bit, I know I could do it. But, I was also so free-spirited with the bass and playing. Before I went to UC Berkeley, I took bass lessons at Music Unlimited in Oakland, and that was just discipline. Nobody made me do that; I really wanted to do it. I think it helps to have both, and I think it's better to start out not reading and then figure out that you want to read. I'm not a fluent reader now, but I think like a composer. I can walk into an orchestra and tell them what's wrong and go to a piano and play it. I think it has its advantages and disadvantages. I can read charts, I can read notes, so it's fun both ways. It's fun going into a club in Chicago and being able to get on your guitar and play some B-flat blues. So, I think you want to have both, but you have to really strategically plan how not to make one make you not want to do the other.

> When I got my hands on something, I tried to master it. Technology is the same way; people slow down and show it to me, and I soak it up.

Looking over your credits, it would seem like going from the Bee Gees to Snoop Dogg would be a bit of a stretch. How do you get your head around those different dates?

I'm a melody-driven person, and people like Snoop, even though they rap, are melody-driven people, too. When I work with somebody like the Bee Gees, they are full of melody. I don't think the gap is that much different, because those guys that rap well really hear melody, but they just rap to it. I like spreading myself like that, from the Bee Gees to Babyface to TLC to country music. That's one thing I haven't done that I want to do. And ska.

Is it on the horizon?

It just sounds fun to me. Ska bands will always be around. I just like playing with good musicians. Like I say, I'm a supporter. So I can play with them. I like Spanish music a lot. I like traditional Mexican music. If you ever listen to the bass on some of those songs, it's close to reggae-sounding. And the horn section? Like the Cuban horn sections? Carlos Santana turned me on to a lot of the Cuban horn players.

And country? What's the attraction? The emotion?

Nah, I don't think it's that. I just like the constant strum. I like that constant turnaround that the bass does, because early gospel was sort of the same. The Soul Stirrers and Charlie Pride were almost the same, just more with a southern twang on it. It just seems real peaceful and sunny. Sometimes they get down, but most of the time, if you go to Nashville, it's sunny and there's big trucks and people got a lot of land. I'm into that. I like that kind of freedom and peace.

As a producer, songwriter and burgeoning solo artist, do you keep an eye on current music?

I don't have a real big concern about it, because I do it naturally. Thank God I don't have to make an effort to make a radio song. So I think I bridge between artistic and credible and radio-friendly. I do it naturally, without giving away the music.

What kind of feeling was it when D'Angelo's song "Untitled" won the Grammy?

Well, it was *his* Grammy, and I don't really view the Grammys like [I won it]. I don't want to say it doesn't mean anything. I think it's a great thing to win a Grammy; I would like to have nine of them. But at the same time, Britney Spears could win a Grammy, too. Not that she doesn't deserve it, because she's worked hard just like the next person. [But] if you're the flavor of the month, you can have one. So, I don't really get excited about Grammys. I was excited about it getting nominated. It's all a game and I'm playing the game. That D'Angelo and I were able to collaborate and come up with something as a team that the world likes and to help somebody's career—that's my Grammy. ■

David John Farinella is a San Francisco Bay Area-based freelance writer and a frequent contributor to Mix.

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BY BARBARA SCHULTZ

Trevor Hutchinson's Marguerite Studios

Traditional Music, Direct-to-DAW

A decade ago, Trevor Hutchinson was playing bass in The Waterboys, an Irish (via the UK) band with "modern rock" leanings that introduced the sounds of traditional Irish folk to many pop music listeners. After leaving The Waterboys, Hutchinson turned to more straightforward traditional projects, recording with another Waterboys graduate, accordion player Sharon Shannon, and then with his current group, Lunasa.

Lunasa's music beautifully evokes all the moods usually associated with Irish trad music: It can be, by turns, melancholy, gentle, joyous or playful. It doesn't commonly conjure images of a Pro Tools-equipped home studio, but that's where Lunasa's latest, *The Merry Sisters of Fate*, was recorded.

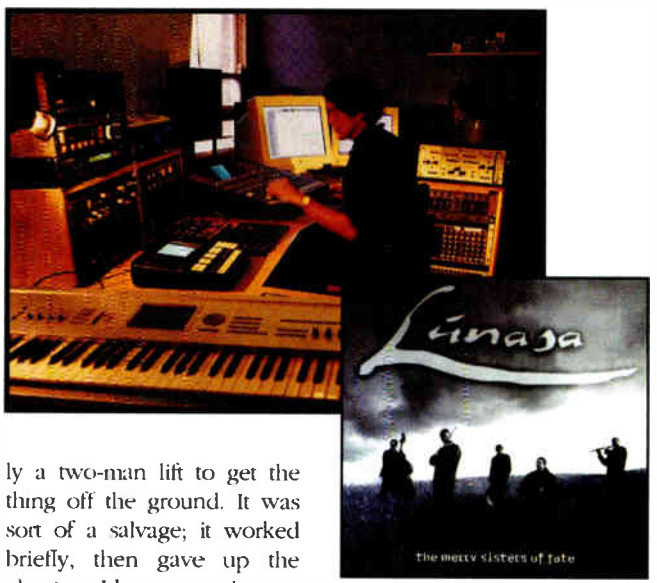
Like many project studio owners, Hutchinson says his facility, Marguerite Studios, "started off just as my own—someplace I could indulge myself. I started to do bits and pieces for other people, and it's gone from there. It's taken over my home."

The studio was originally centered on ADATs. Hutchinson added a Pro Tools MIX|Plus system a few years ago. "We put it in just before we started working on our previous album, *Otherworld*, so that was a bit of a hairy ride," he says. "I was trying to do an album under quite a lot of pressure using a medium with a fairly steep learning curve. But it's probably the best way to learn, just jump in the deep end."

To make their new album, Lunasa recorded direct-to-disk, and played live all around Hutchinson's home. "I put in about a dozen large sound baffles, just to kill some of the reflection in the living room and to have a bit more separation between the musicians. We usually record the fiddle, flute and pipes together. The guitarist [Donogh Hennessy] puts down a guide track at the same time, in a different room. Often, he overdubs additional guitars, including high string. Sometimes I play along in the control room, on an electric upright bass, because it doesn't take up so much space." The tracks were recorded and mixed by engineers Ed Kenehan, the band's FOH engineer, and David Odlum, who Hutchinson says comes from an alternative rock background and helped them give a different slant to some of the tunes.

The core of Hutchinson's setup consists of eight channels of vintage Neve mic pre/EQ modules. "It takes quite a lot of work to keep them on the boil, but they're lovely," he says. Other outboard gear includes the Manley Massive Passive tube EQ ("gorgeous"), UREI 1178, Focusrite Red 7, Lexicon PCM 80 and PCM 70, and the Eventide H3000.

"I'm currently trying to restore a very old Klein-Hummel U100 valve EQ," Hutchinson says. "It's nearly a two-man lift to get the thing off the ground. It was sort of a salvage; it worked briefly, then gave up the ghost, so I have to get it completely overhauled. But when it worked, the sound was amazing. They don't make anything like that anymore." The studio also has Quested and Genelec monitors, and mics from Neumann, Sennheiser, Earthworks, Beyer, RØDE and AKG.



Clearly, Hutchinson is still doing with technology what The Waterboys did with musical instruments—effectively blending old and new tools and methods. However, Hutchinson is suitably wary of the effects that modern conveniences can have on traditional recordings. "[Pro Tools] has a lot of really good upsides, and probably a few downsides as well," he says. "You have so many options that it's hard to control yourself.

"We have to be fairly aware of not overcorrecting things too much, especially in regard to tuning. You can end up with something that sounds sweet but absolutely bland. The idea is to get rid of the worst [mistakes], but still leave enough depth of character in there, enough breadth of pitch difference in it."

Though Marguerite Studios grew out of Hutchinson's desire to record his own music, the studio also hosts numerous Dublin-based artists, including producer Donal Lunny with singer Frank Harte, singer/songwriter Gerry O'Beirne, Niamh Parsons, The Frames, Ten Speed Racer and Miriam Ingram. Lunasa has to squeeze into the studio in between these paying clients, and in between their own tour dates, which recently included a series of North American shows, opening for Mary Chapin Carpenter.

To check out their music, visit www.lunasa.ie, and for more about Marguerite Studios, www.marguerite studios.com. ■

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TAKING AIM AT THE High End

STEINBERG ENLISTS TOP PRODUCERS FOR NUENDO USERS' GROUP

By Maureen Droney

Audio professionals are a cynical bunch. When it comes to new products—especially software-based products—they know that the path from concept to efficient reality is invariably long and difficult. The people at Steinberg Media Technologies AG are well aware of this skepticism, and as they make a foray onto the high-end DAW battlefield, they've been developing strategies to combat it.

Steinberg, best known for its Cubase MIDI sequencing software, is now jockeying for a leading position on the high end with the 24-bit, 96kHz Nuendo Media Production System. Two concepts were important from the beginning: The software had to be able to adapt to whatever computer technology is currently state-of-the-art, growing as both user needs and hardware evolve; and an open-design architecture, coupled with shared technical information, would create universal standards, benefiting Steinberg and the overall industry.

For Nuendo to succeed, there are some obvious hurdles. Is it really possible, both technically and financially, for a product to be all things to all people? And, can a small, European company—even one that's highly successful in its niche—wrest share from a market that's already firmly entrenched on a (de facto) standard platform? With its musician-friendly reputation and high-profile, Grammy Award-studded Nuendo user group, Steinberg is betting that the answer to both questions is "yes."

THE ROOTS

Based in Hamburg, Germany, Steinberg was started in 1984 by Karl Steinberg and Manfred Rürup. Now, with almost 200 employees worldwide, the company produces more than 50 products; last year, Steinberg generated sales of approximately $20 million. Besides Cubase, Steinberg has also brought to market such innovative technologies as ASIO (Audio Stream Input Output) and VST (Virtual Studio Technology): real-time, software-only, open standards for digital signal processing.

In the early '90s, Steinberg designers—many of them musicians who saw hardware-based systems as inherently limiting—began experimenting with the idea of a native DAW, a program that runs on a host computer without requiring proprietary, dedicated DSP or audio I/O hardware. Headed up by Wolfgang Kundras, the team came up with a multifaceted program but was caught in a Catch-22: No computer platform was powerful enough to run it. Those first editions of what became Nuendo ran on Unix-based Silicon Graphics computers. Early trade show previews of the program evoked positive response, along with the realization that the SGI platform was unlikely to be accepted in pro audio. When advances in more accepted operating systems created other options, the platform was switched to a Windows base. A year's worth of beta testing at a post-production facility followed, and, in 2000, Nuendo V. 1.0 was launched.

Based on new code that incorporates ASIO and VST technologies, Nuendo offers, for both PC and Macintosh, a wide array of production applications, including MIDI, audio in stereo and surround, video and multimedia. Currently, the program provides up to 200 tracks of recording and mixing in 16, 24 and 32-bit floating point audio files with 44.1, 48, 88.2 and 96kHz sample rates. It accepts imports of .AIFF, AIFC, .WAV, Broadcast .WAV, MP3 and REX (SD2 on Mac) files, offers OMF import and export (making porting to and from Pro Tools possible) and supports, in real time, VST and Direct X plug-ins.

PHOTOS: OSCAR G. ELIZONDO

The Steinberg Producer Group. Front, from left: David Tickle and Elliot Scheiner. Back, from left: Rory Kaplan of DTS, Chuck Ainlay, Frank Filipetti, Rob Hill of Steinberg, Greg Ladanyi and Alan Parsons. Inset: Phil Ramone.

POWER USER NUMBER ONE

Nuendo evangelists use the word "transparent" a lot. But can something designed to support such a plethora of file protocols possibly be easy to run? It is, according to Grammy-winning engineer/producer Greg Ladanyi, who has joined with Steinberg to help with artist relations. Searching for a likely 5.1 surround format to remix Jackson Browne's landmark *Running On Empty* for DVD-A, Ladanyi was convinced to give Nuendo a shot. *Running On Empty*, of course, is the perfect surround vehicle, documenting as it does songs recorded on the road in various acoustic environments, from hotel rooms and tour buses to full-blown concerts.

"I really knew nothing about Nuendo," Ladanyi explains. "Rory Kaplan of DTS suggested that I talk to Steinberg's Rob Hill because he knew that I wanted to work 24/96. Digital has always had the issue of coldness, along with the lack of both bottom end and open highs, but 24/96 has opened the door wide. That's what I wanted. But, even though I'd worked with Pro Tools and Logic Audio for editing, I'd never been hands-on with a digital recording platform. Rob gave me a demonstration, and being able to do all the panning, processing and moves inside the computer really interested me. But what made Nuendo unlike any other digital platform I'd worked on is that you don't ever have to stop the song to perform functions. It's hands-on while you're in motion. For me, that's the way it has to be. I don't want to have to stop the music to access things."

The staff at Steinberg understands the time and budget pressures that today's music projects contend with. Breaking into professional recording was the goal, but they knew that users wouldn't come onboard if they had to cope with a steep learning curve. For the *Running On Empty* project, Hill signed on as co-engineer to ensure that the process ran smoothly.

"Although everyone embraced Nuendo's technology," Hill observes, "nobody was going to bleed on the cutting edge without our help. That's where my role with Greg came in, to make it so he could keep working without flipping through a manual."

Ladanyi admits that some blood was shed, in part because, instead of beginning with a "learning" project, he dove right in on *Empty*, starting with transferring 22-year-old multiformat analog masters into Nuendo. During the transfers, which, by sonic preference were done through a Neve 8078 console at Browne's Groovemasters Studio, some of the tapes began shedding lubricant. The ensuing haste to get the job done resulted in the discovery, after the transfer, of clocking errors. With no SMPTE on the originals, there was no possibility of multiple passes (even if the tapes would have held up for it), so a nail-biting second overall transfer was required.

"You have to realize that we were doing something quite new," explains Hill. "We were using a standard, consumer-based platform to simultaneously track and read 24 tracks of 96k audio. We were clocking six different devices, including three A-to-D converters and two PCI cards."

Once the tracks were safely into Nuendo, it was relatively smooth sailing, with two turnkey (hardware included) systems set up, one at Groovemasters and one at Ladanyi's Tidal Wave Productions. "Everything sounded great," asserts Ladanyi. "And having the mix automated

from top to bottom—panners, effects, delays, whatever we chose—was fantastic. I loved being able to chain things up like I would in an analog studio. It was a very creative way to work."

The deeper Ladanyi got into Nuendo, the more convinced he became of the system's promise, and he determined that he wanted to play an ongoing role with the company. "I was working faster and better using Nuendo," he states. "And as I got to know the people at Steinberg, I started understanding the musician-driven philosophy behind what they did. I was hearing all the right things, and I decided that I wanted to become more involved with what happened to the product. I wanted to help give them credibility. That's how the producers' user group developed. I had complete confidence that Nuendo would do its job for whoever tried it, both with its capabilities and its sonics."

THE PRODUCERS

The cachet of having golden-eared Grammy-winners such as Elliot Scheiner, Phil Ramone, Ed Cherney and Frank Filipetti involved with your product is an undeniable publicity coup. But Nuendo's user group has another purpose: to bridge the quintessential dichotomy that exists between designers and end-users. The idea is, these demanding pros are working out the kinks so that the average Joe won't have to. And, though they didn't have to bear the full cost of their setups, user group members have made significant personal investments in their systems. In return, they're getting the opportunity to help develop a product that addresses their needs in very specific ways.

"Each of us has our gripes," says group member Chuck Ainlay. "And when we turn them in, they've been really quick to come back and say, 'This is fixed in the next revision,' or 'This is stuff that we didn't know about and we're going to figure out a way.' They're very straightforward."

Elliot Scheiner used his system on the 5.1 remix of Queen's 1975 *Night at the Opera*, which includes the classic "Bohemian Rhapsody." "All the problems that I had were extremely minor," he offers. "And we've gone over all of them, and they're making changes."

"In the first couple of rounds with the user's group, we've had the system in everybody's hands," Hill adds. "They submitted lists of things that they wished for or problems they came across. Their lists get compiled to a master, and that goes to the development staff, who are required to put a resolve on items one way or another."

Items being addressed so far include such things as Scheiner's and Filipetti's request for support for AES31 transfer protocol, and a preference that came in independently from Ainlay, Ladanyi and Alan Parsons: the incorporation of individual pre- and post-fader metering into the mixer. "Nuendo has been built from the ground up with fresh code," Hill continues. "Now, we're fine-tuning the features. The user's group is really a partner in development, helping us take it from good code to a good tool. The software is capable of doing just about everything; now we're refining the ways to get there."

Greg Ladanyi (left) and Rob Hill at Tidal Wave Productions

"Up until Nuendo, development of the DAWs out there has largely been from the business perspective," comments Steve Garth, CEO of Steinberg North America. "Steinberg is different in that we focus on usability and customer needs. We think that progress has to come from the creative people themselves, so we're talking to them all the time. They need to have tools that are in tune with their way of working.

"It's not about getting a lock on a certain piece of pie; it's about growing the pie," he continues. "The way to do that is to accept that customers do not want to use only Steinberg products. You can use Nuendo and use other manufacturer's products with it. We develop plug-ins, and, of course, we want people to use them, but we do accept that people want to mix and match."

"It's not our goal to force the hand of consumers," adds Hill. "That's why we open-code-spec'd a lot of the protocol. Steinberg created VST and ASIO and open-coded them, allowing people to see how the DSP, algorithms and engines worked, allowing third-party development on all levels. You can go to the developer's section of our Website and get the software developers' kit with all the code lines and so on."

"It's like making records with analog tape on machines from Studer to Ampex to 3M," says Ladanyi. "There wasn't an issue about taking your reel of tape and being able to work on any machine. Steinberg is showing that, hopefully, we can get to a place where DAW systems will talk to each other so people can easily share their work and go from one place to another.

"The users group is a big help in that kind of development because all of us use the system in a different way," Ladanyi continues. "Frank [Filipetti] recorded the Korn record onto a Euphonix R1. When he needed to do time compression and placement, he used Nuendo as a 96k editor, and its role kept expanding from there. Elliot [Scheiner] started out using it like a tape machine because he loved the sonics, now he's editing with it also. Steinberg listens to the issues and feedback of all these different professionals to try to improve both Nuendo and the way we work." ■

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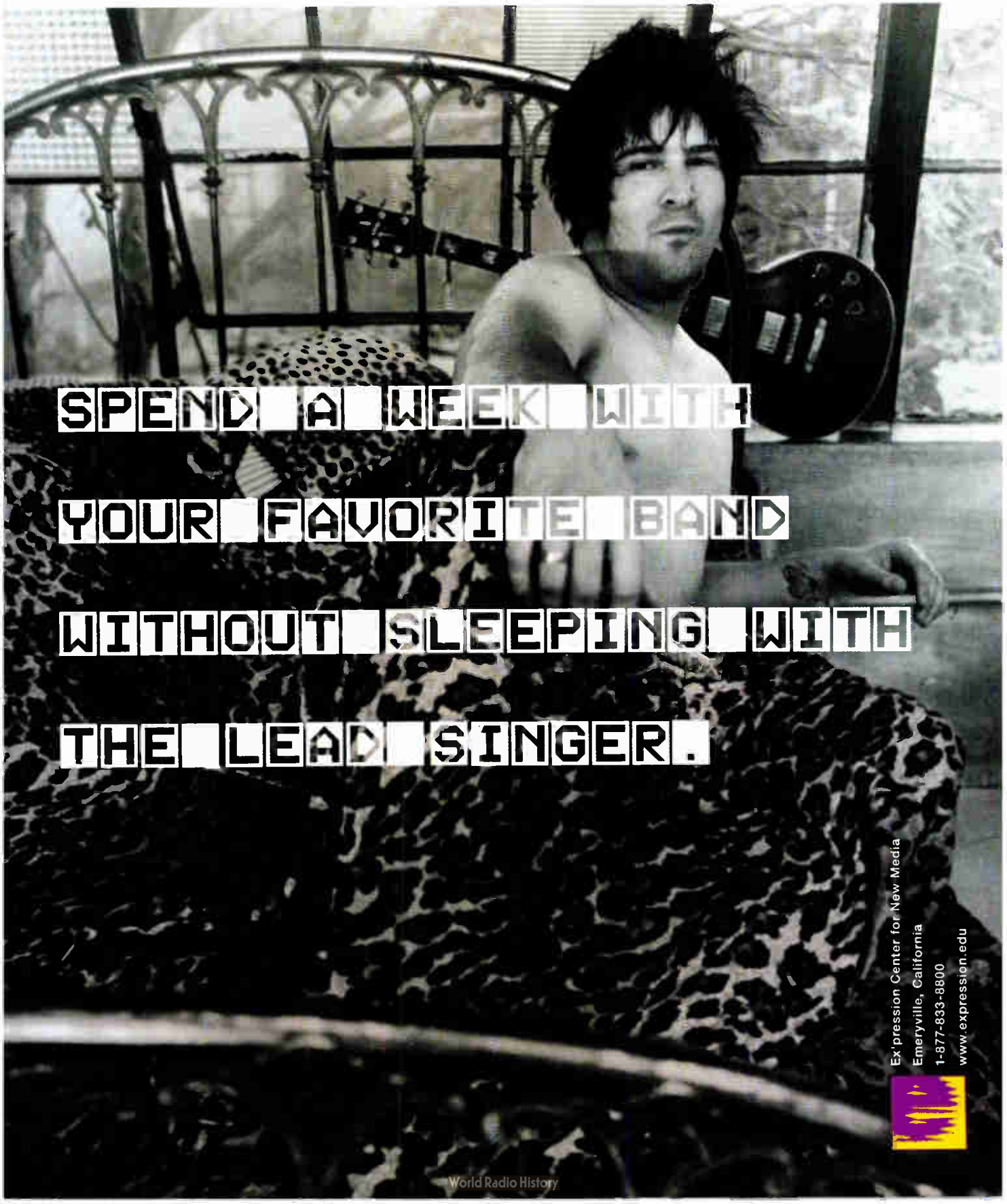

ALL PHOTOS BY MIKE MINA

BJÖRK

THE VESPERTINE GODDESS MAKES HER DEBUT AT COVENT GARDEN

Experimental pop queen Björk made history last December as the first "pop" artist to play in the Royal Opera House in London's Covent Garden. On a three-month-plus world tour, accompanied by a full 56-piece orchestra and a 16-strong choir from Greenland, Björk elected to appear in some of the world's most prestigious operatic and theatrical venues, rather than the usual "acoustically challenged" assortment of traditional rock venues. Among the ancient and revered sites that hosted Björk's innovative and eclectic performances were Rome's Costanzi Opera, New York's Radio City Music Hall and the Hitomi Kinen Hall, Tokyo.

But it was the Royal Opera House booking that caused the most controversy, in part because Björk's touring show not only included a full P.A. system, but also a surround system requiring up to 20 loudspeaker positions. "Some venue operators are, understandably, very particular about their buildings—they'd never normally let a pop tour through the door," explained Björk's production manager Peter van der Ende. "Once we show up, though, they see that everything's under control."

Among his other duties, it was van der Ende's task to find venues around the world with good acoustics, a comfortable auditorium, and sufficient stage and orchestra pit capacities. Although there are plenty of candidates, the schedules of most "classical" venues leave little room for one-off pop shows. "We were lucky to find a slot in each of the houses we were visiting," van der Ende explained. In fact, the date at Covent Garden was sandwiched between a Royal Ballet performance of *The Nutcracker* and Wagner's *Parsifal*. Both are large-scale productions that required several hours of build and strike time, which severely restricted the window available to the Björk production.

SURROUNDED—FLAT PANELS RULE

One of the more tricky elements of the Björk tour was the installation of a 20-position surround sound system in each auditorium. The original plan to use conventional compact loudspeakers such as the D&B E3 beloved by theater designers was compromised by access problems due to the size of the loudspeaker enclosures and supporting stands. Chris Hill, a director of Wigwam Acoustics, the tour's audio supplier, came up with a surprising alternative. "I'd been to London for a look 'round English National Opera (the only other UK date on the itinerary), and it occurred to me that we might be able to use NXT speakers for the surround system," said Hill. "Kevin Pruce [Björk's FOH engineer] and I listened to various different panels and we were convinced they could do the job." Hill's team provided several alternate mounting methods for the 5½-pound speakers, including sprung Autopoles (more commonly found supporting backdrops in photographic studios), clamps and even vacuum suckers rated at over 150 pounds. After successful trials at Björk's pre-tour Paris show, Hill committed to the NXT system, using flat panel speakers from British manufacturer and NXT licensee Amina Technologies.

Innovative technology also solved a space problem at FOH. "We had a space issue at the mix position, and when I looked at the number of inputs and outputs we'd need, I knew we'd have to look at something other than a normal console," explained Hill, who, with FOH engineer Pruce, selected a Yamaha PM-1D digital console. Capable of handling 96 inputs and 48 mix outputs, the PM-1D was well equipped to manage mixing and routing chores, but Hill was unwilling to use the console's SCSI-format connectors on the road. "We were concerned that none of the existing PM-1D users had really addressed the packaging of the desk," he explained. "It was more than just cutting off the end of a SCSI cable and

Mamos (Martin Schmidt and Andrew Daniel)

by Mike Mann

FOH engineer Kevin Pruce at the Yamaha PM-1D

remaking it, and digital transmission is a very specialized area." Hill and the Yamaha team worked with cabling experts VDC, which provided a military-spec solution that has been integrated into the console's road case and Wigwam's racks. "A multicore system like this costs money," Hill admitted, "but the reliability of the whole system hangs on it—so it's worth the expense—and VDC did a fantastic job, building and testing the whole lot in a very short time."

TWO INTO ONE GOES NICELY

Pruce is enthusiastic about the Yamaha PM-1D, and not only because two or more traditional consoles, plus outboard gear, would have taken up too much space. "The PM-1D does everything," says Pruce, who arranged his input list to make the best use out of the PM-1D's two-layer control surface. "I've got the entire orchestra (a 56-piece opera band occupying nearly 40 channels) on one layer, with Björk, her band, the electronics and the choir on the upper layer." Each layer provides Pruce with 48 dedicated faders and a central section representing an entire input and output path. Automation, as expected, is all encompassing; though Pruce pointed out that for such an ambient show, he makes extensive use of the PM-1D's facility for dropping key channels out of the automation system. In all, 72 inputs are required for the orchestra, the Inuit choir,

The 16-member Inuit choir appeared with Björk on her world tour.

5.1 REASONS ELLIOT SCHEINER PREFERS YAMAHA MSP10s.

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Elliot Scheiner, DVD Audio authority

The MSP10 also comes in highly polished Maple Sunburst.

SW10 Subwoofer

After 33 years as an engineer/producer, Elliot Scheiner has become the guru of DVD Audio. For his 5.1 surround sound mixes, Elliot uses Yamaha MSP10 monitor speakers exclusively. "They are perfectly powered speakers; you turn them up and they're still wonderful. My mixes sound great as they're going down and even better outside the studio."

The MSP10's dual amps drive 120 watts to lows/mids and 60 watts to the highs. Their frequency response carries out well past 40kHz, perfect for 24-bit, 96kHz masters. Plus, in Elliot's surround environment, "probably the most important aspect: the balances relate very well." Which, of course, makes them ideal for stereo mixes as well. Once again, Yamaha gives you more for less.

YAMAHA

CREATING 'KANDO' TOGETHER

The Midas Heritage 3000 at the monitor mix position

electric harpist Zeena Parkins, a North Canadian throat singer named Tagaq, and Matmos (the California-based electronica duo of Martin Schmidt and Andrew Daniel).

The PM-1D's impressive output count meant that, as well as providing mixes for flown and ground-stacked speaker arrays, Pruce could generate 10 surround mixes and a 24-track feed for a possible live album project. He also found space to create submixes of the orchestral strings and choir to send to the monitor position. "I'm using all but three of the available outputs!" claimed a proud Pruce. Two mighty DSP engines operate in "mirror mode"—the B engine constantly tracks its partner, ready to assume control in an instant should the need arise. Mixes are fed straight from the PM-1D main feeds to XTA DP 226 system controllers, which are used as crossovers for the L-Acoustics DV-DOSC system. Surround feeds are sent directly to the amp racks, with Pruce using the PM-1D's output filters to roll-off below 80 Hz.

With the PM-1D configured so that most audio I/Os are onstage, local sources and feeds are handled at the FOH position by a satellite rack. "As far as onboard processing goes, I have assigned the PM-1D's DSP compressors to the usual channels, and I use internal reverb units for most of the effects," Pruce explained. The exception to this is Björk's own vocal channel, into which Pruce has inserted a Tube-Tech compressor and BSS DPR-901 dynamic equalizer.

IT CAME FROM THE PIT

Pruce selected Schertler pickups for the stringed instruments to minimize gain-before-feedback problems. "They are not ideal for a full orchestra—I'd rather have a more open sound," noted Pruce. "We did try doing it with overheads, but Björk likes the orchestra to be visible, which means having them higher in the pit and much nearer the speakers than normal." The choice was vindicated at one northern European gig where the show was staged in a circus tent—with no pit at all. Also fitted with Schertler pickups were the two large musical boxes that are featured in Björk's album and her live shows. Other unusual sources include an acoustic harp, fitted with three pickups (which Pruce bridged into a single full-range feed before sending to both consoles), an electric harp with guitar-style pickups and effects pedal board, and a harmonium, which was miked with an AKG A98-KCS mini-mic. Surprisingly, perhaps, Björk's vocal mic of choice is a wireless Shure Beta 58—a very conventional capsule for a singer with a wide range and unique delivery style.

A 12-channel E-mu E4 provides the majority of computer-generated sounds, while Matmos mixed their own wide-ranging sources. As well as providing electronic content for their own songs, the duo also served as a support act, playing tracks from their recent albums. This involves the use of medical probes (complete with endoscopic cameras) as musical instruments, and also included a solo played on a hamster cage. "This is very far from rock 'n' roll," admitted monitor engineer Bob Lopez, who was given the intricate task of combining ambient and amplified monitoring for Björk, the choir and band. Because none of the artists were keen on using ear-worn mon-

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Monitor engineer Bob Lopez

itors, they were provided with either Nexo PS 15 wedges or D&B E3 cabinets. Lopez describes his job as providing a timing reference, while allowing the response of each room to be heard onstage. "We've been into some fantastic rooms—especially the opera houses—they've been a real pleasure to work in," he enthused. "This way of working means that I have to listen to each room every day, and mix the monitors differently every night to match its response. If the people onstage are hearing a lot of P.A. from a lively room, I have to compensate; in a drier place, I don't need to throw a lot of level at them."

Lopez chose a Midas Heritage 3000 as his monitor board and used it to create 16 mixes, including two reverb sends. Four mixes were sent to the Matmos duo, who were incorporated into the 4-channel surround feeds that they generated, and Lopez provided a monitoring setup that mimicked the larger auditorium surround configuration. A pair of Nexo wedge monitors at the front (representing the DV-DOSC system) and D&B E3s to the rear were fed from an Alesis effects panner, which uses proximity effect to move the source around the 2-D image. A further finger-operated joystick was used to create an offset between front, back, left and right as required. Across the outputs of his console, Lopez inserted two BSS Soundweb digital processors, allowing him to perform any EQ, delay or dynamics function without having to re-patch the monitor drive rack.

BEWITCHING, BEGUILING

Crew members are often enthusiastic about the artists they work with, but on this tour it's clear that this is no crude ploy to curry favor—those who work with Björk just seem to have become bewitched. "She really is a dream to work with," says Lopez. "We've all got a lot of respect for what Björk does." "She's one of the few clients who we really regard as part of the family," agrees Chris Hill, who, like many of her support team, has worked with Björk since she was in The Sugarcubes in the mid-1980s. "In those days, I was struck by how fresh she was—untouched by the industry—and she's still the same. She knows exactly what she wants as an artist and just does it—and she works hard to pay for it, as well." Audiences have been similarly charmed by the elfin Icelander, even if their comprehension of Björk's work is limited. "It's just like an opera," a well-dressed audience member was heard to say. "They all sit through it hardly understanding a word, but they clap and cheer at the end, all the same." ■

Mike Mann is a freelance writer living in England.

One of the NXT flat panel speakers used for the surround system

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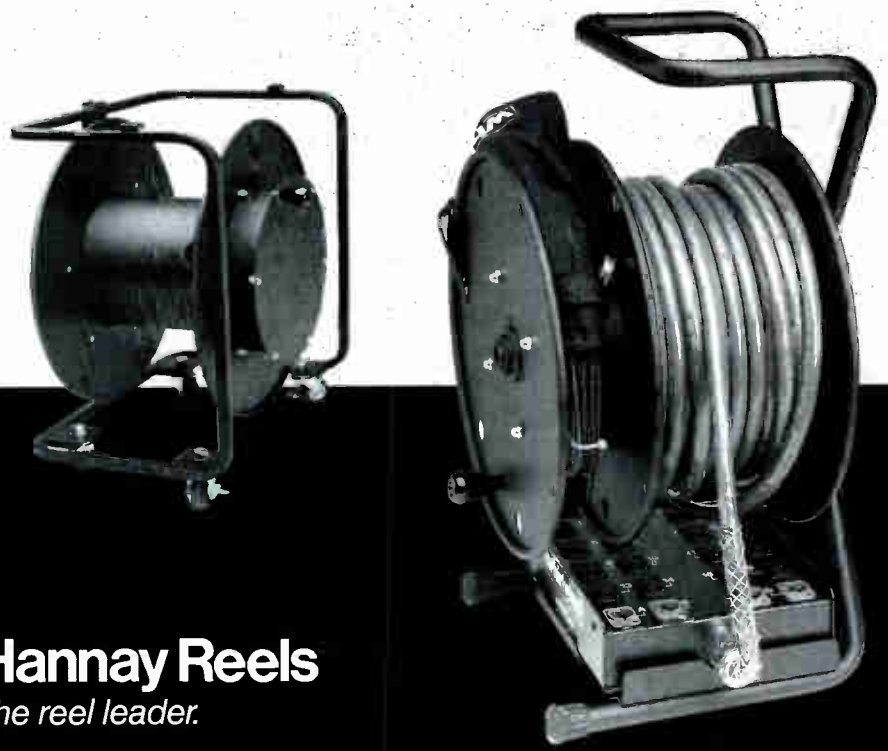

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NEIL DIAMOND MAKES A BEAUTIFUL NOISE

HEADED FOR THE FUTURE WITH AN ALL-DIGITAL LIVE SOUND SYSTEM

Digital audio has made steady, if not entirely trouble-free progress in the recording world, and even devout analog believers now accept that their work must eventually be committed to CD or some other digital storage medium. The live sound industry, by contrast, has largely stuck with analog technology. Apart from DSP-based outboard effects units, most touring sound companies field P.A. systems that are primarily based on an analog signal chain, from the onstage microphones through analog mixers, processors and crossovers to the traditional "stacks and racks."

Of course, many current touring sound systems include multiple digital components, and sales of both digitally controlled analog and all-digital mixing consoles for live work are steadily increasing. However, until 2001, no major touring production had committed to an all-digital signal chain.

That significant milestone was passed last September, when Neil Diamond's fall 2001 tour got under way in Columbus, Ohio. Featuring Yamaha PM-1D FOH and monitor consoles, the main P.A. was fully digital all the way from the A/D converters right after the mic preamps to final D/A conversion at the Crown amplifier inputs. Other than a few analog components—mostly the mics (mainly Shure and Audio-Technica) and the JBL VerTec line array loudspeakers—the entire signal chain from input to output transducers was all-digital. Even the onstage musicians used individual Yamaha 01V digital mixers to combine a menu of submixes for their own in-ear monitor mixes, which remained digital up to the front end of the IEM systems.

ON THE ROAD TO DIGITAL CONTROL

For system designer/FOH mixer Stan Miller, the current tour, which is timed to promote Diamond's latest release, *Three Chord Opera*, represents the achievement of a long-held ambition to use digital technology to bring complete control and repeatability to the FOH mix.

"I'm a guy that likes to be innovative," says Miller, who has been working with Diamond for 35 of his 40-plus years in live sound. "I have been working to move to the kind of system we have now for several years. The first kind of automation, or semi-automation, that I had was a modified Ramsa 840 console with programmable MIDI mutes. The objective was to go from song to song and have only the channels open that you needed to have open, with no chance of making any mistakes." To mute and unmute channels on the Ramsa, Miller used Cue Sheet MIDI software running on a Macintosh.

Miller's next setup included 14 Yamaha Pro Mix 01s used as submixers, and feeding stereo sends into a 24-channel Yamaha PM3500. "The Pro Mix 01 was the first [digital mixer] that was 100-percent recallable—every function and feature," notes Miller. "So, not only could I recall the channels off and on, I could recall all the EQ, I could recall any little effects and things I was using within the unit itself. And I had some external effects that were MIDI-recallable, some Lexicon stuff. So, that was the second generation."

Miller's third-generation setup revolved around a pair of Yamaha 02Rs fed at line-level from Soundcraft preamps onstage, an arrangement that provided automated control over up to 80 inputs. Also, for the first time, the onstage musicians were given a way to mix their own monitors. "We did that by using a little Ashly unit, a VCA-controlled box with eight little faders on it that controlled a box that was down under the stage," recalls Miller. "But it was all-analog."

The current, all-digital setup evolved through a cooperative effort with Yamaha. "I knew about the PM-1D through my association with Yamaha," says Miller, who was consulted during development of the PM1000, Yamaha's category-defining entry into the live sound console market. "I visited [PM-1D hardware product manager] Dan Craik and asked, 'Here's what I have in mind. Is this workable? Is it do-able?' As we talked about it, we got the idea to hook up the 01Vs. It's kind of overkill to have these 01Vs all over the stage, but, frankly, we did it because if one goes down, we can switch it with another and just load the software. And we wanted to keep [the audio] in

by Chris Michie

PHOTO: RICH ARAS

Each onstage musician mixes his or her in-ear monitor mix on a Yamaha 01V

System designer Stan Miller at FOH

the digital domain—we didn't want to be switching back and forth."

In fact, there are only two nondigital signal chains in the entire sound system: Miller's cue speakers at FOH are fed from a supplementary analog snake that runs back to FOH from the PM-1D engines onstage; and, because Diamond had not previously used an IEM system, a backup monitor system includes a couple of traditional wedges and flown sidefills. Apart from this monitor system and the main P.A. subwoofers, which are owned by Diamond's own ArchAngel Music Concerts production company, all the sound equipment was provided by Maryland Sound Inc. of Baltimore.

NO AMPS ONSTAGE

Diamond's 17-member band includes two guitars, bass, drums and percussion, two keyboard positions (piano and synthesizers), four horns, a string quartet and two singers. Miller cheerfully admits that he delegated microphone choices to monitor engineer Bernie Becker, who is also Neil Diamond's recording engineer, with credits on several albums going back to 1991's *Lovescape*.

"I get a mic list from Bernie, because that's his thing," laughs Miller. "Whatever makes him happy and makes him comfortable, I'll live with it and make it work, and it'll be terrific."

Becker chose an all-Shure lineup for vocals, including a Shure Beta 87 wireless for Diamond and wired Beta 87s for backing vocals. Drum mics include Audio-Technica ATM 35s on toms, medium-diaphragm A-T 4033 condensers on overheads, and a Beyer Dynamic OPO 583 on snare. Horn section mics are all Audio-Technica, including a new model, the 4055. The four string instruments are picked up with MKE 2-5 mics—essentially Sennheiser MKE lavalier condenser capsules fitted into a sleeve and inserted into the instrument body through the tail peg hole. Because all of the onstage electric instruments are taken "direct," initial A/D conversion takes place at the inputs of the satellite 01Vs. "There are no mics on any guitars," notes Miller. "No guitar amplifiers anywhere. They're all direct through their mixers."

IEMS 'R' US

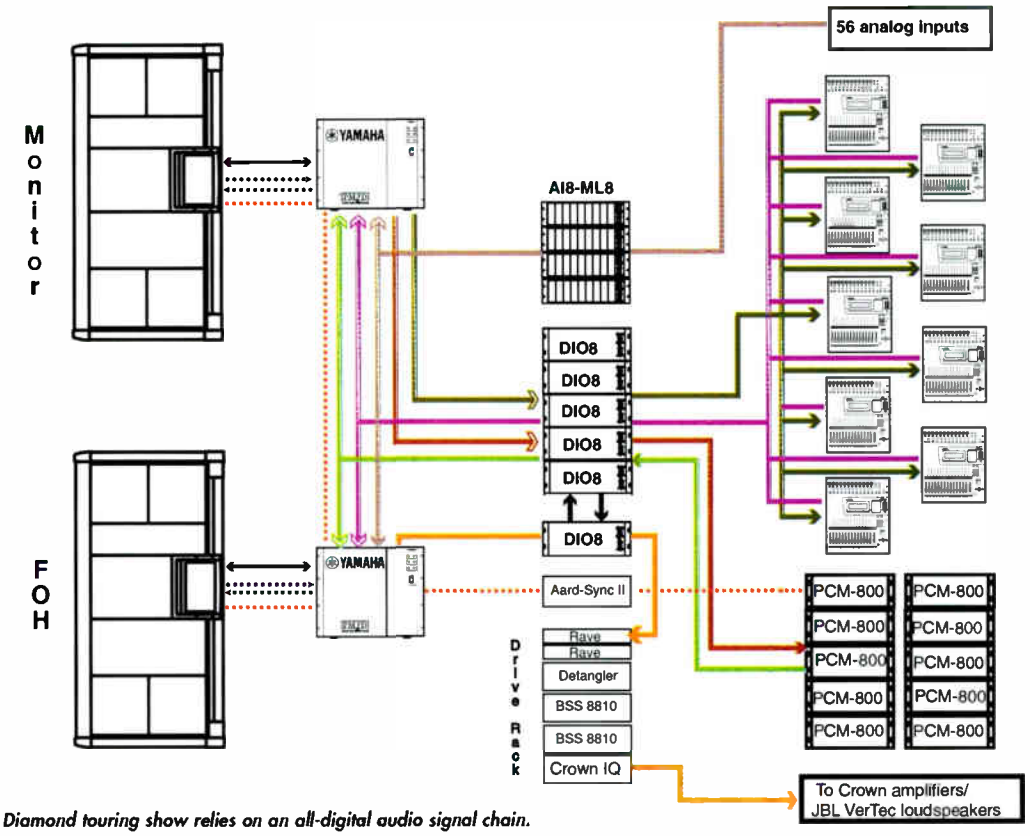
Using a PM-1D onstage, Becker creates mixes for Diamond, the string section and the horn players, but all of the other musicians have local control over their in-ear mixes via individual Yamaha 01D mixers. The strings and horn players use in-ear monitor or headphones driven by hard-wired Shure beltpacks, whereas the singers have Shure wireless in-ear systems supplied by Firehouse Productions of Red Hook, N.Y. Diamond is also using wireless IEMs fed from a Shure PSM700 system.

All mics are routed to Yamaha AI8 modules, 8-input ADCs that provide two outputs for each input; the "cloned" outputs are routed to both the FOH and monitor PM-1D engines. "It eliminates the splitters—there aren't any," says Miller. "And the patching is all done digitally in the consoles themselves. So, if an input comes in on channel number such-and-such, he can put it in his console wherever he wants it, and I can put it in mine wherever I want it. And then we have some cross-patching, because I send him a couple of things for backup. If something goes down, we have a way to run the entire sound system off of his console, and we also have a way to feed part of the monitoring system off of my console, in case something goes astray."

COMPACT FOH COMPOUND

Miller's FOH compound is admirably compact. Besides the PM-1D, he has a pair of Panasonic 3700 DAT machines (one for playback), a Marantz CD player and a Dell PC set up to run Crown's IQ for Windows software, which system techs John Drane and Art Isaacs use for monitoring and controlling the VerTec P.A.

Miller also has a Dell 8000 laptop computer for storing and editing the PM-1D presets and cues. "I'm actually a very Macintosh guy," says Miller. "But the console stores everything in Windows, and I can use the laptop to work on cues in the hotel. I don't have to do it at the



The Neil Diamond touring show relies on an all-digital audio signal chain.

venue. The other very cool thing is that all the cues are stored on a Compact Flash card, which fits in a little PCMCIA card in the console, and that I can transfer over to the computer. I carry a backup chip in my pocket and, if something went wrong, I could reboot the PM-1D with it."

One other piece of equipment at FOH is something of an antique. "I have a Roland MIDI thing called the RC3—it looks like a telephone keypad. They don't make them anymore, but I wish I could get another one," says Miller, who uses it as a random-access MIDI program controller to call up cues for each song in the show.

"As I said, we are 100-percent digital," notes Miller. "There are no outboard effects anywhere in the system—nothing." All of the compression and EQ used on individual channels or subgroups are provided by the PM-1D. "The problem is that, once you switch to the digital domain, if you start going back to the analog domain, and then come back to digital, chances are a lot of what you hope to accomplish you've destroyed in getting out and getting back," explains Miller. "A cool thing about all the Yamaha stuff is they're capable of rewriting and adding software to do the things you want to do, such as adding a de-esser to the PM-1D, as it doesn't have one and we sometimes need a de-esser, particularly with earpieces."

360 DEGREES OF VERTEC

Miller uses the PM-1D's output matrices to create zone mixes for the main five-position VerTec P.A., which includes 16-cabinet left/right clusters and eight-cabinet center and outer left and right clusters. Two additional five-cabinet clusters are available for extreme audience left and right coverage when the seating plan exceeds 270°. "We can go 360° around the stage," says Miller. "In some venues, we have already. So we have enough loudspeakers to do that, and we have more outputs to feed the system."

The flown three-way, full-range VerTec VT4889 cabinets are augmented by eight JBL Concert Series 4842 subwoofers containing 18-inch JBL drivers that are stacked on the arena floor or under the stage. "One of the things that's amazing about the VerTec system is the low end," says Miller. "For the first time, I feel like I have real low end up in the air that's usable and warm-sounding."

Typically, systems engineer John Drane hangs, tests and presets the VerTec system for Miller. "John has had quite a number of years' experience with line arrays, and he's also been working with me on the IQ stuff for several years," says Miller. "We've actually developed our own settings now [for the VerTec system] by taking JBL's and changing them to fit what we think sounds good. I used to go in and tweak the system myself. I don't do that anymore. I want to be able to plug in my mixer and make it work. I don't want to have to mess with a lot of EQ. In fact, it's my opinion that you do a minimal amount of EQ in the mixing, and you do the program EQ to make the system sound good. Once the system sounds good, the vocal mic EQ won't change from day to day. Maybe a little, but not much."

One consequence of the elimination of stage monitors and instrument ampli-

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fiers is that Miller has found it necessary to add "lip fill" speakers for those sections of the audience closest to the stage. "When we had stage monitors, there was enough vocal stuff coming off of the stage from Neil and we didn't really need them," says Miller. "We learned when we went to the in-the-ear systems we had to have them. We could not get the coverage down in the front rows we needed."

RAVE ALL NIGHT

As the diagram indicates, digital audio sources for the various P.A. and monitor systems are distributed to the amp racks and subsidiary 01V mixers via standard CAT-5 Ethernet cable. AES/EBU outputs from the PM-1Ds are converted to CobraNet by QSC's RAVE system, which routes and manages the resulting data packets. The Routing Audio Via Ethernet (RAVE) system can route up to 64 channels of 20-bit/48kHz audio over a 100BaseT network. System-wide latency is about 6.3 ms, regardless of configuration.

All crossover, EQ, dynamic control and delay functions are executed by DSP in the USP-2 CN input modules fitted to the inputs of the Crown MA-5000vz amplifiers. Crown's IQ software provides complete control and monitoring facilities, so the entire system can be tested and adjusted on PCs at either FOH or monitor positions.

"We have two of everything," explains Miller. "The thing everybody worries about is failures. You worry about that even with analog stuff, but with analog stuff it's a little simpler [to troubleshoot] because we understand it better." To provide complete digital redundancy, the system design includes two complete QSC RAVE networks and will switch over automatically if one goes down. A Z-Systems Detangler, effectively a digital 8-in/8-out router, acts as a switcher. "Because you can't just start unplugging digital stuff and repatching it," notes Miller. "So this device switches from one digital input to another one, if there's a problem."

Though the Neil Diamond sound system design is technologically ambitious, Miller is more than pleased with the results. "When you're in the digital domain, we virtually have no buzzes, no hums," he notes. "They don't exist. We used to spend an hour or two every day, when setting up, trying to get rid of the buzzes and hums, because of the hodgepodge of stuff we had connected together. For this system, we had a tremendous amount of assistance from Yamaha, because nobody's ever taken a system out like this—nobody has hooked up all this stuff the way we've connected it up. We had some glitches initially and they've had to fix some things in the software. But it's now working, and it works terrific. We have a wonderful relationship, and they have been very supportive of the whole project."

Chris Michie is a Mix *technical editor.*

TECHNICAL SUPPORT

In addition to those named in the article, support on the Neil Diamond tour came from:

Marc Lopez, Yamaha: digital audio system design and implementation

Sam Helms, Sigmet Corp.: overall system design assistance

Greg "Chico" Lopez: assistant monitor engineer

Lonny Wayne: assistant to Stan Miller

Christy Zellman: touring sound technician

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Attaching To Structures

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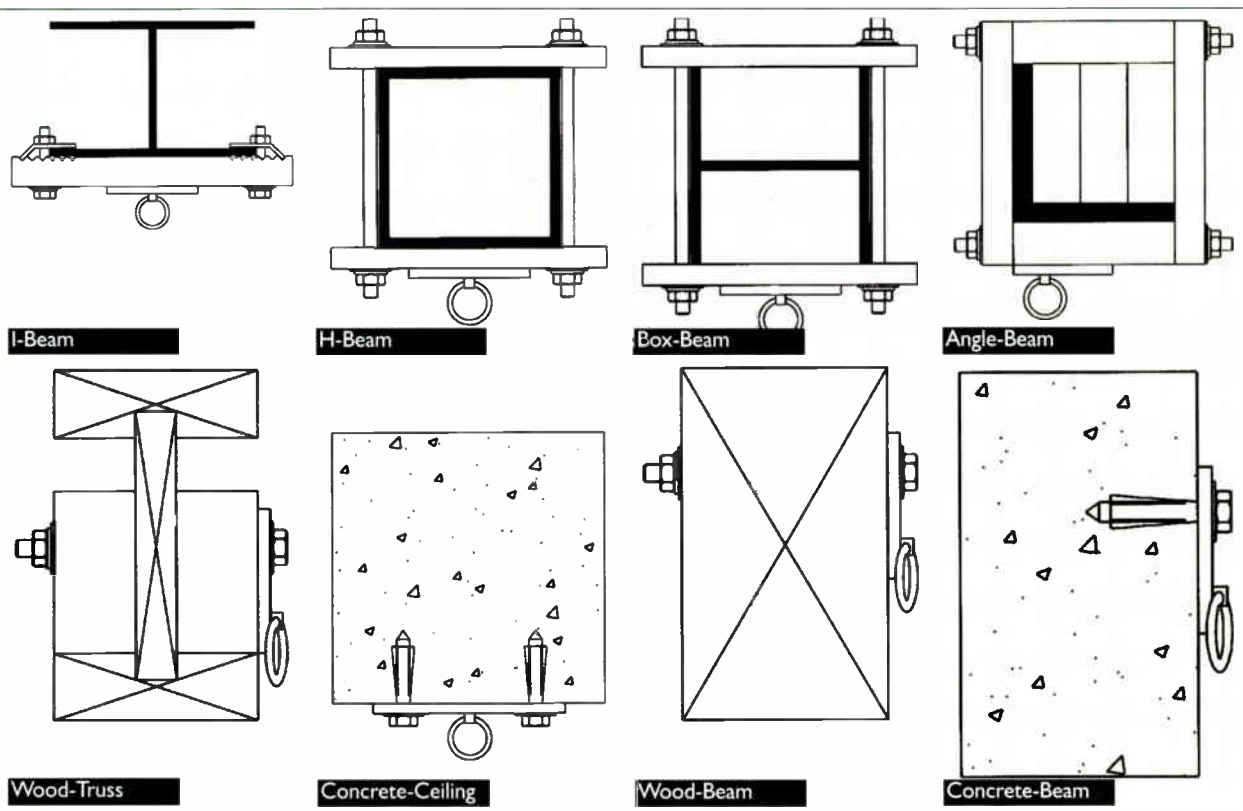
Similar to searchlights, loudspeakers must be aimed to be effective. And, in order to cover an audience area effectively while keeping the speakers' coverage pattern away from reflective surfaces (such as walls and ceilings), it is usually best to raise speakers above the audience members' heads. Though placing speakers on poles or risers may provide adequate elevation in some situations, many others call for the speakers to be "flown," or suspended from the building structure.

by Andrew T. Martin



The most common methods of attaching to structures for the purposes of suspending an object.

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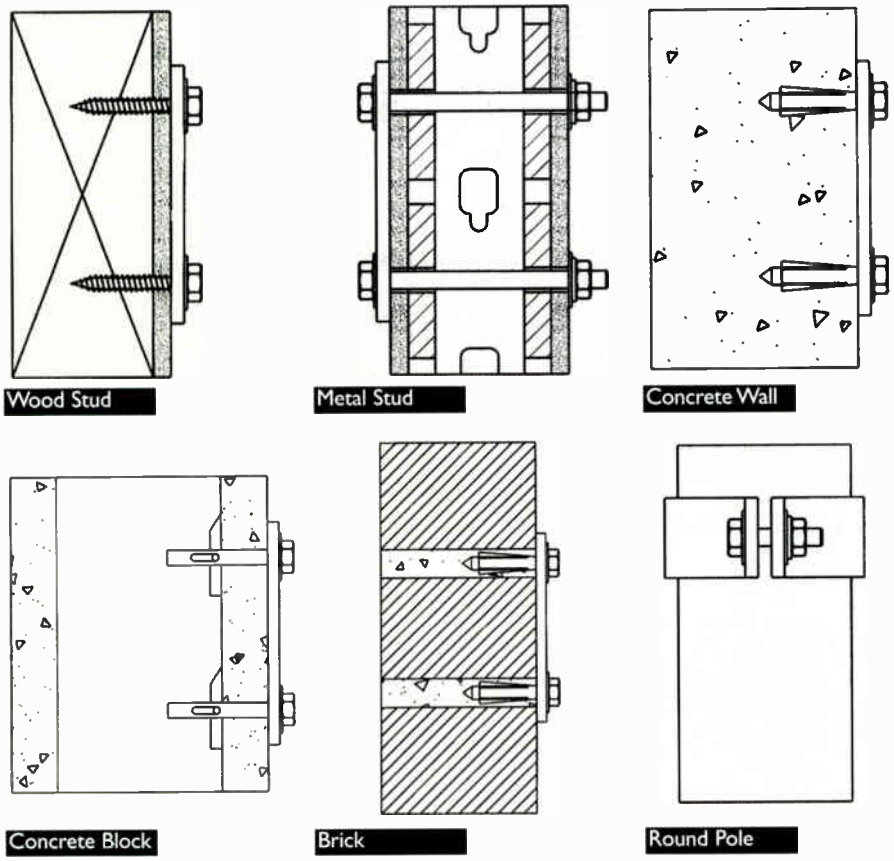

Common methods of attaching to structures for mounting an object, such as the base plate of a manufactured speaker mount.

There are probably a gazillion different ways to securely attach loudspeakers to structures, and there is probably an equivalent number of structure types to be attached to. This article outlines the most common attachment methods and structure types I am familiar with, based on my experience in the contracting and service industries.

Perhaps the most important message in this article is that there are a multitude of suspending and mounting methods, and that no one method is correct for all applications. I recommend that any and all structural attachments are reviewed by a professional engineer to ensure that the attachment method is correct and will perform as designed, with an adequate design factor.

STRUCTURAL INTEGRITY

DON'T FORGET THE SPEAKER CABINETS

By Chris Michie

As the accompanying article stresses, any installation plan that includes speaker cabinets suspended above an audience area should be reviewed by a qualified engineer. However, ensuring that the stationary mechanical attachment is properly designed is not enough—the loudspeaker cabinets themselves must be capable of supporting their own weight, plus any additional load suspended from them. Not surprisingly, manufacturers are keenly aware of liability issues, and take care to test and document the structural integrity of any speaker designed to be hung or mounted.

"Safety is always one of the first things we think about when building a cabinet," says Larry Howard, business and product development manager for Tannoy distributor TGI North America. "Understanding the particular niche market that each of these products is going into is paramount as well." Howard notes that, for products aimed at the lower end of the installation market, "you really have to build in every safety issue that you can because of the level of installer that's going to be putting the product in." Tannoy tests all of its loudspeaker cabinets to destruction, and that data is passed on to the customer. "We're very clear in our manuals and instructions what not to do," Howard concludes.

In addition to club and installation speakers, EAW manufactures loudspeaker systems for touring applications, but the company pays rigorous attention to safety issues, regardless of the eventual application. "Anything that we build is pull-tested," says EAW's manager of touring systems, Paul Carelli. "The structural integrity of the box is taken into account during the design stage. If we know that this model is going to be flown over people's heads, we take that into account." EAW's design specifications include a 7:1 safety capacity, which means that the integral rigging points in each cabinet will hold at least seven times the weight of the box. In the case of the larger cabinets, this is accomplished through the use of an integrated steel frame, so that all rigging connections are steel-to-steel. "We also include in the instructions that, if you are going to hang it, use a qualified rigger," notes Carelli. "We steer our customers to qualified professionals."

In general, any professional loudspeaker manufacturer will design each of its products with an eye to its likely use. However, users intending to suspend or wall-mount speakers should always check the manufacturer's literature or Website to ensure that the cabinet has been approved for use in the intended application.■

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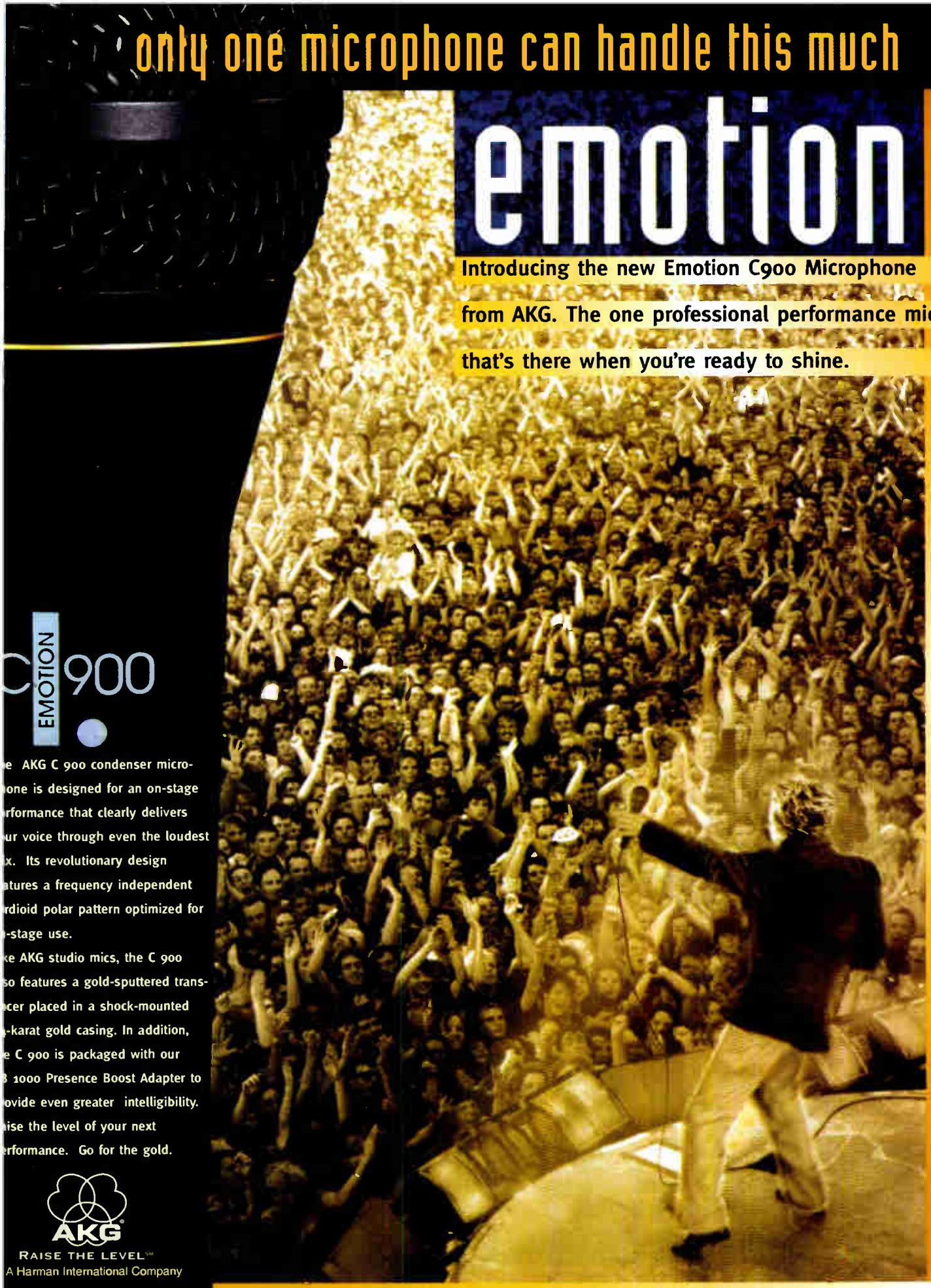

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Seismic concerns can be problematic when attaching to structures. It has been my experience that the local building authorities within seismic territories are very reasonable when it comes to approving solutions for the task at hand. When designing the attachment method in a seismic activity zone, it is important to remember that the primary concern for the building authority is that a dynamic load, such as a shocking movement or a rolling movement, will not overload the attachment method. It is not uncommon for dynamic loads to exceed two or three times the static load of the object being suspended or mounted, so load dynamics are a valid concern. Another concern relates to the materials being attached to; some materials have excellent structural properties in compression but not in tension, and vice versa. In any case, I strongly recommend consulting a professional engineer if you suspect any seismic activity.

The hardware used in attaching to structures should only be of a type that is manufactured for overhead use and is fully traceable product. Traceability ensures quality products and is a critical part of a risk-management program that can protect designers, installers and end-users from product liability risk. More information on risk-management systems can be found at www.marshalriskmanagement.com.

COMMON SENSE RULES

For someone who is not accustomed to the task, the idea of attaching to a structure to suspend a heavy object can be worrisome. In my opinion, someone who is not comfortable with the task should not attempt this without a professional's assistance (someone who is in the business of attaching to structures). The stakes are simply too high should the attachment method fail. Here are a few tested, common sense rules that should ensure a safe and durable installation:

- Purchase only traceable products intended for overhead suspension.
- Get assistance and guidance from product manufacturers prior to installation.
- Have the design reviewed and/or approved by a professional engineer.
- Install the attachment hardware in a methodical way, paying attention to every structural detail along the way.
- Install the hardware exactly as the manufacturer and professional engineer recommend.
- If there is a question about anything, stop and get the answer before proceeding.
- If you are suspicious or uncomfortable with the structural attachment at any point, stop and then find a solution or another way; do not install anything you feel may be unsafe.

Readers who wish to expand their knowledge of attaching to structures and suspending or mounting objects overhead should contact contractor trade organizations and manufacturers of overhead suspension hardware for relevant seminars and training opportunities. ■

Andrew T. Martin is president and CEO of ATM Group Inc., which operates three business units in Carson, Calif. ATM Fly-Ware designs, manufactures and distributes loudspeaker rigging hardware and video wall suspension hardware. BendiForm metalworks designs and manufactures structural sheet-metal products and architectural elements. Marshal Risk Management Systems is a risk-management consultant to the high-risk entertainment industry. For more information, visit www.atmflyware.com or call 888/RIG-MORE.

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DEPECHE

PHOTOS BY STEVE JENNINGS
TEXT BY ROBERT HANSON

Depeche Mode took to the road last summer, playing sold-out sheds and arenas around the world in support of *Exciter*, their 13th full-length release. *Mix* caught up with the tour in Northern California, where shows in Sacramento, Concord and Mountain View were all sell-outs.

The set list favored material from the band's most recent studio efforts, plus a few notable classics, including the title track from the '86 release *Black Celebration*, "I Feel You," and, of course, "Enjoy the Silence."

During tour pre-production at Santa Barbara Sound Design in Southern California, the band decided on how many components of the original studio recording were needed for playback tracks and created an elaborate synth and sample library. During soundcheck at the Shoreline Amphitheater, band and crew were working up a truncated version of the current single, "I Feel Loved," for an appearance on *The Tonight Show*. Engineer Andrew Phillpott managed playback and editing of pre-recorded tracks from a pair of iZ RADAR 24s (a main and spare rig aptly named "Master" and "Servant") and a rackmounted Pro Tools system. Once an edit was approved, Phillpott burned a CD-R for each bandmember and saved the mix that was eventually flown into the RADAR rig.

MODE

Monitor engineer Sarne Thorogood created 32 mixes for both in-ears and wedges on a Midas Heritage console. Onstage monitors include 18 TFM-450 15-inch wedges, six TFM-780-L subs and custom-built sidefills dubbed "Thoro-fills." "Martin [Gore] has one in-ear in all the time," Thorogood explains. "And that has click in it all the time, and his vocal. And then he gets a general mix in his wedges."

Thorogood uses Lexicon PCM-91 and Roland SDE-990 reverb and chorus effects on the main vocal channel, and Yamaha 990s for drums and backing vocal effects. dbx 160s are patched across all of the vocal channels, and Thorogood notches out offending frequencies on the main vocal with a BSS Varicurve. BSS 960 EQs keep everything else in check.

FOH engineer Gary Bradshaw mixes on a Midas XL-4. Faced with the challenge of two dynamically different vocalists (Gahan and Gore) sharing the same vocal mic, Bradshaw sets up a switch that routes Gahan's voice through a BSS 901, a DCL 200 Limiter and a Neve 9098; Gore's voice only gets the DCL 200. Bradshaw uses dbx 160As for backing vocals, and a Yamaha 03D for live drum effects.

Lead vocalist David Gahan sings through a wireless Samson UR-50 with an Electro-Voice 757 capsule. Martin Gore (vocals/guitar/keyboard) sings lead vocals with Gahan's mic, and uses an Audio Technica 89-R for backing vocals at his keyboard and guitar positions. All other vocal mics are A-T WT-73s. Drum mics include a Shure SM91 on kick, SM98s on toms, SM57s on snare top and bottom, A-T 4050s as overheads and an A-T 4060 on the hi-hat.

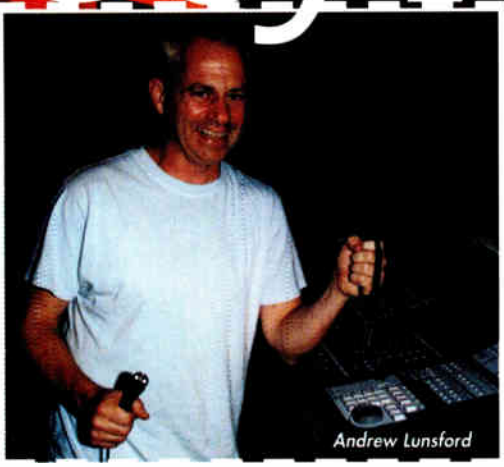
Britannia Row was tapped to outfit the tour. The main P.A. is the company's standard Flashlight system.

Depeche Mode live:
Dave Gahan, vocals
Martin Gore, vocals/guitar/keyboards
Andy Fletcher, keyboards/backing vocals
Peter Gordeno, keyboards
Christian Eigner, drums
Jordan Bailey, backing vocals
Georgia Lewis, backing vocals

Martin Gore

Andy Fletcher

Stylin' at Club Moomba


Andrew Lunsford

By Maureen Droney

It's an only-in-L.A. kind of thing: A multimillion-dollar new club, smack in the middle of the West Hollywood neighborhood known as Boys' Town, that's become a total (female!) babe magnet. Moomba, housed in what was formerly Luna Park, is a rambling, multilevel venue that caters to the beautiful people, with a top-rated restaurant, lounges wired for video and surround sound, a patio, and a cozy performance space with a high-quality sound system.

In L.A.'s trendy and competitive club scene, celebrity sightings are the name of the game. Moomba's buzz was enhanced when it hosted Elton John's Oscar night post-awards party, where a Yorkville Sound TX Series P.A. debuted in the main club space.

Seemingly, no expense was spared to outfit the audio/video elements of the club. Panasonic Plasma screens and DVD players abound; monitoring in the sound booth is on Genelec 1031As; and there's even a digital audio recording system for the bands. The main console, a Sony DMX-R100, is set up for 24 mic inputs and eight monitor mixes; in addition to routing FOH sound, monitors and various feeds throughout the complex, the desk also sends signal, via ADAT Lightpipe, to a Pro Tools MixPlus | 24 system archived on removable Glyph drives housed in a four-space Glyph Trip rack. The extensive mic collection, all by Shure, includes wireless, SM44 and the complete Beta Series.

According to Andrew Lunsford, Moomba's perpetually-in-motion sound technician, the club hosts all sorts of events, and the 200-capacity performance room, with its corner stage, is readily reconfigured. Some nights, carpet and couches appear and a digital video projector drops down, creating a viewing room for 5.1 DVD movies. For DJ nights, it becomes a dance floor with a lounge and mirror balls. There are private events, and sometimes the room gets transformed into a small theater—complete with a runway—for fashion shows.

"Basically, we have three systems," says Lunsford. "The main performance space, the dining room and the lounge. Anything can be routed back through the main sound booth to the different rooms."

Moomba's complicated routing was provided by Anaheim Communications. All feeds run through the Sony desk, where Lunsford decides what will be piped where. Sometimes, the performance onstage goes everywhere; other times, it's different for each room, or a DJ working in the downstairs "pool hall" lounge may have cuts playing throughout. Boston Acoustic speakers are arrayed around the outside patio; M&K monitors, including powered mini-subs buried underneath the couches, rock the lounge; and there's even a subwoofer in the restaurant. Each room has its own satellite dish, and, besides the setup in the main sound booth, there are DJ booths in the lounge and restaurant.

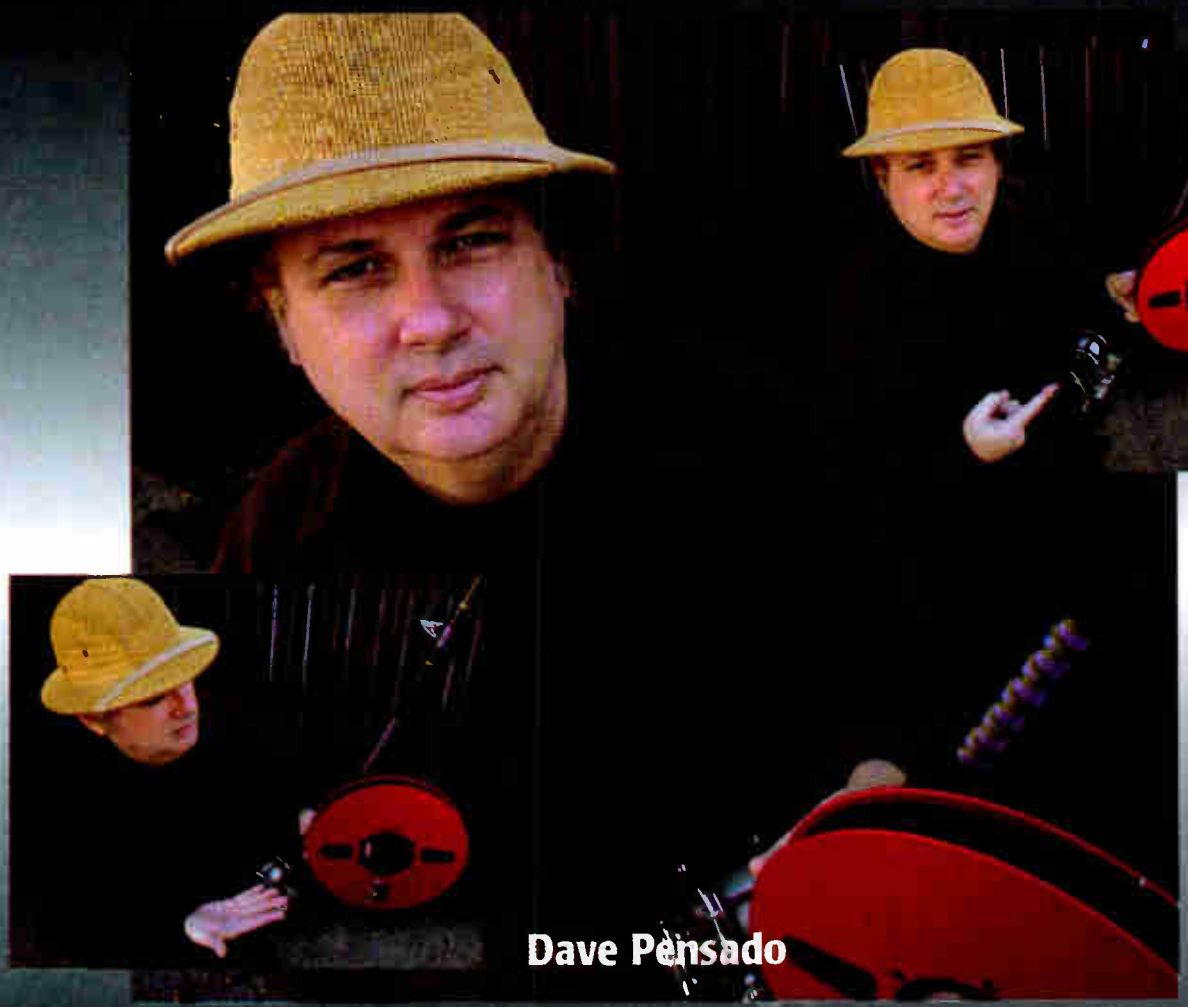
The nightclub's P.A., designed and built by Yorkville, and including cabinets, power amps and processors, has proved a boon in working with such a wide variety of shows. The two main TX8 three-way cabinets, which move onstage for club nights and off for bands, are enhanced by two TX9 subwoofers and three TX3 two-way cabinets for center-fill. Four TX4 two-ways handle corner and backfill. Stage monitors consist of four TX2Ms and four TX5Ms.

Powered by a combination of 20 Audio-Pro amplifiers, the system boasts an output of an astonishing (for the size of the room) 18,000 watts. One might expect trouble, considering all those DJ-driven shows, but all enclosures in the system are protected by proprietary Yorkville-designed TX Series processors.

"The processor in the TX system is self-calibrating and provides complete speaker protection for the system," explains Yorkville's Tim Marshall. "It not only looks at what's going into the amplifiers, but also at what's coming out of them. There are sense cables on the back that listen to what's going in and out, so the processor is constantly calibrating and retuning the system, changing filter and crossover points. As you put more information into the system, it determines where it can shift signal, and the cabinet is constantly retuning itself."

Great sound, beautiful people and a buzz; the word is that "moomba" is Australian Aborigine for, "Let's get together and have fun." From the looks of the crowd at Moomba L.A., that invitation's working. ■

Reelin' in the Hits.



Megamixer for some of the biggest hits of all time: "Lady Marmalade," Christina Aguilera, Lil' Kim, Mya, Pink, Missy Elliot; "Emotion," Destiny's Child; "Get The Party Started," Pink; "Love Of My Life," Brian McKnight; "All My Life," K-Ci & JoJo; "All For You" (remix), Janet Jackson/Missy Elliot.

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MADONNA'S DROWNED WORLD

PHOTOS: STEVE JENNINGS

Madonna's six-month Drowned World 2001 world tour combined state-of-the-art sound equipment, provided by Clair Bros./Showco, with good old-fashioned hard work, apart from one song lip-synched from a trapeze, Madonna sang throughout the energetic and spectacular show. Backed by a five-piece band and two back-up singers (with occasional synthesizer and percussion parts streamed from a Pro Tools system), Madonna sang into a Sennheiser SKM-S72UX wireless mic fitted with a 300E capsule. Backing vocalist mics were Shure UI RF systems with Beta 58 capsules.

Clair Bros. veteran Dave Kob (pictured below) mixed FOH on the Showconsole. "It worked out brilliantly," said Kob, who had not used the propietary digitally controlled analog console before, and spent two months in pre-production and rehearsals. "The ability to recall snapshot presets for each song and tailor the crossfades between songs made for an exceptionally smooth-running and consistent show." Kob used a Summit TLA-100 compressor on Madonna's vocal channel and a 2-channel Tube-Tech CL-2A compressor on the backing vocalists. Reverb and effects were provided by an Eventide H3000, a TC Electronic M5000 and M2000, and Yamaha SPX1000s. A pair of TC Electronic D-TWO Multitap Rhythm Delay units provided delay.

The P.A. for the tour was a Clair I-4 line array system augmented with Clair's new I-4B bass bins, which were flown with the P.A. rather than stacked. All bandmembers used Future Sonics IEM III wireless and wired in-ear monitors, though CBA R-4 II full-range monitor cabinets supplemented with CBA ML-18 subwoofers were placed on-stage for the dancers. The monitor mixer was Blake Stob at a Midas Heritage 3000.

—*Chris Michie*

APOGEE GOES TO THE THEATER

The Calvin Simmons Theatre in Oakland, Calif., has purchased an Apogee Sound loudspeaker system to cover its 1,900-seat auditorium. Michael Beyl of Swanson Sound spec'ed and installed a center cluster made up of three AE-5s, three AE-5NCs and two AE-12 subwoofers, with two additional AE-5s on either side of the proscenium. Amplifiers are Apogee DA-800 models; system processors are Apogee D-1s.

NEXO ADDS DIGITAL AMPS

NEXO USA will distribute the German-manufactured CAMCO range of digital power amplifiers in the U.S. CAMCO's key product for the U.S. market, the Vortex Series amplifier, is a lightweight, compact and powerful unit that can produce more than 6,000 watts at peak output, and weighs less than half of similarly powered professional amps.

TURBOSOUND IN LAS VEGAS

Las Vegas nightclub The Ra has installed an all-Turbosound sound system. Designed and installed at the Luxor Hotel hot spot by local equipment vendor Scott Fisher, the system includes four Turbosound TFL-760H cabinets, eight TSW-718I, and eight TSW-124i subwoofers, 10 TQ-440 cabinets and five LMS-D6 digital loudspeaker management systems. Other Las Vegas clubs that have purchased Turbosound systems include Club Utopia and The Kass-Bah.

QSC DRIVES BASEBALL

QSControl Ethernet-based audio network drives the weatherized, distributed audio system at Milwaukee's 43,000-seat Miller Park, home of the Brewers and scheduled site for 2002's All-Star Game. Designed by Dave Stearns of Pelton Marsh Kinsella, the sound system also includes at least four different models from the contractor-friendly QSC CX Series amplifier range.

SALES AND INSTALLATIONS

Central Christian Church in the Las Vegas suburb of Henderson, NV, has included eight Bag End D18E-I subwoofers in its new sound system. The system, which also includes a Peavey Media Matrix and three flown speaker clusters, is the primary sound source in the brand-new 186,000-square-foot church's 3,200-seat auditorium...The Sheffield Family Life Center in Kansas City, MO, has purchased three InnovaSon Essential Live digital consoles. A/V contractor Harvest Productions of Kansas City installed the sound system, which includes a Peavey Media Matrix system and EAW speaker clusters driven with Crown MA Series amplifiers.

TOURING NEWS

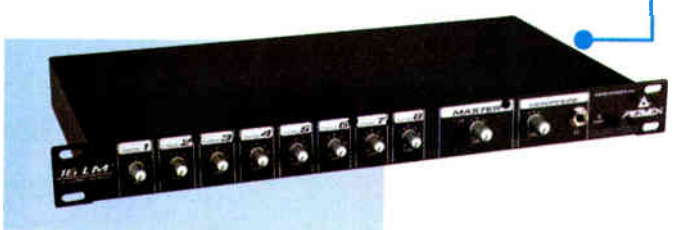
Deep Purple has been using HK Audio T-Series and M-Series speakers as onstage monitors. According to monitor engineer Rob Hodgkinson, "The new VT 115 X that we are using as stage monitors for Ian Gillan, Roger Glover and Steve Morse is one of the best 15-inch/2-inch monitors in existence. This box is just incredibly loud and clear."...Veteran Clair Bros. monitor engineer Steve McCale picked the ATI Paragon II for shows with both The Eagles and Stevie Nicks, citing the Paragon's rock-solid stereo imaging. "Left-to-right separation is vitally important, and the ATI Paragon II has the best imaging and the widest dynamic range of any console I've ever used. It's my first choice," noted McCale. ■

SHURE BETA 58 VOCAL ARTIST UHF

Shure Inc. (www.shure.com) offers the Beta 58 Vocal Artist™ UHF, combining the performance of the super-cardioid Beta 58A with Shure's UT Series wireless technology. Available for a limited time only, the system uses Shure's MARCAD® diversity circuitry to optimize reception and minimize dropouts. The transmitter range is up to 100 meters, and up to eight systems can be used simultaneously. Shure is also making nine new UT wireless frequencies available. The system retails at $762.50.

PEAVEY 16 LM LINE MIXER

Peavey (www.peavey.com) offers the 16 LM, an 8-channel stereo line mixer. Each input channel features left and right unbalanced ¼-inch inputs; outputs are also unbalanced L/R ¼-inch connectors. Each input offers a front panel level control, and the output section offers a master level control, an LED clip indicator, and headphone output with a separate level control. The 16 LM is $124.99 and has a five-year warranty.



SABINE 2.4GHZ WIRELESS

Sabine's (www.sabine.com) True Diversity 2.4GHz spread-spectrum wireless mic technology allows up to 50 units to operate within a single location. The 2.4GHz band is globally accepted and clear of the new DTV frequencies. SWM-5000 mics are available in single- and dual-channel models, and have Sabine's built-in Targeted Input Processing, which includes the FBX Feedback Exterminator, a compressor/limiter, intelligent de-essing and Mic Super-Modeling. This last feature allows the system's standard Audix OM-3 (or optional OM-5) capsule to emulate different mics; users can recall up to 10 presets per channel on the receiver. The system is available with handheld or body pack transmitters; options include rackmount antenna distribution for up to six receivers and a low-profile extension antenna.

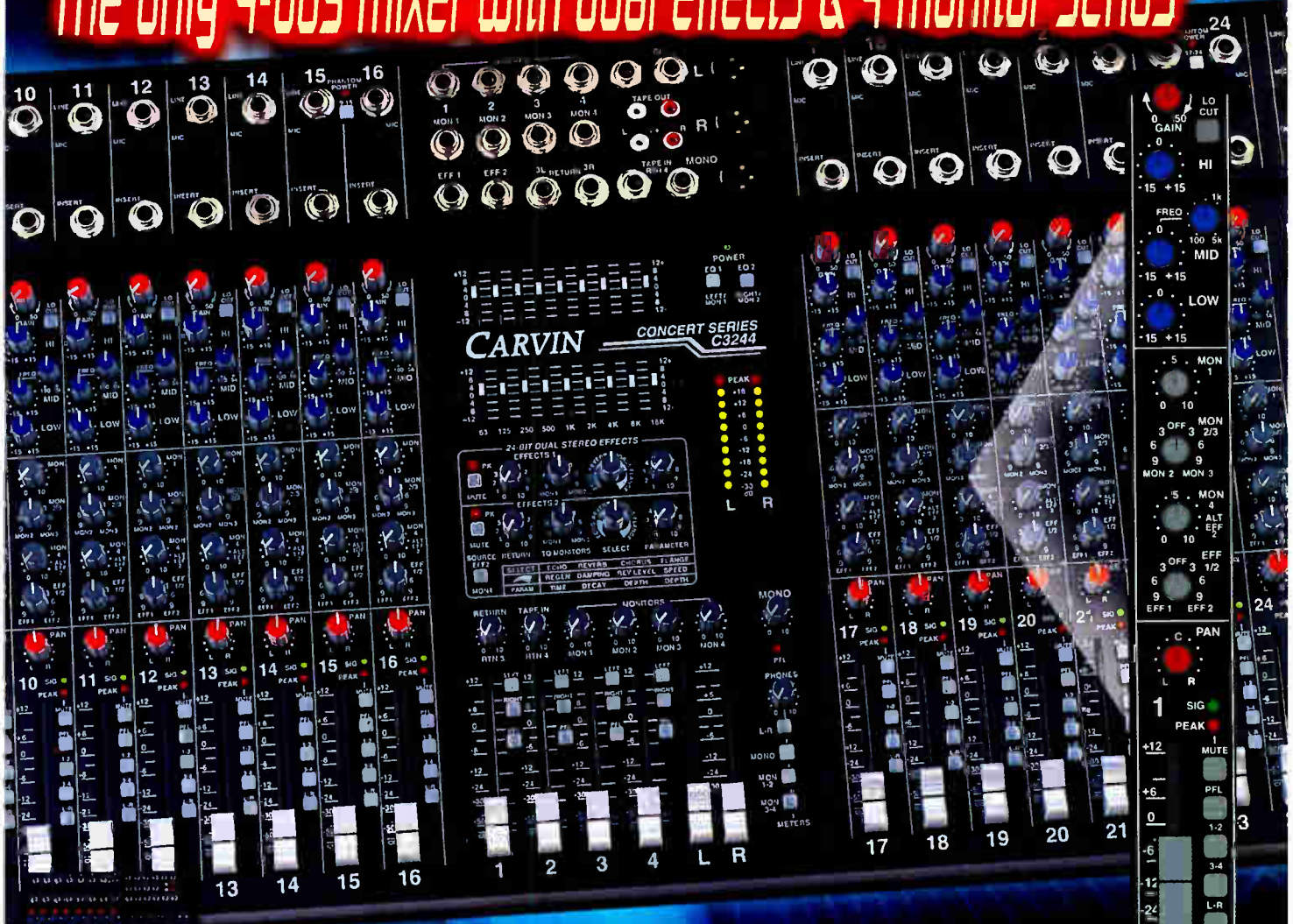
SENNHEISER PLUG-ON TRANSMITTER

The Sennheiser (www.sennheiserusa.com) SKP 30 miniature RF transmitter plugs into the XLR output of any passive or phantom-powered mic. Featuring Sennheiser's HiDyn plus™ noise-reduction system, the SKP 30 transmits over 16 preprogrammed (and lockable) PLL-controlled frequencies chosen from 1,280 user-accessible frequencies within the unit's operating range. Compatible with Sennheiser's 3000 and 5000 Series receivers, the SKP 30 maintains signal-to-noise ratio of 114 dB. Sensitivity is adjustable via -10 and -20dB pads, and the unit includes switchable 48V phantom power and low-battery power status displays on both transmitter and receiver.

A-T FREQUENCY-AGILE UHF

The Freeway™ Professional range of UHF wireless systems from Audio-Technica (www.audio-technica.com) is available in handheld, headworn, lavalier, guitar and bodypack versions. Featuring 10 selectable UHF channels, Freeway systems offer two independent frequency bands (470-480 MHz and 482-492 MHz), allowing up to eight channels to operate simultaneously. Each UHF system includes the ATW-R600, a 10-channel frequency-agile receiver with advanced dipole antenna, bodypack or handheld mic transmitter, squelch and volume controls, and AF Peak, RF and Power indicators. The ATW-T601 UniPak™ bodypack transmitter has a dual-impedance input for instruments or mics. The ATW-T602 handheld dynamic mic/transmitter is included with the ATW-602 system. All transmitters operate on a single 9-volt battery, and have a battery-condition indicator, an off/standby/on switch, internal channel selector and variable trim control. Prices range from $349.95 to $459.95.

The only 4-bus mixer with dual effects & 4 monitor sends



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QUIK-LOK S-170 SPEAKER STAND

Quik-Lok (dist. by Music Industries Corp.; www.musicindustries.com) debuts the S-170 Tripod Speaker Stand, featuring Quik-Lok's exclusive non-strip, height-adjustment collar and a heavy-duty nylon leg joint with tightening block. Constructed from lightweight steel tubing, the 8.9-pound S-170 will support speakers weighing up to 125 pounds, and has a steel safety pin to lock the stand when folded for transport. Minimum height of the S-170 is 52 inches; maximum height is 78.7 inches. When folded, the S-170 measures 45.3 inches. A provided adapter accommodates speaker cabinets with a 1.5-inch diameter standmount socket. Available in a black matte finish, the S-170 has a limited lifetime warranty and is $99.95.

YORKVILLE BASSPIPE SUBWOOFER

The Yorkville (www.yorkville.com) LS1208 "basspipe" subwoofer has a high power-handling 18-inch woofer feeding a multiple flare horn, which is, in turn, connected to an organ-like pipe. Inputs are ¼-inch or Speakon, and a configuration switch allows for easy single-wire hookup using optional four-wire Speakon cables. Cabinets are constructed of ¾-inch Canadian ply with heavy internal bracing and black carpet finish. Price: $999.

BLACKHURST RUM RACKS

Blackhurst Stagegear (www.stagegear.com) offers a variety of standard and custom racks, workboxes and road cases. The new RUM Series racks with mixer tops include the RUM 16/24, a 16-space utility rack with a slanted top rack for a rackmount mixer. A three-lid design allows access to all rack and mixer connections, and options include a rear rack rail and various wheel and dolly options. The RUM 16/24 features Baltic birch construction and a gray carpet finish.

JBL CROWN-POWERED SUBWOOFER

The new MPro Series MP418SP subwoofer from JBL Professional (www.jblpro.com) has an integrated 2-channel Crown power amplifier rated at 660 watts into 4 ohms each channel; the second amp channel can power a second sub or a full-range speaker. Designed for use with JBL's MPro speakers or powered EON G2 models, the MPro 418SP's compact bass-reflex enclosure has an 18-inch driver and a Crown Audio integral amp/signal processing module. Additional features include a pole-mount for supporting satellite speakers, Duraflex™ finish, steel handles, steel grille and casters. The 119-pound MP418SP measures 24.3x21.2x30.6 inches. Frequency range is 30-150 Hz.

SOUND PHYSICS LABS SPL-TRIK

The SPL-trik™ stage monitor from Sound Physics Labs (www.soundphysics.com) is the latest in its growing line of high-fidelity, high-output, Boundary-Compliant™ loudspeakers. Featuring a 60°x60° coverage angle, the SPL-trik has four 8-inch, direct-radiating LF drivers (two on either side of the horn) and four 4-inch horn-loaded mid drivers emanating from a 1-inch, HF compression driver at the back of the horn. Frequency response is 44-18k Hz (±3 dB). Constructed of 13-ply Baltic birch covered in tough Line-X Truck Bed Liner material, the SPL-trik measures 17.5x19x35.5 inches and weighs 108 pounds. Price: $2,495.

D.A.S. COMPACT 1

The Compact 1 self-powered speaker from D.A.S. Audio (www.dasaudio.com) is a three-way, bi-amplified system. Each Compact 1 has two 500W ICEpower® amp modules (made by Bang & Olufsen PowerHouse) driving the LF and mid/high sections. Lows are via a 15-inch G-354 woofer with 4-inch voice coil. The midrange horn is loaded with a 6-inch B-6 cone speaker, with HF handled by a 1-inch exit M-5 compression driver with 2-inch titanium diaphragm coupled to a CD horn. The Wisa® Birch plywood trapezoidal enclosure features multiple coats of catalyze polyurethane paint and a steel grille. Ancra® Track flying hardware allows for precise vertical coverage, and 16 M10 eyebolt-based points are included. Price: $2,795.

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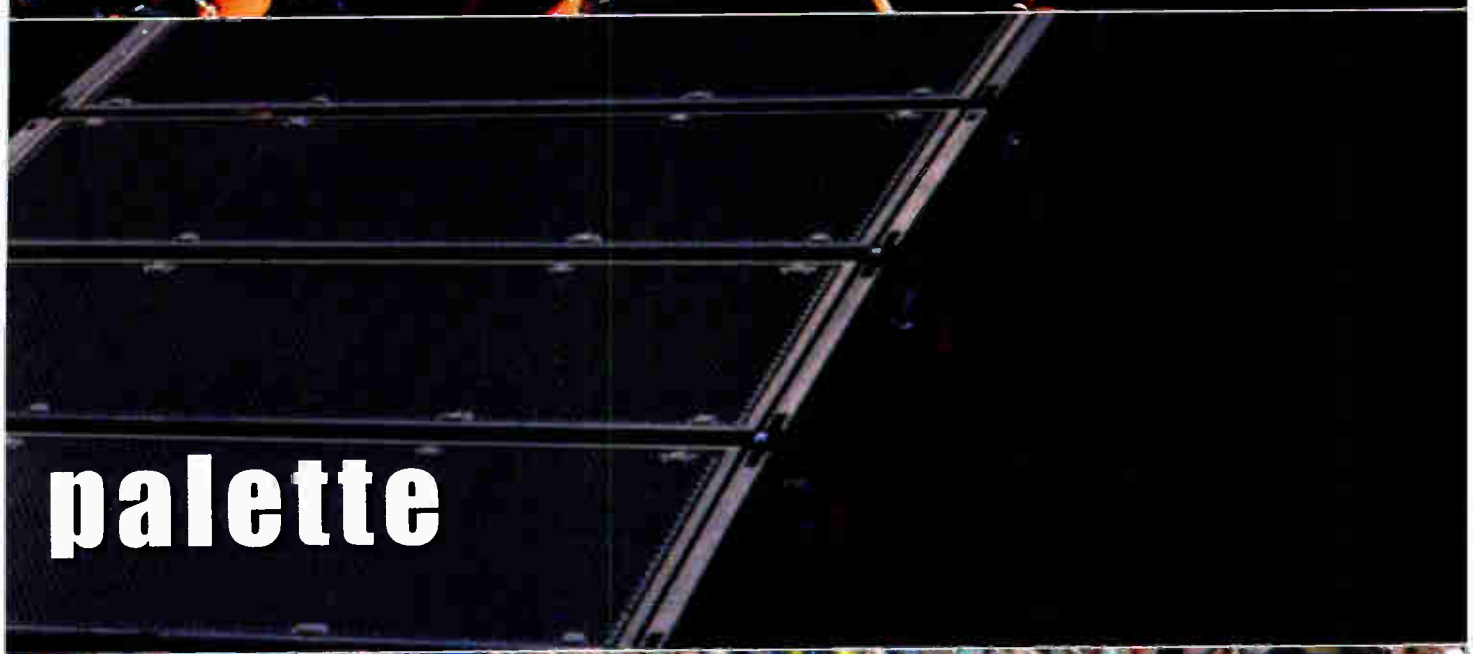

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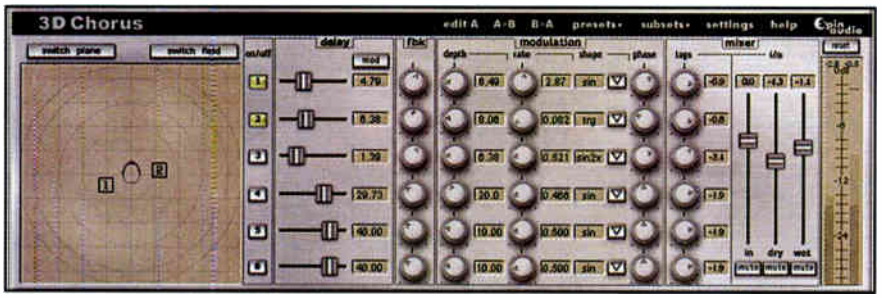


SPIN AUDIO 3D CHORUS

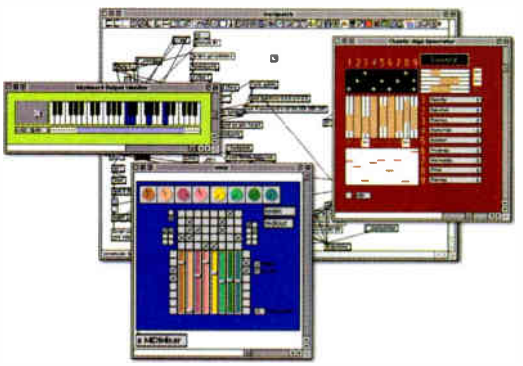
Spin Audio's (www.spinaudio.com) 3DChorus VST/DX plug-in is based on its earlier 3DDelays Windows-based, multitap dimensional space delay plug-in, but it offers six independent stereo delay lines and modulated delay-based effects like chorus and flanger. 3DChorus has six modulated delay taps that can be placed freely at any point in a 3-D soundfield around the human head; each is true stereo and offers feedback control, LFO with five waveforms, tap gain and disable. Its 38 presets include A/B setups for quick comparison, inter-instance presets (for transferring plug-in state between instances), file preset sharing with other users and instantly recallable preset banks. Max tap delay is 100 ms; the software supports sample rates of up to 96 kHz and higher; and internal processing is 32-bit floating point.

GALLERY UK VIRTUALVTR 1.5

VirtualVTR 1.5 from Gallery (www.gallery.co.uk) is designed to transform a Mac into a stand-alone, 9-pin or MIDI-controllable, nonlinear QuickTime VTR. VirtualVTR has been adopted by many Pro Tools users for moving the QuickTime video load off of their Pro Tools CPU and onto a dedicated Mac. It has also been employed in TV broadcast, DVD authoring and other high-end markets for recording picture with timecode, and externally controlled, synchronized playback of any QuickTime picture. New in Version 1.5 is support for Aurora Video Systems' Igniter Film, allowing VirtualVTR to play back 24 fps picture. With VirtualVTR and Igniter Film, users editing with Pro Tools can operate a completely 24 fps process, using a 24 fps timeline in Pro Tools and a 24 fps picture in VirtualVTR. The Igniter Film card plays a 24 fps picture, but it outputs a standard NTSC or PAL picture during playback for output to a monitor or projector. VirtualVTR 1.5 also adds support for the Contour Shuttle Pro desktop Jog/Shuttle controller.

ABLETON LIVE 1.0

The Ableton (www.ableton.com) Live 1.0 is an audio sequencer designed to be played like an instrument. Geared toward live performance, Live allows recording and playing samples in real time using computer keyboard hot keys, MIDI notes or a mouse; and samples sync to song tempo in real time, without pitch change. Users can drag-and-drop, record, loop, effect, resample and launch sequences while the music is playing. Every action during a session is recorded and can be edited—including all mixer and effects automation. Live hosts VST plug-ins and ReWire client applications, and syncs to any MIDI clock source, with ASIO and DirectX compatibility. The package includes material from E-Lab and Big Fish Audio, plus a connection to Sonomic for instant access to an online samples/sound effects library. Retail is $349 for a "hybrid" format with both Windows and Mac versions.



CYCLING '74 MAX 4, MSP 2

Cycling '74 introduces Max 4 and MSP 2, the first major upgrades to the Mac-based interactive, graphical programming environment in more than five years. Max 4 includes new user-interface building tools and advanced features such as scripting and high-precision scheduling: Enhancements include Inspectors (Max user interfaces for editing details about user interfaces); floating-point scheduling (said to be precise to two samples); scripting commands to create/connect/move/hide/delete objects in a patcher; an Extras menu for quick access to useful tools; color-coded patch cords; con-

textual menus; and numerous new objects. MSP 2.0 adds polyphony management, waveform display and graphical filter design, plus support for sample-accurate scheduling, improved MIDI timing, and more than 40 new signal-processing and user-interface objects. Signal processing objects are now optimized for use with the G4 Velocity Engine (Altivec). Audio I/O improvements include support for all major 8- to 32-bit audio file formats, 512 I/O channels, and interapplication audio connections using Propellerheads ReWire, Steinberg VST and Digidesign DirectConnect. Max 4/MSP 2 is $495; demo versions, purchases and upgrades are available online at www.cycling74.com.

PSP VINTAGEWARMER

The PSP (www.pspaudioware.com) VintageWarmer is a software simulation of an analog-style multiband compressor, combining "warm analog" sound with a straightforward user interface. The processor can be used for single and multiband compression and brick-wall limiting, and comes with a library of presets; emphasis has been placed on the processor's overload characteristics, with the software designed to generate saturation effects typical of analog tape recorders. Other features include shelf filters, VU and PPM metering and overload indicators. VintageWarmer comes in VST, PC and Mac versions; DirectX and MOTU MAS and Digidesign RTAS are on the way. List price is $149.

UA EXPANDS SMARTCODE

Universal Audio (www.uaudio.com) announces the development of its SmartCode Pro line of software encoders for Mark of the Unicorn's Digital Performer 3. There are three versions of SmartCode Pro for DP users: DTS-DVD ($1,495) for encoding prior to DTS-format DVD duplication; DTS-CD ($495) for creating 5.1 preview masters using standard CD-burners; and Dolby Digital ($795) for creating AC3 DVD masters.

GLYPH M PROJECT FOR MOTU

Glyph Technologies (www.glyphtech.com) is now shipping its M Project FireWire hard drive solution for Mark of the Unicorn hard disk recording systems. Designed in a joint effort by both companies and extensively tested with MOTU systems, M Project is the first FireWire hard drive solution officially approved by MOTU for the 828 and all MOTU PCI-324-based systems, including the 2408mkII, 1296, 1224 or 24i. M Project is in a single-rackspace, AC-powered drive enclosure with 40GB hard drives running at 7,200 rpm.

UPGRADES AND UPDATES

BIAS (www.bias-inc.com) announced Peak DV, a new version of Peak designed for digital video editors. The software is Mac OS X native, and offers a full audio editing feature set...**Digidesign** (www.digidesign.com) is now shipping the Control|24 TRS DigiSnake Kit, a new all-TRS version of the XLR/TRS DigiSnake Kit. The cable kit includes seven custom 25-foot color-coded, custom-labeled 8-channel cable snakes, all DB25 to TRS connectors. List price: $695. In other Digi news, the company announced the Digi ToolBox CD bundle, which features the Audiomedia III card, Pro Tools LE software, MasterList CD, Maxim, DINR and D-Verb...**CreamWare** (www.creamware.com) announced that its TripleDAT hard disk recording software is now available as a native plug-in for CreamWare DSP systems. The plug-in includes two effects packages, previously available only at additional cost: The FireWalkers effects suite includes an 8-band equalizer, chorus, flanger, FFT analyzer and more; osiris is CreamWare's real-time audio restoration package with de-clicking, de-noising and more...**Native Instruments** (www.native-instruments.net) introduced the Vintage Collection ($99), a tonewheel set add-on for its B4 organ emulation offering a set of new virtual tonewheels that give the B4 the classic tones of a Vox Continental, Farfisa Compact or Indian Harmonium, and includes several B3 emulations. Also, the B4 can now be tuned to six different frequencies...**Panasonic** (www.panasonic.com) and GEAR Software announced that GEAR's DVD recording products are compatible with Panasonic's 4.7GB DVD-RAM/R drive, the DVDBurner...**E-mu/Ensoniq's** new Website, www.soundfont.com, caters specifically to SoundFont users around the world. Check it out! ■

Preview

AKAI 24-BIT/96KHZ SAMPLERS

The new Z4 and Z8 24-bit/96kHz samplers from Akai (www.akai.com) combine the advantages of dedicated hardware with the interface power of ak.Sys PC/Mac control and Networking System software. Features include Q-Link™ knobs for real-time modulation control, Intelli-Sample™ audio-trigger sampling, 512MB SDRAM capacity, onboard 24-bit/96kHz 4-channel effects, 192 filters, 26 resonant filter types, up to three simultaneous filters per voice, and dual independent LFOs with internal/external modulation control. Also included are an internal 20GB IDE hard drive, balanced I/O, 24-bit/96kHz AD/DA conversion, built-in sample rate converter, and a USB host/slave connection.

SENNHEISER HD 280 PHONES

Sennheiser's (www.sennheiserusa.com) HD 280 Pro headphones offer exceptional isolation and feature an innovative fold-up design. Designed to deliver linear sound reproduction at high SPLs, the HD 280 Pro combines fidelity with practical design and comfort. The HD 280's form-fitting, circumaural earpieces and single-sided coiled cable give users maximum flexibility. All wearing parts are replaceable. Price: $199.

TASCAM DM-24 DIGITAL CONSOLE

Now shipping, the Tascam (www.tascam.com) DM-24 digital console features 24-bit converters, up to 96kHz sampling and 32-bit internal processing, along with dynamics processing and internal TC Works and Antares effects. Other features include full automation with 100mm touch-sensitive moving faders, 4-band parametric EQ, onboard machine control tools, and a circuit design that can compensate for fixed latencies within a digital studio. Multiple digital and analog interfaces and optional expansion modules ease connection to DAWs and digital recorders. Price: $2,999.

BEHRINGER DIGITAL MIXER

Now shipping, the DDX3216 from Behringer (www.behringer.com) is a compact digital mixer featuring 32 full-feature channels, 16 buses, eight aux sends, 12 mic preamps, internal digital patchbay/routing, and static and dynamic automation of all console parameters, including its 100mm moving Alps faders. Powered by four SHARC DSPs, the DDX3216 also offers 4-band parametric EQ, compressor and gate on all 32 channels, along with four onboard digital effects processors, 24-bit AKM/Crystal converters, and two I/O card slots for TDIF, ADAT and AES/EBU interfacing. Retail is $1,999, including free editor software for Windows.

MASSENBURG INPUT PROCESSOR

The Model 2020 High-Resolution Discrete Input Channel from George Massenburg Labs (www.georgemassenburg.com) is a two-rack-space unit that combines a mic preamp with filter, EQ and dynamics capability. Manufactured by Manley Laboratories (in conjunction with GML), the 2020 is based on GML's 8300 preamp, 8200 parametric EQ and 8900 dynamics processor, providing flexible routing for its processing sections (including sidechain insertion) and includes polarity reverse and phantom power switches. The single-channel unit accepts mic or line-level signals, and features discrete transistor, balanced/symmetrical Class-A op amps for wide bandwidth, low noise and extended dynamic range.

PEAVEY STUDIO MICS

The StudioPro® M1 and M2 from Peavey Electronics (www.peavey.com) are studio condensers featuring a large, dual-diaphragm capsule. The M1 is a cardioid model, while the M2 has selectable omni, cardioid and figure-8 patterns. Both mics include a 10dB pad for handling up to 140dB SPL without distortion. A switchable highpass filter can be used to compensate for proximity effect and reduce unwanted low frequencies. The StudioPro M1 is $250; the M2 is $370. A shockmount is optional.

GORDON MIC PREAMP

The Microphone Preamplifier System from Gordon Instruments (www.gordonaudio.com) is a discrete, 2-channel FET design. Rather than controlling large amounts of fixed gain via feedback or attenuators, a true variable gain circuit inserts into the signal path only the amount of gain selected. An output load compensation circuit senses any change in load and readjusts the output stage

for the lowest distortion. This "soft signal path" concept automatically optimizes for the selected gain and the output load, improving clarity, bandwidth and dynamic range. Price: $3,500.

MACKIE HR624 ACTIVE MONITORS

Essentially a smaller version of its acclaimed HR824 studio monitors, the HR624 active studio monitors ($649/each) from Mackie Designs (www.mackie.com) are slated to ship this month. The bi-amped (100 + 40 watts), magnetically shielded units combine a 6.7-inch woofer with a rear-firing passive radiator and the same waveguide/1-inch aluminum dome tweeter as the HR824s. The speakers feature THX™ pm3 certification, and can be used as a stereo pair, or as a complete 5.1/7.1 surround system, with or without Mackie's new HRS120 400-watt subwoofer ($1,499). The HR624 specs include a frequency response of 50-20k Hz, ±1.5 dB and a max SPL of 112 dB (1 m).

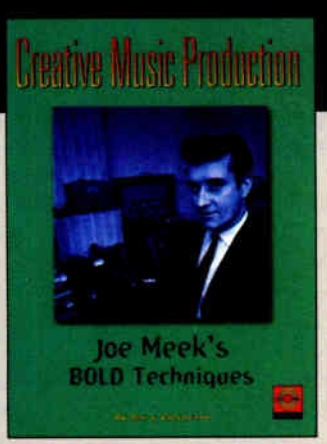
ATR ARIA SUPER ANALOG

ATR Service Company (www.atrservice.com) debuts Aria Super Analog Electronics, an external add-on package for high-performance analog tape transports. Designed by David Hill of Crane Song, ATR's Aria record and playback electronics are compatible with most late model transports from Studer, Ampex, Otari and MCI/Sony. A programmable interface works with original remote controls and offers automatic switching of EQ curves when tape speed is changed. Additional features include 40-segment VU/peak hold meters, which include a high-res mode for precise alignment. Aria Electronics are available in either 2-channel or 8-channel formats (plus time code), and they are optimized for use with Flux Magnetics Mastering Series heads, also available from ATR Service Company as part of a complete retrofit package.

AUDIENT ASP520 BASS MANAGEMENT PROCESSOR

The ASP520 Bass Management Processor from Audient (www.audient.co.uk) is designed to integrate a subwoofer into any surround monitoring system. Besides selecting the bass redirect source and destination, the unit features crossover point-phase compensation and two bands of parametric EQ for optimizing the system's LF performance. The ASP520 can be used alone or in conjunction with the ASP510 Surround Sound Controller to provide a complete surround monitoring management system.

HOT OFF THE SHELF



Creative Music Production: Joe Meek's Bold Techniques **by veteran music journalist Barry Cleveland** explores the legendary British producer and technical innovator's 12-year professional career in depth, with special attention paid to the equipment he used and the effect that his work had on the people around him. The book, which includes a CD containing Meek's previously unavailable *I Hear a New World* album, is available direct from publisher artistpro (www.artistpro.com)...**Lectrosonics' 2001 Accessory catalog** lists accessories for all Lectrosonics wireless mic and LecNet products. The catalog and separate price list are available in PDF format at www.lectrosonics.com...**Verbatim's new DataLifePlus® CD-R discs** can support full-speed 32x audio, video and data recording at speeds of up to 4.8 MB/sec with the new 32x drives and 3.5MB/sec with 24x drives. The CD-R media can be used with existing CD drives at speeds ranging from 1x to 24x. Call 800/421-4188 or visit www.verbatim.com...**Mackie Designs** now incorporates the Castlewood (www.castlewood.com) ORB™ 2.2GB drive into its HDR and MDR Series of 24-track DAWs. Known as the Mackie Media PROJECT™, these removable Magneto-Resistive (MR) drives can store 11+ minutes of 24-track, 24-bit/48kHz audio. Visit www.mackie.com...**Promusic's new Website** offers fast access to its SFX and production music catalog, with a searchable online database, auditionable 30-second Windows Media audio samples and downloadable licensing forms. Check it out at www.promusicinc.com. ■

BSS Minidrive

Loudspeaker Management System

BSS introduced the DSP-based Omnidrive Loudspeaker Management System in 1994, and has since developed a comprehensive family of Omnidrive products, all designed to provide multiband crossover, limiting, EQ and delay functions, all in one integrated package. Last year, BSS introduced the affordable Minidrive™, which includes many of the features of BSS's FDS-355 Omnidrive Compact and FDS-366 Omnidrive Compact Plus units. Functions provided by the Minidrive include a full menu of crossover slopes (up to 48 dB/octave), mid-band limiters, parametric equalization, and up to 635 ms of delay, in 21ms (⅜-inch) steps.

In order to achieve a lower price point, BSS has eliminated some advanced Omnidrive features from the Minidrive. For example, the Minidrive offers a smaller text-only display than the Compact and loses that unit's third input (though one of the two Minidrive models gains a sixth output). Features found on the Compact Plus but not available on the Minidrive include 96kHz sampling, dynamic EQ filters and an AES digital input. However, the Minidrive's specs—which include a dynamic range of over 108 dB and distortion under 0.01%—match those of the FDS-355 Compact.

I checked out the FDS-336 Minidrive with six outputs ($1,500 list), but the Minidrive is also available with four outputs as the FDS-334 ($1,250 list). The FDS-336 is aimed toward FOH drive racks, while the FDS-334 provides affordable, stereo, bi-amp mixes for monitor racks.

The FDS-336 has an innovative 3-channel bi-amp configuration that allows an LCR configuration to be created from a stereo mix by summing L and R to create a center channel. Other applications include processing for mono/four/five/six-way systems, and unused outputs in mono mode can be driven by the second input, providing a second chain for driving subwoofer, downfill or frontfill systems. One Minidrive unit can also function as a MIDI master, controlling changes on a second unit via MIDI for two-machine stereo systems.

Some 38 bands of filtering are available in the Minidrive (the Compact offers 60 filters). Crossovers count as two filters per 12 or 24dB/octave "edge," so a stereo three-way, 24dB crossover with a highpass filter leaves 18 filters for parametric EQ. The 48dB/octave crossover filters eat up processing twice as fast.

Individual outputs can also be run full range, which means that the Minidrive is also well suited for use as a multizone distributed system controller. In this application, the Minidrive could be configured with nine stereo filters on the first two outputs (stereo mains), leaving four filters plus highpass filters available for each of the other four outputs.

Fast-access editing makes the Minidrive convenient to set up and tweak. The four-direction "Navipad" control works just like the one on the Compact Plus: up/down buttons dig through each menu, and left/right keystrokes adjust parameters. The Minidrive also retains the Omnidrive's familiar rotary encoder for parameter adjustment; one simply steps through channels by pressing on it.

The new push-to-select action on the output knobs provides instant access to any output channel for editing, without having to scroll through them sequentially. These knobs can add or subtract up to 6 dB and have a 0dB center detent, plus there are individual output mutes. Illuminating buttons select either input channel or their sum, allowing access to their menus. The buttons for these, the Utilities menu and the six red output mutes are made of a soft silicone material, which provides a comfortable feel and makes the buttons easy to get around on quickly.

Gone is the graphical representation of output bands found on the Compact's tiny screen, which never worked as well as on the original, larger Omnidrive screens, but the bright blue, two-line by 16-character LCD screen is easy on the eyes in all light conditions.

Unlike Omnidrive, Minidrive has no PCMCIA card slot for storing additional presets. The Minidrive does offer 60 onboard user program locations, but it is not controllable from SoundBench. Instead, BSS provides MiniStore, a straightforward librarian application that doesn't edit parameters, but simply dumps to and from a PC computer, re-orders presets and provides offline storage. MiniStore can be downloaded for free from the BSS Website at www.bss.co.uk. Another alternative to SoundBench is the latest version of SIA Software's Smaart Live analysis program (Version 4.6) that can be used to control the Minidrive via a 9-pin, D-type, "null modem" cable.

Minidrive puts the familiar comfort of OEM and the owner security features of previous Omnidrive products in a flexible, yet affordable package. Users with simpler needs who don't require the expanded features—such as the third input, dynamic filters, large display and increased preset storage—will find Minidrive's low pricing very attractive.

BSS Audio, 1449 Donelson Pike, Nashville, TN 37217; 615/360-0277; www.bss.co.uk. ■

Mark Frink's is Mix*'s itinerant sound reinforcement editor who this month is at the Super Dome.*

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BY BARRY RUDOLPH

Native Instruments Absynth

Virtual Synthesizer

Native Instruments' Absynth exploits the vast potential of computer-based, virtually modeled analog synthesis. Synthesizer sound-generation techniques, such as subtractive, FM, AM, ring modulation and waveshaping, are easily combined in creative ways with Absynth's flexible patching system and clever architectural design. Absynth is designed for serious sound design, but anyone can start creating and building sound structures using the excellent and intuitive interface. A major feature of Absynth is that you'll hear all changes in real time, as you play a MIDI keyboard, without clicks or glitches.

Absynth's oscillators, DSP modules, Waveform editor and Envelope window

INSIDE ABSYNTH

Originally developed by Brian Clevinger and further developed by N.I., Absynth is efficiently written and runs as a stand-alone, or is multitimbral in VST 2.0-host programs with up to eight instances. Six oscillators, four filters, three ring modulators, a waveshaper section for distorting waveforms, and a delay effect section with three delay processes are available for each voice. Absynth comes with a huge collection of great patches you can copy and modify to taste. By using hundreds of oscillators, you can build huge rhythm ensembles and evolving ambient textures. Maximum polyphony is 64 and is only really limited by your CPU. I used a G4 500MHz with 640 MB of RAM (Absynth is currently Mac-only) and had no problems running Pro Tools in the background for the stand-alone version and Emagic's Logic 4.7.3 for VST.

As a VST plug-in, Absynth does not rely on ASIO, MIDI or OMS; therefore, timing precision and resolution are better. Absynth, as a stand-alone, uses Digidesign's DirectConnect to stream audio into Pro Tools and other Digi DAE hosts; or, for working with Digital Performer, MAS and FreeMIDI are supported. As a stand-alone, only one Absynth will run at a time, but in the Record window you can stereo record, overdub and mix additional layers of synth sounds directly to the available RAM in your computer (with full undo). In stand-alone mode, CPU loading—an issue with all VST instruments—is not much of a concern.

THE MAIN WINDOW

Whether you use Absynth as a VST instrument or as a stand-alone, every sound begins with the Main window, where you'll find a virtual synthesizer with mousable keyboard and MIDI controller sliders, a bank of 128 presets with 16 listed and available at a glance, buttons to select any of six editing windows (which are repeated on an "always present" dragable navigation toolbar), buttons to select MIDI channels, store and recall preset buttons, and a Reset/Pause button to stop sound and re-initialize internal DSP parameters when things get wacky.

THE PATCH WINDOW

The Patch window is where the 12 DSP modules that make up the synth's sound are displayed and interconnected by organic-looking glowing tissue or, as the well-written manual (translated into six languages) calls it, "plumbing." This otherworldly bionic interface schematically shows the signal flow between modules arranged into three independent channels. You can turn modules on or off within channels, or surgically remove and reroute the connective arteries between them. The internal module routing for each of the three channels is consistent: Oscillator module connects to a filter module, which flows to a modulator module. Each module's settings are easily changed by mouse or by directly typing in values.

Each of the oscillator modules has two oscillators, Main and Mod. These are not sampled waveforms or actual oscillators but single-cycle wavetables. Waves used by the Main and Mod oscillators, as well as sources for any modulator, are selected from a list of 41 waveforms. Oscillator module modes include single (only Main is active), double (both oscillators mix), FM (Mod modulates Main) and Ring/Amplitude, where the frequencies of both oscillators are algebraically summed together to produce other tones.

WAVEFORM EDITOR

The Waveform Editor page is for editing factory-preset waves or redrawing any waveform used for Main oscillators, Mod oscillators, LFOs or wave-shaping modulation. You can create your own waveforms here or you can import and use the first 1,024 samples from any .AIFF sound file. Future versions of Absynth will allow users to create libraries of waveforms for use as both oscillator and LFO/modulation sources. This page is entered directly from a module's currently selected wave; with this version, you cannot copy waves from one preset to another. In addition to hand-redrawing by clicking and dragging the wave around, you can normalize gain, fractalize (a super-complex transform that creates bright, organic-sounding waves) and much more. Spectrum mode allows the first 64 harmonics of the wave to be displayed, so that both amplitude and phase of each harmonic number can be altered. Harmonics above the first 64 re-

DAVID KAHNE, M-POWERED.

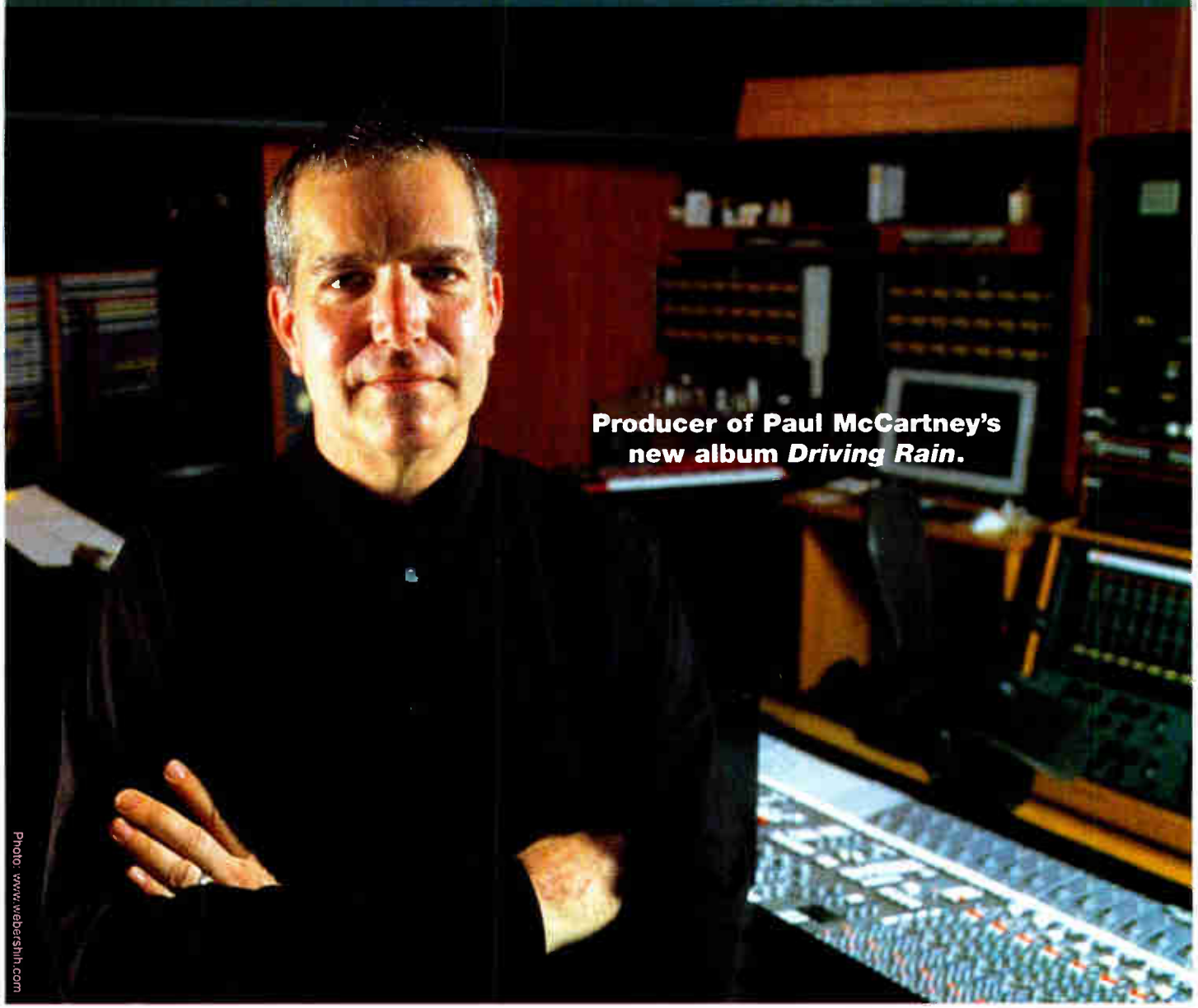

Photo: www.webershin.com

David Kahne, head of Warner Bros A&R, is one of the most trusted producer/engineers in the music business. In fact, David's ears are so good that it seems everyone wants to borrow them. Paul McCartney did for his latest recording, *Driving Rain*. David has also loaned his lobes to the likes of Shawn Colvin, Sublime, K.D. Lang, Fishbone, Soul Coughing, The Bangles, Sugar Ray, and Matthew Sweet - just to name a few.

Needless to say, people take notice of David's choice of audio cards. **David uses the M-Audio Delta 1010 audio card in his studio.** The critically acclaimed Delta 1010 has become a staple item in pro studios because of its ability to thrive in so many environments. From Mac to PC, from audio/sequencing programs to soft synths and soft samplers, the Delta 1010 is the card increasingly found behind the scenes. (The slim price tag helps, too.)

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main unchanged and will not chop off when the wave is resynthesized. Again, all of these changes are real time; I found this page to very educational as to why certain sounds are the way they are!

COMPLETING THE CHANNEL

After an Oscillator module is a Filter module with eight different filter types, most with resonance and feedback. You have three lowpass, two highpass, bandpass, band reject (notch) and comb. You can apply a separate filter to each voice (poly) or all voices together (mono).

The Mod module follows the Filter and has similar parameters as an Oscillator: wave, frequency mode and frequency. Ringmod mode is like ringmod in Oscillator, with the balance control adjusting input level vs. the modulated signal. This configuration, Oscillator/Filter/Mod, completes a single channel, and there are sliders built into the connecting plumbing to adjust the level of each channel that is going to the master channel for output. I liked the Auto-Balance Sliders feature, which automatically adjusts the 3-channel output levels proportionately: If you raise one channel's level, then the other channels automatically reduce in level so that the total mix is at full output level. (I wish someone would invent that feature on automated mixing consoles!)

MASTER CHANNEL

The Master channel is chained in this order: The Waveshaper module (distorts the wave) connects to the Filter module, which goes into the Effect Delay Matrix module. Waveshaper uses nonlinear distortion to affect the sound. Interestingly, you can allot a separate Waveshaper to each voice (again called poly), or use mono, where all voices merge and pass through a single waveshaper. There are controls for the timbre of distortion, level and phase. I found waveshaper to add very analog-like textures to any sound...processing I would do on most hardware synths.

Next in the Master channel is another Filter module, which is just like the filter following each oscillator. Absynth has a unique feature with three separate buttons on all modules for parameter settings: coarse, fine and extra-fine. This gets you around quickly and precisely with less overshoot, say from 0.01 Hz to 20 kHz.

The Effect Edit window, the final module in Master channel, is for editing the six delay lines. Effect has controls for delay times ranging from one sample to 740 ms, LFO modulation and MIDI controller, master feedback level and feedback low-pass filtering, master time control, gain and panning, invert and control sensitivity (input gain). Pipe, a multitap delay, uses waveguide-based physical modeling. This effect, like all of the effects, is stereo and produces some to the best flanging, pitch shifting and rotary speaker effects I've heard coming out of a computer.

ENVELOPE WINDOW

Each of the oscillators in Absynth has an envelope generator with breakpoint envelope generators with up to 68 breakpoints; Absynth stops using CPU resources as voices reach their last breakpoints. Again, you can click and drag, make new breakpoints and change the curve of a breakpoint's line segment (slope). You can copy envelopes from one voice to another, snap them to tempo grids, and loop and/or repeat sections of an envelope. However, there is no performance control over envelope times and no LFO sync to MIDI clock.

Absynth has three LFOs, all with sample-and-hold modes. The LFO Edit window has extensive control over LFO waveforms, phase, LFO pitch, depth, FM (where one LFO modulates another), sample-and-hold rate, and retrigger by a preset control value. The MIDI window is the main control and assignment window for all MIDI controllers: their note scaling, lag, or the amount of time it takes a parameter to respond to continuous controller data, velocity, program changes, pitch bend and depth.

ABSYNTH IN THE STUDIO

After copying a bank of patches into a new one for editing purposes, it was great fun to explore how sounds were created and then instantly see and hear how changing parameters and waves affected the patch. For synthesizer players, the big attraction to Absynth will be its great sounds and real-time operation: You can always hear your changes as you play along, just like working with any good, full-featured hardware synth. Any new synth, hardware or virtual, has to come with some great sounds to get you going, and Absynth shows up with many very complex, useful soundscapes as well as rhythmic collages. (What's the actual reason why some synths become very popular and others don't? Great preset sounds!) There are more third-party soundware CDs on the way. The ultimate in advanced synthesis in a virtual instrument these days, Absynth sells for $299 MSRP.

Distributed by Steinberg U.S., 21354 Nordhoff St., Suite 110, Chatsworth, CA 91311; 818/678-5100; fax 818/678-5199; www.steinberg.net or www.native-instruments.com. ■

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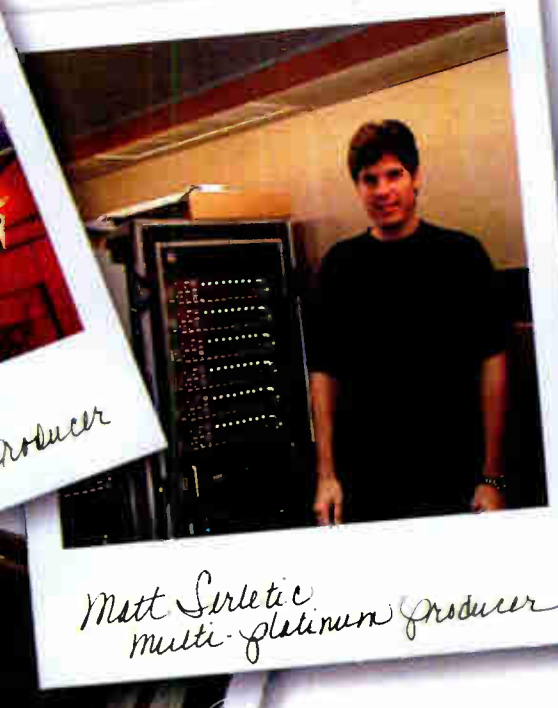

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SOUND AMAZING

BY BARRY RUDOLPH

Shure KSM27

Cardioid Condenser Microphone

I can't help but "feel the love" from a company that broadens its product line by offering a lower-priced model that could directly compete with its existing line. Retailing at $575, the all American-made, cardioid-only KSM27 from Shure is one of the best values around. It's a great new mic that stands out in a plethora of models that have debuted recently. The KSM27 is the third studio condenser microphone in the Shure line, following the KSM44 multi-pattern mic and the cardioid-only KSM32. Actually, the 27 was chosen to replace the KSM32 used on Jay Leno's desk on the new set of *The Tonight Show With Jay Leno.*

Like the KSM44 and KSM32, the KSM27 is a side-address condenser design. The KSM27 uses a 1-inch, externally biased, gold-sputtered, layered Mylar diaphragm like the KSM44. And like both the 44 and 32, the 27 uses a Class-A discrete and transformerless preamplifier with gold-plated internal and external connectors. One immediately noticeable, unique feature that separates the 27 from the other two mics is its diminutive size, just over six inches tall. I loved that I could place this mic in just about any tight situation using the optional ShureLock™ swivel adapter. (Actually, I borrowed the swivel mount from my KSM44, and it worked just fine!) The KSM27 comes with a rubber-isolated shock-mount and also has internal shock-mounting that reduces stand and handling noise. There is a built-in pop grille with three separate mesh layers to reduce plosives. Shure thinks of everything!

Despite the 27's smaller size and price, Shure didn't cut the features you'd expect from a good studio condenser, such as a three-position LF roll-off filter with options for flat, -18 dB per octave cut-off at 80 Hz, and -6 dB per octave roll-off at 115Hz settings. There is also a switchable -15dB attenuator pad that was perfect for close-miking drums and guitar cabinets. Both the KSM44 and 32 beat the 27 in dynamic range by only a couple of dB, with all three equal in maximum SPL rating at around 138 dB (153 dB without pad). The 27 matches the 32 with an 81dB signal-to-noise ratio spec, while the KSM44 offers a better 87 dB in cardioid pattern. Self-noise for the KSM27 is a low 14 dB.

A/B WITH THE BEST

Before a session, I set up A/B comparisons of the KSM44, KSM32, KSM27 and, for a reference to my ears, a Neumann U87. The multi-pattern U87 and KSM44 were set to cardioid. For this subjective test, I used my own speaking voice and a pair of loud headphones. I don't have the acute hearing of someone like Klaus Heyne—who uses this same method for tuning the capsules of his mics—but it is easy for me to hear the differences when comparing mics or different signal processing chains. I had an assistant quickly mute and open each mic by way of my hand signals, from out in the studio. I used an AKG outboard phantom power supply and level-matched four inputs of the lovely API console at L.A.FX Studios in North Hollywood.

The 27 has a slight bump in the 50 to 70Hz area, and a smooth rise starting at about 3.5 kHz up to about 8 kHz. From there, high-frequency response dips very slightly and then continues its rise out to about 15 kHz. Checking the printed frequency response curves supplied by Shure for the three mics, I confirmed my preference for the 27 over the KSM32. The KSM32's chart shows a flat, low-frequency response and an irregular contouring of the high frequencies between 2 kHz and 12 kHz. More like the KSM44, I found the 27 to have a sweet and smooth HF lift.

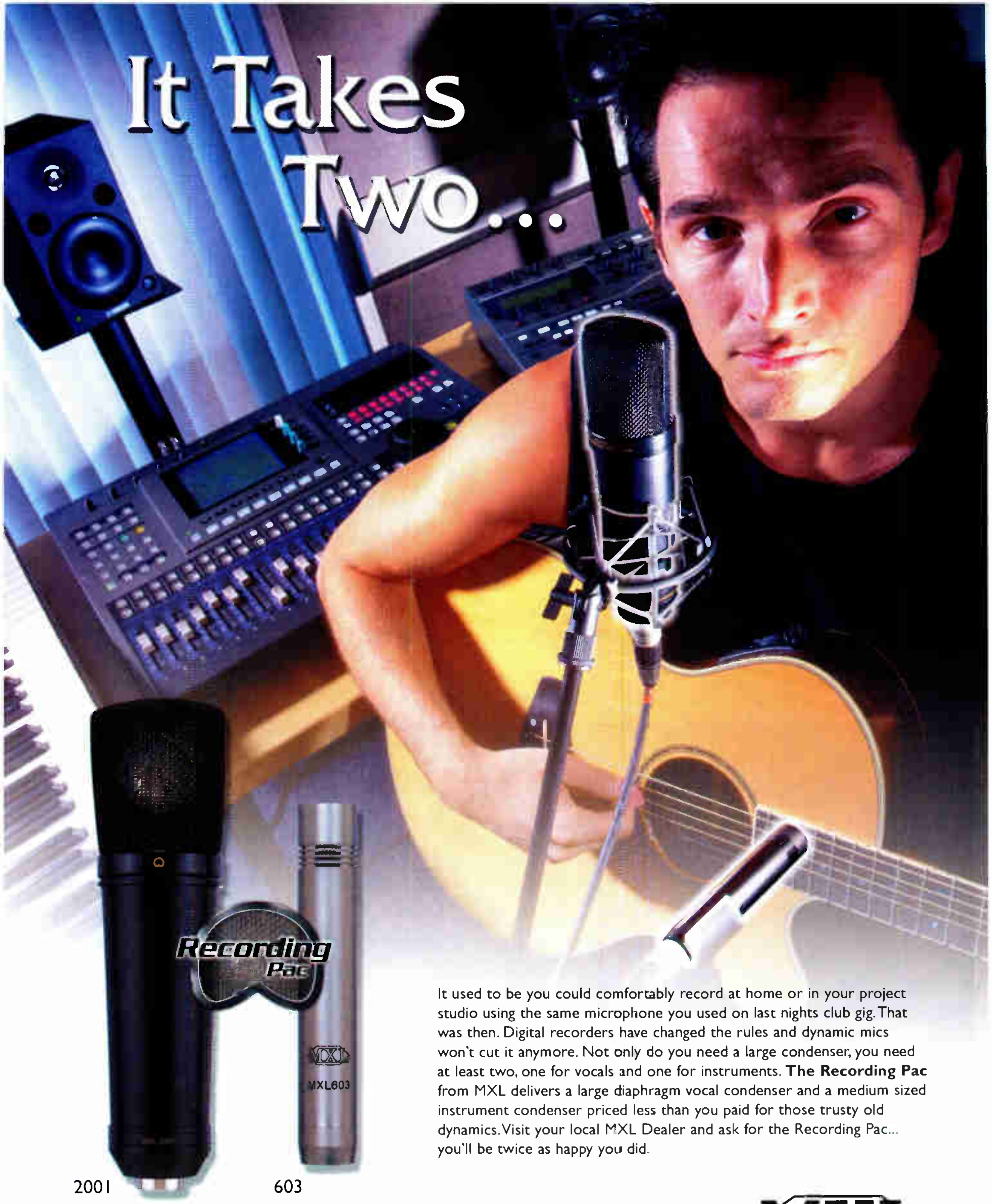
By comparison, the U87's high frequency was all there, in a more noticeable way. (Read that as "personality.") I have to say that this particular stock U87 sounded a little rolled-off in the bottom end compared to the 44 and 27. The KSM44 has a very solid low end with a much "drier and cleaner" sound (its self-noise is only 7 dB) than any of the others. The KSM32 is a little thinner, but more importantly, doesn't have the low-frequency warmth of the 44. Compared to the others, the KSM32 has more of a somber quality from the midrange through the highs; I could see this mic working well for edgier voices. The 27 has good low frequencies (especially down to the subsonic), a warm, lower midrange and a clear upper midrange. Sibilants were clear—and most importantly, clean—for all the mics. with the 87 and 27 a touch crisper.

IN THE STUDIO

I used the KSM27 in the studio for drums, acoustic and electric guitars, and vocals. It is one of the most versatile mics I've used lately. I miked a bass drum about a foot away out front. I usually like a U47 FET for this ambient sound and hope that with both the pads switched on the Neumann, it doesn't overload. Here, I had no overload problems with the 27—in fact, I didn't even use the -15dB pad.

Next up, I miked acoustic guitars with the 27 and A/B'd the 27 with the producer's Sanken CU-41. The Sanken is a warm microphone that, in this case, made me want to reach for the equalizer on my Neve 1084 module. Here, the Shure KSM27 was a better choice, as I found little need to equalize unless I needed to "carve" the guitar's natural sound to fit the track's hyperbolic production.

Vocals went well, with the added low-end warmth of the 27 bringing out what-



It used to be you could comfortably record at home or in your project studio using the same microphone you used on last nights club gig. That was then. Digital recorders have changed the rules and dynamic mics won't cut it anymore. Not only do you need a large condenser, you need at least two, one for vocals and one for instruments. **The Recording Pac** from MXL delivers a large diaphragm vocal condenser and a medium sized instrument condenser priced less than you paid for those trusty old dynamics. Visit your local MXL Dealer and ask for the Recording Pac... you'll be twice as happy you did.

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ever little bit my singer had. It was almost like a proximity effect, without getting as close. Finally, electric guitar cabinets sounded great with the KSM27. You should use the -15dB pad here, because the 27 puts out a good hot level and your preamp will be at its minimum gain setting.

Priced at $575 MSRP, the KSM27 comes in a protective velveteen pouch and includes a ShureLock™ rubber-isolated black shock-mount. Optional accessories include an aluminum carrying case, foam windscreen, PS-6 Popper Stopper, and a padded, zippered carrying bag. Whether it's your first studio mic or something to expand your mic locker, the KSM27 is a wonderful addition to any microphone collection. Its small size and versatility—qualities that made the Shure SM57 ubiquitous—belie its big sound.

Shure Inc., 222 Hartrey Ave., Evanston, IL 60202; 847/866-2200; fax 847/866-2279; www.shure.com. ■

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

SPEC SHEET: SHURE KSM27

Polar pattern: cardioid, externally biased condenser capsule
Frequency response: 20 to 20k Hz
Output impedance: 150 ohms
Attenuation switch: -15 dB
Phantom power: 48 VDC (5.4 mA)
CMRR: greater than 50 dB, 20 to 20k Hz
Dimensions: 2.2 inches diameter, 6.15 inches long, 22.6 ounces
Sensitivity: -37 dBV/PA
Self-noise: 14 dB
Maximum SPL @ less than 1% THD with 2,500-ohm load: 138 dB or 153 dB w/pad
Maximum SPL @ less than 1% THD with 1,000-ohm load: 133 dB or 148 dB w/pad
Output clipping level @ less than 1% THD with 2,500-ohm load: 7 dBv
Output clipping level @ less than 1% THD with 1,000-ohm load: 1 dBv
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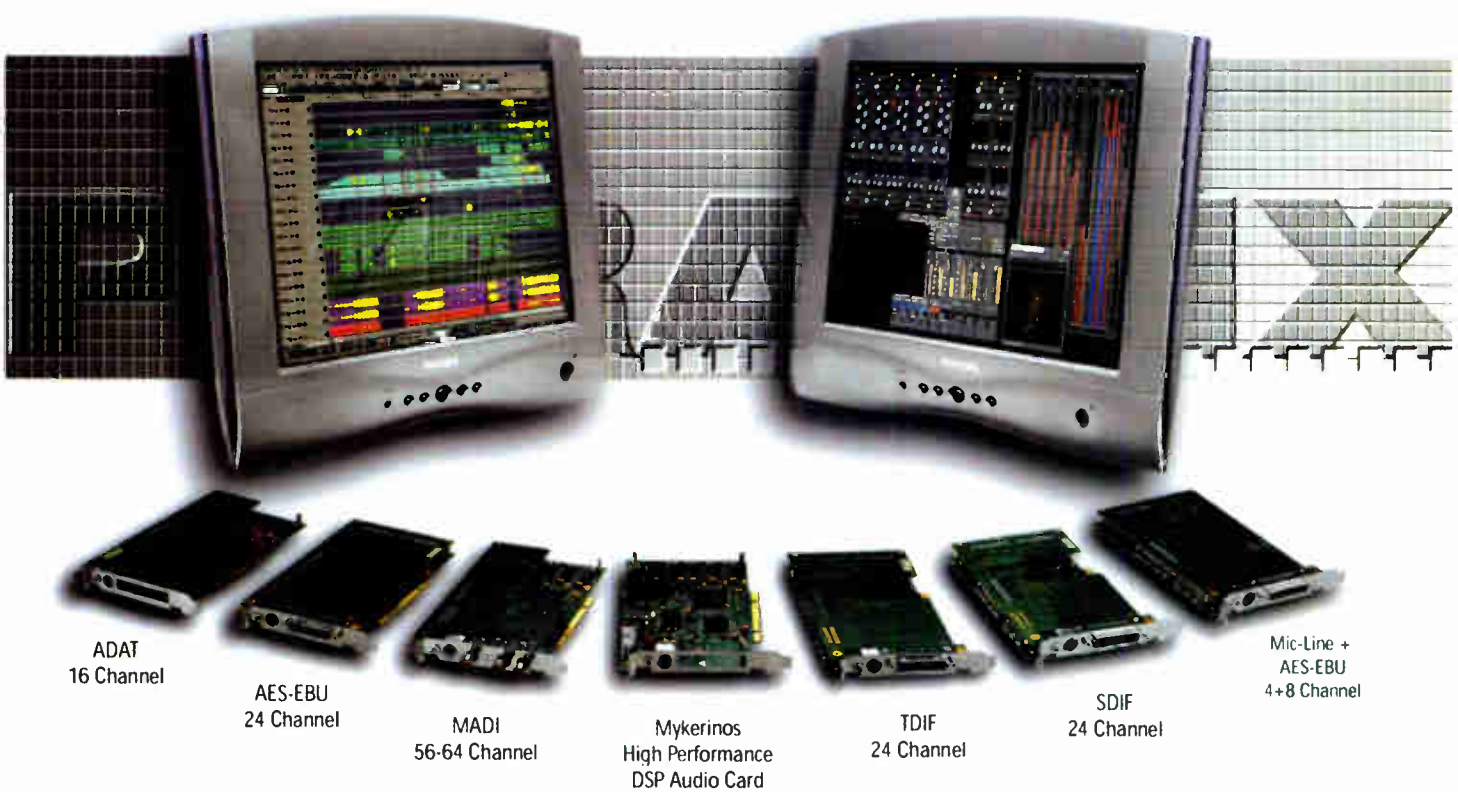

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BY DAVE HILL JR.

Propellerheads ReCycle 2.0

Loop/Groove Editor Software

In 2001, the Propellerheads software team released the virtual, modular rack synthesizer/sampler/sequencer/drum machine combo Reason 1.0, and a sweeping upgrade to a tried-and-true groove-editing application—the subject of this review—ReCycle 2.0. ReCycle isn't one of those "keep you up all night" creative toys, but rather an indispensable workhorse to those who use it, and an exciting new tool for those just catching word.

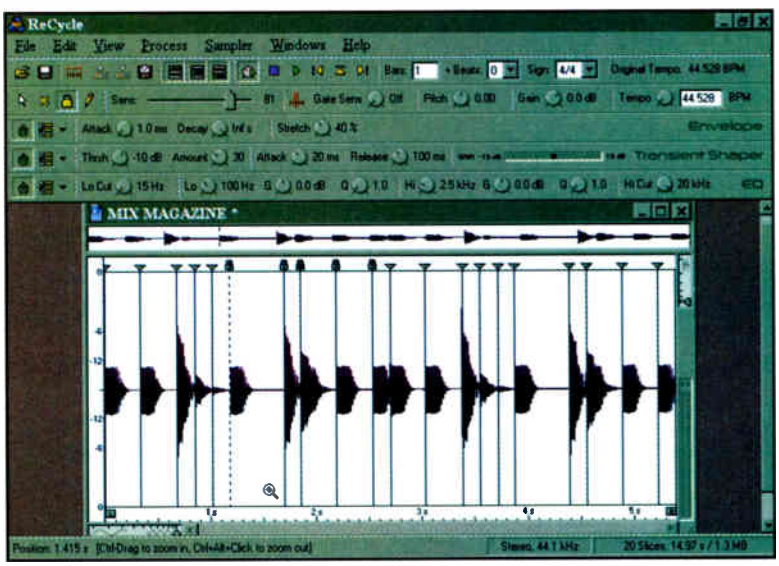
For years now, beat-junkies, club remixers and the loop-based music cognoscenti have been calling on ReCycle to tweak the beat at any tempo they choose. If you've never heard of a REX file, or fiddled with a loop in ReCycle (Version 1.x), now may be as good a time as any to dig in and learn what ReCycle and its useful REX format can do for you.

THE RECYCLE CONCEPT

Instead of accelerating or decelerating a sample when changing tempo, ReCycle lets you create a REX file and export each and every sound contained within the sample. It achieves this by allowing users to edit their sample into individual slices at each sonic attack point. For example, in a basic drum loop, each kick, snare and hi-hat sound becomes individual samples, as opposed to one big loop. These can be exported in a variety of formats and even sent via SMIDI to a hardware sampler. Some applications can import a REX file, which contains all of the above slice information, plus retaining the respective timing of the loop. This allows loops to be played at any tempo, quantized, played manually, re-combined to make new loops and a host of other creative possibilities we will touch on below. Also, extracting sounds from a sampled loop and editing loop start/end points is a breeze.

GETTING STARTED

Taking the ReCycle disc out of the jewel case and placing it into my CD-ROM took approximately 90 seconds longer than actually installing the software. The program stands at only around 6 MB fully loaded, and requires a straightforward one-time serial number entry in order to fire up clean for good. ReCycle requires a Power Mac or Pentium 66MHz PC with at least 16 MB of RAM, CD-ROM and a 16-bit sound card. ReCycle settings really involve no more than selecting your sound card and audio buffer; my Athlon 700 MHz with 128 MB of RAM worked fine at about a 40ms buffer.



ReCycle's Edit window lets you analyze, edit and process audio. The loop here has been divided into segments; if this groove is exported, then each of these segments can become an individual sample.

ReCycle 2.0 can handle both mono and stereo .WAV or .AIFF format files, with bit depths of 8, 16 or 24 bits. Sample rates can be as low as 11 kHz and as high as 1.0 MHz. And, while you will typically use ReCycle to work with short loops, it can handle files all the way up to 5 minutes in length. After audio is selected, a wave editor-like interface lets you dissect, set loop points, silence unwanted sections of audio, and export the sample in a number of different file formats, including standard MIDI files (which can later be used to drive other samples), whole loop or individual one-shot .WAV or .AIFF files, as well as several software sampler formats like Mixman Studio (TRK files), SF2 (Sound Font 2 banks), AKP (Akai S5000/6000 program files) and INS (Digidesign's PCI-based SampleCell computer-based sampler).

ReCycle is a pro at detecting loop start/end points. You can move the left and right (start and end) indicators to anywhere within the sample and ReCycle will naturally search out the best microsecond for the splice. This can help eliminate obnoxious clicks or pops in your samples, and is an efficient way to make lots of loops. Also, in any given sample, ReCycle allows you to specify the time signature as well as the number of bars and beats contained in the loop, so your end results will jive with the music you are making.

Audio editing in ReCycle 2.0 has been duly improved: ReCycle now supports stereo loops, with real-time effects previewing and per-slice audio scrubbing. A new compressor, called Transient Shaper, and a 2-band parametric EQ with hi- and lo-cut knobs can also be found, as well as ReCycle's signature time and pitch functions in real-time edit knobs. Each of the three effects can be separated into three optionally viewed toolbars. My personal favorite is the Transient Shaper for its beat-

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scrunching compression and clean-up gating effects. I found you could really "gut" a groove or isolate specific events or samples. The EQ is well done, except that there is no visual aspect—guess we must rely on our ears. The envelope tool, which can alter pitch, shave attack, remove sustain and aid in shaping stretched samples, is a neat tool that can really change the sound of a loop. While most users use ReCycle for drum and percussion loops, the envelope tool can add some interesting effects to a pad or horn slice. I was, however, frustrated that you cannot save your own patch presets (six presets per effect are included). One other complaint I do have is that there is only one level of undo. Maybe I'm spoiled, but I like to make several adjustments before reverting back to the original sound. Better plan on saving your loops in several different stages.

New real-time tools in ReCycle 2.0 include a compressor, 2-band EQ with low- and highpass filtering, and an envelope filter that can shave the attack off of each segment, and add and remove sustain via ReCycle's Stretch function.

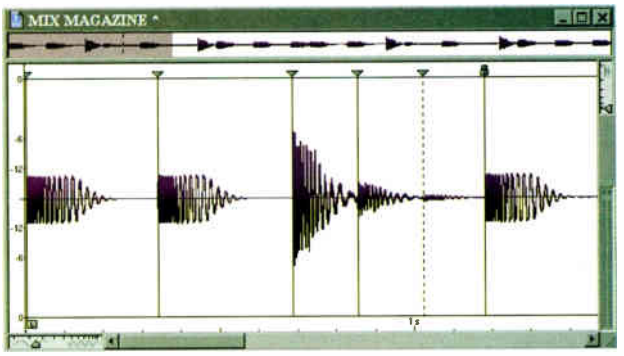
EXPORT EXPERT

Keep in mind that ReCycle will allow you to export the entire sample or the group of slices to a hardware sampler via SCSI or even MIDI. You can save the file's MIDI file to your sequencer, and then drive your sampler with the cut-up sounds. For a list of supported samplers, please refer to the Propellerheads Website (www.propellerheads.se—click on ReCycle and then ReCycle support), which is packed with great ReCycle info. Another way to work with ReCycle is to import the REX file into another software application.

SOUND REASONABLE?

If you are among the growing populace of Reason 1.0 users, then you are in for a treat. ReCycle can save each of your loops in the REX2 file format (which replaces the ReCycle 1.7 REX file format) for immediate use in Dr. Rex (Reason 1.0's loop player). Not only can you then tweak the player's filtering, effects and performance aspects, but REX2 files will automatically follow the Reason project tempo (including tempo changes). In Cubase VST and Emagic's upcoming Logic Audio 5.0, REX2 files will be instantly mapped (one slice per track) and ready to be driven by their respective MIDI files. Imagine the creative potential of different MIDI files working the same REX2 loop, the same MIDI file triggering different REX2 loops, adding effects to some slices and not others, and on and on. The key is that once a loop has been mapped (sliced) by ReCycle, the possibilities are endless.

One technical note: If you plan on using REX2 files in Cubase 5.0r4 (Windows), Cubase 5.0r1 (Mac) or Reason 1.0, then you must have the most recent REX.DLL installed on your system. The file can be downloaded from the Propellerheads home page or found on the ReCycle 2.0 CD-ROM. Without this quick upgrade, you will get a "Newer File Format error," meaning the REX2 file is unreadable by Reason and Cubase.



This loop has been divided by ReCycle. Ideally, there will be one segment or slice for each audio event in the sampled loop. Each sound can be exported individually, as well as the entire loop and MIDI file.

LOG OFF

ReCycle is not exactly a wave editor, yet you do have the ability to edit loops and apply changes to the waveform. You will not, however, be able to cut, copy, paste, reverse or any other slice-specific tasks with ReCycle. You will be able to normalize, normalize each slice with itself (an awesome compression-simulating effect—see sidebar), set loop start/end points and add ReCycle's new effects. And if the list of ReCycle 2.0 improvements appears short compared to Reason or Cubase, then remember that ReCycle 2.0 is a unique software application with a specific function. While REX and REX2 sample CD libraries continue to grow, you will need ReCycle to make your own musical REX files. Whether you are working with hardware samplers or computer-based studios, ReCycle can help add flexibility and professionalism to your samples. If you're already a fan of ReCycle 1.x, then 2.0 is a must have. If you're new to REX, don't be afraid; the magic has been programmed.

ReCycle lists for $199.95, and is distributed in the U.S. by Midiman; 45 E. St. Joseph St., Arcadia, CA 91006; 800/969-6434; fax 626/445-7564; www.propellerheads.se or www.midiman.net. ■

Former Seattle multitasker Dave Hill is composing, drumming and writing in New York City. He is a regular contributor to Digital City (AOL), Modern Drummer *and* Remix *magazines. Visit www.bannervison.com/davehill for more information.*

NORMALIZING BY SLICE

If you like compression, and most beat junkies do, then you are gonna love ReCycle's ability to normalize each slice of a loop independently. I will take a step back to explain how cool this really is.

Often, when you are working within a file, you may decide to optimize the signal by normalizing. When you select "normalize," ReCycle (like most wave editing/recording software) analyzes the file to determine its loudest peaks. After doing so, it raises the signal of the whole loop to the maximum level possible without clipping. The normalize-by-slice function takes this process one step further by analyzing each slice and maximizing it within itself. The end result is a more natural (and simpler) form of compression that will straighten out volume inconsistencies without sounding compressed.

—*Dave Hill Jr.*

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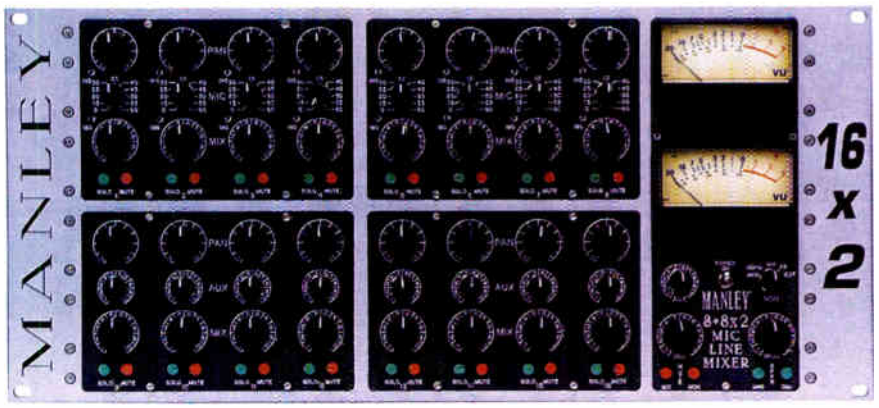

MANLEY 16X2
Rackmount Mixer

Leave it to EveAnna Manley and her chief designer, Hutch, to destroy the concept of the line mixer. They got this one all wrong. Line mixers are supposed to be ugly, lightweight, lo-fi, utilitarian units that cram 16,821 inputs into a two-rackspace chassis. Heavy, elegant and offering absolutely sparkling audio quality, the Manley 16x2 mixer started out as a 16-input/2-bus line mixer, but is also offered in two other versions, with either eight or 16 line/mic inputs.

To keep the 16x2 from becoming a 40-rackspace/400-pound behemoth, the unit's vacuum tubes are supplemented by high-quality ICs from Burr Brown and Linear Technology. From the thick, milled-slab, five-rackspace front panel and massive outboard power supply to its use of quality (read: *expensive*) components, the 16x2 was built for no-compromise performance.

I checked out the "8+8" model with eight mic/line inputs and eight line channels. The mic inputs have Neutrik Combo XLR/TRS jacks, insert and direct out jacks, and phantom power—switchable via locking toggle switches. The front panel has illuminated mute/solo switches, rotary pan/level pots, an 11-step gain switch with a 60dB range, and inset switches for phase reverse and insert in/out. The line channels are similar but lack the phase/insert switches and insert jacks, and substitute an aux send in place of the gain control.

The master section has the stereo bus out level pot, aux return pot, dual VU meters, and control room level control with -15dB attenuator, five-position monitoring source selector, and a switch for routing the CR out to main or small speakers. More than a simple line mixer, the 16x2 offers everything you need to do for an entire session, an essential tool for everyday production.

One of my sessions on the 16x2 was recording a jazz quartet live to 30 ips 2-track. The drums were miked with two Royer SF-1 ribbons as overhead XYs; an Audix D4 on kick; AKG C-414s on piano (half-stick lid with blanket covering); and Sennheiser 409 on the guitar amp and bass through a Summit tube direct box. After inserting a UREI compressor on bass and taking the direct outs of the piano to feed a Lexicon 200 reverb (returned through the line inputs), the results were smokin'—transparent, dynamic and clean, with left/right separation you could really hear. Of course, the mixer's huge headroom, 100kHz bandwidth and nonexistent noise floor played no small part in the results.

The 16x2 was equally useful on bread-and-butter duties such as providing eight channels of superb mic preamps for tracking, or as an ultra-fidelity submixer for mixing Pro Tools sessions right from the outs of my 888|24s converters—offering the best of both worlds, bumping the mix performance way up while providing access to plug-ins, editing, etc.

Retailing at $9,000 (line version); $9,500 8+8 (line/mic); and $9,900 for the all-mic version, the 16x2 is not exactly cheap. But with excellent mic preamps and mixer/submixer flexibility, the 16x2 is useful on every session, making it way more affordable than some digital doohickey that gets fired up once a month.

Manley Laboratories; 909/627-4256; www.manleylabs.com.

—George Petersen

APHEX MODEL 204
Aural Exciter and Optical Big Bottom

The Aphex Model 204—which combines the company's patented Aural Exciter® and Big Bottom® processing in a single unit—is the perfect final coat of gloss for any signal chain (live, studio, Internet or broadcast).

For anyone unaware of what the Aural Exciter and Big Bottom do, imagine having the ability to boost both top and bottom end, with the ease of a dynamic EQ, yet without appreciably increasing the peak level of the signal (i.e., without causing overload distortion). The Aphex Aural Exciter circuit actually extends a signal's high-frequency content, unlike dynamic equalizers or other HF enhancers. The Big Bottom circuitry dynamically shapes the bass response in the 20 to 120Hz range, increasing the perception of low frequencies without boosting the peak output.

The 204 is a slick, one-rackspace unit that offers two discrete channels with ¼-inch and balanced XLR I/Os, and it can operate as a stereo unit or run two separate mono sources (e.g., hi-hat and floor tom) simultaneously. Operation requires little more than tweaking a couple of knobs until it sounds great, although moderation is the key here; too much of a good thing can ruin the sound.

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I tested the 204 on live and recorded sources. As the final link on my bass rig, the 204 added noticeable presence and depth to the signal, without bringing in any unpleasant artifacts. I especially liked the way the 204 warmed up synths in a live playback situation. A band I work with uses a pair of E-4 samplers through a small Mackie mixer and sent to FOH. Inserted into the stereo outputs, the 204 brought some much needed punch and clarity to some of the more static "old-school" square wave and sawtooth leads that the E-4s were playing back.

In my project room, I've always been upset with the "boxed in" sound that computer-based DAWs always seem to produce—regardless of the "emulation" plug-ins I keep shelling out cash for. On mixdown, paired with a high-end reverb, the 204 brought just the right amount of "color," sparkle and vocal intelligibility to everything I mixed. My modest studio suddenly started sounding like the real deal, and that's the best endorsement I could possibly give. The Model 204 lists for $399. Check it out!

Aphex Systems; 818/767-2929; www.aphex.com.

—Robert Hanson

TANNOY PS350B
Active Subwoofer

Tannoy is no stranger to studio subwoofers. However, the company's previous subs—such as the PS88 and PS110B—were intended for pairing with smaller near-fields. Now, with its new PS350, Tannoy has unleashed a monster—a 350-watt behemoth paired with a long-throw, 15-inch woofer and advanced bass management capabilities.

Available with balanced XLR (350B) or unbalanced RCA (PS350) connections, the unit is housed in a 20x18x20-inch, 58-pound, vinyl-covered cabinet. The enclosure has a front-firing woofer, with the driver mounted above the dual ports, thus reducing the possibility of foot-through-cone syndrome when used in an under-console position.

The pro PS350B has more features than the consumer version. The PS350B's rear panel has line-level XLR inputs and feed-throughs for the left/center/right speakers; an LFE subwoofer input; and pots for the subwoofer crossover point (40 to 150 Hz), LFE boost and master subwoofer gain. Also standard are switches for phase reverse, LFE lowpass in/out and single/dual-sub configurations.

A remote switch jack is provided for a footswitch (included with the PS350B) that defeats the bass management functions. When depressed, the LCR speakers are rolled off at 80 Hz, with the subwoofer information derived from the LCR inputs. In the opposite position, the 80Hz highpass filters in the LCR feed-throughs are bypassed and the sub is fed from the external LFE input. In that case, if no LFE input is connected, then the switch can simply function as a subwoofer in/out selector. A custom switch can be easily fabricated for fingertip console access, etc.

Overall, the PS350B is capable of pro-

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ducing the kind of chest-thumping experience where LF energy becomes a physical sensation. This is the first subwoofer I've used that could keep up with my Meyer HD-1s, and unless you produce a lot of rap and hip hop, you'll probably have to turn back the subwoofer output control and go easy on the LFE boost knob.

Also, beyond merely offering an extra octave (or two, or three) for monitoring pipe organ fundamentals, the PS350B will tell you everything that's going on in the input, whether it's stage rumble or distant subways creeping into that solo piano track. At $1,419 shielded or $1,299 unshielded, the PS350B is a formidable tool for stereo or surround production.

Tannoy/TGI North America; 519/745-1158; www.tannoy.com.

—George Petersen

FUTURE SONICS EARS EM3
Universal Earphone Monitors

Custom-molded earpieces provide the best performance for in-ear monitors, combining superior sonic isolation with the most comfort. However, they also require a fitting by a hearing professional, which adds to their cost and to the time it takes to acquire them. So, there may be times—such as one-offs or impromptu guest appearances at a show—when custom molds don't fit (so to speak).

New from Future Sonics Inc., the Ears™ EM3 Series of universal-fit, in-ear transducers were designed as an affordable, one-size-fits-all alternative to the company's high-end customized Ear Monitors® brand. Retailing at $198 (with six replaceable foam sleeves), the EM3 features FSI's F/R dynamic drivers for a stated 40 to 20k Hz response, and terminate in a standard ⅛-inch stereo TRS plug for interfacing with headphone amps or beltpack receivers. FSI is also providing EM3s for use with Sennheiser's Evolution 300 Series wireless systems.

Operation is easy. The user selects either the small or large foam sleeves and compresses the foam before placing them into the ear canal. On release, the foam expands, sealing the ear. Each earbud is color-coded with a mark to indicate left/right orientation. Their -25dB isolation was ample for use with rock drummers or players in front of loud guitar stacks.

The EM3s offer very low and very full LF response. Drummers and bass players will love these. For vocal monitoring, I rolled the bass off at about 80 Hz, which added to the MF clarity and allowed the monitors to reproduce greater apparent SPLs. FSI states a frequency response out to 20 kHz, but the top end is well attenuated at those HF extremes, and I found that a little 1.5dB boost around 10 kHz added a little sparkle for a natural feel, without becoming fatiguing.

With a sensitivity of 118 dB at 1 watt, the EM3's 80mW power handling offered plenty of volume and a decent headroom margin for dynamics and punch. At $198/pair, the EM3s provide an affordable alternative for the novice in-ear user, and an excellent backup to custom earpieces for those special "you left them where?" occasions. They also allow ample isolation for getting the rest of the band weaned off those noisy stage wedges—without breaking the bank.

Future Sonics; 215/598-8828; www.earmonitors.com.

—George Petersen

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MBHO JECKLIN DISC
Stereo Microphone System

For 40 years, MBHO has offered a variety of quality, affordable mics for studio, measurement and stage applications. One of the company's more interesting products is a Jecklin Disc—a circular barrier mount that accommodates two omni mics on either side of a 12-inch, foam-covered disc, providing excellent stereo performance from a simple, flexible system.

The Jecklin Disc was developed by Juerg Jecklin—hence the name—who proposed his OSS (Optimum Stereo Signal), where two omni mics were mounted on either side of a round barrier and splayed slightly outward. Jecklin achieved the best results when the two capsules were about 6.5 inches apart. The outward angle of the omni capsules, their spacing, the effect of the nearby barrier (the disc) and the small layer of foam (to prevent HF reflections) increase the apparent separation as the frequencies rise, while having a minimal effect on imaging at wavelengths below 200 Hz.

The Disc itself is 12 inches in diameter (and approximately 5/16-inch thick), and is made of a tough, hard polymer with six

slots where a stand-mount can be fitted, allowing the user to adjust the mic's angle of incidence in relation to the source. Mounts on either side are provided for small-body—about ¾-inch—omni condensers, from either MBHO or other suppliers. I tested the unit with several omni mics, including MBHO's 648 Series with numerous interchangeable capsules with various preamp modules. Unlike other stereo mics—such as AKG C24s or Crown SASS—the advantage of using a stereo barrier/detachable mic approach (such as the Jecklin) is that the mics can also be used separately in other configurations, such as XY, spaced pair, ORTF, etc.

Of the two preamps I tried with MBHO's KA-100D omni capsules ($237 each), I preferred the smoother sound of the transformer-coupled 648 ($264) over the transformerless 603 ($603). Both preamps have extremely fine threads that attach the electronics body to the capsule, and because the bass roll-off switch is located on the covered top of the preamp, users may need to remove the capsule head frequently.

On a chamber recording with a five-piece brass ensemble in a small hall, the MBHO omnis/Jecklin Disc combination provided a wonderful blend of the hall's ambience with a tight, well-focused soundstage of the players. The trick here was to experiment with placement: About 15 feet back with the mics angled slightly downward on an 8-foot stand was just right. Placing them much closer (about two feet above the source) as drum overheads for a rock session yielded a punchy sound with wide separation: Here, the "hole in the middle" caused by the mics being too close to the source helped keep the snare out of the cymbal tracks while yielding a huge stereo image.

Sometimes rules are meant to be broken, and I also tried the Jecklin with some cardioids for some in-your-face, exaggerated stereo effects. Retailing at $219, the

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Jecklin Disc is a useful—and sometimes fun—addition to your mic arsenal.

MBHO USA; 718/963-2777; www.mbho.de.

—George Petersen

YORKVILLE YSM1P
Powered Studio Monitors

I first heard Yorkville's original YSM1 monitors more than 10 years ago and was impressed by their high-performance/low-price approach. Now, the company has updated its classic design with the YSM1p—an active, bi-amped system—and the YSM1i, an unpowered version.

Other than the rear amp/electronics module and clip/power LEDs on the YSM1p, the new speakers are essentially similar to the originals. Updates from the original YSM1 include a smooth, radiused front panel to reduce diffraction effects, a foam-surround woofer and no grille cloth, but the new models are designed to sound like the originals. All feature video-shielded drivers: a 6.5-inch, ferrofluid-cooled woofer, and 1-inch tweeter in a 16.4x9.6x11.2-inch, ported enclosure.

Built in the style of Mackie's HR824, the piggybacked amp module has a Neutrik Combo ¼-inch/XLR input, removable power cord and power switch on the bottom of the unit, and no connectors protruding from the back, so the YSM1p can sit flush against a wall. The module is vented on all sides and remains cool during operation. Besides the 70-watt LF and 30-watt HF amps, the module has a rotary input trim pot, a switchable overload protection limiter, and DIP switches for adjusting HF Reflection Optimization and LF Efficiency Factor (two haughty phrases for the ±2dB roll-off/flat/boost settings for the woofer and tweeter). These are useful for adjusting the YSM1ps to specific listening environments, especially in compensating for corner or against-wall placements common in project studios.

I usually monitor at fairly sane levels (75 to 85 dB), so the YSM1p's max SPL (in the 105dB range) offered more than ample headroom in the near-field, and I left the limiter switched out. If you like listening loud and want the comfort of not blowing drivers, then the limiter feature could be very valuable to you.

Overall, the sound of the YSM1p is very good. The bass is not boomy—nicely balanced, thanks, in part, to Yorkville putting a 6.5-inch woofer in a cabinet where other companies might use an 8-inch driver; the roomy enclosure offers enough volume for the YSM1p's woofer to function smoothly. On the top end, the soft-dome tweeter was an ideal complement to the woofer, with a smooth 2.5kHz crossover band, realistic imaging, and crisp—yet natural—highs that were never harsh.

Users seeking slam-dunk 120dB playbacks should look elsewhere, but at $320/each, these are worth checking out for anyone seeking an affordable, accurate near-field reference.

Yorkville Sound; 905/837-8481; www.yorkville.com.

—George Petersen

Yamaha DM2000

24-bit/96kHz Production Console

Seven years ago, Yamaha unveiled its first full-featured digital console: the 02R. Offering 24 analog inputs and 16 tape returns for a total of 40 inputs, the 20-bit 02R was an instant success. However, production needs have changed since 1995, and today's requirements for more inputs, 24-bit/96kHz recording and surround mixing have surpassed the 02R's capabilities.

Over the past year, rumors and speculation have abounded about Yamaha's next-generation production console—now, it's finally here. Unveiled at November's InterBEE 2001 broadcast show in Japan, the Yamaha DM2000 is a 96-input console designed for true 24/96 production. The DM2000 contains the processing power of nine 02Rs, and, thanks to new DSP7 LSI chips with 32-bit (58-bit accumalator) internal processing, no channels are "lost" in 96kHz mode, a significant feature that distinguishes the DM2000 from its competitors.

A major design objective for the DM2000 was ease of use. The console has many single-knob-per-function controls, four soft keys and four rotary controls below the large LCD, and 16 keys for user-defined functions, such as individually muting surround monitors, recalling scene memories, etc. Five "bank" switches offer immediate access to any of the four groups of 24-input channels and the output buses, and the 24 100mm touch-sensitive moving faders immediately reset to the relevant values for the selected bank.

The master section provides full transport control: rwd/ff/stop/play/record keys, a jog/scrub wheel and 24-track arming keys with four arming groups. An autolocator offers eight memory presets, RTZ and auto-punch with rehearse.

A vacuum fluorescent display above each fader strip shows each channel's name, a useful reminder when switching between banks. Each channel has dedicated buttons for mute, solo, automation and channel select. Pressing the latter for any channel activates the large, central

panel with switches and knobs for setting routing, phase, channel insert, delay, sends, stereo/surround panning (via joystick) and the 4-band parametric EQ. A bright LED on each EQ band indicates gain or frequency settings.

The DM2000 was designed with multichannel production in mind, and includes 5.1-friendly features such as joystick panning, true surround monitoring, bass management, and a downmix matrix that enables LCRS and stereo mix monitoring. Multiple 5.1 stem mixes can be handled easily, and the master section has separate controls for surround and stereo control room volume.

The DM2000 includes numerous 96kHz-compatible stereo effects, many designed for surround mixing. Up to eight internal, 32-bit multi-effects can operate simultaneously; full-function compressor and gating is available on every channel; and six 31-band graphic equalizers are included. Dedicated Effects/Plug-In keys allow fast access to parameters for any of the eight assignable effects.

The MB2000 meter bridge's 48 12-segment meters can display pre-EQ, pre-fader or post-fader signal levels, or signal levels on the console's eight buses, 12 aux sends and four stereo matrix buses. Also included are dual high-res, 32-segment meters for the stereo bus and an LED switchable between SMPTE timecode and measures/beats/clocks.

The rear panel has balanced XLR and TRS connectors for all 24 inputs. Two-track I/Os are balanced/unbalanced analog, in addition to AES/EBU and coax S/PDIF digital connections. Onboard sample rate conversion and a wide range of sync and control options and standard wordclock I/Os are available. Six mini-YGDAI slots accept various I/O (analog, ADAT, AES/EBU, TDIF) and effects cards, as well as Apogee's high-performance AD/DA boards and Waves' Y56k card. Best of all, cascade ports enable two DM2000s to work in tandem for those complex 192-input mixes!

The DM2000 includes extensive support for Digidesign's Pro Tools. (Support for Steinberg's Nuendo is under development.) Yamaha's Studio Manager software (for Mac and PC) ships with the mixer and offers graphical control of all DM2000 parameters via an external computer.

Though the DM2000 has been designed primarily for recording and post-production applications, the system's relatively small format and comprehensive recall capabilities should also appeal to the live sound and installation markets. A target price of under $20,000 has been set, and deliveries are slated to begin this April. For more information, visit www.yamaha.com/proaudio. ■

BY EDDIE CILETTI

Dynamic Resurrection

The Altec 438

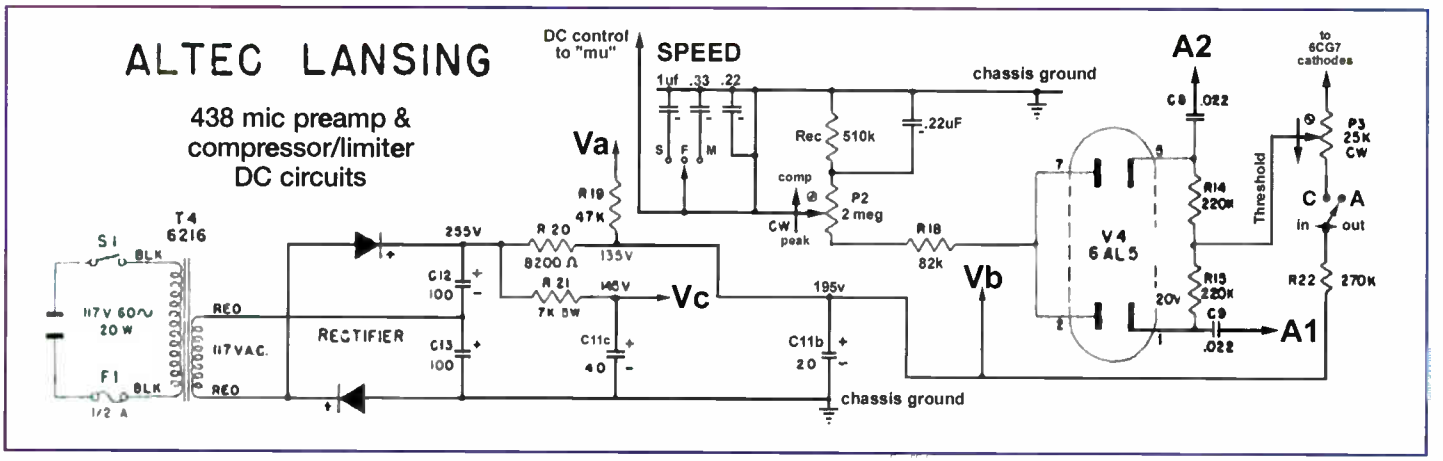


Figure: Partial Altec 438 schematic includes power supply and gain-reduction detector circuit only. Power distribution for mic pre, dynamics and output amp is via designations Va, Vb and Vc, respectively.

A steady parade of digital tape machines marched through my shop last year, interspersed with a few pleasant diversions that included five condenser mics, four dynamics processors, three mastering projects, two guitar amp modifications and (drum roll please) a cartridge in a turntable. Oh yeah, and a gray-market quad-panner that had the ugliest spray-painted gold front panel I have ever seen!

As a user, reviewer and techno-geek, I can't learn enough about compressor/limiters. Two very different beasts piqued my curiosity last summer: an Altec 438 microphone preamp/compressor and an EMT 156 stereo compressor/limiter/expander (to be explored in the few-cha).

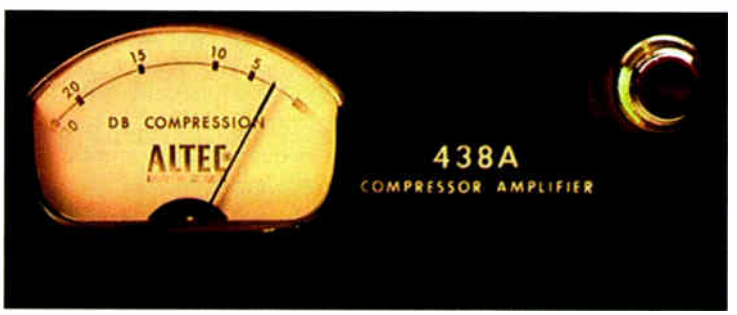
Note: While this column's spotlight is on the Altec 438—a vacuum tube device—troubleshooting basics apply to any product, hence the occasional mention of transistors.

THE LOAD DOWN

In the studio, I often found Altec's variable-mu compressor complementary to bass guitar. On the bench, I've learned that "color" comes from many factors—response time, ratio, amplifier design and especially the transformers. "Color" is never due to just one tube, nor does it depend solely on an "optical" or other gain-reduction device; rather, it's produced by the sum of all the parts.

The Altec 438 has three transformers: mic, interstage and output. The first transformer is the most colorful, the second drives the variable-mu (dynamics) stage, while the output transformer is fairly robust. Because input and output transformers have tapped windings, adding switches improves the accessibility of the impedance options, making it easier to optimize the interface or explore alternate sonic effects.

A VU meter is one overlooked component that's common to all vintage compressor/limiters. It makes a sonic contribution by way of the "feedback" it supplies (or doesn't). The short story is that mechanical VU meters are perfect for voice but slow to respond to transients, whether monitoring level or gain reduction. Having relearned this valuable lesson a few years ago (when reviewing the Pendulum Audio 6386/6ES-8 variable-mu compressor), I can't emphasize it enough. Here are the key points:



"The KSM44 has amazing presence on vocals. It's a great all-around condenser mic."
-Eddie Kramer (Jimi Hendrix, Led Zeppelin, Kiss, the Beatles, ...)

"I found the KSM44 to have an excellent natural quality with good presence and a nice open top end. This mic is so smooth in the midrange, even a banjo sounded good!"
-Joe Chiccarelli (Beck, U2, Elton John, ...)

"I tested the KSM44 on vocals, bass, guitar, and drums, and haven't stopped using it since. It's hard to describe, but there is an immediacy to the KSM44 that is very appealing – sort of like a dynamic mic, but more elegant."
-Brad Wood (Smashing Pumpkins, Liz Phair, Better Than Ezra, ...)

For a mic with such low self-noise, it sure creates a lot of buzz.

"The KSM44 is the quietest microphone I have ever used, and one of the best sounding too."
-Tom Jung (Pro Audio Review, DMP Records, ...)

"As I compared the KSM44 to a mic I consider to be an old favorite, my ear immediately chose the KSM44. Shure has a fantastic studio mic that I can use for critical recordings – it's going to become a standard, very fast."
-Bil VornDick (Alison Krauss, Bela Fleck, Mark O'Connor, ...)

"My first impressions of the KSM44 were warm, round, full – dare I say it? Fat!"
-Bob Ross (Recording Magazine)

"The KSM44 is a remarkable achievement. I am especially impressed with the versatility of this microphone and have yet to find its limits."
-Steve Albini (Nirvana, Page and Plant, PJ Harvey, ...)

"I was given the KSM44 prototype early-on, not knowing its intended purpose - so I tried it on everything. Guess what, it worked on everything!"
-Chuck Ainlay (Trisha Yearwood, Mark Knopfler, George Strait, ...)

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- Listen first.
- Know the difference between peak limiting (fast attack and release) and compression (medium attack and release), as well as the appropriate threshold settings for each.
- Peak limiting probably does more to "wake up" a stereo mix, but you won't get the best results looking at a VU meter. In fact, I encourage retro manufacturers to incorporate additional peak display devices, such as LEDs, so that the metering reflects the work being done. (For more info about this and other "color" commentary, read the sidebar.)

SIMPLY GREEN

In my experience, Altec products are consistently designed around a simple, no-frills philosophy (e.g., the industrial dark green or gray finish). Like the Teletronix LA-2A, and consistent with their other "packages," the Altec 438 features a rack-mounted chassis with a hinged front panel that facilitates service. The compressor uses a variable-mu tube, the 6BC8, with a built-in 12AY7 mic preamp. (The compressor-only version was called the 436. Both models have similar, but simpler, circuitry compared to the Universal Audio 175.)

There were at least three versions of the 436 and 438, which were designated A, B and C. The "A" version had only a volume control. The "C" version added threshold and release (variable from .3 to 1.3 seconds at 63% recovery). Attack was fixed at 50 ms. According to the Application Notes, "The 438 Amplifier is intended for use as an Automatic Level control in Recording, Broadcasting and Public Address systems. It can provide up to 30 dB of compression." Like most dynamics processors from this era, the 438 is a feedback-style compressor, in which the Detector circuit is driven by the output amp. Surprisingly, the documentation goes on to say, "The 438 can be used without the compressor by removing the 6AL5 Detector tube from its socket."

CAP'N CRUNCH

Regarding sonic color, the distortion spec for the 438 is fairly high: 2.5% at 30 dB of compression. The frequency response spec is 40 to 10k Hz, ±1.5 dB. Of course, the response goes well beyond 10 kHz, but in the late '50s, 40 to 10k was the critical window—everything above and below was icing on the cake. The 438 that I received from Customer X had been used as a mic preamp only—for voice-over work—and the customer had pulled the detector tube because the compressor was not functioning well. When the output amplifier got really funky, the unit was sent in for service along with a nice letter detailing normal use parameters, problems and—joy of joys—boxes of spare tubes. I had free reign to make the compressor usable.

Safety note: The capacitors in vacuum tube power supplies can retain their charge even after power has been removed. Please wear shoes and observe the "one-hand-in-pocket" rule. Do not lean on the unit with one hand while probing for the best shock-therapy test point with the other. Caps can be discharged through a resistor to chassis ground using insulated clip leads.

Also, before changing any components, make sure you have schematics. Electrolytic capacitors are often hard wired with multiple connections made to each terminal. Just removing them can be quite labor-intensive. No matter what part is being replaced, *don't* rely on your memory. *Do* make a drawing of the component layout, and check to see that it agrees with the schematic so that everything can be put back the way you found it.

Another point to remember is that, in terms of meeting their specifications, vacuum tubes and transistors are moving targets. "Testers" can be used to match devices and quantify certain aspects of performance, but the best way to scrutinize for noise is to have a known quiet circuit, at least one functioning ear and/or a spectrum analyzer. The NTI Minilyzer is one example of an affordable, all-in-one unit capable of measuring level, noise, frequency response and distortion.

PRELIMINARY

With all vintage gear, check capacitors first. Last year, I showed how square waves can be used to find failing signal caps. (See tangible-technology.com for stunning pictures.) Checking power supply caps in tube gear is another matter. (Please re-read the safety note above.) Electrolytic capacitors that are physically leaking are suspect. All caps can be measured—out-of-circuit only—for "electrical" leakage and for tolerance using a capacitance meter. Vacuum tubes should be tested for emission and "gas," the latter being the most likely culprit when other treatments do not relieve the symptoms. The stripes on overheated carbon resistors may no longer be reliable indicators of the component's value, so try

to correlate them with the documentation and an ohmmeter.

POWER SUPPLY ISSUES

If the unit blows fuses, then the suspect parts include C12, C13, the rectifier diodes and the power transformer. Disconnect the diodes to check the transformer and hope it's not bad. The Altec power supply and detector circuits are shown in the figure. Note that the diodes comprise two half-wave rectifiers (in a voltage doubler configuration) that convert 117 VAC from the transformer secondary into 255 VDC across 100uF caps C12 and C13! C11a (not shown, but connected to "Va"), C11b and C11c are part of a multisection "filter" capacitor that isolates the preamp, gain reduction and output stages, respectively. (The "V" designations indicate power distribution to these stages.)

Let's assume, for the moment, that the device in question can be plugged in without doing further damage to itself or its surroundings. Connect a sound source, adjust the signal level and monitor via speaker. Kill the source, shorting the input if necessary, and listen to the output for noise. Lots of 120Hz hum indicates C12 and/or C13 are bad; some hum may be normal. It is not unusual for vintage gear to have a signal-to-noise ratio of only 80 dB unweighted, some of the noise consisting of hum.

If you are unsure about the other supply caps, then try this in-circuit test: Starting with a 'scope set to its least sensitive position, select AC coupling, connect an X10 oscilloscope probe to the top of C12, where a saw-tooth wave—also known as "ripple"—would indicate that some filtering is being done. Then probe Vc, Vb and Va; each should have progressively less ripple than C12, the saw-tooth being replaced by a near sine wave. Though they are not shown, the 6BC8 and 6CG7 are differential stages and, as such, will reject any ripple at C11b/Vb and C11c/Vc. The mic preamp is the one stage that needs the cleanest DC (C11a/Va).

I once received a piece of outboard gear that barely worked. Most of the tubes were beyond tired and when replaced, the unit oscillated like crazy, as if using good tubes was to blame. High-gain signals from various stages can cross-pollinate if the filter caps are well below tolerance. For a quick in-circuit cap check, connect an oscillator or sound source to the input and terminate the output with a 600-ohm resistor. Now, moni-

tor all of the same capacitors as in the previous test to see if the audio signal is superimposed over the ripple. Any significant amount of audio would also indicate cap fatigue.

OTHER HOT NOISE ISSUES

Although all "antique" carbon resistors are potential noise sources, start by scrutinizing values of 100 kilohms and above that are connected to a vacuum tube plate or a transistor collector—essentially, all voltage gain stages. Be sure to first change the tube or transistor in the stage suspected of generating the noise. Short the input and monitor the output. If "popcorn" still appears, then switching to metal film resistors should reduce the noise, shifting its spectral content to a less disturbing region. Next, tap each tube and listen for microphonics. Hand-select, if necessary. Tubes in high gain circuits are sometimes shock-mounted to isolate them from chassis noise. Replace dried rubber grommets (available at Radio Shack) to improve mechanical isolation.

COLOR SOAPBOX

Three issues come to mind regarding the desirable idiosyncrasies of old-fashioned analog: ease of use, the "color" source and user feedback via metering (if applicable). Electronic part values vary with temperature and manufacturing tolerances. When used in a mono signal chain, most differences are insignificant. When used in stereo, the tolerances are more critical. As with all vintage gear, component aging is a contributing factor to sonic character. The sound of some "magic box" might be the result of the design or the characteristics of marginal components. It is important to know which, especially if the plan is to clone the device and cash in on the magic.

Such was the case with the "new" Universal Audio 1176, one example of sonic time travel that propels the hardware side of our biz. Bill Putnam Jr. and Co. extensively interviewed passionate users, learned what version to replicate, agonized over the cost of finding "original"-style parts and then had their work subjected to further scrutiny. A handful of cherished 30-year-old originals (and their owners) set the high watermark. Golden ears celebrated the resurrection, attributing the subtlest of sonic nuances to component aging in the originals. This is a compliment to Universal Audio, but it must have made a few people sweat!

VROOM WITH A VU

I always knew to ignore traditional VU meters when recording snare, tambourine, handclaps, glockenspiel and steel drums (to name a few). Mechanical metering is, by nature, slow to react to transients but perfect for voice, bass and electric guitars. This is true for level as well as gain reduction readings. With medium-to-slow attack and release settings, VU metering will accurately reflect the job being done. But on program, using the fastest settings, the "magic" didn't happen until I stopped using the meter and just listened.

For pop music, close-miked drums create lots of peaks well above vocals and other "soft" instruments. I generally start out with Slow Attack and Fast Release settings, then gradually increase attack until it starts "biting" into the track, bringing the peaks into line with the "meat." Attack and release response must be very fast—too fast for the meter to respond and too aggressive to do any more than take "a little off the top." As I gradually increased threshold, the mix came alive; peaks of about 6 dB were tamed, yet the meters were barely moving.

The limitations of VU metering are an acceptable shortcoming of vintage technology, but one that requires a little intuition from the user. That was then. Now, precise metering can serve double duty as both a teaching tool and as a value-added product enhancement. By illuminating the differences between peak and average program levels—both in Level and Gain Reduction modes—ears-in-training will see (and hear) what the controls are doing, ultimately getting more from the product. Embracing the simplicity of the past is a great discipline, but I also encourage retro manufacturers to integrate the simplest bits of modern technology—a few LEDs—to deliver the feedback users need so that they can get more from their gear.

—Eddie Ciletti

GAIN REDUCTION

Definite progress was made at each step of the Altec 438 restoration, but I made the initial tests with a steady-state tone only. Various program sources showed that the dynamic response of the variable-mu circuit became unstable under changing loads. Returning to a test tone, the instability occurred right at the threshold, taking the form of a low-frequency modulation as if the sidechain was oscillating. (The 438 in question was the "A" version with fixed threshold.) I reversed a non-factory modification in the detector circuit to see what normal was.

From the 6CG7 output tube, a differential signal feeds the cathodes of the 6AL5 Detector via points A1 and A2. Each half of the wave is rectified, combined by tying plate pins 2 and 7. The raw DC signal is then smoothed by an RC network that sets attack and release times. Because I wanted the unit to be more versatile, I tweaked and listened and tweaked again until I selected the components to the left of the 6AL5, as detailed in the figure.

To achieve near-original performance, set P2 (a 2-Meg pot) to the max CCW setting and the Speed switch to S (slow). Medium and fast settings are achieved by choosing two smaller-value caps; turning P2 CW reduces attack time and increases release time. I liked the idea of having a master Speed switch plus a single pot to inversely affect these two parameters. The threshold control—P3, added in the "C" version—is shown to the far right. Switches labeled "A" and "C" show the before and after of the factory mod. I would have liked to gang P2 and P3 together in order to desensitize threshold when dialing P2 toward Peak Limit mode, and vice versa when P2 is in Compress mode.

CIAO FOR NOW

Signal path show and tell will have to wait for now, but I didn't want to leave without mentioning the EMT 156. It passes audio through a diode bridge using pulse-width modulation to control the gain. Unlike the Altec 438, there are multiple detector circuits for peak limiting, compression and expansion. Three DC signals are mixed together to drive the pulse-width modulator. What a bizarre beast that was, from the power supply on up. Maybe next time. Till then, keep your soldering iron tip clean. ■

Visit the Eddie archive at www.tangibletechnology.com.

Kill Your Mouse

No, no, no . . . we're not advocating violence against defenseless little animals (if they were *rats*, maybe . . .). But we are suggesting that if you're making music with computers, you need to jump on the EZbus—and make the process way more simple, and way more *fun*.

Take mixing, for example. Without an EZbus, you adjust each of your magnificently crafted tracks one at a time with a mouse. With an EZbus, you reach for an honest-to-goodness hardware mixer, and move eight faders at a time. (Now *that's* mixing!)

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But total control is only part of the story. The EZbus is also a superbly flexible **computer audio recording interface**, with 24-bit/96kHz mic, line, and instrument inputs, ADAT®, S/PDIF, and USB digital I/O—plus brilliant EQ and dynamics on every channel, and an any-input-to-any-output audio routing matrix that will leave you wondering how you ever lived without it. (Did we mention zero-latency monitoring?)

And then, when you're all done recording, disconnect the EZbus from your computer, throw it in a gig bag, and make it the heart of your live mixing setup. Because this mouse-killer is also a full-blown **digital mixer**, with all the features, sonic performance, and rugged dependability you'd expect from a piece of gear with the Event name on it.

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SOURCE CODE: MXBA

Surreal Sound, Toy Cameras

Low-Res Source, High-Res Impact for "Killer Me"

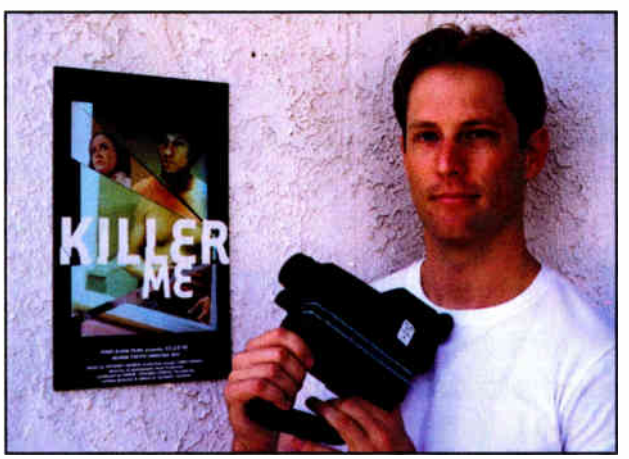
By Arlan Boll

As a sound designer, I am always searching for new and interesting ways to re-create sounds, hoping to avoid that dissatisfying, heard-it-before feeling that plagues so many films (and CDs!) today. In our field, there are directors who perceive sound almost as an afterthought, and from their point of view, who really cares that we're using the same child giggle or bird squawk? Granted, sometimes in this business, the only answer to an audio solution is the quickest and easiest sound, due to time and/or budget constraints. However, on occasion, a director comes through who really seems to understand the possibilities of sound, whether there is a budget or not.

When I first met writer/director Zach Hansen, it was for a spotting session of his feature, *Killer Me*, a serious psychological drama photographed by Neal Fredericks, who also shot *The Blair Witch Project*. It soon became obvious that he was a passionate screenwriter and director; upon experiencing firsthand his work with the actors during ADR sessions and his control of the entire event, it was clear that he cared equally about sound.

When Zach and I first began researching the kinds of sounds and music he desired for his film, I presented to him, at the very least, dozens of sound sources and libraries, all to which he responded with a definitive, "No!" As *Killer Me* continued to play on the monitor, Zach kept talking in surprising specifics about certain sounds he wanted to hear in each scene. He then stuck his hand into his bag and pulled out a 15-year-old, battery-operated toy video camera, a Fisher Price PXL 2000. "I was thinking we could do some of the moodier sound effects on this," he told me. "The sound quality of this toy might give our recorded sounds a different color."

A PXL 2000 (which is no longer for sale) records video and audio onto a single audio cassette tape. No smoke, no mirrors, just plain old, down-and-dirty, '80s tech. The tape moves at 12 times a regular cassette deck's speed to record its low-res image and sound. When you play the PXL-recorded material back on a standard audio cassette player, a whole new sonic door opens. Not only is the sound slowed down to a crawl, but there is also a distinct warp to the audio, and when the sound source recorded is too soft to be picked up by the camera's audio input (its external mic), the whir of the camera motor is brought forward in the mix. At slow speed, this motor buzz turns into a very haunting, vibratory lull.



Zach Hansen with a PXL 2000

At first, I was bewildered that Zach would make such a suggestion, but by that point, I was willing to try anything. We played the sounds on the cassette deck while simultaneously watching the movie, communicating with glances and gestures as we painstakingly married audio and picture. The project quickly found its own rhythm, and on many occasions, nary a word was spoken as we sat in awe, watching and listening as our PXL pieces magically completed the puzzle. This drone/music became the main score of the film.

Zach and I then became obsessed with using the 2000 to record everything we could get our grubby little ears on. The sounds had to be in a high-frequency range, as everything below about 1k was inaudible when played back at normal speed. We recorded bells, birds, pingpong balls, floor creaks, pots and pans, whistles, carrot munching, dog toy squeaks, kalimba, and on and on. Upon playback, we continued to get a most eerie array of tones, a marked departure from any previous sounds used in any media that I have seen or heard to date.

Although many of the sounds from the PXL worked fine on their own, we also wanted to experiment with today's technologies. With Pro Tools being our main mixing environment, I used TC Electronic and Waves plug-ins for chorusing and associated reverb and spatialization effects. Of course, the reverbs tended to give some sounds more of an ethereal feel—but at a higher level, due to the unique foundations of the sound's source. Because the original source was mono, chorusing added an extra dimension in the stereo field. Layering sounds on top of each other and panning left to right created very somber, unsettling entities that felt like they would pass through your body tenfold because of the low-end frequencies and their uncommon nature. We also used reversing, phasing, equalization, limiting and delay, in various combinations.

In one scene of the film, the main character takes a slow walk in a remote part of the woods. With a recording of a rubber ducky quack, the PXL's audio track—the score, essentially—transformed it into a most ominous bellowing, one that would fit well in any sci-fi film. Placing it at various locations in the mix gave the scene a suspenseful, shock-

—CONTINUED ON PAGE 158

Composer Spotlight

Richard Wolf

By David John Farinella

Richard Wolf has some unconventional assistance while he composes music for the new WB Network animated television program *Static Shock*. "When I get the episodes to spot them, I bring them home and I spot them with the kids. They come up with questions that I don't have the answers to," Wolf admits with a laugh.

Most recently, the Wolf children were pressed into action while their dad was working on *Scooby Doo and the Cyber Chase*. "I have a 10-year-old son and a 7-year-old daughter, and now I try to watch the [cartoons] through their eyes," says Wolf. "It's great, because it's a bonding thing with the kids to show them the shows. I show them the storyboards, and I showed my son the script for *Scooby Doo* and got his feedback. My son gives me ideas for titles and sometimes lyric ideas."

Of course, it wasn't always cartoons and afternoons with the kids for Wolf. The composer started his musical career with a solo release when he was just 17. Through the late '70s and early '80s, he played with the band Crimson Tide, and his first foray into the film industry came in 1986 when he wrote the theme song for the Rodney Dangerfield film *Back To School*. "It was pretty much a rock 'n' roll song,

—CONTINUED ON PAGE 158

Richard Wolf

Facility Spotlight

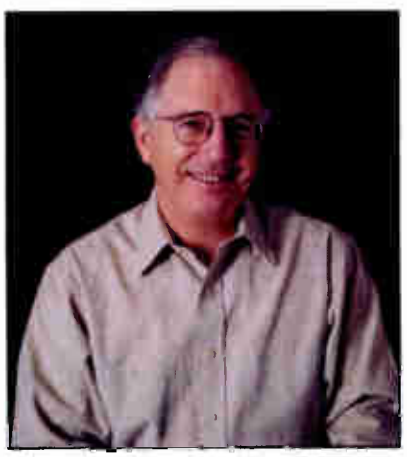
SoundStorm, Last of the Red Hot Independents

By Maureen Droney

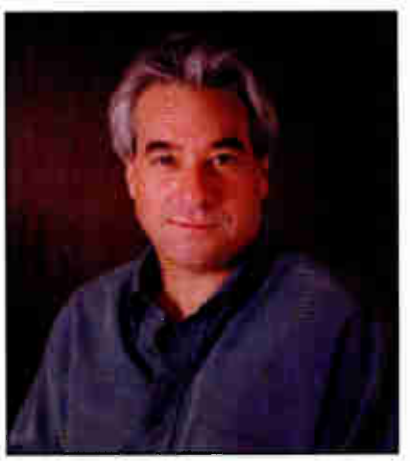
Is it that now-classic 200-track train wreck in *The Fugitive*? The gun battle denouement of *L.A. Confidential*? Squeaking bats juxtaposed against a roaring Batmobile in *Batman Forever*? *A Time To Kill*'s buzzing mosquitoes and slithering snakes? Or maybe those screaming, souped-up race cars in *The Fast and the Furious*? Pinning down the definitive SoundStorm scene is a tough call. The independent company's sonic artists create designs that run the gamut from spectacular to subtle, the common thread being that these guys go the whole nine yards—and more—on every movie.

SoundStorm's slogan is "Out of Our Minds and Into Your Ears," and there may be more truth in that than even those who coined it intended. Longtime SoundStorm supervising sound editors Bruce Stambler and John Leveque, who have garnered, between them, five Academy Award nominations and one win (Stambler, for *Ghost and the Darkness*), are known for going to extremes. They've used ropes to drag a manned dumpster over con-

—CONTINUED ON PAGE 164



Supervising sound editor John Leveque



Supervising sound editor Bruce Stambler

Two Slices Or Six?

Breaking the 2,000-Foot Barrier

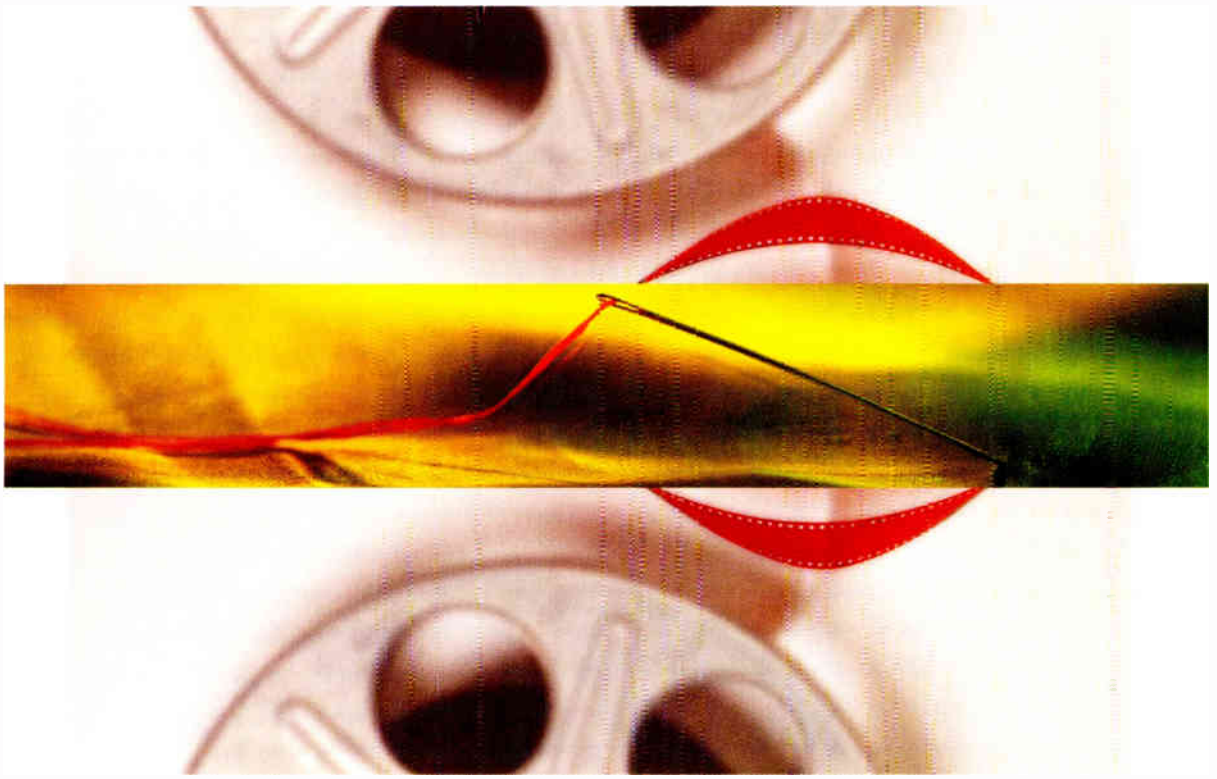


ILLUSTRATION: LIZABETH HEAVERN

By Larry Blake

There's an old quote attributed to the great New York Yankees catcher, Yogi Berra. When faced with an out-of-the-oven pizza and asked if he wanted it cut into six slices or nine, he replied: "Oh, six. I could never eat nine."

Over the years, there have been a few changes in the size of the "slice" of films in which picture and sound editing is conducted. Initially, everything was done in reels whose maximum length was 1,000 feet. (Film runs at a 90 feet per minute, approximately 18 inches per second.) The reason for this is quite clear: Handling film picture and sound units in larger increments was physically unwieldy and required large amounts of elbow grease.

The size of the reels that were shipped to theaters, however, has long been in the 2,000-foot range. (The word "range" means that some reels are much shorter, out of a desire not to break a complicated scene in two.) This meant that films would be edited and mixed in "small" reels, but joined in groups of two at some late point in post-production. In this manner, what was originally reels 1 and 2 became known as reel 1AB, reels 3 and 4 as 2AB, etc. In the case that you could squeeze three small reels into the 2,000-foot increment, the combined projection reel would be called reel 1ABC.

Since the beginning of my career in film sound, in the late '80s, films that I have supervised have been worked on exclusively in "AB" reel sizes. I have not been alone in this policy, as working with multitracks and digital audio workstations are "elbow grease-free" zones. Working in the larger reels was a no-brainer for me, because working in larger stretches allowed us to get a better sense of the flow of the movie, both while editing and mixing.

On the technical/logistical side, big reels reduce the number of times you have to wind up the machinery that goes with starting a reel: new sets of tones, sync pops, patching, etc. All of which is time and energy spent away from the creative job at hand. Also reduced was the chance that a changeover from one reel to the next would be tricky, such as hav-

GLOSSARY

LFOP (Last Frame Of Picture): The last film frame in an edited reel. If you are starting with the "Picture Start" frame in the leader as 0000+00, then your first frame of picture is 12+00.

A/B/C/D FRAMES: The sequence in which 24 frames-per-second film is transferred to 30-frame NTSC video. Every second film frame (A and C frames) is transferred to two fields that comprise a video frame. The other frames (B and D) are transferred to three fields. It is essential that there be a definitive timecode-to-film relationship, and industry practice has A frames beginning at :00 and :05 video frames.

StorCase InfoStation
Behind the Scenes

Glacier Bay
Alaska

Diving into High-Definition

It's not just a job, it's a truly unconventional adventure when John Brooks, an award-winning producer/director/cinematographer, is in charge of the project. He is currently in the final stages of finishing a one half hour "high-definition" video documentary about the underwater work of Alaska's Glacier Bay.

"The Park Service had this project in the que for a couple of years. The delay was actually a blessing in disguise because it allowed me to take advantage of today's high-definition quality", said Brooks. "This piece will enhance the visitor's experience by giving them a spectacular close-up view of the bay's underworld", added Brooks.

Brooks wanted a solution that would allow him to match or exceed the benchmark resolution of underwater filming. After a great deal of research and underwater equipment testing, Brooks found HD to be very flexible in its ability to deliver superior resolution in the bay's harsh underwater conditions. One of Brooks' biggest concerns was the camera. "The camera had to be able to withstand extreme underwater conditions over long periods of time without incident", said Brooks. This concern was lessened when he discovered a Panasonic HD camera with a special Pace Technologies housing specifically built for underwater filming.

On the post-production side, Brooks needed a reliable and flexible solution. He used a Power Mac G5 with an Atto Ultra160 SCSI card, Apple Cinema Display, Final Cut Pro, the **RAID-ready StorCase InfoStation enclosure solution** filled with Maxtor Atlas drives, CineWave HD and Panasonic's compact deck.

Brooks shot and viewed tapes with his onboard monitor immediately in HD after each 32 minute dive. The tapes were later transferred to D5 masters for archiving and converted to DVCPro format for editing using CineWave's video capturing feature. This allowed Brooks to fit 13 hours of quality compressed video on the StorCase InfoStation storage solution. Edited drafts were created in DVCPro by utilizing Final Cut Pro. After the editing process was complete, the drives were flushed clean and a final edited version was recaptured in full HD resolution. After some fine-tuning, the makings are output back onto D5. A D5 Master with soundtrack and animations will be created at a post-production facility and a final HD copy will be transferred onto storage where all future products will be derived.

John Brooks, a veteran documentary filmmaker, wanted a solution that would allow him to match or exceed the benchmark resolution of underwater filming.

Armed with all his brilliant talent and cutting-edge capture and post-production equipment, Brooks is already thinking about and planning his next out-of-the-ordinary journey somewhere along the continental shelf in the South Atlantic.

For additional information about InfoStation, log onto the StorCase Web site at **www.storcase.com** and take the InfoStation virtual tour, or contact a product specialist directly at **(800) 435-0068.**

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ing a busy scene split across two reels. This requires careful coordination in editing and mixing to ensure that levels are matched seamlessly.

So, a 2,000-foot reel is the only way to go, right?

A year ago, I would have said so, but a few experiences and observations have shown me otherwise. First up was my observing the *Apocalypse Now Redux* team work in a "four-act" form instead of in smaller reels. By joining together the original 16 small reels, plus 49 minutes of new material, they had a much better sense of the flow and dynamics of the film. It was just simply more convenient. And when they did have to "stoop" down to the needs of theatrical projection reels, they carved their final printmasters into AB-reel increments in a workstation. But because *ANR* was part new film, part old film, it didn't occur to me that this method could work on a new-new film.

The next bit of inspiration for me was my work mixing *Traffic*, which was my longest film to date, eight AB reels. On *Traffic*, I started my now-standard procedure of recording a voice slate plus complete set of tones at the head of each track of stems and printmasters. This "Rosetta stone" is important, I think, to the act of properly archiving mixes as files, instead of linear pieces of mag film or tape.

Working in the larger reels was a no-brainer for me, because working in larger stretches allowed us to get a better sense of the flow of the movie, both while editing and mixing.

However, the setup procedure was just a pain in the ass, and by the time I got to the last reel in each version, I was exhausted. There has to be a better way, I thought.

Early this year, my company in New Orleans worked on the final mix of Richard Linklater's *Waking Life*. The sound had been edited and mixed in the Pro Tools TDM environment by Linklater's sound supervisor, Tom Hammond, in Austin, Texas. Our job was to help them finish the mix and prepare the multiple versions.

Because their picture edit was locked, I thought it might be a good idea for Tom to join reels together and for us to mix the whole film in one long stretch. This turned out to be the right decision, because we were doing a polish of Tom's mix, and by working in the larger sections we had a much better overview of the flow of the film. And when Linklater came to New Orleans for one day, we were able to play him the whole film, and do fixes, without ever changing sessions. Everything worked out well, even with very large sessions, no doubt aided by our recent update to faster G4 computers.

So…when I started work on my next film, *Ocean's Eleven*, I tried to figure out how I could adapt this procedure from scratch on a film. Having just finished the final mix as I write, I can say that the experiment morphed very quickly into a "I'll never work any other way again" philosophy. Here's how it's done.

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First of all, it doesn't matter if the picture department works in AB reels or in parts, as long as they deliver to you in parts. In the case of *Ocean's*, all picture editing was done in AB reel sections because dealing with longer sections resulted in a very sloooow Avid. (And, of course, it should go without saying that the negative on *Ocean's* was cut in AB-reel increments. I am *not* suggesting that the original camera negative be handled in any larger size!)

When the picture department would give us an output from the Avid, they would join reels 1AB, 2AB and 3AB into Part 1 and 4AB, 5AB and 6AB into Part 2. This way, when we received a new edit and picture changes, they would have the Avid compare Version 3 of Part 1 to Version 2, and our change list was in parts, instead of having to do an awkward reel-to-part translation. In other words, Stephen Mirrione, the picture editor, only worked on the film as AB reels, while my crew and I only viewed the film as parts.

Mirrione's crew, led by Doug Crise and Keith Sauter, were very careful to join the reels last-frame to first-frame, with A/B/C/D frame continuity remaining unbroken. They also verified that the LFOP of the parts matched the standard math of film reel addition. To wit: You have to subtract 11+15—*not* 12+00—to get the correct LFOP, in the part, of the last frame of 2AB, whose leader you are of course "throwing away." And you subtract 23+14 from the combination of reels 1AB, 2AB and 3AB to get the LFOP of the part.

As our guide in separating the reels (when making printmasters during temps), we made a bounce of Avid tracks 1-6 (representing the dialog) and put head and tail pops for reels within that. This way, we had a foolproof guide with which to carve 2AB from the middle of Part 1.

The creative benefits from dealing with *Ocean's Eleven* during sound editing and re-recording were substantial. When I sat down to cut backgrounds, I had an overview of the whole part, and my energy and time (and those of my editors) was not diluted by shifting between reels. (I just don't understand that many people I've talked to say that they don't think that working in parts would be good for them, that they need the pleasure of completing something more frequently. I just don't get it.)

More importantly, when we got to the mix, we could play the first hour of the film for director Steven Soderbergh as soon as he walked onto the stage. And working with digital picture further gave us the ability to be lean and mean.

Picture changes were essentially the same as working in AB reels, although there was one substantial improvement. We had a major reel rebalance toward the end of editing, with 5AB extending longer and 6AB becoming shorter to accommodate the end titles. In a normal circumstance, this might be a pain, although of course workstations have made moves such as these generally easy, but we literally had to do *nothing*. The reality of the rebalance would come when the next temp was next carved into AB reels for screening purposes.

So, the sound job for this whole film came down to eight Pro Tools sessions, two parts each for dialog, music, hard effects/Foley and backgrounds. And then, on Sunday, October 21, we recorded 32 tracks of stems for each of the two parts. So much simpler than the big to-do I had gone through a year earlier on *Traffic*, I just can't tell you.

We continued in the parts mode when

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doing the SDDS 7.1 and DTS 5.1 printmasters, because those are delivered as Pro Tools sessions. Therefore, it doesn't matter that the audio files are in parts; the sessions for the six reels define them properly as regions, plus head and tail pops. Yet another added benefit was that we have pre-made pull-ups on all reels except 3AB at the end of Part 1. Getting the pull-up was as simple as extending the reel 44 frames (to accommodate Dolby Digital basement readers) right before the tail pop.

Okay, I know what many of you are saying: You couldn't work in parts if you have a film that has hundreds of picture changes flying in every direction, with late-arriving opticals changing the balance of everything. To this scenario, I would agree. Situations like that require that you throw reels to many different editors simultaneously, perhaps being mixed on different stages. But if your show is mixed with one crew, and you're making "whole version" changes in groups, without an insane schedule, then I believe that working in parts will not be a problem in most cases.

Now, to answer the other question I know that you're asking: If longer is better, then why not the whole film? There are many answers to this, the first and foremost being that it would be very unwise to not be able to have editing being done on one part while working (at the mix, say) on the other.

Second, as of 2001, we still have to interface with the physical world of linear tape, and many important mediums—DASH and 2-inch multitrack, and ¾-inch and D6 digital videotape—top out at the hour mark. You can go a bit longer on others, such as Beta SP and D1, but you would certainly not be able to conveniently copy, as one part, the picture or sound of anything other than the shortest feature film. And if your film was longer than two hours, which is common, you would most certainly be screwed in any circumstance.

Third, the file size that you would be recording would exceed the sensible size accommodated by industry-standard storage and backup media. The size of a 24-bit file for an hour of recording time is in the range of 500 megabytes, and you can nicely fit 24 tracks of one part onto a (current) industry-standard 18-gig drive. So there, we're stopping our parts at three reels.

I just can't wait to hear from you film people out there about this subject. (I know I've long since lost those of you in music who couldn't care less about LFOPs.) I can be reached at PO Box 24609, New Orleans, LA 70184, or via the Internet: swelltone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them would have to be that everyone there is as quotable as Yogi Berra.

—FROM PAGE 150, "KILLER ME"

value effect that is one of my favorite spots in the film. During test screenings, this scene forces one to cover their eyes and look away, which I simply enjoy, considering it's just a walk in the park, with a rubber ducky.

Linda and Arlan Boll

Needless to say, we spent hours of editing to make things work. In the end, the score for *Killer Me* is now more than 90% PXL 2000 music/effects. This original soundtrack has an unmistakable fresh feel to it. No symphony, group, synthesizer or tone generator can make these sounds. With imagination, the work with the PXL 2000 has helped this film's sound become unforgettable and one-of-a-kind. I believe this to be a significant mark in today's audio post, achieved by using yesterday's childhood trifle.

Killer Me premiered at the 28th Telluride Film Festival this past Labor Day, and was scheduled for an East Coast premiere at the Hamptons International Film Festival from October 17-21. It's creating quite a buzz for its originality of sound and picture; rumor has it that even Roger Ebert commented on the track. I found it to be an extremely innovative feature film, a story of a man's shocking inner conflicts and how he deals with them—not for the squeamish. But then again, you can always close your eyes, but you can't close your ears. ■

Since 1990, Arlan Boll has been owner/operator of AB Audio Design Studios in Long Beach, Calif., specializing in custom sound design and music for all media, all under one roof.

—FROM PAGE 151, RICHARD WOLF

and I was just coming out of rock 'n' roll bands, so it wasn't such a stretch," he says of the tune he co-wrote with Mark Leonard.

"It's something you have to adapt to," he says, in reference to film music. "It was one of those musical montages where there's no dialog. Since it's a scene prominently at the top of the movie, the song has to be exciting and driving enough to maintain the interest, while, really, there's nothing happening other than the guy is in his car driving. There's no dialog, so the music has to carry a lot of the drama. We had to make it energetic."

Wolf went from *Back To School* to *Karate Kid II* to a handful of other major films. As his credit list grew, Wolf started producing albums for a variety of artists such as New Edition, Bell Biv Devoe and the New Kids on the Block. His work with the New Kids helped him when it came time to work on the music for David O. Russell's *Three Kings*. Russell wanted a track that would allow the actors, including former New Kid Mark Wahlberg, to sing "God Bless the USA." "We were going back and forth with the tempo," Wolf explains. "Because I knew Mark from working with New Kids on the Block, I could tell David that this was the right tempo for Mark. The day before they shot it, I sent them the track. They were in the desert somewhere in Arizona. That was a lot of fun—it was challenging."

As his musical experiences were changing, so were his tastes in musical

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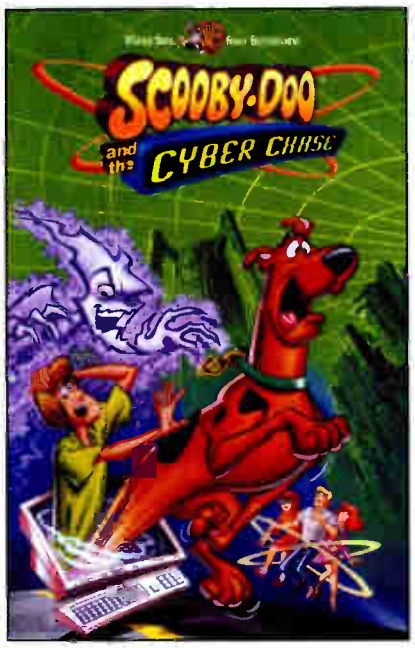
styles. "In the late '80s, I really started to sour on rock music—it was just becoming so corporate and bland," he says. "I started to really get into hip hop. I was into hip hop from Doug E. Fresh and Kurtis Blow days.

"I love a lot of different genres of music, but, to me, the most exciting genre right now, and probably for the past two decades, is hip hop. That's where the most innovation is, although electronic music now is starting to produce some real interesting stuff, and I'm really digging on that a lot."

In addition to film soundtracks and albums, Wolf's music has appeared on the small screen as well. He composed the themes for the shows *Sirens* and *Rock and Roll Evening News*, which, he admits laughingly, most people have probably forgotten about. Meanwhile, his songs were being used on a number of shows ranging from *The X-Files* to *Felicity* to *General Hospital*. Fox Sports also picked up some of his songs, and the channel eventually asked him to come up with some themes. "I ended up writing a bunch of themes for them, which are used in dozens of sports ranging from Major League Baseball to the National Hockey League to women's volleyball to golf," he says. "That was a learning experience, too, because there they give you graphics of



what the openings are, and within that framework you have a lot of freedom."

Having that freedom, in fact, is one of the reasons he enjoys working in television. "When you produce records, you are serving the vision of the artist," he says. "You're really there to bring out the best performances from the artist and to help the artist realize their vision. When you're composing or working in TV or film, the composer is the artist. You're working in the framework of the picture and the story, but it's a very broad framework. The palette of sounds and the genres that are available are very wide, at least in what I found."

The 10 Fox Sports themes that Wolf has composed have been played roughly 8,000 times, yet his "Standard Millennium" theme has received the lion's share of the plays. "It's got rock, and I would say it's triumphal and exciting," he explains. "It's supposed to get your adrenaline pumping. It's got some nice electric guitar work in it and it's very driving. I have a theory about why they love horns in sports so much—the sound of horns going back to Bach have that triumphant, victorious ring to them. I think it's a sound that's embedded in our collective unconscious."

Although Wolf is an accomplished keyboard player, he brought in session players for the Fox Sports spots. For the horns,

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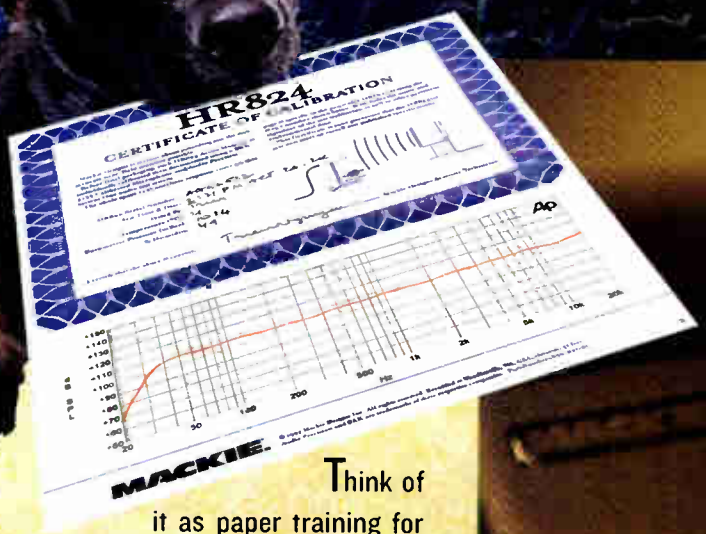

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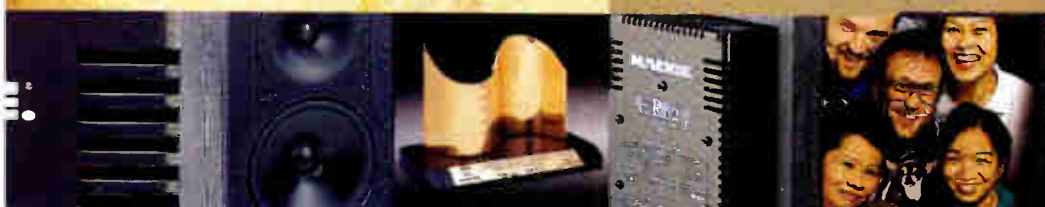

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Wolf turned to Tower of Power trumpet player Greg Adams, and for the guitars, he used Reggie Bennett and Romeo.

During the initial creative process, Wolf works alone, watching the video at home with his kids and then again by himself. "I don't watch it in the studio," he says. "I try to get in as early as possible to get the unconscious working. Then we digitize it, and I watch it from the computer and start working on it. I want to get all my ideas down when I'm fresh with it. Then I may do some rough edits and have my guy fix the rough points of the edits."

Wolf works at his private Studio City facility, which is based on four Emagic Logic Audio Works cards. "I've been using it for so long I don't really know any other technology," he says, "and I've found that I don't need any other technology." He runs Logic from a Macintosh G4 and has a G3 for Propellerhead Software's Reason and ReCycle programs. As for samplers and keyboards, Wolf uses Logic's EXS24 24-bit sampler, two Korg Triton rackmounts, Proteus 2000, Korg M-1 and a Roland JV-80 as a controller. He also gets sounds from the ILIO library for ethnic sounds. For percussion, Wolf uses a Korg Drum Machine, an E-mu SP1200 and Reason. Wolf's outboard gear list includes an Avalon 737SP, Neve 4-band Class-A preamps, API graphic and parametric EQs, UREI LA-4, Aphex tube compressors, dbx 166X, Eventide Harmonizer 3000, and Lexicon PCM 70, PCM 60 and SPX 90. Wolf calls on the Finalizer for mixing and mastering, then delivers tracks after converting to the 48k Sound Designer II format in Logic.

Each piece of gear, from vintage to the state-of-the-art, enables Wolf to expand his sound. "They add to my sonics," he says, "to the range of what is available to me. Certainly, the Triton has its own characteristics that are different and that will inspire you to write different if you're pulling up samples from Reason. It's great to mix and match and draw on different textures for different characters and different story lines. It's part of the fun, getting to use all of this stuff and explore all of these sonic frontiers. It's inspiring to even go back to the SP1200, because sometimes I want to get that old hip hop grittiness."

Wolf had a chance to bring that sonic palette to bear on *Scooby Doo and the Cyber Chase*. As it turns out, the filmmakers wanted to move Scooby Doo into the new century, which pleased Wolf. "They wanted to have 21st century, kid-friendly pop music with a techno edge, because it takes place within a computer," he says. "That was great fun. They animated the Scooby Doo movie to the songs that I wrote."

The "Static Shock" sessions are similar with Wolf getting to blend all of his past experiences. For the big action scenes, he explains, "you need to get that driving, real adrenaline-pumping beat. Hip hop tends to stop at about 110 beats per minute, and for those action scenes, you want to be up to 125 plus. I do use some hip hop-type vocals, some DMX-type vocals over the more electronica beat for those scenes." Other scenes call for R&B and classic hip hop, and still others for scoring beds or stings. "The different characters have different themes to them, but I think what we're doing that's kind of unique is treating them like little feature films," he adds. "If you go see *The Lion King*, you expect to hear songs and you expect to hear the vocals loud when there are action scenes, but on TV you never do. What we're doing for a lot of the big action sequences is using full-blown songs with vocals, and sometimes it could be just like electronic dance records. It's very music intensive—for 20 minutes of animation, [there are] 25 different pieces of music. It's pretty wall-to-wall. The time pressures are pretty dramatic."

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The pressure, though, is something he's learning to conquer. "I wasn't really used to that, because on the movie projects or when I'm producing records, I've had time pressures, but it's not like a weekly regimen. That I'm not used to, but I'm adjusting," he says. "Everything's got to have its upside and downside. There's certainly a lot of upside, self-expression wise and otherwise." ■

—FROM PAGE 151, SOUNDSTORM

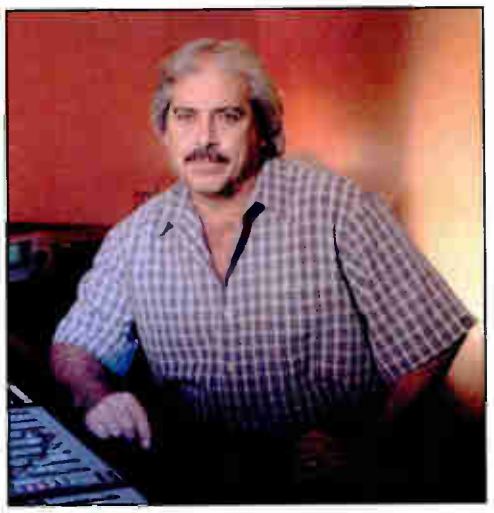
crete and dirt, slogged through bat guano in a Puerto Rican cave, paddled canoes through the swamps of a Louisiana bayou, and recorded 124 DATs of race-car sounds out in the Mojave. And that's for just four of the over 60 films that, separately and together, they've worked on.

Heavy stuff, but in an era dominated by consolidation and merger, the greatest challenge SoundStorm's principals face just might be staying independent. In the post industry, as in the rest of the business world, the trend has been toward the creation of technical and corporate behemoths, capable—theoretically—of marshalling vast resources in an efficient and cost-effective manner. While the end results of such consolidation remain to be seen, no one doubts that staying independent and competitive is a tough task. Three years ago, in a move reminiscent of the creation, back in 1919, of United Artists by screen luminaries Charlie Chaplin, Douglas Fairbanks and Mary Pickford, six sound professionals attacked that tough task, joining together to purchase SoundStorm and chart their own destiny.

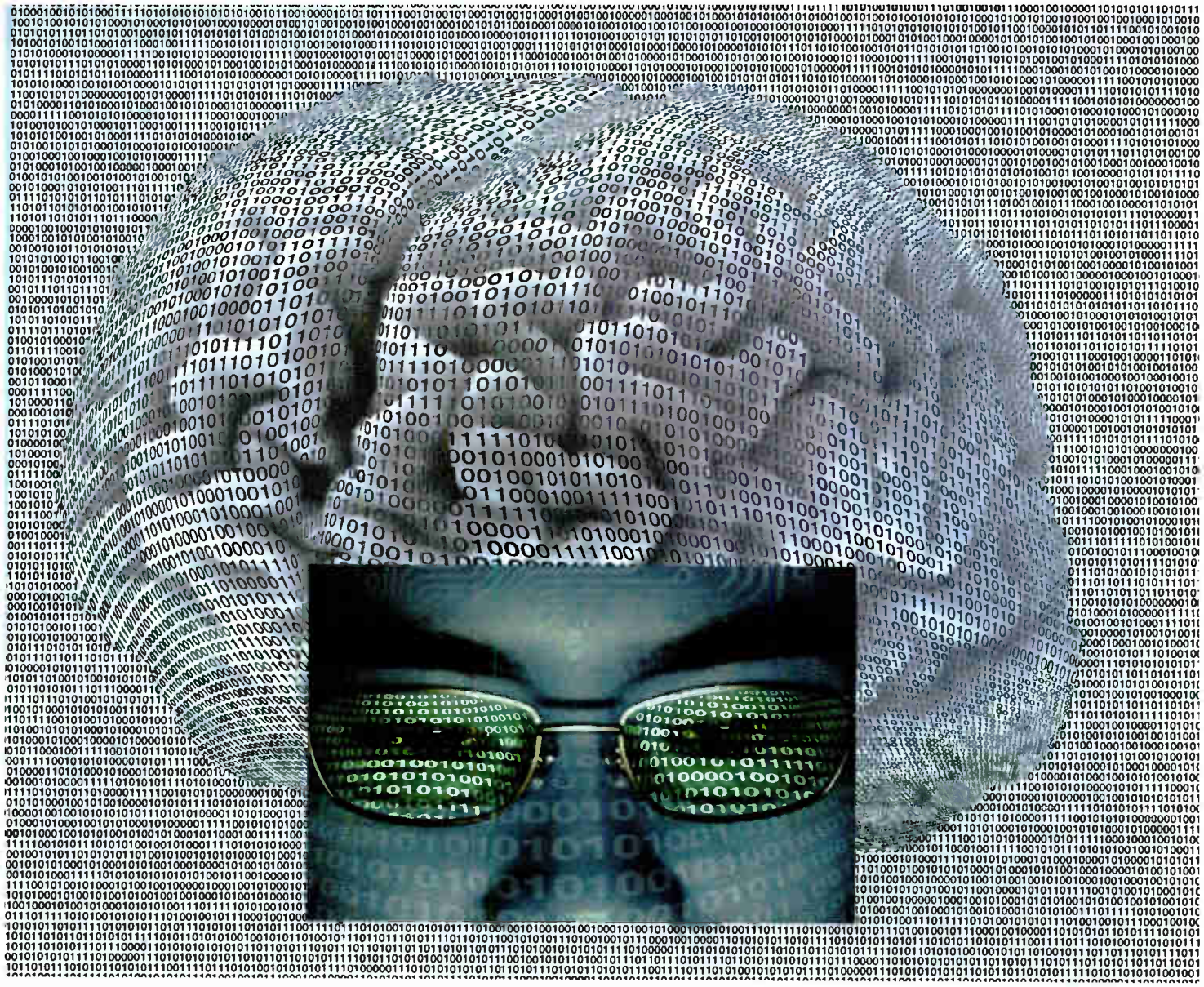
SoundStorm, which started out 18 years ago in Hollywood as Walla Works Productions, has survived numerous transitions; several members of "The SoundStorm Six" have survived those transitions as well. Still, running a company with six owners has to be its own kind of tough task. What seems to make the process work at SoundStorm is a special kind of camaraderie that stems from the principals' shared experiences in the industry.

"Out of our six partners, four are sound editors," explains VP John Switzer, who came onboard in September 2000 from SoundDogs, where he was also a VP. "Bruce Stambler, John Leveque and Rich Yawn are supervising sound editors, and Becky Sullivan is a supervising ADR editor—tops in her field. Having people who are in the trenches running the company gives us a tremendous edge. It's not like having an investment banker or an accountant making decisions that don't apply to the real world of post-production. And, because of our smaller size, we can react quickly when we need to. It's not like an aircraft carrier where you turn the wheel and an hour later the ship turns."

In addition to the four sound editors,



Supervising sound editor Alan Murray



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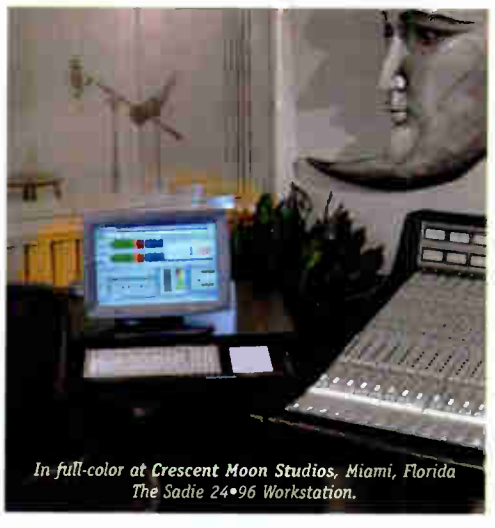

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SoundStorm's partners include president John Fanaris and technical specialist Gary Blufer, who runs the company's busy transfer department. Depending on the workload, the overall staff expands and contracts from its core of 15 to about 60, with approximately 10 sound supervisors in house at any one time.

"The ownership situation is unique, of course, in having this many partners," continues Switzer. "But what's great is that things are not necessarily designed by committee. Because of their knowledge and experience, everybody is able to run their area in a very autonomous fashion."

Becky Sullivan, just off *Domestic Disturbance* where she served as supervising ADR editor, concurs. "This is my 80th feature," she comments. "And I've done most of them with John [Leveque] or Bruce [Stambler]. That means there's no ramp-up time when we start a project—we understand each other's style of working and what needs to be done. Also, we've worked on multiple projects with so many directors and producers that we know how they like to work. That makes things go faster and easier."

With ownership in place, SoundStorm went about enlarging its talent pool. Last summer, they purchased EFX Post and formed an informal working relationship with Wilshire Stages. Two years ago, they recruited supervising sound editor Alan Murray, who brought with him a string of high-profile credits including *Lethal Weapon 1 & 2, Fried Green Tomatoes, Bridges of Madison County, Unforgiven* and *Laura Croft, Tomb Raider.* Although Murray, who has accumulated four Academy Award nominations, including one in 2000 for Best Sound Editing on *Space Cowboys,* has put in stints running sound departments for major studios, he's spent most of his career as an independent. At SoundStorm, he feels like he's found the best of both worlds.

"It's a melding of two worlds," he explains. "I'm not behind studio walls, but I'm with a group that I respect. We have diverse backgrounds and different ideas, but we have a common goal and that's to do a great job. You get different ideas by talking to different people, but you're not involved in their daily work all the time. It's nice to work that way.

"The big conglomerates often tend to take on too much," he continues. "Being independent, we still have to fight budgets, but we can choose to work with people who care about their sound and are willing to give us the means to do the job we know how to do. We work with people who care, and who really want to make their movie special."

While SoundStorm's editors are often found on location or on dubbing stages all over town, much of the work is done at their own facility, which encompasses two buildings on Glenwood Place in Burbank's Media District. The complex is a busy warren of edit suites and offices, including a 5.1 mix studio; on one day in mid-October, the rooms were cranking on a number of projects, including *Domestic Disturbance, Officer Involved, Queen of the Damned, The Guru* and *24 Hours.* The complex is fitted with Pro Tools, Avid and Fairlight systems, and courtesy of the transfer operation helmed by Blufer, almost every other imaginable format.

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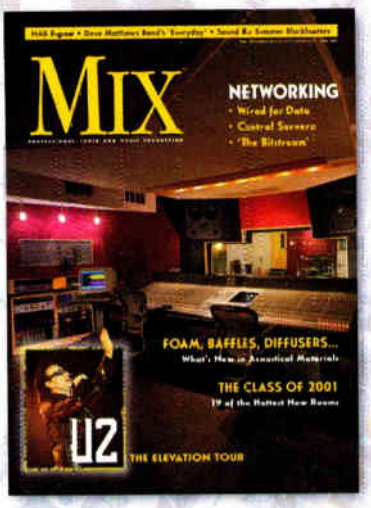

customized ServerSound system. Doug Bossi handled the implementation for SoundStorm, while mSoft's Amnon Sarig wrote code to provide a "notepad" style of effects spotting. By job's end, the server will hold up to a terabyte of material.

Meanwhile, SoundStorm librarians are also in the process of transferring the library to .AIFF files stored on an HTML-based server. The value of such a resource is obvious, and SoundStorm has recently entered into a collaboration with Andrew Sunnucks and Robert Hurst, formerly with British music company Boosey & Hawkes, to create AudioNetwork plc, an online subscription music and effects service scheduled to debut in early 2002.

"SoundStorm's library is unparalleled in its depth and quality, and this is the first time anyone outside will have access to it," notes Switzer. "AudioNetwork's music side will consist of all original material, from top composers. What we're offering is a convenient way for professionals to search for and acquire extremely high-quality sound effects and music."

Many of SoundStorm's clients, producers and directors, like Philip Noyce, Rob Cohen, Peter MacGregor-Scott and Andy Davis, have a special affinity for quality sound. It was SoundStorm's work with Davis on the Steven Seagal vehicle *Under Siege* that garnered the company its first Academy Award nomination and first real accolades.

Supervising ADR editor Becky Sullivan

was a great movie without sound. We just happened to get really lucky—Peter MacGregor-Scott said, 'Do whatever you want—make it great!' And we went as far out as we could on a sound level. From *Fugitive* we got *Clear and Present Danger* because the director saw it and wanted us. It platforms, I think, as long as you keep proving yourself, stepping up to the plate, and doing the right thing by the filmmaker and everyone else associated with the studio. Because, basically, in this business, it's about relationships."

"That's true," agrees Switzer. "With so many established supervising sound editors, we have a tremendous depth of relationships with directors, picture editors and producers. That's where we get work. And it makes it incumbent upon us to do a great job, because a business like this is really built upon return clients. We always want to make sure the filmmaker is happy." ■

VP John Switzer

"It really was the most important thing in our company's history," notes Stambler. "It gave us a chance to do a sound-intensive movie that was, for its time, quite unique and very cool. It put us on the map. And, almost everybody associated with it went on to *Fugitive*. That was an awesome opportunity, because *Fugitive*

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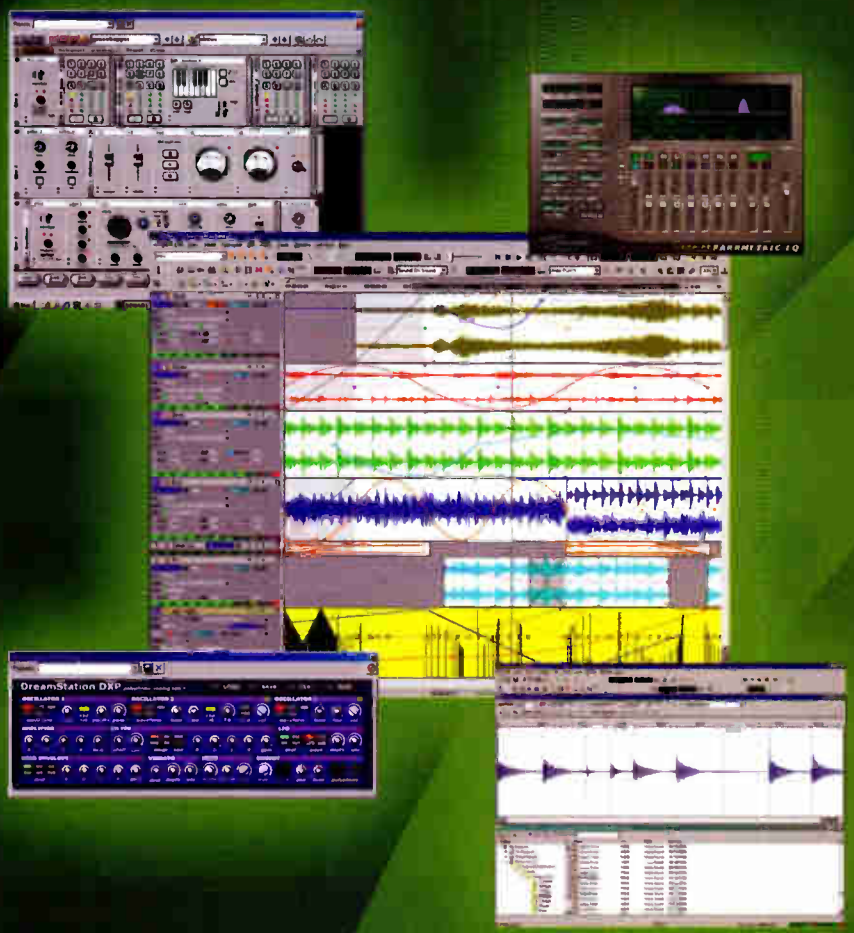

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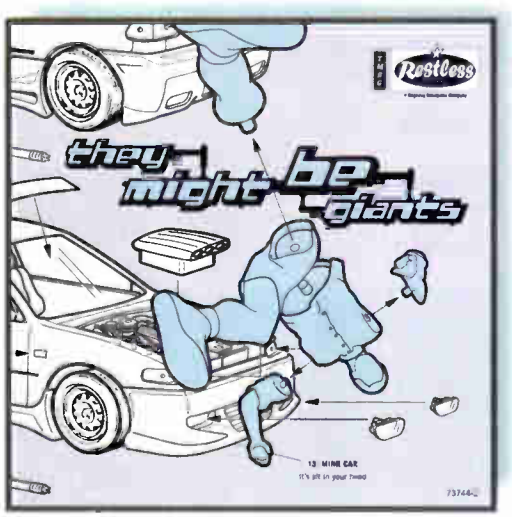
THEY MIGHT BE GIANTS

A QUIRKY 'MINK CAR'

PHOTO: SUSAN ANDERSON

By Gaby Alter

"I've got a question for you," says John Flansburgh, one half of the quirky duo They Might Be Giants, when I call to interview him about his group's latest album, *Mink Car*. "Are you an analog guy or a digital?" After I stumble through an answer that I hope won't alienate him, Flansburgh elaborates: "The big question these days is, analog or digital? And you've got the entire world basically lined up on one side or the other. And in some ways, I think this record is a really good argument for both, because you could not have combined those methods of recording more completely. There are things about the record that are completely expressions of a band; there's total band continuity and performance—songs that are, in many ways, no different than people who have been making records for the last 40 years. And there are other things that are entire concoctions that basically were written on nonlinear digital music-recording stuff, and the actual tracks were created from the ground up that way." After discussing the pros and cons of different recording methods, he answers his own question. "I was trying to figure out what side I was on, and I realized I really enjoy both ways of working pretty equally, and I don't want to deny myself either way of finishing something up."



If you know anything about They Might Be Giants' history, then Flansburgh's answer won't surprise you. The songwriting pair (Flansburgh plays guitar and sings; his partner John Linnell plays accordion and sax and sings) have never been afraid to use new, old and sometimes highly unorthodox techniques to get their songs across. For example, in their early years as a band, they began leaving a new song each day on that most untapped of home recording media: the answering machine. "Dial-a-Song," as it became known, achieved for the Giants their first major notoriety and continues to be popular among their fans today.

On a more practical note, the band was among the first to take up drum machines and the then-new MIDI technology in the early '80s. They have recorded a song to wax cylinder, the world's oldest recording medium, and helped pioneer music distribution on the Internet. Not to mention that, along with all the keyboards the Giants use, you find Linnell's trademark accordion, a stubbornly traditional sound amidst all the electronic ones.

The combination of analog and digital recording techniques on *Mink Car* also makes sense because the Giants now have a touring group called the Band of Dans. (Yes, you guessed it, they are all named Dan.) A number of the tracks on the album capture the Dans' live sound; these were mostly recorded 24-track analog at Coyote Stu-

—CONTINUED ON PAGE 178

HERBIE HANCOCK

BACK TO THE FUTURE

By Gary Eskow

In 1983, the great jazz pianist Herbie Hancock released the album *Future Shock*. "Rockit," the hit single off that disc, brought him a generation of fans who hadn't been aware of Hancock's pioneering work with Miles Davis and other jazz greats. At a time when most major jazz figures avoided rock and beat box-influenced idioms altogether, or approached them with ill-concealed disdain, Hancock jumped in, plugged in and had fun.

Along with producer Bill Laswell, Hancock also helped create the electronica style that today has many branches and practitioners. In the years since his techno breakthrough, Hancock has been all over the map musically, but has mostly played acoustic jazz, much to the delight of his traditional fan base. But now, with the release of *Future2Future*, the Hancock/Laswell team has revisited the creative approach they brought to the *Future Shock* sessions. Collaborating with electronica and hip hop stars Carl Craig, D.J. Rob Swift, A Guy Called Gerald and DXT, they have created a playful admixture of improvisations, beats and electronic textures. *Mix* spoke with Hancock and Laswell about the album, which was released last fall on the Transparent Music label.

Do you like Bela Bartok's music?

Hancock: Funny question. Yeah, I do. Some of his stuff almost sounds like games. I believe in the same way of working. On the

—CONTINUED ON PAGE 181

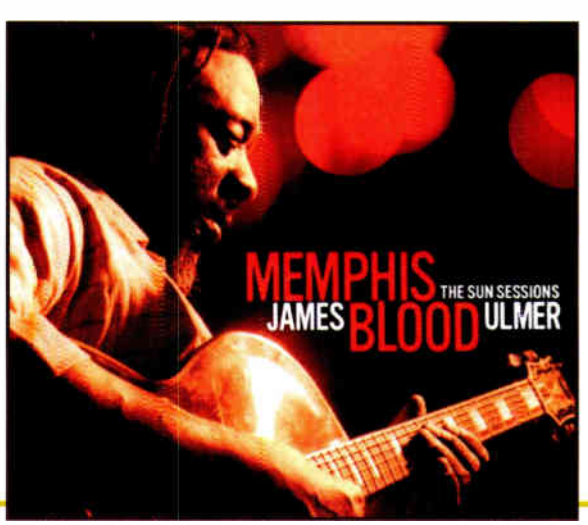
JAMES "BLOOD" ULMER

DRENCHED IN BLUES

By Chris J. Walker

Guitarist/singer James "Blood" Ulmer has traveled down many unusual musical pathways in his career, collaborating successfully with such diverse talents as avant-garde innovators/saxophonists Ornette Coleman, Arthur Blythe and David Murray, guitarist/film scorer/world music maven Ry Cooder, and jazz legends such as saxophonist Joe Henderson and drummer Art Blakey, among many others. He has forged a distinctive style on his own recordings and in combination with other players. Without question, he has challenged some musical boundaries. But surprisingly, the powerful, soul-stirring jubilation of straight-out blues is a style the South Carolina-born artist has shied away from—until now.

"I always felt that Blood was a blues singer," asserts guitarist Vernon Reid, best known for his work with the groundbreaking band Living Colour. From his home studio on Staten Island, (N.Y.), he spoke about *Memphis Blood*, a collection of blues covers featuring Ulmer singing and playing with typical fire and abandon. Reid conceived, produced and played on several tracks of the CD. "From the first time he had a record on Rough Trade, *Are You Glad To Be In America*, I just heard a blues singer," he continues. "For the last three years, whenever I would see Blood at a show or on the street, I would say, 'I think you should do a blues record. But not like a harmolodic recording; instead, a blues record of you singing classic blues songs.' Because I think he's got one of the great original blues voices."



Ulmer, on the other hand, wasn't too sure about doing a project of this type. It was something he had never done before, and he wouldn't be in control, as he normally is for his recordings. But he trusted Reid, who was a protegé of his before forming Living Colour. "This was the first time I was totally produced by someone

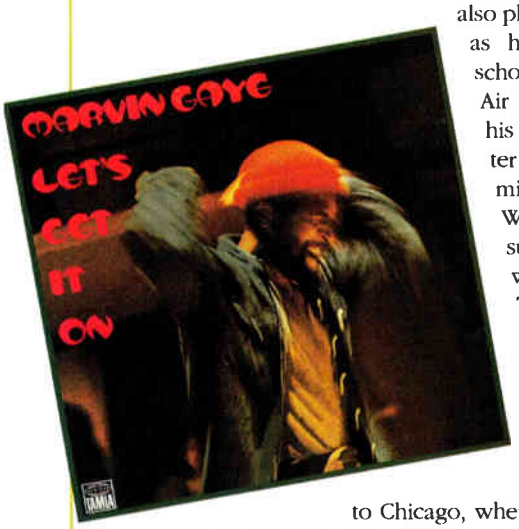
—CONTINUED ON PAGE 184

MARVIN GAYE'S "LET'S GET IT ON"

By Blair Jackson

Marvin Gaye is certainly one of the most remarkable singers and songwriters this country has ever produced, a towering talent whose influence on R&B, and popular music in general, is immeasurable. He had several different, distinct periods of success that stretched over a quarter-century, from the early '60s until his tragic death in 1984; and each phase of his career is interesting for different reasons. With more than 50 charting R&B hits to choose from, we could be running Marvin Gaye "Classic Tracks" columns for the next few years, but for now we'll choose his deliciously sensual masterpiece from 1973, "Let's Get It On."

Like so many of his African American contemporaries, Gaye (born Marvin Gay Jr. in Washington, D.C., in 1939; as an adult, he added the "e" to emulate one of his idols, Sam Cooke) got his start singing and playing organ in church. His father, a minister in the ultra-conservative Pentecostal Church of God, was a stern disciplinarian who beat Marvin regularly throughout his childhood. Music was one of the few pleasures Marvin had in life (in addition to organ and piano, he also played drums), and as soon as he graduated from high school, he eagerly joined the Air Force as one way out of his deplorable home life. After his discharge from the military, he returned to Washington and joined a succession of local doo-wop groups, including The Rainbows and The Marquees. In 1958, The Marquees were tapped to become the latest version of singer Harvey Fuqua's group, The Moonglows, taking Gaye to Chicago, where he recorded a series of singles with the group for Chess Records. Then, while he was touring in Detroit with the group, Gaye's distinctive tenor and wide vocal range captured the ear of Berry Gordy Jr., whose Motown label was just beginning to shift into high gear after a string of hits by Jackie Wilson and Smokey Robinson & The Miracles. Gordy signed Gaye as a solo artist and session drummer in 1961; the same year, Marvin married Gordy's sister Anna.



Though he played drums on hits by Smokey Robinson, Gaye's first taste of solo success came more than a year after he signed with Motown, with the song "Stubborn Kind of Fellow." That was followed by the dance hits "Hitch Hike" and "Can I Get a Witness," but it was "Pride and Joy" in 1963 that really put him on the map. He had hits singing duets with Mary Wells and Kim Weston the following year, and in 1965—one of Motown's greatest years—he scored three Top 10 singles on his own with the soul classics "How Sweet It Is (To Be Loved By You)," "I'll Be Doggone" and "Ain't That Peculiar," and he co-wrote Martha & The Vandellas' "Dancing in the Streets."

In 1967, he formed another successful partnership with a young female singer named Tammi Terrell, who'd signed with Motown in '65. They had a brief but impressive chart run (with such classics as "Ain't No Mountain High Enough" and "Ain't Nothing Like the Real Thing"), but their musical union was cut short when she died of a brain tumor in 1970. (In one of the more dramatic moments in modern musical history, she collapsed in Gaye's arms during a performance in Virginia in 1967; the first evidence of her malady.) Gaye's biggest hit of the '60s—and the only one to reach the top spot on the pop charts (a few hit Number One on the R&B charts)—was his simmering version of Norman Whitfield's "I Heard It Through the Grapevine" in the fall of 1968.

By the dawn of the '70s, though, both Gaye and Motown were starting to change. Black Pride and Black Power had become watchwords, and there was a new social activism in the African American community; the simple but catchy soul-pop love songs of mid-'60s Motown started to seem out of step with the times. Many of the tal-

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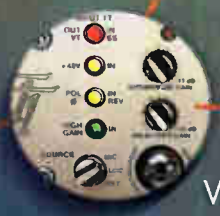

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ented writers and producers at the label, including Norman Whitfield, Stevie Wonder and others, managed to change with the times, slowly moving away from the strict hit formulas of years past. But it was Marvin Gaye, with his incredible socio-political album *What's Goin' On* in 1971, who led the label into its second Golden Age. Berry Gordy was reportedly so upset with Gaye's political turn that he initially refused to release the album, but this was one time when the Gordy's instincts were dead wrong. It became a monster hit that yielded three Top 10 hits, and it is still regarded as a landmark recording, with its smooth, jazzy grooves, lush but tasteful arrangements and unparalleled vocal performances by Gaye. It helped pave the way for Stevie Wonder's greatest work and was a signpost for The Temptations, who would record their ghetto sociology masterwork, "Papa Was a Rolling Stone," the following year.

What's Goin' On turned out to be the last pop album Gaye recorded at Motown's Hitsville Studios in Detroit. For some time, Berry Gordy had been thinking about relocating the company to Los Angeles, and that transition finally happened during 1972. The company set up new offices and studios in L.A., and Gaye followed that year, renting a modest apartment in Van Nuys. For a while after *What's Goin' On*, he seemed to be floundering somewhat, unsure of what musical direction to take next (during this period, he scored the mediocre blaxploitation film *Trouble Man*, which produced the Top 10 title song) and was depressed over the continuing deterioration of his long-troubled marriage to Anna Gordy. It was in early 1973 that he got together with a songwriter/producer outside the Motown fold named Ed Townsend, who had written for Etta James, Nat "King" Cole, Dee Dee Warwick and many others. Townsend was fresh out of rehab (for alcohol) and brimming with ideas. Gaye was somewhat frustrated by his earlier attempts at working on new material with other writers and was open to trying something different and new. One of the four songs the two eventually produced for the singer's next album was "Let's Get It On."

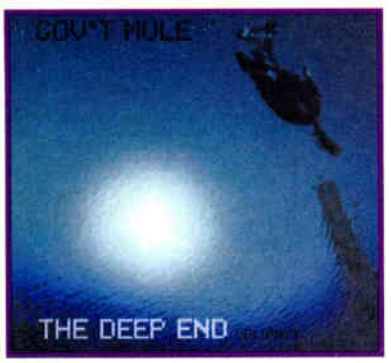
Townsend didn't set out to write a smoldering, sexually charged ballad, but as he is quoted in the liner notes of the recent two-CD Deluxe Edition reissue of *Let's Get It On* (which includes a fascinating CD-and-a-half of demos, outtakes, alternate mixes and various early '70s curiosities), "Marvin could sing the Lord's Prayer and it would have sexual overtones." In fact, Townsend says he wrote the song in rehab partly as a message to himself "about the business of getting on with life." And it is not without social overtones, as Gaye sings "understanding and brotherhood, everybody ought to do some good." But at the song's heart, which is found in Gaye's impassioned delivery, there is love and lust, the spiritual and the carnal fused together in an up-

Cool Spins

The Mix Staff Members Pick Their Current Favorites

Government Mule: *The Deep End, Vol. 1* (ATO Records)

Ace guitar slinger Warren Haynes is probably best known for helping revive the Allman Brothers in the early '90s, but Government Mule, a power trio formed with his



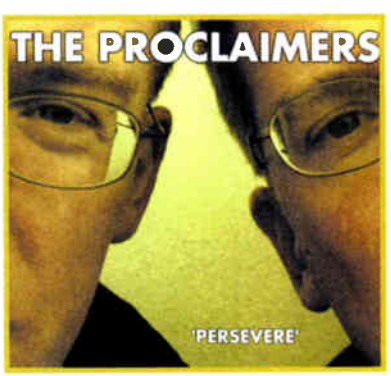
Allmans bass mate Allen Woody and drummer Matt Abts, has long been the main outlet for his formidable songwriting chops. They are something of a throwback stylistically—a good old-fashioned blues-rock band, dedicated to long guitar solos and crunching power riffs but also capable of great delicacy. As a singer, Haynes is from the gruff Gregg Allman/Ronnie Van Zandt school, and his guitar playing is all over the map, from Hendrixy excursions to flashes of Clapton, Duane Allman, Carlos Santana—but put together in a remarkably coherent and original package; he's quite amazing. After Woody's death last year, Haynes and Abts decided to carry on, and this eclectic double-disc shows that there's still plenty of life in the Mule. Disc one features 13 songs, nearly 80 minutes of music, with a slew of guests filling in for Woody, including such bass notables as Jack Bruce, John Entwistle, Roger Glover, Flea, Larry Graham, Phish's Mike Gordon and others; and non-bassists such as guitarists John Scofield and Derek Trucks and keyboardists Gregg Allman and Chuck Leavell. Disc two is live with two different post-Woody lineups. Good, hard stuff, and the "Volume One" tag implies the obvious: There's more to come.

Producers: Warren Haynes and Michael Barbiero. Engineer: Michael Barbiero, with additional engineering by John Cutler, David Z and Ray Martin. Studios: The Theater 99 (NYC), with additional sessions at Sunset Sound (Hollywood), Fantasy Studios (Berkeley, CA), Water Music (Hoboken, NJ). Mastering: Greg Calbi/Sterling Sound.

—Blair Jackson

The Proclaimers: *Persevere* (Nettwerk)

Scottish twins Craig and Charlie Reid have a new label and a new producer...well, new to them anyway. With legendary Rolling Stones producer Chris Kimsey, The Proclaimers have expanded their sound with layers of acoustic, electric and pedal steel guitars, honky tonk piano and punchy percussion. Musicians lending their talents to this release include keyboardist Chuck Leavell (Allman Brothers, Stones), drummer Pete Thomas (Attractions) and bassist Hutch Hutchinson (Bonnie Raitt). At the front of a full and fascinating combination of American and Scottish folk and pop music are the brothers' soulful harmonies and powerful songs. The twins' most recent chart success



was more than a decade ago, when "(I'm Gonna Be) 500 Miles" made it to Number 3 on *Billboard*'s Hot 100, and topped the Modern Rock chart. I don't know what category *Persevere* fits into now, but it's got all the originality, brilliance and bounce hit records *should* have.

—CONTINUED ON PAGE 186

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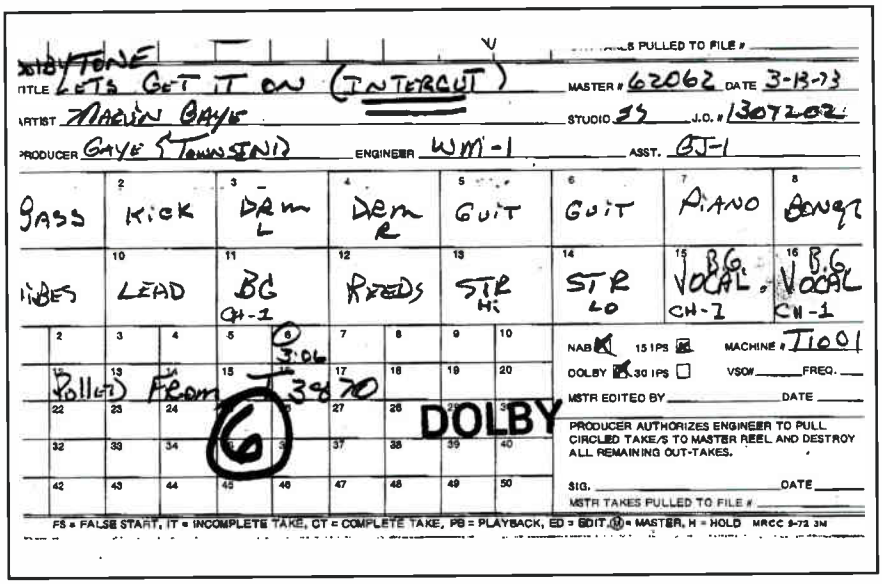
lifting union. Has there ever been a warmer, sexier song?

Once Gaye decided to record "Let's Get It On" (for which he also received a generous co-writing credit) and three other tunes started by Townsend, he, Townsend and arranger Rene Hall (who had worked previously with Townsend) settled on some of L.A.'s finest jazz and R&B players for the March '73 sessions at Motown's new Hitsville-West studios. This time around, the stable of players who had made musical history for the label in Detroit, known collectively as the Funk Brothers, were nowhere to be seen, with the exception of guitarist Melvin "Wah Wah" Ragin. But what a crew they assembled, including Ernie Watts and Buddy Collette on reeds; Joe Sample and Wilton Felder of The Crusaders on piano and bass, respectively; drummer Paul Humphrey; Victor Feldman on vibes, and various other local luminaries. There were also extra percussionists and a small string section on hand on March 13, 1973, when the song was cut live in the studio by Motown engineer William McMeekin. (In all, 21 musicians are listed as playing on the four Townsend-Gaye cuts, plus the string players, though it is unclear exactly who played on what. For example, five guitarists are listed, but there probably aren't five guitars on "Let's Get It On," nor three pianos. As I learned when I wrote a Classic Tracks article about "Papa Was a Rolling Stone" several years ago, there are differing opinions about who the musicians were on a given Motown song. Parts—and even portions of parts—were often replaced after the initial tracking sessions, using different musicians, and there isn't detailed documentation.)

After the instrumental take was completed, Gaye cut a demo of his lead vocal, and at this point a problem arose. As Townsend says in the liner notes, "I asked Marvin to use a certain microphone, and the engineer told me I was using the wrong one. He pushed the talkback and said, 'Marvin, I'm trying to tell the guy that you don't use the mic he wants.' Marvin asked him to look at the session sheet and read the producer's name: Ed Townsend. 'I'm the artist and he's the producer,' Marvin said. 'I'll use whatever mic he says.' I had to fire the guy. He couldn't be open to where this was going to go."

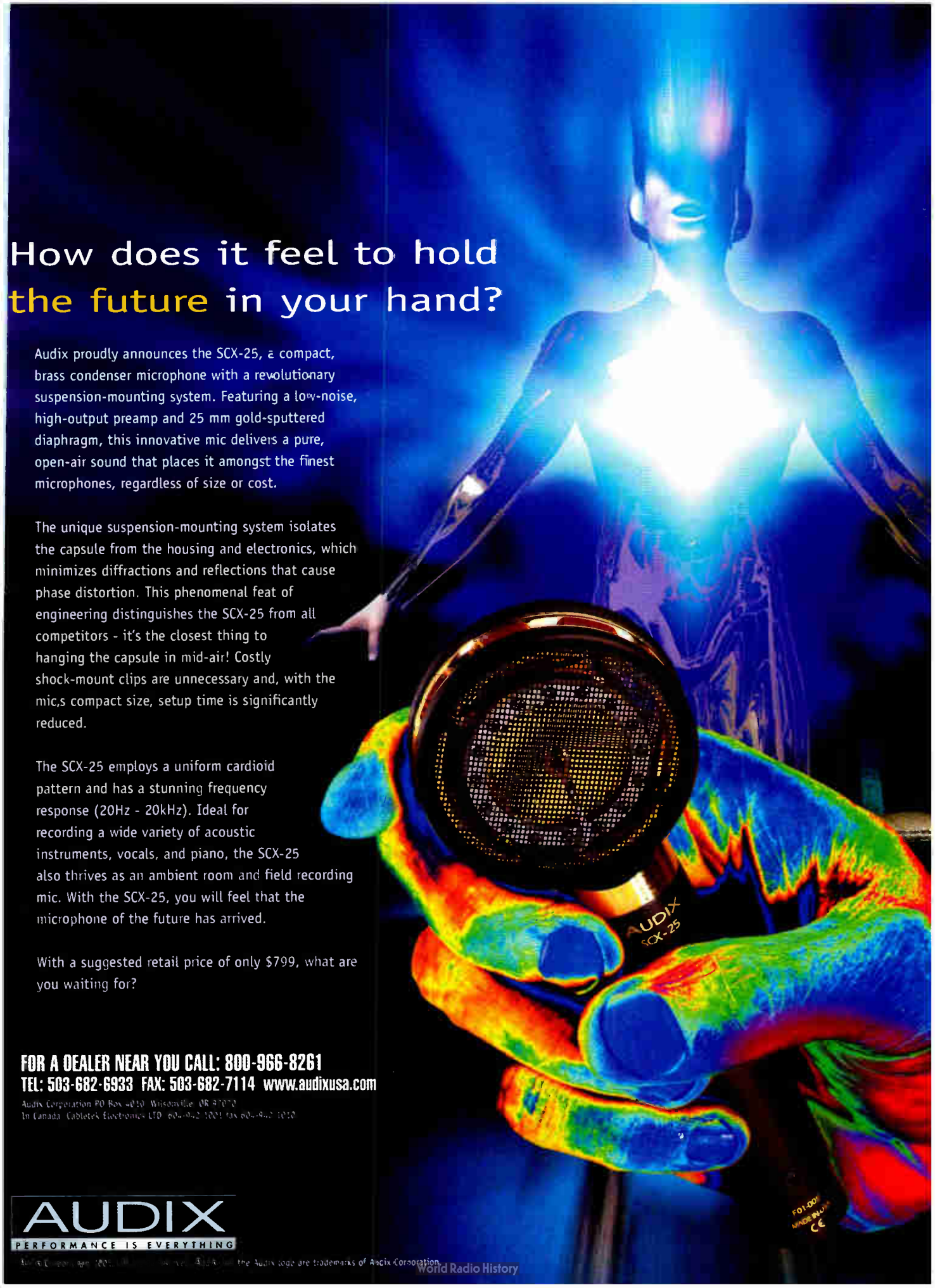
At that time, the Hitsville-West control room was equipped with a Quad 8 console and 3-M 16-track recorder, and the house engineers favored vintage German mics mostly, especially Neumann, AKG and Sennheiser models. To get so many musicians down on just 12 tracks (four were saved for lead and background vocals) required expert mic placement and economical premixing: Drums were only on three tracks, the strings on two (high and low) and the reeds on just one. "What was great about 16-track is that it lets you spread things out a bit," says engineer Art Stewart, who worked on "Let's Get It On" after William McMeekin was taken off the project, recording the overdubs and all of Gaye's lead and background vocals. "Still, with a group that big, you still had to combine things. I had no problem with that. I always preferred to do drums on just three tracks, and I'd mix them as I was recording them, place them where they belong. And you could say the same thing about working with a big group and recording live like that—you've got to record it right, have everything balanced correctly, and that makes mixing it later much easier."



The track sheet from the sessions at Hitsville-West

Nine days after the initial session, Gaye was back in the studio with Art Stewart to record his final lead vocal—using an AKG C-12—and, according to Ben Edmonds, author of *Marvin Gaye and the Last Days of Motown Sound*, that day Gaye had extra inspiration in the studio: One of Townsend's friends, Barbara Hunter, brought along her lovely 16-year-old daughter, Janis, and as Edmonds writes, "The presence of this young girl compelled him to perform the song *to* her, and in so doing, it was transformed into the masterpiece of raw emotion we know so well." Indeed, Marvin and Janis fell in love, almost on the spot, and were married a few years later (after his messy, acrimonious divorce from Ann Gordy was resolved). So, some of the urgency and exhilaration in Gaye's vocals came from his new muse, but some of the other vocal ad libs that Gaye tacked on came from conversations he had with Townsend. "They were Ed's ideas really," notes Harry Weinger, who produced the Deluxe Edition set and helped mix some of the bonus tracks. "Marvin was saying, 'What should I do here? What kind of vibe do you want?' And Ed said, 'You know, something like "sanctify"...' So Marvin then sang 'something like sanctify,'" he laughs. "What Marvin did was find something that appealed to him and he went with it. It was not just a casual ad lib. Marvin overdubbed background vocals on that line several times. He added to it and augmented that phrase."

Though, by the early '70s, Gaye had become fond of doing vocal punch-ins to give himself more control over the finished lead vocals; for "Let's Get It On," it was a single vocal take all the way through. Two weeks later, he and Stewart reconvened in the studio to track Gaye's prominent background harmonies, and here there were many punch-ins. "They were done almost line by line," Weinger says, "or every other line. If you played a version of it without the instruments, you'd hear all the little clicks. You'd also hear some headphone bleed. He liked to have his *cans* loud when he did vocals. In fact, on 'Distant Lover' you hear what sounds like a cool reverb effect, but it actually is headphone bleed coming through his vocal mic."



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The song was mixed by Motown staff engineer Cal Harris, who also engineered a number of other tracks on the *Let's Get It On* album, and is singled out by Gaye in the original liner notes for special thanks because he "practically produced this thing and didn't ask for anything. Great!" In those same notes, Gaye rhapsodizes, "I can't see anything wrong with sex between consenting anybodies. I think we make far too much of it. After all, one's genitals are just one part of the magnificent human body...I contend that SEX IS SEX and LOVE IS LOVE. When combined, they work well together, if two people are about the same mind...Have your sex, it can be very exciting, if you're lucky." *Let's Get It On* was explicitly designed to be an album for lovers, and it's difficult to deny its aphrodisiacal qualities, especially the title track, which became an instant smash when it was release on June 15, 1973, months before the finished album. It quickly hit Number One on both the pop and R&B charts.

There would be more peaks for Marvin Gaye—"Got to Give It Up," engineered by Art Stewart, topped the charts in 1977, and "Sexual Healing" hit Number One in 1982—but as the '70s progressed and then rolled into the '80s, Gaye became more erratic. His bouts of depression—always a problem for him—became longer and more pronounced, and his addiction to cocaine became all-consuming and artistically crippling. In an attempt to regain control of his life, he moved in with his parents in the early '80s, but this only seemed to accelerate his downward spiral; it's not surprising, given his always difficult relationship with his domineering father. He is said to have threatened suicide several times in early 1984, but he never got a chance to carry out his threat: The day before his 45th birthday, on April 1, 1984, his father shot him to death, after hours of quarreling. (Marvin Sr. was convicted of voluntary manslaughter but given a suspended sentence because of his precarious health.) It was a sad end to an often troubled life, but it should in no way detract from the incredible accomplishments of this singular artist.

"Marvin was a genius," comments Art Stewart, who is now retired and living in Las Vegas. "He was incredible to work with. He knew what he wanted, and he was the type of person who was not easily satisfied with his own work. While you and I might accept a rendition of Marvin's, he perhaps would do it two or three times more, and each time he did it, it would just get better. There was no such thing as 'good enough' for Marvin and that's why he was so great. He was always pushing himself and the people around him to do better." ■

THEY MIGHT BE GIANTS

FROM PAGE 170

dios, though they were manipulated later in Pro Tools. Many other tracks, however, were created using keyboards and other MIDI instruments, and recorded digitally.

One of the biggest influences on the nature of the recording was the Giants' hectic work schedule. They recorded *Mink Car* in at least four separate studios, working with six producers, plus the Coyote sessions, which they produced themselves. "We've been incredibly busy, doing a million different projects while recording this record at the same time," Flansburgh says. Given that, it made sense for the group to get in studio time wherever and whenever they could.

Among the projects TMBG worked on during this period was music for the TV show *Malcolm In the Middle* (its theme song, "The Boss Of Me," is one of the Giants' biggest hits), the opening song for the next Austin Powers movie and a children's album due out next year.

"One of the things about making a children's record that's different from making a regular rock record is that it's a real open invitation to experiment with extreme sounds, because a kid's notion of sound is much less defined," Flansburgh says. "They're not particularly interested in the more obvious; you know, they're not going to find an electric guitar solo very compelling. So, it was a really great reintroduction for us into the most experimental sounds and creations that we could think of. Having worked on that project and immediately started working [on *Mink Car*], I think a lot of the spirit rubbed off on this record."

Experimentation—with sounds, as well as musical genres—is definitely evident on *Mink Car*. It contains straight-ahead rock songs, electronica and hip hop-influenced tracks, a loungy number in the style of Burt Bacharach, and even a New Order-esque dance song. There are machine-made beats and live drums, keyboards and accordions, horn samples and scratching, a dash of Middle Eastern percussion here, and a blat from a Sauroussophone (according to their press release, that's a "19th-century substitute for the contrabassoon").

Three of the album's tracks, including the opener "Bangs," were produced by the British team of Clive Langer and Alan Winstanley, who worked on the Giants' hit songs "Birdhouse In Your Soul," and "Istanbul (Not Constantinople)" from their 1990 Platinum album *Flood*. (Langer and Winstanley have also worked with Bush, Morrissey, Dexy's Midnight Runners and others.) "Bangs" recalls the impeccably tracked and polished pop sound of "Birdhouse," with not a note of its modulating major hooks out of place.

Flansburgh found that he had a new appreciation for the British producers this time around. "We had never been in an actual, real, multitrack studio before," he says of the *Flood* sessions. "We had been in an 8-track studio run by a friend of ours that was essentially a demo place. But I didn't know anything about how to make a real record. Coming back to work with them on this record, I realized how unorthodox their method really is as producers. Like, Alan Winstanley is a world-class engineer, but they don't ever do things the same way. The thing that's nicest about them as producers is that, for people like me and John, who are primarily into songwriting, they approach production the way that we approach songwriting. That is, we let the song take us in whatever direction it seems to want to go."

For instance, the track "I've Got a Fang" began as a live band recording. Then, according to Flansburgh, "Clive just had this crazy idea that he wanted to superimpose this rapid hi-hat across the entire song. What's weird about it is that you're mixing two different feels...We tried it, and it makes it sound completely bent. It's a much more singular track now."

The songs with Langer and Winstanley were recorded at the Magic Shop studio in New York using a RADAR hard disk recording system, a combination of analog and digital technologies. Flansburgh, who had never used RADAR before, enjoyed the experience, especially the relia-

bility of the track recall. "If you're doing a lot of tracks, it's very hard not to lose something. That's always been my problem with Pro Tools sessions at studios that are not project studios." He also likes RADAR's sound. "It actually has the sonic presence of a 24-track [analog] machine without the hiss, obviously. And it sounds much less clinical than Pro Tools."

Three of the album's tracks were produced by Adam Schlesinger of the band Fountains of Wayne. Those songs include "Yeah Yeah," a cover of a 1964 bossa-jazz-pop hit by British singer Georgie Fame. A lot of work went into the song's drum track. "It was kind of a big collage," Schlesinger says. "It was done having the drummer play different grooves with different sized drums, different snares, and then chopping it up into pieces. It's very cut and paste. There's wild little moments—drum fills that come from nowhere, piano glisses and things. It's sort of a patchwork. It was all done in Pro Tools." The Giants also called in a Middle Eastern percussionist on the sessions. "That actually really helps when you're building on top of a track that has some programming in it," Schlesinger says, "to have live percussion, just to mix it up."

"Man, It's So Loud In Here" is perhaps the furthest out of the orbit of the other styles on the album. Recorded mostly with sounds from a Proteus 2000 module, it perfectly imitates the electronic dance music of the Reagan era, inducing in the listener a seizure of nostalgia that can only be calmed by a heavy application of black lipstick, eyeliner and hair gel. "It's funny, because it's a song about being trapped in a disco where you can't hear yourself talk, and so we decided to go for a kind of a cross between early '80s New Order-style music and a little bit of '70s dance music," Schlesinger says. "We built it off of a drum program that we started working on at John Flansburgh's house."

Flansburgh elaborates: "Musically, the song is probably more like a New Order song, but the drum aesthetic is straight out of that early Pet Shop Boys sound, which is pretty funny because we've been around as long as the Pet Shop Boys." After recording a demo at Flansburgh's home studio, the Giants took the song to the smallish TMF studios and replaced most of the sounds. Interestingly, the gated guitar sound in the chorus is made by a keyboard. "That's actually a Roland preset called 'Alternative,'" Flansburgh says with admiration.

The album's title track was also recorded at TMF. The song pays musical homage to the Bacharach swingin' '60s style, with a flugelhorn line on the chorus and period-authentic drumming by guest musician Clem Waldman. "*Mink Car* was done backward," Flansburgh explains. "We recorded the piano first, and then did the drums afterward, then all the horns and vocals and everything. The very last thing we did was have Danny Weinkauf, our bass player, play the bass part. The great part about it is that the bass gets to do all that elaborate stuff in all the holes that weren't filled by anything else."

On several other songs, the Giants collaborated with hip hop/electronica producers the Elegant Too at their home studio. "Mr Excitement" is a prime example, full of funky drum machine beats, scratching and a rap by former Soul Coughing frontman M. Doughty. The Giants built the song in an unusual way, starting out with samples of their trombonist Dan Levine, which they recorded and manipulated using Vision software. "Chris Maxwell and Phil and I immediately set about working on this track, writing it to these abstract horn blasts," Flansburgh says. "It has es-

sentially a kind of Peter Gunn quality. That's probably the thing that our minds went to when we heard that sound. It's a strange place to start for a song.

"A lot of it is made by machines being played by Phil and Chris," Flansburgh notes of the sounds in the song. "They're into electronic music, but they're also really great musicians, so it's often easier for them to create electronic sounds by actually playing them. So the bass sound on it is actually from Chris' MIDI guitar that he uses as a trigger. They're experts at sampling themselves to make it sound like a very slick programming, which is an unusual kind of expertise."

With so many producers and studios, an album can run the risk of sounding too patchwork. But there is a cohesiveness to *Mink Car*. It is very much anchored by Flansburgh's and Linnell's distinctive voices and melodies, and experimentation with genres is the theme that runs throughout. For a musically restless and prolific band like the Giants, the result is representative and satisfying in the way a good mix tape can be. After all, as Flansburgh asks, "Why would you want every song on a record to sound the same?" ■

HERBIE HANCOCK

FROM PAGE 171

new record, we have examples of that approach, where things collide randomly. We believe these accidents work, and so why won't you? The cut "Alpha Beta" is a good example. There are three or four different elements to the track. It may not have the intellectual side [of Bartok], which we stayed away from, but it has lots of spontaneity. Some of the pieces sound like parts of a jigsaw puzzle that don't fit together, according to our normal rules. But I think that's the beauty of the album. It contains a sense of naivete coming from the artist.

Laswell: Most people don't realize how records are made. The direction and concept are often a mystery to them. I approached Herbie with the concept of basing *Future2Future* around him as the center, the improviser and the vehicle. Herbie created the nucleus of these pieces.

Herbie was one of the people introducing these kinds of ideas, including combining different kinds of sounds and approaches, early on. He wasn't afraid to repeat electronic ideas and then use them together with jazz stylings. *Future2Future* is a fusion of all the things he's experienced as a musician.

Much of the technology that was radical in 1983, when Future Shock ***was released, is now standard and accepted. Did that have any effect on your enthusiasm about working in the electronica medium?***

Hancock: Science has been a big part of my life since I was a kid, and I'd had some listening experience with electronic music since the '60s. Tony Williams turned me on to Stockhausen! And I met him one night in either the late '60s or early '70s. After the last set, some people were sitting around, but I went upstairs to get ready to go home. A guy came to the top of the steps telling me someone downstairs wanted me—someone named Stockhausen. He had no idea I'd ever heard of him. My favorite electronic piece is his "Gesangderjunlinger." The pacing, the way things are laid out, the tension and release are great. He was blown away that I even knew who he was! He was getting ready to work on a piece that utilized several

national anthems and asked me if I would record our anthem and send him the tape. I never got around to it, but he did come out with this composition. I'm still interested in combining electronic elements with live playing.

***How involved were you in developing the textures and overall sonic palette on* Future2Future?**

Hancock: The initial stuff was put together by Bill Laswell. He put some things on tapes—maybe just drums and bass. Many of the initial electronic elements were on these tapes that came to me. I put all my stuff on top.

Laswell: The whole idea is to do everything in short pieces. I did all my pre-production work at my studio out in West Orange, New Jersey. Robert Musso, the engineer who worked on this project with me, and I mixed out there as well.

We've got some Studer tape decks and a Pro Tools rig. I'd take these short pieces—drum loops and electronica parts, for example—and mix them with effects until they were done. The whole idea is to build these small cells. Every section is its own area, almost as if each of them—which could be as small as four or eight bars—was its own complete song. When they were complete, we'd transfer them over to Pro Tools. We didn't use the computer to mix, but only for editing and crossfading these tiny electronic cells.

There's a big danger in the current focus on technology. People have forgotten what they're trying to express. Most studios are set up by people who are constantly referring to the latest technology rather than creativity. It's a difficult balancing act.

Herbie, has your sense of dissonance, or what constitutes a nonharmonic tone, changed at all over the years?

Hancock: Yeah. That's a strange question! What I may have thought in the past was dissonant doesn't necessarily seem dissonant to me anymore. Maybe it's an acquired taste.

Miles Davis influenced me in this area. Whatever we'd be doing as a rhythm section, his playing would let us know where the center was of what we may have been doing individually. He brought a sense of the whole. I remember one night, it was a great night for the band. The music was building, the audience was right there with us, and at the peak of Miles' solo on "So What" I played a really wrong chord. Miles took a breath and played a phrase that made my chord right. Miles didn't hear it as wrong, but instead as something that happened. His job was to make it sound right. Through my practice of Buddhism, I realized this was a life lesson. Very often, this means coming out of the box of looking at things one way, to create new realities. This will let you bypass obstacles.

I listen to a lot of music that young artists today are making—people who haven't had formal musical training. Sometimes I ask myself how they could put a bass line against the chords they're using, since it doesn't fit. But there's something pure about their approach that I'm attracted to. We used some of that approach on this record, putting elements together with abandon and not worrying about whether things fit in with our European-trained sensibilities.

One of the pieces started out with a backward electronica track and Jack DeJonette playing drums to it—that's it, no bass at all. I added a melody and some solos. Bill transferred my performances over to Pro Tools, and then cut and pasted bits of my solo into different parts of the song.

Laswell: The juxtaposition of ideas is

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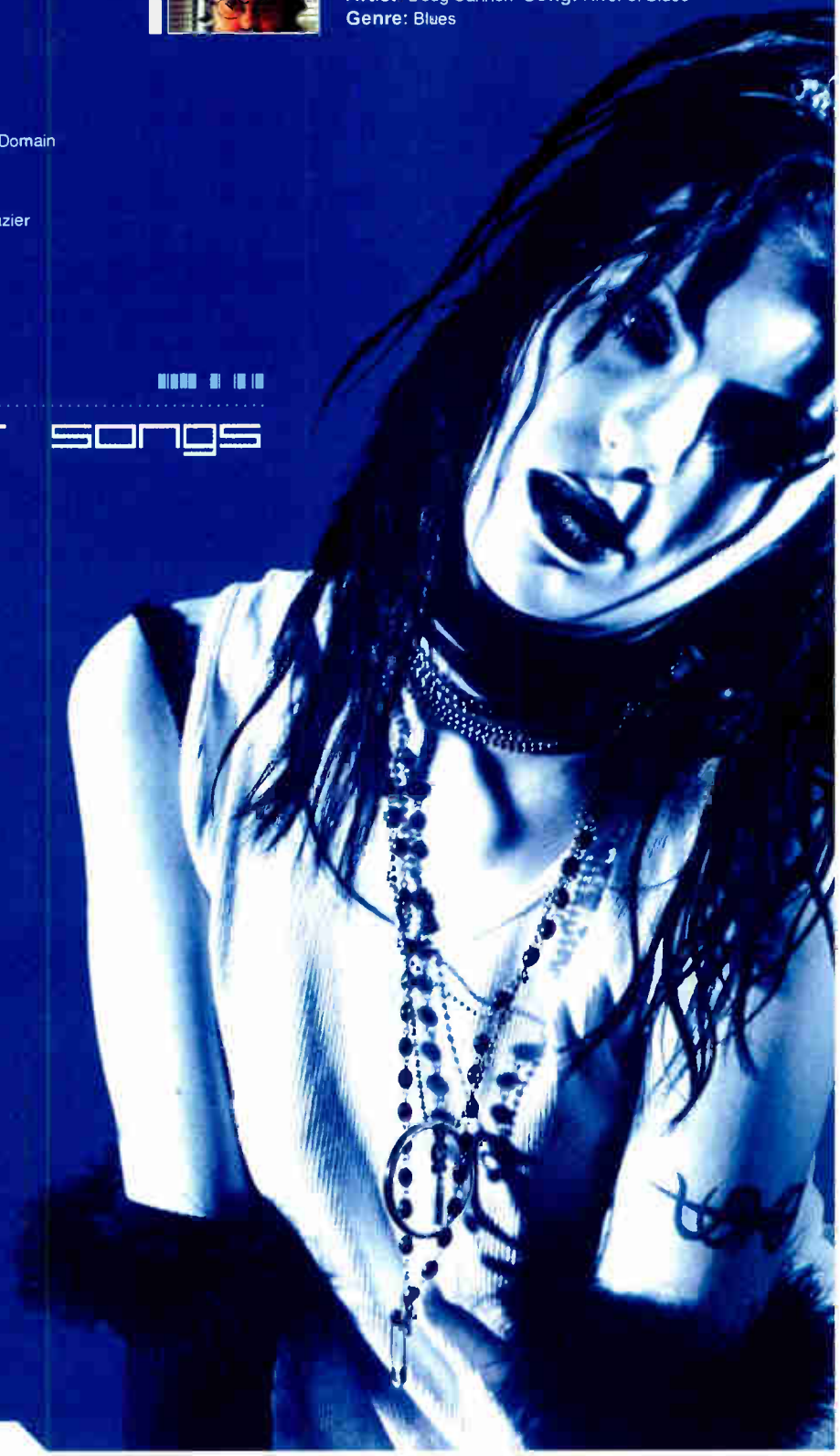
Genre: Blues



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JAMES "BLOOD" ULMER

FROM PAGE 171

since Ornette Coleman [*Tales of Captain Black*], without me saying a word," Ulmer chuckles from his New York apartment. "Also, nobody has been able to produce me, 'cause I won't listen to anyone. But Vernon had been talking to me for years about making a blues record. And finally something came up, and he said, 'I got the idea. I want to take you down to Memphis into the Sun Studios, and I want you to do the hit songs of all the blues greats. It's going to be something—trust me.' So I said okay.

"I always had a problem just doing straight-out blues," Ulmer adds, "because I came from the South and the church. My dad is a preacher, so I would play stuff that was real spiritual. But, basically, I was always trying to come from another side of the music instead of being a straight out and out blues player. Vernon brought that side out of me at a very late age, and I was happy that he did."

In April 2001, Reid and Ulmer started working at the legendary Memphis studio. It rained every night that they worked, which made the atmosphere appropriately swampy. The setting was certainly right for these sessions, but Reid says he had other reasons for picking the facility: "Years ago, Living Colour played in Memphis, and we actually took the tour of Sun Studios. I walked into the room, and I said, 'I *have* to come back here. I don't care how long it takes, I have to do something here,' because I got something out of the room."

For the sessions, Ulmer worked with a band that Reid organized. The players were Charles Burnham on violin and mandolin, Mark Peterson on bass, Aubrey Dayle on drums, Rick Steff on keyboards/accordion, David Barnes on harmonica, plus Reid on second guitar. "I've known most of these guys for a while, but it's the first time we recorded together," Reid comments, "so it was very fresh."

They recorded the body of the CD in just three days—quite a contrast to the three *years* the producer spent trying to get the project going. And for Ulmer, the whole affair became a musical and spiritual journey of self-discovery. Following the directive of Reid, Ulmer did some exciting experimentation with guitar effects, and on a personal level, he found himself dealing head-on with some issues he'd been avoiding for a long time. "We did Howlin' Wolf's 'Back Door Man,' but he didn't want to do it initially," Reid says. "For him, it was dark and dangerous. He turned and said, 'I've been there.' That was the difficult part, because he's been that person in his life."

Son House's "Death Letter" also stirred some uncomfortable feelings for Ulmer, but once recorded, it proved to be one of the most powerful tracks on the CD. Reid recalls, "Blood was complaining that it had too many lyrics, was too long and about some other things. So I started talking to him about the song and how it was about a man finding out his ex-girlfriend was dead. So then Blood said he had lost three of his ex-girlfriends. I had no idea that had happened to him. So the song

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turned into this beautiful exorcism. I felt incredibly privileged and honored to be a part of something that became much bigger than I had originally envisioned."

Capturing Reid's conceptions and Ulmer's catharsis on tape was Sun Studios staff engineer James Lott. He talked with the producer months before the project began and had a good understanding of what Reid's prime objective was. "He said he was going to take James back to his blues roots," Lott says. "It was a normal

setup for me, with guitars and amps out in the front room, which used to be an office, and drums in the middle room with all the guys. Bass was DI, and we overdubbed vocals, with maybe a few solos, too. Everything was live, except for those things. It was recorded on 2-inch, 24-track analog tape, which is the format we use for most of the stuff that I do."

Of course, the studio's colorful history overflows with the architects of rock, blues and country. Consequently, all types of artists come to Sun to try to capture that vintage analog sound that helped make legends of Elvis Presley, Jerry Lee Lewis, Howlin' Wolf, Carl Perkins and so many others. "That's what they're looking for," affirms Lott, who's been there since 1986.

In truth, the landmark studio hasn't changed a lot over the years. Original owner and recording icon Sam Phillips moved on to create the Phillips Recording Service, leaving the studio dormant until Lott started working there under different ownership. "The front two rooms are exactly the same as they were," he notes, "but the control room obviously had to change. I couldn't compete using mono machines. So we put the new gear in." Some of that equipment included a Soundcraft 1600 board, later replaced with a 2400, an MCI 24-track deck, and a few Neumann mics, along with RCA 77s and other vintage models.

For most of the *Memphis Blood* sessions, Reid was out on the floor with Ulmer, playing guitar and offering guidance. The technical end was left up to Lott. "I do as little EQ as possible; sometimes, it's necessary," he states. "I will use a little for the drums, but I try to keep everything as flat as possible, so that whoever mixes has an easy go of it. Ultimately, I want to get good sounds to tape, so if it's really dark, I'll brighten it up.

"These sessions were never hectic, the band was great, and Blood was in a good mood along with everyone else. That made it real simple. I did do some rough [mixes], which they took with them. I had a lot of fun working on the project, and there was some nice interaction between Blood and Vernon. But what really stands out is Bloods' guitar work and vocals. They're incredible!"

Overdubs and mixing were done at Studio 900 in New York City. Reid did his first solo record, *Mistaken Identity*, there and has since developed a strong relationship with owner/engineer Joe Johnson. Like Sun, Studio 900 is mostly analog-oriented. "I have a JH-24 with a lot of guitar amps, Neve outboard stuff, a little Neve board and some of the modules," Johnson says. "I also have ADAT, and I'm looking into some hard disk stuff. Plus, I have a grand piano and a B3 organ. Keith Richards has done a few projects here; so have many Latin and blues musicians, and people from all around the world that want to come to New York and do something live.

"For this album, we mixed to half-inch analog on a Sony 502 in about three days. Their pre-recorded tracks had a pretty cool vibe to them. It was pretty straightforward—mainly, they wanted to capture the sound of that room [Sun Studio] down there. But there was a lot of bleed on everything, so basically you pull up the faders and try to blend everything. I probably would have gone for more separation if I had been there, but that was what they were going for. There weren't any real gizmos or anything that I used. However, I did use the Quantec QRS, an old box for reverb and delay, through an E module."

"We really were on a mission; everyone that was involved with this project was there because they love this man," Reid says. "It's really about James, playing and singing the blues. I was just a catalyst."

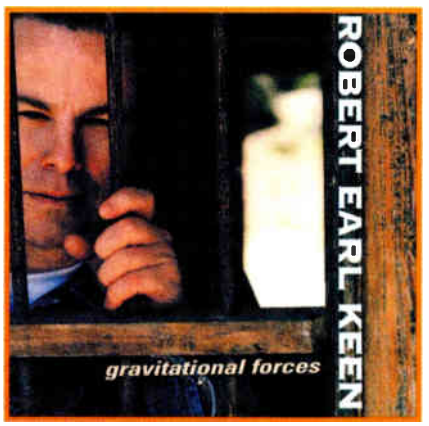
Ulmer adds with a laugh, "I'm glad I trusted the young brother—he did a hell of job! With him producing, I didn't have to think about anything, like writing or picking songs; just performing. Also, I've never done music that's so defined into one category. They've put my music, previously, into all kinds. But this recording is like a launching pad for me, and I'm already singing some of these songs on the road now. I call it 'James Blood blues.'" ■

Cool Spins, *FROM PAGE 174*

Producer: Chris Kimsey. Recording engineers: Chris Kimsey, Tom Tucker Sr. Mixing engineer: Chris Kimsey. Pro Tools engineer: James "Fluff" Harley. Studio: Mastermix Studios (Minneapolis). Mastering: Chris Kimsey/Metropolis (London). *—Blair Jackson*

Robert Earl Keen *Gravitational Forces* (Lost Highway)

Texas singer/songwriter Robert Earl Keen is a darling of the *No Depression* set, and it's no wonder. His recordings are just country enough for Nashville, but quirky enough for college, with rhythmic guitar strumming and drumming that roll through the tracks like a train. This album has some pop leanings as well: Multitracked lead vocals and harmony on some



songs enliven Keen's intimate, raw sound. The album's producer, Gurf Morlix, is a multitalented musician and technician who brings whatever's needed to his projects; on this release, his guitar playing, production and mix lend just the right balance of edge and sparkle to Keen's personal songs, and to some choice covers of Johnny Cash, Joe Dolce, Terry Allen and Townes Van Zandt.

Producer: Gurf Morlix, Ray Kennedy (one track). Recording engineer: Stuart Sullivan, Ray Kennedy (one track). Mixing engineer: Gurf Morlix, Chuck Ainlay (one track). Studios: Arlyn (Austin, Texas), Room and Board (Nashville), BackStage at Sound Stage Studios (Nashville). Mastering: Hank Williams and GurfMorlix/MasterMix (Nashville). *—Barbara Schultz*

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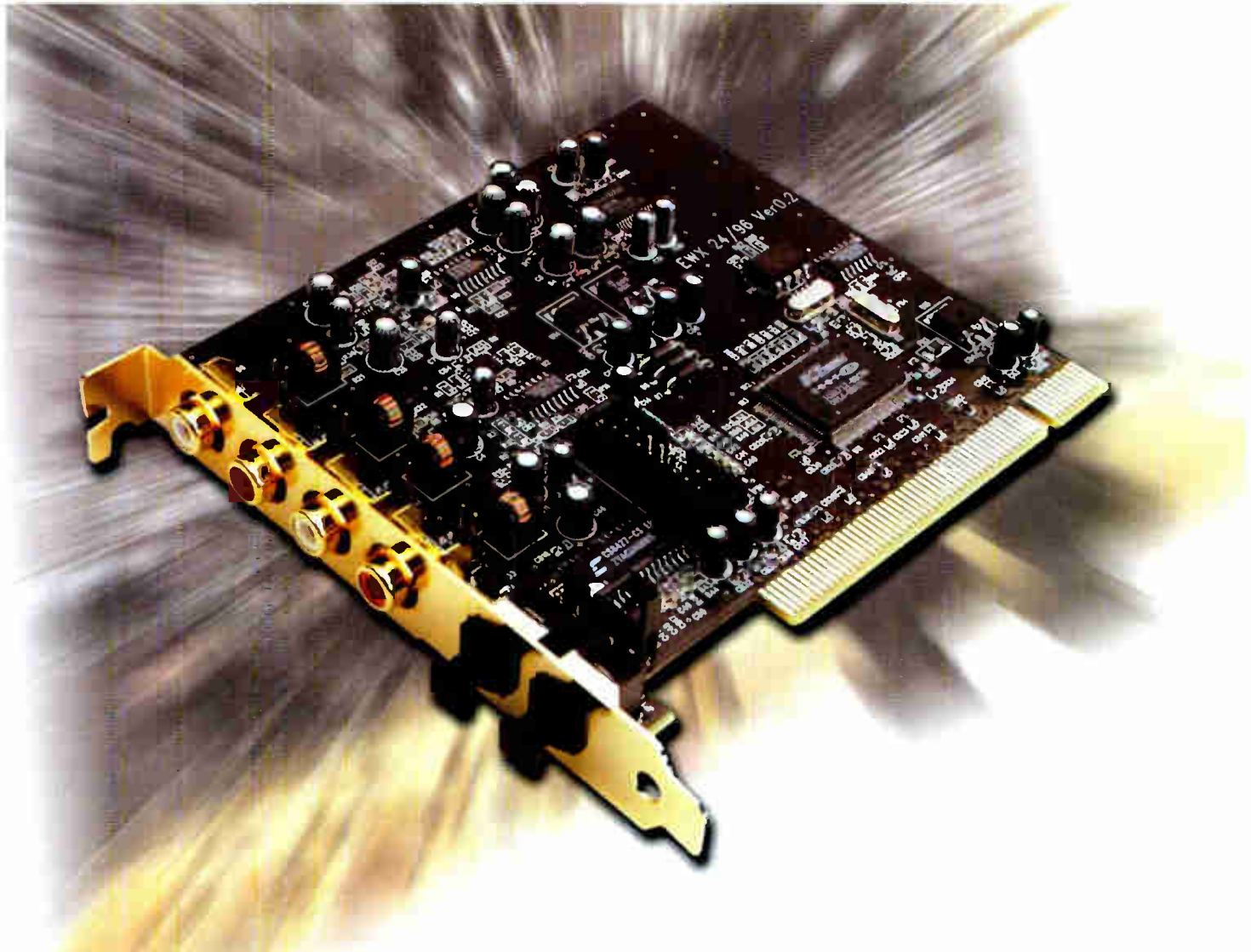
Tori Amos *Strange Little Girls* (Atlantic Recording)

Tori Amos is one of those artists who you need to *see* in order to hear the music. When I last saw her in concert, the lyrics' meaning and utter beauty of her voice came rushing through me like a little earthquake. At times, she strikes at the piano keys, sometimes moving between two pianos at a time, and at others, she is encircled in a 20% blue fog while she sings one of her more gut-wrenching pieces. But all the while, she is fascinating to listen to, and watch. Her new album, *Strange Little Girls*, took me right back to that concert—except she wasn't singing any of her songs. Comprising 12 cover tunes from a wonderfully diverse cast, Tori majestically transforms them into her own compositions—seen through the eyes of a woman—while keeping the original meat-and-potatoes of the tune intact; in fact, it took me a few hard listens to figure out who she was covering at first. Songs originally composed by Neil Young ("Heart of Gold"), The Stranglers ("Strange Little Girl"), Eminem ("'97 Bonnie & Clyde"), Depeche Mode ("Enjoy the Silence"), Slayer ("Raining Blood"), Joe Jackson ("Real Men"), The Beatles ("Happiness Is a Warm Gun") and many others are taken apart and put back together in her dark and gentle way. In fact, her cover of "'97 Bonnie & Clyde" is so chilling that you are forced to realize that it is a song about a man butchering his wife. On a happier note, Tori brought along some of her old friends to accompany her (drummer Matt Chamberlain and bassists Justin Meldal-Johnsen and Jon Evans), and surprising guest guitarist Adrian Belew (King Crimson, David Bowie, Frank Zappa and Talking Heads), who appears on seven of the 12 tracks. A triumph of cover tunes, just another bizarre step for Tori. I can't wait to see what she comes up with next.

Producer: Tori Amos. Executive producer: Natashya. All tracks recorded and mixed by Mark Hawley and Marcel van Limbeek at Amos' studio, Martian Engineering, (Cornwall, England), except for John Philip Shenale's contributions at the Nut Ranch (Los Angeles). Mastering by Jon Astley. —*Sarah Benzuly* ■



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L.A. GRAPEVINE

by Maureen Droney

I caught a smashing performance by Shelby Lynne and her new band one November morning over at KCRW, the Santa Monica-based National Public Radio station. I realized the importance of NPR, and particularly of KCRW, to music some years ago when I was in New York City for the (late-lamented) New Music Seminar, the annual conference that preceded Austin's South By Southwest. Courtesy of a friend who volunteered at the station, I was outfitted with a badge sporting the KCRW call letters, and found myself deluged with tapes, CDs and the eager attention of indie artists who recognized a chance to be heard. They all seemed to know that at KCRW, if someone liked their music, they could actually (gasp!) play it on the air.

A very few commercial stations—L.A.'s KROQ, for one—are known for having the power to break bands, and, armed with that cachet, enjoy some wiggle room within the draconian formats that dominate today's airwaves. But the new music that even those "edgier" commercial stations air stays format-compatible. At KCRW, on the other hand, the jocks get to play what they call "hand-picked music." That means, when you tune in to one of KCRW's 20-plus music shows, you're going to hear stuff that you won't get exposed to anywhere else.

Each of KCRW's music shows features its own style, from the ethnic/world and jazz championed on Tom Schnabel's "Café L.A.," to Jason Bentley's beat-based "Metropolis" and the alt rock on Tricia Halloran's "Brave New World Morning Becomes Eclectic," in the weekday 9 to 12 a.m. slot, is probably the least style-driven, and while you won't hear Aerosmith, N' Sync or even Bonnie Raitt, it's also the most pop/rock-oriented. Over the years, "MBE" has been instrumental in breaking a slew of artists, from Beck and Björk to Dido, Travis and David

—CONTINUED ON PAGE 194

PHOTO MAUREEN DRONEY

Everyone loves Shelby. L-R: FOH engineer Gennaru Rippo, Lynne and KCRW engineer Mario Diaz.

NASHVILLE SKYLINE

by Dan Daley

It's been an open secret for the past few months that MCA Records/Nashville president Tony Brown and former Arista Nashville president Tim DuBois intend to form a new record label. With the exception of a very short stint heading up Gaylord Entertainment's short-lived new music venture earlier in 2001, DuBois has been a free agent since Arista Record folded a truncated version of its Nashville operation into the RCA Label Group in 2000, in the wake of Arista's executive shuffle in New York, which saw Clive Davis reluctantly step down. Brown's contract with MCA, which, as part of the Universal Music Group, was gobbled up by French-owned Vivendi, was headed to term anyway.

The move has many implications. While there are few details available as of this writing, as legal issues are negotiated, it's clear that the venture will not be a country label, which actually could be very good for Nashville's music industry. But there are a few other known factors and they are important to the Nashville recording studio community. First, both Brown and DuBois are producers, and very successful ones at that. Brown is arguably the most successful record producer ever in Nashville, with a consistent string of hits and critical successes over the past 20 years for George Strait, Reba McEntire, Vince Gill, Emmylou Harris, Wynonna Judd and some of Nashville's edgier artists, such as Steve Earle and Lyle Lovett. DuBois signed and co-produced an equally impressive and successful array of artists, including Blackhawk, Brooks & Dunn, Diamond Rio and Restless Heart. Both have been quite prolific, and this pairing will surely produce numerous recorded offspring.

But more to the point for Nashville's studio business, neither Brown nor DuBois has ever owned his own recording studio, and neither seems inclined to

start now. In fact, Brown told me years ago that owning a recording studio was simply not something he wanted to do. At a time when the proliferation of personal studios owned by major country music producers divert an estimated $2 million to $3 million a year in revenues from conventional studios, here the Brown-DuBois venture is a welcome harbinger of a possible reversal of that trend.

Iron on the mountain: Nashville generates tons of content, much of which is stored in garages and basements all over the city. Some of it has simply disappeared. Iron Mountain Film & Sound, a Boston-based media archival company, has set up shop in Nashville, seeking to leverage the increased value of content into a more orderly (and profitable) manner of storage and retrieval.

The Nashville operation of Iron Mountain, which established a foothold here when it bought Nashville Vault (a local data archiving company located in a former Federal Reserve bank building,

—CONTINUED ON PAGE 201

MCA Records/Nashville president Tony Brown (pictured) and former Arista Nashville president Tim DuBois are rumored to have a new record label in the works.

NEW YORK METRO

by Paul Verna

Ask Avatar Recording Studios owner Kirk Imamura to explain the studio's recent resurgence after five years of uncertainty and he modestly defers to his staff and clients. "When I took over [in early 2001], there were clients who had been recording here since the start of the studio as Power Station in 1977. They just like the place. The sound is irreplaceable. Even with all our trials and tribulations, a lot of our clients stuck with us."

Similarly, Imamura is quick to throw the spotlight on his management team, crediting them with ensuring the continuity and proper functioning of the studio. "We have good staff here," he says. "They're very enthusiastic and they go out of their way to help our clients." Led by studio manager Tino Passante—an Avatar veteran—the staff also includes chief technical engineer Ken Bailey, accounting manager Bill Denny and staff engineer Scott Young.

But, in reality, most of the credit for Avatar's turnaround belongs to Imamura himself. An energetic, imaginative leader, he is somehow reinventing the studio without tampering with its unique and time-proven character. In Studio D, for instance, Imamura undertook what he calls a "tightening up" of that control room's low end by slightly moving in the back wall and installing acoustic treatments to improve the studio's bass-trapping characteristics. Furthermore, Imamura fitted the room with soffit-mounted Westlake BBSM-15 monitors, which were installed by in-house carpenter Vinny Sofia. He also replaced a Solid State Logic Axiom-MT digital console with SSL's tried-and-true, "ultra-analog" SL-9000 J, Avatar's second.

Avatar Recording Studios owner Kirk Imamura at the vintage Neve 8068 in Studio A.

Although, by any definition, a new console, new speakers and a change in a control room's dimensions constitute a major overhaul, perhaps the boldest move Imamura made was in the visual realm. Departing from Avatar's trade-

—CONTINUED ON PAGE 202

SESSIONS & STUDIO NEWS

NORTHEAST

Tori Amos stopped in at Indre Studios (Philadelphia) for an intimate taping of *Live at the World Café*, hosted by David Dye. She performed songs from her new record *Strange Little Girls*. The solo performance (just Amos and her piano) was engineered by **Michael Comstock**. **Ani DiFranco** also taped a *Live at the World Café* with Comstock at the faders. Squeezing the session in between two sold-out shows at Keswick theater, DiFranco ran through some songs from her new double album, *Revelling/Reckoning*...EMI recording artist **Lucia Moniz** recently spent two months recording her sophomore release at **Studio Bopnique Musique** (North Chelmsford, MA). **Anthony J. Resta** produced the project, **Carl Nappa** engineered and **Matt Girard** assisted...Mastering engineer **Emily Lazar** recently completed mastering the **Destiny's Child** Christmas album *8 Days of Christmas* at **The Lodge** (NYC). The album is slated for release on Music World Entertainment/Columbia Records...Actor and comedian **John Leguizamo** was at **Unique Studios** (NYC) tracking and mixing for an upcoming album for RCA. **Christian "Wicked" Wicht** mixed on Studio C's SSL 9000 J. **Philippe Saisse** and **Dennis Lambert** produced the effort...Singer/songwriter **Rebecca Fishel** spent some time at **Side Door Studio** (Newark, DE) working on her debut album. The effort is being produced by **Mario Padovani** with **Paul Janocha** engineering...Producer/engineer **Marty Frederickson** (Mick Jagger, Aerosmith) and **Shawn Colvin** spent some time at **Bias Recording** (Springfield, VA) to work on a song for the *Serendipity* soundtrack. **Erykah Badu** was also at Bias working on a track for the *Training Day* soundtrack. None other than **Dr. Dre** himself was tapped to produce the effort, with **Mike Griffith** handling the engineering chores.

This is Saturday Night at Backstage! L-R: assistant engineer Tony Green, SNL technical consultant Stacey Foster, VP of NBC Enterprises Andrew Darrow, music and audio producer Glenn Rosenstein and SNL music engineer J. Vicari.

NORTHWEST

Seattle Disc Mastering (Seattle) was selected by local radio station KNDD 107.7 to master their compilation of on-air performances by a selection of the nation's top touring bands. *End Sessions Vol. 3* contains songs by **The Deftones, Jimmy Eat World, Incubus, Green Day, Harvey Danger, Moby, Stabbing Westward, 311** and more. Arcola Records brought in rare recordings of blues artists **Sunnyland Slim, Bukka White, Furry Lewis** and **Big Joe Williams** for restoration and mastering. All projects were mastered by engineer **Mark Guenther**.

SOUTHEAST

Eagle Eye Cherry and **Jewel** were both in at **East Iris Studios** (Nashville) working with producer/engineer **John Kurzweg**. Also inside Studio A, **Billy Bob Thorton**, co-producer **Ricky Scruggs** and engineer Ron "Snake" Reynolds were cutting some new tracks...Grammy-nominated engineer **Bob Rosa** was busy at **Bogart Recording Studios** (North Miami, FL) with producer **Randy Cantor** tracking with artist **Alejandra Guzman** and mixing for **Susan Martin** with producer **Tony Bruno**. Rosa also mixed several songs with producer **Ernie Lake** in Studio A for artist **Quentin Elias** and engineered vocal sessions for Island Def Jam artist **Shawna**...**The Jazz Orchestra of the Delta** were busy tracking and mixing at the University of Memphis' Studio B (Memphis). The project for Summit Records is a collection of Cole Porter tunes featuring **Marvin Stamm** on trumpet and vocalist **Sandra Dudly**. **Jack Cooper** produced the project with **Jeff Cline** engineering...**Yolanda Adams** and producer **Kevin Bond** were in at **Doppler Studios** (Atlanta) tracking vocals for a new release. **Ralph Caciurri** was in to engineer with assistant **Roger Moody**. Also at Doppler, producer **Dal-**

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las Austin was laying down some strings for a new song by **Pink**. **Granger Beem** and Cacciuri engineered the sessions...A soon-to-be released *Saturday Night Live* 5-DVD box set, featuring musical performances and comedy sketches, was completed at **Backstage Sound** (Nashville). **Glenn Rosenstein** produced the music and audio, and a number of engineers from both Backstage and *SNL* worked on the project. **Sister Hazel** stepped into **Rec Room Recording** (Gainesville, FL) to begin pre-production on their next release. The band is producing the effort themselves. **Ronny Cates** (Creed, Less Than Jake) has been tapped to engineer.

SOUTHWEST

Pimpadelic recently finished recording some new tracks with engineer **Rick Rooney** at **Maximedia Recording Studios** (Farmers Branch, TX). The new material is slated for release later this year on Tommy Boy Music. Also at Maximedia, artist **Danny Wright** finished some piano tracks that will be included in a benefit compilation for the survivors of the September 11th attacks...**Airshow Mastering** (Boulder) recently finished a stereo/5.1 SACD release for jazz singer **Jacintha** that is set for release on Groove Note Records. The project was handled by Airshow founder/chief engineer **David Glasser**.

SOUTHERN CALIFORNIA

Mariah Carey and **Cher** are both working on their upcoming singles at Enterprise Studios (Burbank). Both projects are being produced by **David Foster** and mixed by **Brad Gilderman**. **Dionne Warwick** is also working with producer, and son, **Damon Elliot** (Pink, Mya, Athena Cage), tracking vocals for an upcoming release...Following the trend, the **Red Hot Chili Peppers** have put together a live DVD/5.1 project. The mixing chores were handled at **Cello Studios** (Los Angeles) by mix engineer **Ed Thacker** and chief engineer **Gary Myerberg**.

Please submit your Sessions and Studio News for "Coast to Coast" and "Current" to Robert Hanson. Submissions can be sent via e-mail to RHanson@primedia business.com; fax: 510/653-5142 or snail mail: 6400 Hollis St., Suite 12, Emeryville, CA 94608. Photo submissions are always encouraged.

Gray. Hosted for the past three years by Nic Harcourt, "MBE" is also known for pioneering live-in-the-studio performances, with CDs compiled from those performances used as revenue-raisers for the listener-supported station.

KCRW's offices and studios are housed in the basement of Santa Monica City College. On the day I stopped in, Lynne was debuting cuts from her just-about-to-be-released CD *Love, Shelby*. Studio A was a blitz of controlled chaos as show producer Ariana Morgenstern and the rest of the staff organized the eight-piece band's appearance, while Harcourt smoothly helmed the first part of the show. In the music mixing booth, KCRW engineer Mario Diaz and Gennaro Rippo, Lynne's FOH mixer, were setting up for the live-to-2-channel broadcast and recording.

The control room is fitted with a 24x4 AMEK Big desk, which features 24 channels of dynamics and snapshot recall. The band's live stereo mix is routed to master control, where Harcout punches it up for both broadcast and streaming (along with video) on kcrw.org. Harcourt also creates a mix-minus (his mic, CDs, carts, etc.—everything minus the band) that Diaz selects through a Pacific Recorders BMX22 radio console and combines with the band's mix for archiving. Meanwhile, the band mix is recorded through an Apogee Rosetta A/D to a Panasonic SV 3800 DAT for archiving, then via AES to a TC Electronic Finalizer Plus and finally to an HHB CDR-850 Plus.

Diaz, who typically engineers up to three "MBE" shows a week, along with various other audio production tasks, is proud of the station's mic assortment and quality outboard collection. In Studio A's rack are two UREI LA-4s, an 1176, a Grace 101 2-channel mic preamp, a Klark Teknik 30-band graphic EQ, dbx 902 de-essers, and dbx 905 and 907 comp/limiters, as well as Lexicon PCM 90 and 81 reverb/delays. Mics include Neumann, Coles, AKG, Schoeps, Sennheiser, Beyer and Shure.

"We do anything from a string quartet to rock 'n' roll," he says. "Typically, I put up mics the night before, position everything and do a line check. We usually start at 8:30 a.m., setting up backline and headphones. We try to keep it 24 channels, mainly because we have 24 channels of built-in dynamics and that gives me more flexibility to add a compressor on-the-fly if I need it."

Recording live-to-2-track definitely captures a kind of magic that is, as the show's

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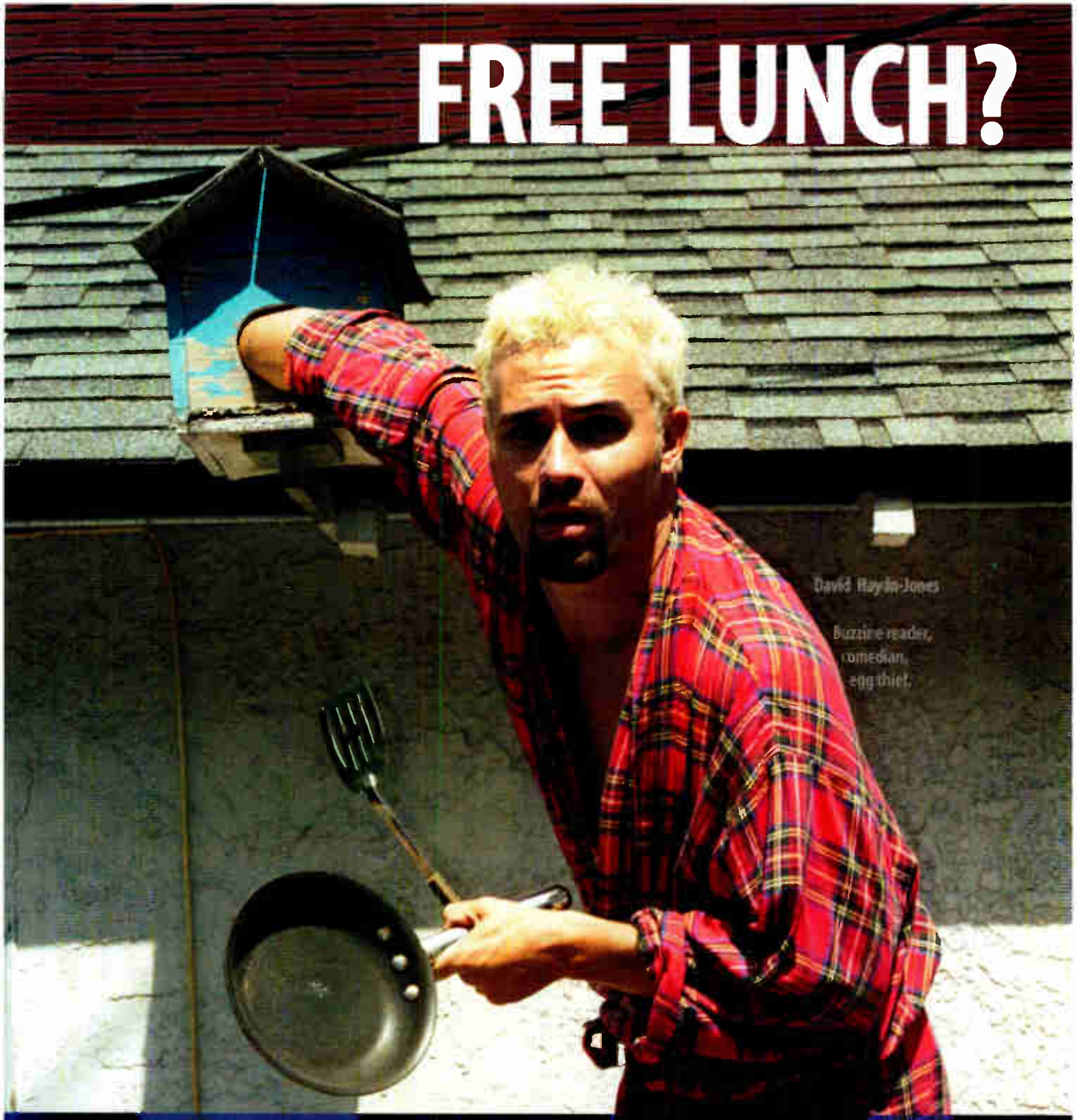

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first compilation CDs were dubbed, *Rare On Air*. (The latest compilation, available on Mammoth Records, is simply titled *Morning Becomes Eclectic*.) "You don't have time to stop," Diaz admits. "You get your soundcheck, and that's it."

"MBE" is successful as well as influential. Much of its popularity, of course, is due to host Harcourt, who, drawing from KCRW's 50,000-title library and his own 5,000-plus collection, puts together a five-day-a-week show that is the top fundraiser for the station. A native of Birmingham, England, Harcourt came to KCRW by way of WDST in Woodstock, N.Y., where he served as morning show host, music director *and* program director. "KCRW is such a unique station in many ways," he comments. "The music is just one aspect of it. The most unique thing about the music shows is that, although they each have a slant depending on the time of day, basically they are free-form. That's the big difference: We're in a really important market, and there's no computer-generated playlist. We're not a 24-hour music station, but when we're doing music, the programmers pick their own. That's really unusual."

Not far away, in the Santa Monica arts and media district near Bergamot Station, I found Shake-a-Leg Music's Elyse Schiller and Jim Watson ensconced in their gallery-like studio. The two musicians, partners in the boutique music and sound design company, specialize in creating edgy hooks for the television branding industry, with clients that include E! Entertainment Television, BET, ABC Daytime, HBO, MTV and Sony Pictures, among others. Recently, the duo have expanded their scope, forming, with the help of some musician friends, "Porkpie," an electronica music collective that's landed cuts in several television shows including *Felicity*, *Fanatic Undercover*, and MTV's *Undressed*, as well as in the Darryl Hannah/Jennifer Tilly film *Dancing at the Blue Iguana* and American World

PHOTO: MAUREEN DROONEY

Spin that black circle: Nic Harcourt inside the KCRW library

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"Mostly, we work with graphic design companies," explains Schiller, a vocalist, songwriter and keyboard-playing veteran of the art/club world. "Our job is to help provide identity to visuals by coming up with music that will give immediate recognition. For example, right now we're doing a project with Jim Kealy, a very cinematic designer with a company called 3 Ring Circus. Working from storyboards, we created a 30-second spot for a Korean television company that wants an identity for its network, which has several different channels."

"A lot of people recreate orchestras with samplers, but we're really not interested in that," adds Watson. "What we do is kind of outside-the-box and textural. A lot of it is about placing sounds and

PHOTO: MAUREEN DROHEY

Rug by IKEA. DAW by MOTU. Shake-a-Leg Studios by Jim Watson (left) and Elyse Schiller.

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Watson, who started out as a drummer, puts his rhythm chops to good use at Shake-a-Leg; his live drum tracks often form the basis for looped grooves. He also handles most of the engineering chores, with the core of Shake-a-Leg's studio operation being MOTU's DP3 running on a Mac G4/533 MP. "I've been using the program since it was just Performer," he notes. "I work really closely with the guys at MOTU; when you find something that can be improved, you can call them up and they're really responsive. Through them, I've also made good connections with other software companies."

Watson's setup is impressively fine-tuned. Mic preamps and DIs are connected to a MOTU 1296 24-bit, 96kHz interface for A/D conversion, and routed back from DP via ADAT Lightpipe through a MOTU 2408 to a Yamaha 02R for monitoring.

"MOTU is really ahead of the Pro Tools curve," he states. "You can do 24/96 in 10.2 surround on their system right now. I find that many plug-in designers like the MOTU audio system better because, instead of being 24-bit integer, it's 32-bit floating point. That finer precision gives better resolution, especially for things like EQ. It's fractional, but you're always trying to make it sound more like analog and not have that digital grain, and this system really sounds great. Metric Halo, for example, makes a great piece of software called Channel Strip. It's the best software EQ, made for both TDM and for MOTU. A lot of people think it sounds much better in MOTU."

Watson also routes signals digitally from DP, via AES and S/PDIF, to his outboard effects units, such as a TC Electronic M1 and M3000, and a Lexicon PCM 90 and 80, bypassing the converters in those units. "The MOTU 308 digital interface has eight channels each of optical, S/PDIF and AES," he continues. "Once the sound is in the computer, I don't have any more conversions and re-clocking."

PHOTO: DAVID GOGGIN

Outkast's Andre 3000 (left) and mastering engineer Bernie Grundman during sessions for the group's Greatest Hits album.

—FROM PAGE 42, LIVE SOUND PICKS

($29k to $42k list). Mic pre's are derived from the XL4; EQ comes from the XL3. Snapshot automation will be compatible with the Heritage 3000 so it can be used as a sidecar.

Nexo's (www.nexo-sa.com) latest speaker is the GEO S-805 (about $1,500 list), a very small, full-range, two-way line array module. Patented new technology includes a unique bent diffraction slot horn with a special exponential flare in the non-coupling plane, and a phase device to improve the woofers' coupling at higher frequencies. The S-830 is a similar 23-pound near-fill enclosure. The CD12, a DSP-driven, dual-12 supercardioid subwoofer, is also offered.

PreSonus (www.presonus.com) introduced the CL44 Quad Compressor and the GTX44 Quad Gate (either is $599), with DSP sidechain for digitally controlled analog dynamics processing. Both are full-featured, with eight knobs per channel, including high/lowpass sidechain filters. Also new is the half-rack Acousti-Q Tube Blender ($299), a dual-input acoustic instrument preamp with a notch filter, low and high EQ, plus swept mids. A footswitch changes the output level to go from strumming to picking.

Sennheiser's (www.sennheiser.com) HD280 Pro headphone ($199) is a closed, circumaural 64-ohm design with 30dB isolation, high output and a robust collapsible design, with swiveling ear cups—sure to become new favorites for live sound. It's also available with a supercardioid dynamic boom mic for intercom applications, in single- or double-muff versions.

Shure's (www.shure.com) new ULX wireless systems tune across six TV stations with a new auto-scanning feature to find open channels, with up to 20 per group. Standard ($1,050 list with an SM58 capsule) and Pro ($1,312 or $1,388 with a Beta 87 capsule) versions are available. Both are half-rack, but the Pro has a metal chassis with front panel lockout, volume pot, RF metering and adjustable squelch.

SLS Loudspeakers' (www.slsloudspeakers.com) LS8695 two-way Line Source column speaker ($3,195 list) is a foot wide and 55 inches tall, with eight 6.5-inch woofers and nine 5-inch ribbon drivers. Power handling is 1,600 watts peak, with a sensitivity of 104 dB and a maximum SPL of 128 dB. It has 120° horizontal dispersion and only 1° vertical above and below the column ends.

AKG (www.akg.com) re-released the C 451B ($549), adding a touch more 10 kHz to its legendary rising response. Its cardioid capsule is now fixed, with a second slide switch for a 10 or 20dB pad, in addition to the 75 or 150Hz low-cut filter. Also unveiled: the C 900 vocal performance condenser mic ($250), the C 430 condenser overhead ($238) and the D 409 dynamic instrument mic ($198). ■

Midas Legend 3000

The outboard collection at Shake-a-Leg is extensive, and Watson has established personal relationships with many small manufacturers. "I'm not an electrical engineer-type," he observes, "but I have a lot of respect for the people who are and who manufacture this kind of gear. I got on the Joemeek bandwagon early on; I have one of the ones that Ted Fletcher was making in his garage. The same thing with Jim Demeter's compressors—now there's a guy who really knows what he is doing! I have one that's numbered #28."

Recent additions to the collection include two Wade Chandler Neve items: a repackaged 1073 preamp/EQ and a 32264 compressor, as well as two Telefunken V72 preamps, purchased from Germany and racked and modified with Jensen transformers by Jamie Sutton at Valley Sound in Burbank. "You can use them for DIs," Watson notes, "especially for bass, because they have a lot of bottom and are really fat."

While Schiller and Watson enjoy the short-form work they do, they've also been branching out into scoring for soundtracks, contributing 20 minutes to *No Maps For These Territories*, the critical fave documentary on sci-fi writer William Gibson, which features appearances by Bono and Daniel Lanois.

"We like all sorts of projects," says Schiller. "Sometimes I feel like we're really just two bees working away in a hive. The identity things are a lot of fun, because we have to tell a whole story in just a few seconds, creating this little sonic package. For the long-form things, it has to flow more, and we get to stretch out. But it's still about communicating feeling and thought. We just like to create music that fits visuals."

Got L.A. news items? E-mail MsMDK @aol.com.

NASHVILLE SKYLINE, FROM PAGE 191

in 1995), is being headed up by Barry Cardinael, who, from 1979 to 1995, worked full time for singer Neil Diamond as a recording engineer.

"It was working with Neil that got me interested in archiving in general," Cardinael recalls. "In 1995, I was trying to find one of Neil's old masters and it took quite a while to accomplish that." It was eventually found, at Iron Mountain's Hollywood facility (it also has storage centers in Paris, London, Pittsburgh and Chicago), which gave Cardinael and the facility manager the chance to talk about taking music archiving a step further. Cardinael developed a prospectus to help Iron Mountain more aggressively move into entertainment media archiving, which led not only to a more focused mission for its 15,000-square-foot Nashville facility, but to the decision to build a new, 25,000-square-foot, state-of-the-art storage facility, which will open on the eastern edge of Davidson County later this month. That new $1 million facility will have a triple-thickness seamless concrete ceiling and redundant heating and A/C systems, says Cardinael. Furthermore, he says, Iron Mountain has

The Village in Los Angeles recently upgraded their Studio D with the installation of a Neve 88R analog console.

become an active participant in the regional effort being conducted by the Producers & Engineers wing of the Nashville NARAS chapter in developing archival audio standards. The committee tasked with this, including producers George Massenburg, Tony Brown, Kyle Lehning, Garth Fundis and Ocean Way manager Sharon Corbett, are experimenting with the AES 31 .WAV file format for long-term digital audio storage and retrieval. Iron Mountain is in the process of testing how well the format can be recalled via T-1 line, from its data storage silo near Pittsburgh.

"It's the industry that has to make the decision ultimately," says Cardinael. "But we want to be ready to adapt to whatever they decide to do in the future, so we want to stay involved in how they arrive at their conclusions."

Archiving has been a hot button in the pro audio industry for some time. The increased need for content to fill endlessly expanding media channels has added to the issue's urgency. And Nashville's position as one of the most prolific producers of music and audio in the world makes it a natural locus for archiving activities. Other independent data storage companies are also eyeing the entertainment media market, and some archival clients already maintain their own long-term storage facilities, such as Sony Music Entertainment's underground facility in upstate New York.

Cardinael declined to discuss actual rates, but did say that smaller clients, ranging from songwriters to publishing companies to independent labels, could pay proportionately for archiving services. "There's got to be 500 songwriters in this town who have hundreds of masters sitting in their garages and basements," he says. More pointedly, though, Cardinael is actively courting Nashville's studios. Small wonder: One of the top peeves of any facility owner is the fact that clients often regard the studio as their own cost-free archiving facility. Many studio owners spend as much time chasing clients to pick up tapes as they do chasing checks. Cardinael agrees that he could channel that problem into a reference for Iron Mountain's services. "It's crossed my mind," he says.

Send your Nashville news to dan writer@aol.com.

NEW YORK FROM PAGE 191

mark knotty-pine, natural-stained wood paneling, Imamura painted the walls in Studio D a glossy black, giving them a high-tech but still warm look. "It's a whole new world," beams Bailey.

In its previous incarnation, Studio D had hosted such recording luminaries as Diana Ross, Joe Jackson, Tony Visconti, Nile Rodgers and Foxy Brown. In fact, Brown was the first client to book the room after its redesign, proving to Imamura that his approach toward the room was, above all, client-friendly.

A hallmark of Studio D's spacious control room is its readiness for 5.1-channel mixing. However, Imamura is the first to admit that the studio has yet to receive a substantial demand for surround work. On the other hand, Avatar's investment in connectivity has already paid dividends. With four ISDN lines in each of its four major studios, the facility's fiber network is used constantly for remote collaborations, approvals and video teleconferencing.

If Avatar's ISDN capability enables remote collaborations, then the studio's heavy Pro Tools orientation allows clients to share projects by bringing their own hard drives with them. With two full-fledged editing suites in the facility (Studios E and K) and systems that are shared by the four primary control rooms, Avatar is a Pro Tools powerhouse. "Because Pro Tools is a de facto standard, we wanted to have a place where people could do pre- or post-production on their projects, or work on lower-budget projects," says Imamura. "That's why we built Studio K."

Studio E, Avatar's other Pro Tools suite, is leased by Jan Folkson in a partnership designed to foster a "creative community" of artists and engineers at the studio. Two other veteran Avatar clients, Jeff Bova and Jim Janik, also recently joined the studio in a similar capacity.

Now that Imamura has completed the redesign of Studio D, the construction of Studio K and a cosmetic facelift on Avatar's 53rd Street facade, he is setting his sights on such projects as turning the building's fourth floor—formerly a penthouse apartment—into a mix room and converting space in the basement into a project studio. Those projects are years, not months, away, but Imamura is already plotting them, suggesting that he has a methodical and long-range vision for the studio.

Elsewhere at Avatar, the rooms remain quite the same as they've been.

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Studio A houses a vintage Neve 8068 and a huge tracking room for which Avatar is most renowned—a space that both Sony and Yamaha sampled for their high-end reverb processors. Studio B is home to a 72-input SSL 9000 J with a 5.1 monitoring matrix, Total Recall and Ultimation. Its tracking area is also quite large: 20x30 feet, with a ceiling height of 15 feet at its highest point. Studio C, based around a 72-input Neve VRP, has a tracking room measuring 24x40 feet, with a 24-foot ceiling and an architecture that allows the space to be divided into three large isolation booths.

Prior to Imamura's arrival, Avatar had been run by Voikunthanath Kanamori, a Japanese businessman who purchased the former Power Station when it was auctioned off in 1996 after its original owner, Tony Bongiovi, lost control of the studio. Kanamori renamed the facility Avatar and appointed Power Station veteran Zoe Thrall manager and, later, president. Thrall oversaw a period of continuity and prosperity for Avatar, allaying clients' misgivings about Avatar's ability to live up to the Power Station legend. However, tensions between Kanamori and Thrall led to Thrall's resignation and the eventual sale of the studio.

Imamura, a mechanical engineer who worked at Sony Corp. and Sony Electronics, purchased Avatar amid new skepticism about the studio's viability in a changing, competitive market. However, many of Avatar's and Power Station's longtime clients have returned to the facility, proving that Imamura is carrying on the studio's tradition of excellence while adapting it to the age of the Internet.

"When the Power Station was auctioned off in 1996, it didn't fold because of a lack of customers," says Imamura. "It folded because of management issues. There's nothing wrong with the studio or its rooms. These are some of the best-designed rooms ever built. Plus, no matter how much work you do in a project studio, you still need to track somewhere, and the rooms we have are *the* place to track. No one wants to see this place turned into a condominium."

Certainly not the artists who have made Avatar and Power Station their home over the years. To name just a few: Madonna, Bruce Springsteen, Eric Clapton, the Rolling Stones, David Bowie, The Ramones, Aerosmith and Sheryl Crow.

SEPTEMBER 11 ADDENDUM

Last month, New York Metro Report brought you news of pro audio companies and individuals who contributed to the September 11 relief cause by donating time, equipment or services. After deadline, I received news of more worthy benefactors whom I'd like to mention here.

Marcussen Mastering and Metropolis DVD donated audio mastering and DVD authoring services, respectively, for the *America: A Tribute to Heroes* CD and DVD. Also, the following vendors and venues were involved in the *Heroes* recording and/or the September 21 telethon on which it was based: Westwood One, ATK Audiotek Corporation, Soundtronics, Center Staging, Audio Affects, Audio Specialties, Hollywood Sound, Top of the Pops and DMT Rentals.

This, of course, is by no means a comprehensive listing. However, in the spirit of solidarity with the cause, I wanted to acknowledge all the entities whose contributions were made known to me.

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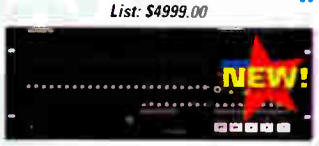

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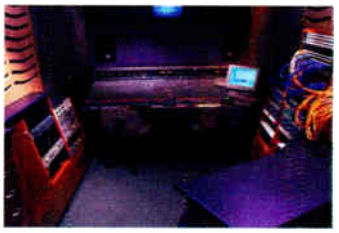

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—FROM PAGE 22, THE ANIMAL FAIR

and more less and less well, the audio expectations of the targeted demographic actually lower. The same people who buy these things listen to MP3s at 64k all day.

So the bottom end of that market shall survive, as the bottom end of all markets do. But what about the rest of the market?

MARKET? MARK IT OUT

Then there is the rest of the market, the mid- and high-end keyboards. These synths are getting better and better. I heard some stuff that amazed me. Organic instrument emulation that I *know* I could get away with in a mix with just a little careful planning. Weighted-velocity keyboards that I could *play*, not argue with.

But, alas, it seems that nobody really cares, and so the market is certainly collapsing. New monster high-end stuff is quieter, better, more expressive and more realistic than ever, and priced at a fraction of what it once was. But synth companies are dying faster than I can write about it.

The popularity that samplers are currently enjoying is a testament to this. People want to get back to real instruments. They can't all play the instruments they want to record, so they play keys—keys that can be edited and fixed up in the world of MIDI, and then assigned to 20 different guitars or violins until just the right one is found.

Frankly, I don't have any real problem with this. If you can play keys and understand the characteristics of the instruments you wish to emulate well enough to fool your market, you become dramatically more versatile and powerful.

> The line between synths, samplers, drum boxes, sequencers and mixers is now blurred into a faint gray smudge

It's the fool-your-market part that may be the problem. I no longer buy CDs with synths on them. Most of my friends have gone that way as well. Once I hear a fake instrument, I immediately lose interest.

I want to hear the musician play a real instrument, and I want to hear him do it better than I can. I want to hear the nuances. I want to hear him work, sweat and strain. I want to hear his soul.

Or, I want to hear him effortlessly outplay my best by 10 to one. I want to hear so much skill and rapport with his instrument that I can't even feel technical ability is a concept. You know, those guys who become one with their instruments and produce music that goes directly through your brain and into your chest and makes you sit in silent awe until 10 minutes after the song ends.

Or, I want to hear raw, rough and real. SRV in some stank bar in Dallas, even Stray Cats at their most basic, any *real* blues band in any bar with a $2 cover.

Yes, my personal taste runs straight to blues, but the point still stands. I understand the need for, and the attraction to, sampling, but I prefer my music straight up. And, judging from what is happening to the synth market, it looks like many of you do, too. ■

SSC is off to finish loading his iPod, then it's back to workin' his PRS and THD.

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Small But Mighty

—FROM PAGE 42, AES SHOW REPORT

years of building capsules for other manufacturers, David Josephson (www.josephson.com) is getting serious about marketing his own mic designs. The new Series Four offers two small-diaphragm condensers barely larger than the XLR connector they mate with. The C42 cardioid has a fairly flat response; the C41 omni has a broad, HF peak centered around 10 kHz for distance recording.

MXL's (www.mxlmics.com) 1006BP adds a twist to the market of inexpensive, cardioid, 1-inch-capsule condenser mics. A 9-volt battery compartment allows the 1006BP to be DC-operated for sampling or remote recording, or phantom powered in the studio. Retail: $119.

DIGITAL STUFF

Portable audio is redefined with the MicroWave from Wave Digital (www.wavedigital.com), which packs a miniature computer featuring an Intel Pentium III 1GHz CPU, Intel 815 chipset, four USB ports, two FireWire ports, 256MB SDRAM, 30GB HD and a CD-RW drive into a compact package that's about the size of a portable CD player.

MOTU 896 96kHz FireWire I/O

Gibson Labs (www.gibson.com), the tech division of Gibson Guitar Corp., unveiled Media-accelerated Global Information Carrier (MaGIC), a digital protocol allowing up to 32 channels of fully duplexed, high-resolution digital audio (up to 32-bit/192kHz), video and controller information—including MIDI—to be distributed with extremely low latency on standard CAT-5 cable, conforming to IEEE 802.3 (Ethernet) specifications.

Fairlight (www.fairlightesp.com.au) launched its DREAM (Digital Recording, Editing And Mixing) multichannel, multiformat technologies. The stand-alone DREAM Satellite editor features Fairlight's new Binnacle Editing, which reduces editing keystrokes by 30% to 50%. The DREAM Station offers up to 48-track recording/editing, mixing in any format up to 7.1, moving touch-sensitive controls and a customizable control surface. A fully configured DREAM Console has 48 tracks of Binnacle editing integrated to 96 audio channels, 48 returns and 48 aux inputs (a total of 192 inputs) routed into multiple multiformat buses and a comprehensive monitoring system. For more information, see the "Technology Spotlight" in the December 2001 *Mix*.

It was standing-room only at the MOTU (www.motu.com) booth for ongoing demos of Digital Performer 3.1, offering unlimited multiple undo, including MOTU's new "TimeLine" Undo, allowing users to navigate a time-based representation of a session. DP 3.1 also includes waveform editing of surround audio files, and new features for loop-based music production, post-production work and MIDI music production. Behind the scenes, we got a preview of the new 896 96kHz FireWire audio interface, with eight channels of 24-bit analog I/O, eight channels of Lightpipe I/O, eight built-in mic pre's, AES/EBU digital I/O, wordclock and sample-accurate ADAT sync. Four 896s can be daisy-chained to a single computer for 72 channels of I/O. The 896 comes with AudioDesk workstation software and drivers for all major audio software on both computer platforms. The 896 is $1,295 and ships Q1 2002.

SADiE (www.sadie.com) also drew crowds with upgrades of workstations introduced earlier this year at AES Amsterdam: DVD-A Direct is a Windows-based DVD-Audio authoring system with optional Meridian Lossless Packing encoding; Super Audio CD Mastering Editor is designed for editing and mastering DSD and producing SACD masters. SADiE also showed its Disc Editor Software Version 4.2 and the CD-R Tower, available in 4- or 8-recorder models.

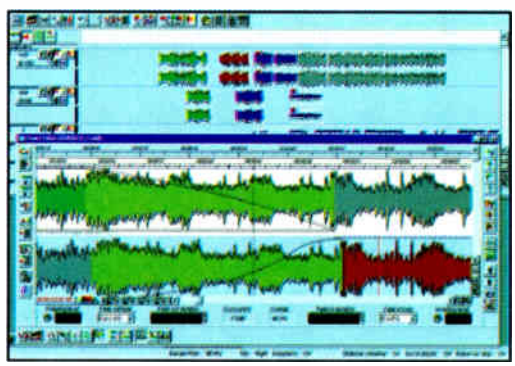
Sonomic (www.sonomic.com) debuted the Sonomic Server Library service, in which the Sonomic Sound Team will digitize, categorize and index your CD collection on a server that is searchable from any networked workstation. Library features include a search by category or keyword (or both), instant preview and import directly into your workstation, and Sonomic's SoundBay, where users can organize sounds in protected project folders. Sonomic recently signed a distribution deal with Sound Ideas, adding 10,000 effects to the collection, including catalogs from Zero-G, Q Up, Sampleheads, Valentino and more.

EMTEC Pro Media's (www.emtec-usa.com) LTO Ultrium Tape backup/storage media can store as much as 200 GB on a single tape, with fast data transfer rates and a minimum storage life of at least 30 years. It's available in four sizes, with compressed/uncompressed storage capacities from 20/10 GB to 200/100 GB, and transfer rates from 10 MB/s to 40 MB/s. Future generations of Ultrium will feature up to 1.6 Terabytes of storage. LTO is an open-format core technology supported jointly by HP, IBM and Seagate.

MPEG pioneers Fraunhofer Institute for Integrated Circuits (www.iis.fhg.de) was showing its AudioID system, which automatically recognizes and identifies audio data (based on a database of material) and can then generate any required information such as song title or artist name. Applications include broadcast monitoring, music sales and identifying illegal music use on the Internet.

Dolby (www.dolby.com) showcased both pro and consumer technologies. On the pro side, the new DP583 Dolby E and Dolby Digital frame synchronizer allow recording Dolby E streams to nonvideo recorders (such as DAT). On the consumer side, Dolby's new AAC consumer encoder lets licensees incorporate encoding into Internet music-based distribution, portable players and other consumer products; Liquid Audio has signed on as the first licensee. Booth visitors could check out Game Cube, PlayStation and X-Box game consoles demoing Dolby's surround technologies, including Dolby Surround, Dolby Interactive and Dolby Pro Logic II.

There were plenty of other hip products at AES, and we'll present many of these in our regular new products columns in upcoming issues. Meanwhile, AES returns to Munich, Germany, for its 112th convention, to be held May 10-13, 2002. The next U.S. show is October 5-8, 2002, in Los Angeles. See you there! ■



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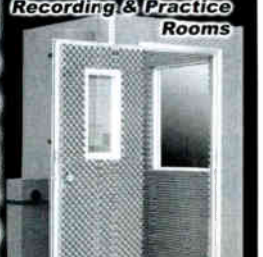

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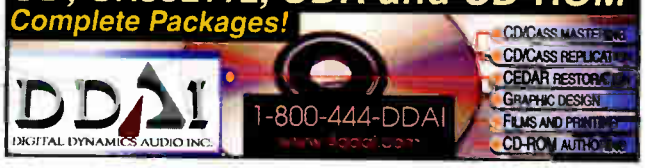

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—FROM PAGE 26, HARDWARE, SOFTWARE, WETWARE

They show up with only two vinyl discs and a laptop. The discs have nothing but SMPTE timecode recorded on them. They feed the output of the turntables through a converter into the computer, which is loaded up with audio files (.WAV or MP3) and some custom software. They tell the software which files they want to play, and start spinning the platters. The timecode on each turntable tells the computer where to start playing each file, how fast and in which direction. The DJs can skip around, go faster and slower, and backward and forward, just as if they were playing vinyl records—but when they want to change records, instead of having to swap vinyl discs, they simply call up a new file on the computer.

Right now, the system, which is being produced in limited numbers, has a pretty steep price tag: around $3,000. But by the time you read this, Stanton, a turntable and cartridge manufacturer, will have a production version that promises to cost a lot less. After that, who knows—maybe someone will come out with a "virtual" turntable and laser-equipped tone arm that doesn't need any records at all. And then they can put some touch sensors in them so that if you bang on them, they make a sound like a stylus skipping...

As the functions of our tools and the forms they take continue to disengage from each other, we can expect to see some radical new designs in human/machine interfaces. Some of these will be brilliant, some will be awful, and some no doubt will be both. With any luck, the present trend in software front end design, in which every program resembles either the console of a spaceship or a nightmarish oozing primordial Salvador Dali landscape, will abate, and new design aesthetics that are more inspiring and less self-conscious will prevail.

But however technology develops, it's a safe bet that reports of the death of hardware will continue to be, as Mark Twain might have put it, premature. As long as we have hands, fingers and feet, we will need to be able to hold, push, turn, press, squeeze and stomp on our tools if they are going to feel like they're ours. Until, of course, purely synaptic-driven interfaces (with appropriate neural feedback) are perfected. At that point, all bets are off. ■

"Insider Audio" columnist and Mix *Web editor Paul D. Lehrman knows that next year's model will be different. Just don't ask him how.*

Expand Your MOTU Desktop Studio

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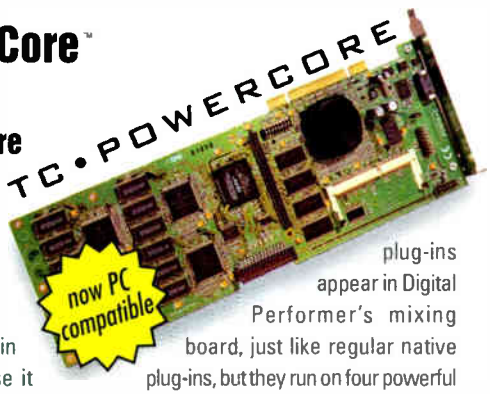


TC•PowerCore is a major breakthrough for Digital Performer's real-time MAS plug-in environment because it provides DSP turbocharged plug-in processing. At last, the renowned TC TOOLS/96 studio-quality FX package (included), with TC MEGAVERB, TC Chorus/DELAY and TC EQ[sat], can be at your fingertips in Digital Performer, plus other TC | Works plug-ins such as TC MasterX and TC Voice Tools (sold separately). These powerful plug-ins appear in Digital Performer's mixing board, just like regular native plug-ins, but they run on four powerful 56K DSP chips on the TC•PowerCore PCI card. It's like adding four G4 processors (equal to 2.8 gigahertz of extra processing power!) to your computer. Run 12 studio-quality TC plug-ins with no hit on your CPU power, and run other native plug-ins at the same time! And coming soon from 3rd party developers: Waldorf Vocoder, Antares AutoTune, TC Helicon Voicecraft and others.

TC | WORKS

bias Peak™ 3.0

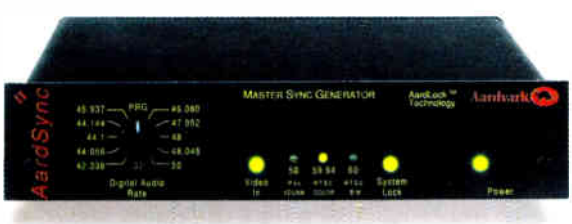
Advanced waveform editing and mastering

BIAS Peak 3.0 for Mac OS 9 and X, is the ultimate editing, processing, and mastering companion for Digital Performer! Peak gives you lightning fast, nondestructive waveform editing with support for audio files up to 32 bits and 10 MHz, including 24-bit/96kHz files. Unlimited Undo/Redo gives you the freedom to work creatively. Select an audio region in DP, choose the "Use External Waveform Editor" command, and instantly switch into Peak! Peak's sophisticated options for on-the-fly marker, region and loop creation are simply unparalleled. Advanced DSP and looping tools include Convolve, Repair clicks, Loop Tuner™, Loop Surfer™, Loop It™ and Guess Tempo™ and more. Process thousands of files, or just a few, using Peak's batch processor. Peak directly supports all MOTU audio interfaces and includes Roxio Toast™ Lite CD for burning your own redbook audio CDs directly from Peak's powerful playlists. Create web or multimedia content for export with multiple file formats, including Apple's QuickTime.

Aardvark Aard Sync II™

Ultra-low jitter master clock for your MOTU studio

The problem? Multiple word clock devices that you need to sync perfectly with your MOTU system. The Solution? The AardSync II Master Clock from Aardvark. The Aard Sync II will make everything in your studio slave together smoothly. With four industry standard word clock outputs and ultra low-jitter performance, you can set the Aard Sync II to generate any digital audio sample rate desired—not only 44.1 and 48 kHz, but also the pull-up and pull-down rates required for film and video applications. The AES/EBU outputs are low-jitter approved and make any converter sound more accurate. No clicks, no pops, no falling out of sync! Slaves to video blackburst in both NTSC and PAL/SECAM format. If you've got multiple digital audio devices in your MOTU studio that need to stay in sync, Aard Sync II is the wonder box you've been looking for. Call Sweetwater today to find out more.



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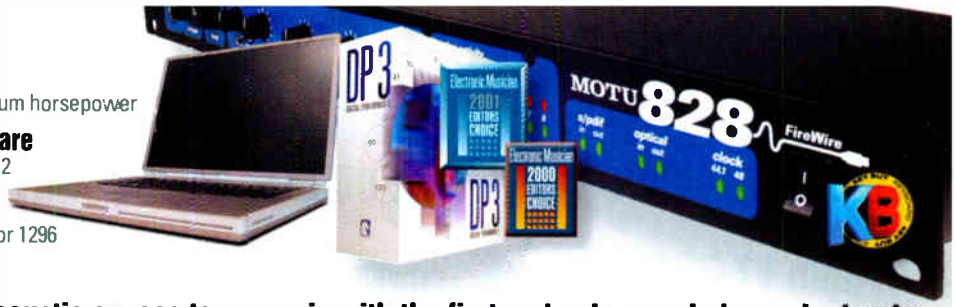
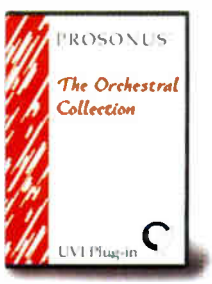


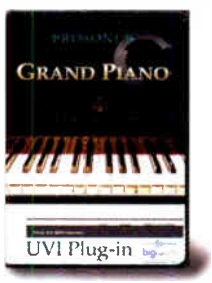
Altiverb™ Add real acoustic spaces to your mix with the first and only sampled reverb plug-in

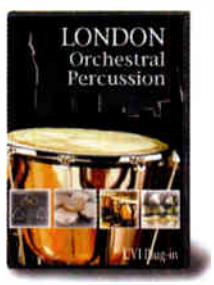
Pictured here is the Concert Gebouw, a world-famous concert hall in Amsterdam with superb acoustics. Altiverb, the first (and only) real-time sampled acoustics plug-in, delivers the sound of this hall to your Digital Performer virtual studio — along with dozens of other sampled acoustic spaces. Altiverb is an astonishing breakthrough in reverb technology because it fully reproduces the acoustic qualities of real spaces, rather than synthesizing an approximation with artificial algorithms. Only a few very expensive ($10K+) hardware processors offer sampled acoustics processing, but Altiverb gives you this unsurpassed level of realism for less than $500, thanks to the amazing "Velocity Engine" Altivec processor in all G4 Power Macs. Provides dozens of real spaces, from concert halls to closets, or sample your own! Now shipping exclusively for Digital Performer. VST version coming soon.

bigfish audio™ UVI Plug-ins™ Universal Virtual Instrument plug-ins for Digital Performer and MAS

The UVI Plug-in will revolutionize your Digital Performer system. It's a playback sampler that opens as a plug-in right inside your Digital Performer project. With nine brand new titles to choose from, you can have a different sound library with hundreds of samples at your fingertips. What makes this plug-in so unique? Instead of trying to cram an entire sound collection into a ridiculously small amount of RAM, these libraries serve as a virtual sound module right inside DP. No more wasted time loading CD-ROMs, waiting, listening, loading again, waiting some more... With UVI plug-ins, the patches are loaded in seconds and are available directly inside Digital Performer. There's nothing quite like this! London Orchestral Percussion, Prosonus Orchestral Collection, Prosonus Grand Piano, Six PlugSound Volumes: 1-Keyboards, 2-Frets, 3-Drums, 4-Hip Hop Toolkit, 5-Synth Collection, 6-Global and more titles on the way.







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Vol. 6 — Interactive Training for Digital Performer 3

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Surround Encoder Plug-ins For DP3

KIND OF LOUD

SmartCode Pro is the first and only surround encoder plug-in for Digital Performer. It allows you to deliver fully encoded surround mixes to your clients. Burn CDs or DVDs that you can preview using any consumer DVD player that supports Dolby Digital™ or DTS™ — a crucial final step in producing professional quality surround mixes. By encoding with Smart Code Pro directly within DP3, you avoid having to invest in expensive dedicated hardware encoders (that cost thousands), which saves you both time and money.

SmartCode Pro is available in two versions to accommodate the two most widely used surround formats: Dolby Digital and DTS. Both versions allow you to preview your 5.1 surround mixes in real time 5.1, then encode and decode the mix to create a 6-channel surround master. Smart Code Pro is a must-have for serious surround production with DP3.

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M Project is the new FireWire hard drive for your MOTU hard disk recording system from Glyph Technologies. M Project adds up to 75 GB of audio storage to your MOTU rig in seconds, backed by Glyph's lengendary service and support. M Project is the only MOTU-approved FireWire drive for the 828 and all MOTU PCI-324-based systems, including the 2408mkII, 1296, 1224 or 24i. M Project easily shares the FireWire bus with the 828, and even allows you to connect multiple 828s to your computer. And M Project is the ideal alternative to SCSI drives because it frees up a PCI slot. So call Sweetwater today and ask about M Project, the ultimate storage solution for MOTU hard disk recording.

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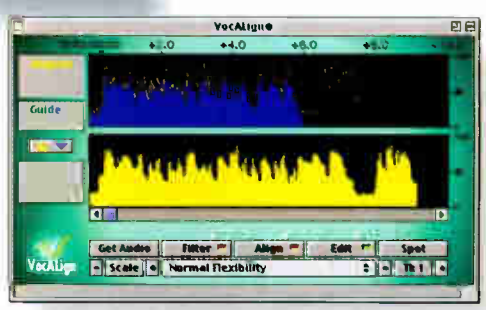


Still spending hours re-recording dialog or vocals? There is another way! Because of its unique ability to align two signals, VocALign can be used creatively to take guide or even live tracks and create performances with perfectly aligned overdubs. VocALign also gives the producer the ability to choose the rhythm and pace for a specific vocal, or even lay down the required tempo pattern for the artist. VocALign gives you perfectly aligned double-tracked vocals, tight backing vocals, easy re-grooving of recorded vocals for remixing and shorter overdub sessions. For post-production, VocALign is designed to take a line of replacement dialog and precisely align it with the dialog recorded with picture. And VocALign Project™ integrates seamlessly with Digital Performer 3. At only $299 list, can you afford to be without it?

Coda Music Technology Finale 2002

Make it Fast, Make it Easy

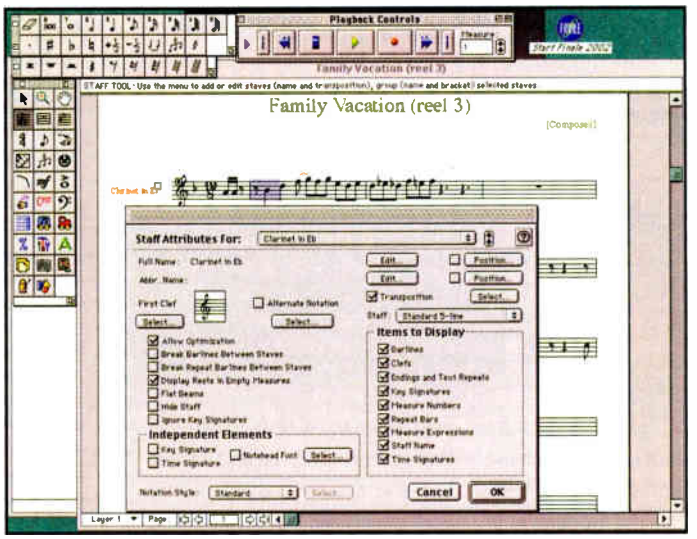
For years, Coda's Finale has been the program of choice for publishers, music copyists and composers. Although Finale's earlier versions were difficult to learn, Coda has recently made the program user-friendly, and Finale 2002 is the easiest-to-use version yet. Coda has also added helpful new features for advanced users—if you know where to find them.

SMARTFIND AND PAINT

Musical works often have repeating phrases. For example, in a fugue, you will likely find the same group of notes repeated in different voices with the same slur, dynamic markings and articulations throughout the piece. To make changes to such a phrase, you'd normally have to go through the piece, find each occurrence of the phrase and make the changes—quite time-consuming in a large work. SmartFind and Paint are Finale 2002's intelligent find-and-replace features that will locate and change a selected passage throughout a score.

To use SmartFind and Paint, select the Mass Mover tool in the Tool Palette and highlight the first example of the phrase you want to duplicate in the score. Under the Mass Mover pull-down menu, select Set SmartFind Source Region (or hit command-F). The phrase should now be surrounded by a bold black box. Pull down the Mass Mover menu again and select Apply SmartFind and Paint. This brings up a dialog box allowing you to specify the slurs, articulations, smart shapes, note expressions and measure expressions you want copied throughout the piece. You can also choose to Delete Target Markings Before Paint.

Now, choose Paint All or Find, which works much like a spell checker. Choosing Paint All searches the entire score and changes every phrase that matches your selected Source region. If you choose Find, then you are taken to each phrase resembling your Source region, so you can selectively choose which phrases are changed: Once you find a phrase to change, click Paint; if you don't want a particular phrase changed, then click Find Next to move on.



Open this Staff Attributes box, using the Contextual Menu feature in Finale 2002, in order to change individual elements in a measure.

SLUR UPDATE

In Finale 2002, slurs automatically avoid crossing notes, stems and beams, even when you perform transpositions. If you plan to publish your score on the Internet using SmartMusic, this allows the person downloading your score to make adjustments (e.g., transpositions) to the piece but maintain clarity in the articulations.

For better shape management, Finale 2002 gives you five handles on a slur—very handy for complex phrases. If you reshape a slur on a phrase that is repeated throughout the piece, then you can update the slurs on the remaining phrases using the SmartFind and Paint function. This trick will quickly and easily give the score visual consistency.

SMART PLAYBACK

Prior to Finale 2002, hearing your glissandi, trills, tremolos and dynamic changes (crescendo/decrescendo) played correctly wasn't possible. Included with Finale 2002 is a new plug-in called Smart Playback—part of a new suite of plug-ins by Tobias Giesen called TGTools—that lets you precisely set how each effect is played back.

Begin by highlighting the region you want to change in your score. Go to the Plug-In menu, select TG Tools and choose Smart Playback. A dialog box appears where you can set the trill interval (diatonic, semitone or whole tone) and speed (number of changes per quarter note); determine how long it takes for the trill to begin (stated as a percentage of the duration of the note); set the number of steps per quarter note for a glissando; and decide on the number of volume changes available per quarter note. Click on Apply to activate the change.

STAFF STYLES MADE EASY

To mix notation elements in a bar—such as adding slashes for rhythm comping or creating a part for a percussionist who doubles on a pitched instrument—you need to change the staff style. A quick way to modify the staff style is via Finale 2002's contextual menus. In this case, choose the Staff tool (the one with the treble clef in an empty measure) in the Palette. Select the parts of the score you want to change. To access the staff style contextual menu, right-click on the selection (in Windows) or Mac users can control-click. A menu of available options will drop down.

Contextual menus—available for most articulations, bar lines, etc.—provide a quick and efficient way to change elements in your score. Just click on the white box or handle on the item to get the menu. ■

Laura Forlin is a freelance music copyist who enjoys searching for the perfect synth patch on her Buchla Electric Music Box.

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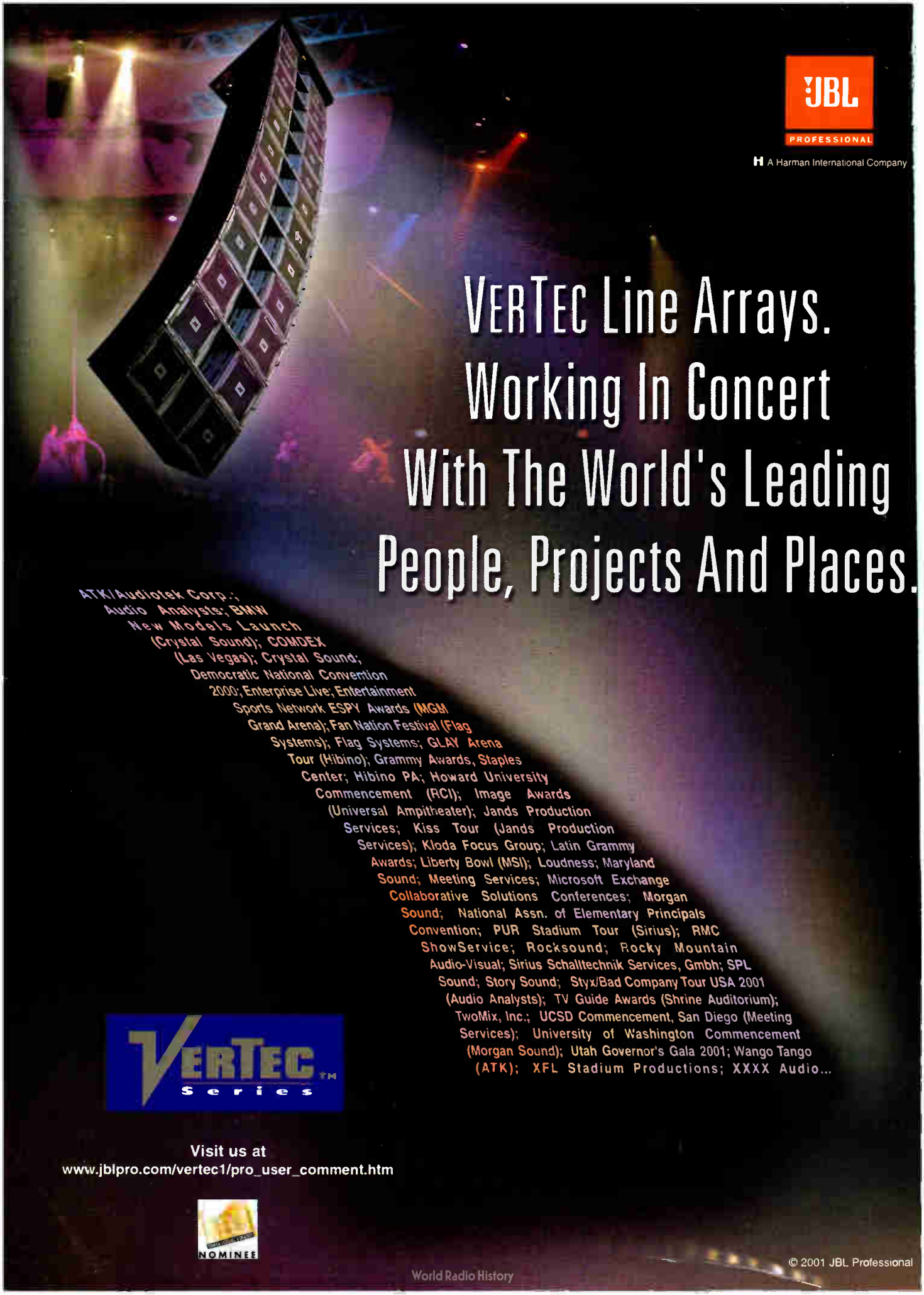

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