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Class of 2003

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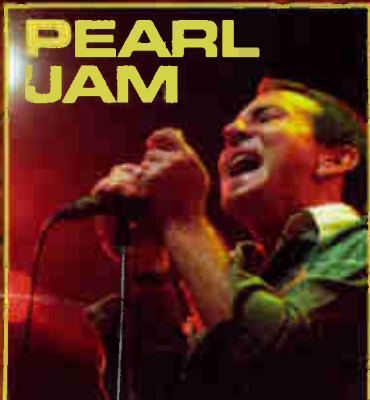
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Brad Gilderman

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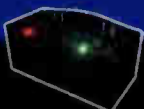


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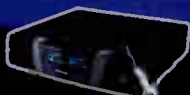
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NUENDO



chuck ainlay

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dream

Arguably the hottest producer/engineer in Nashville, **Chuck Ainlay** recently put the flexibility of the NUENDO system to work on **Mark Knopfler's** latest solo release *The Ragpicker's Dream*.

"My progress from using NUENDO as an editor with EQ to a full multi-track recorder, processor, and sequencer has been astonishing to me!"

Chuck was able to combine tracks transferred from analog with comps of Mark and his guitar, overdubs by other musicians, and even material recorded on the rooftop of Mark's London studio with a laptop using the NUENDO Audiolink 96 series hardware. NUENDO gave Chuck the technical ability and sound quality that would have not been possible with analog while allowing him to capture all the magic of live recording.

"There are so many ways that I have found the NUENDO system superior to all others that I will never be able to go back."

nuendo producers g
nuendo producers group

This group of world-renowned producers including industry notables such as Chuck Ainlay, Elliot Scheiner, Phil Ramone, Frank Filipetti, Alan Parsons, Rory Kaplan and Greg Ladanyi know what it takes to be the best. They also know why NUENDO is the best digital audio production tool available and have partnered with Steinberg to ensure that it will continue to meet the needs of tomorrow.



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MIX

PROFESSIONAL AUDIO AND MUSIC PRODUCTION

June 2003, VOLUME 27, NUMBER 7

features

30 Class of 2003

The Year's Hottest New Studios

Every June, *Mix* devotes special coverage to facility design and acoustics. This year's "Class" showcases some of the most impressive new and reworked rooms to open since last summer.

36 Acoustic Makeovers

It takes more than new gear to breathe life into a tired recording studio. Contributing editor Chris Michie talks with four top studio designers about the art and science of improving an existing facility's acoustics and vibe.

46 "The Matrix Reloaded"

The Oscar-winning sound team is back for this summer's sci-fi blockbuster. As L.A. editor Maureen Drony discovers, the second installment in *The Matrix* trilogy breaks through even more barriers than the first. Note: Some cars were harmed during the making of this film.

52 Multichannel Mic Preamps

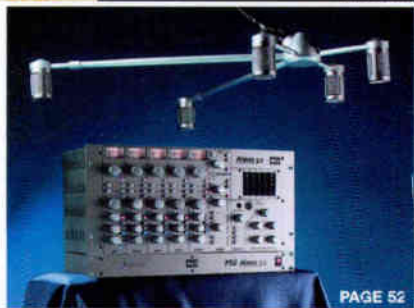
In a world of "consoleless" desktop production, and with the pending boom in 5.1-channel projects, outboard preamps are hotter than ever. Contributing editor Randy Alberts offers this buyer's guide to top-of-the-line multichannel models.

62 Product Hits From NAB

Computer technology took center stage at what was billed "The World's Largest Electronic Media Show." The *Mix* editorial team combed the floor for the best new audio products.

64 2003 TEC Awards Nominees

Check out the list of people, projects and products that will be competing for TEC Awards this October in New York City.



On the Cover: Allaire Studios (Shokan, N.Y.) features a new studio and control room design by architect/co-acoustician John Staryk and acoustician George Augspurger. The studio offers SSL and Neve consoles and custom Augspurger main monitors. For more, see page 30. **Photo:** Dave King. **Inset Photo:** Michael Weintrob.

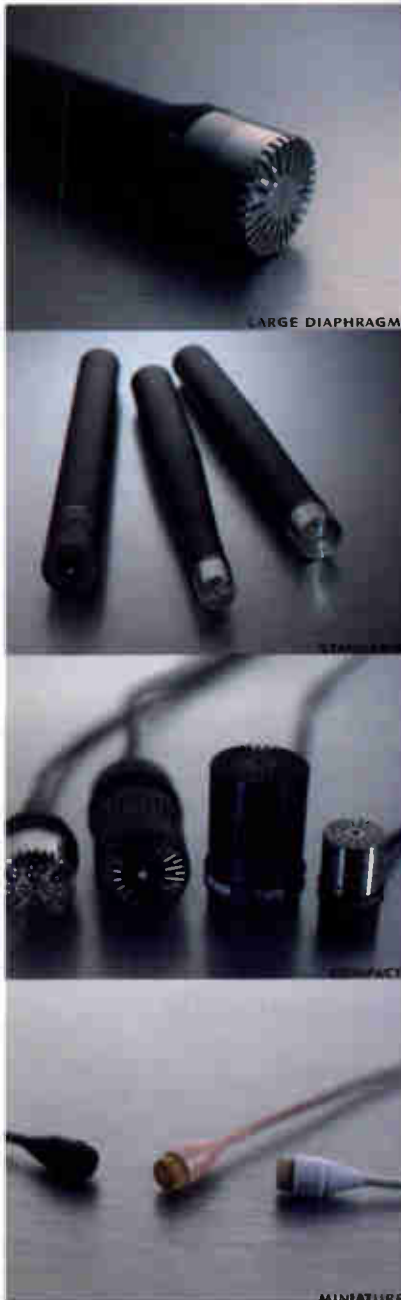


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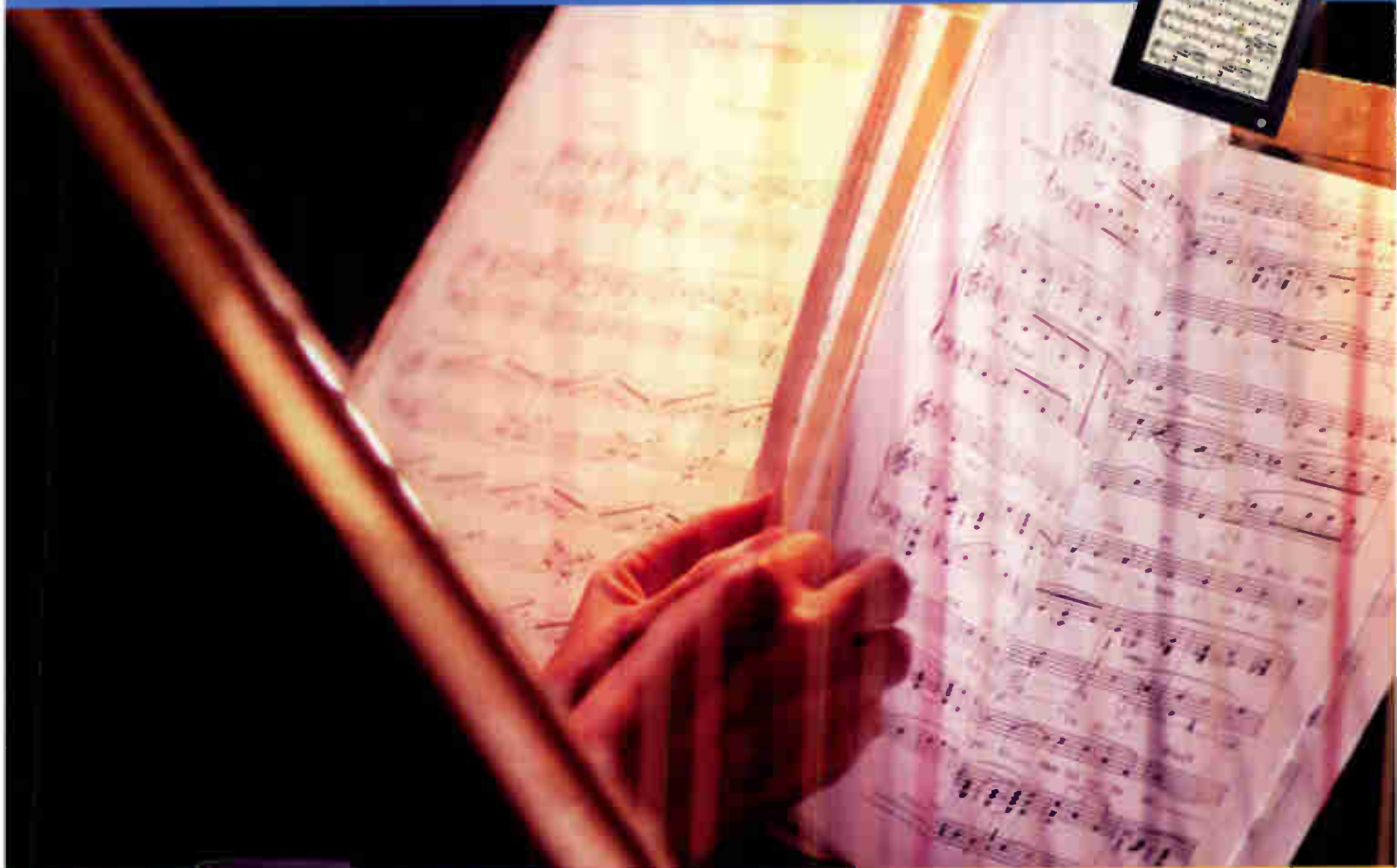
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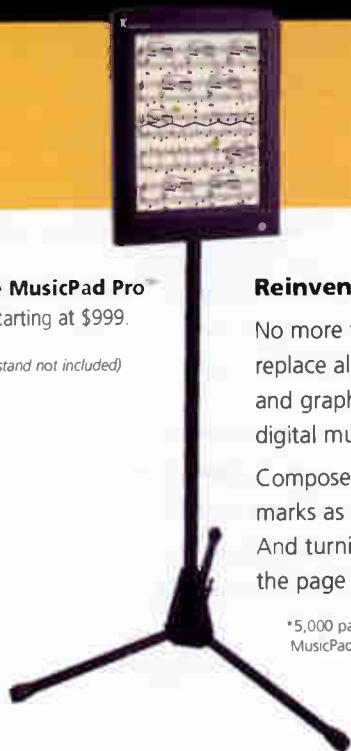


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Reinvention!

Since the invention of the wheel, Gutenberg's movable type, the Wright brothers' "flying machine" and helium-filled Mylar balloons with special-occasion greetings, one truth remains self-evident: Change happens.

In an industry dominated by technology, change is inevitable. We are constantly besieged by new equipment, new approaches and new processes. Certainly a move toward software-driven, DAW-based production is evident in recording and post, just as broadcasters gear up for HD signals and 5.1 audio over all-digital pathways (terrestrial or satellite). In the more conservative realm of sound reinforcement, digital consoles and automation are commonplace, and DSP control of loudspeakers is the rule rather than the exception. Even something as fundamental as studio design/acoustics moves with the times. Check out Chris Michie's article on studio makeovers or our ever-popular Class of 2003 feature for some examples.

On the consumer front, DVDs have taken off as the fastest-moving format launch in history, and the audio production for a DVD-Video release is formidable. DVD film releases typically include multiple stereo/surround mixes, director commentaries, behind-the-scenes footage, cast/crew interviews, outtakes, screensavers, video games, foreign language dubs and more. (*Galaxy Quest* even went so far as to include a full mix in an alien dialect!) Add in the growing genre of DVD concert/compilation videos—with all of their bonus materials—and there's a lot of audio business out there for somebody.

Should audio studios suddenly install soundstages and edit bays? No, but simple ideas—such as partnering with local video houses to provide full DVD production services—aren't so far-fetched. You may not tap into a goldmine of feature-film work, but certainly there are local businesses that need promotional or industrial work, or artists you've recorded who might want a DVD single of their hot new album track. Success in any business—audio or otherwise—is a matter of constant reinvention to keep up with the flow of change.

Last month, *Mix* published its first theme issue, asking the question "What Can Save the Music Industry?" It was like nothing we'd ever done, yet the topic is vital to all of our lives. Concerning the effect of illegal downloads, many interviewees in that issue questioned the shortage of outlets for selling legal MP3s over the Net. One week after our May issue appeared, Apple launched its online iTunes Music Store, with 200,000 songs available for \$0.99 downloads. So far, it's a resounding success, with a million song files sold the first week: a most impressive debut.

People are willing to buy music that they want, but the traditional retail model is antiquated and flawed. If I visit a record store to buy Jack Bruce's brilliant *Songs for a Tailor* CD, I won't find it. The file exists somewhere, so where's the system to download and burn a CD at Tower Records, complete with high-res graphics printed while I wait?

Creative thinking is an essential part of the reinvention process. Log onto www.mixonline.com and check out our forum that continues the dialog on the state of the music industry. Let your voice be heard. Be a part of the solution.

George Petersen
Editorial Director

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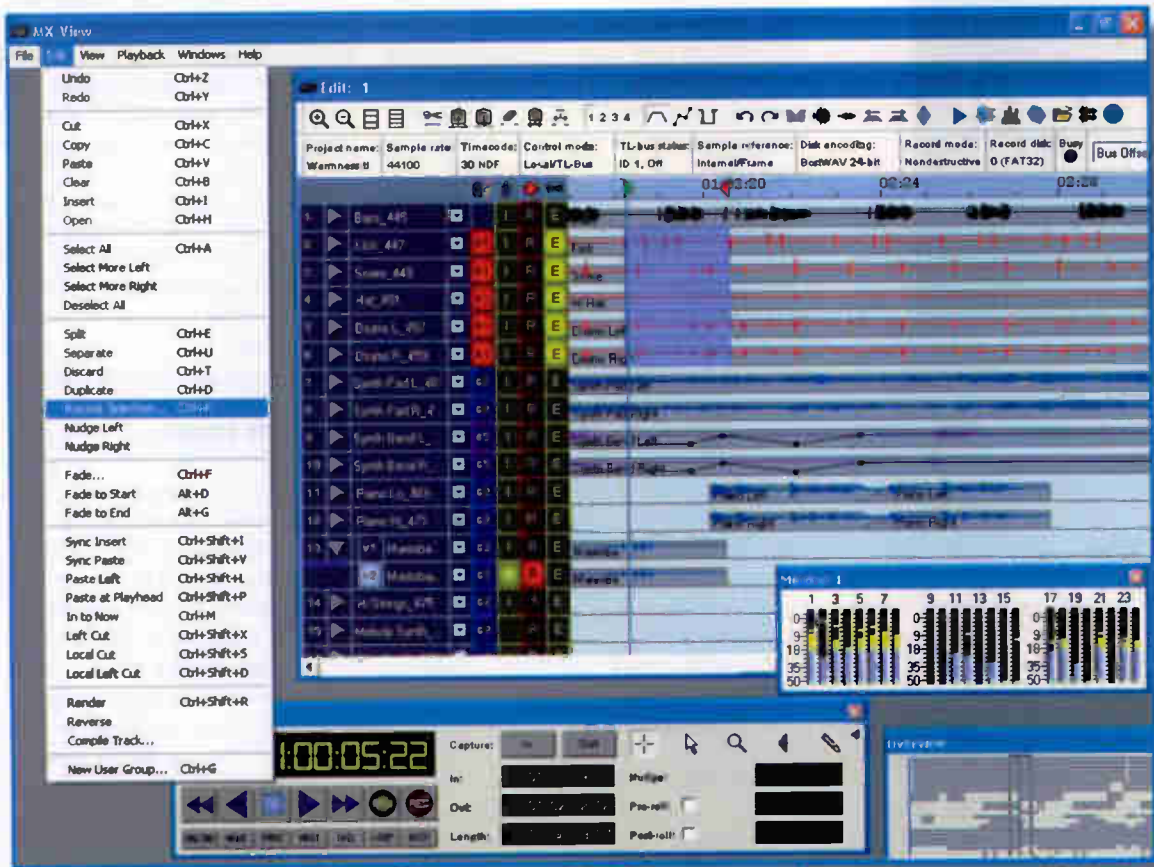
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Letters to Mix



Our May issue asked, "What Can Save the Music Industry?" Readers had plenty of opinions on the subject. Read unedited versions of these and other letters, or discuss them in Mix Forums, at www.mixonline.com.

SAVE OUR SOUL

Wonderful issue, and I raise my chalice to you for addressing the problem in print. However, I think that a great part of the problem has been overlooked. It has been said that music reflects the time in which it was made. This has never been more true than it is today. Music, in general, is easy, prepackaged, convenient, contrived and perfection-oriented, with an enormous emphasis on the way it looks. (Musician or movie star—which is it?) This, in my opinion, is gleaming proof that Orwell is giggling as we speak. You couldn't process cheese more than music these days.

Whether it's downloaded, or bought as a new CD, or bought as a used CD, or it's 24-bit, or the band is hired to play in my living room, or it's on vinyl, or Donald Fagen plays the spoons on it, or Bob Ludwig mastered it in a bamboo hut on the moon, or it's on the radio, it's still just crap music. Everything is too easy for everyone. The best art is seemingly always created under conditions of tension.

I sometimes wonder what it would all be like if the only thing to gain in this industry would be personal satisfaction. At the end of the day, I don't care if I steal it from the Internet, or I buy a CD, tape or record. Just show me some soul. That's all I ask.

Darryl Robbins
Dayton, Ohio

A CHANGE IS GONNA COME

Stephen St.Croix's article ["Beat to Hell"] in the May issue is right on the money. The industry has to get with it or get left behind. Getting my issue of *Mix* the day after Apple announced iTunes

4 and the online music store associated with it [which St.Croix covers in this month's "Fast Lane," p. 20—Eds.] gave me an interesting feeling of déjà vu, because he sure hits the price of things on the nose. With all five of the big labels involved, maybe musicians have a future. Let's hope the online delivery system that Apple has come up with will give us the short path.

Stephen Campbell
Strange Parts Music

I THANK YOU

I just read your May issue and want to congratulate you for addressing a difficult time in our industry and exploring various reasons for, as well as possible answers to, our current situation. Blair Jackson's "A Fine Mess" drew us a road map to show how we got to this dark place and offered a light of hope. Paul D. Lehrman's "The Kids Are All Right" gave an insight into our consumers, those the major labels have taken for granted for far too long. Perhaps we should stop looking for others to blame and instead take a look at ourselves.

Shivaun M. O'Brien
Studio manager
Sound City Studios

TEARS OF A CLOWN

I'm sorry, but the cover story by Blair Jackson ["A Fine Mess"] and the article by Stephen St.Croix ["Beat to Hell"] are so sad. Boo hoo, I got tears in my eyes. Wait...those are tears from laughing too hard. Not to say I told you so, but who didn't see this crap coming? It's not too bad for the recording industry, it's too bad for the record companies. Too bad that they're painting such an evil picture of kids who download music.

We, as engineers, must embrace technology and not try to limit it. We should be promoting the Internet. We should be promoting art and artists, whether they have the cash or not, and rejecting the music business. "We are the music makers, and we are the dreamers of dreams." Oh Willy, where are you now after you gave away your entire chocolate factory to some kid who broke the rules and drank the bubble-up soda?

In the fourth paragraph of "A Fine Mess," a record industry executive reveals that the music industry didn't understand what the unexpected consequences of moving into the digital domain would be. They thought they were doing a great thing by improving the sound. Blah, blah, blah. They did no such thing. They suck, and they sound like Al Gore declaring that he invented

the Internet. For the music industry executive who thinks that they are a great savior of the audible arts, and that they basically created CDs, and promoted the digital domain, I have news for them: It took 20 years for them to go to hell, now take your small penis and leave. They have lasted longer than most businesses that suffer the same fate.

I disagree that if the record industry fails, there will be no music. Concerts will continue, recordings will continue and sales will continue. Music will live. Maybe not as a huge industry, but it will continue.

Jerry Eadeh
Director, Customized Multimedia

CHAIN OF FOOLS

Blair Jackson writes, "Of course, there's no telling how many people would buy much of the music they currently get for free off the Web, but there's no doubt that billions of dollars are being drained out of the music industry every year by [online file sharing]."

As the saying goes, "There are lies, damn lies, and then there are statistics." Statistics can be used to help understand what goes on in the world, but, as any marketing exec or PR company knows, they can also be manipulated.

Dan Bricklin, the inventor of VisiCalc, who knows his way around statistics, did a wonderful analysis on the record industry numbers. Bricklin finds that if the RIAA is right about peer-to-peer networks and CD burners damaging CD sales, then, when combined with other negative factors such as a slow economy and competing entertainment choices, the numbers should look a lot worse.

Instead, in his essay "The Recording Industry Is Trying to Kill the Goose That Lays the Golden Egg" (www.bricklin.com/recordsales.htm), Bricklin argues that file trading is one of the few factors that may have prevented the RIAA from having to report far worse sales damage in recent years.

High CD prices and junk music don't help, but declaring war on your customers instead of finding creative ways to win them over has been the greatest error the labels and the RIAA could have ever committed.

Jon Iverson
Via e-mail



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World Radio History

APPLE ANNOUNCES iTUNES MUSIC SERVICE

On April 28, 2003, Apple announced its new music digital download service, iTunes MusicStore that uses the company's iTunes music jukebox software.

Garnering licensing deals with

the five major labels, iTunes MusicStore currently offers 200,000 high-fidelity tracks, with more added daily. Features include: unlimited CD burns (though a user must modify the playlist after every 10 burns); compatibility with an unlimited number of iPod portable MP3 players; the ability to use the downloaded music with other "i" software; and the provision to play on up to three Macs at once via OS X's Rendezvous software. This last feature al-

lows the user to stream—not download—another user's playlist (as long as he/she is using iTunes jukebox) to his/her computer.

Users can preview a 30-second snippet of a desired track (AAC-encoded at 128 kbps) for free and then purchase that track for \$0.99 (or \$9.99 for an entire album). Credit card charges are made via Apple's one-click shopping, where a user's card is charged for each purchase.

Other features of the new service include original CD artwork; the ability to browse by genre, artist or album; exclusive tracks from 20 (and growing) artists; streaming video; and links to artists' Websites.

Available immediately, the currently Mac-only (Windows compatibility is expected at the end of this year) service is available as a free download at www.apple.com/music; there is a free software upgrade for iPod users who need iTunes 4.



TONY BROWN RECOVERING

The AP reported that record producer/music executive Tony Brown is alert, communicating and is expected to have a complete recovery from head injuries incurred from a fall. Brown fell from a staircase on April 11 in Los Angeles.

He was transferred last week from UCLA Medical Center to Centennial Medical Center in Nashville.

Neurosurgeon Dr. Paul McCombs told the AP, "Tony is doing extremely well at present. His progress to date indicates that he will make a full, functional recovery."



Mix reported in April 2002 that Brown (former president of MCA Records/Nashville) and Tim DuBois (former president of Arista Records/Nashville) had started a new label, Universal South Records, also based in Nashville.

SONY PICTURES BUYS SONIC FOUNDRY SOFTWARE

Sony Pictures Digital has reached an agreement to purchase all of Sonic Foundry's desktop software products and related assets for \$18 million cash and assumption of certain trade payables, accrued liabilities and capital leases. The acquisition follows the recent retail release of Sony Pictures Digital's Screenblast Movie Studio and

Screenblast Music Studio video and music-mixing applications created in conjunction with Sonic Foundry.

Included in the sale are Sonic Foundry's ACID, Sound Forge and Vegas Series, as well as other related assets.

According to Rimas Buinevicius, chairman and CEO of Sonic

Foundry, "Consummation of this agreement will give us the cash we need to pay our debt and allow us to focus our attention on writing the next successful chapter of Sonic Foundry's story—rich media—and building upon the early success we've already achieved with our Web presentation solution, Media Site Live."

REALNETWORKS BUYS RHAPSODY SERVICE

Provided that a California Fairness Hearing approves the acquisition, RealNetworks has bought Listen.com for a proposed \$36 million. The purchase will provide RealNetworks with Listen.com's Rhapsody online music subscription service—which has partnered with a number of consumer electronics companies to bring the service into consumer's homes—and

augment its foray into online music subscription services: RealOne and MusicNet, which launched in 2001 with backing by AOL Time Warner, Bertelsmann and EMI.

The buyout will provide RealNetworks with Listen.com's music content, distribution and technology partners, such as Verizon, Sprint, Gateway, Lycos and many others. All major music labels have

given their consent to the deal.

Listen.com's executive and management team will join RealNetworks' staff: Sean Ryan continues as VP of music services and joins the RealOne division; and Rob Reid, founder of Listen.com, holds the VP of strategic development position. Listen.com will remain in San Francisco and continue to operate music services.

AUDIO SCHOOL HAS THX APPROVAL

Orlando, Fla.-based Audio Recording Technology Institute recently completed construction of a THX pm3 Mix Theater that has been certified by Lucas Film Corporation as the nation's first audio school to conduct classes in a THX-certified facility. Musician/music teacher/recording

engineer and owner of ARTI (which also has a campus in Long Island, N.Y.) James Bernard said, "With the expert design and construction capabilities of both Steve Pietrofesa [school director] and Greg Whwright [construction manager], along with the entire ARTI staff, we are proud to pioneer a first in the industry. The response to the THX pm3 program has been outstanding, and it is most certain that more schools and universities will be seeking certification of their own facilities."



BLUE ROOM IS SPOT-ON

Producer/DJ Chris Gargani and composer/producer Brian Aumueller (aka Craven Moorhaus) bring their spot music careers under one roof: Blue Room Music in the Flatiron District of New York City. Richard Oliver designed their 2,500-square-foot, state-of-the-art studio, comprising two music production rooms.

The main room is outfitted with a Pro Tools|HD3 system with Control|24 surface. An adjoining live room can host several vocalists, a drum set or a music quar-

ter. A second music room is equipped with a Pro Tools MIX 24 system and Logic Audio sequencer. A smaller live room is attached for vocalists and voice-over recording.

Future plans for the duo include launching a satellite production and editing house dedicated to music-driven projects. Visit www.blueroompro.com.



Brian Aumueller (left) and Chris Gargani

WELCOME TO THE JUNGLE

STUDIO 880 OPENS COMPLEX, NEW ROOM

Oakland, Calif.-based Studio 880 recently unveiled its 880 Entertainment Complex, which features 20 executive suites (some built with reinforced sound walls to be used as pre-production spaces), a spacious conference room and a full kitchen—all mirroring the studio's "jungle" theme.

Meanwhile, Studio C is now open, complete with a private lounge, loft, two iso



rooms and a spacious live room designed by studio owner John Lucasey.

Studio A was acoustically enhanced with new columns and adjustable drapes in the live room, adding more flexibility to either liven or deaden the sound of the room.

LO-PRO INFUSED WITH EN-ER-GEE

Lo-Pro locked out NRG's Studio B to record their debut album with producer Don Gilmore. The Southern California band is the first signed by Staind's Aaron Lewis to his imprint with Geffen president Jordan Schur. Lo-Pro was found-

ed by former Ultraspank members Pete Murray (vocals) and Neil Godfrey (guitar). The two are joined by former Godsmack drummer Tommy Stewart and Pete Ricci (guitar). Lo-Pro's album is due out this summer.

Back row, from left: Fox Phelps (assistant engineer), Don Gilmore (producer) and John Ewing Jr. (engineer). Front row, from left: Neil Godfrey (guitar) and Pete Ricci (vocals)



NOTES FROM THE NET

D&M HOLDINGS BUYS REPLAYTV AND RIO BRANDS

At SONICblue's bidding process in U.S. Bankruptcy Court in San Jose, Calif., parent company of Denon and Marantz Japan, D&M Holdings, purchased assets from



SONICblue's digital video recorder and MP3 business units for \$36.2 million.

D&M is purchasing inventory, receivables, intellectual property and capital equipment; the company intends to design, manufacture and distribute its own line of ReplayTV and Rio products. D&M will merge SONICblue's assets into a new digital-development group, tentatively called Digital Networks North America.

LOOK KIDS: IT'S COOL TO LEGALLY DOWNLOAD

In an effort to curb illegal downloads and promote its new download music service, Gateway has launched a Website, www.ripburnrespect.com, that is devoted to educating music consumers about how to legally download music to their PCs—most notably, to a Gateway computer. Additionally, TV spots promoting Listen.com's Rhapsody service are set to air.

ICE-T HOOKS UP WITH KAZAA

For \$4.99, Ice-T fans can buy his new release, *Repossession*, on the peer-to-peer file-sharing site KaZaA. The album will be available through a secure platform from Altnet, a company that has partnered with KaZaA. Ice-T said that he hopes this move will "enable artists like myself to generate more revenue through selling products ourselves."



MIX L.A. OPEN GARNERS SPONSORSHIPS

The Eighth Annual Mix L.A. Open charity golf tournament, sponsored by the Mix Foundation for Excellence in Audio, is being strongly supported by the audio industry. Confirmed sponsors include Absolute Music, Audio-Technica, C.E. Pickup Company, Design FX, KRK Systems, Moonlight Mastering, QSC Audio Products, Record Plant, Royaltone Studios, Shure Incorporated, Steinberg North America, TC Electronic, Warner Brothers Studios and Yamaha Corporation of America. A limited number of playing spots are still available. Call Karen Dunn at 925/939-6149 or visit www.mixfoundation.org.

INDUSTRY NEWS

David Parse fills the newly created position of CEO at Ashly Audio (Webster, NY)...Leading business development, sales and support for A Designs' (West Hills, CA) structured wiring and architectural products division is James Fowler...With over 38 years of experience in SR and concert touring, Ronnie Smith has been hired as Eighth Day Sound Systems' (Highland Heights, OH) managing director of business development...Chris Walsh is the new DPA Microphones (Lyons, CO) product manager...Northern Lights Post (New York City) added veteran editor Robert Pennington (*A Tale of Two Pizzas*) to its talent roster...Pragmatic Communications Systems (Santa Clara, CA) has added Alex Vaschenko as electronic technician...Touring DJ Daniel L. Newman joined Spoiled by Technology (Naperville, IL) as a sales/technology specialist for outside sales...Exiting Sam Ash Professional, Tim Finnegan joins Dale Pro Audio's (New York City) sales staff...Celestion (Ipswich, UK) promoted and transferred Andrew Farrow to take on his new role of U.S. OEM/distribution manager...Doug Miller has been promoted from sales director to sales and marketing director for Henninger Media Services (Arlington, VA)...Sennheiser (Old Lyme, CT) has appointed two former Danacom sales managers—John Reitano and Barbara Lanning—to handle its product sales in the Western and Eastern regions, respectively...Tony O'Keefe will be overseeing CAD's (Mentor, OH) outside rep firms in the U.S. and Canada as the company's national sales manager...Lake Technology Corporation (the U.S. subsidiary of Lake Technology Ltd. of Australia) appointed Michael A. Colon to U.S. Eastern regional sales manager...L-Acoustics (Oxnard, CA) beefs up its sales and marketing crew with these new hires: Paul Freudenberg, sales and marketing director, and Michael MacDonald, sales and marketing consultant.



David Parse



Tim Finnegan

PRODUCING MACHINES

Our Lady Peace recently stepped into The Boat (owned by the Dust Brothers) in Los Angeles penning song ideas for an upcoming album. Bob Rock handled production duties with engineer Brian Garcia.



Taking a break from writer's block. From left: engineer Brian Garcia, assistant engineer Steve Mazur, Jeremy Taggart (drums), producer Bob Rock, vocalist Raine Maida, Duncan Coutts (bass) and friend Jason Sutter.

CORRECTION

The photographer credited for L.A. Grapevine in April 2003 should have been Mieke Kramer, not Mike. Mix regrets the error.

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Shall Inherit the Earth



ILLUSTRATION: DAVE EMBER

Well, well, well. Never in my career have I pleaded for a sweeping, fundamental change in the way something works and had it actually happen this fast. Or anywhere *near* this fast. Let me give just two examples.

When MiniDiscs first came out, they sounded worse than horrible. Twenty-four hours after the first players hit the U.S. shores, I complained bitterly. I warned the world to stay away from this technology like the plague. It took a little over a year from the time that column hit for the new ATRAC encoding to come out. And I had to hand it to them: It was not just an improvement, it was *good*.

Then there was the series of CD-R formulations. Long-term readers will remember how that turned out. But nobody knows *this*—as I have never told anyone before. I was never gunning for TDK. I had, in fact, found an obscure off-brand CD-R that happily self-erased under common real-world conditions, and I wanted to put the warning out in general terms. But during fact-checking (I do it twice when potentially li-

belous statements are made), TDK came running out of the woodwork, screaming, “No they don’t! Our CD-Rs don’t erase like that!” This was a complete surprise to me, as I had not even tried a TDK; none of the three stores I had gone to carried them.

But after that *most excellent* Shakespearean example of protesting too much, I mail-ordered a box immediately, and damn if they weren’t the worst and most unreliable CD-Rs that I had ever tried!

Fun was had by all, for months. Mud was slung. TDK paid for ads in my own magazine attacking me personally and ran them right across from my column. I smiled in my sleep for a year.

It took years for that horrible dye formulation to go away, and it is not truly gone today.

So, my success rate has run from partial satisfaction after years to total correction of a problem in about one year. This, I believe, is the proper use of an egomaniac with a magazine: to use the ol’ power-of-the-press trick to expose bull and fix problems. Everybody benefits, everybody wins. A manufacturer may take a hit from

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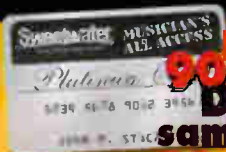
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Ah, Sweet Mysteries of Life

I've Finally Read You



ILLUSTRATION: LIZABETH HEAVERN

It was around the time when I built my first home studio that I rediscovered the mystery novel. In my living room were a half-dozen MIDI synths, a Macintosh computer (upgraded to 2 Megs of RAM!), some buggy sequencing software and a Sony PCM-F1 digital audio converter. I felt as if I now had everything I always wanted. Now, the world could just leave me alone and I could be *creative*. And I would never, ever have to leave the house.

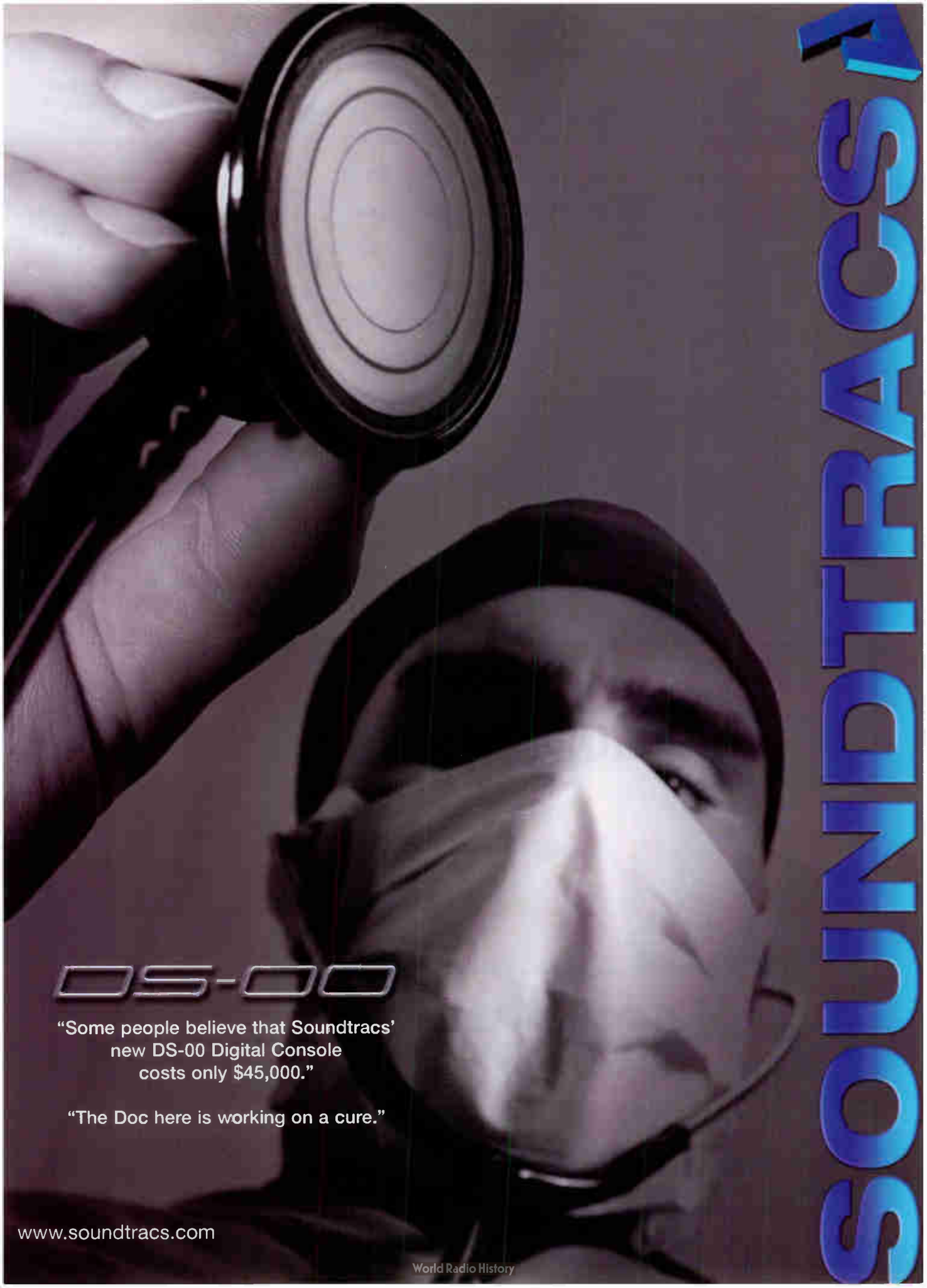
Well, my girlfriend at the time would have none of this. She wanted to have picnics in the woods, sit by the ocean, hike through the mountains and all that silly outdoor stuff. I resisted as much as I could, but when she held out the possibility of food and drink, and hinted that there might be some opportunities for romantic interludes, my resistance started to flag. But what was I supposed to do with all that time she wanted to spend just staring at the trees or the water or wherever we found ourselves? "Bring a book," she said. "Like a mystery novel. Something to get your mind off of equipment for a little while."

And so I did. I remembered devouring *Sherlock Holmes* as a kid, and I found that as a purported adult, I got the same kick out of reading the best of the mod-

ern writers, like Robert Parker and Tony Hillerman. Then I discovered a subgenre, which could be called the "musical mystery." There are a lot more of these out there than you might imagine.

The most fun from reading a mystery, as I see it, is not necessarily staying ahead of—or even keeping up with—the plot. It's finding recognizable people and settings in the book and seeing what the author does with them. As fiction writers know, there's actually no such thing as fiction. All of that stuff you think they're making up, they're taking from real life, just changing the names and circumstances to protect both the innocent and the guilty. But if you're smart, you can tell whom they're *really* writing about.

Which is why I'm going to open this little survey of musical mysteries with one of the funniest—to my mind—books I've ever read: *We Interrupt This Broadcast*, by Seattle-based writer K.K. Beck, who undoubtedly was following me around when I first started my working life, because everyone in her book seems to be based on someone I knew way back then. In a run-down, stagnant, family-owned AM classical-music radio station, as the evening announcer cues up Ravel's *Bolero* to assist him in seducing a visiting female fan,



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World Radio History

he discovers the sales manager's dead body stuffed into a convertible couch. Things go downhill from there.

We find out that the victim was running an escort service out of his office, which is apparently how he bought a BMW, because he certainly wasn't selling any radio spots. The sexy overnight announcer, "Teresa, Queen of the Night"—who tapes her shows ahead of time and hence has never been seen by the rest of the staff—finally makes an appearance and she's not *at all* what they expected. The brother and sister who inherited the station loathe each other. When they announce that they are finally getting rid of the shelves of ancient LPs ("as well as any 78s, wax cylinders or piano rolls you may have squirreled away over the years," reads the memo) and replacing them with CDs, the afternoon man, in protest, locks himself in the control room and has a psychotic breakdown, live on the air. Before it's over, we also get blackmail, secret mail-order brides, heavily armed white supremacists, another murder and an accidental hero on a skateboard.

Though it was almost 25 years ago, the brief time I spent in classical-music radio

The cast includes a standoffish conductor, a jovial Russian cellist, several spurned lovers of various persuasions, an aging hippie orchestra groupie and her seductive daughter, social-climbing music students and a host of others.

came roaring back to life as I read this book. The story is well done, but it's the characters that made me laugh nonstop.

Another thoroughly enjoyable, comparatively gentle tale (there's almost no violence, save the victim collapsing at his music stand) that propelled me into the past is *The Tanglewood Murder* by Lucille Kallen. Published in 1980, the second in

Kallen's *C.B. Greenfield* Series, the book starts off as Greenfield, a stuffy (but, of course, brilliant), Nero Wolfe-ish, small-town newspaper publisher and his intrepid reporter Maggie Rome, who narrates, are driving to the summer home of the Boston Symphony for a few days' R&R. But they find that strange, threatening things have been happening to various members of the orchestra, and then in front of their eyes, a violinist drops dead mid-rehearsal. Was it a heart attack? Was he poisoned? But how?

The cast includes a standoffish conductor, a jovial Russian cellist, several spurned lovers of various persuasions, an aging hippie orchestra groupie and her seductive daughter, social- (that is, sexual-) climbing music students and a host of others I knew all too well in my conservatory days.

Kallen, who was one of the lead writers on the original Sid Caesar television show (Mel Brooks was another) and was reportedly the inspiration for the Sally Rogers character on the old *Dick Van Dyke Show*, gets the atmosphere of a summer music festival just right: petty bicker-

—CONTINUED ON PAGE 139



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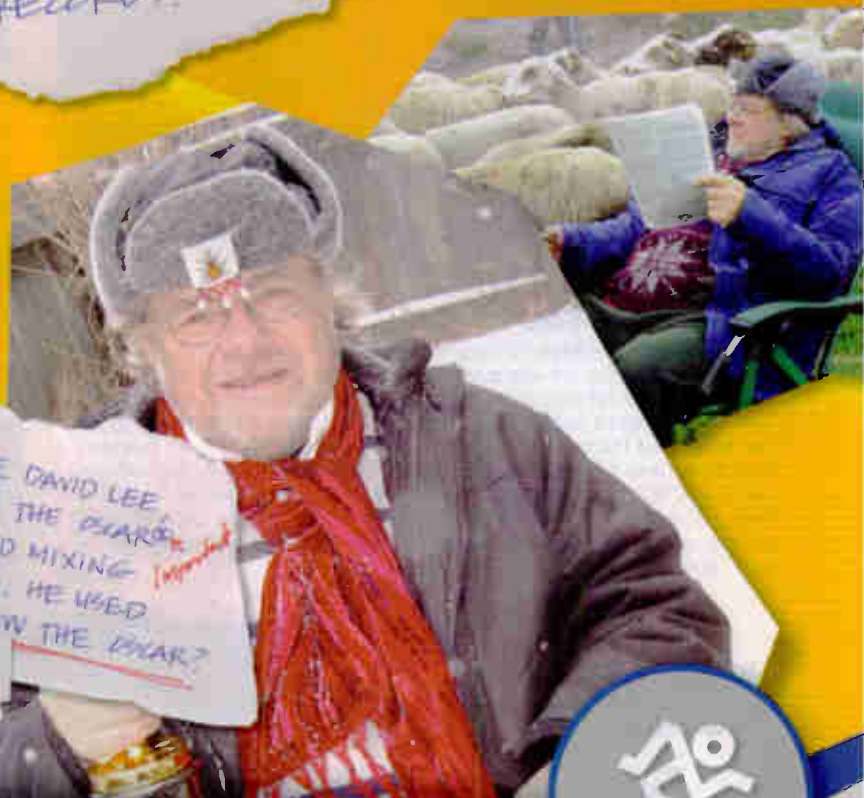
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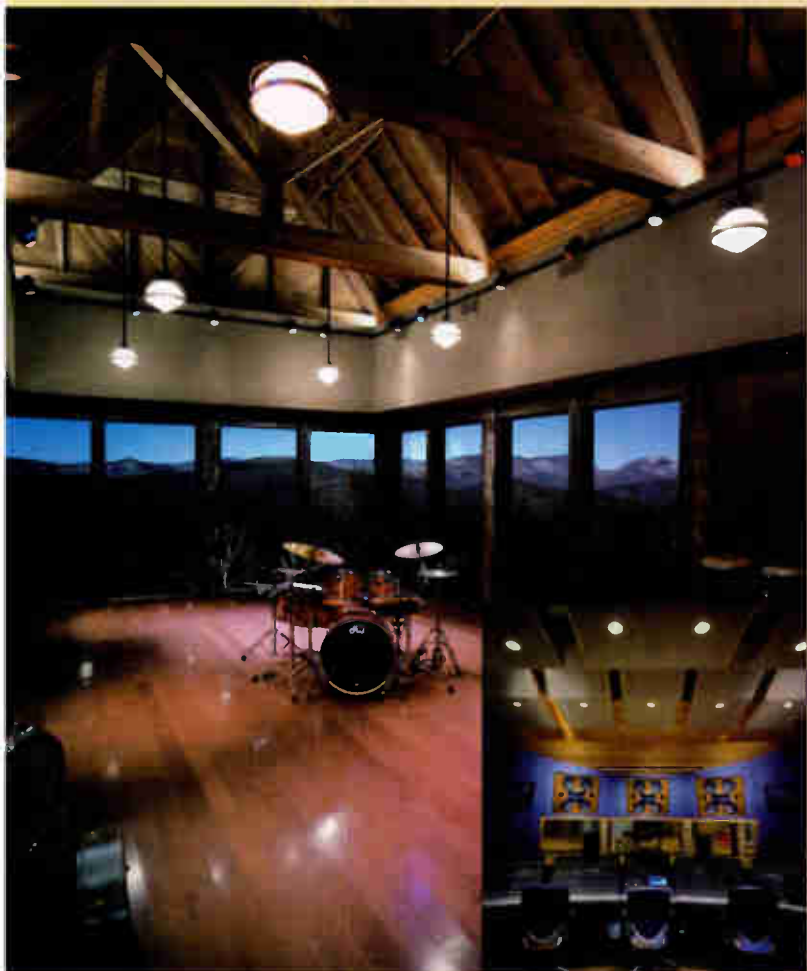
On the Cover: Allaire Studios

The studio on this year's cover was designed by architect/co-acoustician John Storyk and acoustician George Augspurger (the first time the duo has worked together) and opened in September 2002. Set on a mountaintop estate in Shokan, N.Y., Allaire takes advantage of its residential feel to attract high-end talent such as Norah Jones and David Bowie.

The most impressive design feature of this facility is its approximately 2,000-square-foot live recording room with 45-foot vaulted ceilings. "The original turn-of-the-century interior redwood beams and siding, as well as two large stone fireplaces, have been left intact," explains Storyk. "We wanted to create a large environment that maintained full-frequency response accuracy while allowing a significant amount of natural daylight into the room. Full-height surround glass in the corners of the control room and wide site-line viewing to the large tracking room accomplish this. In addition, a new 650-square-foot control room with a SSL 9080 J console has been constructed adjacent to the original building. 'The Neve Room,' a second complete studio, is equipped with a Neve 8068."

"The biggest acoustical challenge in the large control room," Augspurger recalls, "was to provide an accurate 5.1 mixing environment, yet at the same time, achieve even sound distribution from front to back when using just the main speakers. Custom monitor speakers were designed after [studio manager] Mark McKenna had auditioned current commercial designs. Each cabinet has a TAD high-frequency driver and multiple JBL 12-inch woofers: two woofers for each surround speaker and four woofers for each main speaker."

Co-owned by photographer/musician Randall Wallace and Jackie Wallace, the studio also offers Yamaha NS-10M, KRK Expose 7 and ATC SCM-150 near-field speakers, Digidesign Pro Tools|HD and MIXPlus|24 systems, a heated pool, on-site chef and complete privacy.



PHOTOS: DAVE KING

Dave Matthews Band Studio

The Dave Matthews Band opened its own studio in January 2003, in the Virginia countryside, to provide space for rehearsals, writing and recording. The band, with keyboard player Butch Taylor and house engineer Jeff Thomas, contracted architect's studio bau:ton, led by Peter Grueneisen, for the design and TEC:ton Engineering, headed by Peter Maurer, for the technical design and systems integration. Ron Lagerlof of Visioneering collaborated with TEC:ton on the project. A large live room and two iso booths flank the control room, which boasts an API Legacy console, Genelec main monitor system and Pro Tools|HD2. Four skylights, positioned to reduce glare, puncture the pitched roof.



PHOTO: RON LAGERLOF

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PHOTO: JEFFREY COOPER

Technicolor Creative Services

The digitally equipped, THX-certified theatrical mix stage at Technicolor Creative Services (Glendale, Calif.) opened in April 2002. Designed by Vincent van Haaff, the room boasts a Euphonix System 5, JBL three-way theater system, five Pro Tools systems and a Lexicon 960; all Pro Tools systems and disk-based systems link to a Studio Network Solutions Fibre Channel A/V SAN Pro (now 120 seats). The 52x30-foot room is fully equipped to run 35mm, standard video or high-definition projection.

Trillium Lane

Abundant natural light floods Trillium Lane's Great Room (shown), a live recording and jam area attached to the control room. Designed by Francis Manzella and opened in March 2002, this Bainbridge Island, Wash., studio features a 5.1 control room with Pro Tools|HD and two dedicated iso booths. There is a full selection of MIDI instruments, popular plug-ins and microphones; monitoring is achieved through a Martinsound MultiMax EX surround controller that feeds a 5.1 system with Genelec 1031As and 192 subs. Smaller writing and programming rooms round out this facility's offerings.



PHOTO: GEORGE TOOS



PHOTO: DAVID ROAMER

Groove Addicts

Recording and post-production facility Groove Addicts (Los Angeles), comprising two studios and two sound-design rooms, was designed by Bret Thoeny and acoustician George Augspurger. Opened on October 5, 2002, the entire facility features independent floating floors. The control room, built specifically for 5.1 monitoring, boasts a Yamaha DM2000 and Pro Tools|HD3; monitoring is via 5.1 JBL LSR 28p, two JBL LSR-12p subs, Yamaha NS-10s and Auratones. The studio to the right of the control room allows for unobstructed listening in stereo or surround and clear line of sight to the studio, iso booths and the control room's 50-inch plasma display. Three iso booths and a skylight round out this studio's features. Chief engineer Gerhard Joost chose and integrated all equipment.

M-Pire Studio

Van Nuys, Calif.-based M-Pire Studio contracted Steven Klein to design its new facility, which opened in March 2003. Notable features include a clear line of sight from all points and floating floors throughout. Featured equipment includes 48 tracks of RADAR II, Otari Elite 48-track automated console, five Genelec 1031 monitors and a 1094 sub, plus an extensive mic closet. The project also included the design of live and dry iso rooms and a large live tracking area.



PHOTO: EDWARD COLVER

The Class of 2003



PHOTO: ROBERT WOLFSCH

Brooklyn Recording Studios

In November 2002, Brooklyn Recording Studios (Brooklyn, N.Y.) opened the doors to its Walters-Storky-designed, 2,500-square-foot studio and control room. Featuring a vintage 60-channel custom Neve 8088 console, Pro Tools|HD 192 and Genelec

1039A monitors, the room also boasts a spectacular view of the Statue of Liberty, two iso booths and space for up to a five-piece drum kit.



PHOTO: ROBERT WOLFSCH

Sound on Sound, Studio D

For all your Pro Tools|HD needs: Sound on Sound's Studio D (New York City) was designed by Larry Swist of Lawrence P. Swist Designs Group for 5.1 surround mixing in Pro Tools via a 24-fader Pro Control surface and Editpack. Monitoring is through custom LPS Designs mains with subs (TAD and JBL components), Genelec 1031As and Yamaha NS-10M near-fields.

Crystalphonic

Opened in January 2003, the Recording Architecture-designed, four-room studio Crystalphonic (Charlottesville, Va.) includes an SSL room (4064 E/G-Plus console, ATC mains), a 5.1 room (32-fader Digi Pro Control, ATC surrounds), a post/edit suite (keyboards/modules from Akai, Alesis, Korg, Moog, etc.), and a mastering room (ATC mains, Egglestonworks Andra II monitors powered by Electrocompaniet NEMO amps), each with substantial Pro Tools|HD systems. The entire facility runs from a Studio Network Solutions' fiber-optic SAN. The 30-foot-tall tracking area (shown) contains an extensive collection of mics and pre's, and features a balcony and full-height diffusing "Acoustic Trees" based on the designer's Black Box technique of acoustic control systems.



PHOTO: RROG



PHOTOS: NEIL WAVING

Treasure Isle Recorders

With 23 years of recording experience under his belt, studio owner Fred Vail redesigned the Nashville-based complex's Studio A in November 2002. Sporting a new custom-made Trident Series 80 5—which uses 24 vintage 80 Series modules and an additional 24 Oram Pro24 modules—the studio also features RADAR 24, Pro Tools, Bryston power amps, Tannoy 800A active speakers and DynAudio BM15 passive speakers. Special care was also given to not change the overall acoustic sound of the large, live room.

PHOTO: RICH WALKIN

World Wrestling Entertainment

Wrestling is now popular enough that the WWE has opened its own audio post and music-production facility in Stamford, Conn. The studio was designed by Russ Berger Design Group and opened in April 2002. Equipment of note includes: SSL SL9000 J Series board; Quested, Yamaha NS-10M, Genelec 1031A and M&K monitors; and a healthy selection of outboard gear, mics, keyboards and MIDI instruments, as well as a Digidesign Pro Tools|HD3 system. Brazilian cherry floors and custom waves of ceiling diffusers enhance sonic integrity. The live room (shown) features earth-colored, split-face concrete block that supports custom-radius cherry-wood diffusers.



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Ironworks

Actor Keifer Sutherland, hot as can be right now with the success of *24*, contracted Jeff Cooper Architects to transform this L.A.-based 14,000-square-foot warehouse into a new recording studio. The studio was constructed by Synergetics Inc., and had its grand opening in November 2002. The control room, iso room, vocal booth and main studio (shown) all open onto each other through double-paned sliding glass doors to maintain line of sight throughout. The control room houses a G Series SSL console, Studer 24-track recorder and RADAR II digital

recorder; monitoring is achieved through Genelec 1034Bs with Bag End ELF sub and near-fields from Genelec and Yamaha, as well as amps by Bryston and Hafler. Other equipment of note includes an extensive collection of vintage guitars and mics.

Angel Mountain

Angel Mountain (Bethlehem, Pa.) is an 18,000-square-foot multi-studio complex with three 5.1-capable control rooms, a THX mix theater, a scoring stage and other audio spaces. Designed from the ground up by Pilchner Schoustal International Inc. (Toronto) in conjunction with studio owner and president Gary Sloyer, the studio opened in February 2003. The SSL XL 9000 K Series console lives in Studio A, with five soffited, active Quested 412s, Pro Tools|HD and a healthy collection of outboard gear. The scoring stage boasts 22-foot-high ceilings and three iso booths, including an enclosed mezzanine space (shown); it can hold a 40-piece orchestra for large ensemble recording and film scoring.

PHOTO: RICK SCHOUSTAL



PHOTOS: GEORGE BOOS



Blue Jay Studios

In operation for 25 years, Blue Jay Studios (Carlisle, Mass.) was recently purchased by Backstreet Boy Kevin Richardson and writer/producer Marcus Siskind. The new owners commissioned Francis Manzella of FM Design to overhaul the studio, which was completed in July 2002. New equipment includes a custom Mad Labs Neve VR-72, custom 813-K monitors from John Klett of Technical Audio, and full Pro Tools|HD systems for Studio A and Siskind's private writing room. The new acoustic design improves the accuracy of the control room's bass response and imaging, including the implementation of perforated metal ceiling clouds, enlarged acrylic diffuser, additional bass trapping, and new doors and windows.

Ocean Way Studio D

In January 2003, Hollywood-based Ocean Way opened its new Studio D. Acoustical design was done in-house by Allen Sides. Featuring a new 84-input Neve 88R analog console with remote mic pre-amps and an inboard stereo compressor, the room also features Allen Sides' custom monitors and one of the largest collections of outboard gear assembled.

PHOTO: DAVID GOGGIN



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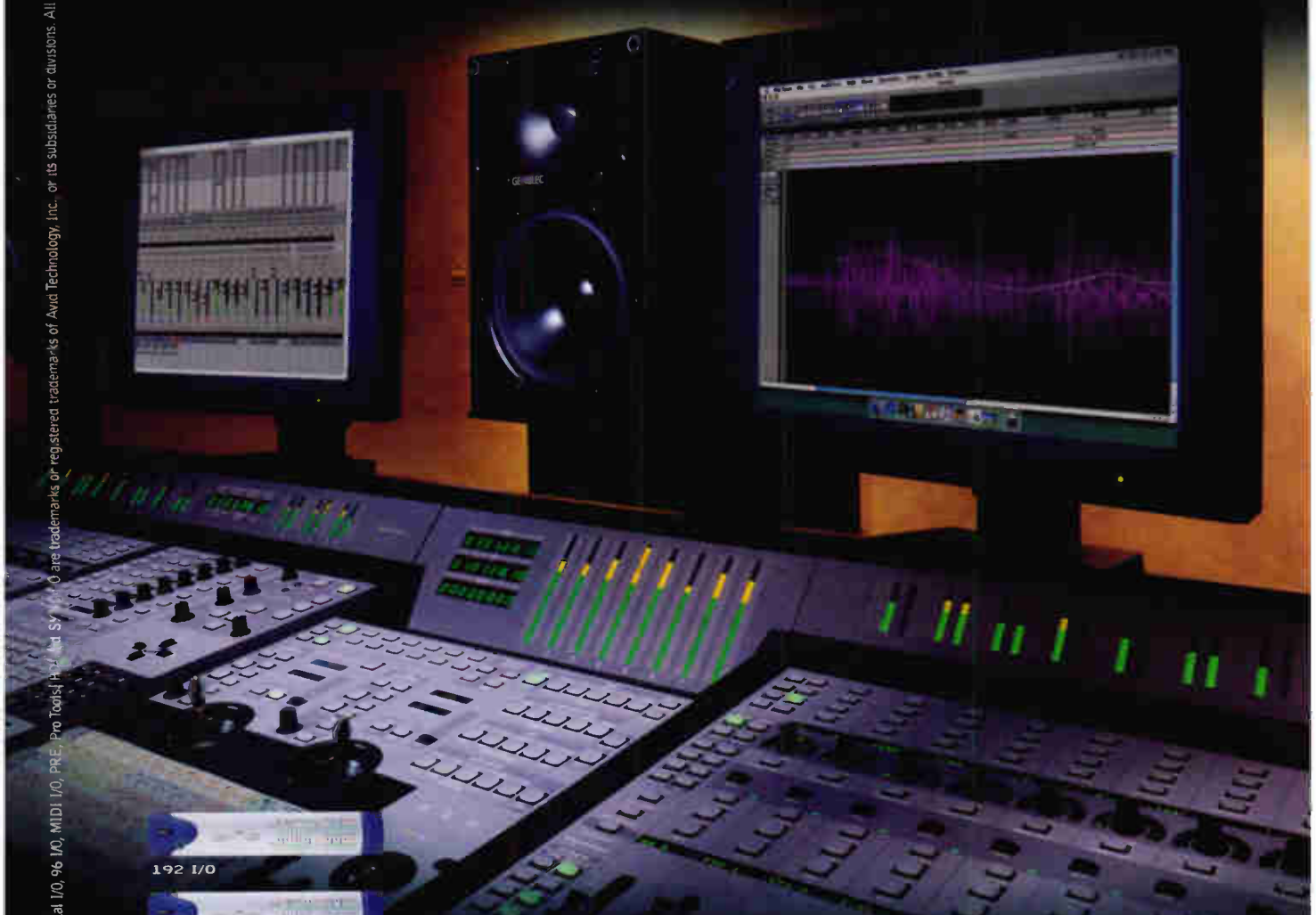
Burst@Creative Bubble

Offering sound design, TV and radio mixing, original mixing for music compositions, sound effects, sound design and music libraries, this New York City-based studio was designed by Studio Pacifica Ltd. and opened in September 2002. The facility's two audio suites and vocal booths feature Pro Tools|HD with AVXL Option and Control|24 consoles; an Avid Unity network ties the audio suites and vocal booths to the video edit rooms. With a view of the Empire State Building and a spacious living room feel, the audio rooms showcase custom ceiling and back-wall acoustic treatment to provide a flat room response with a large sweet spot to mix stereo and surround. The facility also boasts Webcasting capabilities.

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Acoustic Makeovers

DESIGNERS REVIVE TIRED STUDIO SPACES

Every year, at least 10 recently completed studios or mixing rooms appear on *Mix*'s front cover; up to two dozen more are displayed in our annual "Class of..." feature (see page 30). Primped and polished for their "beauty shots," these gorgeous studio spaces look as pristine as a shrink-wrapped CD, yet many of them are older than this magazine (and some of its readers). It's no secret, but many of the spankin' new studios pictured in *Mix* are actually in their second or third incarnation. To find out more about the art and science of renovating existing recording and listening spaces, we spoke to four respected and in-demand studio designers: Michael Cronin, Francis Manzella, Chris Pelonis and Carl Yanchar.

WHY RENOVATE?

As Francis Manzella puts it, "Interior makeovers or acoustic renovations usually come up because of one of a couple different motivations. The first motivation is usually a desire to bring things up to date, both in terms of interior design and the acoustics." Manzella notes that many successful studio owners whose facilities date from the 1970s and '80s may now be looking for ways to rejuvenate their businesses. "They realize that what worked aesthetically and acoustically 20, 25 years ago doesn't necessarily ring the bell for any of their clients anymore.

"Another big motivation is when a studio changes hands," Manzella continues. "The new owners often say, 'Well, we bought this place because it was a great place, but now we want to make it *our* place.'"

There is, of course, often a third reason for an expensive and disruptive acoustic renovation: There is something acoustically wrong with the studio or control room, and nothing short of a complete overhaul can correct it. "Many studios back in the '70s and '80s were kind of homemade," says Manzella. "Most studios weren't designed by an architectural acoustics expert; they were designed by the owner. And the owner either knew what he was doing or he got some books and tried to figure out what he was doing. Sometimes they got it right, and sometimes they didn't."

PROBLEMS, PROBLEMS

Chris Pelonis describes a typical acoustical problem, one he ran into at Hollywood's Future Disc Mastering. "They had one of these sort of stop sign-shaped control rooms with a compression ceiling," says Pelonis, "and that was a problem. Sure, a compression ceiling creates loudness and efficiency,

By Chris Michie



Fran Manzella (left) redesigned Sound Station Seven by combining the machine room, lounge and control room all into one recording space.

but it also creates an absolute disaster in the low frequencies, with an incredible amount of harmonic interference in the tonic frequencies and in the harmonics.”

As Pelonis describes it, many compression ceilings are set at an acute angle to the front wall and are typically very hard. “You get an accumulation of low frequencies that resonate in that acute angle,” he notes. “So I came up with a way to build in a low-frequency absorber out of that acute angle—actually make it part of a trap—and that cleaned up the bottom end immensely. It was very successful both at the Future Disc rooms and at Scream Studios, Randy Alpert’s studio in Studio City [Calif.].

“The other thing we did with these compression ceilings was to soften up the surface to dampen that first reflection,” adds Pelonis. “It’s really kind of ridiculous that anybody would think the trajectory of a high-frequency driver reflected from a compression ceiling smacking right down onto the top of a hard metal console could be a

good thing. But that’s exactly what you see when you ray-trace those reflections.”

A problem that Pelonis often encounters in older rooms is a less-than-accurate main monitor system. “In the [’70s and ’80s], main monitors were not really looked at very seriously,” he says. “They were there more for the hype: ‘Let’s play it real loud and get excited.’ But people would actually mix on Auratones or Mitsubishis or NS-10s or something.

“Another issue I run into is that people have their speakers soffited either improperly or in the wrong place,” Pelonis continues, noting that relocating the speakers to reduce boundary interference can make a “huge difference. There’s also an old style of soffiting that you really need to be aware of: The speaker soffits that kind of hang into the room and beneath them, there’s an airspace. That setup may as well not be soffited.” As Pelonis explains, the purpose of soffits is to eliminate boundary interference: When a speaker is mounted flat into a wall, low-frequency energy is forced forward in time; whereas when the speakers are free-standing, omnidirectional energy rebounds off of the front wall and reaches the listener after the initial signal, causing phase distortion. “So, if you build soffits that are sticking out of the wall with an alcove underneath, not only does it create a cavernous low-frequency resonator, for lack of a better term, it also gives that low frequency a place to go rather than forward.”

A rendering of the patented Chris Pelonis/RPG modular acoustical treatment system.



A MATTER OF TASTE

Pelonis notes that there may not actually be anything “wrong” with a room that he has been asked to modify. “There have been many cases where the room was built in another era. That doesn’t necessarily mean it’s wrong, just that it’s wrong for that client. But this is such a subjective business. In 10 years, there’ll be some dis-

Acoustic Makeovers

covery or a new medium that requires a different approach. And then they'll be tearing out all those old Pelonis rooms," he says with a laugh.

One area of subjectivity is reverberation: Different clients prefer different amounts of "liveness" in their recording and listening spaces. "In a mastering room, for example, it will tend to be on the shorter side, 150 milliseconds, say," Pelonis explains. "Anywhere from 100 to 300 milliseconds seems to be the comfort zone where people really cannot be fooled by the room. But there have been times when people wanted it more live and I've gone up to half a second."

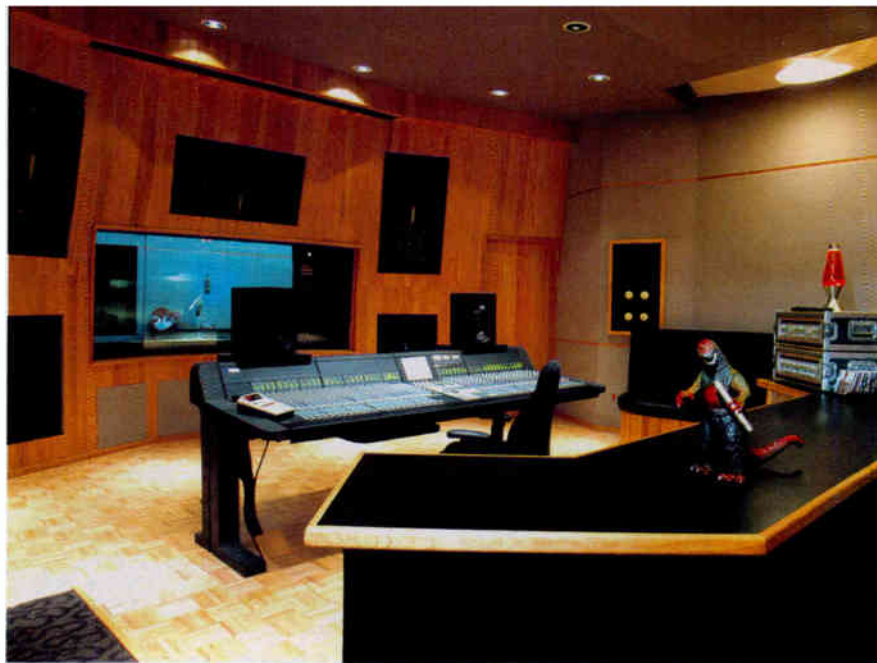
Pelonis points out that with modern measurement equipment, it is relatively easy to capture an accurate picture of a room's reverberation time, and he believes strongly that reverb times should be consistent across the frequency spectrum. "I've had many disagreements with people who say to forget about anything below 300 Hz because you can't control it," he says. "I completely disagree: It can *all* be controlled or properly addressed."

To correct studio spaces that have excessive low-frequency reverberation, Pelonis uses a product called the Edge. "Back in the '80s, so many studios would have these nice, consistent reverb times—300 milliseconds—from 300 or 400 Hz up, and then they'd have a second-and-a-half of reverb from 200 Hz down," he recalls. "That really creates a problem in the harmonics in the rest of the spectrum, not to mention what it does for the low frequency. If you start adding up the harmonics of 40 cycles, it doesn't take too long to figure out that there is going to be some interaction with the midrange frequencies."

DESIGN CHOICES

Assuming that the studio owner has identified the acoustic or aesthetic problem he or she wishes to correct, what are the options? "Every job is different," says Manzella. "It has to be tailored to the vision and the budget of the customer."

As Manzella notes, isolation—or the lack of it—is often a serious concern. "With a free-standing studio, you're generally more concerned about exterior



Some studio owners are redesigning rooms to take advantage of 5.1 monitoring. Front Page hired Carl Yanchar to build this new surround mixing room. Godzilla doll is optional.

noise getting in than you are about the music getting out," he explains. "But in New York City, you're worried about it being a two-way street: You don't want to be bothering the neighbors, because that's as much of a headache as it is when they bother you. New York has its own set of unique challenges. A large percentage of our clients are in Manhattan in multistory commercial buildings ranging in age from 120 years old to brand-new. And a lot of the older buildings are structurally sound buildings, but really not built with a whole lot of sound isolation in mind."

As Manzella explains, many loft buildings were once used for manufacturing and are designed for heavy live load capacities but, being wood-framed, are rather springy structures. "This is very problematic for studio isolation," he notes. "In the simplest of terms, when we're doing a floated room for a studio, you can think of the room as a spring and you can think of the building as a bigger spring. If the building itself is more compliant than the isolation construction we devise, then the isolation construction is defeated by definition; the building will move more easily than the heavy studio room that we've built. Now, structural transmission is basically transmitted into the building. So, these are the first challenges we face: determining what the existing isolation is and if it needs to be improved, and finding methods that are compatible with the host building construction."

Given adequate isolation, and provided the room proportions and dimensions are correct, Manzella is usually content to work within an existing shell.

"We'll basically strip back most of the installation of finishes and fixtures and millwork, and then build in again from the shell," he says. "In a lot of these places, there's something good about them that they want to keep."

ENLARGING THE CONTROL ROOM

Many recent control room remodels have been spurred to some extent by the growth of the market for 5.1 and other surround formats. "People are coming to grips with the fact that they want to go one step better than just popping five speakers on stands and saying, 'Now we're surround,'" says Manzella. "They want to actually think about the implications of doing five full-bandwidth channels in their control room."

In some cases, installing a new 5.1 monitoring setup may require an increase in the control room's dimensions, which is not always an option when structural or isolation walls cannot be moved. Carl Yanchar's solution for Studio B at Front Page in Glendale, Calif., was to build a new 5.1 mixing room in what had been the original studio. However, many existing stereo control rooms actually contain enough space for a 5.1 monitor system—or a larger console—without moving structural walls, because "lost" space devoted to bass traps can often be recovered. "The amount of real estate dedicated to trap space has been reduced as designs have evolved over the years," notes Yanchar. "It's now easier to calculate and there's less overkill."

Occasionally, the additional space for a control room expansion can be found

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Mitch Gallagher, Editor EQ Magazine

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Fete Weiss, Tape Op Magazine



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Acoustic Makeovers

by revising an existing floor plan. "Sound Station Seven had an old '70s-style compression ceiling—a very dead control room—and it didn't really sound very good," recalls Manzella. "The owner said, 'I've got this really beautiful recording room, but nobody's really happy with the control room.' So I came in and said, 'I've got to tell you, I've got a crazy idea.' My crazy idea was to rip out the control room, a machine room and a lounge, and turn the whole thing into a significantly larger control room that basically encompassed the functions of the machine room and the lounge all in one big room. He liked the idea, we talked about a couple of different ways to do it, and we implemented it and it came out wonderful."

BYE, BYE BLACKBIRD

In the case of a recent dramatic renovation at Blackbird Studio in Nashville, at-



Designer Michael Cronin added seven feet of depth to Control Room A of John McBride's Blackbird Studio (Nashville). A huge Beatles fan, McBride says he is ready for Paul McCartney.

tracting a better clientele was not a motivating factor. Rather, it was the extreme perfectionism of owner John McBride, who dreamed of having his own studio for 25 years. "I'm not exactly running this studio as a business," says McBride, founder of sound rental company MD Systems (currently MD Systems/Clair Bros. Audio) and husband of country singer Martina

McBride. "My goal is to have the finest audio recording environment in North America, which doesn't necessarily coincide with an intelligent business plan." McBride is an unabashed Beatles nut (hence the name of the studio) and aims to equal the recording standards of George Martin and Abbey Road Studios. "If I ever have the chance to get Paul Mc-

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Cartney in here, it's got to be the best," McBride explains.

Of course, perfectionism comes at a cost. When McBride bought the two-room studio, originally built for producer/engineer Brent Maher (The Judds, Kenny Rogers, Jo Dee Messina, etc.), he brought Michael Cronin in to redesign the second room: a mixing suite. The remodel was a great success—according to McBride, it is now engineer/producer Richard Dodd's favorite room (aside from his own) in Nashville—and Cronin was then re-engaged to redo the A room.

Unfortunately for McBride, he had upgraded the A room once already, but Cronin's new design necessitated trashing most of that work. "There were some suck-outs in the room, one in the engineer's position," recalls McBride. "I tried to put a Band-Aid™ on it: put some subs in and retuned the boxes. But basically, I was fighting physics. We had some success with the room rolling along just fine for about four or five months, but then I did some rough mixes on Martina's new record and the inaccuracy of the low end bothered me enough to know that it had to change. I had to cancel three weeks of bookings, but it had to be right. We've added seven feet of depth to the control room, which gives us a little over 30 feet; enough to give us 20 cycles accurately."

As well as expanding the control room, Cronin's new design includes the addition of a complete second recording room adjoining the existing studio space. "The A control room will be finished in about two weeks," said Cronin in late March. "Then, we'll be breaking ground on an 1,400-square-foot live room that will be added onto the A room. That will more than double the original floor surface and add a 22-foot ceiling." Conceived as a "drum room," the second A recording room will also feature a second live chamber and movable acoustic panels on the wall to change the reverb time. "These are all custom-made by RPG," explains Cronin. "They look like a door panel that opens and closes and will vary the reverb, I would say, by half of a second."

Commenting on the tortuous and expensive process that will eventually help him realize his dream, McBride wryly observes that, "I wanted to do something perfectly right, and a studio's not the best choice when you want to do something perfectly right. It's a money pit, man; it'll bleed you dry. We have gone to the tenth power to make this studio a wonderful place, and this level of quality is expensive, but I don't care because I am on a mission."

UNBOXING THE BOX

At Blackbird, which is located in the spacious Cherry Hill section of Nashville, Cronin and McBride were able to develop a design that included new construction. But in many situations, moving walls is not an option: Pelonis has recently been working with a game developer who is leasing space in an office building and must return the space to the landlord in its original condition. "There are guys who are moving in and out of buildings all of the time," says Pelonis. "They'll rent out an office building for two years to do a couple of projects—interactive CD work and what-

not—and then maybe move to another part of the country or liquidate."

For Shiny Entertainment, which is developing video games based on *The Matrix*, Pelonis has come up with a modular approach to creating a usable audio environment. "Like everybody in this economy, they didn't really want to sink twice as much money into these rooms if they didn't need to," explains Pelonis. "This way, they could pull all of this acoustic stuff out and sell it, and hand the space back to the landlord as an office building."

Pelonis has been working with modular systems since he patented the Edge

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Acoustic Makeovers

back in the '80s. "It's still widely used, and I can't build enough of them," he notes. "Peter D'Antonio at RPG and I have been developing a new, improved version, and we are about to hit the market with a high-end modular studio package that'll be 10 to 15 thousand dollars." Pelonis used a prototype system to upgrade a basement mastering room for Geffen Records. "Dave Donnelly ran it for them," he recalls. "It was basically a rectangle, and we created a real mastering studio with all this modular stuff. We built it off-site and then showed up with a Ryder truck and a couple of guys. In maybe five hours, he had a studio."

BUSINESS TRENDS

All of the designers we spoke to divide their time among all-new designs and renovations and/or additions to existing spaces, though it is hard to get a fix on the relative size of the two market segments. "I would say the biggest trend I've seen is toward privately owned facilities," says Manzella. "Whether makeovers or ground-ups, we're seeing more and more significant projects that are being funded by an individual producer or artist or producer/artist and are being built for the purpose of their own work and not to be booked to outside clients."

As to the overall health of the industry, Manzella is upbeat: "I thought for years that the recording business was more or less immune to the general economic climate of the country—up until 9/11. New York took such an awful hit at that point, and all the allied entertainment businesses—including recording and broadcast and production—also took a hit; at least anybody who relies on clients. Network broadcasting carries on, of course, but the commercial operations that rely on outside clients are still recovering, including my business. I'm very happy to report that the first quarter of this year is probably the biggest quarter I've ever had. I've got nothing but a positive feel for the way things are headed right now."

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Chris Michie is a Mix contributing editor.

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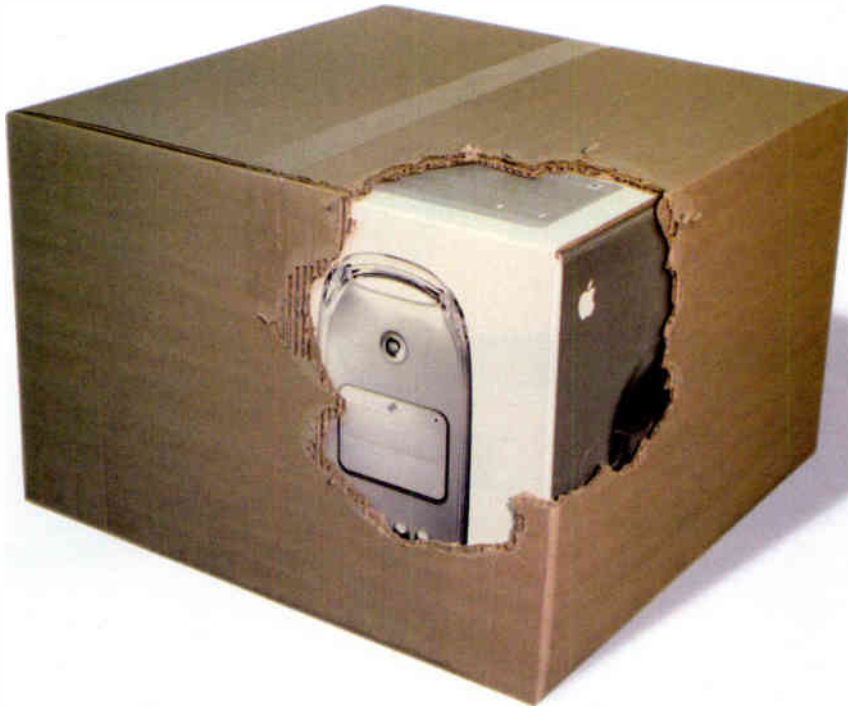
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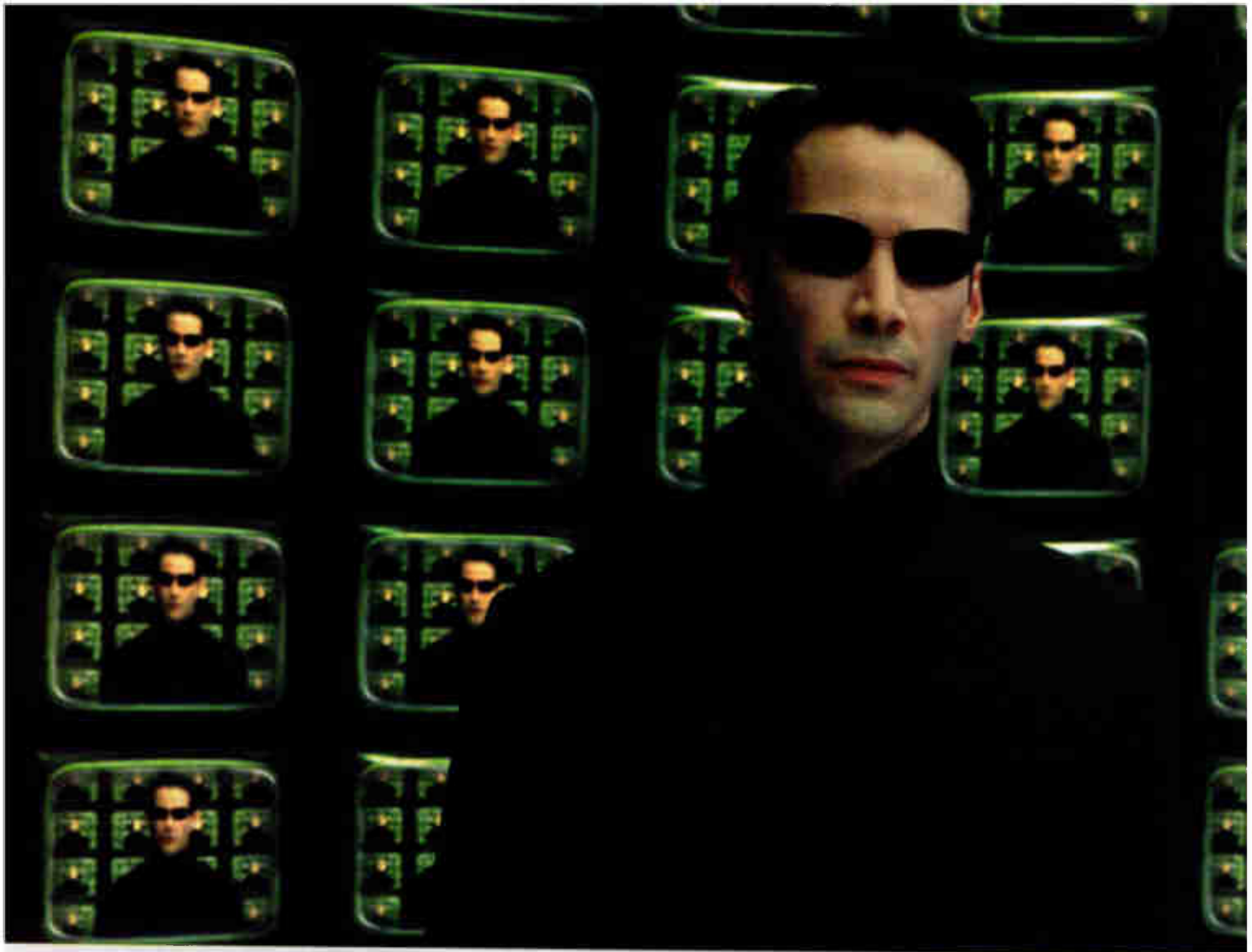


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World Radio History



ALL PRODUCTION STILLS COURTESY OF WARNER BROS.

The images are deeply embedded in popular culture: Curtains of dripping green computer code, Keanu bullet surfing in ultra slow-mo and a gruesome world of ambitious machines gone mad with power. *The Matrix*, the 1999 edgy and groundbreaking foray into alternate time and space, upped the ante for sci-fi, action/adventure and martial arts movies. It was an amazing feat and an astounding success story: *The Matrix* earned more than \$458 million in theaters worldwide, sold over 25 million videos and won four Academy Awards. In 2003, writer/directors Larry and Andy Wachowski are set to do it twice, with May's *Matrix Reloaded* and *Matrix Revolutions* in November.

From the start, *The Matrix* story was envisioned as a trilogy, with Keanu Reeves' character, Neo—"The One" who can save the human race—ultimately slated for an epic showdown with the forces of doom.

Sound in *The Matrix* kept pace with the stunning visuals, garnering Oscars™ for both Best Sound and Sound Effects Edit-

ing. Most of the key players are back on-board, including composer Don Davis, sound designer/supervising sound editor Dane Davis, supervising sound editor Julia Evershade, sound designer/editor Eric Lindemann and the re-recording team at Warner Bros. Somehow, just four days before *Reloaded* was due to print master, I was able to nab Dane Davis, Evershade and Lindemann for lunch at Warners. After more than a year of work that included nine animated shorts and a sophisticated game soundtrack (Infogames' *Enter the Matrix*), they were shell-shocked and weary but also extremely excited.

Although some work began a year earlier, the official start for the project was in October 2002. It was immediately evident that everything was much more complex this time around. "The scale is much bigger," says Davis, whose company, Danetracks, has also handled sound for, among other films, *Swordfish*, *8 Mile* and *Treasure Planet*. "In addition to expanding on the elements that were already established—the computer code,

the way the guns work, the acoustics of fighting and body movement, and the way time expands and contracts—there's also a gigantic freeway chase that's almost entirely live photography. For the chase, all of the physical stunts had to be staged, and it had to sound extremely real."

A major challenge in working with a sequel is to maintain the familiar while creating something fresh. The "familiar" sounds of *The Matrix* resided on 9GB drives; state-of-the-art in 1999. Davis and crew faced more than a few hurdles in transferring that material to today's systems. Restoring stacks of the old drives to 120GB FireWire drives, then reorganizing and "repointing" all of the sessions took months. And then there was that little problem of outdated software. "It was a real pain," admits Davis. "But we wanted to have all of the components, the whole history of each sound available to build on."

Although it references the past, the sonic vocabulary of *Reloaded* was largely new, even to what Davis calls the fight scene's body "whooshes" and the signa-

THE MATRIX RELOADED

Xtreme Reality Returns

ture computer code through which the Matrix is entered. "The origins of the sounds are not necessarily the things you think they are," he explains. "For example, the original code was all made from water dripping into a barrel. For *Reloaded*, I made all of the raw code materials from other kinds of water drips. In the end, we used variations of the original code and some more mechanical source sounds. What the characters hear from their mon-

itors had to be very similar to *The Matrix*, but what *we* hear through Neo had to go to many new places."

The concept of "big" was important, as in lots of very, very big machines (especially in *Revolutions*). For some of them, Neumann's digital Solution-D microphone played a major role. "The Solution-D was an amazing tool," notes Lindemann. "For the large metal sounds of the machines that are in the real world, we recorded big metal bangs and hits at very high sample rates to capture ultrasonic frequencies. That way, we could pitch them down while still maintaining the whole harmonic structure."

"I'm very interested in extreme high frequency, extreme level and the complexity of the acoustic waveform," adds Davis. "We do a lot of pitching up and down; generally, when you do that, you lose a lot of naturalness. The 96k resolution of the Solution-D just happens to play into one of our fascinations: capturing the harmonics of sounds that we don't normally hear.

We also did extensive recording at 192 kHz using mics with extended upper range, like the Sennheiser MKH800 and some calibration microphones."

It was the car chase, however, that presented perhaps the biggest recording challenge. The super, against-the-flow-of-traffic thrill ride, filmed on a stretch of freeway that was built on a former naval base in Alameda, Calif. (for a reported cost of about \$2.5 million), was created with very little CGI. Once shot and edited, it was relatively complete, making it one of the first scenes ready for Danetracks. Due to the segment's complexity, six months later, the mix for those scenes was still being fine-tuned. "It had to be exciting, powerful and fun, in all of the ways that car chases have to be," explains Davis. "Except more of it, with cars flipping and tumbling through the air and sword fights on top of the cars. An important part of the chase scene was to have it grow dramatically and to avoid



Dane Davis, Eric Lindemann and Julia Evershade

PHOTO: DAVID WING

By Maureen Droney

ear burnout by the end of the 18 minutes. We all worked very hard to break the whole scene into many 'phrases,' each with a different emphasis and feel."

The process of casting vehicles went on for over two years. "In *The Matrix*, you can get away with being just a little more extreme," Davis observes, "although we also tried to respect the realistic aspects of, say, a GM vehicle. With some of the cars, the people who built them thought they were ready for racing, but when we put

them through the range of emotional expression we were looking for, they blew up. It's not like we were redlining the whole time. We didn't *want* to blow anything up. We just wanted to find out how angry something could sound."

Cars were abused in numerous other ways, as well, from crash sessions on a rented speedway to a four-day marathon "car dropping" in a junkyard, complete with crane and 3,500-pound wrecking ball. An array of 14 or so mics—Schoeps, Sennheiser, Neumann and Audio-Technica, among others—was arranged in an arc, with recording helmed by lead recordist John Paul Fasal.



100 SMITHS FIGHT NEO

Julia Evershade, martial arts maven: "Because of the length and the intensity of the 'burly brawl' sequence, we concentrated on keeping the sounds as diverse as possible, keeping it rhythmic and real, while trying to vary the sound and speed of the 'whooshes' and hits as much as possible.

"We knew the sequence would be a big music cue, so Dane had to create a pipe hit and swinging whoosh sound with harmonics that would complement, and not conflict with, the score. These pipe whooshes and clanks then had to be edited so the end result would be harmonious, yet distinct enough to be recognizable for what they were supposed to represent."

We don't want to spoil anything, but there *are* fights in *Reloaded*. For fresh combat sounds, two jujitsu masters were brought into both the Danetracks facility and Warner Hollywood's Foley stage to do battle for another microphone array. "The jujitsu fighters were amazing," says Davis. "We recorded them hitting and slugging and kicking each other wearing fabric and leather, and with bare skin. We had them throw themselves into each other...and down onto the ground on various surfaces. We did it for days and days, and they got very good at it. Especially when they understood that it wasn't about the visuals. We didn't care at all what they were doing, only what the mic 'saw.'"

THE EDIT

Given the tons of new material and vast gigabytes of old material, obviously a major challenge with a workload this huge and detailed is organization. The system that networks the Danetracks library, servers and databases, and also connects to the dubbing stage, was designed completely in-house, although it uses some components from elsewhere, including Decode from Mark Gilbert's Gallery software. "We call it FIDO," Davis says with a laugh, "because it hunts, points, barks and fetches. Our design engineer, David McRell, and I worked on it for over five years. Having that kind of system is the only way a show of this complexity and schedule compression can be done. There's no time for phone calls and long conversations. Everything is in the databases and in terse e-mails."

For the most part, scenes, though they evolved with visual effects, didn't change conceptually. "The movie is exactly like the script," explains Lindemann. "The directors storyboard everything, and then they make cartoons called 'animatics' that are like the pencil drawings on an animated film. A lot of the time, they do animatics and edit them before they even shoot the real material, so they're in editing long before they're done shooting.

"We keep a lot of things virtual in Pro Tools, because things are going to change and we know it," adds Lindemann, who did much of his sound building in 5.1. "For example, there's a scene where there's extreme slow-motion gunfire; slower than the one in the original *Matrix*. The flames coming out of the gun are Jello-y, and the sound is very complicated. It's very slow, but the shots keep changing, so there's no real hard sync as to where the gunshot is or even what it looks like.

"In that scene, there were something like eight 'mechanical' layers to a gunshot,



PHOTO: DAVID WING

CAR DROPPING

Dane Davis: "It was all about the angles that things would bounce. We had to drop the cars right in the middle of the microphone array, and then keep them from rolling over the mics or over all of us. We also had a couple of wrecking balls—including one that weighed 3,500 pounds—that we dropped through the cars. At one point, one of the balls went all the way through the cars, through the concrete under them, into the dirt and back up through the car, then rolled over a bunch of mic cables and came to rest on a PZM mic, completely crushing it. We got some really great sounds out of that."

and because it's in slow motion, sounds that would normally come after the shot come before it. It's all mixed up to create this unusual sense of time being manipulated. It doesn't make sense on an intellectual level, but when you hear it, it *feels* like something really slow."

Much of Davis' work is done by real-time manipulation. He uses two Pro Tools systems (as well as Steinberg's Nuendo) and records between them using both analog and AES lines. "Some of the plug-ins," he asserts, "and programs like Metasynth perform differently when you're manipulating the preview buttons than they do when you use the automation. Working in real time makes it more of a performance: I get more emotional expression sculpting the variables live while it's a continuous stream of audio. For the same reason, I use a MIDI controller for other sounds. It's all about energy and dramatic intensity: the 'physicality.' A lot of sounds that we create, like for the ships and for the Sentinels [the squid-like machines that come and attack the humans], are combinations: They're audio samples and MIDI sequencing, with lots and lots of MIDI automation on top of

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lots of Pro Tools real-time automation controlling plug-ins.”

All of that is ultimately in pursuit of not the literal representation of a sound, but its essence. “We are much more interested in the dramatic and emotional reality of something,” says Davis. “What is a sword? It’s death, pain, damage, sharpness. We did tons of recording, we had swords built to our specifications with holes drilled in them for mounting, and we found all kinds of other things

that would help create that sound of sharp, painful, dangerous steel. We sus-

pending all these swords and fake swords and got them clanging and spinning really fast in the air, then recorded it all HD at 192k so we could slow things down as much as we wanted to [and still keep the upper edge of the sound]. But what really matters is the expressiveness and the emotional connection with the audience.

“As with the fight hits and the whooshes, it’s not about the point of contact,” Davis continues. “When somebody is swinging a fist toward you, it’s about the amount of force that’s behind that fist and about the damage you’re going to incur. We expanded that concept into the sword fighting. The blade coming toward you doesn’t make



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THE CODE

Eric Lindemann: “The original code was all water dropping. Then the structures of gears and mechanisms are made of code until they appear real to people jacked into the Matrix. There are other scenes where we needed to take a natural sound and give it a code-like texture as a transitional bridge into code. A good example was the sound of a fork passing through a piece of chocolate mousse cake, which Neo sees as code, but also had to sound somewhat natural. This began with a suspended fork clang elongated by grain cycling through a prototype program called ‘Inertia.’ It continued with the Foley recording of the fork cutting into cake stretched by a program called Meta-synth. Finally, the full code character takes over, then gives way to the on-screen woman’s subtle vocal reaction to the experience of the bite of cake.”

much of a sound in real life. But we don’t care, because you feel it. Your brain is going, ‘Sharp, sharp, sharp!’ We made the sound of that sharp coming at you.”

THE MUSIC

“We approach what we do very musically,” says Davis. “Take, for example, the fights, which Julia cuts from the tons of hits and whooshes I make. These are choreographed fights...and you have to maintain that ballet. Music is also scored to the fight action and to that rhythm. It’s all part of the score. It’s all just to give it a kind of groove.”

The musical groove was the domain of composer Don Davis (not related to Dane, although after five movies together, including *Bound*, *House on Haunted Hill* and *The Matrix*, they’re some kind of family!). He started working at about the same time as the sound designers, and pre-mix-



THE SENTINELS

Dane Davis: "The Sentinels had to be very monstrous-sounding, very alive and very lethal; yet we know that they're machines. Each one has eight motor and gear tracks, plus about four Foley tracks that are done live [mostly for the tails]. Each track is a composite of a bunch of sounds, and every move that the Sentinels make has to be expressed in every one of those tracks. The dubbing mixers then had to carefully pan each element of each Sentinel as they moved through space to give them a very real, three-dimensional power and menace."

es of music and effects sequences were sent back and forth. "We have a kind of sibling rivalry going for the bandwidth," comments Dane Davis, "but we know that, ultimately, cooperation and alternation of emphasis are what the movie and the directors need."

Don Davis also worked to merge the musical aspects of *The Matrix* trilogy. "There's definitely a thematic continuity that I was attempting to preserve with all three pictures," he observes, "and I approached *Reloaded* somewhat like the second movement of a three-movement symphony. The directors felt very strongly that there should be an electronica element to the score as there was in the first *Matrix*, but they wanted to integrate much more between the electronica and orchestral elements. I worked very closely with Ben Watkins, an artist with a band called Juno Reactor. There were two key sequences that we wrote together: the freeway chase, and what we refer to as the 'burly brawl,' the big fight between Neo and the multiple-replicated Agent Smith.

"Fortunately, we have a film editor, Zach Staenberg, who is not only a master, but also very organized, so there is a minimum of confusion about changes. Also,

—CONTINUED ON PAGE 135



WHOOSH!

Dane Davis: "A really key part of the sound of *The Matrix* is the way air is pushed out of the way. The whooshes are the power: all those molecules of air being moved out of the way so that fist or foot can connect with you in a bad way. It's unlike a lot of Hong Kong movies that go 'thuk'—with no air. The way we approach it is that every limb is a combination of different whooshes. They're very complicated, with a lot of sound manipulation, but they all start out with real sounds: me swinging things around my head as hard as I can—computer cables, phone cords, unraveled nylon rope, lots of odd things on the ends of rope—you name it, we flung it."

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Vertical Horizon
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The Dave Matthews Band

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Peter Gabriel
Carly Simon
moe.
Natalie Merchant
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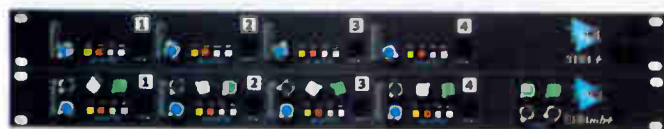
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Crane Song Spider

Once considered an anomaly, multichannel mic preamps are becoming more commonplace. Why? The reasons are many, but certainly among them are a resurgence in live tracking, an increased demand for surround production, and the convenience of compact, remote location recording packages. Multichannel preamps often present an ideal solution in the console-less studio environment, where DAW mixing is done onscreen and the "console" doesn't have preamps at all! But perhaps the biggest reason for the popularity of outboard preamps stems from users looking for a different (or improved) performance over the stock preamps in their consoles.

We decided to look at the current crop of top-of-the-line multichannel preamps, priced from under \$1,000 up to \$28,000. Some offer amenities such as remote-control capability, allowing the preamps to be situated near the mics, while affording the ease of fingertip gain control from the control room or recording truck; some include digital outputs (either as standard or optional offerings); and others have the good old analog outs we're accustomed to using.

This article focuses solely on units with four or more channels, although it should be noted that most manufacturers of single- and dual-channel preamps—such as Apogee Digital, Avalon Design, Martech, Speck Electronics and Summit—can package their preamps into multichannel rack solutions. We've limited the scope of this guide to stand-alone products, so preamp/front ends designed to be used exclusively with computer-based systems—such as the ESI MAXIO or MOTU 896—are not covered here.

OUTBOARD PERFORMANCE IN A CONVENIENT PACKAGE

The latest addition to AMS Neve's (www.ams-neve.com) line of inline and outboard gear is the 1081R Remote Microphone Rack, a sharp stand-alone version of the company's 1081 channel amplifier first introduced in 1972. This rig can interface directly with the company's Encore Automation Computer and 88R mixer for full control from the board, and an optional PC remote-control software package is available for staying in touch with the 1081R rack. Transformer-balanced XLR mic input to balanced line output is provided via the unit's multi-way Varicon rear-panel connector. Up to 12 1081R modules fit into the 4U "intelligent" rack housing, which provides front-panel controls over gain, phantom power, pad, phase reverse and a Bypass button that routes XLR inputs direct to the outputs.

Put eight preamps, remote MIDI control, wordclock, and analog and digital outputs into two rackspace and you've got something akin to the Aphex (www.aphex.com) Model 1788 Remote-Controlled Mic Preamp (\$4,995 with control software; \$5,990 with optical digital outs; and optional remote-control unit, \$1,495). Employing an audio DAC approach to lower-stepped gain resolution when the optional controller is being used, the Model 1788 can also be controlled by any device sending MIDI. Up to 16 units and 128 channels can be controlled by one control line using the RS-422 output to daisy-chain devices. The company's limiter circuit on the front end can limit mic output levels by as much as -20 dB, and the 1788's digital outputs appear on two DB25 connectors (AES/EBU and TDIF) and optical Toslink for ADAT connectivity.

API (www.apiaudio.com) has long been known for its preamp and EQ modules, such as the \$795 512C mic preamp/DI input card, which can be mounted in consoles, an outboard 500V 10-module rack or the popular 4-slot 500B4 "Lunchbox." API also offers the more compact 212L preamp card (\$695), which has 4- and 12-module rack housings available. The latest multichannel preamp from the company is the 3124+, a 4-channel unit that packs the same preamp used in all API consoles into a single-rackspace chassis. The 3124+ retails at \$2,795 and is also available as the 3124MB+ (\$3,695), which is similar but adds a 4x2 stereo mixer with aux send and stereo aux return.

ATI (Audio Toys Inc., www.audiotoys.com) reissued its 8MX2 Mic Preamp/Mixer (\$2,995), which combines eight ATI high-voltage mic preamps with limiters and an 8x2 line mixer into a single rackspace. Stereo bus mixing with full monitoring capabilities and individual level, pan, limiter and phantom power controls per channel are possible. The 8MX2's cue system allows input, attenuable pre/post limiting or line-return monitoring. A multipin input to the mixer's eight line returns and a multipin output are perfect for monitoring, mixing or recording DAW and MDM tracks. A front-panel headphone jack, rear-panel monitor/cue output and fully balanced outputs are also standard equipment on each born-again 8MX2.

Unveiled at Musikmesse 2003, but not shipping until later this year, is the Behringer (www.behringer.com) UltraGain Pro-8 Digital



SPL Atmos 5.1



Grace Design 801



Sage Electronics SE-Pre 1



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Multichannel Mic Preamps

switches and rotary 24-position gain switches with an 18- to 64dB gain range in 2dB steps. Also available is the Model 801R (\$4,995), an 8-channel preamp featuring the company's proprietary LNLD (Low Noise Low Distortion) digital gain-control cell that can be digitally controlled by an optional \$995 RCU (remote-control unit). Up to eight model 801Rs (64 channels) can be controlled from up to 1,000 feet away.

The MP-4 Standard (\$2,899) from Great River Electronics (www.greatriverelectronics.com) is a 4-channel preamp employing a transformer-coupled, Class-A discrete design. Each channel features a -15dB pad, polarity control and +48VDC phantom switches, and a 24-position gain switch. All connections are gold-plated XLRs. Versions of the MP-4 Standard with output transformers (MP-4M; \$3,499) and unbalanced pigtailed are also available.

First introduced in 1987, the M-1 mic preamps from The John Hardy Company (www.imjohn.com/JohnHardy) are available in a variety of models, including 4-channel rackmount versions. The M-1 and the M-2 (which is similar to the M-1, but offers a 16-position gain switch with 1% metal-film resistors for accurate, repeatable settings) are available with one to four channels, and they feature Jensen JT-16-B input transformers, 990 discrete op amps and no capacitors from the signal path. A 4-channel M-2 with the optional VU meter and Jensen JT-11-BMQ output transformers is \$3,085.

Joemeek's (www.joemeek.com) recently announced JM828 8x2 Channel microphone preamp (\$999.99) is the first Joemeek unit produced under the new ownership of the PMI Audio Group. Features include an external power supply, a stereo L/R output control (in addition to separate 1/4-inch line outs for each channel), a headphone jack with volume control, L/R LED meters and a solo LED for monitoring. Each unit also features an in/out expansion port to cascade up to 32 inputs to the L/R master.

Marquette Audio Labs (www.marquetteaudiolabs.com) custom builds its multichannel preamp packages, including the Telefunken V672 4-Channel (\$2,600 to \$3,000) and Langevin AM16 4- and 6-Channel (\$3,000 to \$4,000) offerings. The

Telefunken V672 uses custom vintage Telefunken '60s Class-A discrete mic preamps, housed in a three-rackspace chassis with custom-engraved faceplates for pad, phase, gain and 48VDC switches; Cinemag DI transformers are optional. The Langevin AM16 "6-Pack" is a custom 6-channel version of the same package



Marquette Langevin Rack

with an internal power supply. (External PSU is optional.) MAL's Telefunken V672 modules are discrete, solid-state versions of the V72. Both packages include input pad, variable gain control, phase reverse, and phantom on/off controls and XLR I/O per channel.

The HV-3D from Millennia Music (www.mil-media.com) retails at \$2,995 for four channels or \$3,995 for eight channels, and is built on the same design as the company's TEC Award-nominated HV-3 solid-state preamp circuitry. The



Millennia HV-3D

HV-3D features high-resolution gain switching (36 steps at 1.5 dB per step), a passive summing option and optional powering for 130V DPA (or B&K) mics. The two-rackspace HV-3D provides an entirely balanced audio path, requires no input pads and it can reportedly drive 1,000-foot cables without detectable signal degradation.

The \$2,880 OctaSonic Plus from Oram Audio (www.oram.co.uk) is an 8-channel unit that uses the same circuitry as the popular BEQ Series 24 console. It also incorporates a group delay feature that delays LF content with respect to HF content. Oram preamps handle a hot +22dBu input and boast an 18- to 73kHz bandwidth. When used together with an Oram OctaMix or OctaFade, the OctaSonic also



Jeff Rona, M-Powered.

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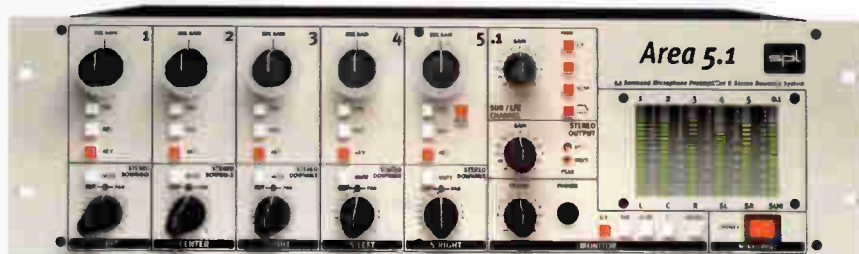
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Multichannel Mic Preamps

provides a stereo output 8-channel mixer for live sound, broadcast and theater applications.

The two-rackspace PreSonus (www.presonus.com) M80 (\$2,299.95) is an 8-channel mic/instrument preamp with balanced input transformers, an ultralow-impedance mix bus for assigning and panning any channel to the main stereo output connectors, and a high-gain headphone output for main bus. The M80 also allows adjustment of a signal's even

System (\$27,990, including mic array) sports the company's new triple-gain-stage mic preamps and unique motorized master gain controls, the latter allowing users to adjust all five channels with a single control knob. Atmos features Lundahl input transformers, pads, phase reverse, phantom power, low-cut filters, and switchable insert and tape send/returns per channel. Although the Atmos 5.1 accepts any mic input, the Brauner ASM 5 Adjustable Surround Microphone array included with the Atmos 5.1 package is a perfect companion. If you don't need the mics and frills, SPL's Area 5.1 Surround Microphone Preamp (\$4,599) also has five matched gain-stage preamps with motorized master/slave gain controls.



SPL Area 5.1

harmonics for tape and tube-saturation emulation.

RME (dist. by X-Vision Audio, www.xvisionaudio.com) offers both QuadMic and OctaMic preamps, both featuring the option of battery-powered operation. More than just a dual QuadMic, RME's top-of-the-line OctaMic is an 8-channel unit with a discrete Class-A design and provides specs such as 129dB EIN and a 5 to 200k Hz (-0.5dB) bandwidth. Each channel has switches for 48VDC phantom, low-cut filter and phase reverse. Outputs are balanced TRS (switchable to -10 dBV, +4 dBu or +21 dBu) and a 25-pin D-sub connector for a direct, one-cable connection to RME's 8-channel A/D converters. It's due out this month.

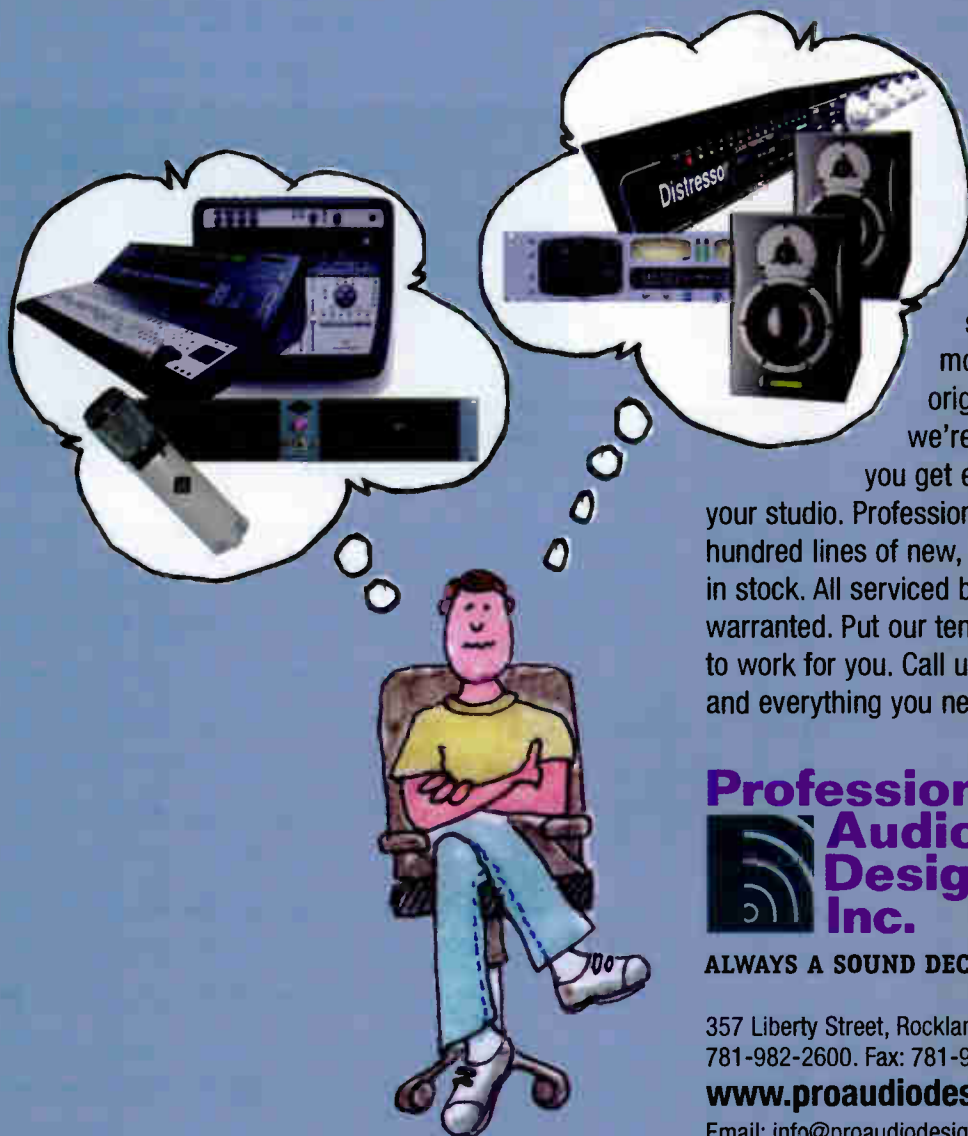
The (\$472/single-channel) SE-Pre 1 from Sage Electronics (www.sageelectronics.com) is a discrete Class-A transistor preamp series offered in single, dual, 4- and 8-channel configurations. The oak or Brazilian purple heartwood front panels have a classic, vintage big-knob audio look. Hand-built, wired and assembled by producer Phillip Victor Bova and family, the SE-Pre 1 has gold-plated XLR I/Os, 48VDC phantom power and high-voltage external power supply.

SPL (Sound Performance Labs, www.spl-usa.com) has two 5-channel offerings that are ideal for surround audio production. The SPL Atmos 5.1 Surround Miking

Whether in the company's second-generation, DC-coupled SuperAnalog console or as a stand-alone preamp, Solid State Logic's (www.solid-state-logic.com) XL SuperPre is configurable, with each unit supporting up to 24 preamps via modular cards providing four inputs each. Total Recall is integrated with the XL SuperPre, and stepless remote gain control is provided via servo-driven motorized potentiometers. Each channel provides -20dB pad, +48V phantom power and impedance switching for handling line and mic inputs. Housed in a stage box design with minimal depth dimensions, the XL SuperPre can also be remote-controlled with the company's optional SuperPre Remote.

The four preamps in Sytek's (www.sytek-audio-systems.com) A-SYS MPX-4A use a Class-A, Auto-Bias Bridge configuration, hybrid-input stage preamplifier for low -134dB EIN (50-ohm) performance, and a stated 10 to 85k Hz (± 0.25 dB) response. The \$1,678 unit also includes a useful Mute function in addition to the usual 48VDC phantom and phase switching. The company also offers the A-SYS MPX-4D, with similar performance, but in a \$2,860 digitally controllable package. Under MS-DOS software or Windows 3.1 (or higher), up to 256 MPX-4Ds are supported in a single user package, as a true AES15 standard PA422 interface or simple

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RS232C. Future developments will support Mac and MIDI interfacing, which will be free to registered users.

TL Audio's (dist. by HHB, www.hhb.co.uk) Ivory2 5001 4-channel tube

design that is DC-coupled at the output.

Vintech Audio (www.vintech-audio.com) is now shipping its 473 (\$3,195; external power supply, \$150), a 4-channel, Class-A discrete unit that features four Neve 1073-style mic preamps with EQ on every channel. EQ frequency choices are 3.2 kHz and 12 kHz for the highs and 60Hz and 220Hz low-shelving, and customers can special-order units at other EQ frequency settings. Each channel also of-



TL Audio Ivory2 5001

preamp (\$749) provides four quality discrete tube mic preamps in a two-rack-space chassis. Separate input and output level controls, -30dB pad, 90Hz low-cut filter, phase reverse and phantom power are standard. Drive- and signal-level LEDs and DI inputs are offered, and there's an optional 4-channel 24-bit digital output upgrade. Each channel of the Ivory2 5001 uses one-half of an .ECC83/12AX7A Sovtek dual-triode valve run from a 150VDC supply, and the unit's valve stage is positioned just after the initial discrete mic preamp stage.

The Precision 8 (\$2,850) from True Audio Systems (www.true-systems.com) elegantly fits eight solid-state mic preamps into a single-rack-space unit, and then some. Two FET direct inputs are available, and the Precision 8's built-in M-S (Mid-Side) decoding allows for creative spatial image and stereo control

fers an input-sensitivity adjustment allowing up to 70 dB of gain, an input impedance switch, a mic-line switch, an instrument input, and switches for phantom power, phase reverse and EQ on/off.

Housed in a two-rack-space chassis,



True Audio Systems Precision 8

the AD824 from Yamaha (www.yamaha.com/proaudio) is an 8-channel, remote-controllable mic/line amplifier. The rear panel has eight analog XLR inputs, eight TRS balanced insert-in and -out jacks (the latter also doubles as direct recording outputs), BNC word-clock I/O and a Mini-YGDAI output slot, which accepts optional cards for 44.1/48kHz, 16/20/24-bit multichannel digital outputs in ADAT Lightpipe, AES/EBU or Tascam TDIF formats. Remote-gain trim control of one or more AD824s is possible from a Yamaha DME32, PC or other device connected to the unit's COM PC/RS-422 ports. ■



Vintech 473

without readjusting mics or settings. Five-segment level indicators with peak-hold feature and selectable peak reference allow rapid optimization of program levels between the Precision 8 and other devices. Also included are continuous gain controls, dual DB25/TRS outputs and a totally balanced dual-servo

Randy Alberts is a San Francisco Bay Area-based technical writer, musician and composer.

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*MU-24 Meter Bridge optional



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THE 19TH ANNUAL TECHNICAL EXCELLENCE & CREATIVITY AWARDS

Listed below are the nominees chosen by the Nominating Panel of the 19th Annual TEC Awards. A special TEC Awards nominees supplement and voting ballot will appear in the August issue of *Mix* magazine.

Please note that in the category of Outstanding Creative Achievement, a complete list of all nominees for each project may be found at www.mixfoundation.org.

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OUTSTANDING TECHNICAL ACHIEVEMENT

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Little Labs IBP Analog Phase Alignment Tool (rev 2.0)
Martinsound MultiMax EXR
SIA SmaartLive 5
Tascam DS-M7.1 Surround Controller
Z-SYS z-256.256r Digital Detangler

Amplifier Technology

Carver Pro ZR Series
Crest Pro200 Series
Crown CTs Series 2-Channel Ethernet Digital Interface Amplifier
Hot House Model Six Hundred
Martin Audio MA 4.2s
QSC PowerLight: 6.0 II

Digital Converters

Apogee Mini-Me
Benchmark DAC-1
Digital Audio Denmark ADDA 2408
Dolby DP-564 Multichannel Decoder
Preonus Firestation
RME ADI-648 MADI/ADAT Converter

Mic Preamplifier Technology

Daking Mic Pre/EQ
Digidesign PRE
Focusrite ISA 428 Prepack
Grace Lunatec V3
Summit 2BA-221 Mic/Line Module
Universal Audio 6176

Microphone Technology/Studio

AEA R84
Audio-Technica AT4040
BLUE Baby Bottle
Brauner Phantom-C
Neumann Solution-D
Telefunken Ela-M 251

Microphone Technology/ Sound Reinforcement

AKG CS 2
Audio-Technica AE2500
Audix D6
Electro-Voice RE-510
Shure SM86
Sony ECM88

Wireless Technology

AKG WMS40 Diversity
Audio-Technica Artist Elite 5000 Series
Electro-Voice CDR-1000
Sennheiser SKM5000-N/KK105s
Telex SAFE-1000
Zaxcom Digital Wireless

Sound Reinforcement Loudspeaker Technology

dbx Driverack 260
Electro-Voice XLC
JBL VerTec VT4887
Lake Contour
Meyer M2D
Nexo Geo-T

Studio Monitor Technology

ADAM Audio S2.5A
Blue Sky ProDesk 2.1
Dynaudio Acoustics AIR 20
Genelec 7070A Active Multichannel Sub
Mackie HR-626
Westlake Audio BBSM-6

Musical Instrument Technology

Line 6 POD XT
Moog Music Voyager
Propellerhead Reason 2.0
Roger Linn Design Adrenalinn
Roland V-Synth
Vienna Symphonic Library

Signal Processing Technology/Hardware

Cedar DNS2000 for Pro Tools
Lexicon MPX550
Manley SLAM
SPL PQ Mastering EQ 2050
Summit TLA-50 Tube Leveling Amplifier
TC Helicon VoiceWorks

Signal Processing Technology/Software

Antares Tube
BIAS SoundSoap
Cedar Audio Retouch
PSP DelayPack
TC Electronic Assimilator
Waves Platinum TDM

Workstation Technology

Cakewalk Project 5
CEDAR Cambridge
CubeTEC AudioCube 5-Dell530
Digidesign Digi 002
Emagic Logic 6.0
SADiE Series 5 DSD-2

Recording Devices

Glyph Trip 2 FireWire Rack
iZ RADAR 24 S-Nyquist High Definition
Mackie SDR24/96
Rorke Galaxy 60
Studio Network Solutions A/V SAN Pro

Sound Reinforcement Console Technology

Cadac R-Series
DiGiCo D5 Live
InnovaSon SY40
Midas Legend 3000
Soundcraft MH3
Yamaha DM2000

Small Format Console Technology

Allen & Heath Xone: V6
Dan Dugan Sound Design D-2
JL Cooper CS-232 MiniDesk
Mackie Control
SPL MMC1 Surround Mastering Console
Yamaha 02R96

Large Format Console Technology

AMS Neve Logic MMC
Calrec Sigma 1000
Euphonix Max Air
Harrison TVD-SL
SSL XL K-Series
Studer Vista 7

OUTSTANDING CREATIVE ACHIEVEMENT

Record Production/Single or Track

(Awards go to Recording Engineer, Mixing Engineer, Producer, Recording Studio, Mastering Engineer and Mastering Facility.)
"A Thousand Miles," Be Not Nobody, Vanessa Carlton
"Complicated," Let Go, Avril Lavigne
"Landslide," Home, Dixie Chicks
"Soak Up the Sun," C'mon, C'mon, Sheryl Crow
"Hot in Herre," Nellyville, Nelly

Record Production/Album

(Awards go to Recording Engineer, Mixing Engineer, Producer, Recording Studio, Mastering Engineer and Mastering Facility.)
C'mon, C'mon, Sheryl Crow
Home, Dixie Chicks
Live in Paris, Diana Krall
The Eminem Show, Eminem
The Rising, Bruce Springsteen

Tour Production

(Awards go to Tour Company, FOH Engineer and Monitor Engineer.)
Peter Gabriel "Growing Up" Tour
Diana Krall "Look of Love" Tour
Paul McCartney "Back in the U.S." Tour
Rolling Stones "The Licks" World Tour
Bruce Springsteen "The Rising" Tour

Remote Production/Recording or Broadcast

(Awards go to Remote Engineer, Production Mixer, Music Mixer and Remote Facility.)
An Evening With the Dixie Chicks, NBC DVD
45th Annual Grammy Awards, CBS
The Rolling Stones Licks World Tour: Live From Madison Square Garden, HBO
Bruce Springsteen & The E Street Band, CBS
Standing in the Shadows of Motown

Film Sound Production

(Awards go to Supervising Sound Editor, Sound Designer, Re-Recording Mixer, Production Sound Mixer, Score Mixer and Audio Post Facility.)
Chicago
Minority Report
Signs
Star Wars Episode II: Attack of the Clones
The Lord of the Rings: The Two Towers

Television Sound Production

(Awards go to Supervising Sound Editor, Re-Recording Mixer, Production Mixer and Audio Post Facility.)
Alias, ABC
Austin City Limits, PBS
Late Show With David Letterman, CBS
Six Feet Under, HBO
24, Fox

Studio Design Project

(Awards go to Studio Designer, Acoustician and Studio Owner.)
Allaire Studios, "The Great Hall," Shokan, NY
Angel Mountain Productions, Bethlehem, PA
NFL Films World Headquarters, Mt. Laurel, NJ
Hit Factory Studio 6, New York City
Mi Casa Studios, Hollywood

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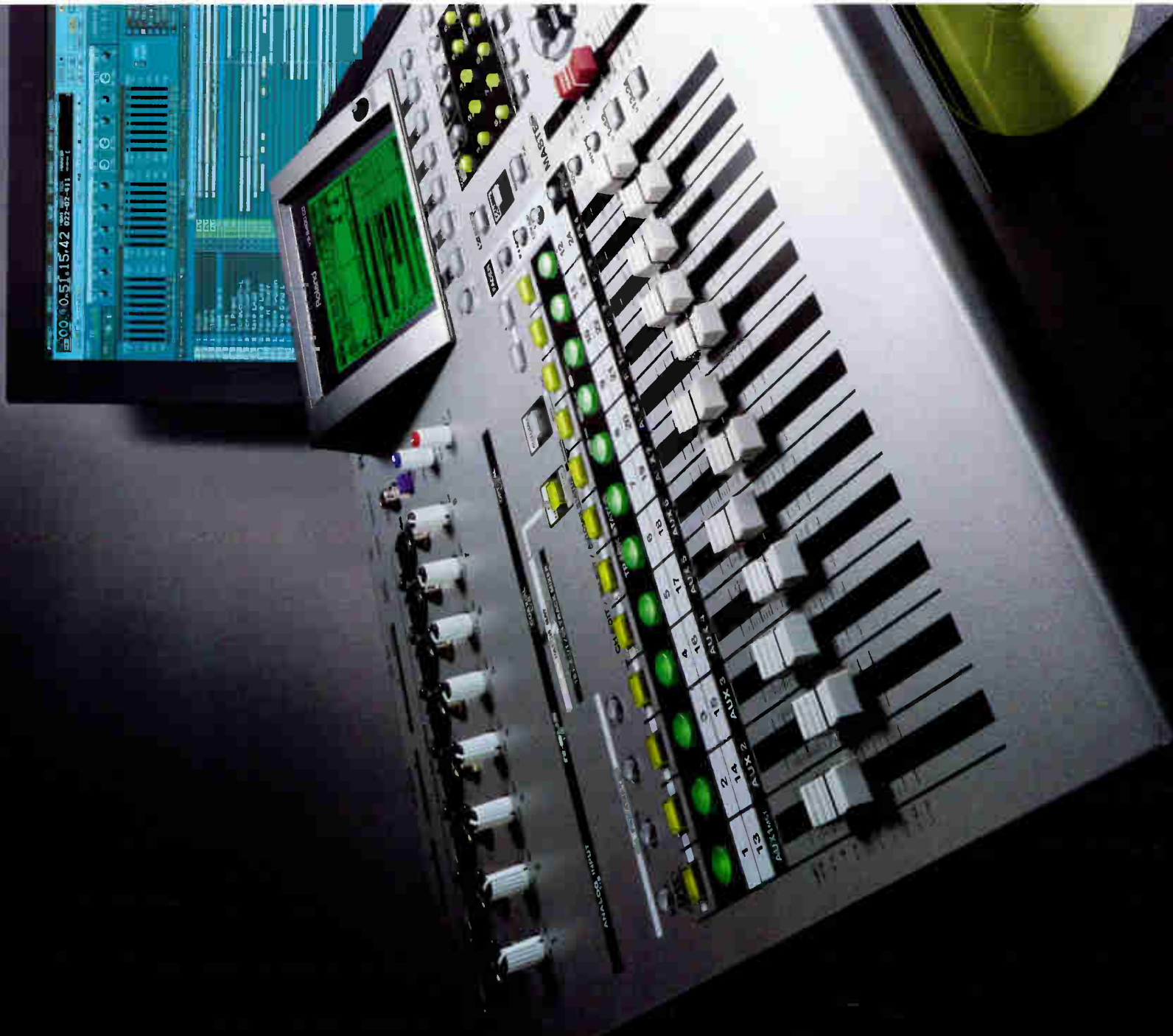
Add in the DM2000 sound quality and the ability to share Automix and Scene data with its bigger brothers (DM2000/02R96) using the included Studio Manager software to make this console a truly indispensable tool packaged in a 19" rack mountable unit.

Yamaha DM1000. Big things come in little packages (even little brothers).



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A photograph of the Roland VS-2400CD recording workstation. The device is a silver and black unit with a control panel on top featuring a large black knob, several buttons, and a red emergency stop button. A mouse is connected to the front panel. A CD is partially inserted into the front-loading disc tray. The background is a dark, textured surface.

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Roland
VS-2400 CD

Wattstax

Restoring and Reviving a Classic Concert Film

By Blair Jackson

At the time, it was dubbed “the black Woodstock.” On August 20, 1972, more than 110,000 people—probably 98% of them African-Americans—streamed into the Los Angeles Coliseum for an all-day concert featuring a slew of artists from the Memphis-based Stax Records label, including the Staple Singers, Albert King, Rufus Thomas and one of the era’s reigning soul kings, Isaac Hayes. Jesse Jackson, resplendent in a colorful dashiki and sporting a huge afro, was the concert’s emcee. The event, called Wattstax, was a benefit fundraiser for the depressed Watts area of L.A., which had been torn apart by riots seven years earlier. It was captured on film by an all-black crew helmed by white director Mel Stuart, who is best known today for the film he directed a year earlier, *Willy Wonka and the Chocolate Factory*. Wally Heider’s remote truck did the 16-track concert recording.

But the 1973 film *Wattstax* was more than just a parade of funky groups gettin’ down in the sweltering L.A. heat. Stuart wanted the film to be *more*—to reflect the

Wattstax restoration crew (l to r): Stephen Hart, Tom Christopher, Jim Austin and Michael Kelly.



Jesse Jackson introduces the show-stopping closer: Isaac Hayes.

views of people in the black community—so in the weeks following the concert, he had documentary crews roaming the streets, shops and churches of Watts, and he interspersed footage of the people they encountered between the film’s live performances. He also punctuated the film with hilarious bits from an up-and-coming comic named Richard Pryor, who’s seen doing stand-up in a tiny L.A. club.

Wattstax opened the Cannes Film Festival in 1973 and was nominated for a Golden Globe award (for Best Documentary) in 1974. The film “did very well in black neighborhoods,” Stuart told an interviewer, but it had all but disappeared by the following year. “A lot of black people have seen it, but it generally hasn’t made it into the mainstream because of the [raw] language. It’s become a sort of cult thing because it probably is, in all honesty, the best concert film about black music that’s ever been made.” Indeed, the film is a wonderful time capsule of an era when there was a deep social consciousness emerging in black music, and Black Pride was on the rise all over the country: “It

was the magic moment before crack hit [the inner cities] and everybody thought ...something good was going to come,” Stuart said.

Now, *Wattstax* is being re-released theatrically this month, with a DVD due in the fall. A CD of Isaac Hayes’ complete set is already in stores, and a box set containing nearly every song performed over the course of the seven-hour concert will be out soon. The restoration of the film and the soundtrack, at the Saul Zaentz Film Center/Fantasy Studios complex in Berkeley, Calif., was a complicated and time-consuming task, but well worth the effort and expense: There’s never been anything quite like *Wattstax*.

Our story begins on the audio side. Because the *Wattstax* film has long enjoyed cult status in England (with old monoprints playing midnight showings, etc.), Roger Armstrong, who runs Ace Records there, approached Fantasy Records—which owns the post-1968 Stax catalog—about putting out a box set of *Wattstax* music. About 60 songs had been recorded in the Heider truck on 16-track 2-inch tape, some of which made it onto a pair of live two-record sets that came out shortly after the original film.

“The original mixes were not very good,” says Fantasy Studios engineer Stephen Hart, who remixed the original

Wattstax tapes, produced the music for CD release and delivered mixes to the soundstage for the film's re-release. "I'm sure [the original mixers] were very, very rushed because they probably wanted to coincide with the film, which was on a big rush, too. There was lots of room for improvement, and certainly [in 1973] they didn't have the tools to fight the kind of problems they had. Those were not the days of multiple front-of-house mixers. They had one console that was constantly being re-plugged and switched, and as a result, there were incredibly deep busing errors. Snare drums would end up on vocal tracks, background vocals would end up nowhere. Guitars would be summed with a hi-hat. At this point, we'll never know exactly what was going on onstage during the show, but I suspect what would happen is a percussionist would come on and he'd grab a background vocal mic. Or a singer would walk up to the drum set and take the hi-hat mic; stuff like that. Then they'd put the mic down and maybe then it got used for something else. So it was all confused. The tapes were not uniform at all. With all the inherent problems with the tapes, it was definitely a Pro Tools kind of world to sort it out, just to make things linear."

Around the time Hart was beginning to investigate the multitrack masters for *Ace*, film editor Tom Christopher, who had helmed the picture restoration of the *Star Wars* trilogy, *Amadeus* (see *Mix*, March 2002) and other films, was making another discovery, independently: At a Warner Bros. film-storage facility in Burbank, Calif., he stumbled across a huge pile of film boxes of *Wattstax* material. "Originally, Warner's said, 'We have a lot of stuff here, but we don't have any masters. We just have the outtakes,'" Christopher recalls. "I said, 'Let me come down and see it.' So I went down there and I stayed in this cold vault for two-and-a-half hours and started going through these boxes. It was all just sitting on a pallet on the floor; they hadn't checked it into the facility yet. So I was opening boxes and taking extensive notes on everything I saw, and what I found was the camera original for the film, which was astounding to

me. And I also found out it was a 16mm show. What Columbia [the original releasing company] had was a 35mm blowup negative; they had considered *that* the original. So this was a big deal."

As he went through the boxes, many of them labeled poorly or not at all, Christopher made an exciting find: the "lost" final reel of *Wattstax*, or at least the components thereof. You see, when the film originally had its premiere at L.A.'s Dorothy Chandler Pavilion in 1973, it concluded with Isaac Hayes performing "Theme From Shaft" (his big hit of the day) and another moving tune from that film called "Soulsville," which almost acted as a summation of many of the themes addressed in *Wattstax*. But right after the premiere, MGM Studios, which

director Stuart.

"I discovered it on an optical soundtrack negative," says Christopher. "And that really became the basis for the restoration. I started from the sound and worked backward. It was a full reel, and all it said on it was something like 'Goldwyn Reel 6 Soulsville.' Well, 'Soulsville' didn't mean anything to me at the time because I was looking for 'Shaft,' which I had read was part of the end of the film. I had thought only one song had been taken out.

"So I had a guide to make the reel, but only in audio. There was no saved print that we know of. But all the negative pieces existed. The 16mm cut A-B rolls had most of the shots in them, but not all of them, because they did a lot of the effects work in 35 mm. So



Rufus Thomas belting it out at a daytime set.

controlled the rights to the music in *Shaft*, threatened a million-dollar lawsuit if the film (which cost just \$480,000 to make) was released with those songs in it. Stax, which was in a fairly shaky financial state at the time, backed down in the face of the suit and replaced the footage with a different Hayes song—"Rolling Down a Mountainside"—shot six months after *Wattstax* on a soundstage, then intercut with audience shots to make it look like it was from the L.A. concert. (Another song filmed on a soundstage and added later was Luther Ingram's "If Lovin' You Is Wrong, I Don't Want to Be Right," one of the true musical highlights of the film and in mono, no less!) As a result, no one since the premiere had ever seen the film as intended by

there were holes in the 16. When I printed the 16, the picture would go out at various times. There was no Richard Pryor, and a whole bunch of other stuff was missing. Of course, there was no paperwork on anything, so there was a lot of detective work involved just figuring out where everything was and what everything was."

Apple's Final Cut Pro editing software with Cinema Tools was used to build the picture for the reel in sync with the music, piece by piece. Nevertheless, Christopher managed to put together the final sequence, complete with some rapid-fire cuts on the beat during "Shaft." "I tried not to change anything," he says. "It had been cut that way. I didn't make any

—CONTINUED ON PAGE 72



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are really tiny-profile mics, we could do that. It worked really well, because it enabled flexibility in the mix to match up sounds with the visual focus.”

Vanston gives high marks to music editor Fernand Bos of Lowdown Music, who matched up the myriad music takes to picture, something that—due to the novice musicians—had to be particularly challenging. (Did we mention that Guest works from outlines, rather than scripts, and all dialog is improvised?)

“Chris’ movies have a very evolved kind of humor,” concludes Vanston. “It’s very gratifying to work on something knowing people who see it are going to laugh and have a good time. It was a ton of work, but it doesn’t come off that way. And word’s getting out; yesterday, I got an e-mail from the Kingston Trio inviting us to a cookout and asking us to bring our guitars!” ■



Music producer C.J. Vanston with Christopher Guest

Wattstax

FROM PAGE 69

aesthetic decisions.”

When Christopher learned that Stephen Hart was getting ready to begin transferring the multitracks into Pro Tools for the Ace box set project, he “convinced Stephen to lock it to the 60Hz pilot tone [track 16 on the master], which would give me film sync, even though at that point, there *was* no film project and nobody needed to listen to me. I convinced them it was a worthy thing to do. So ‘Track 16’ was my mantra: ‘Are you locked to sync?’ And they actually redid a couple of transfers where they’d forgotten to do it. They were great; they did a wonderful job.”

After baking the 16-track tapes, Hart transferred them into Pro Tools and went to work mixing. Between the 60Hz pilot tone and the two tracks of audience on the tapes, there were only 13 tracks of music, which meant Hart was somewhat limited in what he could do in the mix, because frequently, instruments and/or

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vocals were ganged on a single track.

"I ended up using a lot of processing," he says. "I did basically everything that's available in Pro Tools, with the exception of tuning; I didn't touch any of that. It could have used it, too, but with the amount of bleed there was, it would have been very difficult. You'd be tuning the ambience, and the next thing you know it sounds weirder than it did out of tune. So there was plenty of EQ'ing. The whole project jumped back and forth between a regular [Pro Tools] MIX system and an HD system, which had some different tools. I set things up so it was very interchangeable: I could go in any studio [at Fantasy] and plug in. I was still breaking out to an SSL console; it wasn't all inside Pro Tools. But I did it as stems, so the whole analog setup would be very simple and fast.

"When I was working on it, I kept wanting it to be a wider image," Hart continues. "It's stereo, but it's a mono-ish stereo due to the fact that the bleed was so bad that if I got really wide with a lot of things, you'd begin to really notice the bleed. There were other weird things. I think there were times when mics would get kicked out of the way or they'd be way off-axis. Then there was a whole string section that was on a little side stage and it had P.A. monitors that were usually louder than the musicians were; they were not close-miked at all. That was really a fight; I had to dive deep to pull some of that stuff up. I had to do some very picky editing to cut out as much [monitor noise] as I could and still maintain some kind of fluid sound, because it would get choppy with all the cuts. I used a lot of EQ, a lot of filtering. And sometimes there just wasn't anything you could do, or the tools only made it worse. Unfortunately, with Isaac [Hayes], his performance was really good but it's one of the worst recordings. I think people must have been wiped out after a long day. I had to do a lot of work on that, but it ended up okay."

Meanwhile, upstairs from Fantasy at the Saul Zaentz Film Center, the film restoration had taken on a life of its own, even though there was no formal financial backing for what was, at the time, entirely speculative work; there was no guarantee that *Wattstax* would ever be re-released. There was enough interest, however, to allow Film Center staff to work on the project and to pay Christopher, a freelancer. From September to December of 2002, intensive work on the film's sound-

track kicked into gear, with Hart as the stereo and surround music mixer, Michael Kelly the principal sound editor, and Jim Austin (chief engineer at the facility) the lead mixer on the show, working with Hart and doing dialog and effects. Around this time, Christopher departed to work on a PBS documentary about gourmet food maven Alice Waters, but he continued to check in every morning and to offer his expertise. He would return in December, which became crunch time.



Richard Pryor brings comic relief to Wattstax.

Michael Kelly notes, "Like a lot of projects, the ambition and the scope of what we did with the restoration started out small and inevitably got as big as it could get. In part, we did a complete restoration on the audio because there were not adequate masters that survived. We did a thorough search and found no stems, basically. We had started out thinking we were just going to replace the music and we'll use the old soundtrack for the dialog. Well, it's not that easy, because there are places where the music overlaps with the talking heads. So then we thought, 'Let's see what's going on with the quarter-inch. We've got to at least find the handles.' So Tom found all the quarter-inch audio. I wasn't expecting how much the film would be improved by going back in and replacing all that dialog. Now, you can really understand the dialog of these people in the streets, captured with a single boom microphone."

There was limited documentation about what was on the quarter-inch mono Nagra reels that were the source of the nonmusic portions of the film. So Anna Geyer of the Film Center watched the film over and over again, creating a database and memorizing the dialog. Then she started listening to all the quarter-inch rolls, and, Kelly says, "whenever she heard any line or section of dialog that she recognized from the film, she'd load

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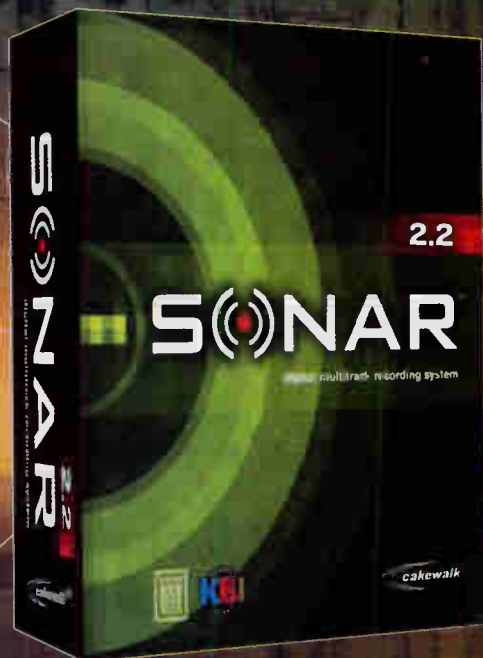
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it into Pro Tools. So basically, all the dialog in the film was rebuilt by hand. Unfortunately, there were a few sections where there was no quarter-inch. As is always the case with restoration, you're so thankful for all the things you find, but you never find *everything*, and for some reason, out of the 100-plus rolls of quarter-inch that they rolled on this film, there were two rolls missing. Now, every time I watch this film, I wince when those four shots where we didn't have the quarter-inch come up and the sound isn't quite up to the rest of the film." In the cases

where they didn't have the quarter-inch, they pulled the pieces off of mag or optical film and put them into a Sonic Solutions No Noise to clean them up. The Richard Pryor material only existed as a dupe of the master tapes.

Not surprisingly, given the variety of settings in the film and motley materials he was given to work with, Jim Austin faced quite a challenge when it came to developing a good surround mix for the film. Rather than creating some overhyped spatial environment for the dialog/street portions, he elected to have all that

information appear solely in mono in the center channel. For the music, Stephen Hart "took the 20 songs that were going to be in the film and I brought them back in here and made stems, which ended up wider than the original because I was stereo-izing some program. Then I had ambience that I created for the record. The audience, which was on two tracks, was always discrete. Then there were plates and 480s that I built some ambiences with that I printed to separate stems. In the end, it was 24 tracks wide from a 16-track tape."

Austin then took the stems and, "built them out, so to speak, into the 5.1-channel film space," he says. "I didn't use any low-frequency effect or subwoofer channel on the film because it didn't seem to fit the genre that we had, and I didn't want to manufacture it."

Most of what appears in the rears of the surround mix is audience and reverb. "It was easy enough to build a good stadium sound with the modern reverberation tools we have right now," Austin says. "That was one of the easier things. But you have to start with a good stage sound, and that was hard because there was so much leakage, and sometimes it was constructive and sometimes it was quite hampering: You'd get bass cancellation sometimes from different tracks."

"There was a lot of forensics involved," Kelly adds. "The thing about restoring the soundtrack is that we had no map, except for what we could hear. For the 5.1, we didn't want to create new things. We had to figure out: Is that the crowd mics that were live, or did they do additional editing and add the crowd tracks later? Which they *did* do. On the crowd tracks—applause, bubbling—sometimes we cut those in two stereo pair sets. I would take the same track, have it bubbling in front and then a version of that offset bubbling in back.

"But there are also specific effects. When Jesse Jackson introduces the Black National Anthem ["Lift Every Voice and Sing"] and then [Kim Weston's] singing it, there's a shot where Jesse has his fist up in the air and then he takes it down and claps. Well, we had to Foley that clap. There's another spot where the singer in The Bar Kays picks up a cowbell and starts hitting it, but it wasn't on any of the mics, so I went to Guitar Center and bought a cowbell. A lot of the work was like the Tasmanian Devil: whatever was right in front of you that had to get done to prep for the mix, we flew through it to do it any way we could."

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Wattstax deftly brings the inner-city street life to the big screen.

Even with the team working hard day after day, "From week to week, it looked like the project might get shut down because there wasn't enough interest and money to finish it," Kelly says. "It was just little baby steps week to week that allowed it to eventually blossom." The team put together a videocassette of the film, including the "new" ending, and Film Center facilities manager Scott Roberts sent it around to various people and studios trying to drum up interest in the project.

"We had also made a DVD that compared the new ending and the old ending, so it was an analysis tool if you wanted it," Christopher says. "We sent those around and nobody was calling us back.

But we kept trying, and suddenly Sundance [Film Festival] called back and said, 'We want this film. We're going to play it, but not in competition.'"

Instead, Sundance gave *Wattstax* a special designation as a historically significant film, worthy of inclusion in the Sundance Archive at UCLA. That bit of news was all it took for Sony, which had the theatrical rights to the film (through its ownership of Columbia Pictures) to bankroll the remainder of the restoration at the Film Center. "Of course, it's what we all wanted," Christopher says, "but it was impossible: It was December 9th when we got the P.O., and Sundance wanted a print by December 30th. Well, we managed to find a great lab—Monaco

[in San Francisco]—that wanted the project and would do it quickly. And then we all worked like crazy. My assistant editor, Tim Fox, and I were cutting the 35mm work print on Christmas Eve. The day after Christmas, it was being neg cut. We had our first print out of the lab on the 6th of January; we delivered [to Sundance] around the 10th or the 14th. We were late, but it got there."

And, predictably, *Wattstax* was very well-received at Sundance. At press time, the film is slated to play at the late-April opening of the new Stax Museum in Memphis, and a limited theatrical release was planned for early June. At the Film Center, there was still debate about the DVD that will likely come out in the fall. What sort of extras might there be? More from Albert King's incendiary set? The "old" ending, with Hayes lip-synching "Rolling Down the Mountainside"? Those decisions were still up in the air. But the really hard work—restoring this fascinating slice of black Americana—was done, and *Wattstax* can now be enjoyed by new generations of viewers and take its rightful place among the great concert films.



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PEARL JAM

by Candace Horgan



Engineer
Brett Eliason

Pearl Jam, one of the most important bands of the 1990s, is still a vital force in American rock. Anchored by the passionate singing of lead vocalist Eddie Vedder and the guitars of Stone Gossard and Mike McCready, Pearl Jam—along with Nirvana—propelled grunge rock into the mainstream and fostered a host of less-impressive imitators. The band also pioneered the release of “official boot-legs,” a concept that has been taken up by groups such as Phish and String Cheese Incident. Each show can be ordered at www.pearljambootlegs.com; MP3s of each song from the show are available for download the day after the concert to tide fans over until the CD arrives. The group is currently on the road with a huge production in support of their latest album, *Riot Act*.

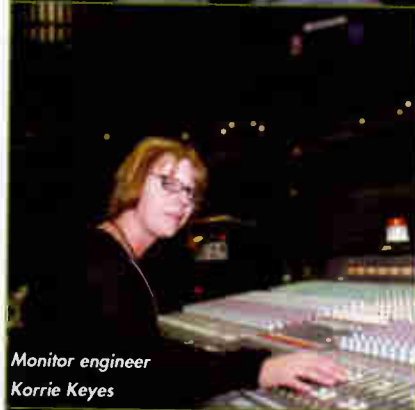
The band's sound engineer, Brett Eliason, has been with Pearl Jam since their first tour. To meet the demands of releasing the shows on CD, Eliason is mixing the show from a truck in the back of the venue, sending a feed to another console at FOH. He is using a Midas XL4 console on this tour. “I chose the XL4 because of its routing capabilities. I have signal going to a lot of places. I wish it had a little more in the way of inputs and outputs—especially outputs—though most people in a live situation don't run into that limitation. I have 56 inputs going, and for outputs, I send 22 lines to FOH, two outputs to stereo recordings and a 48-channel multitrack, all simultaneously.”

From the XL4, he sends one stereo feed to a Panasonic SV3700 DAT; one

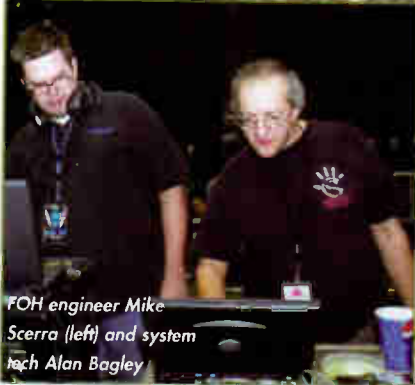
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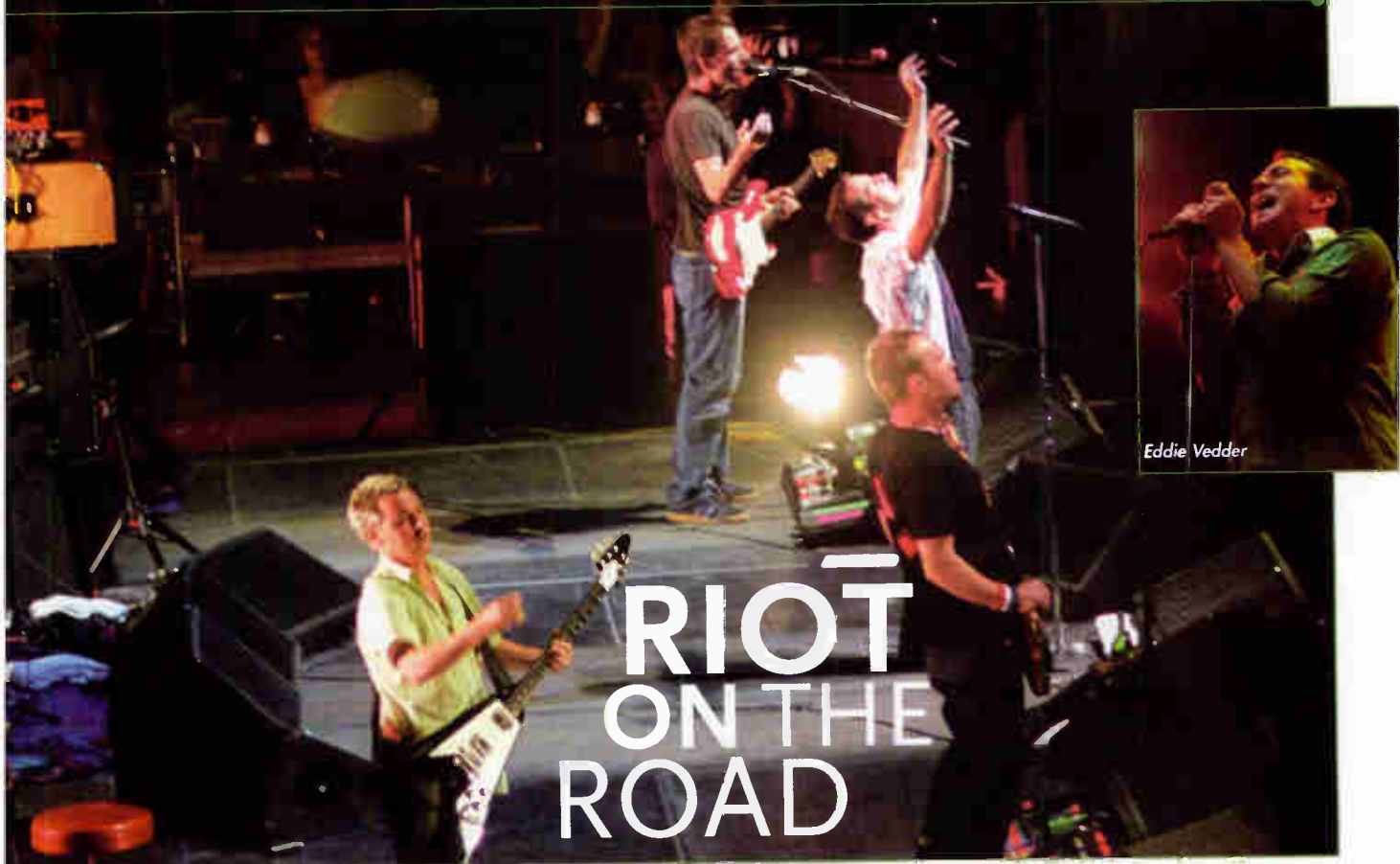
stereo feed to an Apogee PSX-100 A/D that sends a digital feed to an Apple Powerbook G4 running Pro Tools LE recording in 24/48; one stereo feed to a MOTU 828 FireWire recording setup that sends a feed to another Powerbook G4 running Peak Audio to do the MP3 mixes; and another feed to a 48-track Pro Tools hard drive system. Eliason explains, “When you go online to buy a show, you are given a link to go download MP3s of each song. We knew they would be traded, so we put them at low resolution so people would still want the CDs. The MP3s are uploaded to a Sony server. The 24-bit stereo files for the bootlegs are being uploaded by Wam!Net. We have sites from all of the cities we will play that let us upload the files to a mastering lab in Seattle. When the mastering engineers come in the next morning, the files are waiting for them. They then use the Wam!Net servers to send the mastered files to a Sony pressing plant, so by the second day, the disc images are available for pressing CDs. We are done within 48 hours, and the discs are shipped. I also have an HHB830 Plus CD burner in there so that the band can have whatever they want when they want



Monitor engineer
Korrie Keyes



FOH engineer Mike
Scerra (left) and system
tech Alan Bagley



Eddie Vedder

RIOT ON THE ROAD

it. We record everything they play, including soundcheck."

Meanwhile, Eliason is sending submixes to a Midas Heritage 3000 console at FOH that is run by Mike Scerra, who fine-tunes the mix for the P.A. Says Scerra, "Brett sends me 22 submixes, 20 of which I use. The last two I use to monitor the mix through headphones. The K-T DN3600 is inserted on the left and right and used to control any blatant frequency problems. The Aphex Dominator is used to catch the peaks and contour the high and low end so things don't get too out of hand. The BSS units are standard omnidrive digital DSP crossovers. We run four of them and also use them for other finite EQ. We EQ with those first because you can get much tighter control of the frequencies instead of using the DN3600 to grab a whole octave. I'm doing a mild remix to make sure that the vocals are up and monitor the P.A. to make sure it sounds consistent throughout the show. We use almost no EQ on the console."

Pearl Jam is carrying an EAW line array provided by Carlson on the current tour; Carlson's Alan Bagley is working as the system tech. "We used the EAW in Seattle for some one-offs we did last

year," Eliason says. "The Key Arena, where the SuperSonics play, is boomy and swirly, and the EAW worked great there; it was easy to control. I was very impressed that in the 300-level seats, you had clarity and power. I had friends sitting up there during the show, and they said they had never gotten that clarity that high up. At FOH, I think we run 102 to 104 dB A-weighted, at a typical 110 feet from the stage."

Bagley has worked for Carlson for seven years, doing special projects like festivals. He explains the system setup this way: "We use two computer programs. One is the 760 Wizard, which tells us how to aim and hang the thing. To gather data for that, we spend time with some surveyor tools to figure distance and angles. After the system is up, we use Smaart Live to look for minor problems. Mike uses his voice and a couple CDs to fine-tune it further. They don't spend a lot of time at it. Here at Pepsi Center, we are using 24 KF760s and 24 761s—12 on a side—24 SB1000s subs—stacked three high and four wide on each side of the stage—nine KF750s and KF755s for rear coverage, and six JF2000s underneath the front of the stage for the nearfills. I'd prefer to put them on the front edge of

the stage, but because of the front-line monitors being so close to the edge of the stage, we can't put them there. The Pepsi Center is a really tall room; the bottom of the P.A. is about 39 feet off of the ground, which is the highest I've ever run a P.A. That seems the best way to run line arrays, though, to assure better coverage front to back. Other than demo'ing other people's line arrays, this is a relatively new field for us. We've been an EAW company for a long time and like the way the boxes perform. We like the consistency of sound from each box. We thought about some other line arrays, but it would have been a real departure for us. Also, when we purchased this P.A., we did it specifically for this tour because the demo we did at the Key Arena went fabulously well, and Brett and Mike loved the system. All of the amps are QSC Powerlight 6.0s and 4.0s. We have the 4.0s for the highs and 6.0s for mids, lows and subs. We use two BL236s for the nearfills, 12 6.0s per side and three 4.0s for the front. We have additional QSCs on the rear P.A.s, three each of 4.0s, 3.4s, and 3.8s for the 750s and 755s."

Monitors are handled by Karrie Keyes, who has been working with Pearl Jam

for 12 years: "I started by doing shows in clubs and theaters in L.A., which is where I am based," she says. "I was doing monitors for the Red Hot Chili Peppers, and Pearl Jam was the opening band, so at the end of the tour, I hooked up with them. For years, I did both bands and leapfrogged back and forth. Since Pearl Jam and the Peppers overlap with each other, I sometimes cover for the Peppers' monitor guy, but I am pretty much full time with Pearl Jam now."

Keyes mixes on a Yamaha PM 4000M, which she says is not her first choice, but the choice of the band. "We've done so many tours, especially in the early years when we would tour almost constantly, and that is the board they got used to. Every time I use a different console, the sound is never quite right."

The monitor system is provided by Rat Sound Systems Inc. and has been designed especially over the years to meet the exacting needs of the band. Keyes details each player's mix as follows: "The monitor system is almost completely a Triamp system, predominantly using Klark Teknik DN800 crossovers and TAD 2-inch

drivers with waveguide horns. These were designed for the band in order to make vocals as loud and clear as possible onstage. Stone has an L-Wedge for all instrumentation and guitars. He also has an S-Wedge for his vocal, a Trap 5 sidefill triamp cabinet with full instrumentation in it, and a Rat Sub cabinet for kick and bass. Ed has two S-Wedges for vocals and an L-Wedge for instruments. He gets guitar, his acoustics and ukulele, and a lot of cues throughout the show from Mike and Stone, but they aren't in there all the time. He also has four S-Wedges for rearfills with vocal, and two vocal monofills in Rat Trap 5 triamp cabinets on the stage. Jeff has an M-Wedge with a McCauley 15-inch driver in it. It is a triamp wedge, but I only use the McCauley in it, and he just gets low end from the kick drum. He also has a Rat-designed bass wedge in front of him, but it's controlled by his Ampeg heads. Mike has an L-Wedge and gets a little of Stone in it and that's it. That side of the stage has a lot of hearing issues, so I keep it quiet over there. Any high end just kills Jeff and Mike; they both share a

Rat Sub that has low end from the kick. Matt has two Rat Trap 4 drumfill cabinets and a Rat Sub. He has just about everything in there; I don't think there is one instrument on stage that he doesn't have. Boom has an M-Wedge and gets kick and snare, his keys, all of Stone's guitars and Ed's vocal."

While music is, obviously, the band's primary focus, the members of Pearl Jam have also gained notoriety speaking out on issues that concern them. During the 2000 presidential election, they encouraged listeners to vote for Ralph Nader. They have also been vocal in their (unsuccessful) challenge of Ticketmaster. And controversy continues to follow them: The song "Bu\$hleaguer," a scathing indictment of President Bush, and the group's stance against the war in Iraq have drawn criticism in some circles. They're sure to keep stirring things up, politically and musically, as the Riot tour continues into the summer months.



Candace Horgan is a freelance writer based in the Denver area.

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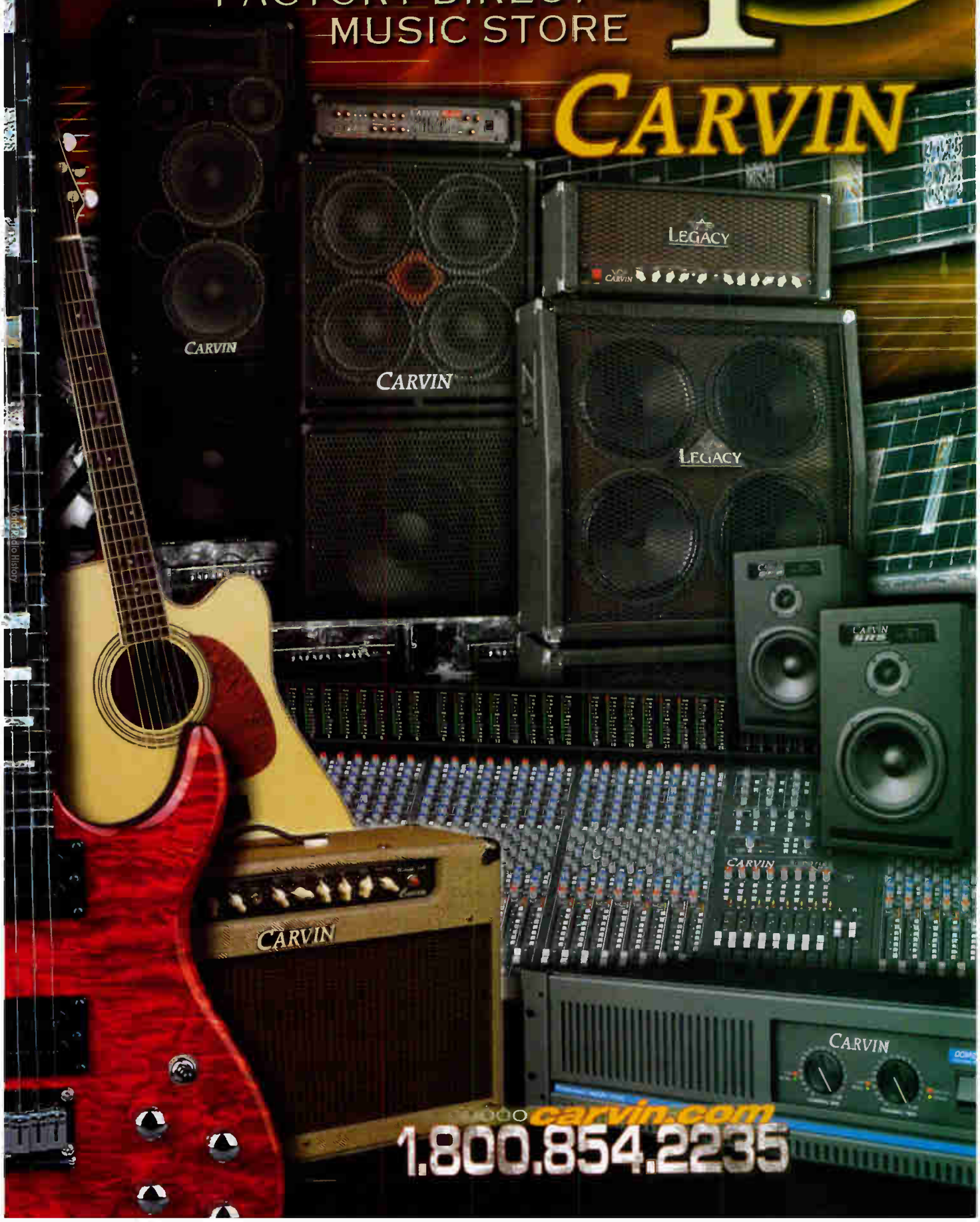
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THE PRETENDERS



On tour since January to promote their latest album, *Loose Screw*, The Pretenders rocked through the San Francisco Bay Area in early March. Fronted by the charismatic Chrissie Hynde, the seasoned band played two sold-out nights at the Warfield Theatre; their well-received set featured fan favorites from an impressive 25-year recording history.

New at FOH was Chris "Privet" Hedge, whose previous credits include such diverse acts as Genesis, Gary Moore, Tangerine Dream and Irish boy-band Westlife. Hedge's FOH console of choice is a Midas XL4. "It's the best desk ever made," he says. "The solid-state EQ and mic preamp are fantastic, the faders are beautiful, and the MIDI automation is more than sufficient." The sound system, consisting of self-powered Meyer cabinets, was supplied by Solotech (Montreal, Quebec), which also provided monitor and control systems.

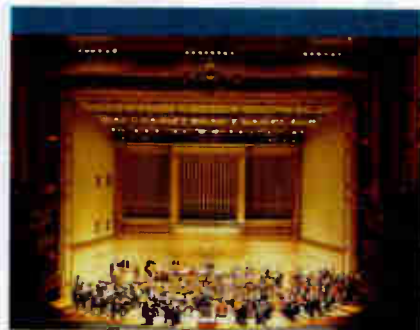
Hedge uses only moderate compression on the vocals, with a TLA 100A followed by a dbx 160A on Hynde's lead vocal. "A band of this quality

should be allowed to breathe and create their own dynamic," Hedge explains. "The dbx is just to make up the gain, because you don't want to drive the TLA too hard. They're quite noisy machines. The 160A also goes into compression now and again as a sort of gatekeeper if Chrissie screams. But it's only on a 2:1 or 3:1 ratio; it's all soft compression." For total control of his gates, Hedge places D-Drum triggers on each of Martin Chambers' drums. "If you use normal gating methods and rely on the mic to open the gate, you'll struggle," Hedge says. "Martin is a very dynamic player. So, in order to have enough accuracy with the gates, the triggers are crucial: to be able to set the threshold sensitivity low enough for a grace note to open the gate, yet still avoid other drums breaking through. The clarity this helps produce is striking."

—Chris Michie



Chris "Privet" Hedge



BOSTON SYMPHONY INSTALLS V-DOSC

Symphony Hall, home to the Boston Symphony Orchestra (BSO) for more than a century, has installed a new L-Acoustics loudspeaker system. Specified by frequent BSO engineer and consultant Steve Colby, the new system features a central cluster of seven V-DOSC cabinets suspended above the proscenium with a pair of dV-DOSC downfill array elements hung beneath, the whole augmented by portable stage systems, including a front-fill array of four MTID-108a cabinets mounted on stands and a deck-fill system of stage-left/right ground stacks.

BSS SOUNDWEBS GO TO BLACKPOOL

The Syndicate in Blackpool, the largest-capacity nightclub in the UK, has installed a custom sound system from Ohm Industries with all signals routed and controlled by BSS 9088 Soundwebs and 9010 "Jellyfish" remotes. The 4,500-capacity club is split over two floors, each with its own music policy. The system includes 116 fullrange and bass enclosures for the several dancefloor areas, peripheral areas and DJ monitoring setups.

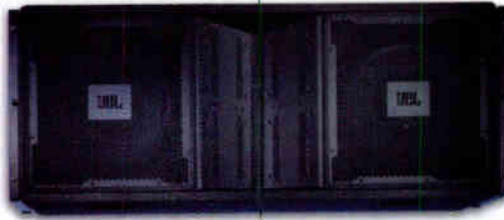
SALES AND INSTALLATIONS

Berlin-based Complete Audio has purchased Martin Audio 12 W8LC compact line array enclosures, plus rigging frames and amplification from German Martin Audio distributor Atlantic Audio. Complete Audio's rental inventory already includes 20 Wavefront W8C top boxes, eight Wavefront W8CS subs, 20 Wavefront WSX subs, eight Martin LE12JB floor monitors and 10 Martin LE700A floor monitors, all powered by Martin Audio Lab Gruppen amps... The Church, a premier night-spot in Denver, has added Allen & Heath Xone Series professional club mixers as part of a major upgrade to its sound systems. Tim Hannum, of Diavolo Systems in Houston, managed the refurbishment.

TOURING NOTES

UK-based SSE Hire is providing InnovaSon digital consoles at FOH and monitors (a Grand Live for monitors and a Large Scale Live at FOH) for singer/songwriter David Gray's year-long world tour to support his fifth album, *A New Day at Midnight*. Because the InnovaSon boards include dynamics on every channel, the touring production has netted significant savings in shipping costs and outboard gear rentals... FOH engineer Hugh Johnson is using Summit Audio DCL-200 dual compressor/limiters on bass guitar and vocals for Vince Gill's current Back 2 Basics U.S. tour. "Generally speaking, keeping the vocal properly mixed is a matter of it being level," says Johnson,

who has worked with Gill since 1990. Another Summit Audio fan is engineer Robert Scovill, who used the DCL-200 during the Tom Petty & The Heartbreakers' Last DJ tour to give the band's drums and piano a "really nice harmonic rise"... Back on the road after a two-year hiatus, Phish is touring with a full complement of Sennheiser and Neumann microphones, including the Neumann KMS 150 vocal mic. FOH engineer Paul Languedoc uses five KMS 150s onstage for vocals and carries a pair of U87s for the piano. ■



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CELESTION FRONTLINE2 DRIVERS

The next generation of Frontline raw P.A. speakers from Celestion (dist. by Group One, www.g1limited.com) includes the Frontline2 15- and 18-inch woofers. Both feature a 700-watt power rating, 4-inch voice coils, die-cast aluminum frame and high-power double suspensions with proprietary suspension reinforcement rings. The speakers have a nominal 8-ohm impedance; the 15 has a 35-2,000Hz response, and the 18 has a 30-500Hz bandwidth.



RADIAN MICROFILL MONITOR

Radian Audio Engineering (www.radianaudio.com) offers the RMF-1122 MicroFill speaker system, a two-way, multiprofile wedge designed for touring, corporate and installed sound. Featuring a 12-inch woofer and a 2-inch HF compression driver, MicroFill can be bi-amped or driven passively via an internal crossover. Developed in conjunction with Dave Levine of Rat Sound, MicroFill is constructed from 3/4-inch Baltic birch with built-in "I"-track rigging points and finished in Radian's exclusive waterproof Duradian™.



SLS RLA/2 RIBBON LINE ARRAY

The RLA/2 ribbon line array from SLS Loudspeakers (www.slsloudspeakers.com) is a compact system designed for small- and medium-size venues that can't accommodate large cabinet arrays. The RLA/2 incorporates SLS ribbon-driver technology and a space-efficient cabinet housing two 8-inch, high-powered cone drivers. Bass response goes down to 70 Hz, with 500-watt handling for 125dB continuous SPLs and 131dB peaks. SLS' PRD1000 Push-Pull Neodymium Ribbon Driver offers HF response out to 20 kHz. With rigging, the 56-pound RLA/2 cabinet is trapezoidal, measuring 9.6 inches high in front (7.6 inches high in back), 28.25 inches wide, 13 inches deep and is covered in black NeverMar® coating. Input connectors are two NL-4s.

TAPCO 6-CHANNEL MIXER

In 1969, Greg Mackie introduced the first 6-channel mixer specifically designed for rock 'n' roll P.A. under the TAPCO brand name. Now, Mackie Designs (www.mackie.com) intros the new TAPCO 6306 6-channel mixer, the first product in the new "TAPCO by Mackie" family. The 6306 features two low-noise mic pre's, two instrument inputs, a stereo aux return to monitor, two aux sends, LED metering and separate level controls for headphones and control room monitors. Retail is \$119.95.



SHURE HEADWORN VOCAL MIC

Shure (www.shure.com) offers the Beta 54 headworn vocal mic, available in both wireless and hard-wired configurations, in either black or tan. A lightweight, durable unit, the Beta 54 features a supercardioid design for improved ambient noise rejection and maximum gain-before-feedback.

Capable of handling SPLs up to 149 dB, the Beta 54 has a 20-20k Hz frequency response and is supplied with a snap-fit windscreen, detachable boom mount, and flexible, fully adjustable headband. Price is \$594.65 for the wired model; \$509.65 for the two wireless models.

EAW STEERABLE ARRAY

The Digitally Steered Array (DSA) Series from Eastern Acoustic Works (www.eaw.com) is a variable directivity powered line array that includes the full-range DSA250 and DSA230 low-frequency speakers and DSAPilot™ software. Each DSA250 includes eight 4-inch woofers; eight horn-loaded, 1-inch dome tweeters; and 16 channels of onboard amplification and DSP. The DSA230 LF module has eight 4-inch woofers and eight amp channels of amplification and DSP. The vertical output pattern of up to 32 DSA loudspeakers can be adjusted via the Windows-based DSAPilot software, which calculates environmental parameters and upload settings for the best possible coverage. DSAPilot may be networked using standard EIA-485 or optional CobraNet.

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World Radio History

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RELIABILITY: Everybody knows Yamaha consoles take a knocking and keep on rocking. Build quality second to none. Proprietary software is feature-rich and stable. How much down time can you afford?

INFRASTRUCTURE: PM1D tech support and service is "24/7", U.S.-based and staffed with experts. Regional service centers with techs and parts on the next available flight if needed. Factory-direct, nation-wide sales force dedicated to supporting PM1D customers. Free software upgrades, interest free finance programs, etc. etc.

USER BASE: Hundreds of PM1Ds in use daily. Over 600 engineers trained at Yamaha's PM1D seminars in the U.S. alone. These comprehensive sessions are on-going and free (no extra tuition required). Lots of flight time on PM1Ds.

EASE OF OPERATION: There's a reason we've sold hundreds of PM1Ds. Don't take our word: "Sure, there's lots of depth to this console, but as far as hopping on and mixing you can be doing that after a five-minute lesson." —Alan Richardson, *Monitor Engineer for Elton John*.

SONIC PERFORMANCE: The theoretical sonic advantages of digital consoles are well known but not always realized. John Cardinale of the world-renowned Carnegie Hall says, "What impressed us the most is that it's extremely stable, and sounds very quiet and clean, almost like a digital recording console. And, it translates the audio passing through without colorization." Top tours, concert halls, houses of worship and broadcast facilities all over the world (lots of golden ears) trust their art to PM1D every day.

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*Large 800 x 600 pixel
display. Intuitive,
user-friendly software.
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*Virtual Output Channel
Programmable and
recallable for all master
section outputs,
6 band parametric EQ,
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SOR and 0 to 1,000
milliseconds of
programmable DELAY.*

*Flexible meter bridge
selectable to monitor MIX
or MATRIX buses.
Dedicated meters
for STEREO A and B
and CUE signals,
TIME CODE, and SCENE
MEMORY display.*

*Basic input channel
includes MIX SEND selec
tion, Input MIX, Input PAN
and GAIN encoders,
TO STEREO, Input DCA,
CUE and ON switches and
Input A, B, COMPRESSOR,
GATE, METER, Input DCA,
RECALL and MUTE SAFE
LEDs along with a high
quality 100mm motorized
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section, encoders for
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ATTENUATION, switches
for DCA Assign, CHANNEL
SAFE, CHANNEL SELECT,
metering or LED displays
for all functions and
100mm motorized fader.*

*Master section includes
encoders, 100mm motor
ized faders and LCD
displays for MIX and
MATRIX Outputs and DCA
Groups as well as
switches for fader "flip"
functions and MIX and
MATRIX layers.*

*Utility section includes
scene memory controls
and displays, computer
interface and controls such
as track pad, keypad, PCM
CIA card slots, MONITOR A
and B controls, delay control
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milliseconds), and quick
access keys for instant func
tion recall. Software can be
programmed off line on a
PC. Computer can run soft
ware in parallel with console
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Widgets, Widgets Everywhere

The Latest in Cool Consumer Technology

I'm coming to you live from beautiful Lost Wages, that city of silliness in the great, pointy state of Nevada. Nothing typifies excess like the faux grandeur of the midline hotels here, unless, of course, you're into gadgets, and what engineer isn't? No, I'm not going to tell you about the NAB show. That's for the high end, and you can find that report on page 62. I'm going back in time to the annual Winter Consumer Electronics Show, *the* place to go for binging on electronic gewgaws. This month, we'll take a look at fun gear that sounds good and may just impact your thang in days to come.

Let's start with USB Flash drives, which have matured considerably since our last visit to USB Land. Features have proliferated, with capacities up to 1 GB, biometric security, waterproof packaging, Bluetooth and USB2 connectivity, and multimedia capabilities such as onboard still/video cameras and MP3 players. But will they do the dishes? Home networking is also maturing, with vendors offering all sorts of solutions to the nightmare of wiring the crib. These products will, in turn, drive the demand for home consumption of rich media, a good trend for us audio folks.

Lots of spendy DVD-Audio, SACD and universal players were out on the floor from Kenwood, Meridian, MSB Technology and TEAC, while Denon showed its universal player tentatively priced at \$999. But, it was Pioneer that finally delivered the olive branch to both sides in the War of the Formats

with its DV-563A. This player, with a MSRP of \$270, handles MP3 and WMA files on CD-ROM and CD-RW, along with DVD-V, DVD-A and multichannel SACD. It even includes a JPEG playback function for those slide shows of the wee ones. Now *that's* value!

One of the standout trends at this year's show was the wide range of quality choices in the Home-Theater-in-a-Box category. DVD chieftain Toshiba even announced its first HTIB, the SD-43HT, a \$300 package with a 50-watts-per-channel receiver/DVD player combo, a wide range of I/O and DTS decoding. Another example is Mission's fs1 system. This 5.1 loudspeaker product combines high-fidelity reproduction with modern good looks and an incredibly small footprint. At a suggested retail price of \$1,000, this is a good example of the many manufacturers providing multichannel speaker packages in the \$600 to \$1,500 range, well under the pain threshold for many households. This means that, with the introduction of very inexpensive DVD and SACD players, many more families will be settling in for some surround audio thrills in the near future.

Tannoy showed a more innovative HTIB design, its FX5.1 model. The two-way satellites provide extended high-frequency response via titanium tweeters. The shielded sats have provisions for wall mounting and are spec'd as -3 dB at 71 kHz. Way out there, baby! Another Brit stalwart, KEF, also preached the wideband gospel. Its new XQ Series of down-market loudspeakers have additional hyper-tweeters for extended ultrasonic response. While most engineers pooh-pooh the concept of playback above 20 kHz, I have not done any tests with ultrawide-band speakers. I'll just say that some folks I know like having that extended upper-frequency response. A more concrete advantage, applicable to most complex systems, is that extending the bandwidth provides better linearity and less phase shift within the passband.

At the fidelity scale's other end, Ellula showed its latest inflatable loudspeaker, the HotAir. Yup, I said inflatable, as in way portable. This \$99, battery-powered, active 2.1 system shares something with Mission's fs1: They're both based on NXT's flat-panel transducer technology.

In other consumer-electronic news, JVC has something wonderful for all you vidiots out there. The company's new GR-HD1 is the first high-definition consumer camcorder. "By utilizing a newly developed 1/8-inch-type



Tannoy FX5.1

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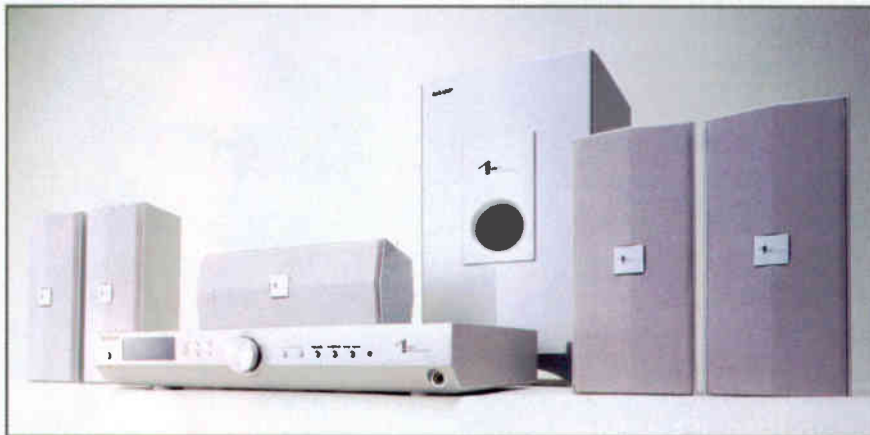


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BITSTREAM



Sharp SD-AT1000 1-bit system

1.18 million pixel progressive scan CCD and JVC proprietary processing, the new camera records and plays back 750/30p (1280x720/30p viewable) digital high-definition and 525p progressive wide images to mini DV tape." What this press release means to me is that for videographers, the quality of a work is no longer tied to the cost of production, just like we've seen in audio.

As in years past, Sharp showed the latest generation of its DX-SX1 high-end SACD transport and SM-SX1 amplifier (\$3,000 and \$4,500, respectively) with a proprietary DSD link. This year at least, they got the styling right. More important is the company's trend of manufacturing a line of inexpensive hi-fi packages and components using "64-fs 1-bit switching" technology. Sound familiar? It should, because this is DSD data. Sharp is doing for hardware what ABKCO is doing for reissues: sneaking quality in under the radar, while not scaring consumers with more jargon and obfuscation. I hope we'll see some end-to-end DSD hardware at commodity prices from these folks in the near future.

Score one for Windows XP; ignore the hype over Tablet PCs. Instead, check out one of the most compelling new features: support for "Smart Displays." I spent some time with the ViewSonic folks while beating on one of their *airpanel* V150 wireless displays. Imagine not having some honking big CRT, which creates a bogus acoustic shadow, or a traditional LCD at the mix position, with its accompanying acoustic reflections. Instead, your display hangs out away from the sweet spot, and you can pick it off its charging cradle, hold it or lay it down, and interact with your CPU as if the darn thing was hard-wired. Wi-Fi-connected Smart Displays support stylus input, great

for non-Roman alphabets like Farsi or Korean, but a major PITA for the rest of us. The ViewSonic critter also has USB ports if you'd rather go with an ordinary hard keyboard instead of a virtual "soft keyboard."

Speaking of which, another useful but overpriced Windows technology is a new keyboard with electroluminescent backlighting. Auravision's \$100 EluminX full-size keyboard lets you type even by a Lava Lamp's feeble illumination.

For those of you who spend a generous portion of your waking hours in a vehicle, you may have noticed how car interiors force you into a compromised listening position: too left or too right. The folks at Alpine noticed and took matters, or possibly power tools, into their own hands. They started with a Honda Civic Si, gutted the interior and moved the steering column to the center of the vehicle, creating a single-seat, center-drive car! They then stuffed it to the gills with the latest mobile audio and video madness. In addition, "each door panel...holds three nitrous-oxide bottles, which are artfully incorporated into the design scheme." Humm, is that for the engine or the driver?

With a Lava Lamp and a can of nitrous, I think I could be happy mixing the next *NSync record. Okay, maybe not. Anyway, I hope you enjoyed this month's peek into the world of consumer gear, the products that ultimately drive our pro audio industry. Until next time, keep on tweakin'!



This column was written while under the influence of DJ Jonah Jone, whose first birthday arrived while I finished writing up this madness. Drop by www.seneschal.net for more new, wild techy stuff.

PROFESSIONAL RECORDING EQUIPMENT

MANLEY Langevin

Manley Laboratories, Inc. in recent years has expanded and thrived under EveAnna Manley's leadership. Our 11,000 sq. ft. building houses our own machine-shop, printed circuit board manufacture, audio transformer winding, engraving, and silk-screening facilities. All custom design, R&D, assembly, testing, and quality control processes are performed with precision and pride at the Manley factory, located just 35 miles east of Los Angeles.

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Tools of the Trade



NATIVE INSTRUMENTS VOKATOR

Native Instruments' (www.ni-vokator.com) new Vokator plug-in bows to both the old and the new, mimicking a retro vocoder while doubling as an advanced synth and granular sampler. Vokator boasts 1,024 frequency bands balanced by an integrated multiband compressor, and loads both .WAV and .AIFF file formats. It works in both Windows (98/2000/ME/XP) and Mac (OS 9.2/OS 10.2.2) formats, and supports VST, MAS, AU, DXi II, Core Audio, DirectSound, SoundManager and OMS. Price: \$299.

HARRISON MPC3-D

Harrison (www.harrisonconsoles.com) unveils its new flagship film console, the MPC3-D, which is available as a com-

pletely new unit or can be fitted into an existing MPC frame to minimize downtime. The 3-D features many new upgrades, one of the most interesting being the introduction of Harrison's own plug-ins, including a de-esser, camera noise filter, bus limiter, leveled EQ and crossover EQ. Other upgrades include 16-wide panning per channel, full 40-bit signal processing, expanded dynamics, upgrad-

ed digital engine capable of up to 192k operation and much more.

APOGEE ROSETTA 800

Of interest to DAW owners looking to upgrade their AD/DA signal path is Rosetta 800, Apogee Electronics' (www.apogeedigital.com) latest multi-channel converter. The unit has eight channels of 24-bit AD/DA conversion operating at up to 96 kHz with a 192kHz option available. In addition, there are eight channels of AES and ADAT I/O, a unique channel selector for flexible signal routing and the company's acclaimed Soft Limit and UV22HR processing. An optional FireWire card offers OS X and Windows XP compatibility.

MINITRAPS ACOUSTIC PANELS

Just like RealTraps' (www.realtraps.com) top-of-the-line wood panels, the new, more affordable MiniTraps are designed to address acoustic problems in project studios. MiniTraps are 2x4 feet, 3/4 inches thick and weigh only 15 pounds for easy mounting via simple

hardware that does not leave permanent wall damage. The company offers free advice on placing the portable Fiberglas traps and claims a combination of its products can achieve superb acoustic performance for under \$3,000 per room. Price: \$199.95/each.

TASCAM DAW CONTROLLER

Offering a midprice solution to DAW control, Tascam's (www.tascam.com) expandable FW-1884 Audio/MIDI Interface provides eight 100mm moving faders, one master fader and dedicated controls, as well as eight balanced XLR analog mic/line inputs, phantom power and in-



serts on every channel. Communicating at FireWire bandwidth, the FW uses 24-bit/96kHz ADCs and DACs for full 96kHz operation on all analog I/O channels with compatible DAW software. An FE-8 expander offers eight more 100mm faders and dedicated control knobs to the FW mother unit. Price: FW-1884, \$1,599; FE-8, \$1,249.

3D AUDIO DAW SUM SAMPLER

3D Audio (www.3daudioinc.com), creator of mic and preamp shoot-out CDs, releases its latest comparison CD. The DAW SUM Sampler compares 29 DAW and analog mixing platforms using identical source files and levels. A varied, prestigious group of testers, all listening blindly, were sampled for the test using 24-bit, 48kHz stereo .WAV files. The test fell into



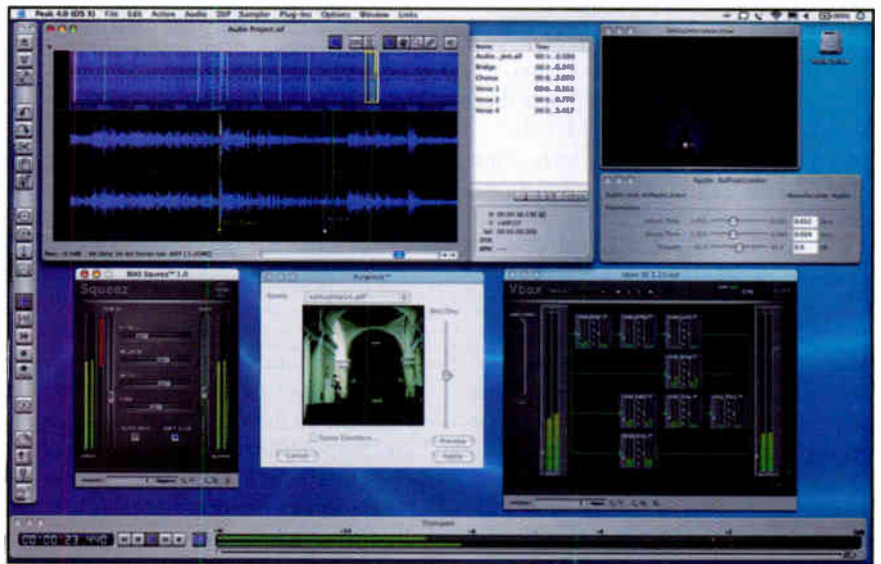
two groups: one at unity gain and the other with fader volume changes on the individual channels and stereo master fader. Price: \$24.95, plus S&H.

BIAS PEAK 4

Strictly for Mac OS X, Peak 4 from BIAS (www.bias-inc.com) offers a new look and numerous upgrades. Peak 4 now supports Audio Unit plug-ins, multi-processor support, Red Book CD burning from within the Peak application, and a host of new DSP tools, including PureVerb (a convolution-based sampling reverb algorithm) and Squeeze, a high-end, dynamic compressor/limiter VST plug-in. Other enhancements include a dynamic envelope control added to the time compression/expansion, add and mix functions, and allowing users to control the effect of these processes over time. The new interface offers expanded customization options and the ability to create a truly custom work surface. Price: \$499.

STEINBERG ID

Steinberg's (www.steinberg.net) new USB Nuendo controller, Steinberg Input Device, offers 24 channels of direct access to the DAW, showing track names and current status of important parameters. The surface has 12 faders in two layers, 40 continuously variable encoders with buttons, a fine-tune function, weighted jog dial, ASCII keyboard, 50mm trackball and 380 backlit buttons. There's also a meter bridge with 30 segment meters for 24 channels and eight



master channels, 52 LCDs and nearly 2,000 LEDs. Additional options to consider: an upholstered armrest and mahogany paneling.

DV TOOLKIT FOR PRO TOOLS LE

Pro Tools LE users who want more features should check out Digidesign's (www.digidesign.com) DV Toolkit for Pro Tools LE. It features timecode-accurate editing, new file import/export capability and a bundle of new plug-ins, including the popular Synchro Arts Vocalign audio-alignment/lip-sync tool and Digi's DINR AudioSuite Noise Reduction plug-in. In addition, with the bundled DigiTranslator 2.0 software, LE users can now import/export both AAF and OMF files. It's \$995, with a limited-time introductory price of \$795.

SYMETRIX STUDIO MATRIX

Symetrix intros Studio Matrix, its latest system under the AirTools (www.airtoolsaudio.com) brand. Built on the Symetrix SymNet Audio Matrix technology, systems are configured by networking up to 15 redundant pairs of spe-

cialized, single-rackspace, DSP-driven devices into a matrix. This allows maximum flexibility for hundreds of input and output signals to be brought into the systems and routed via mixers, selectors and/or crosspoint matrix/mixers up to 32x32 (stereo). Interconnection between devices is facilitated by robust, low-latency audio bus technology that allows routing between any two (or more) points in the system, completely on demand.

CYCLING '74 RADIAL 1.0

Cycling '74 (www.cycling74.com) releases radial 1.0. This loop-based composition/performance tool for the Mac platform features a unique interface that is optimized for playing live. The program is based on loop channels represented by circular displays, each with its own performable multfilter and pitch shifting/time scaling. This versatile system can be controlled from a variety of sources (control surfaces, MIDI, keyboard or mouse) and is configurable for live performance, studio recording or sound design. radial features multichannel audio I/O support and works with all major audio file formats and I/O standards. As a bonus, radial includes VST plug-in effects from the Pluggo collection and a tempo-synchronized filter/delay. Price is \$249 packaged \$239 download.



EVOLUTION UC-33 USB CONTROLLER

Now available in the U.S., the Evolution (www.evolution-uk.com) UC-33 is a USB controller for use with DAWs, MIDI sequencers and software. User-assignable controls include 24 rotary knobs and nine faders, along with a transport control and LCD screen showing controller assignments. Its 33 presets offer instant control of virtual instruments and host apps, ranging from Cubase SX to Propellerhead Reason to Native Instruments B4; the UC-33 comes with custom overlay skins marked with parameters of popular programs. The Class-compliant UC-33 doesn't require installing drivers with Windows XP or Mac OS X. Price: \$329.95.

**MINNETONKA DOLBY DIGITAL SOFTWARE ENCODER VERSION 2**

Minnetonka Audio Software (www.minnetonkaaudio.com) announces a major upgrade to its SurCode Dolby Digital (AC-3) software encoder. Significant new features include: Batch mode encoding, which allows groups of audio files to be AC-3-encoded easily, even

unattended; timecode, which allows the user to specify the encoded file starting timecode in the file header; auto-naming and auto-destination, which allow the encoder to automatically name files and set destination folders for encoding (including Batch mode); command line encode, which allows other software

programs to control the encoder; built-in decoder, which allows confidence playback of the encoded AC-3 files. SurCode Dolby Digital Version 2 remains at the previous MSRP of \$995, with upgrades to registered users priced at just \$99. Visit www.surcode.com for more information.

UPGRADES AND UPDATES

Genex Audio and Merging Technologies have entered into a strategic alliance that will provide audio pros with a seamless transition between sound acquisition and post-production. Extensions to the MADI (Multichannel Audio Digital Interface) AES-10 standard protocol have been developed to allow a standard MADI interface to transmit and receive up to 24 channels of DSD data between Pyramix and other select Genex products. Check out www.genexaudio.com... The ME-1NV—a \$1,499 single-channel version of Great River Electronics' popular Mercenary Edition ME-2NV mic pre-amp—offers identical performance as the 2-channel pre, combining old and new to re-create the vintage Neve 1073 preamp sound. See it at www.greatriverelectronics.com... A free download for qualified users at www.digidesign.com, Digidesign's Pro Tools 6.0.1 addresses some key software fixes from Version 6.0 and offers a new MIDI I/O driver and multichannel output support from Digi hardware via third-party applications that support Apple's Core Audio stan-

dard. Also, Digidesign recently offered NAB-goers a sneak peak at a new Windows platform-only software feature that allows users to export audio in the new Windows Media 9 format...The Rootsolutions StudioSystem 4.1 all-in-one administration package for studios and musicians features the integration of archive, contact, invoicing and inventory databases. Also included are a calculator, calendar, label, lyrics and track-sheet printer. All printable forms can be customized. (English, German, French, Spanish and Italian templates are included.) The StudioSystem is available for Mac OS X, Mac OS Classic and Windows. Download a demo at www.rootsolutions.de...RML Labs releases V. 3.0 updates to SAWStudio and SAWStudio-Lite, available via download and incorporating many new features and fixes. For more info, visit www.sawstudio.com/LatestReleaseNotes.htm...Ableton now includes a specially compiled PowerFX Sample CD with Ableton's LIVE 2 audio software. The free PowerFX's Sample CD has over 500 MB of free samples and

loops. See more at www.ableton.com... M-Audio is now the exclusive worldwide distributor for Sonic Reality's ReFills for Propellerhead's Reason software (also distributed by M-Audio in many parts of the world). Sonic Reality currently offers two excellent Reason ReFills: Sonic ReFill and Omni-Soundz ReFill...Propellerhead Software announces Reason 2.5: The substantial upgrade to the rack includes the addition of the RV7000 Advanced Reverb, BV512 Digital Vocoder, Scream 4 Sound Destruction Unit (we've gotta hear that one!), the retro UN-16 Unison and the Spider Audio splitter/merger. The upgrade is free to Reason 2.0 users. More about the products at www.m-audio.com...KriegerSonic custom-made acoustical doors are supplied as a complete unit (door, frame and sound seals) to ensure their STC specs. Features include radial-bearing cam list hinges and a wide range of finishes and designs, from textured or embossed stainless steel to bronze and wood veneers. Visit www.kriegersteel.com for details. ■

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World Radio History

Emagic Logic Platinum 6

Powerful DAW/Sequencer Upgrade

About a year ago, Emagic surprised the audio industry with its announcement that it had been acquired by Apple. Everyone waited to see what the implications would be for the Logic series. We didn't have to wait long: Emagic introduced Logic Platinum 5.4 for Apple's OS X last fall, boasting the first pro audio host program to support Audio Units. Recently, I took a look at Logic Platinum 6, the long-awaited upgrade of what many would argue is one of the most powerful and versatile sequencing/audio software packages available today. Because OS X is still relatively new to our industry, this review focuses on ways Logic harnesses the features of this powerful operating system, as well as the numerous upgrades in Version 6.

GETTING TO THE CORE

OS X introduced us to Core Audio, which handles audio at the system level. Whether you're using a PCI-bus audio card or a USB or FireWire solution, audio is handled more efficiently and latency is kept to an absolute minimum. Audio and MIDI both have highest priority in the system, which was certainly not the case in prior versions. With the Core Audio HAL (Hardware Abstraction Layer), the latency between applications and I/O hardware is exceedingly low; as low as a virtually indiscernible 1 ms with certain hardware. Also, multichannel audio is now handled internally, a step up from the former limitation to stereo in all pre-OS X operating systems. The audio resolution is 24-bit/96 kHz, with 32-bit internal processing. Core Audio also allows multiple applications access to multiple interfaces simultaneously.

Another major upgrade with OS X is in MIDI handling. OS X is the first Apple operating system that literally integrates MIDI at the OS level, and the system is referred to as Core MIDI. No longer are third-party MIDI drivers like OMS required. An Audio MIDI Setup application allows the user to create a global MIDI configuration that can be

used by all applications that need it. Because MIDI happens at the system level, it is much faster and more efficient, minimizing latency in the same fashion as Core Audio.

AU: GOOD AS GOLD

Probably the most exciting new feature in OS X is Audio Units, the new plug-in architecture that exists at the system level. Along with myriad other benefits, AU allows a user to use a plug-in in multiple applications simultaneously. This is the stuff of dreams. Among other positives here is the documentation included, both for plug-in developers and, more importantly, host developers. And while there are no guarantees that the various plug-in developers will abandon the idea of proprietary plug-in formats, one begins to get the idea that, at the very least, they will make AU versions of their plug-ins available. By virtue of the enhanced GUI capabilities and exceedingly versatile and powerful development tools available, plug-in developers would be crazy to pass on Audio Units.

AU is a landmark system that was developed with a very healthy influence from the worldwide community of home-based and commercial plug-in developers; there is a strong sense of global "community" when it comes to AU.

Although Logic 6 runs very well under both OS 9.x and OS X, VST plug-ins are only supported in the pre-OS X operating systems; only AU plug-ins are available in OS X. So, ostensibly, you must make a choice. But there's good news about this problem: An organization in the UK called FXpansion has developed an application that actually takes any carbonized VST plug-in and creates a derivative plug-in that works in AU. Strictly speaking, it's not a wrapper because it actually creates a new plug-in. The new plug-in is part AU, part VST, but works



Logic 6 can display movie thumbnails frame-by-frame with QuickTime.

perfectly under AU. The hit to your CPU is thus minimized (typically less than 0.1% per instance!). This allows all of your classic old VST plug-ins and instruments to be resurrected. This is something that almost had to happen, because we've all grown so accustomed to our favorite plug-ins.

FREEZE!

The coolest new feature is Freeze. As with any other host-based application, the CPU can be overtaxed enough to render the applications unusable with even modest real-time DSP and even more so with virtual instruments. Freeze eliminates this problem.

Although an elegant solution, it's really nothing new. It's one of those smack-yourself-in-the-forehead, "Why didn't I think of that?" situations. But while the idea for the solution is simple, the execution is not. And that's its brilliance. Read on and see why.

Most DAW users have realized for a long time that when a virtual instrument with one or two plug-ins gobbles up huge amounts of CPU resources, you render the track by bouncing; as a result, the CPU only needs to handle playback, leaving much more power available for further programming and mixing. Freeze makes this process virtually transparent. Rather than going through all of the motions—creating buses, muting, selecting, bouncing, importing and so forth—you simply indicate which tracks you wish to "freeze" by press-



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"For those who have come to love and depend on the sound of the Distressor, the new British mode turned it into a new fun loving animal. At the flick of a switch, the Distressor becomes more aggressive and stressful on any instrument you desire. Dave Derr should win the "(explicative deleted)" award for coming up with such a nice but nasty box." *Michael Brauer (Goldplay, Rolling Stones, Sugar Ray, etc.)*

"The Distressor is Great....You can make it sound just grungy, but its also a really good sounding vocal Compressor. Guitars, Drums. Everything. You cant have too many Distressors." *Tchad Blake*

"In general I really like where Dave Derr's ear leads him; one of pro audio's truly independent thinkers. I'm a huge fan of the box (the Distressor), I use it for brnging up the "goosh" on ambient sources, and for saturating snares, toms and kicks." *George Massenburg*

"People used to have to hurt for old, expensive gear to get the kind of sounds that the Fatso gives me." *Ed Cherney (Lenny Kravitz, Dave Mathews, Eric Clapton, Wallflowers, Goo Goo Dolls, Stones etc.)*

ISN'T IT TIME YOU GOT ONE (OR TWO) OF YOUR OWN?

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Also - Awarded "The show award" for its FATSO processor

Craig Anderson - Pro Sound News Nov 2000



BEST NEW SIGNAL PROCESSOR-EQ AES AWARD

"Empirical Labs Fatso took this category, despite the introduction of a variety of cool new processors. Who can resist the best aspects of analog tape combined with great compression?" *EQ Magazine Nov 2000*

"In a word, the Fatso is a very good answer to what a lot of people loathe about digital recording. It smooths out the sharp, brittle edges to exactly the extent you choose, and fills in the hairline cracks just right. I use one on almost every mix I do. I could easily use one and quite possibly two more." *George Massenburg*

YOU AREN'T GOING TO GET THESE SOUNDS WITH A "PLUG-IN"!

"I'm an owner of a Distressor. The unit is really awesome! I've used it on guitars, bass, room mics, vocals it works great on everything. I've used it on records I've made with Beck, U2 Etta James, Hole and lots of others. I'm about to buy a second one." *Joe Chicarelli*



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ing a global Freeze button. During the next occurrence of playback, Logic very quickly renders the tracks with all automation and plug-ins in place. The frozen stereo audio tracks have a default resolution of 32 bits. You can choose any other resolution you like, and this is a nice, tidy way to render files for export. The unwieldy process of rendering individual tracks one after another becomes almost mindless.

Obviously, it is preferable to avoid committing to the EQ, dynamics and whatever other DSP you have in place, and you certainly don't want to do so permanently. Or if you wish to transpose the key or

otherwise alter your MIDI programming for a virtual instrument, you must have the ability to revert, which was an unwieldy and downright difficult process prior to Freeze. Because the frozen audio file is a representation in Logic 6, it is just as easy to "unfreeze." Then you can modify to your heart's content and "refreeze" if you care to do so. This is all done with maximum transparency. Emagic touts this process as "CPU management," and it is truly a brilliant way to maximize CPU use. The idea is not revolutionary, but the simplicity of its execution is. Emagic, as usual, lives up to its name.

USER-FRIENDLINESS

Emagic has also gone to some lengths to make Logic 6 more user-friendly and shift some of the focus away from the operational and toward the creative aspects. For instance, there is an elegant mechanism to hide/expose tracks now that will be intuitive to seasoned Logic users, but simple for new users as well. There's also the powerful new Marquee tool, which enables "region and sequence-independent selection and editing." For example, I was able to select across the boundaries of a repeated loop, which had the effect of creating a representation of a new loop. This is possible using Smart Loop Handling, which prevents any ill effect to copies or aliases while, for instance, the user is working with the Scissors tool. In my example, a copy of the new loop was created, and when I moved it to another track, it became an entity unto itself. In addition, the Smart Snap feature behaves exactly as the name implies: Objects snap into position dependent upon a chosen level of resolution, causing the mouse to be smoother and more intuitive.

Another welcome new addition to Logic 6 is editing at near-sample level in the Arrange window. Editing at this level of resolution was previously only available in the sample editor. This is one of the few new features that makes Logic 6 feel a bit more like Pro Tools. Another perk is the ability to have a thumbnail of a movie displayed frame-by-frame in the Arrange window via QuickTime. The level of zoom automatically determines the number of frames displayed. You can also find a setting for this feature in the video preferences. Another powerful feature associated with video synchronization is the ability to import or export DV via FireWire into and out of Logic directly. It's a nice way to get your movie up on a big screen in your mix environment. Another major step forward is the capability to time-stretch directly from the Arrange window. This speeds up the work process immensely.

One of the most significant upgrades in Logic's operation is in grouping: Every channel can be assigned to one or more of a maximum of 32 groups. The groups can be for editing, mixing or both. Grouping like this is nothing new, but now that it's finally available in Logic, users will enjoy the ability to create drum muting, vocal mix groups and so forth. Users can group tracks vis-à-vis zooming, hiding/exposing and record-arming, among other things. Individual sends can be grouped per track, as well.

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CONTROL FREAK

Logic now supports quite a number of third-party control surfaces. While the Logic Controller has been, and probably remains, the best choice if you already have other controllers at your disposal, it's nice to be able to use them all. A powerful feature of this support is that you can simultaneously use any number of controllers from different manufacturers configured as you see fit. Another powerful aspect is the ability to assign controllers literally. For example, one can use the linear faders of a pair of controllers in a "long-throw/short-throw" configuration, like a large-format analog console. The possibilities are wide open. Controller configuration is accomplished outside of the Logic "environment," existing in a state that is probably best described as a plug-in. Each different brand and model has a "plug-in" associated with it, and you can have multiple iterations of each.

Other clever additions include the Mix in Arrange feature, which gives you a mix module or "channel strip" in the parameter section of the Arrange window. The display automatically coincides with a channel selection. It's great to be able to

tweak mix parameters without switching to the mix display. Also available is a powerful EQ plug-in available for each channel. It features eight bands, including filters and shelving—high and low—and four parametric bands in the middle. However, all eight bands are fully parametric; they simply default to the above-described configuration. The GUI for this EQ provides a wealth of visual information about the EQ curve. There is a nice representation of that curve on each channel strip in the Mix window. Aside from all of the EQ's nice visual aspects, it sounds good, too—really good.

For users of Propellerhead applications such as Reason, ReWire II support is a welcome addition to Logic 6. Up to 64 channels of audio can be routed from that application into Logic, and Logic's MIDI sequencing can control virtual instruments going back the other way. Synchronization between the two applications is a breeze.

Logic now features a Project Manager application, which allows handy consolidation of all the resources associated with a project in one place. It enables renaming, introduction and editing of comments. Another powerful tool here is

"Save As Project," which enables simplified archiving and transport another way. It consolidates all aspects of a project, even the audio used by samplers. It yields a panoply of options in terms of how and what is saved: a great way to organize and prepare a project for transport to another studio or professional.

CONCLUSIONS

There is a reason why there was a slight delay between the acquisition of Emagic by Apple and the appearance of an expected product upgrade. They wanted to do the upgrade correctly, and they succeeded. It's powerful and supports almost every format you can imagine. Seasoned users will be thrilled with the powerful new tool, and newcomers will be bowled over by the possibilities. Logic 6 will be a serious application used by professionals in all different production domains.

Emagic USA, 530/477-1051, www.emagic.de.



John McJunkin is the principal of Avalon Audio Services in Phoenix, and is a consultant in the design and operation of audio systems for recording professionals.

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Designer Chaumary Stephens

Universal Audio 6176 Channel Strip

Sweet Combo: Tube Preamp and 1176 Compressor

Universal Audio's Model 6176 Channel Strip is a two-rackspace unit containing one channel from UA's Class-A 2-610 tube mic preamp and a UA 1176LN peak limiter. This "natural" combination gets even better when you realize that both the 610 and 1176LN inside are enhanced over current stand-alone units. Besides featuring refined versions of UA's two stalwarts that date back to the '60s, the 6176 provides the remarkable sonic synergy of a classic tube mic pre followed by one of the most popular transistor compressors ever made.

Preamp enhancements on the 6176 (not found on the 2-610) include a -15dB mic pad and an enhanced +300-volt power supply with high-voltage MOSFET regulation said to improve bass response and the noise floor. The 6176's right half has a complete 1176LN with three new features: a Bypass switch that hard-wires the preamp out directly to the 1176LN output jack; a 1:1 ratio position to use for its "color" (a redundant feature, because just like the stand-alone 1176LN, the 6176's attack knob has a CCW "Compressor Off" position); and an All Ratio switch position that duplicates pressing all four ratio buttons at once, an old engineer trick that wreaks havoc on the Ratio button assembly of the 1176LN but produces a wild and chaotic compressor action with increased distortion.

Behind the thick aluminum front panel is a steel cabinet containing three main circuit boards: mic pre on the left, PS in the middle and 1176LN on the right. Four of its five transformers are firmly bolted to either the cabinet's floor or walls. Cine-mag transformers for both the mic pre and 1176LN inputs are used, and all connections to the circuit boards are hand-soldered (for audio paths) or use special, high-reliability Molex Trifurcon connectors for easy field maintenance. The preamp section uses 12AX7 and 6072A tubes. There are high-quality Electroschwitches,



polypropylene capacitors and metal-film resistors galore. Construction is good: You'll never have problems with mechanical ruggedness.

TUBE PREAMP/LINE PROCESSOR

The preamp has three inputs: rear-panel XLR mic and line inputs, and a front-panel, unbalanced 1/4-inch jack for direct recordings. Controls include -15dB pad and phase-invert switches. There is a rotary impedance switch for both the XLR mic (2k-ohm and 500 ohms) and the instrument (47k-ohm and 2.2 meg) inputs. Gain setting is via a rotary switch with -10/-5/0/+5/+10 "ballpark" positions that set the amount of negative feedback (and therefore gain) for the 12AX7 and 6072 tube amplifier stages. After you have set this switch, there is a large knob that sets final output level. Dominating the front panel's left side, this '50s-style radio knob is impressive-feeling and perfectly sized to "ride" recording levels. The preamp has up to 61 dB of gain—plenty for 99% of all recording chores—and the 1176LN section has up to 40 dB of gain if needed. Because the preamp also has a separate line input, the 610 double-duties as a line-level processor. Increasing the gain switch to +10 offers a pleasant-sounding overload (especially in the low frequencies) that will warm up the coldest tracks.

The 6176 uses the same equalizer as the 2-610: It's a simple high/low-shelving EQ that works best when you want to brush up a mic's sound rather than seriously carve. A three-position switch toggles between 4.5/7/10 kHz for HF and 70/100/200 Hz for the lows. This very smooth equalizer's boost/cut is in 1.5dB steps for up to ±9 dB. The EQ is wonderful for opening up the top end (10

kHz) on a vocal mic or adding a 4.5kHz edge to a direct bass guitar recording. The 70Hz LF shelf was smooth and fine for rolling off mic proximity effects or sub-sonic noise.

1176LN

An 1176LN in a half-rack...hmmm? Maybe UA should build a dual-channel 1176LN with two of these jewels side-by-side! All of the stand-alone 1176LN's usual controls are there; its operation is the same. Controls include: attack, release, ratio (with 1:1, 4:1, 8:1, 12:1, 20:1 and All settings); the input control (to set the amount of compression); and the output level control. There's a three-position rotary meter switch to select gain reduction; Pre shows the output level from the 610 and is useful to get a proper—or improper—gain structure; and the Comp position reads the 1176LN's output level on the small but lighted VU meter. I'd like to see a larger meter from across the control room, but front-panel real estate is scarce.

There's also a phantom power-on/off, an oversized power switch with an old-style (incandescent) blue-jewel power indicator, and the important Join/Split switch that connects the 610 output to the 1176LN input or separates them for independent operation. There's a pushbutton to select between 15k-ohm or 600-ohm input impedance; otherwise, in Join mode, the impedance is 600 ohms to match the 610 output.

IN THE STUDIO

First on the list of jobs was recording bass guitar. The 610 and 1176LN provide a great combo. The 2.2-meg input impedance didn't put a load on the P-Bass I tracked, offering an exuding, thick and creamy tube coloration with loads of sus-

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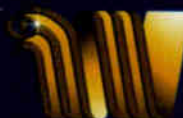
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tain. Recording a five-string Fender bass with active pickups, I switched the impedance to 47k. The gain setting was different, but I used the same limiter settings, matching levels using the Pre meter switch position to get the same amount of compression. In general, the bass sound is somewhere between a pristine "direct sound" and a miked bass amp sound. If you crank up the gain (and cut back the Input control on the 1176LN for the same amount of compression), then you'll go dirtier and crankier-sounding. There are many options here for direct recording.

For vocal recording, I adjusted the unit for the cleanest sound by backing down the gain selector and keeping the 610's output-level knob nearly full-up. The 1176LN input control also decreases, as I was looking for about only 2 to 6 dB of 4:1 compression of vocal peaks on vocalist Eloise Laws, whose album I've been recording. Using a vintage Neumann M49 mic, I found that by boosting 1.5 dB at both 10 kHz and 100 Hz—with the EQ correcting the mic's occasional tendency to sound nasal—I got a big vocal sound with very good dynamic range and warmth that helped out when Eloise sang at full voice and near the top of her range.

Recording any instrument or vocal with the 6176 immediately places that sound source on a proper and wide stage. The 6176's "personality" includes tight and clean low frequencies (if you run the unit clean) with a very forward and thick-sounding midrange coloration that's augmented by the bright sound of the 1176LN section. Percussion instruments benefit from slight preamp overload, reducing "spikes," while electric guitars fatten up very well even without the 1176LN switched in. Using an external EQ and/or compressor after the 610 stage will get you anywhere else you'd like, but it is hard to resist *not* using the unit as is for all recordings!

The UA 6176 Channel Strip retails at \$2,495. With all of the choices now in the crowded channel strip market, I found it incredible that there was room for yet another entry, but here it is. The 6176 is a true original with deep retro roots in an updated and modern form and capable of a huge, impressive sound.

Universal Audio, 831/466-3737, www.uaudio.com. ■

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

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PCU Series paging stations include four-button and ten-button administrative options. All stations include integral microphone preamplifiers and a choice of hand-held or stem-style microphones.



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The new CAB 4n break-out box provides an efficient drop point for distant paging stations. Multiple units can be combined to support hundreds of station locations.

Audio and control data is transported via Ethernet to the MediaMatrix processing engine for easy implementation. Full support for MediaMatrix control functionality is provided.

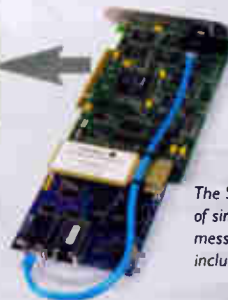


System configuration shown is conceptual only.

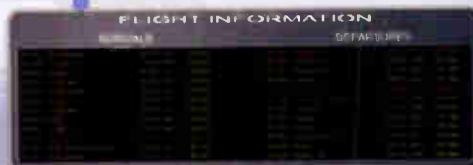
Integration with MediaMatrix processing frames is simple with CobraNet network connectivity. ControlMatrix supports the full copability of MWare's audio configuration and control functionality.

Introducing ControlMatrix™, the new, fully integrated paging solution from the leaders in digital audio technology. Designed as a fully integrated "front-end" for the world famous MediaMatrix digital audio processing system, ControlMatrix features a variety of products designed to make complex paging simple and efficient. At the heart of the system is the Q-Host Paging Controller, a powerful UNIX-based* host for seamless management of all paging functions. The Q-Host performs transparently, managing paging stations, dynamic messaging and interface with third-party data systems including FIDS, MUFIDS, signage and other critical systems. Support for simultaneous, full-bandwidth messaging allows robust record/playback functionality for configuring "store & forward" paging. The ControlMatrix system works with standard Ethernet cabling backbones, so you don't have to dig trenches just to install the paging systems. Design your next paging system with ControlMatrix, and find out just how easy perfection can be.

*ControlMatrix operates with the QNX operating system, a variant of time-tested UNIX technology.



The SS60 Messaging Card provides multiple channels of simultaneous, full-bandwidth "store & forward" messaging. Support for multiple messaging cards is included with an additional host controller.



The Ethernet network provides simple and cost-effective interface to external database-driven systems. Integration with FIDS, ADA signage systems and other external controllers is fully supported and easy to implement.



MediaMatrix®



Audio-Technica AE2500 Dual-Element Mic

Sometimes Two Heads Are Better Than One

A totally new, innovative mic design, the Audio-Technica AE2500 uses specifically designed dynamic and condenser cardioid transducers mounted side-by-side in perfect phase alignment in a single microphone body. This dual-element approach offers audio engineers a kind of "remote control" at the mixer position. Whether you mix the mic's two elements together or record them on separate tracks, the \$699/list AE2500 offers many creative processing options when miking LF sources such as kicks, floor toms and bass cabinets.

The sturdy, all-metal windscreen cover of this 13-ounce mic unscrews to reveal two all-new A-T capsules mounted on a rigid, polished, nickel-plated metal support structure to withstand excessive shock and vibration. The dynamic element's neodymium magnet structure is specifically designed and tuned to capture the beater's attack. The companion condenser element has a self-polarized (electret), 11mm-diameter capsule with a 2-micron-thick diaphragm and is housed in a special structure to help reduce high-SPL distortion at subsonic frequencies.

The build quality is excellent: I'm sure that the AE2500 would stand up to the "drop-kick" test that any mic should pass before being placed near a drummer. The AE2500 comes with an AT8471 isolation clamp mount and a 5-pin XLR connector with mating plug, and a 16.5-foot cord that fans out to two standard XLR-3 plugs. Thoughtfully, the ends are marked "dynamic" and "condenser" so you know which requires phantom power. Onboard electronics for the condenser element include a switchable -10dB pad and a -12dB/octave, 80Hz highpass filter.

IN THE STUDIO

My first look at the mic was for a drum-sample session in which we sampled two different bass drums. Besides the AE2500, I used an AKG D 112 and a Shure Beta 52 as a reference, not as an A/B test. The kick drums were an 18-inch 1971 Slingerland floor tom (with a Danmar Percussion Tom Kick Riser conversion) and a clear Remo

Emperor head. I also recorded a 1967 22-inch Ludwig kick with a Remo Powerstroke 3 head. Both drums had new single Remo heads with Remo Flam Slam patches. We also used a Danmar felt beater. On all tests, the mic was centered exactly on the shell's diameter, pointed at the beater, with half of the mic's body inside the drum and half outside.

My recording setup was a PreSonus M80 8-channel preamp and a Pro Tools HD system set to 24-bit/192 kHz. No processing was used. Drummer Jimmy Hunter played snare and hi-hat for some of the recordings to assess differences in the amount of leakage.

Comparing the AE2500 to two really good dynamic kick mics (AKG D 112 and Shure Beta 52), I noticed that its dynamic element had more output than both and less snare/hat leakage. The AE2500's dynamic captured the attack of the beater in a balanced way compared to the Shure's accentuated top end. The D 112 was smooth-sounding in the highs, but I had to add top-end EQ later in the mix. I found the AE2500 dynamic had better upper-bass response than the Beta 52. While the D 112 sounded good on both kicks, I couldn't get the presence I got with the AE2500 dynamic.

The Beta 52 offers more subsonic level than either the D 112 or the AE2500 dynamic; adding in the AE2500 condenser element quickly changed that! The condenser produces a deeper and rounder sound quality than the dynamic, and I found using the -10dB pad produced a consistently hotter digital recording level than without it. Compressing just the dynamic half and mixing in the condenser unprocessed, I sure found a cool new bass drum sound.

I loaned the AE2500 to engineer Erik Zobler, who was tracking artist Will Downing. Zobler put the AE2500 on snare, where he also had a Beta 56 EQ'd with a Pultec with about +8 dB at 10kHz shelf. Using the AE2500 and mixing the two outputs equally together (the condenser with -10dB pad in), he got a good-sounding "crack" from the snare without EQ.



Next up, at prerecord sessions at Capitol Records in Hollywood for the 2003 Academy Awards, engineers Tom and Dan Vacari used the AE2500 along with the Shure Beta 52 on drummer Harvey Mason's kick drum. They got every sound needed for all the different music styles required for that show.

A NEW TREND

The AE2500 leads what I hope is a new trend in mic design, where now—beyond the exact mic choice and placement—a new level of microphone control is possible. I liked the option of mixing and processing the mic's two elements with perfect phase integrity for a cohesive bass or snare drum track that you just can't get using two separate mics.

Thanks go to Dan and Tom Vacari, Erik Zobler, Jimmy Hunter, Cazador, LAFX and Capitol Studios.

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McDSP Synthesizer One Version 2

TDM-Based Instrument Gets a Face-lift, New Effects and More

There are plenty of native virtual instruments in a rainbow of formats, but the development of software instruments for TDM has been largely neglected. Recently, a handful of TDM-based instruments have cropped up. One such instrument is McDSP's two-oscillator wavetable synth, Synthesizer One (or SynthOne for short).

Version 1 of SynthOne debuted in March 2002. The latest release, V. 2, takes the instrument up several notches. Several significant bug fixes and major enhancements were made, including a third analog-modeling oscillator, an entirely reworked user interface and onboard effects. (Version 2.01 was about to be released as I put the finishing touches on this field test. It adds OS X support, faster load times and a more integrated Performance Generator, among other improvements.)

SHINY NEW GUI

SynthOne requires a Pro Tools Mix or HD system. With V. 2, you can get up to eight voices on a MIX SRAM chip or 10 voices on any HD chip (because they are all SRAM). Different versions of the plug-in are available from your plug-in menu: mono or stereo; and four, six or eight-voice. However, you are limited to two instances per chip on a Mix system. The paradigm is a little different with HD: A pool of eight voices is shared when there is more than one instantiation on a chip. SynthOne is not multitimbral, though this is not a big problem because you can always open another instance, assuming that you have the available DSP power.

Copy protection is via standard challenge/response or iLok USB dongle. Authorization can be installed on the iLok either by license card or directly through your personal account at the iLok Website.

The plug-in's new user interface is much easier on the eyes: The knobs have been redesigned and there are no more yellow parameter labels. Losing V. 1's green and yellow color scheme is a welcome change.

PARAMETER HAPPY

SynthOne comprises eight different pages; a handy area on the main page's left side is reserved for quick access to its most basic parameters. Examples of Quick Page parameters include clock source, bender range, glide time, filter freq and ADSR. It would be nice to see a Quick Page for the new effects, too. But despite this omission, it really streamlines searching for rudimentary parameters. Users who are uninterested in serious programming and just want to fine-tune a preset will appreciate this feature.

Wavetable oscillators 1 and 2 and analog-modeling oscillator 3, along with controls for mixing and filtering these sources, are found on SynthOne's first page: the OSC Page. There are numerous waveforms to choose from—sines, squares, triangles, saw up/down—and you can capture your own wavetable using the included Synthesizer One Wave-Capture Audio Suite plug-in. Oscillator 3 tracks the pitch of oscillator 1 and can be detuned two octaves down. An external audio source (from the aux or audio track where the plug-in is inserted) can be mixed with the oscillators for some really cool effects processing.

There are three LFOs on the LFO page; each LFO's shape is created by combining two waveforms: waves 1 and 2. The same shapes available for the oscillators are available to the LFOs. When you combine two waveforms, the resulting shape is drawn next to the LFO—a nice touch. There are attack and release parameters for each LFO, but LFO delay is missing. The envelopes can be assigned to a variety of modulation targets throughout the plug-in's pages (like in the Mod Matrix section of the System page). All of the LFOs can be synchronized to each other or an external MIDI Beat Clock.

Two VCFs (virtually controlled filters, rather than voltage-controlled filters because they are virtual) and two assigna-



SynthOne Version 2 adds an oscillator, onboard effects and a new interface.

ble VCFs make up the Filter and Envelope page. Both VCFs are two-pole, 12 dB/octave with a choice of either low, high and bandpass, or band stop filter types. Filters can be used in serial, parallel and modular routing. Both VCFs are ADSTAR (attack, decay, sustain time, attack on key release and release) for serious envelope control.

The Wave Edit page is where you create your own wavetables. Up to eight custom wavetables can be stored with a preset and then recalled via the OSC and LFO waveform shape pop-up menus. You can use a variety of algorithms to generate and customize your waveshape, capture your own shape (up to 256 samples) with the Wave Capture plug-in, or simply draw one freehand. The ability to capture your own wavetable is an amazingly powerful feature that adds new dimensions of depth and realism to your sounds.

All 128 MIDI controller numbers can be assigned to any of SynthOne's nearly 300 parameters. The assignment menus are spread out over two pages: 0 to 63 and 64 to 127. Being able to assign any of SynthOne's parameters to a MIDI controller number is wonderfully empowering. However, the pop-up menus used to select the instrument's parameters are too long and not alphabetically organized, which makes finding the parameter you want to assign difficult. I'm sure that there is a better way to organize these

"Awesome..."

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Paul Rogers, Front of House
George Strait

"The D6 was designed with just one goal in mind: to be a no-compromise contemporary kick mic... If you want a painless way to get an absolutely rocking professional sound with a ton of serious beef on the bottom and that Lars type 'click' on the top, then this is the stuff."

Mark Parsons, Modern
Drummer

"Every day in sound-check we wrestle with that first channel. We know the ideal mic for any application is one that sounds natural with no EQ. The D6 is the 'swift kick' we've all been waiting for. Thanks Audix."

Mark Frink, Monitor Engineer
k.d. lang

"The introduction of the D6 from Audix has made an impressive impact. We've had many requests from high profile drummers to install them in their custom kick drums using our Mity Miking Systems..."

Randall May

"Audix continues to impress us with its latest kick drum mic." 2003 PAR Excellence Award Winner, Pro Audio Review

"I am extremely happy with the D6 as I have been looking for an excellent sounding Kick mic. It is great to finally find a dynamic kick mic that has clean clear low end without that "unnatural resonant low boost" that so many so-called 'Kick Mics' have."

Dave Rat, Front of House,
Red Hot Chili Peppers

"The D6 was awesome right out of the box. In a recent TV performance with Lucinda Williams, the D6 shook the ground to the point where the high definition camera men asked me if I could please high pass the bass!"

Don "Turk" Schell,
Front of House

Lucinda Williams, Ryan Adams

Don "Turk" Schell, Front of House for Lucinda Williams, Ryan Adams



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GEORGE PETERSEN, MIX MAGAZINE

"The D6 delivers a crisp, modern sounding kick sound right out of the box and is also a useful mic to have in the locker for bass miking."

Martin Ostrowski
Gig Magazine

"With the D6, attaining an authentic kick sound requires no effort so I don't need to spend the time researching crossover points and loading, or EQ's. Steve Gossy, Mobile Engineer
Real Image Recording

"The first time I put the D6 in our drummer's (Rickie Fataar) kick drum was to sound check at one of our gigs. We didn't even get through the first 8 bars before he asked what I did to the kick drum sound. He said it was shaking the whole stage and that he could really feel the improved low end. The D6 is now part of our stand."

Paul Middleton,
Front of House, Bonny Raitt

"Love the D6 sounds so natural and those hot color-tie sound in all it barely took me 2 minutes on the first day of tour to get Matt Cameron's kick drum sound and I have not messed with it since."

Karrie Hayes, Monitor Engineer
Pearl Jam

"In my 30 years of doing this, I have never received more compliments on my kick drum sound than I do now. I only dress with three things: two pieces of heavy English cuthead gear and an Audix D6."

Chris "Boby" Sullivan,
Front of House, Jethro Teller

"I like the fact that the D6 has all the low end and can handle the 80% of large, low frequency drums, but still allows the drum to sound the same as it does acoustically."

Dr. Blue Man Group, we use many drums with frequency ranges that go even lower than average kick drums... the D6 does a great job of reproducing them accurately."

Ross Humphrey,
Sound Supervisor,
Blue Man Productions

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Room to Move

Optimizing the Project Studio on a Budget

Even with the best monitors, achieving an ideal mix is a challenge. Assuming that your hearing is decent and you have well-recorded tracks to work with, your mixes can suffer because of effects from the Equal Loudness Curve. This details the ear's spectral sensitivity, a phenomenon that's uneven at all sound pressure levels (SPLs) from the Threshold of Pain down to the Threshold of Hearing. To make matters worse, many of us work in acoustically imperfect rooms. We can't change the forces of nature or transform everyone into a world-class mix engineer, but by examining a few basic issues of control room acoustics, we can improve the performance of less-than-optimal spaces.

Here's a list of tools (some of which you may already have) for basic acoustical troubleshooting: a sweep oscillator, an omnidirectional microphone, any device with a high-resolution meter and digital converters. Some less-obvious (but easily acquired) tools include balloons and a rubber mallet. In addition, software for this month's sonic shakedown include WaveLab (www.steinberg.net), Smaart (www.siasoft.com) and Cool Edit Pro (www.syntrillium.com).

BOUNCING OFF THE WALLS

Often, when acousticians look at a room, the audio spectrum is divided into five critical bands (125/250/1k/2k/4k Hz), with the goal of making the decay time consistent across this spectrum. Treatment for each frequency band is not the same, because bass behaves much differently from treble. One of the most basic tests is to listen in mono for the phantom center and then switch back to stereo. Is the image stable? Can you "touch" it? Is it full-bodied or scattered? Optimized rooms focus more sound directly at the listener. What can degrade the image? Let's start with clutter.

To start, tidy up the crib. Remove all gear that may be obstructing or reflecting the primary path between the monitors and the listener. If stereo imaging tends to slide around, then redefine the room's center, get out the tape measure and symmetrically align the work area: the monitors, console and equipment racks. Detail the room's particulars using familiar artistic tools (paper or virtual), making sure to measure accurately.

From an acoustics-measurement perspective, the three essential tests are spectrum analysis, decay time and impulse response. Spectrum analysis displays

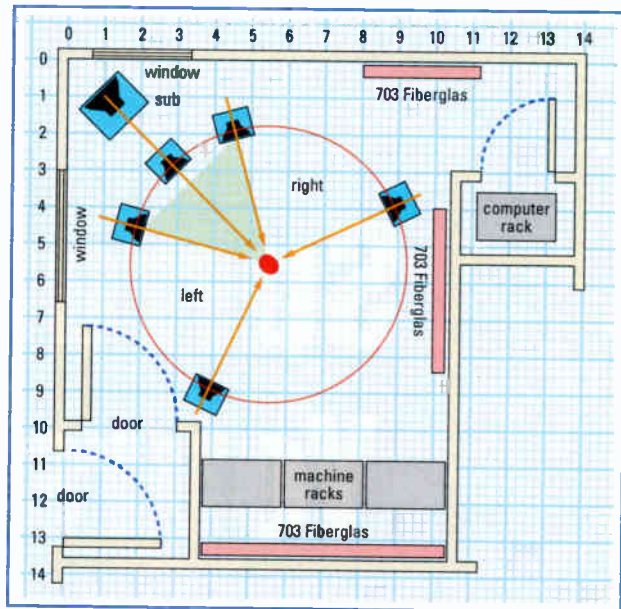


Figure 1: The very modest control room under scrutiny. The pink rectangles represent Type 703 Fiberglas panels used to absorb reflections.

amplitude vs. frequency, but doesn't provide any insight into why the response is so lumpy. Adding the dimension of decay time reveals the presence of reflections, while impulse response can reveal specific reflections all the way down to the timing between woofer and tweeter.

That fact that each band should have a similar decay time cannot be overemphasized. It's pretty obvious that high frequencies—responsible for positional (localization) cues—are easily reflected by hard, smooth surfaces. To get the best "cues," you want only direct sound from the monitors. High-frequency reflections can be tamed three ways: by repositioning equipment; by applying porous, absorptive material in the immediate sound field; and by using diffusion (uneven surfaces) in areas that will not distract the listener or corrupt the stereo image. Too much absorption will exaggerate the problems in other frequency bands.

In order for bass to bounce off of a wall in a similar fashion to treble, that structure would have to be infinitely more rigid and dense, like a sand-filled concrete block or poured concrete. Sheetrock™ walls can absorb, reflect or resonate when stimulated by bass and midrange. Whether by accident or on purpose, this example shows how wall construction and problem-specific traps can be built to physically tune the room like an equalizer, including "Q" (bandwidth).

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This can be good, bad or ugly, depending on the location in the room where this happens, room size, shape, and the room's length/width/height ratio. Get out your fist or rubber mallet and pound the walls while listening for resonance—it will be all over the map.

What other accidental contributors might there be? Windows (the glass kind; *not* the OS) and the ductwork inside the walls can be problematic or nightmarish, especially when you are using a generic room for sonic purposes. If you're at the planning stage, then evaluate the room *before* putting all the gear in. Ripping out Sheetrock is a messy business.

DIMENSIONS

The relationship of height (H), length (L) and width (W) can be magical or disastrous; a cube-shaped room is least desirable. The ratio of these dimensions will play a large part in determining the "modes": places where buildups occur. Two examples of preferred ratios are 1:1.14:1.39 (a small room that's 10x13.9x11.4 [HxLxW] feet) and 1:1.6:2.33 (a larger room of 10x23x16 feet).

Reflections refer to three modes that

detail the number of surfaces sound will hit—and bounce from—in an untreated room: axial (two surfaces), tangential (four surfaces) and oblique (six surfaces). The dimensions and the number of reflections create sonic bumps and dips across the frequency spectrum. Larger rooms have less-destructive modes and support lower frequencies.

SHAKE-DOWN

A sweep oscillator is all that's needed for the first test; it's not for absolute measurement purposes, but feel free to put up an omnidirectional mic at the sweet spot and document the proceedings. Start at 1 kHz and slowly sweep down into the bass region while listening for (and fixing) rattles. This might keep you busy for a while. If you are taking notes, then perform separate tests for left/right/both monitors. You'll be amazed at how different the response for each will be.

While an oscillator is not the right tool for the job, it does provide some insight. The room should be perfectly flat,

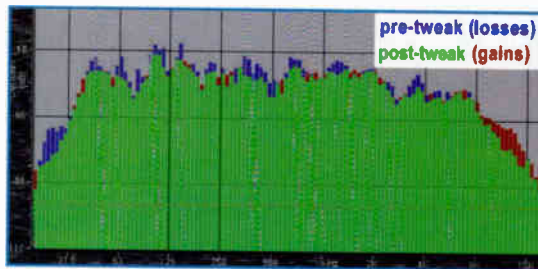


Figure 2: Tweaking with Smart Live: The blue spikes represent the original curve pre-tweaks. Green represents the curve after tweaks. Post-tweak "gains" are shown in red.

but I'll bet you noticed lots of peaks and dips during "the sweeps." A well-played and dynamically processed bass part can be similarly flat, although a funky room can make it seem inconsistent. Knowledge of music and of the notes that seem boomy or lost can be integrated into the interrogation process.

A standard electric bass guitar covers over three octaves. Here are some bass notes translated into audio frequencies and MIDI notes:

- E Open (E1): 41.2 Hz, MIDI #28
- A Open (A1): 55 Hz, MIDI #33
- A Fret 2 (B1): 61.74 Hz, MIDI #35
- D Open (D2): 73.42 Hz, MIDI #38
- E Fret 12 (E2): 82.4 Hz, MIDI #40

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- G Open (G2): 98 Hz, MIDI #43
- A Fret 12 (A2): 110 Hz, MIDI #45
- G Fret 4 (B2): 123.47 Hz, MIDI #47
- G Fret 7 (D3): 146.83 Hz, MIDI #50
- G Fret 9 (E3): 164.81 Hz, MIDI #52
- G Fret 12 (G3): 196 Hz, MIDI #55

Once the problematic frequencies are known, you can calculate the offending distances using the formula: Wavelength = 1,126.8/frequency.

The "constant" is the speed of sound at room temperature: 1,126.8 feet/second. Having documented all of the bumps and dips, plug a few of those frequencies into the formula to see if any wavelengths correspond to the room's obvious dimensions. My room, depicted in Fig. 1, had a bump at 160 Hz, just a bit shy of E3; its 7-foot wavelength corresponded to the ceiling height. An online wavelength calculator can be found at www.eatel.net/~ampstech/elecdisc/frequency.htm. Just plug in the numbers and play.

HEAVY ARTILLERY

After the basics were out of the way, I consulted with Dave Meyers at Overkill Audio. He brought over balloons, and we popped quite a few in several places: in front of the monitors and in each cavity (entrance and storage). Even before analyzing the recording, this test helped us find several sympathetic resonators, like the window behind the left speaker and ductwork along the right speaker wall. These remarkably obvious problems were otherwise hidden when we were listening to music.

Dave suggested Smaart Live (\$695 list), a powerful and affordable analysis tool that runs on a PC. A 30-day demo version is available from www.siasoft.com. The resolution of Smaart's spectrum analyzer goes up to 1/4 octave; we used 1/2 octave. Pink noise was pumped into this average (undersize and under-treated) control room (mine), and considering the sine sweep, it wasn't too frightening. The "before" image was saved and combined with the "after," as shown in Fig. 2.

IMPULSIVE

In a large space, like a studio or concert hall, reverberation time is stated as RT-60 (the time required for the signal to be attenuated by 60 dB). It's a little different in a control room where the "R" is more like "resonance and reflection" than reverberation.

Steinberg's WaveLab (\$599 retail) has great time-domain capabilities. Using its signal generator to create an impulse, its

time-domain tool helped determine LF/MF resonances and MF/HF reflections. You can do a similar test on any editor (such as Cool Edit Pro: \$249 online) by recording a balloon "pop" and then measuring the reflection in the waveform. Figure 3 shows the waveform as an insert (top right) along with the full-color analysis below. In this instance, time is from rear to front with the audio spectrum from left to right. This relationship can be reoriented to your preference.

As we learned via the balloon tests, the window contributed several very-

low-frequency aberrations (plus rattling springs), while the ductwork quacked in the midband around 300 Hz. Above 160 Hz, the decay is obvious, but below that frequency, there is almost no decay within the half-second range of capture. In the insert, time moves from left to right: The large double arrow is the distance between the impulse and its first reflection. When the area is highlighted in WaveLab's Waveform window, the time in milliseconds is displayed. From there, it was easy to calculate the actual distance of the reflection using a ratio, again based on

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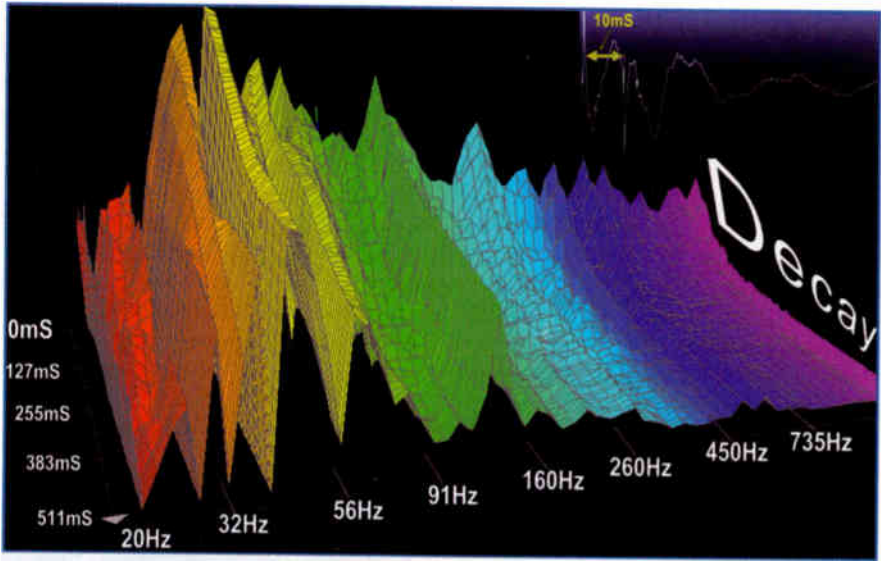


Figure 3: The insert at top right is an impulse reproduced by the monitors and captured to measure reflections (the double arrow) and analyzed for resonance below.

the speed of sound: 1,126.8 feet/1 second = $x/0.01$ second (10 mS) = $0.01 \times 1,126.8 = 11.268$ feet (aka, room width).

"X" is the distance we're looking for. Just cross-multiply. Because both denominators are in seconds and the left denominator is "1," there's no need to divide.

FIXES AND SUCCESS

I spent the next day applying damping materials to the windows, window springs and ductwork, none of which was considered the final treatment, but just to see if anything measurable would happen. It did! I also reoriented an absorber panel, opposite the left monitor, by 90°. The results are displayed in Fig. 2, where green represents the curve after tweaks. Any "gains" are shown in red, while the blue spikes represent resonance reduction (attenuation). The gains at the far right may have been microphone orientation. The losses at left were most likely the result of window dampening. In between, many of the losses were in the 3dB to 4dB range, while 1dB to 3dB gains were realized.

For each attempt at tweaking control room acoustics, I have been rewarded. These have all been little gains, and while this project's goal was to improve the LF response, the sonic upgrade was full-spectrum. Most interesting was that the midrange listenability improved to the point where I wanted to pump up the volume. The phantom center became more like a sonic hologram; the improved stereo image revealed that the D/A outputs required L/R calibration. Previous tweaks—an overhead absorber—improved the localization range between 5 kHz and 7 kHz.

Further tweaks extended this into the mid-band. Now, the sound space has more depth, more impact and more intimacy.

I did not go into detail about the materials used—mostly panels of Owens Corning Type 703 Fiberglas—because the experiment is ongoing. (OC's 700 Series of glass fiber is a popular choice of acousticians because of its effectiveness, density and fire rating.) On my yet-to-do list, the room's two windows will be replaced and the Sheetrock covering the two lengths of ductwork should be removed for full damping. There are still some peaks to tame, materials to try (3M Thinsulate, it's not just for gloves and coats) and traps to build: The makings of a future article, for sure.

Ultimately, a control room should minimize the guesswork. Of course, you could hire a professional and I highly recommend that you find one who is compatible with your needs. But as always, I also recommend the DIY approach for the learning experience: In the worst case, you'll know what questions to ask.

For more information, install a copy of *How to Build a Small Budget Recording Studio From Scratch*, recently updated by Mike Shea (TAB Electronics), into your porcelain office of choice.



Eddie would like to thank Dave Meyers (www.overkillaudioinc.com), Terry Hazelrig (www.diyacoustics.com) and Wes LaChot (www.overdublane.com) for sharing their expertise. Visit www.tangible-technology.com for tips on tapping maple trees and processing raw sap.

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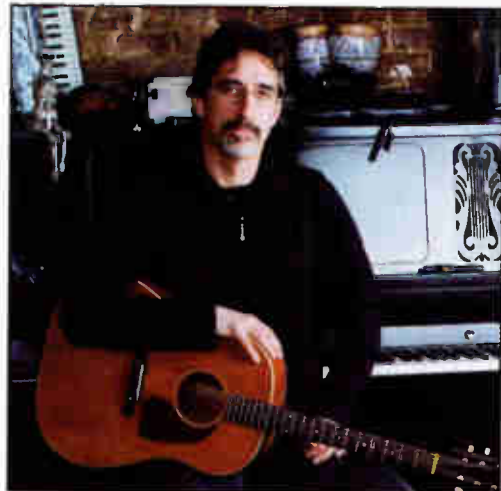
PHOTO: ANNE LEROVITZ

ROSANNE CASH HITS NEW HEIGHTS

By Elianne Halbersberg

Like the beginning of a classic Dickens novel, the past few years have been the best of times and the worst of times for Rosanne Cash. She gave birth to a son (best), lost her voice due to a pregnancy-related polyp on her vocal cords (worst),

John Leventhal



wrote and recorded new songs (best), had to shelve the project while waiting for her voice to return (worst), finally released her brilliant new album, *Rules of Travel* (best), and, because she has spoken out against the war in Iraq, is receiving hate mail and is the target of a campaign to boycott her records. You can guess which category that falls under.

Rules of Travel, which pairs her with her father, Johnny Cash, on one of her compositions, "September When It Comes," is the culmination of lessons learned. "When I look at the album now, I see that it's all about loss and recovery," she says. "It will always represent the period in my life when I had my son—a beautiful, life-changing experience and part of the recovery process—and the loss and recovery of both my voice and this record—not knowing if I would get my voice back or whether these songs would be lost—and realizing that my parents won't be here forever. So it was a circle for me. Everything became more precious because it is finite, and I feel incredibly grateful for the things I have."

Cash's partner, in music and in life, is producer/songwriter/multi-instrumentalist John Leventhal. They have been making records together since her 1993 album, *The Wheel*, and have grown as a songwriting and recording team. "We're definitely better at it," she says. "We used to take our personal stuff into the studio and work it out at \$250

—CONTINUED ON PAGE 122

DANIEL LANOIS SHINES ALONE

By Chris J. Walker

Daniel Lanois is well-known to most *Mix* readers as the highly creative, best-selling producer of landmark albums by U2, Peter Dinklage, Emmylou Harris, Bob Dylan, Robbie Robertson, Willie Nelson, the Neville Brothers and others. But the low-key, easy-going French Canadian native is also a formidable musical talent himself: an exceptional guitarist, songwriter and singer with three fine solo albums: *Acadie* (1989), *For the Beauty of Wynona* (1993), and his latest, the recently released *Shine*. He's seemingly got the best of both worlds—producer and artist—and balancing the two lives has been an interesting juggling act. Lanois is the first to admit that 10 years between albums is “a long time. But I'm always stockpiling music. I've probably got 20 albums' worth in my library. It's a little difficult when I'm doing production for other people: I'm pretty dedicated and don't treat them lightly.” Right now, though, he's in solo-career mode.

“After I finished U2's last record [*All That You Can't Leave Behind*], I decided that this was *my* time and just devoted myself to my own music. I took writing sabbaticals in Mexico, Canada and France, and wanted to create a CD that you could listen to from beginning to end and not skip over certain tracks. That's kind of my romantic view on records.” Lanois mentions Miles Davis' *Kind of Blue* and *Bitches Brew* as albums that meet that high standard. To create a similar aura, he crafted his latest recording, *Shine*, around four songs that would be, as he puts it, “universally embraceable,” with the other songs being basically “snapshots.”

“One is called ‘San Juan,’” he continues, “and it's this little song about getting away from urban crossroads, finding this small Mexican village and having a romantic life. ‘I Love You’ has dreamy psy-

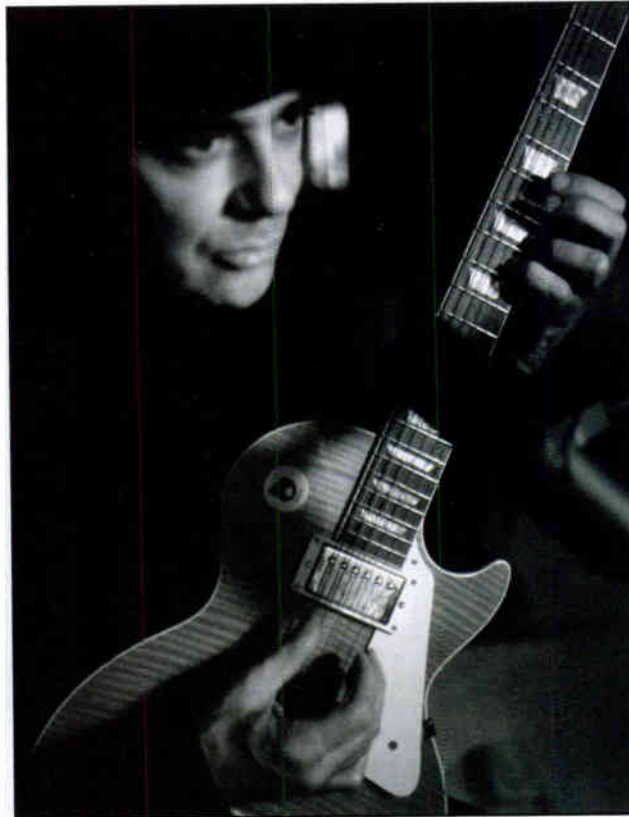


PHOTO: JENNIFER TIPO

chedelic twists and some identifiable sonic ingredients such as a repeating theme played on a Les Paul. It's like the theme to ‘A Summer Place’ [a big instrumental hit in 1960], and it has an exotic sound combined with these bells I found in Mexico to create an entire vibraphone out of them. The instrumental ‘Matador’ is all about technology, with one note and I changed that into three with a harmonizer. Then I built them up and stored them with a bunch of different intervals. Ultimately, I played the whole thing on a keypad, not even a keyboard. Also, pedal steel guitar is a big rediscovery for me. Over the last five years, I found my own way of playing it in more of a gospel style. The last song on the record, ‘[J] Leaves L.A.’, features it.”

In a somewhat disjointed fashion, Lanois recorded bits and pieces of *Shine* in a variety of locales during a long period of time. He transported equipment from his New Orleans studio to Tijuana and Los Angeles. Additionally, just north of Buffalo, N.Y., on the Canadian side, he maintains a “rig,” in his brother's log cabin

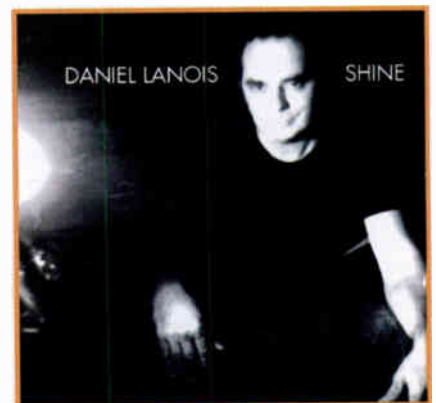
in the woods. Around 1997 (he was a bit fuzzy about exact dates), he spent a number of months in Mexico, and that's where he originally conceived of *Shine*. He fondly recalls the period as “an amazing experience” and did skeleton songs and recordings. Additional songs, augmentation and enhancements were done in Canada, France and finally in his Los Angeles home/studio.

“There was basically 10 years of stuff already recorded,” remembers Adam Samuels, Lanois' engineer, from the producer's home/studio located in the Silverlake area of L.A. He's been working regularly with Lanois for the past three years there, and at Teatro Studios in Oxnard, where they met five years ago. At that time, Samuels was hanging out with Victor Indrizzo, a producer/drummer (Beck, Macy Gray and Drizz) and was just learning the basics of engineering. His attitude and drive impressed Lanois, and they first

worked together on Willie Nelson's *Teatro* CD (1999) at that studio. From there, he did a stint at the Sound Factory, assisting Tchad Blake for a year before he relocated to England. Since then, Samuels, who's also Canadian but was raised in Europe, has reunited with Lanois and is handling his various engineering needs, including tour sound.

“What strikes me all the time about Dan is his absolute dedication to innovation, uniqueness and greatness,” Samuels

—CONTINUED ON PAGE 124



RANDY NEWMAN'S "SAIL AWAY"

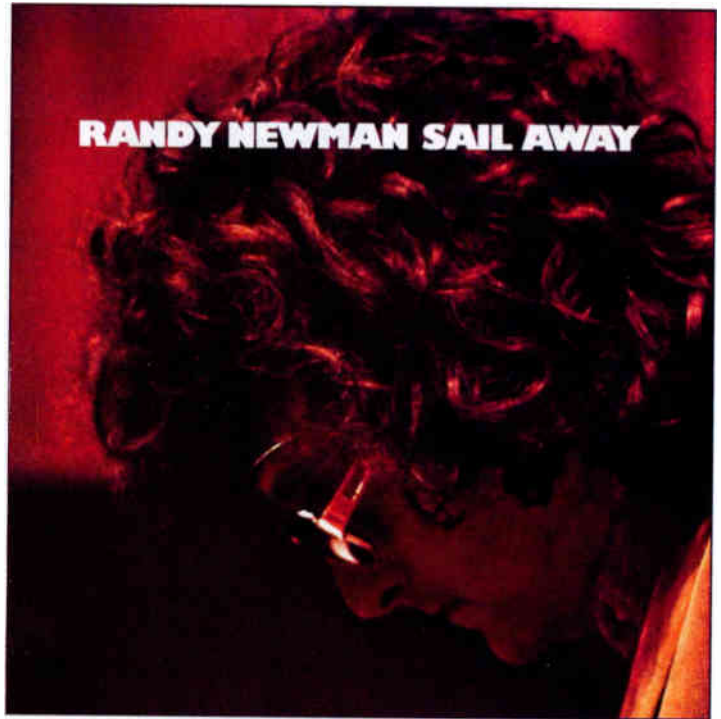
By Dan Daley

They don't make records like this anymore. Much of Randy Newman's acerbic wit and barbed social commentary manifested themselves well before the notion of "political correctness" became entrenched in American culture. Songs like "Rednecks" (which managed to piss off most of the population of the former Confederacy in three minutes and eight seconds), "Short People" and "I Love L.A.," masked by bouncy melodies, brought Newman's insightful vitriol to the masses, whether they liked it or not. Newman never sold a large number of records over a 30-year career, but his status as cult commentator on a changing America has been assured by these jarring singles, which would likely never get past the market research process at Clear Channel these days.

"Sail Away" was the first of these lyrically and musically masterful daggers to make waves, when it was released on an album of the same name in May 1972. Newman had already established himself as a credible hit songwriter, penning "Mama Told Me (Not to Come)" for Three Dog Night, "You Can Leave Your Hat On," which became a hit for Joe Cocker, and other songs that were covered by Judy Collins, Dusty Springfield and Peggy Lee. Harry Nilsson even did an entire album of Newman songs in 1970, *Nilsson Sings Newman*. But "Sail Away," an FM favorite though not a hit single, was the record that first made people stop, take notice and want to listen a second time to make sure they were on the right side of the joke. The lyrics constitute a tongue-in-cheek recruitment jingle for the slave trade. To paraphrase Newman himself on the liner notes to his 2001 *Best of* collection, the song touts the benefits of hopping on a ship bound for Charleston harbor where the enlistee will no longer have to "run through the jungle and scuff up your feet."

Newman seemed destined to make his mark in music. His uncles Alfred and Lionel were both noted film composers; another uncle, Entil Newman, would become the conductor for many of his orchestral sessions. Randy was also a boyhood pal of Lenny Waronker, who became a powerhouse executive and producer at Warner Bros. Records in the late '60s and helped assemble a top-flight production team that included the likes of Van Dyke Parks, Donn Landee, Russ Titelman and Lee Herschberg. It was Waronker who signed Newman to the label in 1968 and produced many of Newman's best records during his long stint with Warner Bros., along with Titelman and engineers Herschberg and Bruce Botnick, among others.

Herschberg first met Newman when he worked on the artist's *12 Songs* LP, which preceded *Sail Away*. Herschberg was already a wily veteran by the time he worked with



Newman; he had gotten into the business as an engineer in 1956 at the old Decca Studios in Los Angeles, where he worked on more than 100 records, in his estimation. He left Decca in 1963 when he moved over to Bill Putnam's United & Western Studios; there, he engineered many more recordings, including Frank Sinatra's "My Way." But it was at Decca that Herschberg got his first taste of rock 'n' roll. "We were doing really traditional pop records there, like Lawrence Welk," recalls Herschberg. "But after Buddy Holly died, The Crickets came in to do a record, and that was the first time we had seen so many electric guitars and amplifiers. Most of the engineers on staff there were older, so they turned the session over to me." Rock piqued Herschberg's young musical sensibilities, but it turns out the orchestral recording techniques he learned at Decca and United would fit perfectly with Randy Newman's theatrical production style.

12 Songs was recorded in a single session at United, and in 1972, with the studio now at 16 tracks and Newman's productions becoming more elaborate under Waronker's guidance, Newman's recording approach became a bit more complex, as well. But not much: "It was still more like a demo session than a record session," says Herschberg. "He would come in and sit at the piano and play a song, and the musicians would start to add parts as they heard them. But mostly, we were recording piano-and-vocal demos, which became the core of the records."

"Sail Away" epitomizes that methodology. "The song is literally just Newman on piano and vocal, with a 12/4/4 [violins/violas/celli] string section added later at Warner's Burbank recording facility of that era, Amigo Studios. But Herschberg knew that these *weren't* just demo sessions that he was cutting with Newman, and after working with him a few times learned that he had to adapt his tech-

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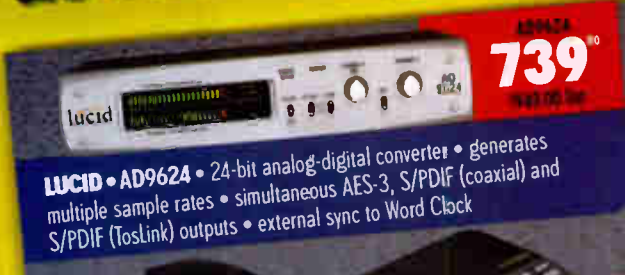
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niques to Newman's eccentricities.

"Randy's voice is, well...you take what you can get," Herschberg says. "He would move his head around as he sang, so I had to always have two microphones—Neumann U87s—about six inches apart on his vocal to catch him. The vocals were always live; he rarely overdubbed them, so they had to be recorded well and consistently every time.

"Another quirk was that Randy's foot would tap out the tempo, but he did it on the piano pedal, which resonated though the whole piano and sometimes sounded like a bass drum from another planet. We tried everything to mute it, including pillows under the pedal, but nothing worked. In the end, we either masked it with other sounds or tried to EQ it down a bit using a highpass filter in the mix." The grand piano was miked with a pair of U87s, as well.

Newman's vocals were kept largely pristine, going into the custom-made console designed and built by Putnam, and to the 3M 16-track deck running 3M tape. "I'd add maybe a little bit on the top end and a little more than that on the mids and roll off a little on the bottom. But that was about it," Herschberg recalls.

Herschberg doesn't remember being particularly taken aback by the lyrics of "Sail Away," even after he realized the point of the song. But after a few sessions with Newman, Herschberg had come to expect the unexpected. "At a time when people were making pop records, Randy was making social commentary, and I enjoyed working with people who actually had something to say. In part, that's why his vocals were so unprocessed: We hardly ever put reverb on them. He didn't want to highlight the vocal as much as he did the message he was singing. I always knew what Randy was trying to do and say in the studio."

Orchestral tracks for "Sail Away" were a straight-ahead matter for Herschberg after his years at Decca and United. Conducted by Emil Newman at the Burbank studios, the orchestra was miked with U67s over a split violin section, another overhead for the violas and a pair of U67s on the floor for the celli, with Altec ribbon mics or RCA 44s for additional room sounds. Altogether, with ambient microphones, there were between six and eight tracks of strings—more than twice as many as the rest of the elements of the track, which comprised just Newman's vocals and piano. The mix took place at Amigo, which Warner's had acquired

when it bought studio owner/producer Snuff Garrett's publishing interests in the early 1970s.

"Sail Away" was almost like the coda to that intimate period in Newman's and pop music's arc of time. Of course, in addition to continuing to cut his own albums, Newman would also go on to become an extremely successful film composer, with scores for movies including *Ragtime*, *The Natural* and *Toy Story*, among others, earning him Oscar nominations. Two years ago, he took home an Academy Award trophy of his own for the song "If I Didn't Have You" from *Monsters, Inc.*

Herschberg would do a few more records with Newman, but he notes that the charm of those demo-as-record sessions would fade as Newman began to incorporate more synths and other instrumentation in later records, like the 1977 *Little Criminals* (his biggest album) and *Trouble In Paradise* in 1983. Herschberg, who retired from Warner's engineering staff in 1996, still has fond memories of how those records were made: deceptively simply and all the more powerful for it.

He also feels that he was destined to work with Newman: "As it turns out, when my family moved to California from Chicago in 1944, our family doctor was Doctor Newman: Randy's father."

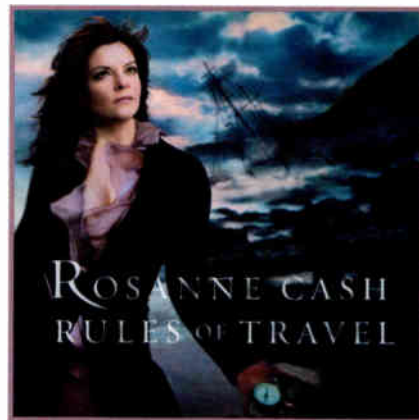
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ROSANNE CASH

FROM PAGE 118

an hour; how stupid could that be? Also, we've developed respect for each other's styles. I focus in bursts, and he focuses for 10 hours straight without looking up. It's a lot more fun now: We're relaxed as a couple, and creating something together can be very romantic.

"We have very different strengths, and that's the key to working well together. He has a much wider musical palette, in that if he wants to create something, he has the ability to find it quickly. I don't hear voicings and arrangements and sonics, and I've learned to get out of his way, although everything is open to discussion. Someone recently described John as a sonic sculptor, and that's very apt. He's also very intense, and if he's going to spend eight hours on a guitar part, I'm not going to stick around. I'll check back in a few hours!"



Leventhal's production discography reads like a who's who of singer/songwriters: Joan Osborne, Shawn Colvin, Marc Cohn, Rodney Crowell, Jim Lauderdale, Kelly Willis, new tracks with Michelle Branch...the list goes on. Try to pinpoint what makes him good at his craft, however, and he responds, "I have no idea. I'm not even sure I am a good producer. [*Rules Of Travel*] is my best so far, because I distilled a lot of my ideas to their simplest form. I've never thought about it. I think I'm a fairly musical guy with a good arranging sense, and I think I have a sensitivity to what songs are trying to put across. It's not just about gear and compressing and drums. My theory is that most musicians try to tap into that adolescent feeling of what music did to you when you responded viscerally and didn't understand why. I think I can still tap into that part of my psyche.

"Being a musician and songwriter are huge for me, but you can be a good producer without being either," he continues. "There are all sorts of different ways to come at this thing, and however you get to it is great. It can't help but enhance and help you to have a fundamental knowledge of music. Gear and compressors and miking the amps—to me, that's the least interesting part. I understand the seduction of sonic manipulation, but the song is so much more important. If you hear a singer sing a great song they sang into a Shure 57, you don't care as long as the music is great. Don't get me wrong: I like that stuff, and I like making great-sounding records, but there is an incredible amount of emphasis on that. When I first started making records, I knew nothing about gear. Now, I probably know too much about it. We all work on a lot of different levels, and you want your peers to appreciate what you do, as well as your non-peers. If other record-makers like my records, that's great; but at the

same time, I want someone who doesn't know anything about making records to like them, too."

In keeping with that theory, Cash and Leventhal kept things as simple as possible while making *Rules of Travel*. That is, between the original sessions and the final ones that took place two-and-a-half years later when she regained her voice. "I recorded at the three New York studios I use," Leventhal says. "Sear Sound, where we tracked rhythm sections, 12th Street Studios, which is my studio, and New York Noise. I engineered with Tom Schick, who worked with me on Shawn Colvin's last record. Roger Moutenout mixed at Allaire Studios. I played a lot of the instruments on it: guitar, keyboard, a good portion of the bass and drums on at least one song. That tends to happen when I map out parts, and in my spontaneous ineptitude they have a vibe and I say, 'Let's keep it.' I try to balance it out. There are very few records on which I approach the rhythm section the same way on every tune. So, it's me on some tracks and a band on the others."

Despite having been away from the material for an extended period of time, Cash was able pick up where she left off. "That's part of being good at your job," she says, "like an actor doing a scene over and over and keeping the emotional content intact. It's just a matter of retouching that place emotionally and trying to deliver from and reconnect with that tone every time you do a take."

"With 'Will You Remember Me,' it was a live vocal and we fixed one line. 'Rules of Travel' was a comp; maybe I did three or four takes. 'Hope Against Hope' was almost all live and maybe a couple of extra tracks to pull a few lines. I don't do lots and lots of vocals, because, although I can reconnect with the original feeling, it just doesn't make sense past a certain point, unless I'm really working up to something. It took me a long time to find the tone of 'Closer Than I Appear,' and we re-recorded that vocal three different times. I recorded three or four tracks, comped it, went away, came back, recorded three or four tracks, comped it, went away—three or four times—and I did that because I couldn't find the right attitude for it."

"'Rules of Travel' was difficult to cut because it took me forever to finish the lyrics to the verses," she adds. "It was late in the game: We were almost finished with the record before I finished them. We reapproached it a couple of times. The first time it was recorded was before I lost

my voice, and it's a different version from what's on the record. 'Will You Remember Me' was incredibly easy. I took the lyrics to the studio and asked John to really think about this song. I'd asked him to write music for it, and he asked, 'Do you really need another sensitive song on the record?' 'Well, yes!' He wrote the music right there and played it as if he was reading it. My voice was gone, and I put down this 'Tom Waits with laryngitis' vocal that stayed until I got my voice back."

When it comes to gear, Leventhal makes no demands other than good vocal mics. "That's all you need," he says. "I have my preferences, and I know it when I hear it. Over the years, I've wanted to keep constant with Neumann 67s. I bought two and tend to bring those with



me. We cut all of Rosanne's vocals with one. I like a good compressor, and there are a lot of good ones out there. The 1176s and Distressors are my primaries, and I also own and use a Tube-Tech compressor. I have Geoffrey Daking and Millennia Media mic pre's, and I've invested in a lot of microphones and instruments in my studio: guitars, harmoniums, xylophones, keyboards. That, to me, is the fun part: the actual music-making."

"I don't use a lot of outboard gear at all: one reverb and one delay, no multi-effects units. Whatever you hear, I created with guitar stompboxes and stuff like that: wah-wah pedals for filter and all sorts of weird stuff. I have nothing against Pro Tools, and there's no question in my mind that I'm bound for a computer system. I'm a non-techno guy and I don't relish the idea of sitting in front of a screen, as opposed to just listening to the music. But

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the writing is on the wall.”

Cash shares Leventhal's aversion to computers. In the studio, however, she is “very involved with microphones and guitar sounds. I'm acutely aware of vocal mics,” she says. “I love tube mics—the AKG C 12, the Neumann 67, and the Neumann 47 is one of my favorites. These mics are so warm in the midrange but also in the upper end. They don't have that brittle quality in the high end that a lot of mics do. Once in a while, I'll use the 87 if it's the right thing, even though it's not a tube mic. I don't play guitar much in the studio. John, being a guitar player, has very strong ideas and works stuff out, but I generally like a mix of going direct and using a mic.”

Despite his years of experience behind the board, Leventhal's definition of a producer is “an amorphous one. It can be someone super-hands-on, like me, or a benign figure who knows when to order lunch and when to say enough. That can be valuable, too,” he says. “For me, it's an ongoing process. With each record, I learn more and I don't know what my process is. In the past, I've gotten seduced by big landscapes or whatever, and now I like to be a little simpler. When it begins to seem routine, I'll stop, because now, every record almost seems like the first record I'm doing.” ■

DANIEL LANOIS

FROM PAGE 119

says. “He doesn't settle for anything less than amazing. He's always fighting, even when you think, ‘I can't go on anymore.’ He'll have his sleeves rolled up and ready to go after it and be thinking about how can we make this great. The song ‘Tears Roll By’ came out of a loop that was made for Bob Dylan's *Time Out of Mind*. It just had something that he felt was great. But he worked at it for a long time to develop a song out of it.”

“I did a lot of the parts on the album myself,” Lanois says. “I find that in the heat of the moment, especially at a time when I considered a particular recording to just be a demo, I'll play all of the instruments myself.” For accompaniment, Lanois recruited a few select friends: “On drums, it was mostly Brian Blade, who's my favorite drummer. [Jim Keltner also played drums.] Chris Thomas and Darryl Johnson played bass sometimes, and Aaron Embry was on piano. I'd wait for



PHOTO: JENNIFER TIPO

Lanois' living room was turned into a tracking room for Shine.

people to come through town, while in the meantime, I was chipping away by myself. Then I'd invite them in for a few days and see if we could shake up a little dust.”

Samuels helped turn Lanois' living room into a studio, and much of the tracking for *Shine* took place there during the late summer of 2002. When Lanois was working alone, the pace was relaxed: Typically, recording would start around noon and end by the early evening. However, during sessions when other musicians were used, the sessions went to all hours. “There's a certain aspect of the studio that's ongoingly mystifying to me,” Lanois comments. “You'll tune your instruments and record on one day, and you'll try to overdub a month later and it doesn't quite fit in. I think the molecules are set in a certain way one afternoon and that's the time to get the overdubs done. When ideas are flourishing and things are really going well, that should never be taken for granted. That's really a great time to just get as much work done as you can on a track.”

Samuels says that Lanois' way of using equipment and laying things out is well-thought-out and ensures that sessions go smoothly with minimal complications. “Everything has its own job, and nothing is doing two things,” Samuels notes. “That's a philosophy Dan always tries to put in his studios. An example of that is the main mixing console is not used for going to tape. It's the idea of dedication [of equipment], and luckily for Dan, he's got enough equipment to do that. He has

a separate console for going to tape, a Neve Melbourne 12-channel with API preamps. Those are set up with dedicated microphones and sound. A channel that's [dedicated to] the piano microphone is always that. If you sit down at the piano, it's miked up and I know what it's going to sound like.”

Over the years, Lanois has amassed an impressive array of equipment and he manages to put together similar setups wherever he ends up working. Consoles include his vintage Neve 8068, a pair of smaller Neve desks and an Amek. He likes Studer decks but has also found the RADAR hard drive system to his liking; he started using it during U2 overdub sessions in France for their most recent CD. The RADAR was used extensively for recording, editing and mixing tracks for *Shine*. “I think it's fantastic because you don't do data entry with it,” Samuels says. “Instead, you're listening to music and working with your sound, not waveform pictures and a keyboard. I prefer the sound of the RADAR, too [to other hard disk systems].” The producer did end up using Pro Tools, too, because his engineering friend Tony Mangorian brought in his setup to assist on the song “Falling at Your Feet” (which features Bono on vocals).

Lanois albums always feature unusual processing and sonics, and *Shine* is no exception. He says he tends to use “whatever I'm most excited about,” which usually amounts to many of the old boxes he's had around for years, such as the Lexicon Primetime and PCM70, and the Eventide Harmonizer. He generally eschews

conventional reverb devices; for compression, he uses a Teletronix LA-2A for vocals and a UREI 1176 for bass. Neve 1066s are his preamps of choice. For microphones, he's fairly set in his ways: He says he hasn't seen any improvement in the technology over the years. He listed these time-tested models as favorites: Sony C37A, Neumann U47 and U48, RCA 77 and 44 ribbons, and the more modern Sony 800-T. He also likes dynamic mics such as the Shure Beta 57 and 58, and the Sennheiser 409 and 421. Overall, his only innovation in the mic area was using Sennheiser's radio headphone system during the sessions, which he says, "worked very successfully."

In many respects, gear is often secondary to Lanois; more important is the sessions' setting and vibe and his willingness to experiment. He often quotes Leo Nocentelli, guitarist of New Orleans' famous funk masters, The Meters: "It ain't the axe, it's the cat who plays it." Samuels adds, "You can make a great record on anything. The key element I've learned from working with Dan is paying attention to the way things sound *before* the microphone. If you've got a great-sounding guitar player and amp, then put a [Shure] 57 on it. Or you read a manual that tells you how to get a great guitar sound and do whatever they say. Either way, it'll sound good. But if you've got a guitar player on a crappy amp with bad tone, it doesn't matter what you do, even if you have a super-duper plug-in."

For Lanois, recording successfully is often about the process itself, and working on so many albums has given rise to a number of personal theories of what works and what doesn't. One that separates him from many other producers is, "I do the mixing as I go along." He says, "I don't save it for a mixing date. If a track is sounding good after an afternoon's work, I do a mix. I find that the best mixes often come from rough-and-ready situations, when people aren't thinking about things too much." Samuels adds, "A lot of the mixes would be where I was toying around with a blend after a take. Dan would say from the other room, 'That's great. You got something there.' And I would just leave it, even if it wasn't what I was going for. From there, he would come in and we would both be on the console."

Lanois likes to stay open to new ideas, and it is not at all unusual for him to be working on several different arrangements and mixes of a song at once. "These are

lessons I learned from Brian Eno a long time ago; he's the mastermind of unusual balances," he says. "It's a way of getting you out of your usual habits and may present you with a fresh way to look at a blend. For 'Sometimes' [on *Shine*], the original version was acoustic guitar and me. I was tempted to put that version on the record, but I ended up with four or five different versions. I like having a lot of versions of songs and think you learn a lot by having another bash at it. Additionally, I look for sonic identities: sometimes a riff, other times a tone. A track will come on and it will just have a sound that separates it from everything else on the radio.

"I often wonder, what would my buddy Brian Eno think? He had little involvement with this project, although I did send him the CD at the back end for his views on sequencing. The same with Bono, and he was very useful. While on vacation with his Dublin cronies, they would call every hour as they got drunker and suggest marketing campaigns, among other things. It was a lot of fun. Bono even said, 'You've got to call the record *Shine* [which is also the title of one of the songs]. Its got a lot of rain on it, but its also got a lot sun.' Then he asked, 'What kind of photograph are you going to use for the cover?' I said, 'I've got a picture of me, nighttime, lit up by motorcycle headlamp.' He said, 'Perfect, coming out of the darkness; that's great.' Then he went on to say, 'That's what it should be when you perform. Walk onstage back-lit and don't let them see your face for the first song.' He had it all worked out," Lanois laughs. "He's a very sweet man and I'm lucky to have him."

Of course, the other side of working with the likes of Bono, Dylan and Gabriel is that beyond the camaraderie is the pressure of having to produce under the microscope, so to speak. Amazingly, Lanois seems to thrive in those settings, yet he admits the tension level on his own project was more intense, especially near the end: "Those folks are all highly intelligent and creative people, and only good comes out of those situations," he says. "That's a wonderful arena to be operating in, and I like the challenge of *intelligence*. It allows me to get real resourceful and bring the best out of myself. There is a kind of intensity and there's high expectations, such as with a U2 record. Then I take those same lessons and apply them to my own productions. Yeah, maybe it's a little more relaxed, but at the end, the same pressure exists: You've got to deliver." ■

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L.A. GRAPEVINE

by Maureen Droney

There was more going on than what first met the eye when I stopped in at Record Plant's Studio 2 to visit with producer/engineer Toby Wright. Along with engineer Elliott Blakey, Wright was deep in mixes for soulful rockers Tantric, who were finishing up their sophomore Maverick release. When he took a break to talk about the new album, I also discovered that Wright is such an avid surround sound maven that he's come up with software designed to simplify the task of setting up 5.1 mixes.



Tantric mix sessions in Studio 2 at the Record Plant. From left: engineer Elliott Blakey, producer/engineer Toby Wright and assistant Mike Eleopoulos.

Wright's been a fan of Tantric's lineup since their previous incarnation as members of Days of the New. He also produced their first CD, having hooked up with the band when it turned out that they were on each other's "people I'd like to work with" list. That CD, with its 2001 single "Breakdown" (Number 4 on *Billboard's* Modern Rock chart), was also mixed at Record Plant, where Wright is a longtime client. "I've mixed 15 or 20 records here," he says. "I like the console [a 96-input SSL G Plus] and I trust what I hear. One of the reasons I'm com-

fortable here is that I feel confident about what I'm getting."

This time around, tracking sessions were done at "The Sanctuary," Ocean Way Nashville's Studio A, another Wright favorite that also happens to be near home for the Kentucky-based band.

Wright is an experimental kind of guy: For one Nashville session, he placed the drum kit in an unused alcove about 20 feet above the control room. "Studio A was originally part of an old church," he notes. "The control room sticks out in such a way that there's about 10 feet between the ceiling's outer shell and the actual building ceiling. I was looking for a tighter drum sound for one of the songs; up there, the

ceilings were at 45-degree angles with pads on them, which worked out great."

Recording with surround mixes in mind, Wright added elements such as guitars and vocals that don't appear in the 2-track mixes. That brings us to Mixlab, the software product he and partner Scott Blum co-developed. "It came about around an Alice In Chains DVD, called *Music Bank: The Videos*, that I mixed," Wright explains. "After researching a lot of DVDs while doing that project, I felt that much better use could

—CONTINUED ON PAGE 129

NASHVILLE SKYLINE

by Rick Clark

Nashville might be known around the world for being the home of country music, but it also boasts the largest concentration of labels, publishers and talent affiliated with the Christian music industry. Two of that industry's most successful engineering and mixing talents are Tom Laune and John Jaszcz. Laune has also started wearing the production hat on quite a few projects in the past couple of years; he won a Dove Award and was nominated for a Grammy for his production work on the Platinum *Worship* album for Michael W. Smith.

I've known Laune since the late '80s, when he worked as an engineer/producer at Ardent Recordings in Memphis. After seven years at Ardent, he moved to Nashville and very quickly became in-demand as an engineer/mixer/producer for the contemporary Christian market. Recently, Laune's production credits have included Smith, Watermark, Point of Grace, John Tesh, Phil Keaggy and live multi-artist records on Sparrow and Rocketown Records. His mixing credits include Bruce Springsteen, Amy Grant, Rich Mullins, CeCe Winans, Michael McDonald, Chris Rice and Ginny Owens, to name a few.

When I asked Laune what he was excited about mixing lately, he mentioned the Nichole Nordeman *Woven and Spun* album on Sparrow as his recent favorite; that album's first single, "Holy," tied the record for the longest-running Number One single in contemporary Christian's AC radio history. "Holy" also won pop/contemporary Song of the Year at this year's Dove Awards.

When we spoke, Laune had just finished a live project on Six Step Records with Chris Tomlin, David Crowder, Charlie Hall and Christy Nockels at Atlanta's North Point Church. One of Laune's all-time favorite worship leaders, Matt Redman, flew in from England to be a part of the project, as well.

"This is another 'passion' record fo-

cusing on reinterpreting old hymns with a modern approach," says Laune. "The church has a studio on-site, and we are going to bring in a lot of my gear to complement what the studio has. [The church] does surround mixing in its studio and makes DVDs in surround every Sunday. They have an Amek Media 5.1 console and 72 tracks of Tascam MX-2424. It's the only church doing surround every week that I know of."

Laune was one of the first engineer/mixers in Nashville to get into surround; among his projects are a mix for Disney's *Beauty and the Beast* DVD and a Sparrow/Six Steps Records project titled *One Day Live*. "I'm looking forward to more surround work in CCM," he says. "I geared my studio up for surround mixing to picture, so I'll be ready when the format takes off."

"One thing I think holding back surround's success at the moment is the consumer being so confused about what format to buy and how to get the most out of it," Laune continues. "On the pro end, the tools to make the surround music are struggling to keep pace with what the consumer playback systems are capable of."

While Laune works in many of Nashville's finest commercial facilities, he has been fine-tuning his own mix studio.

—CONTINUED ON PAGE 130

NEW YORK METRO

by Paul Verna

Along with her millions of newfound fans and supporters, one of the people cheering the loudest for Norah Jones, as she and songwriter Jesse Harris swept the 2003 Grammy Awards, was William Garrett. A musician, composer, engineer and studio manager at Sony/ATV Music Publishing's New York studios, Garrett recorded the demos on which Jones' debut, *Come Away With Me*, was based.

By now, it's a familiar story. Harris, an up-and-coming Sony/ATV songwriter, wanted a female singer to record demos of his songs. His A&R representative at Sony, Nate Krenkel, recommended his roommate, Jones. The demos attracted the attention of Blue Note Records' president Bruce Lundvall, who signed Jones as an artist and hired famed producer Arif Mardin to re-record the material. As a tribute to the quiet simplicity of the songs and the quality with which Garrett initially recorded them, the finished tracks bear a strong resemblance to those understated demos.

Ironically, the room at Sony/ATV is so small that one can hardly envision any kind of live band in it, even a small jazz combo like the one that Jones used. "We had Jesse, upright bass, drums, piano and Norah in what's essentially a vocal booth," says Garrett. "It was the most people we've ever had in there."

The studio is equipped with a Pro Tools MIXPlus system running Version 5.1.1, as well as Logic Audio Platinum 5.5 and Dig-



Grammy-winning songwriter Jesse Harris (left) works on tracks for Norah Jones' *Come Away With Me* with Sony/ATV chief engineer William Garrett.

ital Performer 3.0. Consoles and control surfaces include a Yamaha 02R and 8-fader Motormix. Among Sony/ATV's microphones are a Neumann M147 tube, an AKG 414, two Sennheiser 421s and a Sony C-48; preamps and processors include two Millennia Media Origin STT-1s, a Summit TPA 200-B and a Neve 33609 stereo compressor/limiter.

In addition, the room is stocked with racks of MIDI gear, including an Akai MPC 2000XL, Nord Rack 2, Roland 2080 and JV 880, and Kurzweil K2000R. Speakers include Genelec 1031As, Yamaha NS-10s and JBL 4412s.

Despite its small size and modest equipment offerings, the room has served its purpose as a "creative environment where publishers could be involved right there, on the spot," says Garrett. "Somebody'll write a hook and say, 'Hold on a second while I grab the A&R person from the office down the hall,' and they'll pull them out of a meeting and drag them into the studio. It creates a dynamic atmosphere within the publishing department."

In the days when demos were demos and masters were masters, a publishing studio was a place where writers would sketch out songs in the hopes that a label or artist would later recut them in a "proper" facility. To an extent, publishing studios

—CONTINUED ON PAGE 134



Tom Laune, left, with worship leader Matt Redman.

SESSIONS & STUDIO NEWS

SOUTHERN CALIFORNIA

Producer Roy Thomas Baker tracked and overdubbed Split Shift's latest release (NoName/Elektra) in Glenwood Place's (Burbank) Studio 1 with engineer Daniel Kresco. Ziggy Marley and producer/engineer Ross Hogarth had Studio 2 booked... The Wallflowers were in Skip Saylor Recording (Los Angeles) with mixer Bill Appleberry for an upcoming MTV live release; Jason Vescio assisted. Justin Timberlake spent some time with producers The Underdogs, tracking and mixing for his latest release. Dave Russel engineered and mixed the effort, while Kevin Mahoney and Jason Gossman assisted.

NORTHEAST

Rufus Wainwright was working with producer/engineer Marius Dvries at Loho Studios (NYC)...Dr. John was in The Clubhouse (Rhinebeck, NY) with producer John Platania and musical director Michael Pillot to track new songs for an original Nickelodeon Series called *Littleburg*. The series will feature Dr. John's original theme song, along with music by Guy Davis, John Platania and Whoopi Goldberg. Paul Antonell engineered and Sean Price assisted on Pro Tools...Producer Charles "Poogie" Bell Jr. was at

Unique Recording in New York City working on Kenji Hino's forthcoming album for Universal Japan. Guests musicians included John Scofield and Kenny Garrett. Engineer Christian "Wicked" Wicht mixed the effort, with Kaori Kinoshita assisting.

NORTHWEST

The Plant Recording Studios (Sausalito, CA) has seen Tower of Power (producer Emilio Castillo and engineer Tom Flye), Prozac (mastering engineer John Cuniberti) and Zack de La Rocha (DJ Shadow producing and Jim Abbiss engineering and mixing) working on new projects.

MIDWEST

Blue Room Studio's (Chicago) producer/engineer Edgars Legzdins recorded and mixed new material with Turnerjoy; Lauren Pagni assisted. Also working with Legzdins and Pagni were Prolixon and Plane mixing their upcoming albums... Also checking out Chicago's bright lights were Spirit Web, who rapped up a three-

month effort at Up on the Roof Recording with engineer Mark Blas. Marty Bilecki mastered the album at Performance (Orland Hills, IL)...Producer/remixer Greg Schelander of LoudBUG! Productions (Minneapolis) recently remixed the latest single releases from Grammy and Emmy Award™-winning Val Watson, Tiff Lacey, Valerie M, L-KAE and Me & My.

SOUTHEAST

Grammy Award-winning producer/songwriter/guitarist Rene Toledo has been working with Julia Iglesias at the Hit Factory Criteria (Miami), and mixing El Puma's and pianist Raul Diblasio's next efforts with engineers Carlos Alvarez and Mike Rivera.

SOUTHWEST

Nichole Nordeman (Sparrow Records) recorded live cuts for her next release at The Door (Dallas). Reelsound Recording's mobile truck recorded the event. Production credits include: producer Brad O'Donnell, engineers Russ Long and Malcolm Harper, and assistants Woody Woodard and Joey Lomas...Rock-House Studio (Fort Worth, Texas) completed final mixes on *Head First*, the new album by John Gomez. The effort was engineered and produced by Mark Merritt and Earl Musick. ■



Hip hop artist Keith Murray working the room at his media listening party at Mirror Image Recorders' Studio C (New York City). Mixed by Mirror Image owner Tommy Uzzo, Murray's new album, *He's Keith Murray*, is now available.



New Warner Bros. artist Mandy Kane (center) stepped into LAFX (North Hollywood) to work with producer Joe Chiccarelli (far left) and engineer Dave Ashton.

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be made of the surround field.

"Most of the music I heard used 'front loading,' where three speakers are considered the front; most of the music comes out of those. The back speakers are used mostly for effects and ambience. What we've created uses that other space so that when you sit down and close your eyes, the speakers literally disappear."

By using a project's multitrack material, Mixlab focuses on setting panning at its optimal positioning. "We've used wave analysis and other techniques to create a

method that's very fast," Wright comments. "As a mixer, when you're setting up a surround mix, most of your time is spent on panning. There are so many options that you can lose perspective."

Based on the instrumentation, Mixlab chooses between approximately 2½ million possible mix combinations and provides what it considers the best-possible starting point. "You can keep stepping through [the mixes] if you want," Wright notes, "but we find the first one is usually really good."

Wright and Blum plan to offer Mixlab as a service, where the software and gear for a surround mix will be set up for the client. Once set with the basic panning and levels, an engineer or producer is free to get creative with the mix. The system works with any kind of multitrack music, including film scores.

Meanwhile, on Ventura Boulevard in Studio City, engineer and co-producer (with Bob Ezrin of Alice Cooper, KISS and Pink Floyd fame) Brian Virtue was at Scream Studios wrapping up mixes for a new Jane's Addiction CD. Yes, it's true folks: Original Jane's mem-

bers Perry Farrell, drummer Stephen Perkins and guitarist Dave Navarro have reunited and are striking sparks, helped out by the addition of bassist Chris Chaney. With a CD summer release, titled *Hypersonic*, and a 2003 Lollapalooza fest gearing up, fans are expecting the return of some funky rock 'n' roll fireworks.


Virtue, who has previously worked with Korn, Coal Chamber and Crazy Town (including on their Number One pop and rock song "Butterfly"), among others, had been behind the desk—and the Pro Tools—while the group, which hadn't recorded a full album together since the 1990 *Ritual de lo Habitual*, sorted out how to get their grooves back on. Camped out at L.A.'s Henson Recording in-between tours to Asia and Europe, they were jamming, writing, recording and refining for over a year.

"We were trying to keep everybody occupied and excited," says Virtue, "so we had to keep a lot of things going on at once. Perry would have his system set up and be writing songs in one room. I'd be working in the control room, and the band would be out in the studio with a separate headphone mix rehearsing other songs. The assistants had their work cut out for them: cordoning off different sec-



Engineer/co-producer Brian Virtue taking a break from mixing Jane's Addiction's upcoming CD.

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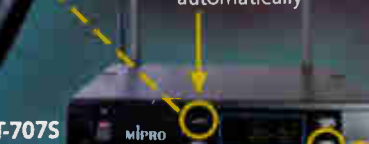
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COAST TO COAST

tions of the console and changing gear around all of the time."

Working mostly in Henson's Studio B, Virtue relied on its outboard API and Neve preamps to record the basics to analog tape, tending to bypass the console for tracking the band, who cut live with two guitars, bass and drums. I'd expected walls of guitar parts, but instead, Virtue says, parts got simpler and simpler as the process went on.

Mixing was on Scream's SSL 9000 J Series, which Virtue still kept set up for "tracking and overdubs at any time." He was also, seemingly, working with a speaker shootout. On the day I stopped in, there were five systems set up: his own Dynaudio B15s, Tannoy System 8 NSM2s, Yamaha NS-10s and a mono Auratone, and a pair of NHTs with dual subwoofers that Ezrin was trying out.

Virtue left his rack at home, except for his PYE limiter and some extra Valley People Dynamites, which he uses for drum compression.

I kept wondering what method Virtue used to archive the long project. "You mean the wall of hard drives?" he asks, smiling. "I would just continually buy new ones. I used the Pro Tools function 'Save a Session Copy,' which saves everything you're currently using in a song. 'Save a Session Copy' copies only the audio files that are being used at that time, in that mix. I'd keep the old hard drives in case we needed to go back to them, but continually move the current mixes to a new hard drive. The drives are just numbered consecutively. Since they're mostly 120-gig FireWires, each one holds the whole record [as it was at that time]."

Other projects recently at Scream, which is celebrating its 15th year in business, have included producer David Kahne with engineer Michael Brauer mixing Sugar Ray (whose previous three albums were also mixed by Kahne at Scream), Kahne and Brauer mixing a live version of "Hey Jude" for Paul McCartney, and Tim Palmer mixing new Elektra group Burn Season. ■

Got L.A. news? E-mail MsMDK@aol.com.

NASHVILLE SKYLINE FROM PAGE 127

"My concept was simple," he says. "I wanted the best of both worlds, so I designed a mixer that would take 64 discrete inputs from my Pro Tools rig's D/A converters and use the analog mix bus from five

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Most studio grade wire is made by "drawing" heated copper, through a die. As it cools, small metal crystals form. Adjacent crystals cause resistance and other electrical properties called boundary effect. Between each crystal or grain, mineral and gas residue also cause resistance, so hydrogen is introduced during the melt to purge impurities. This results in oxygen free copper and while OFC does improve performance, it has no effect on boundary or directional resistance.

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So who totes around Zaolla Cables?



Paul Du Gre': took his Zaolla Mic Cables to the Plant and ran them direct tracking Tracy Chapman's "Let It Rain". He also recorded Leo Kottke and Mike Gordon's "Clone" through Zaolla. Paul prefers Zaolla for analog and digital because he refuses to compromise his sound.



Joe McGrath: after recording AFI's "Sing the Sorrow," Joe took his cables to New Orleans tracking Ryan Adams at Piety Street Recorders. "Having used a lot of different designer cables, this is the first Mic cable I like—it just sounds good. I can't give you a better description than that."



Roger Christian: mainstay DJ at Star 102.5 in Buffalo, NY recently did the acid test using Zaolla for his live venue powered speakers. "We started out evaluations with the finest XLR-XLR cables from [all the big names], including the "Best." I must conclude that the ZAOLLA are all they are advertised...simply THE FINEST CABLES available on the market today!"



John Fishbach: John's seminal work includes Stevie Wonder and WAR. From the Nevilles, to Jazz, at Piety Street he hears them all. When Joe took his cables home, John and Mark Bingham suffered a major case of Zaolla withdrawal, so John bought his own. "I would not have believed it, the difference wasn't even close to being subtle—it was astounding, my jaw dropped."

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different-sounding consoles to combine the signals to stereo outputs. The five mix bus colors I chose were Neve 8068, vintage API [with parts from one of Frank Zappa's old API consoles], Flickenger [a very fat console from the 1960s], custom tube electronics and a mix bus that was ultraclean using Jensen 990 transformers. Implementing this was no small feat and took many months of work, but the end results are stunning. I completely bypass the internal Pro Tools mix bus and give my clients a wide variety of classic console flavors on every mix I do. I use the sound of the five different consoles, depending on

The Disc recording studio in East Detroit, Mich., where he worked on sessions for such rock and R&B acts as Mitch Ryder, Parliament/Funkadelic and Zapp. He has lived in Nashville for 10 years, dividing his work between country, gospel, rock and R&B recordings. Perhaps because of his involvement with R&B in Detroit, Jaszcz's first recordings in Nashville were limited to punchy, country dance mixes with producers Steve Keller, Wynn Jackson and Scott Rouse. In recent years, he has recorded conventional country records for Billy Ray Cyrus, James T. Horn and Ray Vega, and had Platinum success with John Michael Montgomery.

Jaszcz says he learned a lot from his days tracking Parliament/Funkadelic, where sessions would often start in the morning and go into the wee hours of the *next* morning. "Spontaneity was the most important thing," he says. "We always kept the machine in 'record' to capture the moment. Every note and every breath were important, as well as the mistakes. Gear was not the most important thing, although it was well-maintained. We never thought that recording on an API console would ever be thought of as 'vintage.' Of course, you don't really notice until you compare your work later."

Working with contemporary Christian artists of today is a far cry from burning the midnight oil with Bootsy Collins and George Clinton, but Jaszcz says he feels a strong affinity to the Christian artists.

One of his most recent projects was Papa San, a Jamaican artist for Gospo Centric Records, which he mixed at Paragon Studios on their SSL XL 9000 K. "Papa San is a *real* reggae Dancehall artist, not a Christian artist who does reggae," he comments. "Working on the Papa San project was an interesting experience all the way around, both technically and culturally. The sessions would come in from three different producers—whom I would never meet during the mixing—in Pro Tools format on either FireWire drives or CDs. Sometimes, the no-producer thing became a problem when we would find out that we didn't have the latest session because the artist had recorded some extra vocals and forgot to send us the latest overdubs," Jaszcz says with a laugh. "Thank God for recalls—and for Grant Greene, my second." ■

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John Jaszcz (back right) with Narada Michael Walden (right, seated) and Wynonna's background vocalists at The Sound Kitchen Studio C. Narada is Aretha Franklin's longtime producer.

what the mix calls for. For example, if it is a real crunchy, clean R&B thing, I can use the Jensen 990. If it's a real organic, rootsy rock thing, I can switch to the API."

For monitoring, Laune uses NS-10s, each powered with a 400-watt Hafler P3000 power amp bridged in mono. "I've found the way to make NS-10s sound really great is to overkill them with power," he says.

"One of the things I am really excited about, gearwise, is the Sintefex-Replicator," Laune adds. "It's a mastering box, where you can use two to eight channels and it can replicate any piece of audio gear, including tape. The company is based out of Portugal and [the box] was designed by the guy who started SADiE. Abbey Road Studios just put in one of these boxes. It's one of the only boxes that I know of that you can do eight channels of Pultec EQ locked together across a mix bus. So, if you're doing a 7.1 mix and you want to have Pultec EQ on every channel, with this you can."

John Jaszcz (pronounced "Yosh") got his start in 1978 as a second engineer at

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NEW YORK METRO FROM PAGE 127

still serve that function. However, thanks to high-quality digital audio workstations, many of the tracks cut in these little recording rooms end up on finished masters.

In the case of Jones' material, it *was* re-recorded, but the vibe that Harris, his band and Jones achieved was replicated on the full-blown project. Other major artists who have worked at Sony/ATV with Garrett and engineer/Pro Tools guru Victor Mancusi, who helps keep the facility fine-tuned for its 'round-the-clock schedule, include Mary J. Blige, Faith Evans, Lauryn Hill, John Waite, Everything But the Girl, Cyndi Lauper, Curtis Stigers and Bryan Adams. In addition, tracks for Nas, Angie Stone, Jennifer Lopez and Toni Braxton were cut at the studio. Some of this material—notably Nas and Stone tunes—have ended up on the artists' releases.

For Garrett, the success of the Sony/ATV facility has been the culmination of more than two decades of studio work in many disciplines. A graduate of the University of North Carolina and Berklee College of Music in Boston, Garrett began his career at Beantown's Intermedia Sound in 1978,

where he assisted on sessions by the likes of Burt Bacharach, Carly Simon, The Cars and Aerosmith. He went independent in 1980 and started his own label, Alpha-Media Records. The explosion of new wave and synth pop bands offered plenty of opportunity for Garrett to hone his engineering skills, which he did on projects by Til Tuesday, Aztec Camera, New Edition, The Stylistics and New Kids on the Block.

In 1987, Garrett moved to New York, where his streak of major credits continued with Slayer, Hanoi Rocks, the Golden Palominos, Treat Her Right, Cyndi Lauper and Mr. Crowe's Garden, which later became the Black Crowes.

Although his career was successful by any measure, Garrett was restless for a new challenge. He found it in 1991 at Sony/ATV Music Publishing. "The person who came up with the original concept for the publishing studio was Patty Devries, an A&R rep at Sony/ATV," recalls Garrett. "She had signed four or five bands to publishing deals without record deals, so she needed fully produced demos. Instead of hiring me to produce these bands as an independent, she hired me as an in-house engineer/producer and asked me to put together a studio in the office area. The idea was to bring music back to this end

of the publishing business."

In its first incarnation at Sony/ATV's former premises on Fifth Avenue, the studio lived in a file room and was not equipped with the kind of gear that could yield professional results. However, when Sony Music moved its corporate headquarters to 550 Madison Ave. in 1993, the company was able to "design a real room," as Garrett puts it.

Although Sony/ATV keeps him busy, Garrett still finds time to pursue his own projects outside the studio. Since 1993, when he scored his first film, *Back in the Days*, Garrett has worked on music for 17 films and a host of TV programs for Cinemax, Lifetime, American Movie Classics and the Travel Channel.

In 1999, Garrett began a professional association with John Cale, engineering and mixing several albums and film scores for him, including *American Psycho*. Other recent projects include engineering material by Conor Oberst from Bright Eyes, producing a cartoon show theme and score with The B-52's and producing new records for singer/songwriters Daniel Simonis and Bill Campbell. ■

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—FROM PAGE 51, THE MATRIX

his cuts are very musical. Another thing of note is that we delivered everything as a 5.1 spread. I think that contributes tremendously to the final product. I don't like to bring in stereo stems of this and that. If everything is conceived from the get-go from a surround standpoint, it's all going to mesh better."

THE MIX

The original Oscar-winning team of John Reitz, Dave Campbell and Gregg Rudloff (dialog, music and effects, respectively) was back again for the final mix of *Reloaded*. Final FX pre-dubbing began at Warner Bros.' Stage 6 with Rudloff accompanied one at a time by Dean Zupanic, Ron Bartlett, Steve Pedersonor and Dan Leahy. Concurrently, Reitz and Campbell were pre-dubbing dialog, Foley and backgrounds next door on Stage 5. While the whole Danetracks library system is

wired and accessible to the dubbing stage, in general, a prebuilt stereo or 5.1 sound is given to the stage.

"When the sounds leave here, they're often composited," comments Davis. "There's no way we could go to a stage with the thousands of separate details in the many layers of sound we take to them. We rarely give any 'choices.' We make it work, and if it doesn't, we do something differently. We don't like to burden mixers with a whole bunch of options within the predub units. Even then, they have lots and lots of mixing to do."

"Every one of us has to remain alive to make *Revolutions*, so in spite of the

stress, the atmosphere was a tense kind of fun," Davis concludes. "[Producer] Joel [Silver] kept us supplied with Polish deli sausages, and vitamins and chili dogs kept our strength up. We had just enough time to make several passes through the entire movie, which made a big difference by allowing for fine- and then finer-tuning as the visuals evolved closer to their ultimate form. By the last day of print mastering, we had a confirmation of the timing of every VFX shot so we could finally breathe! I couldn't feel any sense of completion until I saw those last few shots."

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NIOBE'S FIREBIRD

Andy Lackey, who oversaw vehicle recording: "Niobe is the killer driver; when she drives, it has to sound pretty ferocious. After auditioning over a dozen cars, we found a '66 Nova that had been rebuilt as a dragster with a small-block 355 sprint car racing engine. The car originally had a Flowmaster exhaust system that contributed a ringy, sheet-metal quality to the exhaust sound. This was bad. We listened to various exhaust systems and, based on our requests, [stunt driver/race car owner] Steve Rowe assembled the exhaust on the Nova specifically to suit our needs. It sounded great, and the short pipes allowed us to mount our mics in close, out of the wind. We blew it up on the first recording session, so Steve had to rebuild it for the second run. This car's engine and exhaust combo were ferocious and yet very agile. While doing onboard recordings, we hit 130 mph!"

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—FROM PAGE 22, AND THE GEEK

picked a compression that actually sounds pretty good. He made iPods tell Macs what you listen to so you could see what you like. He found an answer to the piracy issue that looks like it may do the impossible: satisfy the labels and the consumers.

Steve Jobs figured out all the pieces to the puzzle, and he actually made them fit before he even told us he cared.

THE PRICE OF SUCH VISION?

For me, it's pretty high. I bought 135 songs the first day, and I assure you it would have been more if I hadn't stopped to get this column in before deadline. And I will go right back to the iTunes Music Store as soon as I hit Send.

I have never had this much fun buying music. The system is laid out almost perfectly. You find what you want (fast, by the way: about one second from click to hearing the tune on my connection), then you see what else that artist has done, and then maybe cross-link to other albums that they have been on, and so on.

I have already found about half of what I was looking for, but surprisingly, I have bought even more songs from artists

or albums that I did not know about before, material that the iTunes Music Store linked me to or suggested!

This means that the dreaded "gotcha" of this dream has apparently been expertly dealt with and virtually eliminated: how to introduce customers to new material. Impressive.

Everything about the experience is impressive. The level of integration is unprecedented, bringing Steve's promise of a unified media experience to life in a way no one else could have imagined, or even done.

GOOD MORNING, CHAKA KAHN!

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iTunes Music Store is the first online music service that I have ever used and

would recommend to my readers. No monthly fees, simple search, listen and buy, and a fun way to get rid of all that extra cash. Come on, skip one bag of fries a day, lower your cholesterol and get a high-quality song—legally—instead. I will never buy a CD again. Never.

But...I stand by my statement from last month: I believe that in the end, the right price will be 49 cents a pop, not 99. Ten songs for five bucks should feel like a bargain good enough to get everybody onboard who would get onboard.

You do get album art...I wanted that. No subscription, fair to everyone. Boy howdy, as Les Paul has said to me...lots.

Les, by the way, is there, as is Brian Setzer and Kid Rock. It's kinda weird, both Johnny and Edgar Winter are there, but no Frankenstein.

There is an, uh, "interesting" mix of current premium best sellers there, but what is most interesting is what is *not* there.

And when you look into the past for classic and what was once alternative, more of the same strange omissions.

There are a lot of "partial albums" with no explanation. There are 13 Joplin al-

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THE FAST LANE

bums and one Big Brother (all mysterious "partial albums"), five Airplanes, but *no Doors!* There is a twisted "Light My Fire" by Stevie Wonder, though. And 13 Floyds.

There are no Stones, Beatles, Her-
man's Hermits, no Zeppelin. Mmmm. No
Zappa, no Seeds, only two Dire Straits al-
bums. No Animals. No Surfaris, no Jan &
Dean, no Shadows or Dick Dale, and only
"Rawhide" from Link Wray. No MC-5, but
a little Leslie West with Mountain. Even
Blondie has a couple songs, but no "Heart
of Glass."

Either hundreds of people are loading
tunes 24/7 and they are just not all in yet,
or some very complicated rights issues are
keeping some of these tunes offline.

They did manage to sign *all five* Big
Boys—EMI, BMG, Universal, Warner and
Sony—before they even went online! And
indies are coming in as fast as they can
get loaded. *Then* we should finally have
easy, instant access to the freak acts who
are the creative blood of our industry.

The iTunes Music Store sold 275,000
tunes in the first 18 hours, and *1 million*
in the first week...So it seems there are
some honest people out there after all. In
fact, I believe that this service can become
a viable, honest alternative to KaZaA. Let's
hope that the thieves don't manage to ren-
der this Herculean effort worthless.

And you *do* know that this is only for
Mac users, and only in the USA, right?
That means that this service is available to
about 4% of the potential market. Imag-
ine later this year when Windows people
are invited in, and then the world.

AND WHAT OF YOUR STEVE?

Well, what actually was my part in all of
this? Obviously, all my personal effort
meant absolutely nothing, for as I was slav-
ing over a hot TiBook writing the column—
you know, the one that begged for the vi-
sion needed to step onto the information
highway with our bags of songs—it had all
already been done. How incredible.

Jobs was the architect of our salvation
months or maybe years before I even re-
alized that the problem was acute, and he
actually implemented the entire multifac-
eted solution in secrecy—again, before I
typed my first word on the topic.

And with *that*, I bid you a humble
(don't you get used to this) farewell until
next month, when we look at a very dif-
ferent approach to online music.

Signed, one of the Steves. ■

*If ever there was a column that did not
need a bio, this is it.*



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—FROM PAGE 26, *AH, SWEET MYSTERIES OF LIFE* ing, incestuous liaisons, intense competition and sublime performances. She wrote five Greenfield novels in all, but this one is the most delightful. Sadly, she passed away in 1999.

Linda Barnes creates a totally different atmosphere in *Steel Guitar* (published: 1991). Heroine Carlotta Carlyle is 6-foot-1, has Bonnie Raitt-like red hair and used to play guitar semi-professionally. Then she became a cop, and now drives a cab and is a part-time P.I. As the book opens, she's working downtown when Dee, a rock superstar, gets into her cab. She tells the cabbie (whom she doesn't recognize) to go to a park in the worst part of the city, where she proceeds to give out \$10 bills to drunks, until one of them starts to grab for more and Carlotta has to come to the rescue with a foot-long lead pipe that she carries under the front seat. And then it starts to get *really* dark. An argument over a bass riff ends up in a murder. Or does it? A long-lost band mate is threatening blackmail over songwriting credits. Or is he? Little is as it seems in Dee's world.

Steel Guitar is a terrific look at the excesses of that era's rock scene (not that they've changed much): drugs, groupies, hangers-on and sycophants, juvenile behavior and screaming fights among bandmembers, the decadent press and, of course, the adoring fans. There are smiling mobsters, sleazy record label execs, overworked doctors and a Jewish mother. Two of my favorite blues artists, Chris Smither and Rory Block, make cameo appearances.

For me, the book has the added resonance of taking place in Boston, much of it on the very block between the Berklee College of Music and Symphony Hall, the place I called home when I first moved here, and where I still go for an occasional concert and the best Thai food in town. Barnes is a former actress and drama teacher who lives not far from where I live now.

Steel Guitar and *The Tanglewood Murder* are currently out-of-print, but they are easy to find online and at brick-and-mortar used bookstores.

This genre's catalog would not be complete without the collected works of Kinky Friedman, who describes himself as "the oldest living Jew in Texas who doesn't own real estate." A sometime country-music songwriter and performer, sometime writer (he pens a column for *Texas Monthly*) and full-time friend of radio wacko Don Imus, The Kinkster (as he

likes to refer to himself in fiction) was recently cited by *People* as one of the artists heard on the sound system of Air Force One. Granted, it's an odd, but fitting, fact to hear about someone who describes a certain bodily function generally performed in private as "taking a Nixon."

His 14 (!) mystery novels have been called "peerlessly cosmic paranoid fantasies," which pretty much sums them up. The protagonist is a sometime private eye named, coincidentally enough, Kinky Friedman, but this Kinky lives in Greenwich Village, in a loft underneath

a busy lesbian dance studio with a security system based on a rubber puppet's head on a parachute and a reluctant freight elevator. Kinky (the fictional one) used to play music, but now—after years on the road, during which, among other things, he snorted "a passenger train full of Peruvian marching powder"—he spends a lot of time talking to his cat, drinking espresso from a machine that sings operatic arias and "Lara's Theme" from *Dr. Zhivago*, watching pieces of his ceiling fall down and waiting for his two phones (both connected to the same

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line) to ring so that he can go play sleuth.

Not surprisingly, all of Friedman's books have plenty of musical themes, but perhaps the one that strikes closest to home is *Road Kill*, in which our hero joins the venerable Willie Nelson—"the last living folk hero in America"—on a three-bus tour from Texas to Buffalo, N.Y. It seems that the star's personal vehicle—the famed "Honeysuckle Rose"—accidentally ran over a drunk Native American one night in Arizona, and ever since then, Willie's been scared that he's under a curse.

Published in 1997, the book is still in print and easy to find.

One writer who has emerged from within our own ranks is Keith Snyder, whose four books show his pedigree: In all of them, major plot points revolve around music and recording technology.

Snyder is a composer, keyboard player and graphic designer, originally from Los Angeles, who, he says, "falls on the cusp between the boomers and the Gen-Xers, and I think both camps are strange." This is reflected in his protagonist, Jason Keltner, who is also a composer but who has a penchant to seek out and find trouble.

Jason finally finds a way to make money with his music when a client pays him big bucks for a bunch of random sequencer patterns he generates one night out of boredom.

Snyder's first novel, *Show Control*, was released by a small Colorado publishing company in 1995. Jason does have a day gig inspecting pipes for the water department. By night, he plays and hangs out at clubs. One night, a performance-artist friend meets with an untimely death when a laser she's using to write words on her midriff goes berserk and cuts her in half. The wayward laser rig uses the MIDI Show Control protocol; that's just one of the multiple *entendres* of the title.

Naturally, Jason goes off to find out

who's responsible, and along the way encounters a shadowy but beneficent federal agent, a larcenous evangelical preacher and his "trained boulder" bodyguards, a couple of mobsters and the über-geek-criminal from cyberspace who seems to be behind all of the trouble. There are plenty of double- and triple-crosses, and another of Jason's best friends may have tried to kill him or save his life. There's lots of computer talk: Martin uses Photoshop to help locate one of the bad guys, much of the action takes place as e-mail exchanges on a pre-Internet BBS called "Muse," and the final showdown involves samplers and signal processors as the good guys literally try to flush out the villain.

Snyder's second book was picked up by a respected New York publisher, Walker & Company ("the mystery editor there liked my AOL posts," he says), and he has done two more since then for Walker. *Coffin's Got the Dead Guy on the Inside*, the second book's title, is the punch line to an ancient musician's joke.

This time, Jason, who's broke, has been hired by his fed buddy (who's moonlighting as a sound designer for a videogame company) to spy on his friend

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Paul, who has fallen in with a "suspicious crowd." Soon, a dreadlocked multimedia genius—a cross between Macromedia founder Marc Canter and virtual-reality guru Jaron Lanier—drops dead at a party in front of Jason, and somehow Jason feels Paul is connected. There follows a hysterical car chase during which pieces of Jason's ancient Plymouth fly off at various locales all over Los Angeles County, followed by other chases involving large numbers of white Ford Tauruses (or "Tauri") up and down the 101 to Silicon Valley. What's everybody chasing? A computer dongle that contains code powerful enough to...well, you'll have to read it.

The Night Men brings Jason to New York (not coincidentally, as Snyder himself moved there long ago), where he is enlisted to help a gay friend whose music store has been trashed. A vintage Theremin plays a minor role. Jason finally finds a way to make money with his music when a client pays him big bucks for a bunch of random sequencer patterns he generates one night out of boredom. The book ends with an amazing discovery in the store's basement that revitalizes the long-dormant career of a legendary psychedelic singer who calls himself "The Inscrutable Whom."

Gentility is not the hallmark of Snyder's books: They're violent, unsparing and tough on both the reader and the characters. But they're very clever, he has a lot of fun with his words and his people, and gets in plenty of jabs at the music industry. A lot of his more outrageous scenes actually come from real life: his own experiences as a composer and performer, and those of his friends. Here's a quote from *The Night Men*:

"It was at a big music trade show in Los Angeles, and the Theremin had been a geek-attractor in the booth of a small, innovative music software company that was, during the short span of the show, courted, acquired, reorganized to maximize effectiveness and summarily executed, no survivors reported, for no apparent reason, by a large guitar manufacturer that was, despite having no business acquiring such companies in the first place, famous for leaving a trail of their smoking carcasses strewn across the landscape."

I couldn't have said it better; especially, not in one sentence. ■

Paul Lehrman has written three books, all of which were considered nonfiction at the time.

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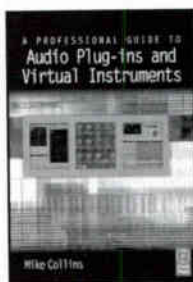
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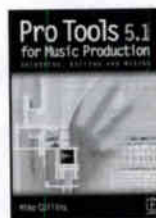
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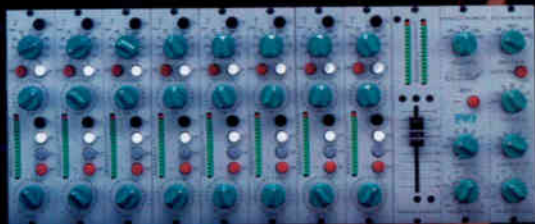
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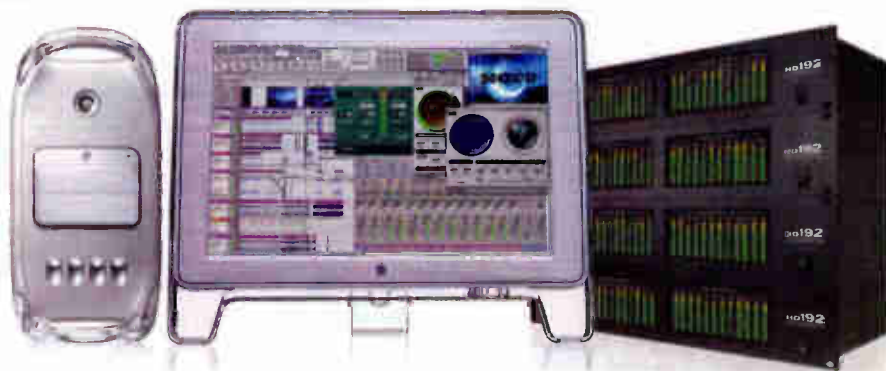
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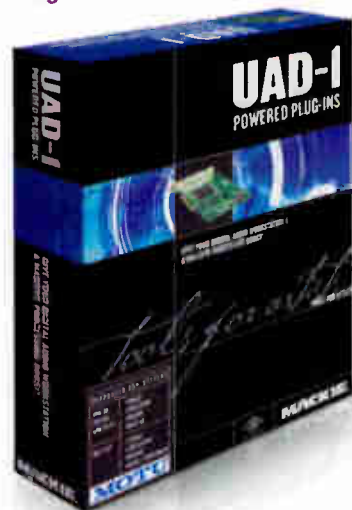
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Mackie Control and UAD-1 Powered Plug-ins Version 3 Mix and process your Digital Performer sessions with hands-on control and accelerated effects processing

Imagine the feeling of touch-sensitive, automated Penny & Giles faders under your hands, and the fine-tuned twist of a V-Pot™ between your fingers. You adjust plug-in settings, automate filter sweeps in real-time, and trim individual track levels. Your hands fly over responsive controls, perfecting your mix — free from the solitary confinement of your mouse. Mackie Control delivers all this in an expandable, compact, desktop-style design forged by the combined talents of Mackie manufacturing and the MOTU Digital Performer engineering team. Mackie Control brings large-console, Studio A prowess to your Digital Performer desktop studio, with a wide range of customized control features that go well beyond mixing. It's like putting your hands on Digital Performer itself.

UAD-1 Version 3 is here, with multi-card support and many other enhancements. Run dozens of sophisticated effects plug-ins inside Digital Performer without bringing your Mac to its knees. What's the secret? UAD-1 is a custom DSP-equipped PCI card. It's like adding an extra \$20,000 worth of effects gear to the dozens of native plug-ins included with DP. UAD-1 ships with a growing list of powered plug-ins, including Nigel, a complete palette of guitar tones combined with every effect a guitarist could ever need. Authentic vintage sounds include the Pultec Program EQ, a stunningly realistic recreation, and the 1176LN Limiting Amplifier and Teletronix LA-2A Leveling Amplifier, two more analog classics reborn inside Digital Performer. Apply liberally with host CPU cycles to burn.



Universal Audio Cambridge EQ for UAD-1

Add smooth British equalisation without taxing your CPU

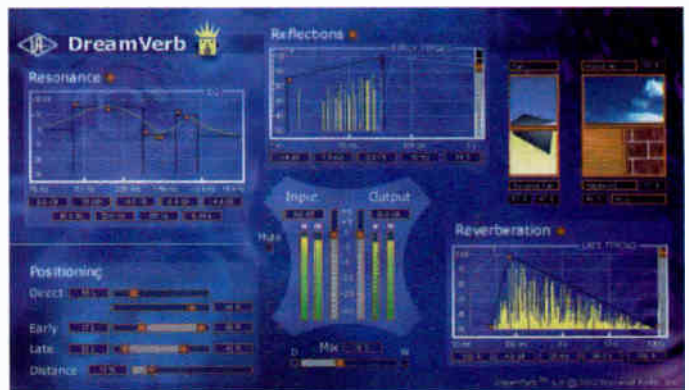
The Cambridge EQ, with its surgical precision, is the perfect complement to the warm, musical Pultec. In addition to its five-band fully parametric EQ, Cambridge features high and low cut filters with a wide variety of filter types and curves, and switchable shelving filters for each EQ band. Cambridge uses complex lattice filters and a special algorithm to achieve a warm analog sound without oversampling. An A/B function allows for quick comparison of two different settings. Cambridge also features a graphic display of the EQ curve, which has "edit handles" for click and drag control of the EQ parameters, plus editable text displays for parameter values. A must-have addition to your Digital Performer plug-in arsenal.



Universal Audio DreamVerb for UAD-1

New flagship reverb for DP from the gurus at Universal Audio

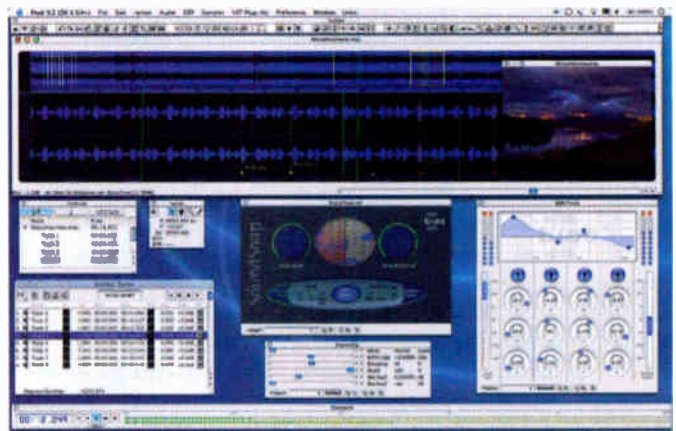
DreamVerb's unparalleled flexibility, power and intuitive interface allows you create any acoustic space inside Digital Performer using a huge list of different materials and room shapes. Blend or "morph" different room shapes and surface materials, adjusting the effect of the room materials on the sound space, and even varying the density of the air to simulate different ambient situations. With flexible 5-band active EQ and unique level-ramping for the early and late reflections, you can create sounds ranging from ultra-realistic dynamic room simulations to lush reverb effects. Universal Audio's proprietary smoothing algorithm lets you adjust parameters in real-time with no "zipper-noise" or other undesirable artifacts.



BIAS Peak 3.2

The ultimate waveform editing companion for Digital Performer

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Get Trigger-Happy With Digital Performer

Working With Drum Samples and MIDI

MOTU's proprietary MAS plug-in Trigger is a handy tool to layer or replace acoustic drum tracks with drum samples in Digital Performer (DP). Trigger converts audio pulses, such as kick drum hits, into MIDI Note-On messages that can be routed to a sampler (or any other MIDI device). Using Trigger with virtual instruments such as BitHeadz Unity Session and Native Instruments Kontakt, you won't even have to leave the digital domain in pursuit of the big bang.

You'll need to open Kontakt and load an instrument (or multi-instrument) into the program's rack before you can trigger any Kontakt samples in DP; Unity Session does not need to be open in order for DP to find and trigger its samples.

Let's examine the basic setup to trigger samples and record them to a new audio track. First, instantiate Trigger on a mixer insert for the audio track (e.g., kick drum) that you wish to layer or replace with samples. Record-enable a new MIDI track and choose Trigger as its input and your virtual instrument as its output. If your virtual instrument offers presets (as Unity Session does), then choose a suitable one in the Default Patch column of your record-enabled MIDI track. Kontakt does not offer presets because it is purely a sampler; the (multi-) instrument currently in Kontakt's rack will automatically receive input when Kontakt is chosen as an output destination for your record-enabled MIDI track.

Now, select your virtual instrument's output(s) as the input source for a new audio track and make that track record-ready. With DP's input-monitoring mode set to monitor source signals and MIDI Patch Thru enabled, put DP into Play mode. As you begin to adjust Trigger's parameters to suitable values, you should hear drum samples triggered in your virtual instrument.

TRIGGER TREAT

Use Trigger's MIDI note control to select the MIDI note that you want to generate with each trigger pulse. For example, choose C1 to generate a kick drum sound in GM-compatible MIDI instruments. Then,

set Trigger's threshold control high enough so that only deliberate drum hits produce a MIDI Note-On message and mic bleed and other extraneous noises get weeded out. The length of the generated MIDI note can be set with Trigger's duration control.

Dialing in a retrigger delay time of approximately 200 ms will usually eliminate double strikes caused by, for example, a sloppy drummer's kick drum beater bouncing off of the drum's head a second time. If that doesn't do the trick, try inserting a gate plug-in before Trigger and gating the bejeezus out of the audio track so that only a very short attack gets through. (If you need to preserve the original track in the mix, then duplicate it and apply this technique to the duplicate and mute Trigger's output as explained later in this article.) The errant second strike is usually lower in level than the intended hit, making it relatively easy to eliminate with the gate. MOTU's MasterWorks Gate usually performs this task well.

If you'd like to *layer* the original track with the triggered sample, then you'll want to preserve its entire envelope (subject to creative whims). In this case, make a copy of the original track, gate the copy and send the processed result on to Trigger (via an insert, as detailed above). You might not want to hear the short blip of gated audio that's used to feed Trigger. To mute the blip, click on the black button above Trigger's numeric threshold readout so that the virtual red LED to the right of the button lights up. Doing so mutes the audio track's output while preserving its signal feed to Trigger.

When replacing drum tracks with samples, I usually mute Trigger's audio input early on in the process so that I can more effectively audition prospective replacement samples. But once I've chosen the sound I want, I'll temporarily turn off Trigger's Mute button while I'm tweaking the



MOTU's Trigger plug-in, set up here to trigger a kick drum sample

plug-in's parameters. I'll pan the original drum track a bit to one side of the stereo spectrum and the triggered sample to the other side so I can hear both sounds more discretely. I'll then listen for dropped Note-Ons, double triggers and/or latency.

To reduce latency, move Trigger's horizontal slider labeled "faster trigger/more accurate velocities" to the left. Unfortunately, as you increase Trigger's reaction time, the velocities of the generated MIDI Note-Ons track the dynamics of the plug-in's audio input less accurately. And even with the fastest trigger time set, you're still likely to have unacceptable latency. The solution, of course, is to nudge the recorded drum sample's track forward (earlier) in time to align it with the original audio track.

One last point: If you're replacing (rather than layering) well-isolated trap-drum tracks with triggered samples and the drummer's original performance wasn't in the groove, then apply some moderate quantization to the recorded MIDI track that was generated by Trigger. Make sure the quantized track is routed to your soft sampler, and route your soft sampler's output to an aux track in DP to listen to the tidied-up results. Once the drum track is groovin' to your liking, record your soft sampler's triggered output to a blank audio track.

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

75 years later... Nothing has Changed!



2003 - UM92.1S capsule.



1957 - UM57 capsule.



The original 'Baby-bottle'.

Gefell microphones are still hand made in Germany with the care and precision that one can only equate with old-world craftsmanship and a commitment to excellence. From the early days with Georg Neumann, through the relocation of the factory during the 2nd World War, and the many years separated behind the Iron Curtain, Gefell has remained true to its roots. And these roots run deep...

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That's not to say we have rested on our laurels... Since the beginning Gefell has set the pace for microphone innovation and continues to elevate the bar: The Gefell UM900 Phantom, the world's only 48V phantom powered tube mic; the Gefell M930 Compact, a large-diaphragm studio condenser with optical isolation and the lowest self-noise in the business; and now the Gefell MV230 digital for better than 140dB performance. But wait, there's more...

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Of course there are lots of mics to choose from and for the average person, a mass-produced copy is just fine. But if you want something truly special and a cut above, visit one of our exclusive Gefell Dealers and listen to the difference that quality, tradition and pride can make. You may be surprised at how good a hand-made microphone can truly be.

Gefell - Quality, Tradition and Innovation



(Left to Right) Tube mics: Original UM57 (1957), UM57 V.E.B. (1972), and today's Gefell UM92.1S



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- **Stand-alone operation** — program your mixes at the studio and then bring the 828mkII to your gig — no computer needed. Need to tweak the mix? Do it on site using the back-lit LCD and front-panel controls.
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