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MIX

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SPECIAL ISSUE MAY 2005

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PROFESSIONAL AUDIO AND MUSIC PRODUCTION
MAY 2005, VOLUME 29, NUMBER 6

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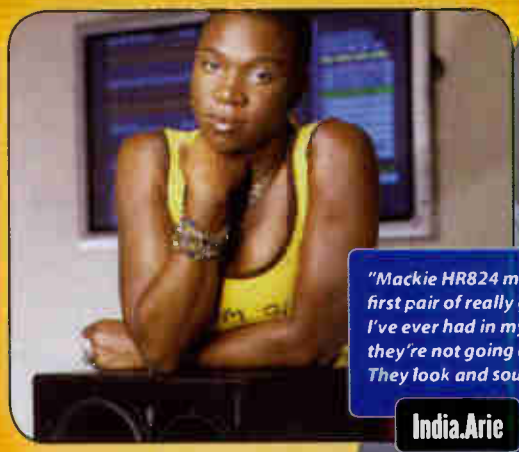

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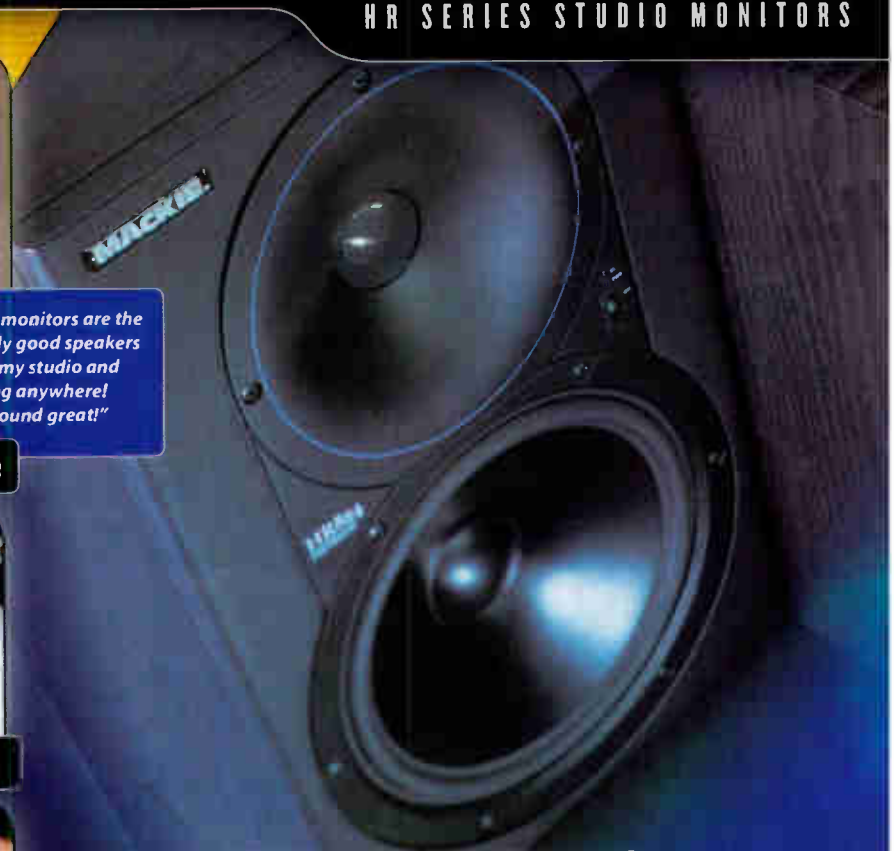

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We All Care About Quality

There's a scene in the movie *Sideways* where the Paul Giamatti character, sidled up to the wine bar with his buddy, is discussing the release of a special reserve with the pourer (Sandra Oh). It's supposed to be a fabulous wine, but Giamatti can't help himself—finds it too young, hasn't filled out yet, etc. The pourer agrees, and they start breaking it down, at which point, the buddy (Thomas Haden Church) pipes in, with a big smile, "Tastes good to me!"

Now, if we think of Giamatti as the veteran engineer, the one who won't accept mediocrity no matter what label it peeks out from, and we think of Haden Church as the typical music consumer, we begin to see just where the audio industry resides in 2005. We are at a crossroads, where the capability for producing and delivering music at incredible fidelity, in full-blown surround, has finally arrived, and yet the consumer overwhelmingly has declared that compressed formats "sound good to me."

These two streams do not need to be in conflict. No engineer working in 24-bit, 96k is going to dumb-down a mix based on a popular release format (i.e., downloads). That would be a wholly unnecessary compromise. And no consumer, perfectly content with the portability and convenience of an iPod, is going to have an arm twisted and plunk down cash for an SACD if that's not what they want. Again, not necessary. Low fidelity and high fidelity can co-exist as they always have.

The same can be said for other areas of the professional production industry. The decades-old argument of analog vs. digital has now morphed into a debate over professional vs. prosumer. Or features vs. performance. Or, well, I guess we do still talk about analog vs. digital. But the point is, as we find professional audio manufacturers making their way into Best Buy, and as processing power inside and outside the computer expands exponentially, can we continue to use price or features or (gasp!) whether a record was recorded in a project or commercial facility as an arbiter of quality?

Quality, no matter what Phaedrus may have been searching for in *Zen and the Art of Motorcycle Maintenance*, is not an absolute. Yes, we can be somewhat objective and note that a vintage Neumann, reconditioned to perfection, sounds better than a Radio Shack lavalier. But if a $99 Casio keyboard sound makes it onto a hit record and the tone is right for the song, who cares that it wasn't a B3?

In putting together this special issue of *Mix*, the only assumptions we made, in answering our own question, was that all 50,000 readers care about quality. They may not agree on what it is, but they all tend to "know it when they hear it," whether in a new product offering or a hit song. And in our approach, we made no judgments on price or features or fidelity or budgets. As Stephen St.Croix points out in his "Fast Lane" column, a crappy, noise-filled Billie Holiday number can still bury any number of hit singles released in the highest of high fidelity.

So if you find yourself next to Thomas Haden Church at the wine bar, and he's asking for a taste of the screw-top, by all means, raise a glass and say, "Good for you." Then reach for the private reserve.

Tom Kenny
Editor

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BACK ISSUES: Back issues are available for $10 each by calling 800/532-8190 or 815/734-1216.

POSTMASTER: Send address changes to *Mix* magazine, P.O. Box 638, Mt. Morris, IL 61054.

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Letters to Mix

BEHIND WALL OF VOODOO'S ALTERNATE REALITY

I read with amusement your piece on the making of Wall of Voodoo's *Call of the West* ["Classic Tracks," March 2005], particularly as I was the recording and mixing engineer for the album at Hit City West (L.A.). My recollection is that "Mexican Radio" and "Hands of Love" were originally cut prior to the album to see, by the powers that be, just what direction the project would take. Both tracks were finished before the green light was given to complete the rest of the album. After those two songs were finished, Richard Mazda brought in Jess Sutcliff to record the remainder. [Then], Jeff had to return to England and the project fell back [to me and] Avi Kipper for the overdubs and mixing. In fact, I mixed "Mexican Radio," "Tomorrow," "Lost Weekend," "Hands of Love," the title track, "Call of the West," and maybe "Interstate-15" and "They Don't Want Me." As for the Spanish noise pollution at the end, the assistant, Susan Wipple, and I simply tuned in a Mexican radio station in one of the studios next to the room we were in and captured some chatter from the airwaves and flew it in. I do remember asking, "Can we do this?" And I do know [that] I said that we should at least find out what the DJ was saying.

On the album and CD, Jess' name appears first and larger than Avi's and mine. On the EP, my name and Jess' have equal billing. I was proud that my mix was used for the record and get a thrill every time I hear it on the radio. The biggest rush came when, in episode #914 of *Seinfeld*, Kramer sings the chorus while installing the reverse peephole. The track was also played for the end credits.

When the CD *Call of the West* came out, my engineering credit was mysteriously dropped out. I could tell you about the EMT gold-foil plates, the Master Room reverb, the 451 with a 20dB pad and elbow on the snare, Joe [Nanni, drummer] playing on pots and pans, janitors and dogs interrupting the vocals, the bunny dust, Stan's [Ridgway, vocalist] comment "It's kind of loud in here" referring to the headphone mix and the epic 20-minute piece about Raul the Clown that never made it on the record.

Despite the fact that some people's memories are selective, I still believe these were great people to work with. Stan is an American treasure. I owe [producer] Richard Mazda for turning me on to Brian Eno's *Strategy Cards*, which included his brilliant words, "The tape is the music." It was a great time in our lives and we thought we knew everything back then. My girlfriend says it's just a case of the older I get, the better I [once] was and that I should be happy that others are so proud of my work.

Perhaps this is a problem that many recording and mixing engineers experience, as this isn't the first time my name has been omitted from a major release. It seems there should be some legitimate way to correctly document credits that follow a song from its initial release through to subsequent re-releases.

I never got into this for the money and certainly not for fame. I truly love my work and the people I work with. Sometimes, it's a thankless job. And sometimes people can't thank you enough. Just give credit where it's due.

Robert "Bert" Battaglia

EN MEMORIUM, MUSCLE SHOALS

I've recently read, with great sadness, of the end of Muscle Shoals Sound in Sheffield, Ala. Although it will continue on within the film industry, it will never be the same. Being born in Florence, Ala., I knew it as a legacy. One of my earliest memories is flying into Muscle Shoals' airport and seeing copies of Gold records on display by artists such as the Rolling Stones, not to mention countless others who had recorded there who never reached the status of the Stones, but ended up with their own top-notch piece of history. Ya'll have the list and know the history. How about a feature on Muscle Shoals Sound Studios? And play it pretty for the swampers.

Jon Head
Traverse City, Mich.

ROMANCING THE UPGRADE

I wanted to pass on some thoughts about Paul Lehrman's article in the April 2005 issue ["Adventures in OS X"]. I value his monthly column and, while I can't really take issue with what was written, I would like to share some thoughts.

Steve Jobs made a mistake not releasing OS X to developers until it was ready to launch. It kept almost every studio user from upgrading until two years later. It is a big jump for everyone—it's a new environment, it has its own unique logic and its own limitations—but it is still an improvement. If companies would embrace open standards like Core Audio, Core MIDI and AudioUnits, it would make everything better. If companies would agree on a standard for libraries and locations, it would streamline OS X and reduce [user] frustration.

Getting everyone to agree on the MIDI standard was hard enough. Companies like proprietary rights; they don't want to get on the love train. At the same time, they don't spend enough time on technical information, installers or updates. There is no excuse for an application not overwriting a user template [or] not removing out-of-date, conflicting files upon installation or updating. There is no excuse for an application not to use OS-defined libraries.

Lehrman is like me, I suspect: something of a romantic. We expect technology to actually fulfill its promise. We expect it to be stable, functional and inspired. Does anything actually work that way? Have you ever had a computer system that ran flawlessly and completed any task you set it to do? It should be that way, but it's not. Won't ever be. Did you ever have a console that didn't need maintenance at the critical moment? Did you ever have a tape that didn't stretch at exactly the wrong place? Never had a guitar amp that didn't secretly long to be a radio? Frustrating, perhaps, but still better than the alternative.

There are actually workarounds for most of the problems mentioned [in Lehrman's column], but who ever likes that sort of solution? In a year, everything will be new again—we'll all be lost again—but at least it will be new pastures.

Todd Zimmerman
Studio 139

GETTING WIRED WITH CILETTI

Just got done with "Tech's Files: Zen and Now—Acoustics, Patchbay Wiring and Balanced Audio Circuits" [April 2005]. Finally, I get some good info on wiring! Here's a suggestion or maybe a plea: Eddie Ciletti, write a small book on studio wiring and sell it on your site as a .pdf. I would buy it!

William DeMarco

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REMEMBERING MARTY FELDMAN

On January 21, 2005, Martin Feldman passed away. Many knew him as the founder of Paragon Recording in Chicago in 1969; others as co-creator of Chicago-based EARS (Engineering and Recording Society). Feldman got his start as a gigging drummer in St. Louis before heading to Chicago to learn under legendary engineer Malcolm Chisholm. According to Gary Khan, founder of Pegasus Recording Co., Feldman was most comfortable "holding court" anywhere, but Chisholm was the *only* person who commanded Feldman's immediate and respectful attention with a stern, but simple, "Martin!" as only Chisholm would call him. While at Paragon, Feldman worked with such luminaries as Earth, Wind & Fire and a who's who of Chicago-based R&B, soul, jazz, rock and blues artists.

Thanks to Khan for helping us round up the following sentiments.

Gary Khan: "In a post-EARS meeting discussion, he reminded us that mere presence in a professional studio meant you had proven skills. To quote in that context: 'Remember when you actually had to have talent to set foot in a studio?' [Paragon] had such a wide reputation that Queen's producer called from England for studio time at the height of their popularity, but [Feldman] dismissed the call as a prank. Marty was (much) later approached at a Grammy Awards show by him, somewhat reticently, who asked if he'd 'somehow' offended Marty. Marty still languished over 'all the studio time he could've booked doing Queen's endless layering overdubs!'"

Bruce Swedien: "In 1969, [Swedien's wife] Bea and I were living in Chicago. I had a staff job recording and mixing music for a major Chicago-based ad music producer. To tell the truth, I was getting very bored with recording music for advertising. But I have always loved recording records. I love recording a meaningful musical statement. I had to do something! Bea and I talked about it into the wee hours many a night. She said that I must be true to my calling. The only thing to do was to go freelance and broaden my options for session work. I did it! I told the jingle producer that I was going freelance. I think I was one of the first in the industry to do this!

"Marty Feldman was the first studio owner in Chicago to open his studio to me. I am forever in his debt for that kind gesture. Marty was a great guy and helped me attain my independence. I love ya, Marty!"

Tom Radtke (past session player with Feldman's wife, Bonnie Herman): "I do remember Marty's great 'no problem' attitude when it came to production requests. I was working on a Bill Quateman album, and Bill and the producer, Robin Cable, from England, wanted an organ overdub for a track, but something big! A big B3 sound or something—and remember, this is before samples. The next day, I show up for more rhythm tracks and Marty has audio cable coming out of that third-floor control room, down three flights of stairs, out the door and along the sidewalk on Huron, down the street and across State, down the block running into the back of this big church. They were recording Dick Reynolds (of Comtrack) overdubbing on this kick-ass pipe organ. I walked into the control room and Marty had this big grin on his face. 'Big enough?' he asked. Ah, the '70s. He will be missed."

Ed Cherney: "Marty Feldman hired me as an apprentice engineer at his Paragon Studios the night that Jimmy Carter was elected president. It was one of the happiest days of my life. He gave me my first opportunity to follow my dreams. Marty created a studio that at the time was on the cutting edge of technology, music and creativity. Marty took personal responsibility for educating and molding kids that wanted to grow up to be recording engineer/producers. He made sure that you learned everything about the business and art of recording music—from the way you held and moved a microphone, cleaned a toilet, mopped a floor, edited tape, made copies, treated clients, made coffee, tuned drums—and capturing great music. Any success that I have had can be directly traced to the discipline, education, interest, caring, opportunity and love he showed me and many others that passed through his beloved Paragon Studios. The time that I spent at Paragon with Marty I consider a gift and his spirit travels with me wherever I go."

Tom Fiegle (former Paragon employee, now with Shure and a new studio owner): "He changed my life."

AVID TO ACQUIRE PINNACLE

With an expected close date of July 1, 2005, Avid has acquired Pinnacle Systems Inc. in a cash and stock transaction. Pinnacle shareholders will receive 0.0869 shares of Avid stock and $1 in cash for each Pinnacle share. At closing, it is expected that Avid will issue approximately 6.2 million shares and pay $71.3 million in cash, for a total value of $462 million based on Avid's stock price of $62.95 at market close on March 18, 2005.

Pinnacle purchased Steinberg in January 2003, which was then bought by Yamaha in December 2004. Avid purchased M-Audio in August 2004. Thus, Avid will only be acquiring Pinnacle's broadcast and graphics capabilities. According to Avid president and CEO, David Krall, "Just as our acquisition of M-Audio brought us into the consumer audio business, by acquiring Pinnacle's consumer video business, Avid will be able to tap into the next generation of video editors while they are still learning their craft."

MUSICIAN'S HOTEL
BRINGING TECH TO TEXAS

Now in its 15th year, South by Southwest (www.sxsw.com) has emerged as *the* showcase for both emerging bands and established artists looking to move on up. With more than 1,300 bands over four nights, it truly is a music lover's dream. The only problem is that even with most of the performances taking place in a club-infused, five-block stretch of Sixth Street in Austin, fans have to sometimes make difficult choices about who to see.

Shopping around in the Guitar Center Pavilion

PHOTOS: DAVE VANN

This year, *Mix*, *Electronic Musician* and *Remix* magazines brought technology to the event for the first time. Based on the popular Remix Hotel, the Musician's Hotel, held in the Austin Hilton, provided rooms full of technology and musical instruments from sponsors that included Alesis, Akai, Apple, Broadjam, the Conservatory of Recording Arts and Sciences, Digidesign,

Mix Nashville editor Rick Clark (left) interviews Ronnie Montrose

Discmakers, Guitar Center, Mackie, M-Audio, Native Instruments, Numark, Shure, Submersible Music and the Musician's Atlas. Also, *Mix*, *EM* and *Remix* editors conducted lively Q&A sessions with the likes of Ronnie Montrose, Dwight Twilley, AMD's Charlie Boswell, Bob Ludwig and the lads from Kinky.

For more on Musician's Hotel and SXSW, see *EM* senior editor Mike Levine's full report at www.emusician.com.

MIX FOUNDATION
ANNOUNCES SCHOLARSHIP WINNERS

Individual scholarships for the 2004 TEC Awards Scholarship Grant were awarded to Tyler Andal, Kayla Knoll and Nathan Tocci.

Tyler Andal

Andal, 16, a recording industry major at Middle Tennessee State University, is interested in audio engineering, producing and session performance, and hopes to teach later on in his career.

Knoll is currently studying at Ex'pression College for Digital Arts, after which she hopes to intern to learn and master new technologies, taking these experiences into developing her own production company while composing music.

Kayla Knoll

While on his way to completing a bachelor's degree in Sound Recording Technology at UMass Lowell, this summer, Tocci will be interning at an L.A. recording studio. Post-graduation, Tocci would like to be hired as a pro recording engineer for a project studio that focuses on rock, pop, vocal or classical projects.

In other TEC news, the 10th Annual Mix L.A. Open, sponsored by the Mix Foundation for Excellence in Audio, will be held on Monday, June 13, 2005, at the Malibu Country Club. Proceeds will benefit the House Ear Institute's Sound Partners program (www.hei.org) and L.A.-based Sound Art (www.soundartla.org). Space is limited, so golfers should make their reservations early. For information about sponsorships or entry fees, go to www.mixfoundation.org or call Karen Dunn at 925/939-6149.

Nathan Tocci

ON THE MOVE

Who Rick Belt, Beyerdynamic general manager

Main responsibilities: designing the future of the brand. To that end, I have assumed the roles of director of marketing and director of sales. Additionally, I oversee all departmental operations.

Previous lives:

- March 2000-August 2004, Sennheiser product manager of RF wireless systems
- 1997-March 2000, freelance sound engineer, studio engineer/producer, ENG and EFP location sound recordist/mixer, system designer and some installation
- 1995-1997, store manager at Fox Music House (Columbia, S.C.)
- 1992-1995, Full Sail Center for the Recording Arts course director of advanced recording and production
- 1988-1992, staff engineer at Platinum Island Recording Studios (New York City)

If I could do any other profession, it would be...designing and building furniture.

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

Currently in my CD changer... Bryan Adams *Waking Up the Neighbors* (mixed by Bob Clearmountain, who is my hero).

When I'm not in the office, you can find me...making sawdust (and furniture) in my woodworking shop.

INDUSTRY NEWS

Jon Sager

5.1 Production Services (West L.A.) has promoted **Sandi Taylor** to the newly created position of VP, production... Recently employed by QSC Audio, **Jon Sager** joins **JBL** (Northridge, CA) as product manager, engineered sound...**Trew Audio** (Nashville) news: **Skylor Morgan** promoted to product specialist for Nashville and Toronto offices; **Robert Milner** is the new sales rep in Nashville; and **Rob Rightmyer** is director of information technology for both offices...**Inter-M Americas** (Chester, PA) hired **Dave Dermont** as technical support specialist and named **PowerLines Marketing** (Evanston, IL) as its rep firm in northern Illinois and eastern Wisconsin...Moving to the States from the Queen's land, **Thomas Jensen** (service manager) and **Phill Scholes** (service engineer) are two new faces at **SSL**'s New York City office... New representatives announced: **SLS Loudspeakers** (Springfield, MO) added **Ouzunoff & Associates** (Yorktown Heights, NY) to represent upstate New York territories and New England; **Holophone** (Toronto, Ontario) appointed **Digital Media Technology** (Hong Kong) as its rep in China, Hong Kong and Taiwan; **AXI** (Rockland, MA) is the exclusive U.S. distributor for **LA Audio** (Hampshire, UK); **HME** (San Diego) added numerous sales reps, including **Applied Technologies Group** (North Carolina), **AVWest Inc.** (Arizona), **Best Audio** (California), **Fault Line** (Oregon/California), **John B. Anthony Company** (New Jersey), **Shaeer Media Solutions** (Maryland) and **Sound Vision Marketing** (Florida/Puerto Rico); **Manifold Labs** (Little Ferry, NJ) selected **ELECTORI** (Tokyo) to distribute Plugzilla in Japan; **American Music & Sound** (Agoura Hills, CA) signs **Vestax** (Tokyo) for exclusive U.S. distribution deal and appointed **Joe Jack Giacopelli** as Vestax product manager; and **NAPA** (Agoura Hills, CA) added **Focusrite** (High Wycombe, England) and **Novation** to its roster of distributors.

CHICAGO NARAS HOSTS
SURROUND PRODUCERS GRAMMY P&E SEMINAR

The NARAS organization and Pressure Point Studios (Chicago) brought all-star producers Elliot Scheiner, Ed Cherney and George Massenburg to a very chilly February 17 in Chicago to talk to area studio professionals about the future of surround sound, particularly format challenges and obstacles to overcome the current record company business model. During both sessions that day, Massenburg, Cherney and Scheiner played examples of surround mixes they had done in the past few years, talked about personal philosophies and experiences with artists and record companies, and took questions from engineers and studio owners.

Massenburg cited industry figures showing that more than 28 million homes in the U.S. have surround playback capability and said, "Once the ears have heard surround, they will always choose it as the preferred listening medium when available." —*Craig Dalton*

PHOTO: CRAIG DALTON

From left: Pressure Point studio manager Chris Schneider, Sarah Madler (Chicago NARAS), Ed Cherney, Steve "Silk" Hurley (Chicago NARAS), Elliot Scheiner, Pressure Point producer/engineer Larry Sturm and George Massenburg

INDUSTRY EVENT
SSL, GUITAR CENTER IN-STORE TOURS

Solid State Logic and Guitar Center held the first of 16 in-store tours featuring SSL's AWS 900 Analogue Workstation System and XLogic line of outboard gear on March 8, 2005, at GC's Hollywood location, attracting local studio owners, artists, producers and engineers. The yearlong tour will hit GC Pro stores in San Francisco, Boston, Seattle, Denver, San Diego, Houston and Las Vegas. Visit www.solid-state-logic.com or www.gcpro.com for dates and times.

According to Rick Plushner, president of SSL North America, "Each SSL clinic features guest producers and mixing engineers talking about modern-day production techniques and their experiences in making hit records. [The March 8 event featured Grammy Award–winning producer David Kershenbaum, who recently purchased two AWS 900s.] SSL staff is on hand to answer questions and help create an exciting event."

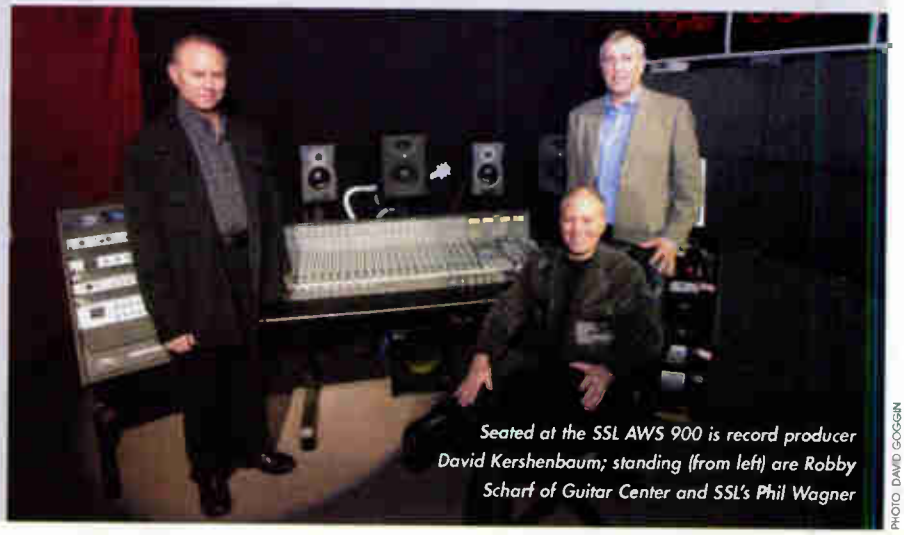

PHOTO: DAVID GOGGIN

Seated at the SSL AWS 900 is record producer David Kershenbaum; standing (from left) are Robby Scharf of Guitar Center and SSL's Phil Wagner

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BY STEPHEN ST.CROIX

Quality Software

At 10 Percent of Retail Prices

Quality.

What the hell does that actually mean? Oh, yeah, I guess I should tell you now that this column has nothing to do with computer software. I just titled it that way because I felt a need to honor the bulk of my carefully filtered incoming e-mail, and "Penis Enlargement, Could the Guy in Front of Me Even *Be* a Bigger Dick?" was just too long a title.

And to further clarify my intent, I'm not even writing about how bad a certain Pathetically Tolerable DAW sounds.

And I leave you to research how writable DVDs delaminate and send your life's work into the ether.

Ah, yes—ether. I shall forego telling you about the quality parties that doctors used to have as soon as it was invented and Roofies weren't ready yet. All I will say is that those were dangerous days for surgeons' female companions carrying little glass bottles and handkerchiefs.

There will be no compression complaints, no sample rate–conversion horror stories. No analysis of why aluminum electrolytics sound like crap or why bad slew rates make bad music even worse.

None of that.

Nope, I am going all the way back to the beginning. This month, I'm ignoring *how* we are recording and focusing on *what* we are recording.

WRONG AGAIN

I guess this would pretty much be where you would expect me to attack rap or metal or puppy-lust pop. But, alas, I cannot, for I have vowed, for this one month, to talk only of music.

Shall we begin?

Most of us have a pretty clear understanding that there are good cameras and bad cameras. The bad ones might be out of focus, have distortion, uneven or unpredictable exposure or any of a hundred other shortcomings. The good ones work.

And we all know that possession of a good camera does not ensure nor even imply the creation of good photographs. Experience, skill, understanding of the technology and the eye of an artist are the components that make good photography possible. A true photographer will certainly get more prints that earn the label "art" with the best gear than with bad gear, but don't forget that there are thousands of grainy, technically flawed prints out there that are truly stunning, emotional art.

The best gear increases your chances of more quality product, but only if you already have what it takes. If you don't, it only helps you produce slicker crap.

And so it is with music—but even more so. Most powerful photographs are seen and stolen by the photographer. They are not posed or staged. The person doing the capturing is the artist. Most photographers are opportunistic manipulators. They develop a skill for finding potentially powerful images, waiting for lighting or circumstances to peak, blocking and arranging angles to maximize impact, and then bracket the hell out of 20 motorized shots. Then *maybe* they print one.

Though we know that the photographer is responsible for the creation of the image, and we know that the artist is responsible for the creation of the actual content of the song, we act as if we believe the engineer and producer are the creators.

But in music we have "talent." Everything is posed, arranged, practiced, rehearsed, executed and punched in a controlled environment. Not to mention compressed, EQ'd, edited, pitch-corrected, mastered and hyped. Hell, the actual process itself seems to intrinsically prohibit the creation of true art.

THE BUCK STOPS WHERE?

And though we know that the photographer is responsible for the creation of the image, and we know that the artist is responsible for the creation of the actual content of the song, we act as if we believe the engineer and producer are the creators. They may be, if they are very good, the creators of the *sound*, but not the soul.

Billie Holiday. The recordings are pretty crappy. But the music, the arrangements, the execution, the intensity, the pain, the pleasure, the whole story—this is *music*, this is quality, this is history, this is art. A heart-wrenching glimpse of haunting musical beauty born of trapped obsession and pain. Ten bucks.

Hank Williams, Patsy Cline, Bob Marley, Louis Armstrong. Roy Orbison, k.d. lang. Ray Charles, Stevie Ray

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Vaughn. Spooky masters of art and technology like Annie Lennox. The raw simplicity that speaks directly to the working class of the time—The Kinks' "You Really Got Me," The Troggs' "Wild Thing." Anger, rebellion and pain focused so sharply that the result burns through all pretense in Johnny Rotten's "I Did It My Way." Joplin. Cream. Queen—Freddie Mercury's final performances.

Even the real-deal doo-wop—absurdly simple games with sounds that resonated within the souls of millions.

And finally the instrumentals. All 154 people who followed surf music felt every note of every hit every time they heard the same damned songs. Ventures, Safaris, Shadows. And way before all that, Acker Bilk and the others who thought like him.

I trust I don't even have to name the original Delta blues and gospel boys who started it all. Just be embarrassed if you can't think of five of them in 10 seconds.

And I don't even want to get started on the intensity of Seattle's offerings.

No, I'm certainly not talking gear here. I'm talking about quality. Real quality. What comes out of the artist's mouth after he shows up, rolls a joint, puts on the cans and leans into the mic and says, "Okay, let's roll."

LOST ART, OR JUST AN ART THAT'S A LITTLE LOST?

Hell, I don't know. There certainly are several artists out there today playing and singing from their hearts, but the sad truth is that the vast majority of products released today are nothing more than buckets of bits.

There certainly are several artists out there today playing and singing from their hearts, but the sad truth is that the vast majority of products released today are nothing more than buckets of bits.

We live in a time where bling-bling is considered *good*. That is so wrong.

Maybe more artists need to have their legs broken or their hopes crushed or come home to eviction notices. Some of the most powerful songs ever released bubbled up through a sea of heroin.

I just don't think I'm going to hear it in your voice if your song is about how your Ferrari got dinged while you were in getting a new O ring for your Rolex on Rodeo Drive.

Hell, I don't even want to *hear* your damned voice if that's all you've got to say.

Let me be as straight and simple as possible. I'm calling for content. Character, individuality, actual singing and playing, the telling of real stories.

If there's no blood on the sword, it's just a toy.

Can a few more of you out there do that for me? For everyone else? For yourself?

I hope so. ■

SSC had a knife shoved into the front of his neck and pulled all the way around to the back two weeks ago. He is home from the hospital now and feels he has the right to sing the blues about it, but he can't because, well...he had a knife shoved into the front of his neck and pulled all the way around to the back two weeks ago.

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BY PAUL D. LEHRMAN

On the Road With Kronos

Chamber Music That's Eclectic and Electric

PHOTO: STEVE JENNINGS

When a string quartet gets on an airplane, they get five seats, with the extra one for the cello. But here's a question: Does the cello get a baggage allowance? For most groups, that may not be a big deal, but for Kronos Quartet, who schlep along the electronic equipment they need to create their unique sound (as well as a modicum of lighting gear) packed into nearly a dozen hard-shell Pelican cases, it can mean a huge difference in what a tour costs.

If you don't know Kronos Quartet, you should. Not long ago, the group celebrated its 30th anniversary as one of the most daring and innovative "classical" music groups in the world. Violinist David Harrington founded the group in 1973 in response to hearing a performance of George Crumb's revolutionary (and fervently anti-war) quartet "Black Angels" for amplified string quartet.

Since then, they have recorded more than 40 albums by themselves, one of which earned a Grammy for Best Chamber Music Performance in 2004, and dozens more with other artists ranging from Nelly Furtado to Joan Armatrading to the Dave Matthews Band, as well as soundtracks for films such as *Heat*, *Requiem for a Dream* and *21 Grams*. They have commissioned more than 450 new works and arrangements and have performed the works of almost every major composer of the 20th century, and promise to do the same for the 21st. And, they're fantastic.

I'm ashamed to say that despite all my years following the contemporary classical scene, I had never heard Kronos play live. But I finally got my chance to hear them at an arts festival in the dead of this past winter in Ithaca, N.Y. They played a typically eclectic program: works by composers from Mexico, Nicaragua, India (with a pre-recorded track by tabla virtuoso Zakir Hussain) and Azerbaijan, as well as a new work by renowned American composer Terry Riley. The encore was their rendition of Jimi Hendrix's interpretation of *The Star Spangled Banner*, complete with gobs of distortion, feedback, screaming rockets and bombs bursting all over the stage—all played live through a couple of small racks of processing gear. They blew the audience, and me, away.

Unique problems call for unique solutions. Kronos is the only string quartet in the world that travels with a full-time sound engineer (actually, two engineers alternate) because they're the only string quartet in the world that uses amplification at every performance. Shortly after the concert that I saw, engineer Scott Fraser took some time away from the group and let his cohort Mark Grey take over for a tour of Australia and New Zealand. "We leapfrog over each other," he says, "so we can accommodate each other's schedules. I tend to do the gigs in Japan because the Japanese promoter we work with likes to have consistency, and I do Latin America because I get by in Spanish fairly well. Mark gets to do Scandinavia."

Fraser has been working with the group for 14 years. He started his career, like so many of us, as a musician with a tape recorder. "I was playing guitar in rock bands in the '60s, and when I discovered Hendrix, I discovered electronics," he recalls. "That led to an appreciation of Pink Floyd, and I got a tape deck and started doing my own *musique concrète* in 1971. Other musicians realized I had a tape recorder, and so they asked me to record

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their band demos."

He went to college to study music and theater sound design. "I couldn't get a music degree where I was," he says, "because there was an ensemble requirement, and they didn't have any way to accommodate someone who played electric guitar. Meanwhile, they had one little room with a modular Moog system and a Putney synth. So I spent every spare minute I had in there teaching myself synthesis."

After college, he found work in the shipping room of Burbank, Calif.'s legendary Location Recording Service, where "I hung around with great people. [Transformer guru] Deane Jensen ran his business out of there. Eventually, I worked my way up." He went freelance around 1977, starting out with a TEAC 3340S 4-track reel-to-reel and has never looked back. At the same time, he started doing live sound for a wide variety of artists, including jazz and big band acts, folk festivals and "square stuff" such as Peter Nero, Mel Tormé, Leslie Uggams and Sid Caesar. On the classical side, he toured with piano duo Katia and Marielle Labèque, and on the rock side with The Residents.

One of his favorite gigs was a 20-year relationship with the Aman Folk Ensemble, who performed authentic folk dance music from all over the world. "I got to work with every possible kind and variation of stringed instruments and weird horns," he recalls.

He got the Kronos job through connections with the quartet's first resident sound engineer, Fred Stites, and his successor, Jay Cloidt. "They brought Fred in when they decided they needed to have consistency," he explains. "I had toured with him on a few acts. After it became too much for him to be on the road all the time, he recommended me."

Kronos tours for about five months every year, with an enormous repertoire to draw on. "On any given tour, there are usually no two nights that are the same show," says Fraser. "A given piece, if it's good, they'll do for years. Some promoters or producers want specific pieces, so they'll work a program around that. Sometimes they'll set up a tour around a new CD. Usually, they'll have up to 20 pieces ready at a time for a tour and they'll do about six a night.

"They feel that an evening's program should have the same structural integrity as an individual piece; in other words, the whole program is a composition and they work the programs out months in advance. Sometimes they'll have to make a change if the promoter prints something different in the program or if it's a big outdoor festival

—CONTINUED ON PAGE 156

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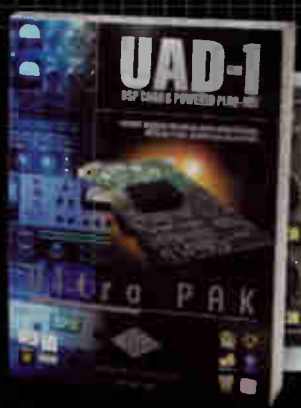

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By Blair Jackson

Quality in the Age of "Good Enough"

It was the late, great Nashville engineer Denny Purcell who, in a moment of frustration and resignation, opined about the audio industry, "We live in the age of 'good enough.'"

Indeed, many people today argue that despite the better efforts of so many throughout our industry, there has been a decline in the quality of recordings, of equipment and of the overall music business climate. Music listeners are settling for mediocrity instead of insisting on excellence. Convenience always seems to trump fidelity.

As with the music industry doomsday scenarios of two years ago, the carping and kvetching about quality is not without some justification—but neither is it a true crisis, nor even a radical departure from historical precedent.

One reason things look so bleak to so many in our field is that to a large degree, much of what we do is an adjunct to the record business, and that industry has been going through strange and depressing times for at least a decade, with no end in sight. As the major labels have become consolidated as part of larger corporate entities unconcerned about the "art" of music, instead interested only in generating profits for über-companies' stockholders, label rosters have been decimated, recording budgets have been dramatically slashed and there has been a serious negative trickle-down effect that has eaten away at recording studio profits and, by extension, audio equipment manufacturers. The lengthy studio lockout is virtually a thing of the past; indeed, rare is the project now that is fully recorded and mixed in a single facility. Record companies know that studios are struggling to find business and are forcing recording rates to go lower and demanding that projects be completed more quickly, quality be damned. Indie labels have taken up some of the slack, but they are in no position to be the sort of free-spenders that the majors were from the late 1960s until the early '90s.

Recently, I called up an old record biz colleague of mine, Howie Klein, to ask him about the deterioration of the record business. A one-time music journalist, Klein's industry credentials include founding the fine San Francisco Bay Area–based new-wave label 415 records (Romeo Void, Translator, et al) and stints as president of both Warner/Sire and Reprise Records. Now, he's semi-retired, teaching occasionally at McGill University and still working with young bands when the inspiration strikes. What, I asked him, is the cause of the record industry's malaise?

"In one word, corporatization. I don't believe the corporate form of organizing business can work with art. It was just a matter of time before the entrepreneurs who got the modern record business going—Mo Ostin and Ahmet Ertegun and others—were going to be superseded for one reason or another—and age was a certainly a factor—by people who weren't music-loving visionaries but who were basically corporate hacks. That's not to say that everyone in the music business is a corporate hack. But at the very minimum, the power to make decisions has gotten into the hands of people who are just corporate hacks." In other words, he says, the power migrated from the divisional level of the record companies when giant corporations bought those companies. "The power was gradually taken over by the corporate owners. It was disastrous for the artists, the employees, music in general. Aside from a few guys at the top who made tens to hundreds of millions of dollars, everyone else was the loser."

How does the corporate climate filter down to the labels? Klein says that at least in rock music, he believes the most successful model is to find artists whose musical vision you believe in and to support them. "They don't break on the first album. Occasionally they do—you find an Alanis Morrisette who comes along and sells 23 million copies of her first record. Much more common would be something like Depeche Mode or Barenaked Ladies, two bands I worked with, where it takes five records before they break." Klein notes that in the case of those two bands, their eventual success led to Platinum sales for earlier albums that had not been successful, but in the current climate, the only thing that matters is breaking bands immediately to improve quarterly profits.

"The other more insidious thing that's happening is that the music people are slowly disappearing and being replaced by business people," he continues. "When I was chosen to be president [of Sire], I was chosen because I was thought of as an artist's guy, but then once I was president, my job had nothing to do with that. I was supposed to figure out budgets; I was like an accountant. They would ask me, 'Okay, how many copies are we going to sell of the next Ministry album?' 'How the f*** do I know? The band didn't even write the songs yet!' But they literally based everything on how many they're going to sell. With Alanis and *Jagged Little Pill*, we figured she was going to sell 25,000 and she sold 23 million. Doesn't that tell you the system is idiotic? When I felt it reached a point where it was irrevocable, I retired."

From a sonic standpoint, the development that has audio-conscious types fretting is the continued proliferation—explosion, really—of MP3s as the medium of choice for so many music lovers. It was bad enough when x-thousand people were downloading "shared" MP3 files for free through pirate sites all over the Internet. But with the success of Apple's iTunes and iPod (AAC encoding), and similar ventures by other companies, the supposedly inferior technology (as compared to CD) has been embraced and legitimized by the music industry. Add into the equation that many people are listening to MP3s on either tiny "ear buds" or inferior computer speakers, and it's easy to understand why audio engineers and others sometimes wonder, "Why am I slaving long hours in the studio trying to make pristine recordings?"

> At the very minimum, all the power to make decisions has gotten into the hands of people who are just corporate hacks.
>
> —*Howie Klein*

But step back for a second and take the long view. As Crosby, Stills & Nash sang in "Déjà Vu," "We have all been here before." I hold in my hand, exhibit A. This quaint piece of plastic casing with some flimsy tape on small spools is called a cassette. There was a time not so long ago when engineers complained about the comparatively horrible sound of cassettes; unquestionably, they were inferior to LPs. Some even argue that the quality drop-off between LPs and cassettes was greater than from CD to MP3. Eventually, cassette sales eclipsed album sales, even though *everyone* knew they didn't sound as good. Why? Convenience, of course. Cassettes gave us music on-the-go—for cars, Walkmen (okay, "personal stereos") and large and small boom boxes.

But you know what? It didn't change the music one iota. There isn't a single engineer who settled for inferior recordings because the ultimate destination for many music listeners was going to be a shitty-sounding cassette played through mediocre car speakers or a $49 "blaster."

The sad fact is, beyond the issue of cassette quality, most people did not have very good home hi-fi systems to listen to LPs either. In the '70s, I had audiophile aspirations but not the budget to match, so I lugged a decent Garrard turntable, KLH bookshelf speakers and a Panasonic amp around to my many domiciles. Most people I knew had worse systems than I did, but we all actually cared about music and spent hours sitting around intently listening to albums—an increasingly rare practice. In a way, CDs leveled the playing field somewhat—they sounded better on mediocre systems than LPs did—and today, even the worst low-budget setups are much better than comparable ones from the LP age. Still, if iTunes and CDs through computer speakers is "good enough," it is in part because the majority of the population don't own top-quality equipment, and they don't listen to music that seriously to begin with. However, one could argue that the iTunes experience may help listeners to care *more* about quality because listening to music alone on buds or 'phones is an intimate act that bonds the musician and listener.

The good news is that equipment manufacturers and engineers are constantly striving to make better-sounding gear and discs. Millions of dollars (or pounds or yen) have been poured into R&D and marketing, and the result is a constantly evolving technological landscape. Multimillion-dollar busts have occurred along the way—remember DCC, the ill-fated digital cassette?—as well as important trends that changed the way people worked and permanently altered the economics of the industry. Those ADATs you have in the closet probably aren't getting much use now that you've got your Pro Tools rig, but they might have kept you afloat during tough times, and they served as a bridge to today's digital workstation ubiquity.

Now the buzz—and the R&D money—are going to high bit rate and surround formats. Engineers and producers and record companies are psyched. But the public is confused. SACD or DVD-A? DVD-V? Dual-layer? Surround for hi-def television? 5.1? 6.0? What the hell is 7.1? Those of us in the industry are in a rarified position, having been indoctrinated to this exciting new wave of products and approaches through the years. I've often thought that if every person in America had the chance to sit in the sweet spot in a first-rate control room and listen to the surround version of The Eagles' "Seven

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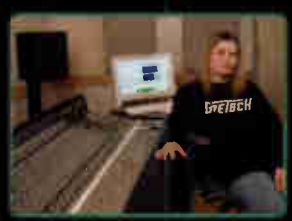

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Bridges Road," surround would catch on in a week! But the reality is that MP3 is "good enough" for the casual music fan and besides, "Where the hell am I going to put the rear speakers, center channel and subwoofer of the 5.1 system in my tiny apartment?"

"I think people are a little wary of the new formats," comments mastering legend Bernie Grundman. "At this point, I'm mainly hoping that people will still support normal CDs because the quality is so much better than [MP3]. I would hope that when people sit down and really give a serious listen to something, they would expect higher quality, but that may not be the case." Grundman is afraid that new, high-res formats won't survive. "They're popular with the audiophiles, but that's probably not going to be enough," he says. "So far, for whatever reason, the public doesn't seem to be going for a high-resolution audio-only disc. It seems as though people want video, too, so the DVD-V is more likely to stick around. Unfortunately, quality does not always win out."

Grundman works with every kind of recording imaginable, and while he believes that "a lot of effort is going into improving equipment all the time," other considerations affect the quality of the music. "One of the gross areas is level," he says. "To get their records noticed, people want them to be louder than the next guy's, and to get level, there's a lot of processing that goes on. The by-product of that is a form of distortion. It usually isn't blatant [distortion], but it doesn't sound natural and it sounds less musical: it sounds almost mechanical.

"In pop music especially, it's gone to a mid-fi kind of sound. I'm finding that a lot of the newer engineers are kind of intoxicated with technology; they're not as aware of the actual quality of the sound as they are in how they can manipulate it in the computers with all the plug-ins. Sometimes, their judgment gets thrown off because they've bought into the notion that in the digital domain, you can do a lot of manipulation and you won't degrade the sound, which is entirely wrong. My rule of thumb is, anything you do to the signal, any plug-in you put in, you're degrading the signal somewhat. So then the question becomes, what really needs to be part of this track? By adding this and this, are you gaining more than you're losing? I have my own preferences, but on a pop or rap track, maybe those plug-ins and gimmicks are what the track needs to get attention. So then it's more a matter of marketing than music, maybe, but who's to say one is better than the other? Obviously, there's no single answer to what 'quality' is in a recording."

The "quality" question spills over into every area of audio, from the training that up-and-coming engineers are getting in schools, to the products that are being promoted by retail stores and e-commerce sites, to the impact of diminishing recording budgets and concomitant rise of personal recording spaces. How has the live sound industry been affected by these factors? Are engineers being asked to do more with less? Have "prosumer" and "professional" merged for good? Join *Mix*'s editors for an in-depth look at these issues and how the best in our industry are dealing with them in this era of lowered expectations and revenues the only way they know how—by refusing to give in to complacency and continuing to raise "quality" ever higher. ■

Blair Jackson is Mix's senior editor.

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engineer has to be either a producer or an operator. They're not going to get paid $500 just to get a guitar tone, then sit there for the rest of the day."

Albini avoids the multitasking issue by concentrating solely on engineering. "I let the band be the producers," he states. "I don't feel obligated to reinvent the record underway. The band makes all the artistic decisions; I basically just execute them on a technical level. It's not really that strenuous: Working with a band that has their ideas and knows what they want, I'm just making it happen. The days are long, but I'm not carrying sacks of dirt! I'm listening to instructions and running up and down the stairs a few times an hour."

WHERE ARE THE ROLE MODELS?

The downsizing of major facilities and growth of producer-owned private studios has splintered the recording community at large, leading to the loss of interaction with mentors and experienced pros. How do engineers perfect their craft in a vacuum?

"One of the things we're slowly losing," muses Clink, "is the ability to learn from the past and from people who've actually done the work. Coming up as an engineer, I had the opportunity—and pleasure—of working with so many great engineers, producers and artists at Record Plant. I was exposed to all those ideas and techniques, and they helped form my style of production. Today, a guy goes to Guitar Center, buys a Pro Tools rig, sets it up in his room and gets his buddies over to record. The experience of learning from other people isn't there."

Message boards, online tutorials, even recording schools all provide education. What's the difference? "Watching a *How to Do It* video is not the same as actually being in the room with a working professional," Clink emphasizes, "where you can ask a specific question about how to resolve a problem or just watch what they do and figure out why on your own. It's not that you can't learn by doing and making your own mistakes. It's just that there's a wealth of information and knowledge that's not getting passed down. As people spend less time in the big studios, and as there are less of them, the people who are coming up are not able to benefit from those experiences.

"I also notice that it's gotten harder and harder to find really good personnel to staff a studio," he continues. "Very often, I've found myself working with an assistant who had the 'I'm really a producer' vibe, to the point where they had their own [Pro Tools] rig in the control room and they'd be working on their own projects with headphones on, saying, 'If you need something, just grab my attention!' That's a lot different than working with someone who is there to learn, observe and complement the studio by being a part of the session."

Schnee adds that with today's accessible recording technology, engineers can confuse having the tools with talent. "Back in the '90s," says Schnee, "when all the musicians ran out and bought ADATS, they would say, 'It's great—I have a professional recorder in my house for about $3,000.' My thought was, 'Yes, for $3,000 you get eight channels of "professional" audio capture. In fact, it will capture exactly what caliber of engineer you are!'

"That problem has continued and actually gotten worse," Schnee continues. "There's no doubt that Pro Tools is a complete profes-

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sional recording studio in a box and pretty darn good-sounding. But, sadly, we have the same mentality that was going on when those ADATs came out almost 20 years ago. People have professional recording studios without the professional recording engineer. That's a sad state of affairs. The science of audio engineering may not be as necessary anymore; computers make it simple enough that most people can figure out what to do. It's the art of recording that's likely to be lost."

BUILDING AND DEFENDING YOUR OWN ENVIRONMENT

Albini's Electrical Audio is a public studio, yet it is, in some ways, its own world, created for classic recording—complete with that analog tape stockpile. "Anybody who runs a business has to be responsible enough to make sure the business won't go under for trivial reasons," Albini points out. "One trivial reason would be if I'd tried to save money by not properly outfitting the studio or skimping on staff, or any of the thousand ways I could cheap out. If I had, we'd lose our clientele because we couldn't do our job properly. For example, we're one of the largest users of 2-inch in the country. We started stockpiling tape a long while before Quantegy closed. The reason being, when you've only got one supplier for a product you use every day, if something happens, you won't be able to make records. I feel like it's my obligation to make sure that doesn't happen."

"My studio is a custom one-off race car kind of place," Schnee admits. "Although, from a user systems standpoint, you don't realize it. Even though we built the console with tube mic preamps, tube line amps and all-discrete solid-state electronics, it has worked flawlessly for almost 25 years! I'll go to my death fighting for that kind of quality and saying what I believe about it.

"When mixing to 16-bit DAT came in, I couldn't understand how certain engineers were quoted as saying it was as good as analog ½-inch," he adds. "But now I think lack of resolution in how they were listening had a lot to do with forming their opinions. If you put seven layers of tissue paper over your speakers, you're not going to hear the clarity in the highs. If you're going through tons of electronics, you may not hear the difference in quality. Today, at 24/96 with really good converters, we have a very big improvement. But it took 20 years to get here. Meanwhile, back then, the early digital proponents were calling those of us who liked analog crazy."

THE LARGER LISTENING EXPERIENCE

From cathedrals and concert halls to tuned reference rooms, throughout the ages, people have created acoustic environments that enhanced the experience of listening to music, live and recorded; hence, the craft of the audio engineer. It's ironic, then, in the age of cutting-edge audio technology, music seems to be becoming more of a "background" experience as quality takes a backseat to convenience.

"We live in a portable society," Clink points out. "Kids are listening to their iPods while walking to class and playing MP3s in their cars. It's not so much that the consumer doesn't care about sound quality, it's just a matter of convenience."

Ay, there's the rub. "How do you get people off earbuds and MP3s?" muses Schnee. "We have the ability to deliver a much better-sounding piece of plastic than a Redbook CD and we can even deliver multichannel sound with it. Unfortunately, there are three different incompatible systems that all do a similar job! HDTV is arriving. With the onslaught of $200 to $300 surround systems, multichannel is in the grasp of everyone. They have amplifiers and speakers—all they need is a player. But now we're going to tell them, 'Well, the product comes out in three different formats.' Even with players that will play all three, what a nightmare for the poor consumer."

CAPTURE VS. CONSTRUCTION

"In the past, if I had a musician who wasn't able to perform," recalls Clink, "I'd make them aware that there was something that could be better from their performance. I'd give them an opportunity to practice and hone in on it. But, if after several attempts we couldn't make it work, I'd have to replace them with someone better.

"Now the way we work, you can save the integrity of the band, but you're *creating* a performance," Clink continues. "Sometimes that's not as good as having a great performance that you just have to 'breathe' on to improve. I often see people willing to give up easily: They'll play a couple of notes and say, 'Put it in the computer and fix it.' Generally, I'll refuse. I tell them to take it home and practice. They're the musician. It's what they do and what they're getting paid for. They have to at least try!

"We are starting to lose some musicianship. Those people who really strive to be better—who, even when they're great still practice every day—are becoming rare. The work ethic has changed because people know that they have a crutch. They don't go in with the fear that maybe they'll be replaced."

"It is a construction process now," admits Schnee, "but that started with multitrack. The tool isn't the problem or the enemy; it's how it's used. You can give somebody six tracks for a solo and that can be a very freeing, experimental thing for them. You can do the same thing, and somebody else will take the tracks and punch them up until they're perfect—in their eyes, at least.

"The changes that we're going through are profound in terms of quality. In the old days (before me!) when recordings were done completely live, everybody had to be at the top of their game: the musicians, engineer, producer and studio. Frank Sinatra went out there with the orchestra, counted the song off and they made a take. When he came into the control room to listen, that was the record and it had better sound like music! Think about what that meant for the skill and creativity of everybody involved. We've definitely lost something."

PERSONAL BEST AT EVERY LEVEL

Ultimately, production professionals will strive for excellence within whatever limitations are dictated by the prevailing consumer format. As for the acceptance of those formats, Schnee says, "When the plusses outweigh the minuses, a product wins—whether the quality is actually higher or not. That happened with the CD. A well-mastered, really good pressing of a vinyl LP played on a great turntable with a good cartridge into a good system against a 16-bit/44.1 CD is going to win in terms of sound. But that's about the only plus. The CD had so many plusses: no noise, no intergroove distortion, the ability to play it in the car and it was close to indestructible, just to name a few. So while the actual sound wasn't as good, it won and we were into the digital age.

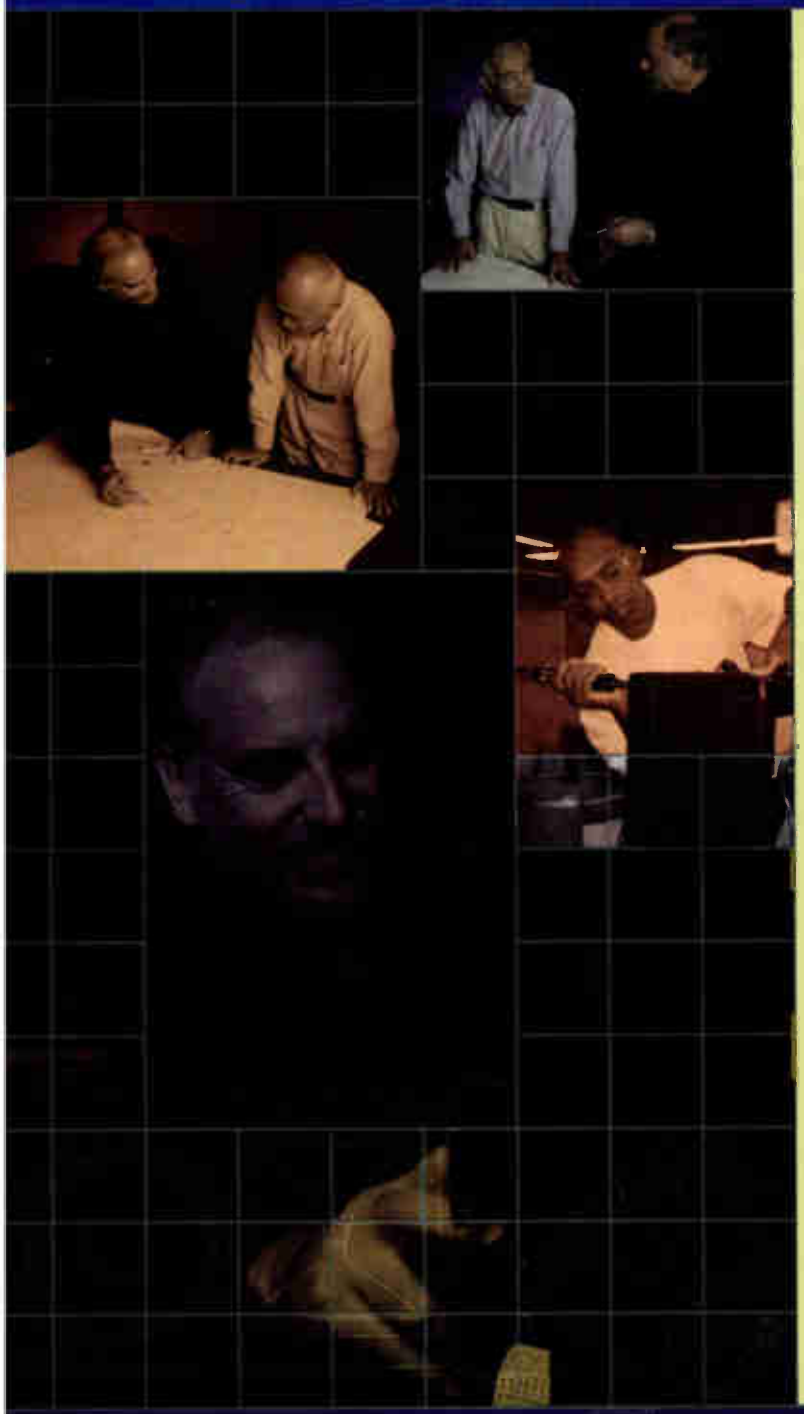
"The same thing happened when professional recording started going digital with 16-bit," he continues. "We who felt it didn't sound good enough had to go through a lot of frustration with those who thought because it was new and digital, it was better. Then, when Pro Tools came out, it still wasn't as good as analog, but its flexibility as a production tool was through the roof. Even I couldn't begin to argue with what you could do creatively with a tool like that. Fortunately, Pro Tools—with higher sampling and bit rates, and better converters—now has much better quality sound.

"There are so many problems today: the fact that labels' financial troubles take money away from new talent development; home recording, which, in many people's minds, diminishes the value of the engineer; and the lack of cohesive new formats, which could get people excited about the enhanced listening experiences that are possible. So it's difficult—but it's absolutely vital—to stay optimistic about what we do individually and about music itself. People will always love music and live performance. For me, the quest is, what can we do on every level to continue to make it better?"

MIX ONLINE EXTRAS

Maureen Droney is Mix's L.A. editor.

INSTALLATION



Yamaha wanted to develop a line of loudspeakers specifically for the installation market to compliment our exceptional mixers and electronics.

The development concept was to apply Yamaha's precision engineering, consistency and unparalleled build-quality to a family of speakers designed and refined by American engineers with the experience and golden ears to create a sonic signature to match the manufacturing excellence.

Yamaha assigned Akira Nakamura to come up with the vision and performance parameters. A legendary speaker designer in his own right (remember the NS10M? over 200,000 sold, etc.), he brought his decades of experience and imagination to the project.

Yamaha retained Audio Composite Engineering of Escondido, California to realize the vision (adding more than a little bit of their own "vision thing" along the way). A.C.E. also had decades of experience developing speakers for the installation and touring sound markets, including the G-5 composite system for world famous Sound Image.

Michael Adams, ex-road warrior engineer (mixing both FOH and monitors for the likes of Jimmy Buffett, Jackson Browne, Warren Zevon, Emmylou Harris and others) heeded his wife's request for a career change and has spent the last several years as V.P. of Engineering for A.C.E. developing speakers for major manufacturers and noteworthy installation projects.

With Adams and Nakamura on board, two-thirds of the trifecta were in. The third key component was Yamaha's factory in Thomaston, Georgia. Primarily a piano factory, they could apply the exacting tolerances required in building quality pianos to the new Yamaha Installation Series.

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Mr. Adams' ideas:
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The Consumer Conundrum

Here's a simple logic problem: If all audio engineers are consumers, does that mean all consumers are audio engineers? That's right, the answer to that one is a big "no," and it's an important fact to face up to in the argument over audio quality.

It may seem hard to believe, but the vast majority of the human race's interaction with music has nothing to do with producing it. They listen to music and acquire the media it is distributed on—sometimes paying for it, sometimes not. But in a time when audio engineers have

Quality Vs. Cost Vs. Convenience

broken new ground in audio quality with formats such as SACD and DVD-A featuring 24-bit/96k in 5.1, why is the consumer vote resoundingly on the side—at least for now—of the less-inspiring sounds of Advanced Audio Coding (AAC) and MP3-encoded audio?

David Pakman is COO of eMusic (www.emusic.com), which was one of the first in the barrage of companies to sell songs and albums in the MP3 format and launch a digital music subscription service. As he sees it, the golden ears of the record industry and the customers are going in different directions. "There is a disconnect," says Pakman, "between where the music industry is heading in terms of audio quality and fidelity, and the direction consumers are going, which is portability and convenience.

"For the first time in the digital revolution, consumers took a substantial step backward in quality with the adoption of the digital format," he continues. "Thirty-three rpm records over 78s were an improvement in quality; SACD over 16-bit/44.1 was an improvement. But for convenience's sake, they have taken a step back in perceptual quality."

According to John Barrett, director of research for Parks Associates (www.parksassociates.com), a Dallas-based market research and consulting firm focused on digital products and services, the compressed tastes of today's consumers can be traced to the limitations of the earliest digital audio players (DAP). The first units, such as the groundbreaking Eiger Labs F10, which was the first to appear on the American market in 1998, had just 32 MB of memory—enough to hold 10 or so songs if they were compressed down to 128 kbps. "When these things first came out, the portable digital players had limited space and you had to tolerate lower quality," Barrett points out. "People thought, 'Well, it's not so bad,' and they stuck with it.

"Today, you just have momentum behind the MP3 format. That was what most of the devices and software packages supported when they came out. Also, your average consumer can't really hear the difference."

Neural Audio (www.neuralaudio.com), a firm that develops digital signal processing platforms in stereo and 5.1 for compressed audio providers such as XM Satellite Radio, has built a business around algorithms that deliver as much music to consumers as possible without them noticing that a whole bunch of bits are missing. "The way people consume music is changing," notes Geir Skadden, CEO of Neural Audio. "They're consuming a lot more, which is good, but they may be consuming less in what you would call 'critical listening.' There are fewer people coming home from work and playing their favorite songs just to chill out; on the other hand, everywhere they go, all day they have music in the background.

"You have this boom in casual listeners," he continues. "They are willing to trade convenience for quality in a big way; you cannot ignore that. We're trying in that trade-off to preserve as much quality as we can. Quality in music is such a subjective thing. What we're trying to preserve is the artist's and producer's intent—whether or not that's quality is not for us to decide. So going for transparency is the scientific side of it."

Right now, the hype is unquestionably on the side of the stylish iPod. The signature DAP from Apple (www.apple.com) has sold 10 million-plus units from its introduction in 2001 through January 2005, with a whopping 75 percent of those sales coming in 2004 alone and 40 percent during the past three months of 2004; another 150 million songs have been sold via the iTunes Music Store. But David Kawakami, North American director of Sony Corporation of America's SACD (Super Audio CD) Project and a key developer of the high-fidelity Sony/Philips Direct Stream Digital recording process, cautions against being blinded by the buzz. "Right now, music downloads have an inordinate mind share," he says. "However, the total revenue the music industry garners from sales to online stores is only a tiny percentage of its total business. Including sales to ring tones—which is much more lucrative than sales to iTunes

By David Weiss

COLLAGE: DMITRY PANICH

or the other online stores—the total revenue for the major labels still hovers around five percent. Granted, they are enjoying a meteoric rise, but that's not hard [to believe] if you consider that a little over two years ago, sales were essentially zero. The more important question is how high online businesses will go as a percentage of total revenue: 10? 20? 50 percent? If you ask 10 people in the music business, you will get 10 [different] answers.

"As to the relative sonic quality of music delivered on SACD or DVD-A versus online, the short answer is that for the download model, sonic quality is not an issue," Kawakami continues. "Listening to music on nice speakers in your living room versus listening to music with earbuds while you're on the go are totally different applications, and they are also totally different businesses. The problem as I see it is that in this all-or-nothing world in which we live, it's very hard for the music industry to identify the different segments of the market and target them with products and services that appeal to those different consumers. Instead, you see an industry that is always looking for the panacea—the one product that will fit all—rather than aggregating a number of businesses of varying sizes into a total business plan."

For DTS (www.dtsonline.com), one of the leading developers of decoders for 5.1 and 6.1 processors and the source of DVD-A releases for artists such as Crystal Method, Frank Zappa and Porcupine Tree, the challenge lies in turning consumers on to higher-quality formats. The reasoning is that once experienced, consumers will not be inclined to look back. "For people who have been exposed to surround sound music, the response is overwhelmingly positive," says Brian Towne, VP, consumer division of DTS. "However, we realize it's still a nascent market and there's still a lot of uncertainty.

"There is a market for higher-resolution formats," Towne continues. "Unfortunately, it's still in its infancy. I think consumers—regardless of what they purchase—are looking for a quality audio experience. Education of what truly is possible is an ongoing process, and because we see such a broad range of equipment, from very entry-level prices up into the stratosphere, I do think consumers care. I'm not certain we've reached out yet and educated the vast majority of them about what is possible."

One such educator in the field is Elliot Fishkin, owner and president of Innovative Audio Video (www.innovativeaudiovideo.com), a high-end Manhattan retail showroom where the transporting possibilities of high-quality music delivery are presented at their most extreme. "A music system that's terrific is a time-travel machine," he states. "It can take you from the present and make you believe that you actually were there when those people did it—as if you went to where people like Louis Armstrong and Duke Ellington were when they recorded it. You feel their joyousness, that it's a performance for you that was captured with these recordings. In my imagination, they were singing to me."

If such an amazing sensation is what can be delivered by listening to a high-resolution format or a finely tuned home theater, or both, why aren't more consumers going for it? Once cost is taken into account, the advantage swings back toward online deliverable compressed formats. "My instincts tell me that consumers won't pay more for higher audio quality," says Parks Associates' Barrett. "People will pay more for higher-quality video—they may pay more for

a DVD over a VHS tape—but it's the way music is used [that changes the equation]. People aren't paying that much attention: They don't normally listen to an album on a couch front to back and absorb it all in like a movie.

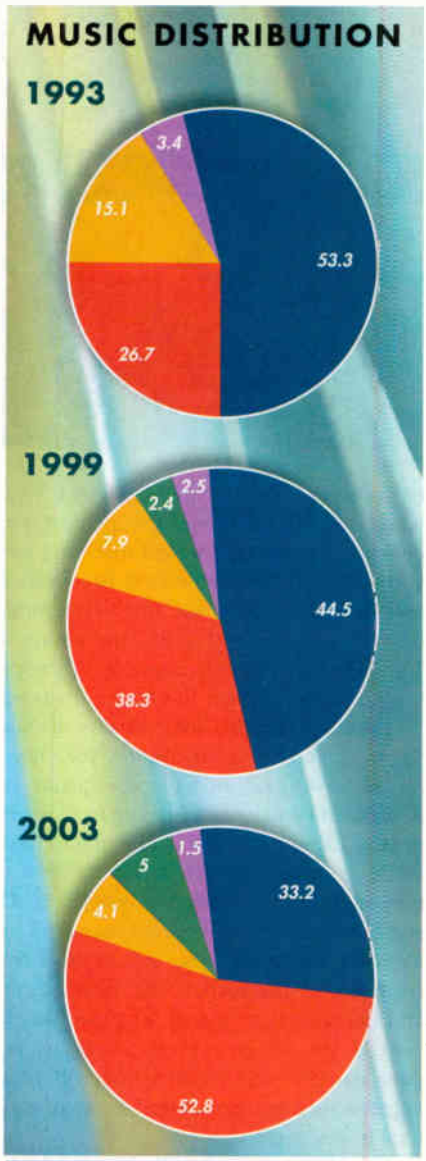
"The people that are adopting digital music tend to be distinct from the audiophile group," he continues. "What may happen is if you had better-quality encoding methods, you could capture the higher-end audio crowd, but for the mainstream crowd, they're not clamoring. Given two choices at the same price, they'd opt for the better, as long as it's still the same file size."

"I'm not arguing against higher-fidelity formats, but the public is," says eMusic's Pakman, who himself is also a recording studio owner that frequently records in 96 kHz/24-bit. "Certainly, the mass market has not shown any sign at all of rejecting MP3. There are many reasons why the public has thus far voted for compressed audio with their pocketbooks, especially given that the availability of content in the MP3 format is much larger than SACD or DVD-A. There is less perceptibility [between MP3/AAC-encoded and higher-resolution formats], and the mass market either can't hear the difference or doesn't appreciate it enough to pay for new hardware and re-purchase their CD collections in higher-fidelity format.

"Higher-resolution formats also don't achieve the portability and convenience factor that digital media allows us. Digital media is portable: It can be moved from device to device, and some media in digital format can be copied, which allows for some additional portability and archival backup. It also allows you to make your own playlists, change ordering, do all sorts of funky stuff. But with DVD-A or SACD, you're still limited to the functionality of a CD. I'm just stating the fact that a large part of the market is purchasing music in a lower-fidelity form because it's convenient and portable, and that's coinciding with a general rejection of much-higher fidelity formats by the mass market."

But far from painting a picture of a close-minded consumer base, Skadden believes that the current lower-fidelity state of affairs opens up the door for a successful music and recording industry more than ever before. "The use of compression as mainstream distribution is dumbing down the consumer as to what fidelity is; no question about it," he concedes. "That said, it widens the variety of content that is easily accessible to the consumer and that should not be underestimated.

"That's important to the music industry because it gives you a broader marketing platform. Let's say you're making a format that is not mainstream or picked up on the Top 20 in the country. If you make it for iTunes, people will hear it and listen to it, they'll go and buy the SACD and/or surround format and say, 'Wow, now I *really* like it.' So there's an up-sell side



The pie charts above demonstrate a gradual shift in unit distribution; as Web and "other store" (i.e., Walmart) sales grow, record stores take a hit. Note: Numbers do not equal 100 percent.

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here if you embrace the opportunity. You can say CD sales are down because people are dumbed down and buying off of iTunes, and that's the typical sad story. But as digital music is maturing as a viable economic model, you still have the up-sell because the quality of digital is not as good as what you get in stores. So you end up getting the best of both."

Kawakami agrees that the question isn't whether or not consumers are taking advantage of high-resolution formats, but whether, with a projected 10 million SACD players being sold by the end of 2005, the music industry itself is. "Currently, about three SACD titles are released per day," he says. "That's about 90 per month or 1,000 per year. The total number of titles available worldwide is approaching 3,000. [*See www.sa-cd.net for more information.—Eds.*] However, most of the SACD releases are coming from the so-called 'indies,' not the majors, who are not looking for market segments but the 'panacea product.'

"Independent labels tend to fly lower to the ground and seem to be better at exploiting specific market segments, and they are not insignificant. The majors, with their deep catalogs, actually have an enormous amount to gain with SACD. Take, for example, Pink Floyd's *Dark Side of the Moon*. Thanks to [remastering engineer] James Guthrie's wonderful 5.1 mix of this classic title, Capitol/EMI has shipped over 1 million copies of *Dark Side* on SACD. Not bad for a 30-year-old record! But it is not only incremental sales that the record industry is missing out on, it is also missing out on the opportunity to migrate the consumer to a *secure* format. The high-resolution SACD layer cannot be ripped and file-shared, so what were those million Floyd fans buying if not quality? After all, they can download *Dark Side* for free anytime they want."

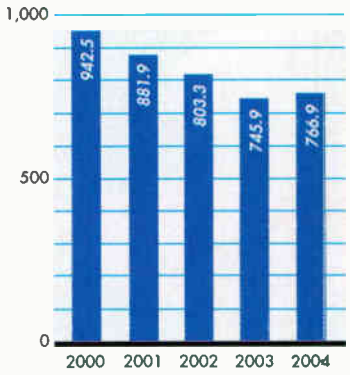
For Fishkin, the key to solving the consumer puzzle is the word *quality* itself—not just how the sample/bit rates and speaker connections measure up, but where audio fits in the multitude of quality-of-life decisions that people make every day. "I think it's important that people listen to music, and I'm happy that they do it in any way that they do," he says. "I just hope that those who want to seek something better know it's out there.

"You can think of many choices that people make to make them feel better: what they eat, what they wear, a happy family life—all these things are variable. Seeking happiness and to go for life with gusto is what it's about. If you have a stereo system that costs $1,500, that's better than an iPod, and I suggest that if you spend that, you should sit down once in a while and listen to it. It's a question of how you use it, not just how you have it."

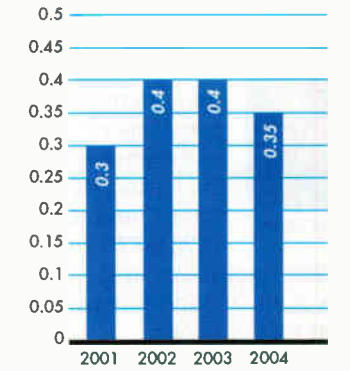
MIX ONLINE EXTRAS

David Weiss is Mix's New York editor.

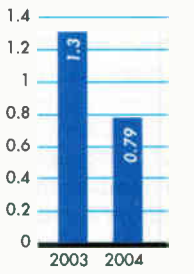
CD UNITS SHIPPED (in millions)



DVD-AUDIO UNITS SHIPPED (in millions)



SACD UNITS SHIPPED (in millions)



DATA COURTESY RIAA

Rumors of the industry's demise are greatly exaggerated: CD shipments rose slightly in 2004, a sign of optimism after a steady four-year decline. DVD-Audio and SACD shipments slipped, however, due in part to limited title releases.

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ILLUSTRATION: VICTOR GAD

The Hybrid Production

By Heather Johnson

We've heard the gripes, even participated in many of them: the roster cuts, the shrinking budgets; the home studio's rise, the commercial studio's decline; the lack of work, the vacant rooms, the silent phones; the flaky client, the fickle consumer. We've also heard ad nauseum the negative assumptions bellowed by both the cynically informed and the ignorantly outspoken, such as commercial studios are dead. Or dying. Or worse, those big live rooms are just a waste of space anyway, and all of that analog gear is just too big and too slow. Who needs it when you've got a fully loaded mega-meg hard drive and 50,000 plug-ins

Necessity Mothers Re-Invention

at your disposal? One can make an absolutely technically perfect record at home, in their pajamas, on their computer with absolutely no contact with any other instrument or any other human being whatsoever, right? Not quite. Not even close.

Contrary to what the naysayers suggest, the commercial studio industry is not dead. Not even dying, for that matter. However, it is adjusting itself to a new business model, one thrust upon it as a result of a radically altered music landscape and slimmed-down recording budgets. In commercial studios across the U.S., most of the overdub business left for producer/engineer-owned spots years ago, mostly out of monetary necessity. Shivaun O'Brien, manager of Sound City Studios in Los Angeles, notes that one regular client built his own studio across the parking lot, where he works after tracking in Sound City's Studio A. "They just can't afford to stay at Sound City for overdubs," says O'Brien. "Engineers and producers get called to do [an album] for $50,000 and it's an all-in deal. They're trying to figure out how to keep at least *some* of the money."

Producer/engineer Joe Barresi, who recently co-produced, engineered and mixed Queens of the Stone Age's latest, *Lullabies to Paralyze*, adds that he and many of his peers spend less *time* overdubbing, as well. "Nowadays, you won't spend two months doing overdubs; you'll spend two weeks. That's good in a way because it keeps things fresh. And if you have to mix two or three songs a day, you do it, instead of mixing one song every two days."

Jason Carmer, a San Francisco–based producer/engineer with credits such as Third Eye Blind, Live and The Donnas, agrees. "In the past, we'd do the whole thing at Skywalker Sound, The Plant or the Hit Factory in New York. Maybe you could do that these days if you're working with a band that's really established and you have a larger budget, but most of the time, you can't...unless you want to go instantly broke."

For his most recent projects, which include producing/engineering new albums for The Explosion and the Star Spangled, Carmer usually spends a minimum of two weeks on pre-production, whips out basic tracks in a commercial facility and then moves to his studio to overdub and mix. Of course, Carmer has the advantage of owning a Helios console—much more of a board than what's found in most home/project studios.

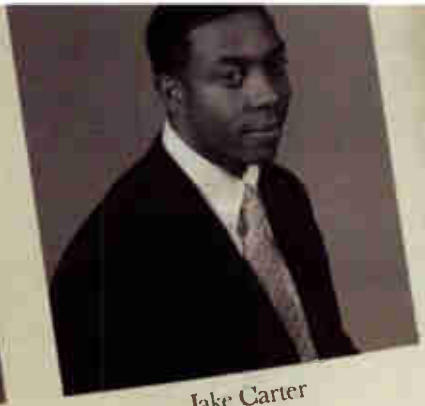
To make the most of scheduled tracking dates, Carmer makes sure his acts are well prepared before they enter the studio. "Now that budgets are tighter, the more you have your stuff together, the easier it is to go in and plug it out," he says. "I did a lot of the Star Spangled record at Coast [in San Francisco], which has this '60s sound. I got all the drums there, and a lot of the vocals, guitars and bass. Then I'd go to my place and hole up and do overdubs."

Barresi also focuses more on pre-production, aided now by the Internet and digital technology. "I can get music from bands anywhere in the world," he says. "They e-mail me songs and I'll burn a CD, load it into Pro Tools and experiment with listening and re-arranging songs in that medium. Or if the band's local, I can just bring a laptop and Mbox [to pre-production], record the band live, go home, do a little editing, burn a CD, bring it back to the band and say, 'What do you think?' We can get the arrangements together before we even start rehearsing."

Barresi is one of the remaining few who doesn't have a dedicated project studio (yet; he's in the process of purchasing a Pro Tools|HD rig) and will record an entire project in commercial facilities; however, he doesn't waste a lot of time. "I never really worked at the $2,000-a-day studios anyway," he says. "I love places like Sound City. It's a mid-studio price-wise, and if I can't afford to stay there for two or three weeks, then I cut the drums there and move to a studio that's cheaper to do all of my overdubs. I'd spend a little more time in that environment and spend more money mixing in a proper studio—it's important for

Thomas Williams

Mandy Adams



Jake Carter

Jenny Smith

Eddy Lin

Walter Nemoy

J.F.K. High School 2004

21

me to be in an environment where you can hear everything clearly."

Miami-based engineer/mixer/producer Charles Dye, who mixed Ricky Martin's Number One smash "Livin' la Vida Loca" entirely "inside the box," works primarily in the Pro Tools environment, whether it's mixing on the maxed-out HD system in his own studio, The Gate, or tracking at Martin's elaborate home studio. He often works in these non-commercial spaces at the artist's request or for budgetary reasons. Nevertheless, he would prefer to

I do not think the studio business is bleak. I do think it's time for studios to stop taking the bullshit.
—John King

work elsewhere. "The pop projects I do are usually major label and with larger budgets, but nonetheless, they're smaller than pre-9/11," he says. "I would love to work in a million-dollar room [more often], but—especially with the rock projects I produce—we just can't afford it."

Dan Huff, Nashville-based producer of major-label acts such as Faith Hill, LeAnn Rimes, Megadeth and Keith Urban, uses his Pro Tools/Control|24–equipped home studio mainly for editing and minimal overdubs, choosing to do most of his work at studios such as Emerald Entertainment. Cutting corners hasn't been much of an issue for Huff, but he does enjoy being able to work after taking his kids to school, for example. "As far as listening and going through the massive amounts of information we have to deal with, it's a real godsend," he says. On the other hand, some clients prefer to work at the Huff household, especially country music artists who are known to tour 250 to 300 days a year. "They're off the road and it's more relaxing for them to come over and sing in your house," explains Huff.

AT YOUR SERVICE

Whether he works at home or at Emerald, Huff and other clients can take advantage of Emerald's expanded technical services, which is one example of how a commercial studio can maintain a competitive edge in our trimmed-down industry.

"We go to producers' houses with FireWire drives and fix Pro Tools systems. We send files all over the world for clients," says Andrew Kautz, COO of Emerald Entertainment Group, which operates five separate facilities in Nashville on Music Row: the original Emerald Studios, Masterfonics Mastering, the Tracking Room, the Love Shack and Sixteenth Avenue Sound. "Before, we could basically just wait for the phone to ring, whereas now clients have a lot more choices and we have to adapt to that."

"It's a 'whatever it takes to get the record done' kind of mentality," notes O'Brien. "Everyone steps up to the plate. A lot of times, even my crew will loan equipment to sessions, and producers will loan each other pieces of gear instead of them having to rent. Our assistants might help out a client at home or the runner might lend them pedals, amp heads, et cetera. It's what you have to do, and in a way, it's not a bad way to work. It makes everyone re-focus on what they're doing."

This sort of flexibility is key in booking, as well—up to a point. There's a fine line between being flexible with scheduling and day rates and getting taken advantage of. Emerald has 10 rooms, ranging from $400 to $2,500 per day, so they can match a client with a room that suits their budget pretty easily. "I just hold our department heads accountable for a monthly budget and it's proven very effective," says Kautz. "We'd love to have [card rate] but the main thing is making sure your customer can get done what they need to get done. Also, we find that if a producer cancels two days one week and we work effectively with him, more than likely, it comes back as a week or a month [booking] down the road—karma in booking, I guess!"

Barresi counters, "Some of the larger studios are too concerned about 'You were supposed to start at noon and you showed up at 1, so you're already over an hour, and there's overtime, and there's a six pack of Coke in the fridge and if you drink more than six it's $3 extra a can.' People are going to work in their houses, but you want to make them come to your place to at least do their mixing or drum tracking. Maybe you've got to open up a smaller room or cut a room in half and have a lesser dollar value place where they can work every day and not stay in their home. There are benefits to that, as well."

Some producers, realizing their need to separate work and home, are returning as regular residents. It's a win-win situation: Studios keep their rooms filled and producers can take advantage of the creative community and accoutrements of the commercial environment. John King, president of Chung King Studios in New York City, rents six of his nine rooms to resident engineer/producers. Outside clients such as Joss Stone, Usher and Kanye West also win, as the studio's three commercially available rooms contain the absolute best gear from the Chung King inventory. Later this year, the studio will also become the recording home for the newly launched Chung King Records, which promises to bring even more revenue to the 20-year-old company. He adds, "anybody who wants to make a fortune is in the wrong business; what you do with your studio—that's the future."

The presence of longtime regulars such as producer/engineer Jim Scott, Rick Rubin, Jack Joseph Puig and Barresi has enabled Sound City to maintain steady bookings (and rates) since the post-9/11 slump, O'Brien says, but with shorter-term projects. They charge on a "three-tier" system "that

How long you work on a record now depends on two things: how well a band plays and how much money they have.
—Joe Barresi

PHOTO: KRISTEN KAUN

works great for the indies," she says. "They cut us a check up front and we give them a lower rate. But in the last year, the majors all of a sudden want the cash rate. Usually it takes them three months to pay you, but if they can get a lower rate, they'll get you a check the next day!"

Sure, our industry's shifting budgets and business models have brought on a lot of anxiety. But by taking a positive and proactive stance, we could emerge a stronger, albeit leaner, recording machine able to weather our stormy market. Come to think of it, we already are. ■

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ILLUSTRATION: VICTOR GAD

The Curriculum Quandary

By Breean Lingle

If there's one thing that most members of the recording industry will agree upon, it's that when it comes to getting an education, there is no fail-safe plan or path to take. With as many factors that can contribute to a person's success post-graduation, becoming well-educated, employable and eventually well-established is something only the student can control. There are now nearly 200 programs available in the U.S. and Canada of varying lengths and emphasis; audio students have few excuses not to find the location, coursework or level of education that fits.

Recording schools have emerged as the de facto entry point to the industry. The older mentor/assistant model of learning—where an engineer takes on assistants and teaches them skills and etiquette hands-on until they get their first break—is rarely employed anymore. As Full Sail's Recording Arts department head Bill Smith recalls, "What I was able to do by hanging around and learning would take a lot longer if you tried doing that today. People are much busier and there just isn't time to sit with somebody and devote an hour or two to them every day. Employers expect people to walk in the door and be competent."

Basic Training for Engineers

Developing technologies, a wider variety of available careers, the closure of large studios and new independent business models have redefined the way new engineers are educated. Students can become prepared through Web-based courses, shorter-duration trade school programs, four-year university programs and conservatory programs. For those who want to take it to the next level, select programs, such as University of Massachusetts Lowell's Master's in Sound Recording, offer advanced degrees.

Regardless of program style, most recording arts students are training for a very different, more broad-based audio world than in the past, one that Columbia College Chicago's Benj Kanters, a professor in the Audio Arts & Acoustics department, finds himself regularly educating students and their parents about. Says Kanters, "The need for engineers is still there, it's just not in studios anymore. It's in the production offices of the jingle companies, the ad agencies, the post-production houses, the Web authoring services, the CD-ROM publishers. The job market is just sprayed out across the landscape. The jobs just don't exist in their traditional forms."

LEARNING TO LEARN

With more career options than ever and a constantly changing technical environment, university-level programs have become increasingly important. As AES president Theresa Leonard notes, "A well-rounded education is important. It provides a young engineer the opportunity to be mobile within the industry."

While new technologies have influenced the way a curriculum develops, educating students about core skills is still pertinent, as Berklee College of Music professor Stephen Webber explains. "The way that records are made, and the industry itself, is going through a reconstruction. Learning to adapt to change and looking around the corner [are essential]. At the same time, there are a lot of core values in the way that records have been made that are also important: having a direction, a vision, a good work ethic, really good organizational skills and documentation habits."

Dr. John Shirley, associate professor of Sound Recording Technology at the University of Massachusetts Lowell, says, "The main movement toward a shorter-term, application-specific education may seem to generate faster results on a limited scale, [but] it is actually a shortcut that hurts students in the end. To be successful in this field, you must know why you are pushing certain buttons. Understanding signal flow, quality factors, acoustics, recording and mixing techniques are paramount."

For four-year programs such as those in the Audio Arts & Acoustics department at Columbia College Chicago, a liberal arts education allows students to learn *how* to learn. Kanters says, "We found that we needed to arm the student with as broad a base of knowledge about the theory of audio, the theory of sound and the many ways in which audio can be crafted. We're teaching them critical audio thinking, creative thinking, flexibility—there is no rule of thumb anymore."

Time is also on the side of university programs, contend its advocates, including UMass Lowell faculty member Alex Case, who lists a university's program duration as one of the few distinguishing factors between it and a trade school's curriculum. "We're not just teaching a piece of equipment or a piece of software," he says. "Because we have a little more time to spend, we can talk about a range of boxes—includ-

ing ones not yet invented—more generally and equip students to take on each box that comes out."

TOOLS OF THE TRADE 24/7

Trade school programs are aware that the environment and shortened timeframe in which its students must learn is not for everyone. Full Sail's Smith acknowledges, "We offer accelerated programs for those who are focused on what they want to do and are suited for the immersive environment. If someone wants to take a slower approach, a four-year program may be better."

Still, trade schools can provide the necessary technical know-how, creative learning environment and flexible schedule. In general, trade school programs comprise practical applications and equipment-use classes, but general education coursework has recently been added to many facilities' programs.

One such trade school is Full Sail (Orlando, Fla.), which offers a one-year Associate's degree in Recording Arts, with the opportunity to continue an additional nine months to recive a Bachelor's of Science in Entertainment Business. Both analog and digital gear are used in class, and Recording Arts classes are 50 percent hands-on, 50 percent lab-based. Of the school's day-to-day teaching philosophy, Smith says, "Our students are in school on average between 36 and 48 hours a week. We're open 24 hours a day, seven days a week. Our program is structured so that while first learning what the knobs and basic functions are, the student is at a station by themselves with the equipment so they can work at their own pace. It's not until later in the program that we put them in a studio environment to put those skills to work."

GREAT EXPECTATIONS

Balancing the creative and the technical, audio education programs today can be as unique as each student and will continue to evolve: Columbia College Chicago now offers sound reinforcement and post-production curriculums; Ex'Pression offers Web design and animation; Full Sail students can focus on sound for film.

Berklee's Webber concludes, "[Students have] a lot to learn, and having a good sense of where you want to go certainly helps. Being open to new ideas and learning throughout the rest of your life is key. Hopefully, we just whet a student's appetite for learning. If we can foster in them the love of doing that, then I think we've done our jobs."

IT STARTS WITH MUSIC

While technical training is key, nearly all educators and engineers stress that you cannot overemphasize the benefits of a music background. Among the purists in the business, renowned engineer Bruce Swedien believes that some of the essential skills an engineer can learn take place outside the studio and classroom. An advocate of keeping music education in schools, Swedien remembers that, in the '50s, when his career started, "The goal of recording was to present an unaltered acoustic event. And the problem [with that] to me was that it left the most important thing out of the music that I was recording: my imagination."

Working with such talent as Duke Ellington, Count Basie and Michael Jackson, Swedien developed a "sonic personality," a step that he advises young engineers to do. To take that step up from technical competence to develop a signature sound, Swedien emphasizes that students need to listen to music in the right environment, one that is acoustically supported. "A lot of young people try to go into the music recording industry without really knowing what good music sounds like," he says. "I hook [my interns] up with Carnegie Hall and start them going on a regular basis. Music is conceived to be heard with acoustic support of some sort. That doesn't necessarily mean lots of reverb or echo.

"In addition, you can't learn how to make unique recordings by listening to other people's records. By trying to learn by listening to other folk's records, you are listening to music with someone else's idea of what music sounds like, thereby short-cicuiting your own originality. Students have to be able to identify with that and really learn about it long before they think about putting a mic in front of an instrument."

To quote one of Swedien's students, Nathan Tharp, who is currently working in an L.A. studio, learning to appreciate music artistically rather than as the sum of its technical parts is essential. He writes to Swedien, "I've spent enough years playing with compression, EQ, reverb and effects to really understand how they affect the sound. I used to think that the big picture was the accumulation of all these sounds. However, while listening to you mix, I realized that the big picture is the song and its emotional impact. You've given me a deeper insight into my artistic self." ■

Breean Lingle is a Mix *assistant editor.*

Graduates Sound Off

Who: Jeremy Rogers
Graduated from: University of Miami
Before college, dreamed he would be: a mixer for films
Current aspirations: to become the best sound designer/mixer in Chicago and work on films
Their program was great because: "It has gotten me everything I have. Miami gives you a great base of knowledge of audio, how it works and how we interpret it. Also, you learn how to learn."
Things he wished he had learned in school: "I would have liked for the mixing and film side of the program to be more aggressive."
Wise words for future generations of audio professionals: "There are a lot of schools out there. I [recommend you] try to decide what you want out of the program before you choose."

PHOTO: MAUREEN DROHEY

Who: Doug Tyo
Graduated from: Full Sail
Before college, dreamed the would be: recording bands
Current aspirations: to make a living as a recording engineer and eventually get to the freelance stage in the studios
Their program was great because: "I got all of the basics; especially for internships, they were great. The day after I graduated, I was driving up to start my internship with a big studio. Alumni status applies for the rest of your life."
Things he wished he had learned in school: "I would have liked to learn music theory and tech support."
Wise words for future generations of audio professionals: "Choosing the school isn't as important as getting a good internship."

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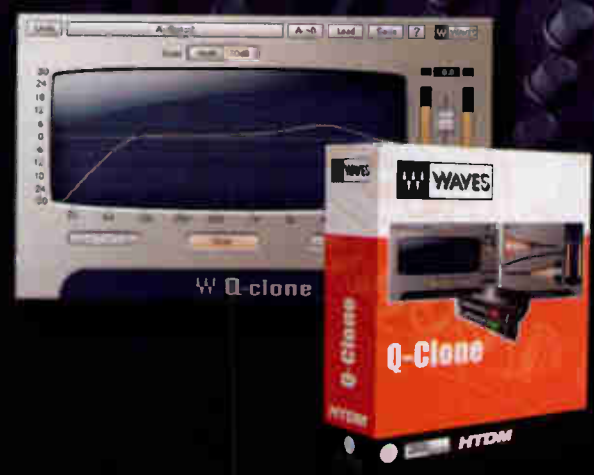

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for audio as a standard defined by the EBU and referenced in AES standards. It is a very flexible format that allows for a variety of bit depths and sample rates and has a provision for storing metadata in the header files."

I NEVER METADATA I DIDN'T LIKE

Any recording project generates metadata: information about the recording, such as technical specifications, names of artist, engineers, titles of pieces, transcriptions of lyrics or spoken word and many other types of information.

There are several approaches to capturing the metadata. Peter Alyea from the LOC notes that the direct approach to capturing the metadata entirely in the header has its limitations. "We store a small amount of metadata in the file header," he says.

"We have found a lack of robust tools to manipulate and update this data in a batch mode, so we've limited the amount of metadata to core fields for the time being. With better tool integration with our database, this will hopefully change." The Hall of Fame's Stoker adds, "We are creating metadata files that are married to the audio files. This is in the form of an XML file that is stored in the header area of the Broadcast .WAV file itself. By using a UMID, or Unique Material Identifier, we can ensure the data is preserved along with the recorded audio."

Stoker's comment points out an important distinction between using the BWF header as the direct repository for the metadata and using it as a reference to an external repository. Rather than trying to capture all of the metadata entirely in the BWF file header, the Hall of Fame project uses the header to capture a reference to an external database record that can be maintained apart from the audio file itself. This approach was recommended by Bridge Media Solutions (www.bridgemediasolutions.com), a consulting company that has carved out a niche providing advice and technical assistance to organizations engaged in audio archival projects.

Bridge Media Solutions was a principal consultant on the Country Music Hall of Fame archive and many other similar projects. According to company president John Spencer, a number of best practices have emerged fairly universally, such as the use of the Broadcast .WAV format for storing the audio. Storing the metadata has found a wider variety of implementations, depending on the sophistication of the archive, funding and other considerations. Spencer says, "There are two principles we believe in very strongly: metadata evolves over time and it is too big to attach to the media."

The practice followed by Bridge Media Solutions is to store a SMPTE UMID in the header of the BWF file; think of it as a unique serial number for that piece of audio. This UMID then acts as a pointer to the file record in a SQL database file stored as XML data. This database, stored separately from the audio, acts as the repository for the metadata. According to Spencer, "This has the double benefit of keeping a small header on the essence file itself and it allows the metadata to be available offline in a standardized format where it can be cataloged, searched and updated separately from the media file without losing the link back to the audio essence."

And even once the archive is built, it has to be maintained. According to Spencer, "An archive should be designed to be refreshed periodically to maintain data integrity and to keep up with retrieval technology." In other words, merely dropping everything off to a gold writable CD and storing the metadata as a Filemaker file won't ensure a long-term future for your archive. Audio playback devices come and go, as do data formats tied to a specific platform or OS. Using more universal standards such as BWF, XML and SQL database structures ensures the archive is relatively independent of particular applications, devices and manufacturers.

NOISE CONSIDERATIONS

Choice of parameters for an archive depends on what format was used for the original recording. If the existing master is analog (analog tape or acetate or vinyl disc), general practice is to create a first-generation archive that's as close to the source as possible, without using any filtering or noise-reduction technologies. These can be later applied to the archived master for producing access copies of the material for public consumption. According to Stoker, "[The Hall of Fame] felt that adherence to capturing and preserving the original is of primary importance for the master archive, so we elected to use no noise reduction in acquiring the master audio from the acetates." Alyea notes that the Library of Congress follows this same purist approach: "As for processing, like equalization along with using noise-reduction tools, we use none of it. We will add some gain if the source is very low, but other than that, no processing is used to make the master file."

WHAT'S THE FREQUENCY?

The use of 96kHz/24-bit sampling seems to allow for balancing the need for sufficient quality and resolution with the practicalities of storage and acquisition technologies. It provides enough bandwidth and dynamic range to capture the essence of the original analog source. For materials originally acquired in digital format, of course you can't add resolution beyond what is there, so these are typically maintained in the existing bit depth and sample rate. The LOC's Alyea notes, "Physical digital media is captured to a file at its native bit depth and sample rate, with no up-sampling or other modifications."

One of the most important requirements in preservation is to get the material onto a medium for which playback devices are likely to be available in the future. According to Bridge Media Solutions' Spencer, "We suggest capture to a hard drive medium, then offloading once there is a large data load to an offline format such as LTO tape, which can store hundreds of gigabytes at very low cost." These are then checked periodically for data integrity and transferred to current technology to maintain the archive's long-term viability.

An archive is a living thing. Once you've given birth to it by getting the essence and metadata into secure digital form, it will require care and feeding to remain viable. Archiving and preservation is not just a one-time job, it's an ongoing adventure.

MIX ONLINE EXTRAS

Ron Franklin is director of media products for Tarari Inc.; his musical identity on the Web is at www.ronfranklinmusic.com.

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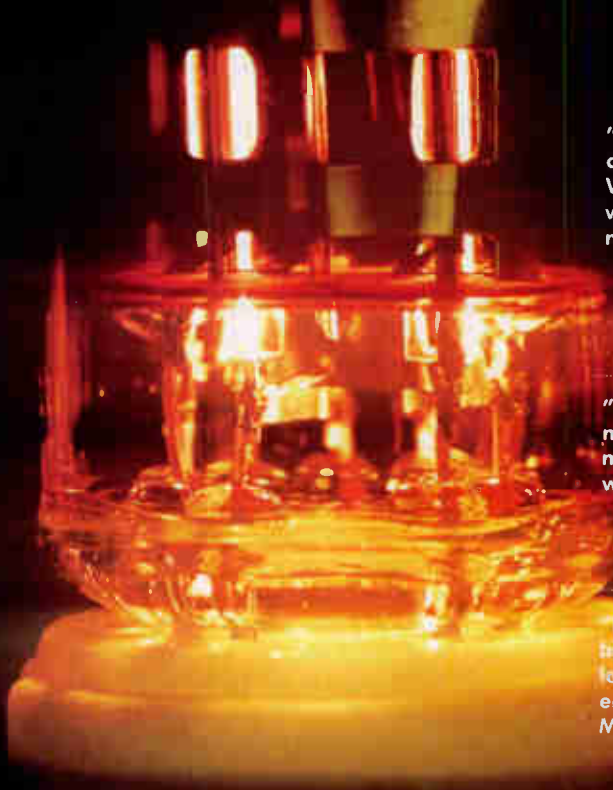

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Joel Jaffe,
Joel Jaffe, award winning Chief Engineer of Studio D Recording, Sausalito California

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Mitch Gallagher, EQ magazine

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The New Model of Manufacturing

At one time, quality was tied in with price: The pro/high end paid high prices simply because the hardware was expensive to build and, by even the most jaded, subjective standards, it sounded better. Now, with PCs dominating the workspace, buyers increasingly equate quality with a price/performance ratio. While the new generation may have reverence and respect for boutique gear and $4,000 mics, they are equally likely to rave about $99 mics made in China or a $149 dynamics plug-in.

Following classical economics, a finished product's price will reflect costs of design, materials, manufacturing, marketing, distribution and after-sales support. And a product's viability—whether an interface cable or a multichannel console—depends on a number of time, market and product-specific factors. But in the New Economics, we find the high end moving down the market and the entry level turning pro. Traditional hardware companies are leaping into software and entry-level software vendors are becoming players. There are lower manufacturing costs but higher R&D investment, with code writers co-existing with electrical engineers. And we find end-users clamoring for features but unwilling to pay more than "x" dollars.

It used to be so simple.

Solving the Price/Performance Dilemma

THE AFFORDABLE HIGH END

"It is inevitable that over time in a free-market economy, manufacturers will increase production and reduce prices," says Stephen Woolley, president of MTSi and formerly with such companies as IAG, Wharfedale Pro, Gibson, Fender and Panasonic. "At the start of any business, there is only one 'first hammer' or the 'first loudspeaker' at its own price. Then things develop to where there exists a spectrum of price:performance in products that cover all of the price levels that the market will support."

Today's customers are highly price-conscious, Woolley continues, "with loyalty only for brands that they perceive as giving value. If these products are inferior in any significant way or if they do not offer some significant and readily perceivable value, the manufacturer will fail. Competition ultimately forces differentiation—either through superior features and performance at a price, or the same specs as everyone else at a lower price."

"We are really considering the perceived value of a product—what it can achieve for the buyer and how the brand will carry a level of respectability to the facility purchasing it," adds Lance Korthals, an L.A.-based business and marketing consultant who has held positions with such companies as dbx, Lexicon, JBL Professional and Spectral. "We ask ourselves, 'What are the features and functions we need to offer at that price point?' And then, 'Can we design and produce it for the requisite cost?' If the answer is no, what are the trade-offs? Will customers accept the product if we leave out some features in an initial release to hit the target price and maybe add more functionality in subsequent upgrades?"

More and more high-end brands are realizing that they need to offer a spectrum of price choices. Even mic manufacturer Neumann is responding to the budget-conscious market. "Our new TLM103," says Wolfgang Fraissinet, president of marketing/sales, "was designed with fewer features and uses surface-mount technology to help reduce manufacturing costs, without compromising sonic quality."

Solid State Logic recently broadened its product range with the introduction of the AWS 900 Analogue Workstation System, which combines a multi-input analog console with integrated DAW control. "When we set a target price for the AWS 900, we based it on a definition of what users would need as a high-end production tool kit for a project studio," says director of product marketing Niall Feldman. "To meet the $85,000 target price and still build to the same quality standards of the larger consoles, we decided to offer a standard configuration using channel strips based on our XL 9000 console modules. For users, the key ingredients were quality of audio performance, build quality and the quality of the user interface's look and feel."

Euphonix has also looked at the high-end music recording market and concluded that value for money is vital for today's commercial facility and project studio owner. "The DAW is now an integral part of any music session, so it was natural for us to devise a way for our console surfaces to directly communicate via high-speed

By Mel Lambert

Ethernet with a workstation," explains Andy Wild, VP of marketing. "Our new System 5-MC uses the familiar System 5 as a control interface for any EuCon- or MIDI-compliant workstation, such as Nuendo, Pyramix and, via HUI-format commands, Pro Tools, Logic 7 and other platforms. The result is a high-quality, powerful digital mixer and editing system that costs much less than a high-end analog or digital console."

JBL Professional, one of Harman International's key brands, is also positioned at the upper end of the price: performance spectrum. "The quality of monitor systems cannot be compromised," stresses VP of marketing Mark Gander. "For the live sound and touring markets, we have been faced with competitive cost challenges, but have been able to respond with new manufacturing efficiencies, as well as new transducer and cabinet technologies. For example, our patented Differential Drive transducers with twin voice coils and magnetic gaps—innovated five years ago for the VerTec Series line arrays—are now being used in the SRX Series available through music stores and the VRX, or 'Junior VerTec,' which allows users to take advantage of line array performance efficiencies but in a smaller package."

ADAPTIVE STRATEGIES

Costs, many of them unplanned, can rise at any time during a manufacturing cycle, but fabrication is one expenditure that can be reduced. A growing number of pro audio companies are now manufacturing in Asia, where labor costs can be significantly lower than in North America or Europe. Or they are setting up factories there themselves. "When managed properly, the manufacturing location does not matter," Korthals stresses. "Just so long as the manufacturing firm pays strict attention to meeting the company's established quality standards and the company understands their production requirements, you can factor that into the product."

Products that are mature in their product cycle and based on well-evolved technologies—passive loudspeakers and some types of microphones come to mind, as well as simple analog mixers and power amps—can now be considered stable components within a highly competitive marketplace. Their implied commodity status means that they are capable of being produced by a large number of companies, and the result is a large, highly competitive market in which unit costs can be dramatically reduced. The value for money offered by these products can be outstanding.

"It's an old adage, but 'know your customer' applies now more than ever before," Korthals says. "Manufacturers must understand the sensibilities of the market and the end-user. The brand name creates an expectation, and inferior—but maybe cheaper—products can easily tarnish that expectation. Having established a premium brand, it would be unfortunate to weaken that image with inferior, 'me too' products."

"For us, the key to success is a combination of technical innovation and manufacturing efficiency," JBL's Gander adds. "We perform a lot of pure research on the JBL campus

The New Model of Manufacturing

[Northridge, Calif.] that might not have any immediate commercial applications, but which helps keep us ahead of the innovation curve. We also have a worldwide support network for our almost 60-year-old company, as well as high connectivity with other Harman brands via our new HiQnet command protocol. The quality of experience that we deliver is key to understanding why JBL products might cost more than the competition, but offer far stronger user commitment."

Where to Buy, How to Buy

Remember when mixers, tape machines, microphones, monitors and outboard gear were purchased through dealers supported by regional manufacturers' reps? And high-capital items came factory-direct? Well, with the lower cost of entry brought on by DAWs and the commoditization of peripherals, most engineers are just as likely to head to a superstore or purchase pro products online. The specialty pro audio dealer hasn't altogether disappeared, but it is harder to find. "Unfortunately, if you're not available at Guitar Center—or through its [Internet e-business portal] Musician's Friend—you are not in the pro audio business!" says Wayne Freeman, director of sales and marketing at Marshall Electronics.

"Pro audio users make purchases based on a product's applicability to the planned application," says David Angress, executive VP of Guitar Center and GC Pro. "Key factors are reliability and dependability, in addition to the bottom-line price. GC Pro follows a business-to-business modality that you will not find at a conventional retail store.

"Our account managers work from 15 locations [within Guitar Center stores] in major metropolitan areas and help customers stay up-to-date on new products, upgrades and compatibility issues," he adds. "And we can leverage Guitar Center's bulk-buying power, inventory and national reach to offer products at very competitive prices."

Today's customer is absolutely looking for lower prices, which tends to favor the bulk purchaser. "The larger outlets do offer stronger buying power from manufacturers, which cannot be matched by mom-and-pop stores," says Dave Malekpour, head of Professional Audio Design.

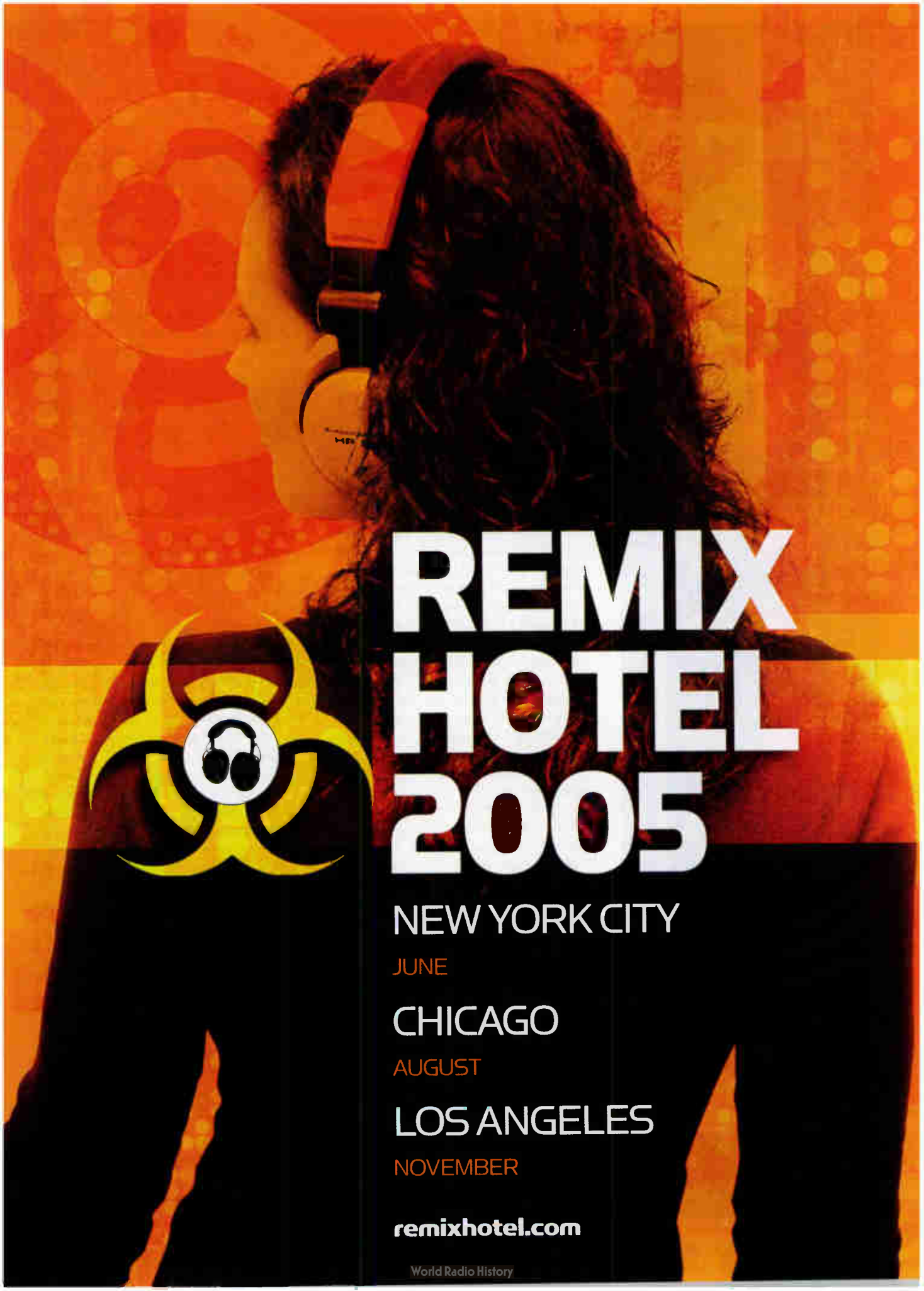
It is unusual for a dealer to also serve as a distributor, but Malekpour sees user advantages in his PAD dealership co-existing with AXI, which distributes six lines, including the in-house–designed and manufactured Resolution Series. "But you cannot mass-market high-end, hand-built products without support," Malekpour stresses. "We recognize the fact that today's market needs real service engineers on call to demonstrate the products and offer a higher level of support before, during and after the sale."

Ken Berger, senior VP of marketing at Loud Technologies, agrees. "The MI market will accept a reasonably technical product just so long as we have phone support for music store customers. But EAW customers have entirely different needs, including application support before a sale. We use retail dealers for the Mackie line of analog/digital mixers, loudspeakers and accessories."

Mackie/Loud, with its range of brands across all price points, takes advantage of all sales avenues. Cakewalk, meanwhile, takes it even further. According to marketing director Carl Jacobson, Cakewalk's economies come from broad distribution via bricks-and-mortar locations, including Guitar Center and Sam Ash; distribution agreements with Roland and Edirol; and online upgrades for existing customers. "We do factor in free online and telephone technical help—an essential commitment for the broad range of customers we target," Berger says.

And then there are manufacturers that employ a more personal, direct touch. "We focus more on boutique music stores and knowledgeable dealers that understand the principles of digital audio," says Apogee director of sales Max Gutnik. "The market needs evangelists to explain the difference between converter brands—the quality advantage—and educate the user on how to best use our products. The more a customer knows about sound quality, the more they will tend to buy an Apogee product."

The choice of technology might need to also be seen in a wider perspective. As Fletcher, a high-profile consultant with Boston-based boutique dealer Mercenary Audio, advises, "The first thing we ask our customers is, 'What are your priorities/goals?' And, 'Where is the sense of aesthetic for the project?' Then hopefully advise them on choices of appropriate hardware. Our product line is unusual—all the gear we sell has 'personality'—but we won't sell a product if we don't think it's the best tool in its weight class." —*Mel Lambert*



The New Model of Manufacturing

JBL's infrastructure is complex and expensive to fund. "We have a number of areas on our campus that represent a substantial financial investment," adds Peter Chaikin, JBL director of recording and broadcast products, "including four anechoic chambers and a computer-controlled 'Speaker Shuffler' that we can use to perform double-blind A-B testing of prototypes and production samples. All of that investment is reflected in the quality of our products. We offer products that extend from the hobbyist through midrange to high-end systems [that] are very cost-competitive in terms of performance and features for the price."

Loud Technology, with its Mackie, EAW and Tapco divisions, straddles a number of price ranges with similar products. "In terms of branding, we position EAW as a very high-end brand [of live performance and installed sound loudspeakers, amps and processors], Mackie as a very high-value supplier of production hardware with a focus on physical reliability and dependability and Tapco as our entry-level line of high-value MI products," says Ken Berger, senior VP of marketing. "Because of lower manufacturing costs, the majority of our products are made in Asia. We have found that quality standards have gone up, not down. We have partnered with [Chinese] companies that fabricate just our products. That way, we can maintain high-build qualities that meet our sonic standards. We strive for quality at every level."

Digidesign has set many quality benchmarks for its Pro Tools Series DAW software, not to mention the new ICON. "The primary reason for offering Pro Tools|HD and its companion I/Os was to dramatically increase the price:performance curve by providing the highest end-to-end audio quality at the most affordable price," says Wendy Abowd, Pro Tools product line director. "It shouldn't be forgotten that there is quite a bit more to a premium-quality converter system than just the ADC or DAC chip. The power supply, clock and audio circuitry are critical. Our product quality also includes the reliability and support that we offer. Part of our brand equity is also recognizing our existing customers' investment. To help soften the upgrade cost [to Pro Tools|HD], we implemented a new hardware exchange program, something we've done since 1996. We also invest a lot of time in our third-party plug-in developer program."

Apple believes in a tiered product offering, with brand quality and support enabling potential buyers to start small and upgrade as their needs develop. "For the last 14 months, we have been shipping GarageBand with every new Macintosh," explains Kirk Paulsen, senior director of pro application marketing. "GarageBand uses the same basic DSP engine as our Logic Series 7 DAWs, so customers can take early projects and make use of the latter's enhanced features." Brand value comes from both the high-quality GarageBand samples—the new Steinway piano files run to 2 GB each—and the upward mobility available to a Logic Express customer, who can upgrade to Logic Pro for the price differential.

Max Gutnik, Apogee Electronics' director of sales, says that one of the firm's biggest challenges is to develop products that can reach into the project studio market without compromising quality. "We have a good reputation for offering expensive, high-end A-to-D and D-to-A converters," he says. "We need to maintain that brand equity for price-conscious segments."

One way is to create innovative designs that lower the cost without compromising sound and build quality. For example, Apogee has designed a new Synchronous Switching PSU for all of its latest converters. Not only does such a unit offer better transient response and efficiency than a traditional linear power supply, Gutnik claims, but the cost is around 75 percent less. "Also, because the supply produces less heat, we can package it into a compact, 1U chassis, without the need for fans," he says.

Cost efficiencies can come from a number of areas. E-mu Systems offers software versions of its MI products, plus PCI- and PCMCIA-based sound cards that run them, and can take advantage of its ownership by Creative Labs. "Since Creative [Labs] is probably the world's largest manufacturer of sound cards, computer audio accessories and similar consumer hardware," explains Derk Hagedorn, E-mu marketing manager, "we can procure components at lower prices than the competition. For example, our 1820M digital audio system uses the same 24/192 A-to-D converter [ICs] as [Digidesign's] Pro Tools|HD 192 I/O interface, but sells for far less."

Within the highly subjective microphone market, Marshall Electronics' MXL range of low-cost models is made in Asia and has earned a loyal following from producers

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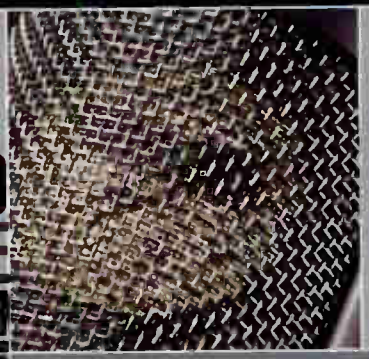

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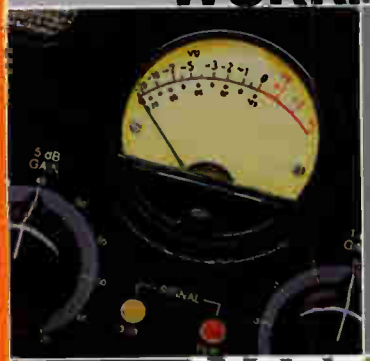

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The New Model of Manufacturing

and engineers. "Our users tell us that they sound as good as German-made microphones that cost 10 times as much," says Wayne Freeman, director of sales and marketing for Marshall. Freeman also considers the retail look and feel of a lower-cost item to be paramount. "Good packaging is vital," he says. "Customers expect a certain level of design that confirms their sales purchase. We maintain high-quality standards from our supplier."

HARDWARE MEETS SOFTWARE

Hybrid hardware/software solutions present a unique challenge. While the fabrication of conventional hardware-based systems is normally labor-intensive, software applications require more ongoing R&D and updates, but are cheap to manufacture and package. Living in a hybrid market sector can be complicated.

Until recently, Eventide had been a hardware-based company selling audio processors to recording and production facilities through select dealers. Introducing TDM plug-ins for Pro Tools two years ago, the company had to ensure that the brand would be relevant to its new offerings. "We made sure that the plug-ins carry the same audio quality as our processors, but with an appropriate price:performance value," says Ray Maxwell, Eventide's VP of sales and marketing. "By developing the software in-house and designing and printing the packaging using local sources, we can maintain quality."

A recent marketing ploy comprises Eventide's Anthology bundling of all nine TDM plug-ins. "Individually, these plug-ins would sell for $2,875," Maxwell says, "but we discount that to $1,195 retail, which translates to a street price of under $1,000. Now, dealers can include Anthology with each Pro Tools sale. This strategy grows our install base."

And E-mu believes that performance speed is a major selling advantage. "We offer a hybrid solution and lock the software instruments to our hardware," explains Hagedorn. "To ensure that our instruments run as fast as possible, we add custom ASICs that accelerate performance and can provide zero-latency monitoring, which cannot be done natively."

"For the majority of pro audio products," Digidesign's Abowd says, "the price: performance ratio will continue to fall; users will continue to expect more for

less. It's essential that we clearly tell each customer how our new offerings and features can increase their productivity and creativity. We are innovating and improving price:performance all the time, but we need to recognize that our professional customers need to integrate software and hardware changes in discrete steps. Because production facilities and project facilities need stability—they cannot afford to upgrade continuously—the timing of our updates and upgrades is very important."

Cakewalk's SONAR 4 digital audio workstation software was designed specifically to run on a number of Windows-compatible platforms. "By remaining totally hardware-independent," says marketing director Carl Jacobson, "we can leverage customer interest with our integration of [ASIO-compliant] Pro Tools hardware, as well as OMFI file-format support and preset QuicKey macro commands. This is a key issue for users with significant hardware investments who want in on what our software delivers."

"Our branding is based on a combination of 'analog ears and digital minds,'" explains Matt Ward, president of Universal Audio, a company that straddles both markets and offers the UAD-1 DSP card platform for native-based DAWs. "We emphasize that high-quality products do not have to be expensive. Traditionally, the average price for one of our analog products has been around $2,000, but recently, we have leveraged our reputation for high sound quality into a range of lower-cost systems that help us move into broader markets.

"At AES 2004, we introduced the LA-610: a 'channel strip' product with a single-channel mic preamp and an LA2-like compressor for $1,749, which translates to a street price of around $1,400. We have reduced some features but not sound nor build quality. We looked at the channel strip market and realized that there was nothing in the price range we were targeting, but that target price had to be based on an enhanced sales quantity to recover our investment in R&D and manufacturing."

SOFTWARE MINDSET

With the majority of audio production migrating to workstations and integrated systems, the quality of application features and functions becomes arguably more important than the host hardware. Costs cover a broad spectrum, with most DAWs shipping with onboard and third-party plug-in bundles.

Waves started life 12 years ago as essentially the first third-party plug-in manufacturer; it now leads the market. "When developing new plug-ins," says Garrett Soden, director of pro audio marketing at Waves, "we research new opportunities; we are not a 'me too' company. Our pricing reflects the fact that we look for different solutions that do something new and useful. Quality for us is the driving force: sonic quality, of course, but also the quality of the user interfaces and the quality of our software code."

"Our perceived value for cost as a software vendor," reflects Cakewalk's Jacobson, "is through the affordability of our upgrades, our commitment to full customer service and the fact that we ship stable products on time and with feature sets that our customers expect. We aim to communicate this value proposition through consistency of delivery in our messaging—and targeted advertising for different segments."

Cakewalk's recent announcement of x64 Technology Preview—a native 64-bit version of SONAR 4 Producer Edition—demonstrates that commitment to leading-edge developments. As Steve Pitzel from Intel's Media Segment Strategy explains, "We are working closely with companies like Cakewalk to develop software that runs on our Pentium 4 processor with 64-bit extensions. We have also developed Software Developer Toolkits and other programming aids to help DAW manufacturers take advantage of the enhanced sonic quality and sample size benefits [up to 1 Terabyte] available with native 64-bit Intel processing."

Because recording and production tools can now be manufactured more efficiently and cheaply, there is a temptation to equate affordability with reduced quality of construction and diminished audio quality. Nothing could be further from the truth. Quality depends on a number of factors, ranging from new manufacturing efficiencies to radical changes in the underlying technology available to today's budget-conscious generation of producers, engineers and musicians. ■

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

Technology Breakthroughs In Concert Sound

These *Are* the Good Old Days

Many of today's high-tech products have complicated our lives and have made decisions regarding inventory an endless nightmare of guesswork, yet it's easy to forget how stone-age we were not so long ago. During the past 10 years, concert sound technology has dramatically improved. To quote *The Postman*, "Stuff's getting better." A major sound company owner recently remarked, "The equipment is so good today that it really comes down to people who can run it to its potential." Major advancements in concert sound quality in the past decade include line arrays, computer-based acoustical analysis, network protocols, DSP system control, in-ear monitors, digital mixers and all categories of wireless from mics and receivers to tablet controllers.

Line arrays are last year's Hummer. Originally perceived as enormously cool, line arrays offer obvious benefits in many venues but don't translate for every trip. Meanwhile, computer applications—such as control of DSP and amps, array wizards, predictive software and measurement programs—help fine-tune systems to where they rival the sonic quality of studio monitors, allowing engineers to transparently communicate mixes to near perfection. In-ear monitors have revolutionized stage monitoring, and wireless is a necessity. The digital live console is the equivalent of next year's hybrid car: As our world changes and the available models improve, the benefits become clearer. The upshot of a decade of progress? Often, it's now easier to succeed with arena or shed shows than in smaller, traditional venues.

Any discussion of dramatic technological improvements would be incomplete without a grateful acknowledgement to an array of pioneers such as Sterne and Perkins; Forsythe and Meyer; Heil and Adams; Henricksen and Button; Gamble and Brooke; Martin and Andrews; Yuill-Thornton and DeLoria; McCarthy and Berkow; Pearson and Borthwick; Harmala and Olsen; and Garcia and Harvey, to name a few.

LINE 'EM UP

During the past decade, we've seen heated reaction to L-Acoustics' V-DOSC modular line array speaker system, with other manufacturers rushing to imitate them, criticize them or both. Many forget that Apogee was the first to introduce a modular line array cabinet. Or was it Clair Bros.? Engineers for touring and large-scale events responded to line array products for their benefits: smaller systems producing more coherent sound and projecting further, often eliminating the need for delay clusters. Widely recognized for superior sound quality, line array designs are extremely popular, even where venue size and geometry dictate that conventional systems might work better. Demand for line arrays in smaller venues has spawned a constant stream of generational compact designs that are smaller, lighter and can bend vertically at greater angles. Manufacturers from all points of the compass have had good results.

Well-designed systems, when used properly—ample cabinets with correct array designs in appropriate installations—will provide superior sound. Without getting into all of the physics, there's not much about line array behavior that really conforms to the theory behind line sources. A line array's height determines the lowest frequency where it still maintains pattern control. It takes a 15-foot array to get good control to 300 Hz. A four-box array may only provide pattern control above 800 Hz. The 3dB instead of 6dB attenuation per doubling of distance claimed for line sources is not found below these frequencies, with a possible result being high frequencies ripping to the back of the venue (where the front-of-house console is often located). When the lows are pushed to keep up, there's a puddle of mud onstage. In some cases, a smaller number of well-designed modular speakers in a traditional array may be a better solution.

BOX OF PLENTY

Typical speaker system design has grown from straightforward left/right arrays with delay speakers used for only the largest outdoor gigs to a fairly complex set of zones, similar to traditional theatrical designs. In addition to delay or under-balcony speakers, small front-of-stage fills and two-way front-fills near the subwoofers at each side of the stage are normal. It's therefore common to employ several DSP processors, originally meant as stereo three-way crossovers, to be used as 2x6 matrix processors in the FOH drive rack to optimize multizone systems by adjusting delay and EQ. Further development of this zone control in larger systems includes split processing of arrays into two and three sections, subtly equalized and gain-shaded to better accomplish consistent

By Mark Frink

PHOTO: STEVE JENNINGS

coverage throughout the listening area.

These past 10 years saw the rise of DSP products for speaker optimization. Remember when a "drive rack" was a rack of analog gear that processed signal feeds to the amps? A dozen years ago, Yamaha's D2040 defined the DSP product class—and the company is still selling them. Suddenly, not only gain and crossover could be secured, but features such as signal limiting, time alignment, parametric equalization and precise EQ for constant directivity horns could be locked down, significantly increasing a speaker designer's ability to create a great-sounding turnkey system.

High-end concert rigs are attended by system engineers who can now use a combination of computer applications and DSP presets to provide a system that needs little additional adjustment by the band's mix engineer. The traditional graphic EQ placed across the FOH mix bus is virtually obsolete, though it's still comforting to reach over and grab a frequency slider or two.

DSP control over a network is increasingly common. TC Electronic's EQ Stations connect over Ethernet, and Lake Technology's processors can only be adjusted from a networked computer or tablet, as they offer little front panel control. "WiFi" technology borrowed from consumer computer networking has made wireless remote control affordable with off-the-shelf solutions, making it possible for the engineer to tweak each zone of a large system while standing in its coverage and listening to it. Those two-person, walkie-talkie adjustments are a thing of the past.

One benefit of the need for quality system adjustment? With FOH engineers often recording gigs while mixing a show, proper adjustment of the system is key to getting board tapes that translate well on playback. And with sales of live concert product—whether as immediate post-show or later releases—becoming more common, the responsibilities and skill of the house mixer is increasingly more important.

THE SOFTWARE SIDE

Ten years ago, SIA Software's Smaart software put powerful speaker measurement within the reach of anyone with a laptop. Device Control is a great feature that allows users to control outboard DSP from within Smaart while taking measurements. SIA Software has also created the SmaartLive Controller, which allows SmaartLive measurements to be seen from within the Lake Controller application.

During the years, we've also seen the evolution of Meyer's SIM audio analysis platform, the high-end product for speaker measurement and optimization that pre-dates Smaart. The newest version, SIM3, is joined by Galileo, a 6x16 DSP processor that interfaces with SIM3 to integrate system signals with room mics for FFT measurement, plus an Ethernet port for remote control and monitoring of Meyer self-powered speakers.

If the console is digital, then it's easy to see why digital I/O for outboard DSP is the new standard. In the coming digital convergence, signals are converted to digital once at the mic preamps onstage and stay that way through all mixing and processing until they get to amplifier inputs. The next evolution is for speaker DSP to move inside the mix engine, but until digital console technology becomes widespread, outboard DSP will remain a crucial product category.

JBL's VerTec speakers have entered the digital convergence with the DrivePack, a piggyback Crown amp module with integral dbx DSP that networks using Harman Professional's HiQnet network for control and monitoring. Digital pioneer Stanley Miller (Neil Diamond's FOH engineer) had CobraNet PIP cards installed in 70 Crown MA-5000 amps to provide stock delay, crossover and EQ for the 2001 Three Cord Opera tour's VerTec speakers. On the 2002 Peter Gabriel *Up* tour, AudioTek chief engineer Scott Harmala similarly implemented a digital drive, using an XTA 226 in the drive rack to send the signal from the FOH Yamaha PM1D to QSC amp racks over RAVE via fiber optics. In both cases, digital I/O for the DSP made it possible.

THE GOLDEN AGE OF WIRELESS

HDTV's disappointing adoption by consumers is an omen of continued uncertainty for entertainment wireless users. In most areas, the transition to DTV will not meet its original end-of-2006 goal and both analog and digital

transmissions will continue, ensuring increased congestion in the largest cities. Operators have been able to fight back with improved antenna combiners and superior designs (like the helical). Manufacturers have added intelligence features to their newest products, such as built-in frequency scanning and remote battery monitoring. If you're on a five-year plan, now might be the best time to upgrade as the status quo is likely to continue until 2010, when DTV acceptance by consumers might have saturated the market enough that analog broadcasts in some areas finally cease. For years, the marketing come-on was "sounds just like a wired mic," but today's improvements to companding circuits and front-end RF design have actually started to lend truth to these comparisons for some of the newer products.

In-ear monitors have revolutionized stage monitoring and, in the process, extended older performers' careers by years. IEMs give each musician a precisely customized headphone mix while quieting the roar of wedge-based competitive monitoring. They've also created the need for higher levels of performance from monitor engineers who can no longer "set it and forget it," but now must make a record every night, with a special mix for each musician. As an additional bonus, IEM usage has reduced onstage volume levels, thus simplifying the job of the FOH "make CD sales from my board mixes" engineer.

MOORE'S LAW AND MORE

Though digital live consoles are not for everyone (yet), they're indispensable for TV awards shows, a boon to multi-act festival tours and a friend to Broadway audio mixers. They're also becoming favored for other applications as more engineers learn to get around on a new control surface. As our industry changes, additional benefits of digital desks become clearer: Beyond repeatable mixes, libraries for all types of settings and the Holy Grail of being able to restore the desk with the push of a button, there's also new products like personal monitor control for musicians and plug-ins for live sound. In fact, at last month's Musikmesse show, Drawmer unveiled Tour Buss, the first plug-ins designed specifically for sound reinforcement: a dynamics suite for Digidesign's VENUE console.

Multitrack technology is becoming a more common part of the live milieu. Once confined mostly to racks of DA-88s or a PCM-3348 capturing direct console outputs at the house position for a live CD or DVD release, robust high-resolution disk recorders—ranging from a full Pro Tools rig to MOTU's Traveler FireWire interface(s) feeding a laptop or Tascam's new rack-mount X-48 48-track deck—open new possibilities in the live environment. With the continued fall in digital storage costs (now less than $1/GB) and inexpensive multitracking options, it's almost obligatory to feed a split of the inputs to a hard disk recorder so that the show can be played back without the band, allowing the engineer to tweak both the system and each scene of a performance in the absence of the musicians. This "virtual band" approach makes practicing the show's mix each day before the band arrives a reality.

Don't get me wrong, I miss a few of those great old products, but mostly, it's the music that makes the show. ■

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By Sarah Benzuly

Bruce Jackson

A Career of Live Sound Firsts

When Bruce Jackson got his start in the live sound industry in the '60s, sound reinforcement wasn't much more than an idea—consoles were pretty basic, electronics (onboard and outboard) were limited and line arrays didn't exist. Since then, Jackson has devoted his life to improving concert sound quality—as an inventor, a soundman and a music lover.

At an early age, Jackson was intrigued with electronics and sound. In his first SR venture, then 18-year-old Jackson (along with partner Phil Storey) co-created JANDS in his native Australia, a lighting and sound rental firm with an electronics design and manufacturing division. There, Jackson helped build column P.A.s, guitar amps, power amps and simple mixers. "We even made the printed circuit boards," Jackson recalls. "It was a great experience." Not content to rest on his laurels, three years later, Jackson sold his share in JANDS, traveled to the U.S. and joined a young Clair Bros. Audio.

While at Clair, Jackson mixed for many Elvis Presley tours, designing and building equipment during his downtime. "Being both a mixer and designer, I was able to design in features that improved the way things worked for me," Jackson says. With original ideas and a great crew, Jackson helped develop the first hanging sound systems (not for sound quality but to sell the maximum number of unobstructed seats) and a sophisticated mixing console, which folded out of the case and was the first to use parametric EQ. This board became a Clair mainstay for more than 12 years.

After the passing of The King, Jackson hooked up with Bruce Springsteen from 1978 to 1988. This proved to be a fortuitous partnership, as Springsteen supported Jackson's quest for quality. "I worked with his musicians, helping with equipment choices and implementation," Jackson remembers. "I hacked into Bruce's favorite guitar to install special waterproof pickup selector switches and an electronic buffer to drive his 100-foot-long guitar cord so there were highs left at the end. In places with poor acoustics, Bruce supported hanging curtains and other acoustic improvements most acts would never consider." Jackson "founded" other companies in-between tours, including promoting and setting up distribution for Fairlight's first music sampler—helping launch the formidable company.

Jackson's next venture, creating Apogee Electronics, was founded on the release of the CD in Japan. Jackson had received a CD player as a gift on a Japanese tour and ran around collecting any CDs he could find. Disappointed with the sound quality, Jackson wanted to find out how he could optimize digital audio, focusing on the analog filters that are part of the AD/DA process. Under his leadership Apogee was

the first to create Soft Limit, low-jitter clocks, UV22 dither, reference-standard AD/DAs and more.

In the early '90s, Jackson began working with legendary performer Barbra Streisand, who, at that time, hadn't toured in more than 30 years. But while on tour, Jackson missed "playing with digital audio" and so suggested to Clair Bros. that they work together. "The next project was to develop the ultimate processor for live sound," he says. "I pulled my friends Dave [McGrath, founder of Lake Technology] and Ed Meitner into a partnership with Clair Bros. Audio we named Clair Technologies LLC. We wanted to be able to create any-shaped EQ curve with non-minimum phase response. I always felt that the basic parametric EQ with frequency, shape and boost/cut controls was too limited: the shape of the classic parametric EQ spills over into neighboring areas you don't want to affect, regardless of chosen shape; and why should you be stuck with just a bell curve when it would be great to EQ whole areas of the spectrum as one?"

And the Clair iO processor was born. "We created entirely new DSP technology and a human interface that does 'all of the above' and lots more. We took great care with converter sound quality using tweako tricks from Ed and me." Lake Technology went public and purchased the proprietary technology from Clair LLC. (With Jackson onboard as VP of R&D—and still currently—Lake now sells the Clair iO as the Contour in addition to the new Mesa Quad EQ.)

At Lake, development has continued at a brisk pace. "It's an inspiration to watch all our different personalities work together as one to create better live sound," Jackson says. With the recent acquisition of Lake Technology by Dolby Laboratories, we can expect to see more live sound "firsts" from Jackson and his team. But for Jackson, it comes back to why he does this at all: "It seems the more you learn, the more you realize what you don't know. The more you dig, the more you find needs attention. A true perfectionist's dilemma." ■

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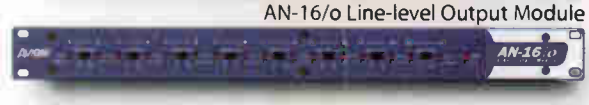

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By Rick Clark

Mark Knopfler

Best of Old and New

Artistic and production excellence has always been the standard throughout Mark Knopfler's career. From the time his old band, Dire Straits, arrived on the scene with their distinctive self-titled debut, through the 1985 worldwide success of *Brothers In Arms*, to his own series of acclaimed solo efforts, Knopfler has approached creating and recording music as if every emotionally resonant note and lyric truly mattered. As a result, his work has moved beyond pop music sensibilities into something more lasting. When Knopfler wanted to create his studio British Grove, he brought in consultant David Harries, studio manager David Stewart and longtime co-producer Chuck Ainlay to assist him. For the recording spaces, Knopfler wanted the flexibility to meet any kind of sonic need.

"Mark built the studio he's always dreamed of being able to make records in," says Ainlay, who calls British Grove "a monument to past and future technology. The studio has an API Legacy in one of the rooms and a new 96-frame Neve 88R in the other room with a bunch of older Neve-style modules. There are also two old EMI consoles: One's a very rare tube desk—like the ones you would see with George Martin and The Beatles with the big knobs—and the other's a later EMI console that *Band on the Run* was actually recorded on. They have a veteran EMI tech going through them and making them like brand new. It's amazing!"

For his part, Knopfler says he wanted British Grove to feature "the best of the old technology combining seamlessly with the best of the new. We've got a wide choice of EMT plates and other analog outboard, vintage mic preamps, compressors and equalizers, as well as all the digital stuff. I've heard just about every mixdown format, and certainly British Grove can supply any, including our great-sounding 1-inch Ampex machine. Sometimes you might want something like that for what it can bring to a recording." Knopfler adds that he prefers to record with two 16-track head stacks on linked Studer 800s and then transfer straight to Steinberg Nuendo through the Apogee 16X converters.

"The whole thing is probably analog's last great shout," Knopfler says with a laugh. "But it also incorporates the best of the latest digital technology via Steinberg Nuendo and AMD to give you unlimited possibilities in terms of recording. Of course, you can also go Pro Tools if you wish."

Concerning the AMD processors, Ainlay says, "Their setup allows us to utilize the system without being apparent. The only reason that it would be apparent would be because it's causing issues and we don't want issues—we just want to do our work, and that's what's good about it. It doesn't crash and it gives me all the speed and processing possibilities that I could ever want. I can't believe how many plug-ins I can effortlessly run. It's really brought Nuendo into the professional world in my viewpoint."

PHOTO: RICK CLARK

Knopfler chose ATC monitors for his studio. "The ATC monitors in British Grove are beautiful; this is the only studio I've been in where I'm happy to work on the big monitors alone. They're lovely at low and high level. They don't tire you at all, partly because of the design of the control room, the ATCs and the way they've been installed.

"Because there isn't yet a 'standard' for positioning of rears for 5.1, especially with music mixing, engineers can position the rear ATCs where they want with a fingertip through an ingenious rail device," he continues.

"The rear speakers are on a track that keeps the speakers equidistant," Ainlay clarifies, "so they can actually move from 110 to 160 degrees. You can have them at the ITU recommendation, all the way to like how Elliot Scheiner likes to work, which is more of a quad situation."

One of the most recent projects done at British Grove was the 5.1 remix of Dire Straits' *Brothers In Arms*, an all-digital recording that was influential in selling the public on the then-new CD format, thanks in part to Neil Dorfsman's excellent recording and mix.

"Each element was superbly recorded," says Ainlay. "For surround, it really is spectacular because you've got all these very dynamic elements and you can really pan them around and it doesn't sound out of place. It fits into the whole architecture of the recording. I'm really proud of this." An upcoming duets album with Knopfler and Emmylou Harris was also completed at British Grove.

Knopfler concludes, "A quality studio will save you time and irritation afterward—sitting in a mastering facility trying to compensate for room and recording shortcomings. People should use good studios when they possibly can. For so many projects and from so many standpoints, it's the best way to do it." ■

Rick Clark is Mix's Nashville editor.

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By Heather Johnson

Keith O. Johnson

Hi-Fi's Audio "Professor"

Traditionally, orchestral recordings don't require much in the way of equipment—an onslaught of amplifiers, compressors and digital processing would only obscure the pristine instruments and reverberant hall's sound. Engineer/audio scientist Keith O. Johnson, aka "The Professor," the secret weapon behind dozens of acclaimed albums for Reference Recordings, incorporates some of these seemingly timeless techniques into his Grammy Award–winning work. Furthermore, his hand-built equipment and audio innovations—from high-speed to high-def—have not only raised the bar for high-fidelity albums, but changed the way that we hear music.

While at Stanford University in the 1960s, Johnson created a solid-state 3-channel recorder that he used on more than 100 recordings. "It has 3.5-megahertz bias and still runs," he says. "I thought that if I could focus the magnetic field onto the tape, I could get rid of some losses that normally occurred in recording. And it worked." The unit later formed the backbone of the high-speed tape duplicators he designed in partnership with Gauss Electrophysics. "It literally revolutionized the whole field overnight," he says.

Johnson went on to contribute his knowledge to the MCA DiscoVision video disc, engineered orchestral works for the Armed Forces Radio and conceived an optical CCD scanner, the Colortek system, which removes noise from damaged motion picture soundtracks. In the 1970s, he worked with rock band Ambrosia and partnered with producer Alan Parsons to develop the Projectron, one of the first tools to incorporate expressive polyphonic sampling.

In 1976, he joined producer Tam Henderson and Marcia Martin to form Reference Recordings, launching a legacy of high-end/half-speed mastered LPs and high-definition CDs (DDD). Johnson co-invented the HDCD technology with Pflash Pflaumer, and in 1996, they formed Pacific Microsonics to introduce the concept of high-resolution audio. In 2000, Microsoft purchased Pacific Microsonics and continues to incorporate HDCD technology into its PC offerings. Johnson now consults with Microsoft; his latest project, SpeakerCorrection, uses modeled correction of speakers to improve computer sound and can be found in XP software.

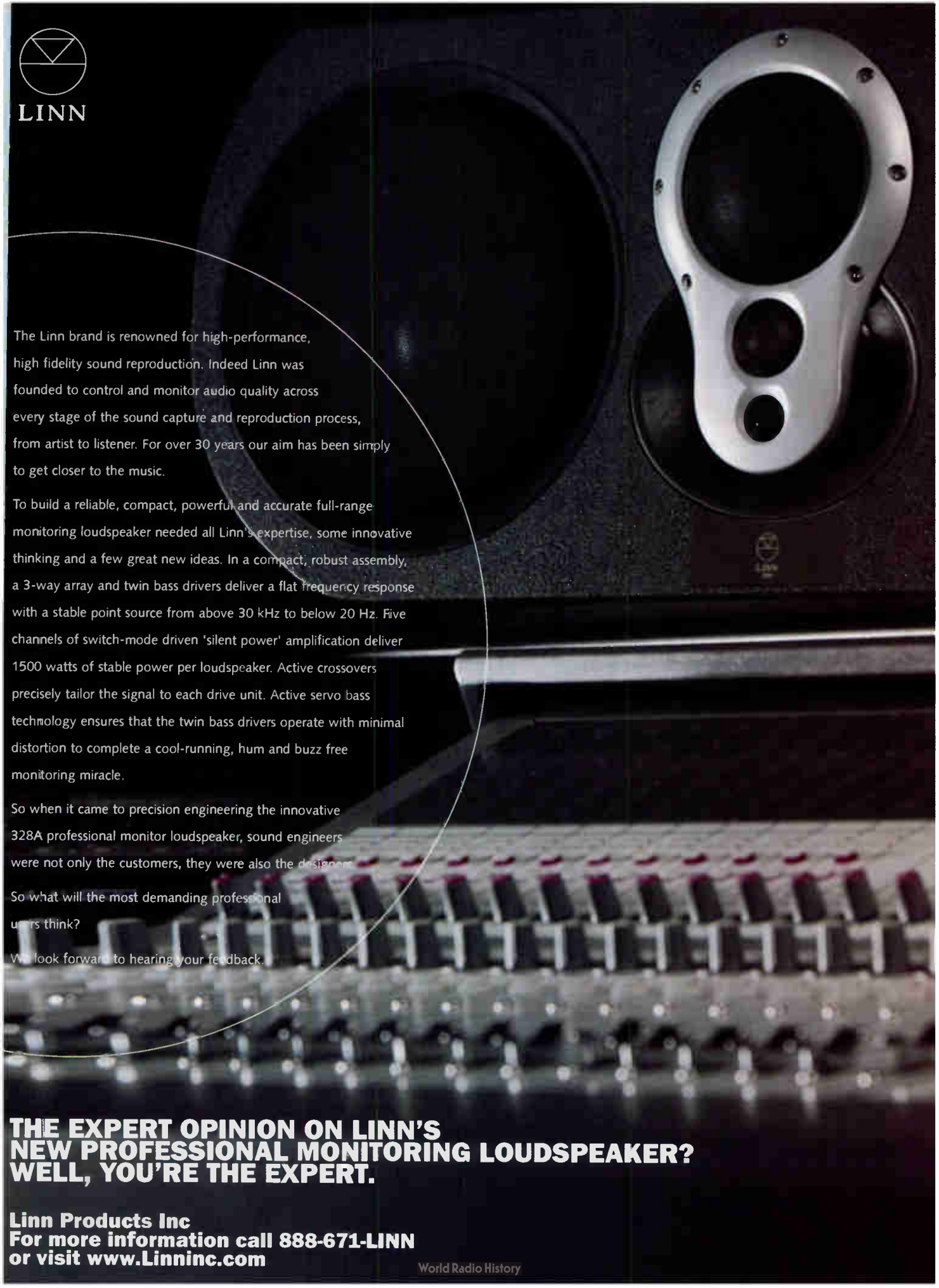
In the midst of his work as a developer, Johnson's ongoing relationship with Reference Recordings gives "The Professor" a platform with which to engineer and experiment with loudspeakers, microphones and other equipment designs. To record renowned ensembles such as the Dallas Wind Symphony, Chicago Pro Musica and the London Philharmonic, Johnson uses *some* manufactured equipment—Tascam recorders, Microsonics Model 1 and 2 HDCD processors (he's admittedly biased) and a Neumann U47 here and there—but mainly uses gear he's either custom-built or extensively modified at his shop in Pacifica, Calif. His modular console arrangement is built from passive mixer and high-voltage discrete amplifier designs; setups include a 2-channel console for main mics, an accent console to highlight instruments and a 5-channel console to process a dedicated multichannel feed. "Now there might be a workstation involved, but its only purpose is for editing and splicing," he says. "We don't have DSP to degrade the signals."

PHOTO: HEATHER JOHNSON

He models his setup after one used by longtime engineer Gordon Parry of London Decca Classical, using EQs on only four inputs, each optimized for a specific task: woodwinds, brass, voice and reverb. Mics include a pair of front omnis, a pair (or more) of semi-directional outriggers on either side, random incident omni pairs to capture hall reverb, ribbon or large-diaphragm condensers for solo instruments and a directional center group between the omnis. "The main and center group are 90 percent of what you hear," says Johnson. "But I add what I call 'time-panned stereo pair accents' to produce delays simulating inter-aural binaural listening."

He has also used his custom equipment to develop sample libraries for East-West, including the EWQL Symphonic Orchestra Series and Symphonic Choir library. As for new technology, he sees the value of added bits, resolution and features, but questions the parts and "cookbook designs" used to create newer equipment. "Circuits are becoming scrimpier and scrimpier," he says. "ICs are efficient, but performance trade-offs create sonic losses that don't always correlate to measurements. Then, we get more of less. I look for relics. It's almost impossible to duplicate the natural, transparent sound that was happening then. Our standards are restrictive. And I'm caught in the middle." ■

Assistant editor Heather Johnson isn't related to Keith, but they both belong to the KStars, a San Francisco–based running club. He's fast. She's catching up.



By Jeff Forlenza

Rudy Van Gelder

Jazz and the Art Of Technical Excellence

"Quality is what drives the work I do," Rudy Van Gelder says. "From the beginning, that's all I would think about, day and night: How could I make the recordings that I made sound better?" After 50 years of recording jazz giants and building his own equipment, Van Gelder is still determined in his quest for "the stunning reproduction of music." These days, he is busy remastering the next round of Blue Note's Rudy Van Gelder Series re-issues, which will include 24-bit digital remasters of classic albums by Art Blakey, McCoy Tyner, Jimmy Smith and others.

Blue Note Records founder Alfred Lion and Van Gelder first met when musician Gil Melle introduced them in 1953. Lion was impressed with the sonic clarity of Van Gelder's recordings, and he made sure that Van Gelder recorded most Blue Note sessions from 1953 to 1967. The signature "Blue Note Sound" is really a culmination of Lion's devotion to hard bop jazz, Van Gelder's meticulous pursuit of accurately capturing that improvisatory music and the remarkable playing of the musicians on those sessions from Van Gelder's first studio in Hackensack, N.J. These days, Van Gelder operates from a state-of-the-art digital facility in Englewood Cliffs, N.J., where he is working with re-issue producer Michael Cuscuna on the RVG Series.

"It's been great," Van Gelder says of the project. "I am in control of the process, but Michael has to approve each album. The project started in 1998, initiated by Toshiba-EMI in Japan, and I'm currently working on a 2005 U.S. release. Since the advent of the CD, other people had been making the transfers and masters of the sessions that I recorded for Blue Note, but there was something lacking. It's not a question of high or low quality; it's just my approach to the music. Since I was there and I still have a strong recollection of what the musicians and producers were trying to do, I feel I can carry that through to the mastering process. I would like to emphasize it's not a question of good or bad, it's just that I'm the messenger."

Van Gelder started recording musicians in his parents' living room in Hackensack as a hobby. Overwhelming demand from musicians and producers forced him to quit his day job as an optometrist and record music full time. Before he started making his own records, Van Gelder simply wanted to re-create the audio experience of live music. His love for jazz and hearing it played back accurately led him to audiophile equipment stores.

"When I first started, I was interested in improving the quality of the playback equipment I had," Van Gelder explains. "I never was really happy with what I heard. I always assumed the records made by the big companies sounded better than what I could reproduce. So that's how I got interested in the process. I acquired everything I could to play back audio: speakers, turntables, amplifiers.

"When I started making records, there was no quality recording equipment available to me," he continues. "I had to build my own mixer. The only people who had quality equipment were the big companies. They were building their own electronics. Larry Scully of Bridgeport, Connecticut, spent his life trying to improve the quality of his recording lathe. There was a time when all the big labels used his machine. The whole industry was based on his effort to design and build a high-quality recording lathe. It was my dream to own a Scully lathe."

These days, Van Gelder is also an enthusiastic supporter of digital audio and an avid learner of new gear and software. "I believe today's equipment is fantastic," he says. "I wouldn't want to face a session without the editing capabilities of digital. There are still maintenance and reliability issues. Tech support helps. From my viewpoint, the essential difference between analog and digital is that analog does not like to be copied," Van Gelder continues. "After the original is recorded, edited and mixed, then what? You need a digital delivery medium. In that sense, the final product can be much higher quality than in the '70s."

Overall, Van Gelder is excited about the level of quality of current audio gear, but he doesn't believe the marketing hype about the value of today's variety of delivery options. "Quality is vastly improved in the current professional production phase," Van Gelder says. "Quality in the home playback phase is questionable: home theater with dinky so-called satellite speakers and subwoofers, ads saying you can get surround sound in your laptop computer, MP3s, lossy compression, music through your cell phone, streaming music on the Internet—come on." ■

Jeff Forlenza is a freelance writer based in San Francisco.

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Striving for Greatness at the Grammy Awards

By Maureen Droney

PHOTO: ADY GIL

Most awards shows just need to look good. But nobody really notices the sound, unless, of course, it completely cuts out during some celebrity acceptance speech. Even most music awards shows are more about outfits and bling than they are about actual musical performances. The Grammy® Awards telecast is different. It's the premier annual showcase for the recording industry, and those involved take sound very seriously.

They also never play it safe. It's broadcast in mono, stereo, Dolby Pro Logic II and discrete 5.1 Dolby Digital to a total of, in 2005, 18.8 million viewers. Held at Los Angeles' Staples Center, the 47th Annual Grammy Awards featured three-plus stages, 20 performances by 17 artists and an opening sequence that used approximately 120 channels of audio for five acts performing across three stages. Dealing with all of this took around 450 microphones, nine mixers at eight digital mixing consoles and more than 60 audio technicians, along with input from some of the recording industry's finest. For more information on the house sound, visit www.mixonline.com.

STEREO PLUS SURROUND

The 2003 Grammys was the first awards show to be produced in high-def with 5.1; this year, it was about fine-tuning the process. Main 5.1 music mixing and stereo music mixing was a team effort by John Harris and Jay Vicari in Effanel's L7 truck using a Neve Capricorn console augmented by a Yamaha DM2000. Each act got 60 minutes of rehearsal (not including dress rehearsal) with two to three passes of each performance.

"We record the rehearsals, listening in stereo, while the cameras are rolling," Harris explains. "All of our compression and EQ are on the monitor side. When the cameras are done, we'll play back tracks, establish the stereo mix and flip on the surround. The Capricorn runs both simultaneously very nicely. The way you assign follows pans, et cetera, so there isn't a big sonic jump between the formats."

The stereo mix is also the one that's monitored during the show. "Our surrounds are built so that any moves we make in stereo will map in 5.1," adds Vicari. "We're constantly monitoring back and forth to make sure that both mixes are compatible."

Only onboard Capricorn EQ was used, notes Vicari, who prefers to avoid the phase coherency issues that can result from multiple inserts of analog outboard devices. Other outboard was minimal and comprised Empirical Labs Distressors on vocals, TC Electronic System 6000s and Lexicon 960 reverbs.

"The opening number was, obviously, one of the biggest challenges of this year's show," says Harris, "with 120 tracks of recording and mixing—and the crossfading between them—going on basically at the same time. Every input we had was used.

"The cooperation that goes into this kind of audio production is really unparalleled," he continues, "from the A2s onstage to the crew from Dolby, who provide us with hardware and tune all the listening environments so we're all on the same page. There's no room for error; if one department were to fail, the whole thing would go down."

AUDIENCE 6.0

New to the 2005 show was the addition of a separate mix station to record audience reaction. Aiming to enhance the broadcast experience by capturing the excitement of the live audience, mixer Klaus Landsberg used a Yamaha DM2000 console and a combination of 32 Neumann, Sennheiser and AKG mics, along with a 6-channel Holophone microphone situated over the front-of-house console area to create six discrete audience stems that were then sent to the overall 5.1 mix.

"The audience is the one thing that can't be rehearsed," explains Hank Neuberger of the NARAS Producers & Engineers Wing advisory council. "Typically during the show, production mixer Ed Greene doesn't have time to balance the audience mics so as to create a great atmosphere. It doesn't help that, traditionally, our 'industry' crowd doesn't clap very much. That makes it difficult to convey the excitement of the incredible lineup of talent."

A total of 22 Neumann KM84 mics, which Landsberg calls his favorite audience mic, provided the bulk of the coverage. "They're a very rich-sounding mic, and they get a lot of dynamics without overloading on the front end," he explains. Additionally, four Sennheiser 416s, four AKG C547s across the front of the stage and two TLM 100s in the rear of the hall were used, along with 17 Aphex 1788 8-channel mic preamps: five in Landsberg's control room and 12, remote-controlled via MADI, onstage. A TC Electronic Mastering 6000 was used for multiband compression on the stems to "fatten them up and give a little control over the balance," while Cedar DNS1000 noise suppressors provided help with "shaping" the room.

MIXING FOR BROADCAST

In the All-Mobile Video truck, dubbed Resolution I, Greene—who also mixes the Oscars, the Emmys and the Macy's Thanks-

—CONTINUED ON PAGE 88

Under Pressure

Sound for ABC's *Lost*

By Maureen Droney

Consistently scoring in the Top 10 on the weekly ratings lists, the hit show *Lost* is, along with *Desperate Housewives*, a major component of ABC Television's prime-time resurgence. Developed by *Alias* creator J.J. Abrams and Damon Lindelof (*Crossing Jordan*), *Lost* is an eerie offspring of *Survivor* and *Twin Peaks* that's both sucking in viewers and awards, including two 2005 MPSE (Motion Picture Sound Editors) Awards for Sound Editing.

The plot? Action, quirky characters and interpersonal conflict coalesce when a plane crash strands 48 survivors on a tropical island. There, threatened by mysterious forces, they have to learn to work with each other to survive.

On location for Lost, with the plane crash that started it all

PHOTO: SCOTT WEBER

Executive producer Bryan Burk (left) and co-producer Ra'uf Glasgow

Wait a minute. That sounds kinda like what's been happening with the sound crew: The production mixers in Hawaii—recording in muddy jungles and on a beach next to roaring surf, a highway and an airport—and the multiple editors and mixers back in L.A. who, ensconced on a computer-filled dub stage, turn out feature film–quality sound on an abbreviated TV schedule.

"Because there are so many flashback sequences, the show goes everywhere: from the outback of Australia to a Kmart parking lot in Los Angeles," says sound supervisor Trevor Jolly, sitting behind his Pro Tools screen at Buena Vista Post Production Room 6, the Burbank, Calif., dub stage where, during a three-day period, *Lost*'s weekly episodes are mixed. "There's always a new location to deal with. We never know where it will be and it's mostly all exteriors; no controlled interior sets for us!"

The music department, headed by composer Michael Giacchino (*The Incredibles*), has the same frantic time frame. Notoriously tight scoring schedules are the norm for a TV series. What's not the norm is using live orchestra. On the day I visited Room 6, the crew was working with orchestral music recorded the day before at Hollywood's Capitol Studios. "The show's creators are impressively knowledgeable about sound and music," says music editor Mike Andreas. "They really care about having live orchestra, which they also use on *Alias*. They understand the difference it makes. It's been 10 years since the live TV score went away; now, these guys are making it happen every week."

Ultimately, six stereo music pairs end up on the dub stage: generally one each for orchestra, harp, live percussion, synthesizer keyboards, percussion and "scary noises"; end credits and main title music; and source cues and "big boomy stuff." The stereo score is adapted for 5.1 using Dolby's Surround Tools plug-in, as are the backgrounds.

Music, monsters, waves, jungles, detailed flashback backgrounds and 40 to 45 scenes per hour-long episode—no doubt about it, *Lost* is acoustically dense.

L to R: Thomas de Gorter, supervising sound editor; Stephen Davis, supervising music editor; Scott Weber, dialog and music mixer; Trevor Jolly, sound supervisor; re-recording mixer Frank Marrone; Marc Glassman, EFX editor; Mike Andreas, music editor

"We use everything we get from Foley, ADR, SFX and production," says SFX/Foley mixer Frank Morrone. "We're creating everything from scratch and each sound moment has a lot going on. Our SFX editor, Marc Glassman, may be the hardest-working sound editor I've worked with on a show. He's constantly updating and has a room next to the dub stage where the executive producers can audition sounds."

Production sound for *Lost* (see sidebar below) battles numerous elements that sound editors in general hate (e.g., surf), including the fact that the main beach location is adjacent to an airstrip and a highway. "My new best friend is my CEDAR DNS 2000 Pro Tools plug-in," asserts Weber. "I can automate the parameters and it's amazing for taking out rumbles, waves and, even in rain sequences, 60 to 80 percent of the noise. It's a credit to [executive producer] Bryan Burk that he wants to use as much of the production [dialog] as possible, so we spend extra time making it intelligible."

"In most cases, however, we still have to cover it with ADR," adds Jolly. "It takes quite a long time to get the dialog in shape, which is our base for everything else."

Lost sounds and looks sharp. Original footage is shot on 35 mm and the show is broadcast HD in 5.1. "Our producers, especially J.J. and Bryan Burk, really love sound," says supervising sound editor Tom de Gorter. "Back as far as the pre-production meeting for the pilot, J.J. mentioned that they'd designed specific shots just for sound—for example, in the pilot, when one of the characters runs past the downed still running, jet engine of the crashed plane."

Four Pro Tools systems—one each for dialog, music, Foley and SFX—distribute approximately 100 tracks to the AMS-Neve Logic 2 console. There's no time for predubs or submixes. Onstage, the editors and mixers can access each other's computer systems and a common network. According to de Gorter, the team strives to improve communication efficiency, using, among other tools, iChat and Instant Messaging. "It's fast, it's free, you can drag-and-drop files without compressing them," he points out about Instant Messenger, "and it doesn't choke on large files like e-mail can."

Lost's hybrid mix setup was facilitated by Buena Vista VP of post-production Gil Gagnon, who also assembled the mix team. "Normally, you get all of your sources from Pro Tools and use a Pro Tools control surface," explains Morrone. "Or you mix in the traditional way, taking your Pro Tools sources through a large-format film console. We're mixing on a digital film console, but we're using two Pro Tools systems—set up on the console's sends, returns and master faders—for all of our plug-ins."

"Both Frank and I have 32-channel HD systems loaded with every conceivable plug-in that serve as outboard gear," continues Weber. "It's the only way to fully automate all the parameters. But we've also got the horsepower of a traditional console for monitoring, routing and machine control, with EQ and sends on every channel at our fingertips so we can work really quickly."

Re-recording is to multiple machines: 24-track stems to a Tascam MX-2424 and 5.1 and 2-track mixes to a Tascam MMR-8, with duplicate machines running as backup.

Broadcast transmission processing is often the downfall of what was, on the dub stage, a great mix. Determined to avoid problems, *Lost*'s mixers and editors took a field trip to ABC's engineering department where they reviewed the components of the compression chain and debated how to optimize their mixes for transmission.

Now, with an official ABC stereo broadcast meter on the stage, they apply their own final compression to the mixes, a combination, according to Weber, of "the container on the Dolby DMU [Digital Mastering Unit], which slows it down, and a Waves L2 as our brickwall limiter. It's not just level. They also use pre-emphasis de-emphasis frequency compression that affects the high end. A high spike can crush the whole signal so we've modified our chains, using a de-esser like you would on voices to roll things off at certain frequencies on the Foley and sound effects."

"We had to make sure," points out Morrone, "that what the producers hear on the stage is exactly what they hear on air. I think we've achieved that. [Co-producer] Ra'uf Glasgow, who's very detail-oriented, screens every show on air and agrees that it's translating very well. We've also heard from other mixers, asking how we manage to get so much dynamic range on the program. Coming from peers, that's a real compliment. In television, it's traditional to mix for 5.1 and to accept whatever happens to the stereo fold-down. But we work

Lost on Location

By David Barr-Yaffe, C.A.S.

Without a doubt, these were the most challenging shows—physically and mentally—that I've faced in my 25 years in production sound. Although we had the luxury of an extended schedule and budget (26 days at a [reported] cost of about $12 million, unheard of for a TV pilot), Mother Nature threw as many curves at us as she could.

The production sound crew, knee-deep into it in Hawaii (L-R): Lance, a roadie; Joe Michalsky, boom/radio mic specialist; Chris Wieking, sound utility; and David Barr-Yaffe, production sound mixer

The first weeks of shooting were on jungle sets. My crew—Joe Michalsky, Chris Wieking—and I stepped out of the van into pouring rain and knee-deep mud. We had to get our gear out of the trucks and down into a ravine below the roads where we shot our big chase scenes with our unseen monster, along with interiors and exteriors of the plane's cockpit. The script called for pouring rain, so on top of the natural jungle rain, the special effects teams ran arrays of water towers and fire hoses as soon as J.J. [Abrams] called "Action!" The tremendous sound of all this water hitting the trees and the water already on the ground—plus the water trucks running at full speed to pump the water to the hoses—precluded using boom mics, except in situations where actors would yell loud enough to be heard.

We'd brought a selection of several different lavaliers (Sennheiser MKs, Sankens, Countryman, Trams) to use with our Lectrosonics MM400A miniature digital water-resistant (to a point!) transmitters and our Lectro UM400 digital transmitters. After some experimentation, we decided on Sennheiser MK Platinum lavaliers wrapped in acousti-foam with a layer of fur over them. They gave us the best protection from the elements and better sound with less clothing noise.

Then it was on to the Coconut Palm farm as the survivors searched for the cockpit, where the cast wove through many years of dead palm fronds, crunching with every step. Fortunately,

—CONTINUED ON PAGE 88

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very hard to get the 2-track sounding as dynamic as possible.

"Gil Gagnon was instrumental in bringing Scott and I together as a mix team," Morrone concludes. "He and his team also provided us with a top-notch facility and gave all the tools and support we need to deliver a great quality product under a tight schedule."

[Richard Lightstone served as production sound mixer on location for the first 14 episodes after the pilot.—Eds.] ■

Lost on Location

—FROM PAGE 86

the rain had stopped and we could expose the lavaliers for a more natural presence. Finally, we reached the beautiful beach at Mokuleia, on the northwestern shore, where we filmed most of the rest of the first few episodes. Ocean on one side, rolling jungle on the other: We sighed with relief that we no longer had to carry our gear in the mud and rain.

There were, however, new challenges. The beach was only long enough to place the fuselage and a little bit of scattered luggage and body parts. We were no more than a few feet from the water line and, in fact, the tide came in and washed over about half the set.

Everything we recorded had the sound of surf crashing on the beach in the background, along with the occasional sounds of light aircraft landing at Dillingham Airfield, just on the other side of the road. The North Shore waves were big and loud, making it difficult to match ambience from shot to shot. We had to be careful not to make drastic movements on the booms (Sennheiser 816s) or we'd hear a dramatic shift in background. We often used radio mics along with the booms and put them on separate tracks of the Deva to give our post team the option of pulling what they needed to drop in.

Finally, the payoff: We packed up and went to one of the most beautiful places on Earth, Kualoa Ranch, where *Jurassic Park* was shot: beautiful, green valleys surrounded by jagged mountains, all overlooking the picturesque Pacific. We buried the generator in a ravine below us and enjoyed almost perfect recording conditions. Winds were calm and we were half-a-mile from the ocean, able to point the shotguns in any direction and hear our actors from more than 10 feet away with no problem. We only had to use our radios for the wide establishing shots.

All in all, we were able to use about 95 percent of the production tracks on the pilot episodes, quite a feat considering the environment in which we shot. Still, I wouldn't trade that environment for any other shooting location in the world! ■

Grammys

—FROM PAGE 84

giving Day Parade, among countless other big shows—served as broadcast mix master for "something like the 25th or 30th time," with Phil Ramone onboard as advisor. A Sony Oxford console was his hub for combining approximately 80 inputs, comprising the Effanel truck's music feeds and the production elements: podium, lavalier and announce mics; voice-overs; video and audio playback; and an audience feed from Landsberg that Greene controlled by a foot-operated volume pedal.

"Everything you hear on standard TV comes through here," Greene says. "I also feed a dialog bus to the 5.1 truck, and I feed the playback elements to everybody: the house, monitors, air and 5.1. As a general rule, I use minimal processing. When you're dealing with most digital desks, it's generally wise to use the built-in EQs, compressors, et cetera, to allow for 'scenes' and general reset-ability.

"I did use an external dbx compressor in a dialog chain because there was no internal compressor available at that crosspoint," he continues. "And in the final output, there was a TC Finalizer—with its CD Master program set for gentle curve shaping—and an Aphex Compellor. For me, the Compellor still provides the most transparent management of program processing. It keeps me out of trouble with satellites and gives the best impression of natural dynamics."

Greene listens "90 percent of the time" on a mono (Genelec or Meyer HD1) speaker, even though, in addition to the stereo broadcast feed, he's also creating a Dolby Pro Logic–encoded 5.1 feed for the standard-definition surround broadcast. "I set it all up in stereo," he says. "I also feed the surround mix left and right with things spread out. I take the music and wrap it around a little bit, and I use a Spatializer on the dialog so it's more homogeneous and not just in the center. But I'm very sensitive to the mono listener."

THE DISCRETE 5.1 MIX

With something like 620 lines of audio bouncing from stage to FOH, monitors and the "truck farm," the routing is a story unto itself. Also in the loop was mixer Paul Sandweiss, working in the Effanel OSR truck on two Yamaha DM2000 consoles, where he was in charge of the discrete 5.1 surround mix heard by those watching in high def.

"When they asked me to do this," says Sandweiss, who owns his own busy company, Sound Design Corp., "I thought it would be the most fun job on the show. I got the 5.1 music feed from Jay and John, and from Ed a stereo submix of all the production elements that I blew out to 5.1. I also had six stereo pairs of audience from Klaus: front, mid and deep perspectives, along with an up-close camera mic pair. Those are delicate to manage because you don't want the room sound to be constantly changing. The audience tracks are so important, but you don't have any idea of how it will sound until the audience arrives."

THE FINAL LINKS

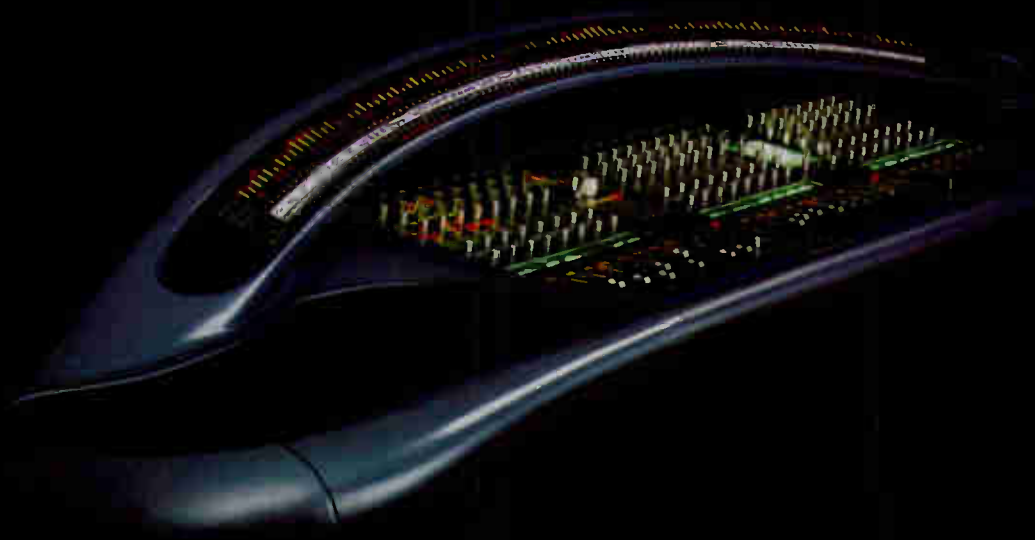
Final uplink compression, the last processing before the mixes are Dolby E–encoded, was supplied by a TC Electronic DBMax for the stereo/Dolby Pro Logic II mix and a TC DB-8 for the 5.1 mixes. A combination of experts from Dolby and CBS worked with the Grammy team to adjust encoding and transmission of the Dolby E, and each truck was fitted with Dolby boxes, allowing monitoring of the feeds at different points in the transmission chain.

As explained by Murray Allen, NARAS audio consultant for the Grammys, the Dolby E transmission is shipped directly to CBS N.Y. For the first time this year, the metadata—which contains compression words, dialog level, downmix coefficients and parameters and mix information—was embedded in the Dolby E. In New York, the audio signal is converted to PCM digital, commercials and a five-second delay are added, and sync is checked. The metadata is removed and follows on a data cable. Ultimately, the 5.1 and stereo audio signal are re-encoded to Dolby E, with the metadata once more embedded. The Dolby E–encoded signal (embedded with picture) is shipped out to two different satellite uplink stations. Finally, local stations use the metadata information to convert the Dolby E to Dolby AC3 required for broadcast.

THE OVERVIEW

According to calculations by overall Grammy Awards audio coordinator Michael Abbott, between front of house, monitors and broadcast, including rehearsal, dress rehearsal, the telecast and all the setup and teardowns, the 2005 show encompassed 3,000-plus patches during the course of a week. "This is the mother of all audio shows," he says. "I don't think there's another production comparable to this event in terms of connectivity and complexity. The more people you have mixing a show, the more disjointed the sound design can become. Our goal is to have a singular, cohesive sound. It's a huge collaborative effort, and a lot of enormously talented people pull together to make it happen." ■

GET CONTROL



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Ani DiFranco

Text and Photos by Steve Jennings

Singer/songwriter/guitarist Ani DiFranco is packing theaters across the U.S., out in support of her latest studio album, *Knuckledown*. *Mix* caught up with DiFranco's front-of-house engineer, Steve Schrems, at The Warfield (S.F.) in mid-February, about the tour, which is just spotlighting the artist and bassist Todd Sickafoose. Sound is provided by Klondike Sound Company, Schrems' "company of choice."

"With the assistance of Larry Berger, V-DOSC tech, we use six V-DOSC elements and three dV-DOSC elements per side," the engineer says. "We also use the EAW SB1000s for subwoofers; they're versatile and sound great." DiFranco is currently singing through an Audix OM5, though Schrems has experimented with models from Shure, Neumann and Audix.

Schrems mixes on a Crest X VCA and uses Drawmer gates/comps, BSS Audio 901 II, TC Electronic M2000 and 2290 and a Yamaha SPX-990. "Mixing this show can be challenging, even more so than a full band onstage," Schrems says. "Although I'm dealing with the nuances of acoustic instruments—limited to phase and EQ—it's quite satisfying when all is just right. Ani and Todd each produce a full sound alone with their acoustic instruments. They work well together arranging the music and we all work well together to balance their sound so that they're not competing for the same frequency.

"Lately, [monitor engineer] Sean Giblin has been lowering levels. This helps and hurts me at FOH. At times, the P.A. becomes the reference for the artists. With the variety of rooms we play, the experience for the artist will vary. In the end, the proof is in the reaction to folks coming to the show."

FOH engineer Steve Schrems

An All-Digital Horse and Human Show

Cavalia, the traveling equestrian spectacular from Canada, recently upgraded its audio setup to an all-digital signal path. The show, which takes place in a 10-story tent, is now using a Yamaha DM2000 at FOH and a PM5D at monitors. An Aviom A-16D Pro system supplies headphone feeds to the musicians and other cast members. Twin V-DOSC line arrays are hidden behind large columns in the center of the arena. Sound designer and chief audio engineer Michel Therrien has found that the digital gear is more reliable in extreme operating conditions. *Cavalia* has special considerations because of the amount of dust generated by the boisterous show, which features horses and a troupe of acrobats, trick riders and performers, along with an eight-piece band.

—*Kevin Becka*

PHOTO: ROBERT VIGNOLA

Chief engineer/sound designer Michael Therrien (left) and monitor engineer Pierre Sanschagrin

inside

News

English trio Keane use Sennheiser EW300 G2 wireless personal monitoring system and an array of mics.

Keane toured the U.S. early in 2005 supporting *This is the Last Time*, using **Sennheiser** e935s on main and backing vocals, e604s and e614s on drums. "The whole setup works well and sounds great," says FOH engineer **Iain Slater**...A 48-channel **Midas Siena Number One console** has been installed at **The Sage Gateshead**, a five-month-old new live music complex located in Northeast England. Head of technical operations Chris Durant purchased the board even before that model was in production. "One of the most useful features is the number of auxes available," Durant explains, "and we're looking forward to the flexibility for in-ear stereo mixing."...In Bucks County, PA, the **Bucks County Playhouse**, home to annual summer theater performances, purchased **Sabine's Smart Spectrum** wireless. Says theater owner/producer **Ralph Miller**, "The sound is excellent. There have been times we've had 24 body packs working simultaneously, and we still don't have a clipping or a drop-out problem."...Performance data for several of **Sound Physics Labs'** (Glenview, IL) loudspeakers are now validated by an independent testing company, **ETC Inc.**, an organization established by Syn-Aud-Con. Results are available at www.soundphysicslabs.com.

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On the Road

Robert Frazza

Robert Frazza is one of those rare engineers who is equally comfortable in the studio or doing live FOH or monitors. We caught up with Frazza as he was getting ready to rehearse the Todd Rundgren/Joe Jackson/Ethel tour, this time mixing monitors with George Cowan doing the house mix.

Are you carrying production?

I'm carrying full monitors, microphones and a DM2000 for front of house, with the venues providing racks and stacks. This tour is mostly acoustic. There's a guitar position for Todd, a piano position for Joe and the Ethel is a string quartet. We've been using the Bose Radiators—those 6-foot-tall, 4-inch-round columns—as sidefills for Todd. They're pretty amazing. This tour, Todd doesn't move around much, but on the last tour, he was all over the stage and the Radiators provided perfectly even fill all around the stage.

Todd and Joe are picky about vocal mics. What are their preferences?

Todd likes using Beverdynamic stuff. Joe has a Neumann KMS 105.

What are some of your fave past tours?

The last Todd Rundgren tour was great. I also do a lot of work with Tony Levin, which is essentially the early Peter Gabriel Band—great players. Working with them was a treat. I was doing FOH for the Walk Down Abbey Road tour [featuring Rundgren, Christopher Cross, Jack Bruce, Alan Parsons, Denny Laine and Joey Mullands] and sometimes Parsons would come out to FOH while I was mixing the rest of the band. It was fun knowing the dude who mixed [Pink Floyd's] *Dark Side of the Moon* was checking out my mix!

What do you do when you're off the road?

I'm a big fan of the Food Channel and I like to cook. We're nearly getting into barbeque season and I'm looking forward to that.

Now Playing

Slipknot

Sound Company: Thunder Audio
FOH Engineer/Console: Dave "Shirt" Nicholls/Midas XL4 with 16-channel XL3 stretch
Monitor Engineer/Console: Bruce Danz/Midas XL250
P.A./Amps: 36 stacks of Nexo Alpha (B1s, M3s) with 24 GEO CD18s/Crown VZ5000, 3600
Monitors: Nexo Alpha E cabinets (sidefills), Thunder Audio proprietary wedges
Outboard Gear: three Yamaha SPX-990s, Eventide H3000, TC Electronic M1/D2, dbx 120X, two Empirical Labs Distressors, Klark-Teknik gates, Behringer tube compressors, Pro Tools|HD rig (56 channels), Mac G5
Microphones: Audio-Technica 40 range and AE range

Elvis Costello & The Imposters

Sound Company: Sound Image
FOH Engineer/Console: Jeff Hooper/Midas XL4
Monitor Engineer/Console: Steve "Flaky" Flewin/Midas Heritage 3000
P.A./Amps: JBL VerTec VT 4889, VT 4880 subs; Sound Image CF/Crown MA 5002 VZ, QSC 4.0
Monitors: Sound Image 1x15s, sidefill cabs

PHOTO: STEVE JENNINGS

Outboard Gear: Yamaha SPX-990, Summit TLA 100, dbx 160A, Drawmer DS201, Sound Image Digital Drive System, Klark-Teknik DN360, BSS DPR-404
Microphones: Shure Beta 58A, Beta 57A, Beta 52, SM57, SM81, SM91; Sennheiser e609, e304; Beyer M88; AKG 414, 451; Countryman DI
Additional Crew: Kurt Springer (system engineer) and Nathan Payne (assistant engineer)

Dave Alvin Rocks the Mystic Theatre

Touring to support his CD *Ashgrove*, roots-rocker Dave Alvin blasted McNear's Mystic Theatre (Petaluma, Calif.) in late January, relying on the venue's engineer. For this show, Randy Teaford, the Mystic's chief engineer and production manager, mixed at front of house for the former Blasters guitarist. "It's a little like mixing a train wreck," Teaford says. "You can see the train coming and you don't really want get out of its way. It's a roots-rock, tear-it-down kind of show. I had a lot of red lights on the console." Teaford watches the peak meters on the 40-channel Crest X8HS console up in the balcony. A recently installed Apogee loudspeaker system fills the room nicely.

PHOTO: ROBERT VIGNOLA

It's hard to believe that two nights prior to this gritty performance, Alvin cancelled a show due to laryngitis. But Alvin was in good guitar form at the Mystic, and Teaford had to keep an eye on the vocal fader. "I have to make sure Dave's vocal level matches the enthusiasm level of his guitar playing," Teaford says. "If my mix is working, the audience likes it, the band likes it and everyone goes home happy." —*Jeff Forlenza*

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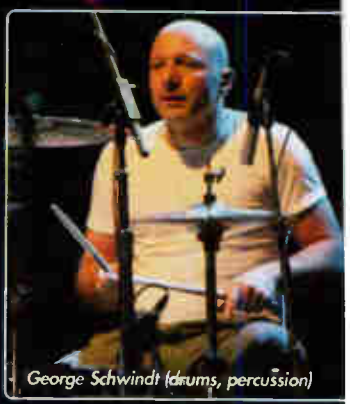
FLOGGING

Describing the band's unique sound, Dave King (lead vocals, acoustic guitar, banjo, bodhran, spoons) has said, "If it didn't have mandolin, accordion, fiddle and whistle, it would be punk rock. If it didn't have guitar, bass and drums, it would be traditional Irish music. Flogging Molly has both." Currently out supporting *Within a Mile of Home*, this seven-piece group is touring in smaller venues across the U.S. before heading to the UK for another slew of dates. *Mix* caught up with the engineers and band at San Francisco's Warfield in mid-March.

FOH engineer Jeremiah Ball at the Warfield's PM4000 console, supplied by Sound on Stage (Hayward, Calif.).

Photos and text by Steve Jennings



George Schwindt (drums, percussion)

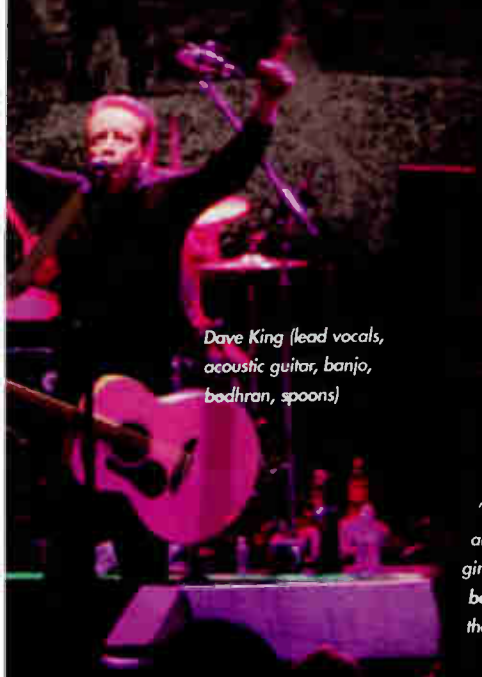
Front-of-house engineer Jeremiah Ball is using a Yamaha Subkick and a Beta 52 on George Schwindt's kick drum. "We compared ours to an open-air model at the BBC, and the drum shell that it's in definitely tightens up the low response."

Although the tour is relying on local production, front-of-house engineer Jeremiah Ball is able to maintain consistency in the sound night after night, as the venue-provided consoles very rarely differ at each show. "Aaron [Glas, monitor engineer] and I are getting the same two or three models in most of the venues—mostly Midas, with an occasional Yamaha—and we are learning what works and what is less-than-ideal for this band. I have a much better idea of what I would like to be carrying now than when I first started with these guys.

"The mic package from Shure has been a huge step forward in consistency for the band," he continues. "Having the same mics night after night means being able to remove one major variable from the stage sound.

"I really am at the mercy of the vendor, but I am always happy to see a rack of dbx 160s. For smooth, yet aggressive compression, you just can't beat 'em. I compress the snare top, bass DI, the banjo and the vocals. If I have a Summit or similar tube comp, I will run a stereo group for the vocals. I like to get my compression in steps, setting the individual compressor to a 3:1, which covers most of the dynamics and a harder limiter to catch Dave [King] on the 'white octave.' Dave was a metal guy, and he can still nail it. I have 25 inputs at FOH, and I am gating both kick drums and the toms. George [Schwindt] hits the snare so often and so fast that gating it would be counter-productive. If I have good frequency-conscious gates such as Drawmer or Klark Teknik, I will put one on the KSM 109 that's on the side-stick, which is a wood block on the rim of the snare. I set the filter above 8k to keep the snare from opening the gate. Otherwise, I have to ride the side-stick mic all night because it picks up the whole kit."

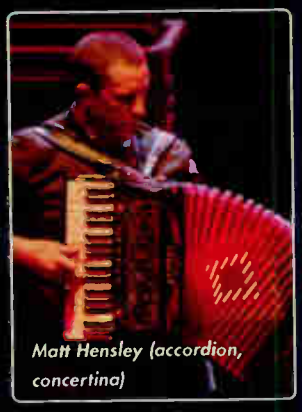
MOLLY



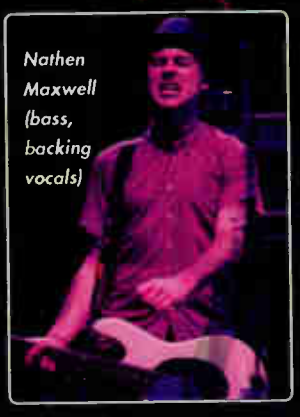
Dave King (lead vocals, acoustic guitar, banjo, bodhran, spoons)

"Ampeg has just given us several of its new SVT tube DIs, and they are great on acoustic instruments," says FOH engineer Jeremiah Ball. "They have a nice articulation without being harsh, and they get rid of a lot of the nasal piezo on the mandolin. I am using a Fishman Aura on Dave's acoustic, which is a modeling DI, and I really like it."

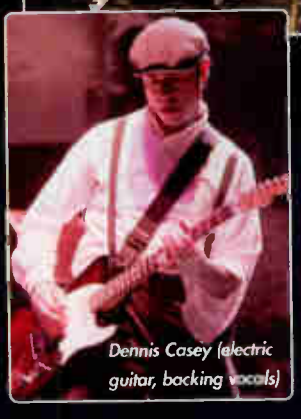
Bridget Regan (fiddle, tin whistle, Uilleann pipes, backing vocals)



Matt Hensley (accordion, concertina)



Nathen Maxwell (bass, backing vocals)



Dennis Casey (electric guitar, backing vocals)

Robert Schmidt (mandolin, banjo, bazouki, mandola, backing vocals)

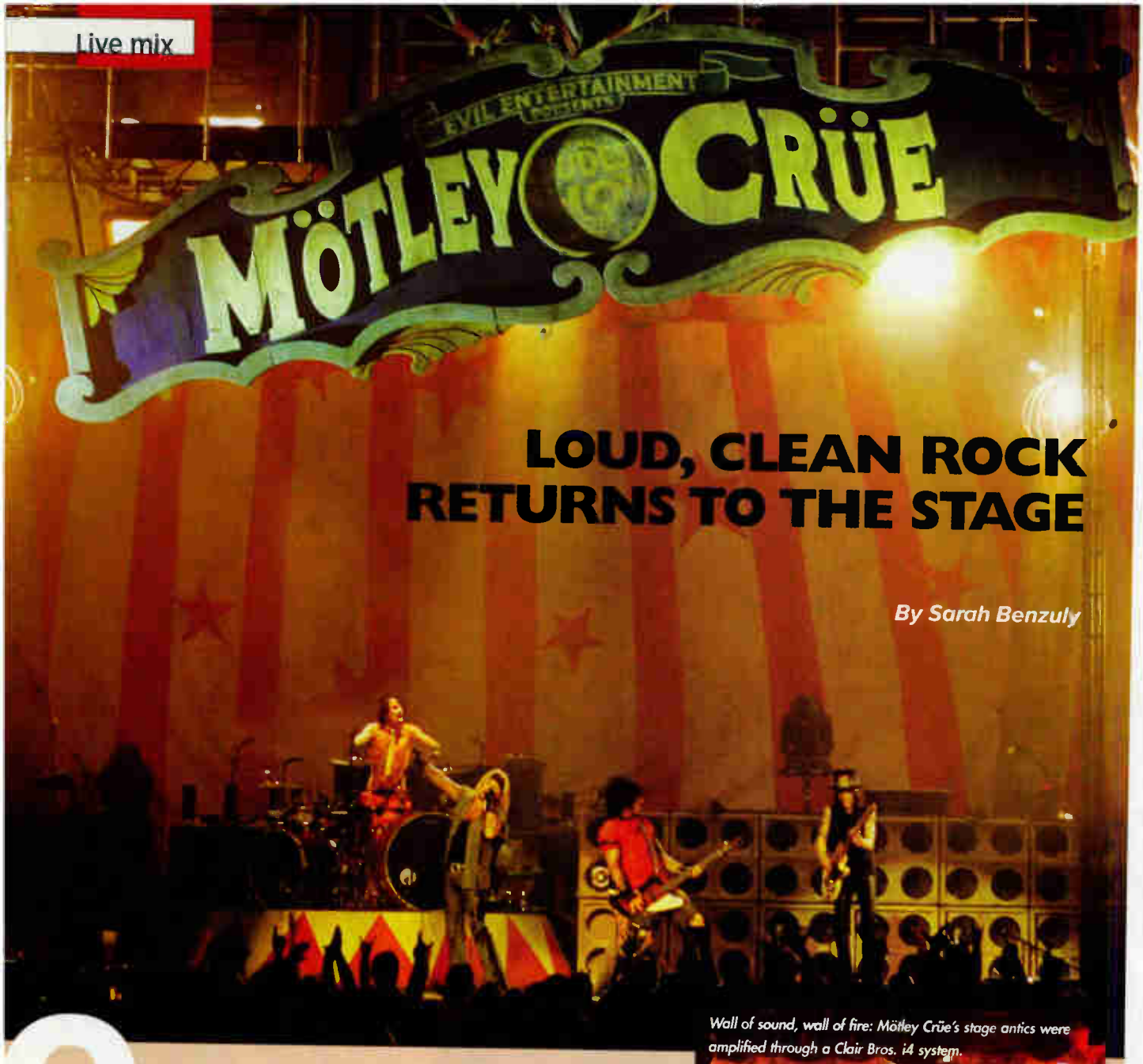
Monitor engineer Aaron Glas

Monitor engineer Aaron Glas reports that only Robert Schmidt (mandolin/banjo) is on in-ears, using a Shure PSM700 system with E5 earpieces and the Sensaphonics custom mold designed for the Shure E5. "The ears are a great benefit for Bob and us engineers," Glas says, "as the stage volume with so many bandmembers can get out of hand and I can control tone and clarity of his instruments with precision in the ears.

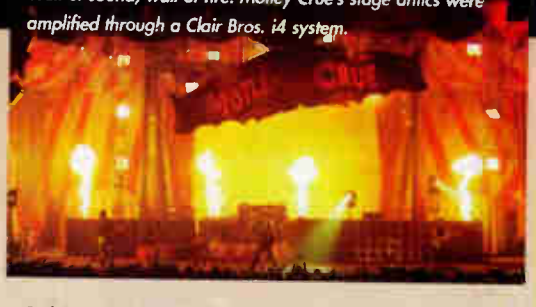
"Until recently," Glas continues, "we used a Shure Beta 57A on Dave's vocal. Jeremiah and I have just finished experimenting with the combination of an SM58 capsule and Beta 57A windscreen. We replaced just the very tip of the windscreen with the SM58 foam material. The resulting mic is an SM58 with a slightly tighter pattern. It's a success for us as Dave likes the sound of the SM58 and Jeremiah needs a microphone with a tight pattern to keep the bleed from the rest of the stage under control. As I don't use any gates, compressors or effects onstage, I only carry a rack with two Shure PSM700 in-ear systems. I rely on local production to provide a solid console, EQ, amplification and wedges. We've enjoyed some consistency with gear on this tour, working quite a few times with a Midas XL250, Klark EQ and Electro-Voice wedges/processing onstage."

LOUD, CLEAN ROCK RETURNS TO THE STAGE

By Sarah Benzuly



Wall of sound, wall of fire: Mötley Crüe's stage antics were amplified through a Clair Bros. i4 system.



Only Mötley Crüe could pull something off like this for more than two hours without a support act and playing just about every night: deafening pyrotechnic explosions, the identifiable first guitar riffs, more pyros and/or a slew of flame pots, chorus of song, stripper-looking trapeze artist dangling from a rope while gyrating in sexual positions, more pyros, bassist/background vocalist Nikki Sixx proclaiming that "Mötley Crüe is f***ing back," dwarfs and odd circus freaks harassing bandmembers onstage, end of song. Welcome to the Mötley Crüe arena rock show extravaganza—and man is it wonderful!

It's hard to imagine that a band who hasn't played live together since 1988 [drummer Tommy Lee has been working on side projects—on both sides of the camera] could get back on the road for a hefty round of sold-out arena dates, they haven't killed each other (yet), don't have an opening band until the summer festival leg and perform for a very appreciative, if not overzealous, audience.

While pulling out all the stops for their top hits, including "Girls, Girls, Girls" (for which the Crüe, minus guitarist Mick Mars, rides out on miked—yes, *miked* with Shure MX184 lavs—Harleys for the opening riff), "Dr. Feelgood," "Home Sweet Home" (complete with lighted Bics in the air), "Kickstart My Heart" and "Shout at the Devil," the band also dragged out older tunes ("Too Fast for Love," "Red Hot"), ending the show with covers of The Beatles' "Helter Skelter" and the Sex Pistols' "Anarchy in the UK"—all in classic Crüe decadence. *Mix* caught up with the Crüe and crew on their Red White & Crue .. Better Live Than Dead tour (out in support of their February 1 release, *Red, White and Crüe*, a 37-track, double-disc retrospective) in late March at the Oakland Arena (Oakland, Calif.)—and we were in for a wild ride.

HE'S THE ONE THEY CALL DR. SOUND GOOD

The last time *Mix* spoke with front-of-house engineer Dave Natale, he was mixing for Lenny Kravitz's 2002 tour. Since

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PERSONAL CREATIVITY

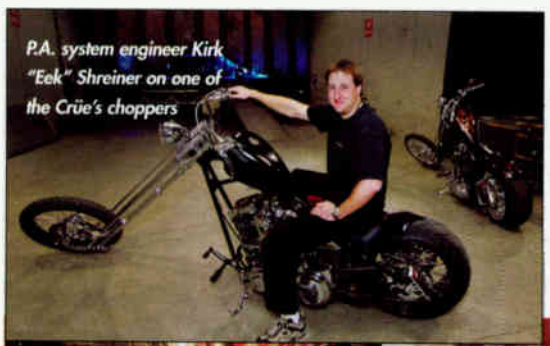
then, he's been on the road with Liza Minnelli, Fleetwood Mac and Lionel Ritchie's UK tour—polar opposites of the Crüe's circus. "Although the type of music is different," Natale says, "my approach is basically the same. It is just louder. I do use more limiters on this than I used before." Natale puts dbx 903 compressor/limiters on the bass DI, bass mic (Sennheiser 409), guitar left/right and dry Theremin and Vince Neil's vocal mic (a Shure Beta 58).

Just as the show itself is "big" in its theatrics, that magnitude is also shared in the audio gear: Both front-of-house and monitor worlds are employing *two* consoles because drummer Tommy Lee plays three kits, maxing out the number of inputs offered in just one board. "I am hopelessly caught up in the analog world," Natale says. "As always, I'm using two Yamaha PM4000s, each with 40 mono and 12 stereo channels. I will continue to use these consoles until they completely disintegrate. Anyone that knows me knows that. As far as consoles go, I avoid any 'smart' consoles: ones that have a microprocessor in it. I am leery about using a console that can do whatever it wants, anytime that it wants without me telling it to.

"I am using much of the same outboard gear that I always use," he continues. "I have six Yamaha SPX-990s for reverb, slap, delay and flanging. I change the programs of the SPXs with a Yamaha MPC-1 MIDI program changer. In addition to the dbx 900 rack, I also use four channels of Aphex 612 noise gates on Tommy's kick and three toms. I have an Alesis MasterLink hard drive recorder and a Panasonic 3800 DAT."

Front-of-house engineer Dave Natale camped out in his FOH compound, complete with two Yamaha PM4000s

However, what's not so basic for Natale is how loud the show is, partly due to the "wall of sound" onstage: 16 Marshall cabs (eight stacks) for guitarist Mars (though Natale says that he really only uses 12) and Sixx's eight 8x10s—three or four of which are on. "I mix this band almost exactly as I mix any other band," Natale says. "Only the overall volume changes. We are playing a wide variety of venues on this tour. We play arenas with high ceilings, convention centers with low ceilings and we have played The Joint at the Hard Rock in Vegas. That was interesting to mix this band in that tiny venue. The band has exceptional stage volume: It is a challenge to get over Mick Mars' massive guitar sound, as well as the monitor volume that [monitor engineer] Mike Adams and the band generate."



P.A. system engineer Kirk "Eek" Shreiner on one of the Crüe's choppers

From left: monitor engineer Mike Adams, and monitor techs Joe Manges and Little Jon Edmonds of Clair Bros./Showco

An all-Clair Bros./Showco tour, the Crüe is heard through a Clair Bros. i4 system: 40 i4s, 36 i4Bs, 14 S4 subs and eight P2s for frontfill. Amps are Crest 10004s and QSC 9s on the i4s and i4Bs, as well as Carver 2.0s on the S4 sub lows and P2s. "I EQ the system every day with a Sheffield Labs direct-to-disc recording called *James Newton-Howard and Friends* that I have been using for the past 20 years," the engineer says. "In my opinion, it has a fabulous drum sound and it is good music." Natale uses about eight minutes of that CD to EQ, then Kirk "Eek" Shreiner (P.A. system tech and crew chief) uses a Lake wireless system processor to fine-tune specific areas and touch up the EQ. "Kirk also specifies the size and shape of the arrays every day. I trust him implicitly. We have worked together on many tours."

Sixx was at a show that had a line array system and really liked the way it sounded. "The band had a few companies in mind," Shreiner says, "but Nikki asked Dave [Natale] which company he liked and because of [Natale's] long affiliation and familiarity with [Clair Bros./Showco],

Dave suggested that company. The band also liked the fact that Clair Bros./Showco has offices worldwide.

"Basically, the P.A. hangs in approximately the same place, relative to the stage, every day," he continues. "I just know from hanging this P.A. for so long where it is going to cover. The biggest difference—from venue to venue—is the height. We just fly as much as we can without blocking sight lines. If it is a low building [such as Las Vegas' The Joint], generally there are not as many seats and so a scaled-down version of the P.A. works out well. Dave and I have been working together for a long time and he trusts my opinion, which is nice!"

Knowing that the P.A. is set and ready to go is necessary for Natale, who also has to contend with the array of microphones used onstage, including miking three drum kits—two of which are hung 25 feet above the stage that Lee "flies" between and plays during his 10-minute drum solo—that require 33 inputs. For the flown stage-right kit (which is basically one 55-gallon drum and two half-barrels, as in beer), Natale uses a Beyer M88 (one 55-gallon drum), AKG 414s (overheads) and Sennheiser 409s (kegs). For the other flown kit (which is all metal), Natale uses line transformers for the D-Drum and E-mu modules and AKG 460s for overheads. The stage kit is miked with Beyer M88 and Shure SM91 (kick), SM57 (snare top and bottom), AKG 460s (hi-hats, cowbell and ride), Beyer Opus 87 (toms) and AKG 414s (overheads).

KICKSTART THE MONITORS

Showco monitor mixer Adams (who has worked for rockers John Mayer, Guns 'N Roses, Limp Bizkit, Ted Nugent and KISS, among others) is also working two boards: Midas 3000s using 80 inputs and 24 outputs. Onstage, Adams ensures that the stage volume isn't overwhelming for the band, especially with a massive amount of speakers and amps. For example, just lining the edge and sides of the stage are 30 Showco Prism SRM wedges. "In addition to their ears [Shure PSM700 and Sennheiser EW300IEM in-ear monitoring units], each bandmember has stereo wedge mixes," Adams says. "The deck splits left/right all the way across downstage, so there's always a sweet stereo spot for them to go to. The wedges live under

—CONTINUED ON PAGE 155

NSCA Expo 2005

Top Live Sound Products From Orlando

By Mark Frink

APB DynaSonics Spectra console

Following on the heels of Winter NAMM—just six weeks before—the 25th annual NSCA Expo (March 10 to 12, 2005) didn't have a lot of new product debuts. However, with 600 exhibitors filling Orlando's Orange County Convention Center, there was still a lot to see. Here are my picks for the show's top live sound introductions.

Founded by industry vets Chuck Augustowski, John Petrucelli and Taz Bhogal, new console manufacturer APB DynaSonics (www.apbdynasonics.com) unveiled its Spectra Series analog VCA desks. Designed for touring or fixed installs, the boards include features not often found at this price point, such as Burr-Brown mic pre's. THAT VCAs, a master output VCA (for controlling any combination of four mix outputs and four matrices), built-in hot-swappable redundant power supplies and LCR control room AFL monitoring. One unique touch is the EQ design, with filters an octave wide in boost and a third wide in cut. Deliveries begin Q3, 2005.

Meyer M Series dual-10

Ashly (www.ashly.com) showed six of its new Protea-enabled PE Series amps, available from 400 to 1,900 W/channel. Housed in a two-rackspace chassis, these 20-pound, switch-mode amps are controllable over Ethernet using Protea software. Optional 32/96kHz DSP cards provide analog or digital inputs and processed outputs for two other amp channels.

Carver Professional (www.carverpro.com) unveiled its new ZRx-3200 amplifier, another switch-mode design, featuring built-in control/monitoring and onboard DSP.

Meyer Sound (www.meyersound.com) expanded its M Series of self-powered line array speakers with the newest compact version, unnamed at press time. (I suggested "Mark.") Slightly larger than the M2D, it employs all-new high-power components expressly designed for the unit: dual 10s—with one crossed out early—and twin HF drivers. It also includes built-in "balcony bars."

Roland Systems Solutions (www.RSSAmerica.com), Roland's new commercial division, showed its AR-3000 single-rackspace digital audio recorder/player. The unit features up to 48kHz sample rates, two PCMCIA memory slots and an IP network option. Also new is the S-3208 Cat-5 24/96 digital snake, which has 20dB pads, phantom power and 55 dB of gain trim on its remote-controllable inputs.

Stardraw's Control (www.stardraw.com) generates stand-alone, customized programs that can control addressable gear from any manufacturer over any communications infrastructure. It offers an open, software-based, unified control framework that can manage the entire system with a single application, breaking the constraints of proprietary or closed-architecture systems. Features include a drag-and-drop interface and an intuitive design environment. Protocols currently supported include IP, RS-232, DMX, IR, EtherSound, CobraNet, infrared, UDP, SNMP and QSControl.Net.

XTA DP428

First-time NSCA exhibitor Tek Panel (www.tekpanel.com) demoed its 300T, an integrated 30-inch WXGA touchscreen 2.4GHz Pentium 4 computer with CD/DVD-ROM and 125-channel NTSC-TV tuner. Initially developed for military applications, this 42-pound, 5-

inch-thick touchscreen PC is also available in two levels of ruggedization said to stop 9mm or 0.45-caliber bullets.

Turbosound (www.turbosound.com) unveiled the TA-890H touring version of its radical Aspect Series full-range enclosure. The unique HF and HMF multicell PolyHorns create a gently curved low-distortion wavefront with 25°x15° dispersion. The 450 to 5k Hz mids are handled by a 10-inch driver, with highs by a 3-inch compression driver and dual long-excursion 10s providing the lows. The compact 31x19x22-inch enclosures' MF/HF sections can be rotated, and cabinets can be flown in horizontal or vertical orientation with an elegant fly system.

The V-8 and V-10 line array systems from WorxAudio (www.worxaudio.com) offer a self-powered option using its PMD-1 amp module. The 4-foot-wide V-10 uses a pair of vented 10s; between them is the Acoustic Integrating Module (AIM) horn that houses twin 8-inch drivers on the side walls and a 3-inch compression driver. The V-8 is simply the AIM without the 10s and is only 28 inches wide.

Turbosound Aspect TA-890H

Xilica's (www.xilica.com) DCP-3060 3x6 cost-optimized speaker-management system employs 24/48kHz converters, featuring 1Hz frequency resolution, six parametric filters for each input/output, multiple crossovers to 48 dB/octave, full-function limiters and 30 program memories. Options include digital I/O and CobraNet.

XTA's (www.xta.co.uk) DP428 is a 4x8 DSP matrix with eight input filters, 28-band graphic EQ, nine output filters, dual-stage limiters and 96kHz AES digital I/O, all in a single rackspace. New AudioCore software features "shadowing" of the selected filter along with the composite curve display. Priced the same as a pair of 224s, the DP428's memory is compatible with earlier presets.

New Version 2 software for Yamaha's (www.yamaha.com/proaudio) PM-1D digital console has features such as automatic gain adjustment for shared inputs, load filter for more flexible file management with PCMCIA memory cards and insert/delete channel to improve console setup. Other new features include a fader view display and integration of Yamaha's add-on effects, including vintage compressors, EQ, REV-X and tape emulation.

Zaxcom (www.theultimatewireless.com) was showing its second-generation TRX900 digital wireless bodypack transmitter with an integrated wireless IFB receiver. One lithium 123 battery provides five hours of operation. Body pack audio gain, RF channel frequency, highpass filter, transmitter RF power and other significant settings are adjustable via remote control from the IFB transmitter module. Ninety minutes of 24-bit audio can be recorded and played back via commands from the IFB transmitter, and it has timecode capability. I'll be in my trailer.

Mark your calendar for next year when NSCA returns to Las Vegas over St. Paddy's Day—March 16 to 18, 2006. ■

Mark Frink (MixSREd@MarkFrink.com) is Mix's sound reinforcement editor. Ms. k.d. lang has given him the summer off. Got a tour?

NEW DIRECTIONS IN

It's All About Control

BY GEORGE PETERSEN

Predicting the future is a tough proposition. And often, every industry analyst and prognosticator in the world can be just plain wrong. For example, when the Neve DSP—the first commercial digital console—was announced in 1982, many felt this heralded the eventual demise of the analog mixer. In some ways, such predictions were right, but here we are, nearly a quarter of a century later, and the main competition for audio consoles (analog or digital) are controllers that add console-style operations to a computer-based DAW or mixing engine.

In fact, with a few system accessories, many of today's producers can get by in a totally console-less environment. Of course, life in this situation is a lot easier when you have some useful accoutrements such as some analog front-end processing—outboard preamps, channel strips and perhaps a tube compressor or two. Fortunately, there are no less than 7 million companies making such devices, ranging from A.R.T.'s bargain-priced Tube MP preamp to racks filled with esoterica such as vintage Fairchild compressors. On the back end, control systems from nearly a dozen companies (Studio Technologies, Mackie, SPL, Martinsound, PreSonus, Tascam, Blue Sky, Furman, Phonic, et al) offer room communications and monitor control solutions in every price range and complexity—from simple stereo volume/source selection to full-scale bus/stem routers, 5.1 speaker control/bass managers, talkback/cueing, etc. Throw in the option of outboard summing mixers, and a screen-based DAW can have all the control flexibility of a full-blown studio console—and maybe more.

Once considered extinct or passé, there has been a resurgence in analog designs, ranging from an absolute zeal for classic Neve and API circuits—either as complete vintage console refurbs or modules for outboard use. Meanwhile, more recent products—such as the API Vision, Solid State Logic SL 9000 and the Neve 88R—are pure analog designs built for performance. John Oram has brought back the classic Trident 80 board in the form of the Series 80-5.1 with amenities for surround, while boutique designs such as Geoffrey Daking's 1112 Sidecar Console and TL Audio's VTC tube console offer alternative directions. On the smaller scale (at least in console size) are rackmount submixers, such as those offered by API, Crane Song, Manley Labs, Speck Electronics and Tonelux—useful add-ons to any DAW system.

Speaking of small, Greg Mackie's compact CR-1604 mixer proved that a budget-priced and good-sounding console could be a hit. Now, tens of thousands of mixers later, the new Mackie Onyx Series offers a 24/96kHz FireWire output option, making it useful either as a conventional mixer or as a DAW front end. Taking the process another step forward, the option ships with Tracktion recording software for plug-and-play ease with your PC or Mac.

The problem with defining the future of console design is that there's no "typical" console or studio today. In my studio, I do mostly DAW-based production and use my old, er, vintage analog console during tracking or overdubbing, mainly as a monitor system to set up cue feeds. I occasionally use the onboard preamps, but typically turn to racks of outboard pre's selected to complement the mic or input. When it's time to mix (in stereo or 5.1), all sorts of possibilities arise: I often do hybrid mixes, in which I combine the strengths of analog console mixing (using traditional outboard gear) with the pluses of virtual DAW mixing and tons of software plug-ins. On some projects, I may mix entirely on the DAW or completely on the console, or I might send mix stems from the workstation to the analog board (or vice versa). These days, there are no rules.

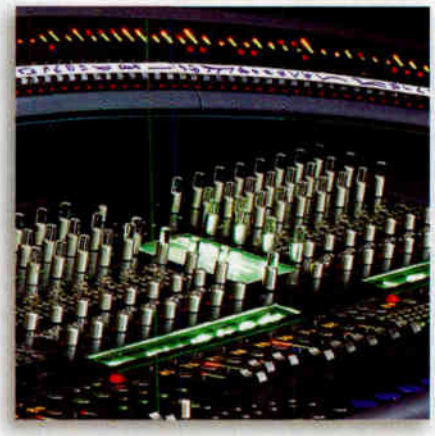
There are lots of ways to work, and determining the direction of future console designs is no easy task, but it's a sure bet that the consoles to come will be shaped by design parameters and features we're seeing on mixers right now.

ALL ABOUT ERGONOMICS

Rotary encoders with "soft" functions that are changed via software are hardly new, but Studer took the concept to a new level with the Vistonics™ technology developed for its Vista Series digital boards. Vistonics incorporates rotary and pushbutton controls that protrude through a flat-screen display, with touchscreen access just below the knobs, resulting in a fast, non-fatiguing worksurface.

For many—not only in fast-paced live broadcast and

production markets, but also in the music studio—ease of use and workflow are essential. "Consoles are not just about audio quality and processing; they are also a critical ergonomic environment," says Solid State Logic's managing director, Colin Pringle. "They will increasingly provide control of DAWs and incorporate innovative control and display technologies. That's because the professional 'power users' are looking for a performance instrument to carry out their craft. They want the speed and touch and feel of what they are doing that you just don't get with a mouse. It's going to be an exciting time to be developing products.



"Changes in technology have provided more choice for recording and mixing," Pringle continues, "and that's a good thing, enabling music to be made in a wider range of circumstances than before. SSL has responded by widening its range of products from the XL 9000 K Series to the fully digital C200 to the AWS 900, which combines a compact SuperAnalogue console with DAW control." Designed for mid-level pro/project facilities, the AWS 900 offers the functionality of a worksurface controller, analog recording front end, stem submixer, summing mixer and full stand-alone analog console capability.

A decade ago, Yamaha turned around the industry with its 02R 20-bit 8-bus console, providing 24 analog inputs and 16 digital tape returns—a total of 40 inputs. Suddenly, an industry that was used to high-ticket digital boards was faced with an under-$10,000 model that included moving faders, reset of all console parameters and onboard dynamics on every channel. Two units could be cascaded to provide a total of 80 inputs, but the 02R's two internal effects processors made it a single package. Besides being later updated for 24-bit/96kHz production, Yamaha's new digital consoles can also double as DAW controllers.

"It's true that we were out there in getting these things affordable," says Larry Italia, general manager of Yamaha's Commercial Audio Systems division, "but where do we go from here? Everything that was old is new again, such as adding analog aspects to your board so it doesn't sound so digital. We've been focusing on the quality of the effects, with plug-ins and add-on effects that emulate some of our favorite old analog boxes."

So, are we perhaps outgrowing the idea that a console has to look like a console? "Maybe, but I'm not so sure," Italia muses. "Today, with a lot a mixing done inside the computer, we're looking at different work styles. We have these appendages with 10 fingers and the worksurfaces on today's consoles didn't evolve by accident. I don't think that consoles are going away. There may be designs with touchscreens and flat panels, and we'll probably see these weird, ergonomically tripped-out things in the studio before they make it into the live sound world, but we may be seeing functions like voice activation someday."

CONTROLLERS: THE NON-CONSOLE CONSOLE

A non-audio control surface could be as small as JLCooper's laptop-sized CS-32 MiniDesk or as simple as Peavey's PC 1600x MIDI Command Station, but lately, large-scale controllers have garnered the attention of the entire audio community. These controllers can run with either proprietary hardware, as in the case of Digidesign's ICON (Integrated CONsole), or more open architectures, such as Merging Technologies Pyramix workstation or Yamaha's DME64N/DME24N DSP engines. Combining the flexibility and familiarity of a traditional console layout with the power of PC-based audio engines, these represent an entirely new way of looking at the art and science of console design, and perhaps redefining how we look at the console itself.

The System 5-MC Intelligent Application Controller from Euphonix is a DAW controller adapted from the worksurface design of the company's System 5. It works with any EuCon-aware application such as Nuendo and Pyramix (and in Mackie HUI emulation, also Pro Tools, Logic, Digital Performer and others), and is available with eight to 48 "channel" strips, dual trackballs, programmable LCD SmartSwitches, integrated touchscreen and full master console and 7.1 monitoring functions. By mapping keyboard commands to its 56 SmartSwitches, the MC can also control any other software application running on the workstation.

One of the most talked about products at last year's AES show in San Francisco was the Smart Console DAW control surface from Smart AV. The brainchild of Aussie designer Michael Stavrou, it currently works with systems such as Pyramix, Logic, Yamaha DME 64N, and those from Fairlight/QDC and Klotz Digital/Vadis. "The key factor in making the Smart AV an attractive concept was its ability to mix a large number of channels in a way that is more efficient," says Smart AV managing director Joe Narai. "You can mix 96-plus channels without leaving the central mixing position and get to any of the channels

with a single action per channel."

Beyond the ease of making channel assignments, the Smart Console is capable of applying levels, mutes or other parameters across multiple channels simply by holding one button and sliding a finger across the overbridge arc. Just as simple is its ability to "interrogate" channels. "As an example, if you have an aux send turned up somewhere on a long [traditional] mixer, that means looking at every one of the channels' aux knobs to find the one that shouldn't be turned up. In a banked console, you'd bring each of the banks up and look through each of those," explains Narai. "But with the arc technology, you could just press the aux control on one channel, press the Interrogate button and wipe your finger across the arc to find the aux. That requires no eye movement and a single hand motion."

In the time frame of barely a year, Digidesign has delivered about 200 of its ICON environments. Unlike most other controllers, ICON is designed for a single platform: Pro Tools, which, in many ways, makes the design process easier. However, given the large number of Pro Tools–compatible plug-ins, the task was still daunting. "One of the big hurdles in designing ICON was developing controls that could work with a variety of software plug-ins from different manufacturers and bring them to the surface so they could be accessed logically and ergonomically," explains Stan Cotey, Digidesign's principal hardware designer on the system.

This challenge is nothing new, says Digidesign's director of product marketing, David Gibbons: "Assignable consoles have always had the problem of taking a pool of available controls and finding a sensible way of applying them to different applications. When the first digital consoles came out, they had a set of four or so encoders you could apply to different EQs or dynamics parameters, but at least they only had to deal with the signal processsing that was built into the mixer and didn't have to worry about things like reverbs that were essentially outboard devices."

Signal processsing is one thing, but how does one design a controller that can handle complex plug-ins such as virtual instruments that may not even exist today? "Designing a controller for an almost infinitely variable set of parameters," Gibbons notes, "is one of the nearly unsolvable problems in the audio business." However, there are solutions, says Cotey: "With ICON, you can either use the center section's controls or dedicate a set of channel strips to edit a single plug-in."

A controller can also bring up new and creative ways of working, says Gibbons. "For example, at [last month's] NAB, we're unveiling a new panner panel for ICON that has two joysticks and a touchscreen. You can do normal panning and the screen gives you the pan window UI, so you can pan from the joysticks or by moving your finger around on the touchscreen. However, you can apply the x and y axes from each of the two panners to any four parameters. You could put equalization frequency on the x axis and gain on the y axis—a fairly intuitive way to drive an EQ—or you could put filter cut-off and distortion amount from a synth or use a plug-in with scratching ability and map that to this panel."

According to Gibbons, the controller approach to console design offers some degree of future-proofing. "Considering the history of assignable consoles—digital and analog—the expandability issue isn't new and is often what people are looking for in terms of future-proofing: the ability to expand and grow with their requirements. Early digital consoles offered extra DSP cards or extra I/O cards, but ICON makes it easier, as everything about Pro Tools has been designed as an expandable system."

THE FUTURE AND BEYOND

Fairlight's DREAM Constellation combines a full-function digital console with integrated 48-track audio editing capability. When we spoke to company CEO John Lancken, he had just returned from Japan where he had a sneak preview of the World Expo. "We were doing mixing and playback for a superhigh-vision display being developed by a number of Japanese companies. It's a 4,300-line HD picture that consumes 3 GB of data per second with 22.2-channel surround sound. While we're getting used to working in high-def and in 5.1, they're

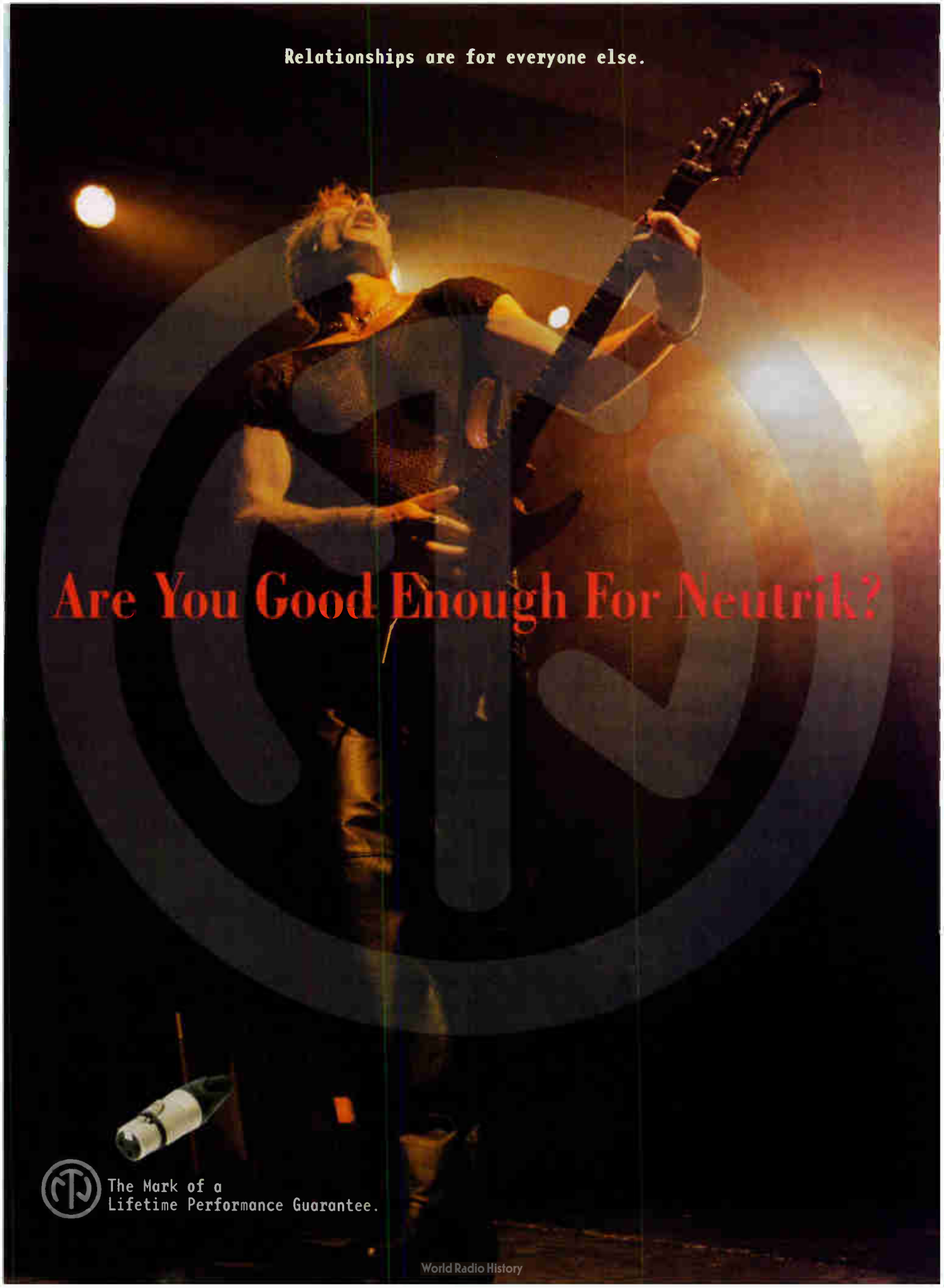
previewing what they believe will be around in 20 years.

"Content creators are looking for ways to enhance the panning experience, going beyond 5.1 and exploring three-dimensional panning, where the sound appears in three dimensions rather than just two," he continues. "We've been developing 3-D panning in our mixing products, offering user control over convergence and divergence at every aspect of the pan, so a room can be made larger or shrunk or rotated or made upside down."

Sometimes the more things change, the more they stay the same, and the best guess is that future directions in console design rest not with gimmicks but basics. "Displays are really important in a digital console, where one knob can do many things and the display enables that," Lancken continues. "Most new display technologies are designed for frontal viewing and can be hard to see if you're viewing them from the side or at an angle on a console. We're using a new display technology called OLED, which provides video in a small footprint and has a 160-degree viewing angle.

"A lot of modern consoles are simply re-worked channel strips," Lancken concludes. "You can do so much more with digital technologies, and users are moving beyond that single channel strip approach. We can't be working at mixers that are 80 feet wide. Factors such as the ability to manage large numbers of channels, informational displays, the ability to link channels and being able to pan in multiple dimensions are all important in console design." ■

Mix editorial director George Petersen produces pop records and co-authored Crazy Campsongs, *a warped collection of children's music.*



BY OLIVER MASCIAROTTE

Getting the Lead Out

Complying With Overseas Green Initiatives

This month, I'm finally closing the book on my "Pedant in a Big Box" IT glossary series, and all I can say is, man, did this project balloon! What started out as a seemingly modest glossary of non-audio techie terms has grown into a list of hundreds of words embodying a crazy amount of research time.

But before we dive into the "W"s, I'd like to bring to your attention a development in EU policy-making that will have subtle but important implications for our industry. It begins with the dichotomy between one facet of Euro and U.S. public opinion, ends with those magic boxes that free many of us from being formal "engineers" and all comes down to heavy metal.

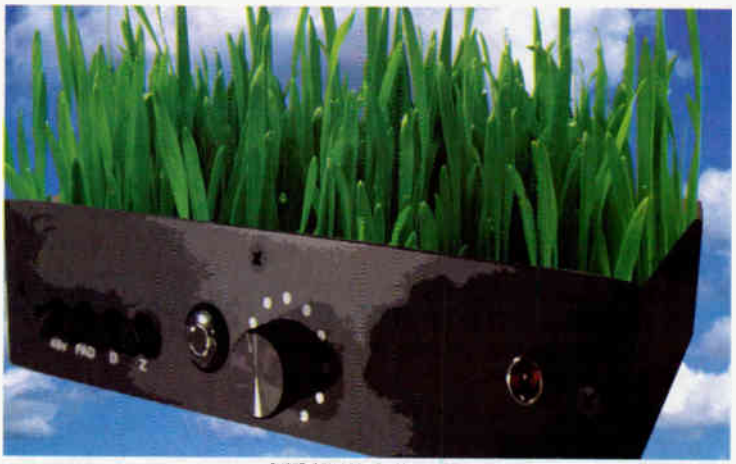


PHOTO COLLAGE: LIZAMETH HEAVERN

No, I'm not talking about the heavy metal genre of big hair and tight pants; I'm referring to the plumbic alloys used as solder in most electronic assemblies.

PEDANT IN A BIG BOX: PART NINE

THE LAST OF AN ONGOING SAGA OF NERDY NOMENCLATURE

WIRE SPEED: a code word for hardware-based, as opposed to software-based.

WLAN (WIRELESS LAN): A *WLAN* uses a *wireless PHY.*

WMA (WINDOWS MEDIA AUDIO): Microsoft's family of *codecs* for *packetized* audio data. There are four members of the family: a general codec, a Professional version that supports 24-bit word lengths and multiple channels, a Lossless version and a Voice version that is optimized primarily for reproducing speech.

WORKSTATION: a vague term that describes a complete personal computer of more than average capabilities. A professional version of a personal computer.

WORLDWIDE WEB, WORLD WIDE WEB: Invented by Sir Tim Berners-Lee, the Web is a combination of ad hoc and proprietary technologies, applications and standards that provide multilingual, interoperable electronic delivery of text, hypertext and audio/visual content. The Web is based on two key systems: the *Internet* and the *Web browser.*

WRAPPER: a file format that encapsulates a variety of metadata and essence into one package.

WWW (WORLD WIDE WEB): See *Worldwide Web.*

xBASEy: the nomenclature for designating *IEEE 802.3* or *Ethernet* cabling. The x is the design data rate—10 through 10,000 Mbps—while the y refers to the cabling type or category. Categories include the original thick coaxial cable (BASE-5); the second-generation thin coax, or "Thinnet" (BASE-2); the original voice-grade *UTP* (BASE-VG); the more common, improved UTP (BASE-T) and BASE-F for glass fiber; and the *PHY,* capable of supporting the highest *data rates* of all cabling types.

XEROX PARC (XEROX'S PALO ALTO RESEARCH CENTER): Founded in 1970, PARC is Xerox's attempt to drive competition through innovation. An example of pure research yielding some impressive results, researchers at Xerox's PARC were responsible for changing the face of modern personal computing, inventing—among other things—the graphical user interface, the computer mouse, "the *Ethernet*" and the laser printer. Despite the company's valuable contributions, Xerox has never been able to capitalize on its PARC investment.

xML: SGML, the parent of all subsequent xML dialects, is a standardized language for describing, or "marking up," a document's appearance. SGML and its dialects separate the content from the document's appearance. More recent standards include HTML, the Hypertext Markup Language used for Web pages; VRML, the Virtual Reality Markup Language used for "VR" delivery; SAML, the Security Assertion Markup Language used for identification and authentication; and XML, the Extensible Markup Language, which is used for *Net services.* —*OMas*

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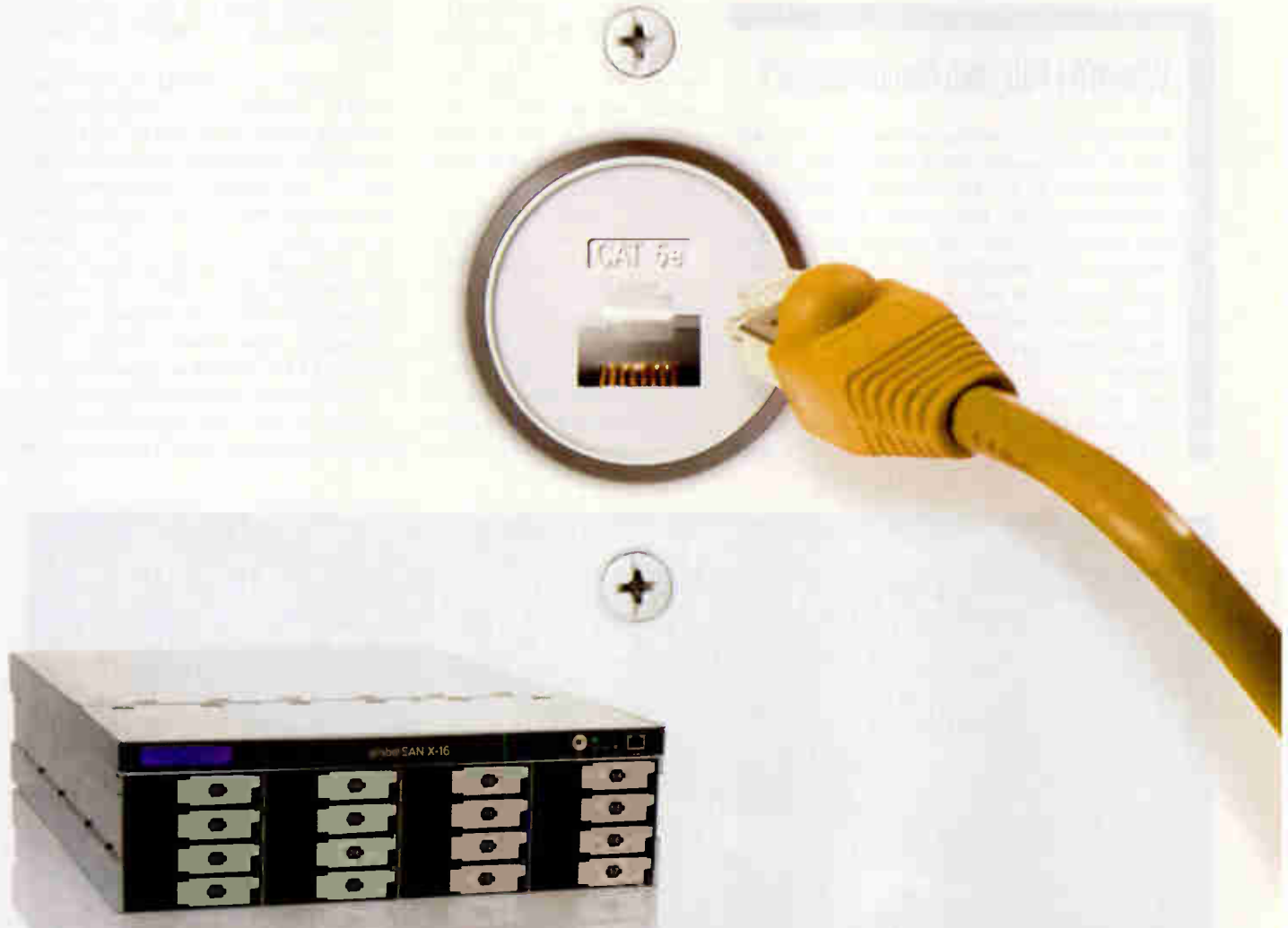

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You see, the EU, unlike us Yanks, is concerned about long-term public health and has phased in a "restriction of the use of certain hazardous substances in electrical and electronic equipment," as the *RoHS* (Restriction of Hazardous Substances) document is subtitled. The Directive 2002/95/EC of the European Parliament and of the Council explicitly states, "Member States shall ensure that, from July 1, 2006, new electrical and electronic equipment put on the market does not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE)."

Though this and another directive, WEEE, or Waste Electronics and Electrical Equipment, come out of the EU, Japan is also pushing ahead with "green" manufacturing initiatives, and any U.S. company conducting global business in the electronics, fastener (hexavalent chromium or Cr IV provides great corrosion resistance), jewelry or a host of other industries had better pay attention to stay competitive or will be shut out from lucrative European and Far East markets.

Fine and dandy, but why should we care? After all, if our government isn't concerned with such trifling, why should we be? Well, two things, really: size and reliability. Let's start with the latter. We have come to expect good reliability from pro-grade electronics, and I expect some interesting exceptions to that rule will surface in the next few years. The reason is that lead—which I mentioned earlier—or the lack thereof.

You see, electronic parts are attached to their circuit boards with an alloy of about 40 to 60 percent lead and other metals, often silver or tin. If you change the composition and remove the offending lead from electrical solder, then you raise the melting point to within a dozen degrees of the temperature, at which point, those precious components you're attaching are literally cooked to death.

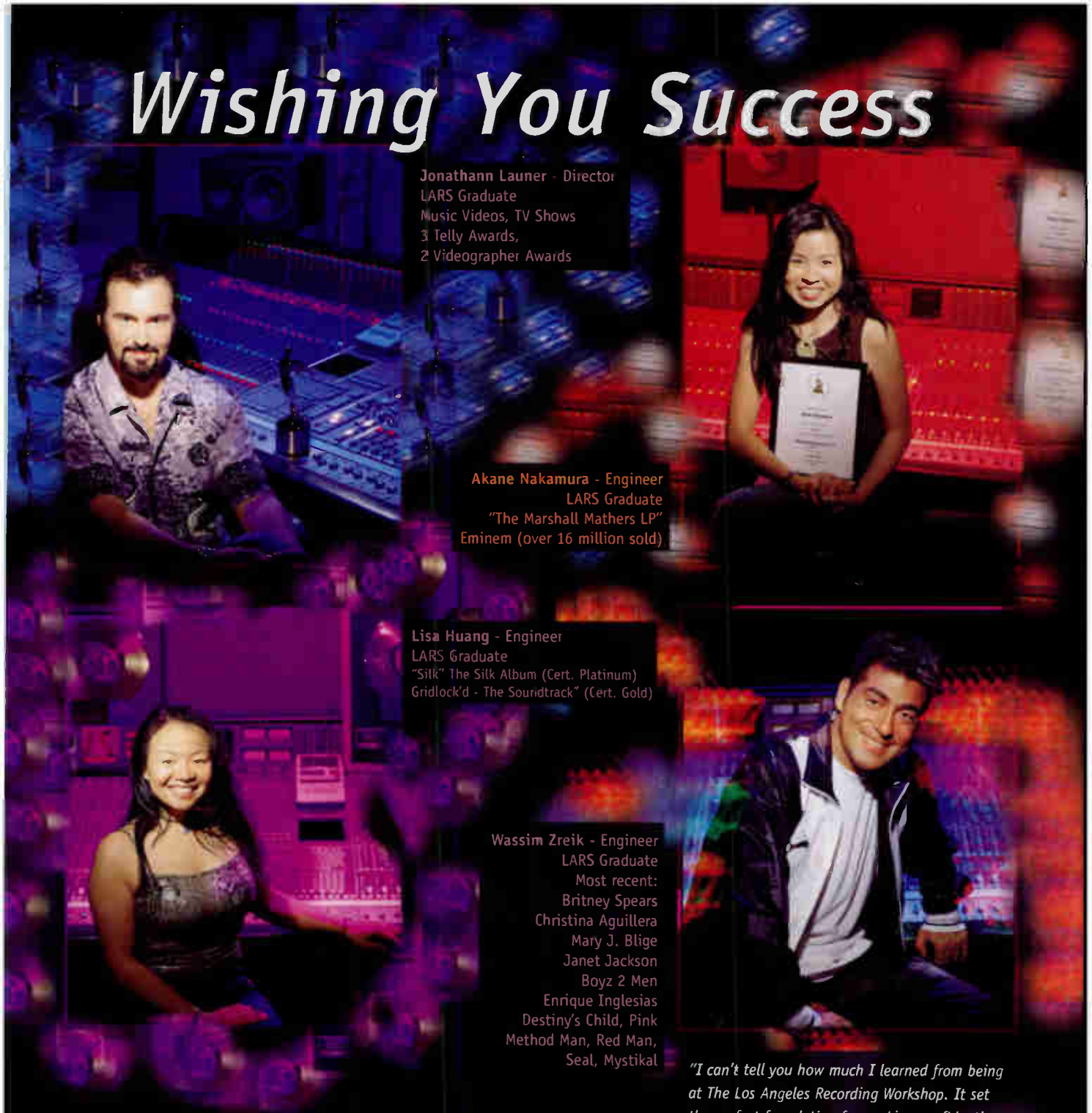
According to Canfield Technologies, a solder manufacturer, "Typical re-flow soldering temperatures for tin-lead alloys have a peak temperature of approximately 220° C. For lead-free alloys, the peak temperatures for re-flow soldering can be as high as 260° C." This means that automated assembly processes must be fundamentally modified to achieve reliable solder flow and "wetting" without exceeding temperature limits. (See "Where'd I Put That Flux Capacitor?")

To make matters worse, many integrated circuits, or ICs, will require either re-packaging or retirement. There might be

Where'd I Put That Flux Capacitor?

What's all this about wetting and flux? Flux is a blanket term used to describe various chemicals that remove contaminants during the soldering process. When plumbers fix a copper pipe, they use a highly reactive acid to chemically clean the pipe's surface—like how detergent cleans greasy dishes—so the solder will "wet" and flow across the joint. As you may know, that acid flux would be the death of an electronic device: The flux would "clean" its way right thought the circuitry. In the world of electronics, clean metal makes for mechanically solid and highly conductive connections, while dirty pieces make for "cold solder joints" that are electrically and mechanically unreliable. —*OMas*

Wishing You Success



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some serious hand-wringing resulting from this directive. I see prices going up and reliability going down for several years as sweeping obsolescence removes the majority of electronic components from the supply chain, all to be replaced with higher temperature–tolerant, heavy metal–reduced versions. At the same time, some parts will simply go away, never to be manufactured again.

This isn't the first time that a big change has happened in the electronics industry due to environmental concerns. In the mid-'80s, the elimination of ozone-depleting CFCs (chlorofluorocarbon solvents) caused a major upheaval in an attempt to find a solution to global warming. That crisis led to the rise of "no-clean" fluxes, which do not require removal after assembly, and water-soluble fluxes that replaced the noxious chemical solvents of days past.

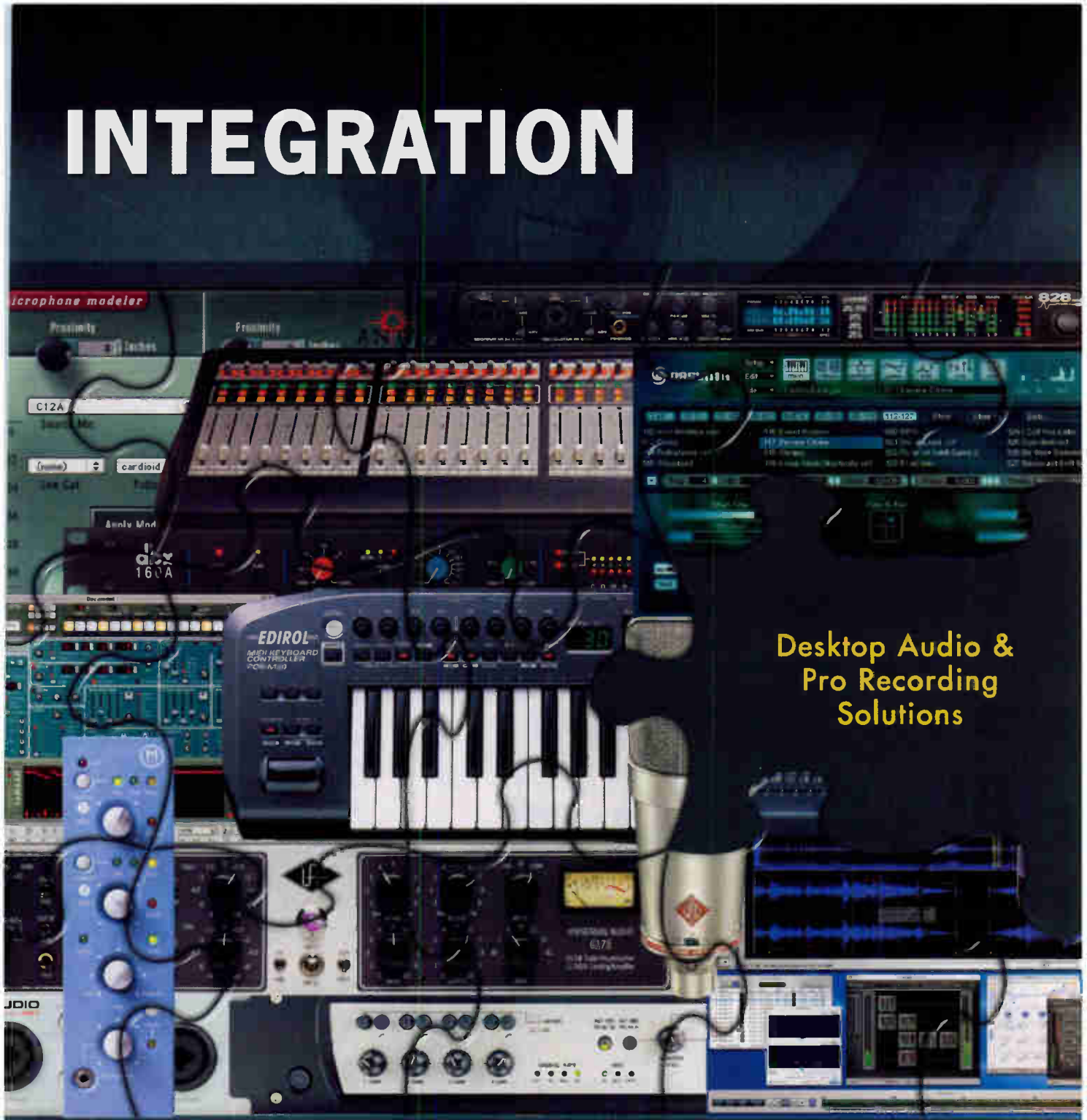
In similar fashion, the electronics industry has introduced new tin/silver/copper (95.5 percent tin/3.9 percent silver/0.6 percent copper) and new compatible fluxes to ensure proper wetting and flow characteristics. The medical and food service industries have been using lead-free solders for more than a decade, so there is a small but significant body of historical data available on using lead-free products.

Way back at the start of this rant, I mentioned size. By that, I meant a temporary increase in size for some products as mechanical designs change to accommodate the increased temperature profiles of lead-free soldering or the size increases because one of the more highly integrated parts are no longer available. However, savvy engineers should be able to minimize this effect.

Oh yeah, there's another fun fact relating to this hardware headache and it's known as "tin whiskers." I'll leave it to you to Google the phrase and consider the implications of whiskers combined with the other reliability issues of the RoHS and WEEE directives, especially for the high-density packaging so common with surface-mounted ICs. Being Pb-free won't be easy, but, thanks to the EU and the Japanese, our domestic disregard for environmental concerns that interfere with the smooth flow of money up the social ladder is being short-circuited in more ways than one. ■

OMas is enjoying a lead-free spring in sunny S.F. Recent revelations, besides the RoHS, include the low-maintenance Brit pop of Dogs Die in Hot Cars *on the V2 label.*

INTEGRATION



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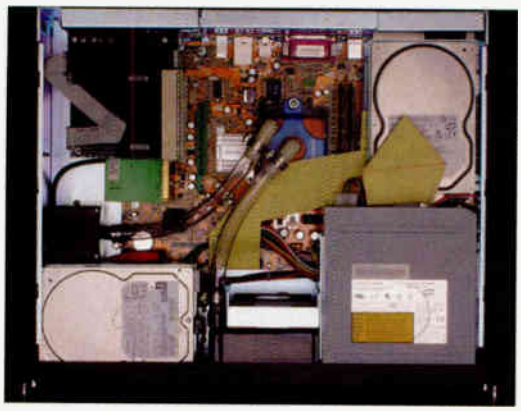

COYOTE R&D TWO-CAN64

Ready for Windows Longhorn's 64-bit power, the Two-Can64 from Coyote (www.coyoterd.com) builds on its predecessor, the Two-Can. The low-noise, liquid-cooled (optional), two-rackspace PC offers up to 800 GB of internal RAID-able storage and an optional FireWire 800 port. The 14-inch-deep unit comes with Coyote's NetMIDI drivers, offering 256 MIDI ports per machine over a high-speed network (Mac/PC), plus high-speed, low CPU utilization, remote-control software that eliminates the need for a separate monitor, mouse and keyboard. Prices start at $1,695.

GEPCO VDM260 CABLE

Those wanting to transmit digital audio through tight spaces will want to look at the ultra-miniature co-ax cable from Gepco (www.gepco.com). It features a 26-gauge solid conductor housed in a broadband foil and braid shield that offers better RF/EMI protection and greater structural integrity than serve-type shields. Also suited for video, VDM260 exceeds the bandwidth required for 1.485Gb/s HD transmission.

NI ABSYNTH 3 TUTORIAL DVD

This new educational tool from Native Instruments (www.native-instruments.com, $59) demystifies even the most advanced features of the decidedly deep ABSYNTH 3. The comprehensive video workshop, hosted by NI product specialist Brian Smith, gives a systematic and detailed insight into the features and capabilities of the latest ABSYNTH version, including the new surround integration. Other chapters address ABSYNTH's powerful oscillator modes, waveform editing, multi-breakpoint envelopes, effects section and more.

MXL MICROPHONES DRK

The Desktop Recording Kit (DRK) from MXL (www.mxlmics.com, $99) is squarely aimed at the home recorder looking for an all-in-one solution for desktop recording. The kit comes complete with a desktop microphone stand, microphone clip, XLR cable, XLR-to-Mini-Plug adapter, 3.5mm Mini-Plug-to-¼-inch adapter and power source. The battery-powered mic is a fixed-pattern cardioid condenser that works with a stand-alone preamp or directly connected to a computer's soundcard via provided cables.

APPLIED ACOUSTICS SYSTEMS STRING STUDIO

Bucking the traditional synth model, Applied Acoustics Systems' String Studio (www.applied-acoustics.com, $249) replaces the traditional oscillator, filter and envelope stage with real-life stringed instrument components. Rather than using samples and wavetables, String Studio generates sounds employing accurate modeling of the various acoustic components of stringed instruments such as guitars, basses, harps, clavinets, bowed instruments and even percussion. In addition to real-life simulations, String Studio offers many innovative sounds from imaginary instruments. It comes as a stand-alone version or as a plug-in for Mac (VST, AudioUnits, RTAS, MAS) and Windows (VST, DXi).

SPL MIXDREAM XP

SPL (www.spl-usa.com) is now offering a more affordable version of its MixDream summing box. The no-frills, 16x2 MixDream XP ($2,195) does away with the inserts and processing options of the MixDream and is trimmed down to a single rackspace. The signal paths are entirely discrete and run on 60V rails in Class-A mode. The box offers an impressive dynamic range of up to 124 dB, with a maximum output level of +27 dBu and a noise level of -97 dB. Controls include mono switches for each of the eight channel pairs and individual output level controls. The rear of the unit carries two D-sub connectors, which provide 16 input channels, master and monitor stereo outputs, and an expansion output for ganging the X with the MixDream.

CYCLING '74 HIPNO 1

HIPNO 1—a new suite of more than 40 effects and instrument plug-ins for VST, AudioUnits and RTAS Mac OS X–host applications from Cycling '74 (www.cycling74.com, $199)—offers a mix of granular, spectral and filter/delay-based plugs. The breakthrough Hipnoscope visual interface (below) gives the user an infinite amount of creative ways to bend sound across a group of parameters. Also included are a set of processors that use live video input as a control source and a new set of modulator plug-ins. Plug-in processors include banks of LFO-modulated filters, a quartet of granular processing engines and a pitch-shifter that features quantization, filtering and feedback looping.

MINNETONKA PRO LOGIC II ENCODER

Minnetonka's (www.minnetonkaaudio.com) latest VST version of SurCode for Dolby Pro Logic II allows users to encode surround sound into stereo delivery formats. The interface accepts 6-channel surround input and then outputs an Lt/Rt-encoded stereo stream that can be recorded and used in any stereo transmission medium, in addition to being compatible with millions of decoders worldwide. The encoder/decoder also works in real time to monitor the results of encoder option changes during the process. The $494 plug-in will work with any compatible VST audio application.

HARK PRODUCTIONS ATMOSPHERIX

If ethereal pads and soundscapes are on your must-buy list, then check out Atmospherix from Hark Loops (www.harkproductions.com). The collection of royalty-free, fully ACID-ized loops features a diverse set of 24-bit pads that cover every mood—from serene to disturbing. The set was created by Detroit-based sound master Wayne Gerard, and comes with more than 800 loops on two discs. Prices: $49 per volume or $89 for the two-volume set.

AMS NEVE ENCORE PLUS

Aimed at the post-production engineer, Neve's (www.ams-neve.com) Encore Plus automation system offers a bevy of new features. The latest generation of Encore software works across a range of Neve consoles, including the 88RS, DFC Gemini, Aquarius, MMC and Libra Post. Major features include Re-Conform, which allows change lists to be imported into Encore Plus and the mix automation cut and spliced automatically to reflect picture changes. Automation in Stop allows automation to be written without timecode running and remote control of Pro Tools, Nuendo and Pyramix systems directly from the surface, all simultaneously if necessary.

GEFEN FIREWIRE EXTENDER 800

For those peripherals that are best left in another room, Gefen (www.gefen.com) offers its latest product, the FireWire Extender 800 ($799). Working through a sender and receiver system that connects the local computer to the remote device with multimode fiber-optic cables, the FireWire Extender 800 speedily sends large amounts of data at rates up to 800 MB per second. Although FireWire is usually limited to 15 feet or less for fear of degrading the signal, the extender lets peripherals operate anywhere within 300 feet of the CPU.

PROPELLERHEAD REASON 3

Reasonheads will rejoice that Propellerhead (www.propellerheads.se, $499) has released Reason 3. The latest version is fat with new features, including the MClass mastering suite of processors and the performance-friendly Combinator that allows users to build elaborate chains of Reason device/instruments, effects, pattern sequencer and more and save them as a Combi patch. The Remote feature allows out-of-the-box integration with most major control surfaces, including support for motorized faders and controller displays. An expanded soundbank and new browser promise faster-than-ever workflow. Visit the Website for a super-slick Reason 3 Flash demo.

DISC MAKERS REFLEXMAX AND REFLEXULTRA

These sleek new dupers from Disc Makers (www.discmakers.com) are enclosed in sleek silver cases that offer a system of vents and powerful fans, keeping the drives running cool. The units offer the latest 52x CD-R and 16x DVD±R/48x CD-R Plextor drives and an optional USB connection package ($139) that allows users to send disc images directly from their PC or Mac to the Reflex duplicator. The ReflexMax line is available in either CD-R or DVD±R/CD-R versions in one ($299/$490), four ($790/$1,290) or

seven drives ($990/$1,790). The seven-drive ReflexUltra ($690/$1,290) offers the same features as the Max, but is optimized to burn only Disc Makers' Ultra blank CD-Rs or DVD-Rs.

TUBE-TECH SMC 2BM

Tube-Tech's (www.tube-tech.com) latest incarnation of its multiband stereo tube compressor is optimized for mastering. The SMC 2BM ($6,595) adds matched-resistor level controls for precise replication of previously used settings. The 12-step matched-resistor gain controls on the SMC 2BM guarantee channel-to-channel and recall accuracy within 0.1 dB. Sidechain controls employ 31 detent potentiometers. The unit includes variable crossover points for precise control of all three bands of optocompression. Independent band-specific threshold, ratio, attack, release and gain parameters let the user tweak each band's compression to perfection while adding or subtracting that band from the mix with the output control.

LINE 6 AMP FARM 3

Amp Farm 3 from Line 6 (www.line6.com, $595) now gives users selectable microphone models that capture classic cabinet-miking techniques across a gang of new cabinet simulations. The latest version supports Pro Tools 6.7 on Pro Tools|HD and Pro Tools|HD Accel systems, plus Digidesign's VENUE live sound environment. Support for 192 kHz is now available on Accel systems

(Mac/PC), and Amp Farm is now iLok-compatible, allowing complete portability. Digidesign (www.digidesign.com) is now the exclusive distributor for Amp Farm; the plug-in can be purchased on Digi's site via download.

Upgrades and Updates

Aphex Systems (www.aphex.com) is now **shipping the Model 230 Master Voice Channel**. The unit features a preamp, dynamics processing, S/PDIF and optical digital outputs (up to 96 kHz), and word clock I/O...The **Dry Studio Kit and Percussion Kit** from **Smart Loops** (www.smartloops.com) hit the streets with more than 300 grooves and samples delivered in three loop formats, allowing users of Logic, GarageBand, Reason, ACID, Digital Performer, SONAR, Cubase and any other compatible software to work with the loops...**Studio Network Solutions** (www.studionetworksolutions.com) announces that the **globalSAN iSCSI system**, the only complete, multi-user, shared-storage iSCSI SAN available for Mac and PC, now offers **Fibre Channel and SCSI support**...**IK Multimedia** (www.ikmultimedia.com) is **offering 11 new SampleTank 2 sounds** along with 18 custom-made presets—all free. In addition, SampleTank 2.1 XL is now available for all existing SampleTank 2 XL users, and includes 1.5 GB of new material designed expressly for the new upgrade...**Native Instruments** (www.native-instruments.com) **offers Traktor DJ Studio 2.6** as a free upgrade for 2.5 users. The new version offers compatibility with Stanton's FinalScratch 2 hardware; Internet broadcasting; direct recording to disk; support for AAC, WMA, Ogg Vorbis and FLAC files; and playlist history. In addition, **the NI Komplete 2** has been expanded to include 11 software synthesizers, samplers and effects, including the Battery 2 drum sampler, Absynth 3 and a Kontakt 2 update; retail is now $1,495...**Brauner** (www.braunerusa.com) is now **shipping the Phantom V**, its first non-tube, variable-pattern mic, based on the VM1 capsule design...**Steinberg** (www.steinberg.de) is **now offering HALion 3.1**, featuring new MIDI and parameter-management capabilities and numerous other enhancements. It is available free to all registered users via download at ftp.steinberg.net...**Sonic Reality** (www.sonicreality.com) is now **offering updates of its Sonic Refills for Reason 3**. The updates include Sonic Refills Volume 11 Retro Keys, Sonic Refills Volume 19 Vocal Textures and Sonic Refills Volume 20 Mello-T. The trio is ready for download from www.esoundz.com or www.propellerheads.se...**Spin Audio** (www.spinaudio.com) has released **V. 1.2 of its Virtual Mixing Console**, which offers new plug-in support and improved compatibility with a number of virtual instruments and sample playback applications...**MusicLab** (www.musiclab.com) is now offering **V. 2.2 of MIDIoverLAN CP** and a new Platinum Edition. The application lets you send and receive MIDI data over a LAN or route MIDI data among apps on the same computer (Mac/PC)...**Waves** (www.waves.com) announces that users can now acquire **audio support for Digidesign's ICON through the Waves Update Plan.** ■

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BY K.K. PROFFITT

Sony Oxford Restoration Tools Plug-Ins

Noise-Reduction Suite for Pro Tools|HD

With its Oxford EQ and Reverb, Sony Oxford has established a reputation for excellence in plug-in design in a very short amount of time. So it's no surprise that Sony Oxford Restoration Tools combine an innovative approach to traditional noise-reduction processes with some additional features that address specific areas in audio restoration.

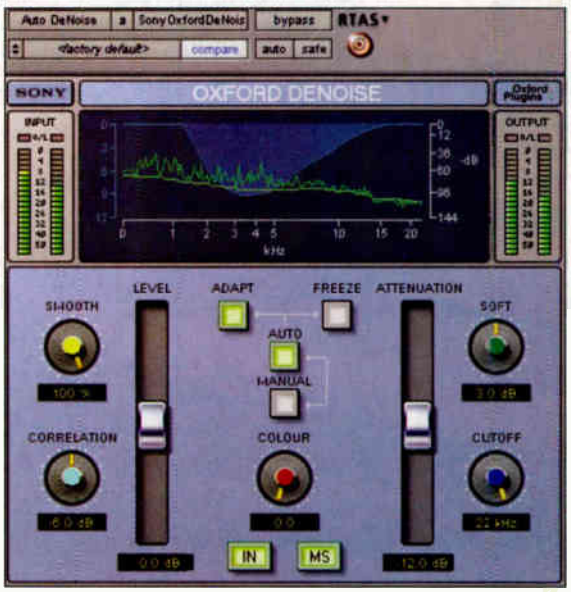
Three RTAS modules comprise the Sony Oxford Restoration Tools: Oxford DeClick (including DePop), Oxford DeNoise and Oxford DeBuzz; these plugs also work in AudioSuite, although manual DeClick may yield slightly different results with AudioSuite. You may also want to turn on delay compensation in Pro Tools because the sample delays for the plugs can be disconcerting in playback: DeClick is 2,794 samples, DeNoise is 10,208 samples and DeBuzz is 7,137 samples. Minimum configuration includes Windows XP or Mac OS 10.2.6 or later, 800x600 minimum display, Pro Tools 6.1 or later and an iLok USB Smart Key.

DECLICK AND DEPOP

DeClick repairs "impulsive disturbances" of up to 5ms duration (and no shorter than one sample). It is clearly meant to be used primarily for vinyl restoration, although I restored some forensic audio so that voices were audible in a badly damaged recording. With severe damage, large pops may still be heard as quiet "thumps" in Playback mode, but when manually declicking pops in AudioSuite, Restoration Tools often "flat lines" the space where the click had been. It's quite different than Sonic Solutions' manual de-click because you're often left with nothing graphically, but during playback, the absence of the click plays through without disturbance and the remaining audio sounds natural. For moderately damaged vinyl, you can get fine results in a fairly short time.

The DeClick module comprises two sub-modules: Pops and Clicks. You can noiselessly switch either or both in or out, and you may switch the entire module in or out without glitching using the In buttons. The Pops' sub-module has three controls: Threshold, Soft and Sensitivity. Threshold separates the larger pops from smaller clicks (also called "crackle"), Soft controls the duration of detected pops and Sensitivity controls the probability that audio will be detected as part of a large pop or click. Although the manual states that Sensitivity will not usually need to be changed from its default 50-percent setting, I found that in some forensic settings, results for pops were usually better with Sensitivity set to 100 percent.

The Clicks sub-module comprises two controls: Sensitivity and Repair. As in the Pops sub-module, Sensitivity also determines how likely audio will be detected as part of a click, but because clicks and crackles are much smaller than pops, its granularity of resolution is improved by giving it a fader rather than a rotary pot. Repair salvages high frequencies when de-clicking audio with high-frequency harmonic structure, such as brass instruments, strings and female vocals. DeClicking can also (to some extent) repair audio with clipping distortion. The Repair process involves interpolating the surrounding audio and, because the flattened peaks are detected as clicks, the plateaus caused by overs can sometimes be gracefully reshaped into less-offensive audio.



The DeNoise module is intuitive—even with 19 controls.

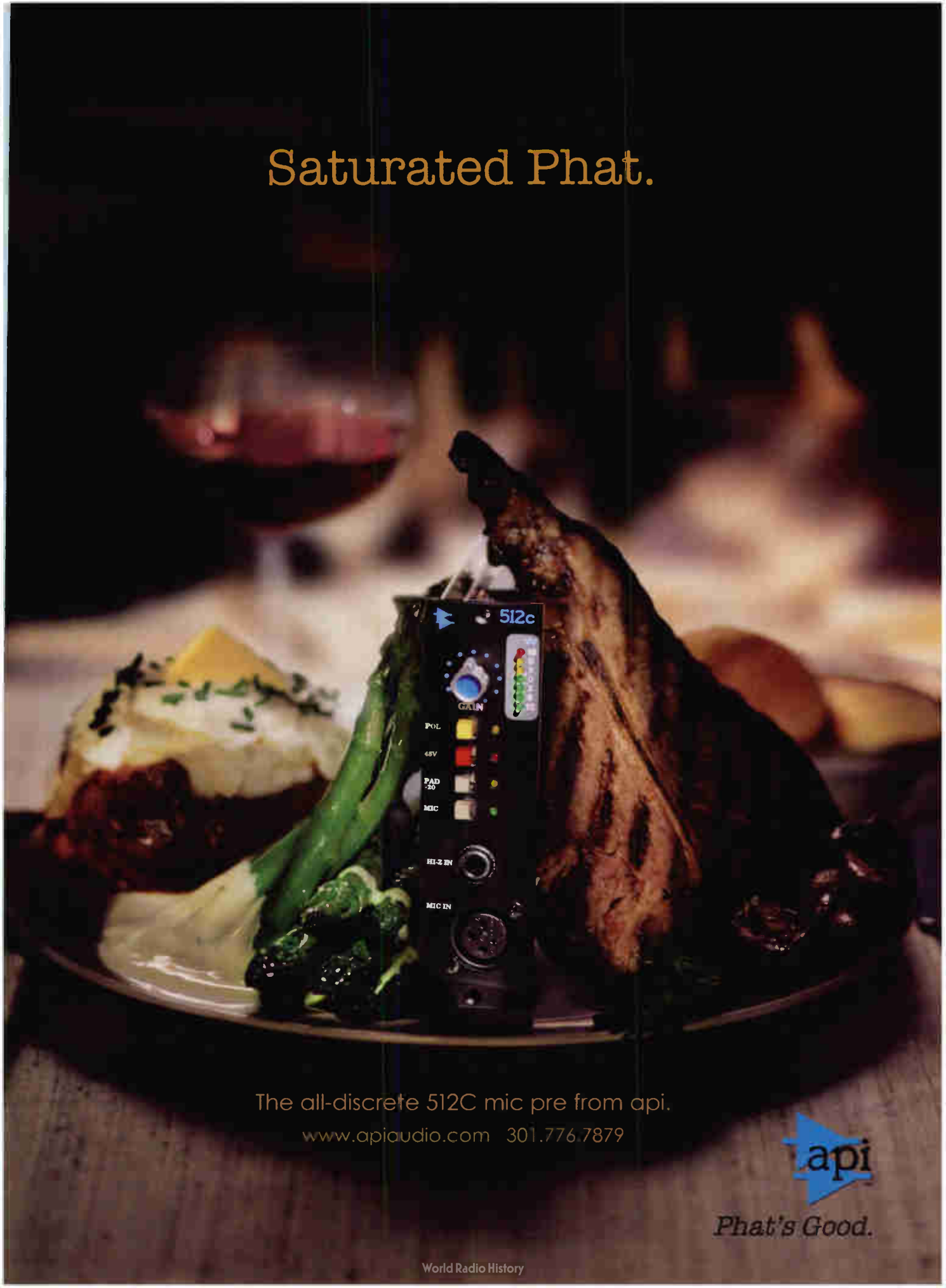
COME ON FEEL DENOISE

DeNoise provided excellent results when I needed to reduce boominess and air conditioning in indoor dialog, as well as cleaning up outdoor dialog by reducing ambient noise of distant traffic and wind rustling dry leaves. With its Automatic mode, DeNoise gracefully adjusted to dynamically changing noisy environments, and it was a no-brainer to remove hiss. Its frequency-dependent attenuation curve, one of the module's most useful component, provided a quick way to tweak out offensive areas and target them for maximum noise reduction.

The DeNoise module is complex with 19 different controls, but most of it is fairly intuitive. In a dark-blue window in the upper third of the module, there's a display of the audio spectrum from 0 to 20 kHz and level from 0 to -144 dBFS. The Noise Fingerprint is shown as a hyphenated line that approximates the contour of the spectrum of the noise. The current spectrum of the noisy audio appears as a jagged line.

Near the center of the module is the Auto mode switch that enables automatic updating of the noise fingerprint. To the upper left of that is the switch for Adapt mode, which updates the automatic noise fingerprint every 50 ms when in Auto mode. With both of these switched in, DeNoise tracks audio where the noise spectrum changes over time. This mode is also useful when a "clean" sample of noise is too short to produce a snapshot fingerprint or where there is no area in the program to create a snapshot fingerprint with the Freeze switch. In Auto mode, the Freeze switch stops updating the automatic noise fingerprint (and switches off Adapt).

The Smooth control usually resides at the maximum setting, but if there are



specific tones in the noise spectrum, it's best to reduce smoothness to allow the fingerprint to more accurately reflect the "bumps" in the frequency spectrum. Level adjusts the vertical level of noise fingerprint in Manual and Auto modes.

Manual is the most intuitively obvious mode if your source program's noise spectrum is white or slightly colored. Just move the level to adjust the vertical level of the noise fingerprint and adjust the color control from fully counterclockwise (white noise) to halfway (pink noise) to fully clockwise (red noise).

The Correlation control regulates the de-correlation between the noise fingerprint and low-level signal in Auto mode. The attenuation control and the frequency-dependent attenuation curve add together to give the total maximum noise reduction at each frequency. Beyond the cut-off frequency, this overall attenuation level is applied non-dynamically; below the cut-off frequency, the de-noise process operates normally. It's useful for band-limiting material that has initially been recorded at a lower sampling rate and exhibits aliasing or a whistling corner frequency in fingerprint contour.

Mid/Side control (stereo instantiation only) applies noise reduction to the side channel only of a stereo pair; mid channel is unaffected. This control is most useful for de-noising FM radio broadcasts where most of the noise is in the side channel.

The DeNoise module provides a lot of control to the user—the more complex routings can be a bit daunting at first. It isn't a terribly steep learning curve, however, and the rewards for learning the system are well-worth the effort.

WHAT'S DEBUZZ?

DeBuzz uses Adapt and Freeze switches that control how the buzz frequency is tracked. In Adapt mode, the frequency fader sets the initial search frequency for tracking a buzz. In Freeze mode, the fundamental frequency is not tracked and the buzz removal filters operate at the current frequency level of the fader.

In the dark-blue window in the top third of the module, the display shows the fundamental frequency at which the buzz filter is operating and a confidence bar that shows the level of confidence in the buzz detection in Adapt mode.

I found that with small buzzes, it was useful to examine the signal with a spectrum analyzer (I used Waves' Paz) to see where possible buzz frequencies might be located. This enabled me to hone in on fundamental buzz frequencies a lot faster than slowly moving the frequency fader.

Sharp sets the Q of the notches for buzz harmonics removal. Select Weak mode when buzzes have harmonics that lie at or below the level of the desired signal; conversely, use Strong mode when the buzz is generally louder than the level of the desired signal. Depth is usually left at minimum: -144 dBFS. If you're removing good signal along with the bad, then you can raise it—but only as a last resort. The Gate fader controls which range of amplitudes in the source material gets filtered. (You just keep moving it downward until you start to hear the buzz and then back it off a bit.) There's also a bandwidth control that limits the frequency spectrum of the buzz filtering.

It's a straightforward set of tools, but proper buzz filtering can be extremely tricky if you don't have the patience to locate the fundamental frequency or frequencies; sometimes, you need to run DeBuzz twice.

LET'S GET CLEAN

At JamSync, I work with a lot of independent video artists. The Oxford DeNoise and DeBuzz plugs proved invaluable on Ben Dixon's *Skarecrow*, a hayseed horror flick that suffered from a bad cable on a boom, hum and complex noise with different and combined fundamentals, and environmental noise that threatened to completely engulf the dialog.

I found that DeBuzz worked amazingly well with hum that could be heard sneaking into musical passages as the dialog was raised. Simple filters simply wouldn't do, but I would often hum the fundamental, check the note with a tuner, check the pitch against my handy frequency chart and plug that value into DeBuzz. Several times, I would remove one component of the hum and then find a remainder with a different fundamental pitch. I was able to again go through the routine and remove the remaining component with no perceptible damage to the dialog and very little to the score. (I was working with a pre-mixed stereo track.) Yanks beware: This British plug instantiates with 50 Hz as the default fundamental. I wish there was a preference for State-side engineers to switch that to 60 Hz.

DeNoise worked wonders on open field shots in which the Tennessee wind kicked up storm after storm of dust. DeClick helped the bad cable problems to some extent, but the "skritch" (multiple quick embedded clicks) and double-click common with this type of problem often responded better to a simple cut and paste with a preceding or following cycle of the waveform.

By far the most annoying problem with the soundtrack was the varying levels and frequencies of background buzz and hum. Oxford DeBuzz took care of that when none of the other tools in my plug-in kit would touch it. I was able to shift the sound from horrible at points back to the horror it was intended to show.

DELIGHTFUL, DELOVELY

True to their heritage, the Sony Oxford Restoration Tools deliver a lot of power in a well-designed package. If you already have

DeBuzz controls frequency tracking with Adapt and Freeze settings.

Sonic No-Noise and Waves Restoration Bundle, this is still a worthwhile addition because it offers several things not found in those packages. If it's your first foray into noise-reduction software, the Sony Oxford Restoration Tools are a good place to start, and the accompanying manual is an excellent introduction to noise reduction and removal techniques.

All in all, it's a very desirable bundle, with easy surface-level control for novices and power and deep control for pros. Price: $1,195.

Sony Professional Audio, 800/686-7669, www.sony.com/professional. ■

K.K. Proffitt is the chief engineer at JamSync, a Nashville-based studio specializing in surround sound production.

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BY KEVIN BECKA

GML Model 2032 Preamp/EQ

Single-Channel Unit with 8200 and 8300 Lineage

Some two centuries ago, German author and philosopher Goethe said, "Excellence is rarely found, more rarely valued." It's clear that his quote needs an update, because Goethe never used any products from GML Labs, whose latest excellent effort is the Model 2032 single-channel mic preamp/equalizer.

The unit borrows heavily from the 8200 EQ that's ubiquitous in high-end studios and GML's super-clean 8300 mic preamp. Like its forefathers, the 2032 features a transformerless, electronically balanced, Class-A signal path. However, it differs from its predecessors with its internal power supply—a first for GML—and the addition of brightly lit polarity and phantom power switches. The latter is a welcome confidence-builder for ribbon mic users.

As a bonus, the front panel includes a ¼-inch unbalanced hi-Z instrument input (1 megohm), which can be selected using the mic/MI switch. The preamp provides up to 75 dB of clean gain using a knob that steps between 15 dB and 70 dB in 5dB increments, plus a trim pot with ±5 dB of continuously variable gain. The filter switch has three positions: flat or a choice of second-order (-12dB/octave roll-off) Butterworth highpass filters at 40 Hz or 100 Hz.

The EQ will be familiar in sound, look and feel to anyone who's used the 8200 EQ. The 4-band fully parametric EQ is broken into lows, low-mids, high-mids and highs, with the outer bands offering shelving functions when turned fully counterclockwise. Up to ±15 dB of gain is available on each band via the gain pot. A dual-concentric knob offers overlapping frequency choices, and Q (bandwidth) control, which is variable from 0.4 to 4 octaves.

The front panel also has a power LED indicator and an overload LED that monitors the preamp and EQ outputs and is set just below clipping at +24 dBu. (The actual clipping point, as determined by 0.1% THD+N, is 27 dBu; so there is a minimum of 3 dB of additional headroom beyond the clipping indicator.) The back of the unit has an IEC socket, fuse holder, 110/220V selector and I/Os for the main signal path and insert. A ground block offers separate bridged paths for the electronics and chassis. The Insert Out jack carries the mic preamp out post-filter. With the Insert button engaged on the front panel, the Insert In routes input to the EQ, while the main output carries its output. As an aside, the XLR input can handle line sources, provided that the device can drive the 1k-ohm load impedance.

IN YOUR EAR

My first 2032 session involved EQing a bass track. Selecting 100 Hz and turning it up rounded out the instrument nicely and was instant love. The bottom end was warm and the Q control let me precisely sculpt the bass to the track. Next, I used the 2032 as a DI and was pleased with the outcome. The bass was clean and it was nice knowing that I could tweak a band or two if I needed it. The bass guitar had active electronics with a hot output, but the 2032 handled the signal without a problem.

This unit is made for vocal tracking. I used it with both a U87 and a BLUE Bottle mic with superb results. Paired with an excellent mic, the 2032 makes vocal tracking a breeze, offering ample clean gain and the ability to add any kind of presence, low or high end, that I needed.

Next, I used the unit paired with a DPA 4061 for miking a snare drum and later the top of a tom. The DPA is very open by nature and juicing it with the 2032 made for an excellent combo for drum recording. Later, I tried it for recording percussion, acoustic guitar, guitar amp, sax and mono piano, all with excellent results.

OUT THE DOOR

Warning: The 2032 can be habit-forming with continued use, resulting in the desire to have more. In short, this unit is a monster. The preamp is exceedingly open and clean, provides plenty of gain and the integral power supply is brilliant. (Anyone who has ever lost the multipin XLR external supply cable from past GML efforts knows what I'm talking about.) The unit's fit and finish is excellent. The knobs and switches are solid; screening is clear and easy to read. Despite squeezing a lot of functionality into a single rackspace, the layout is spacious and comfortable.

Sonically, the 2032 exceeds any expectations you'd have about a mic preamp and EQ. The ability to separate the preamp/EQ functions makes it a tracking and mixing tour de force, giving the user a great preamp, killer DI and four bands of excellent fully parametric EQ. Quality doesn't come cheap, but when you add up all the parts and functionality, this unit is a bargain at $3,000 retail. If you are looking for an excellent front-end preamp/DI, plus an EQ that is one of the best around, give the GML 2032 a listen.

George Massenburg Labs, 615/790-1016, www.massenburg.com. ■

Kevin Becka is Mix's technical editor.

Get Real

What the pros are saying about Gefell:

Bil VornDick - Engineered 42 Grammy nominated recordings and 8 Grammy winners. Clients include Alison Krauss, Bob Dylan, Chet Atkins, Bela Fleck, James Taylor, T-Bone Burnett, Mark O'Connor, Ralph Stanley and Dolly Parton.

"It's like having a secret weapon... My Gefell mics are extremely clear and transparent. They give me the definition that many other mics do not capture."

Alan Silverman - Engineered 21 Grammy nominated recordings. Credits include Chaka Khan, Norah Jones, Cheap Trick, The Kinks, Bebo Valdes, Ricky Skaggs, Bill Monroe, Art Garfunkel, Meatloaf, Keith Richards and The Producers.

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

David Rideau - Multi-platinum engineer/producer and three-time Grammy nominee. Clients include Sting, Jimmy Jam & Terry Lewis, TLC, Janet Jackson, Earth Wind and Fire, George Benson, Tom Scott, Al Jarreau and Kirk Franklin.

"The Gefell M930 is a wonderful sounding mic that has given me great results on acoustic piano, acoustic guitars, percussion and drum overheads. The low self noise also makes it a perfect choice in situations where wide dynamic range is an issue. I call it my elegant workhorse."

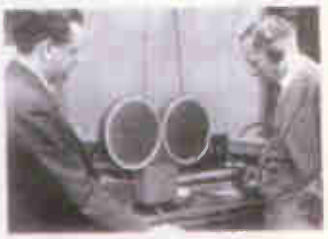
Dave Bottrill - Peter Gabriel, Deep Forest, King Crimson, Robbie Robertson, Tool, Silverchair, Tony Childs, Joni Mitchel, Terry Gunn, Youssou N'Dour, Kid Rock, Roger Eno and the "Philidelphia" soundtrack.

"For vocals, the Gefell UM900 is warm, open and very robust. The control also makes it flexible. It works well on percussion and acoustic instruments, all the while retaining the air and presence that one expects from a large diaphragm microphone."

M930 matched stereo pair with SH93 X/Y bracket

Real History

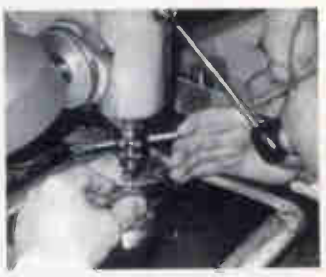
Since 1928, Gefell has led the world in microphone technology, starting with the world's first condenser. In 1935, the remarkable M7 capsule was introduced. That led to the legendary sound of the U47, the U49 and in 1957, the UM57 – the first ever multi-pattern microphone. Today, Gefell continues the tradition under the direction of Mr. Kühnast Jr. with the original M7 capsule featured in the UM75 and UM92.1S tube microphones.



Georg Neumann with Chief Engineer Mr. Kühnast Sr. – circa 1933

Real Quality

Quality comes with the desire to do it right. For over 75 years, Gefell has built microphones by hand in order to achieve the highest standards possible. From the precision machining of raw metal stock to the hand-stretching of each diaphragm and individual testing of each microphone in an anechoic chamber, Gefell sets a standard that is simply higher than *any* other.



2004 – Hand-drilling an M930 back plate

Real Innovation

Introducing the M930 – the most advanced condenser microphone made today. Compact for easy placement, the M930 features a full-size 1" diaphragm mounted on a triangulated pedestal to diffract body reflections away from the capsule and minimize acoustic field disturbance. Inside, the M930's optical power isolation lowers self-noise to a mere 7dB while providing 80 Volts to the capsule for an unprecedented 142dB signal handling. The results are stunning: that 'big bold German sound' without compromising sensitivity, articulation or tonal structure. No other microphone comes close.

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BY ERIK ZOBLER

Nautilus Commander Analog Summing Box

Class-A Stereo Combiner for Recording and Mastering Apps

Which is better? Mixing inside or outside the box? If you haven't had this discussion, then either you have your head in the mix, don't get out much or don't read this magazine. The proliferation of analog summing mixers designed to facilitate DAW mixing "outside of the box" indicates that this is a growing trend in the audio community. Nautilus Master Technology's Commander is a new entrant into the analog summing mixer field.

The design and ergonomics of Nautilus equipment is specified by mastering engineer John Vestman and implemented by Steve Firlotte of Inward Connections. The Commander uses a Class-A SPA 690 discrete op amp block. All switching is accomplished by relays, and there are no surface-mount components. It boasts a frequency response of 10 to 100k Hz, +0/-1.5 dB with 0.02-percent THD. Channel crosstalk is rated at -90 dB @ 1k. This is a clean machine.

SOLID, STRIKING DESIGN

The Commander uses multicolored buttons and analog VU meters and knobs that create a retro feel with a modern design. It has 12 inputs that can be summed to stereo. The first eight inputs are balanced and have pan pots and mutes on the front panel. The pan pots are very smooth and the mutes, like all of the pushbuttons on this unit, are relay-based. There are also two stereo pairs of unbalanced auxiliary inputs that don't have mutes or pans.

The source B stereo input has variable gain that is controlled by a front panel trim pot. The Commander has two analog meters that are set to display a "zero" level of +4 dBm. A meter trim knob, directly below the meters, allows trimming the meters from -4 to +4 in 2dB steps.

There are two insert buttons on the front. The left button puts a stereo insert on the mix bus, while the right allows you to put the insert on the source B input. The Commander also has a large master level control that does not add any gain, but does allow you to do effortless, smooth fades.

The back of the Commander is populated with 14 XLR Neutrik gold-plated input combo jacks, eight transformer-balanced normal inputs, four unbalanced auxiliary inputs and two balanced jacks for the source B input. There are two sets of stereo bus outputs, also on gold-plated XLR connectors. There is an AC ground lift and a virtual dynamics AC cable ($360, included in the unit's price).

IN THE STUDIO

The Commander is a simple and intuitive box to use and offers features that other summing boxes don't, such as a level-adjustable source B input, adjustable meter sensitivity, a stereo insert assignable to the summing path or the source B input and a continuous master fader. The source B allows instant level-matched comparisons of your mix to another source—ideal for referencing your mixes. You can adjust the meters to bring them into a useful range—a feature that mastering engineers have had for years. It comes in handy when you want to level-match to some of today's blisteringly hot CDs. The insert on the Commander is useful for processing your mix through outboard gear, as it allows you to instantly check if you are actually improving your mix by adding your insert chain.

The Commander allows engineers to do stem mixes and sum them to stereo outside the box. Once back in the analog world, mixers can revisit their analog outboard processors, either inserted in-between the DAW and the Commander or on the 2-channel mix insert of the Commander (or both). I used the Commander to mix an album that was recorded with very sparse instrumentation. I sent drums and percussion to 1+2, piano to 3+4, bass to 5, vocal to 6 and all other instruments to 7+8. I used the two extra external stereo inputs as reverb returns (the first from all of the internal effects and the second as a return only for the vocal reverb). I had lots of tube gear patched in with EQ and compression on the mix insert. I printed to an Alesis Masterlink at 96/24. This combination of equipment gave me a deep low end and a pleasant high end, with a depth, width and clarity that surpassed what I was used to hearing. Once I heard this sound, there was no way I was going to send this box back.

BUT WAIT, THERE'S MORE

Not just for mixing, the Commander is also designed for the mastering environment in which clients deliver subgroups derived from their mixes as stems. This Stereo Master Separation format enables a much greater level of flexibility and control during the mastering process, allowing processing to be applied to select stems without affecting the entire mix. In addition, mastering engineers can check to make sure they are retaining the artist's original vision by referencing their 2-channel mix (in the source B input) with the Master Separations (in the summing path).

SO HOW'S YOUR SUMMER?

The Commander is aimed at the high-end user and it certainly does deliver features for the dollar: solid construction, intuitive interface and excellent fit and finish. The unit works nicely as a summing box for DAW use and as a mastering tool. There are a lot of great options now in the summing box wars, and the Nautilus Commander is certainly a contender. Anyone looking for this type of signal path upgrade should take a look at the Commander. Price: $3,995.

Nautilus Master Technology, 714/894-4000, www.nautilus pro.com.

MIX ONLINE EXTRAS

Erik Zobler is an L.A.-based mixer. He can be reached at zobiz@mac.com.

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Professional Audio Optimization: Your PC is ready for audio, right out of the box! Our technicians perform a 40-point hardware and OS optimization procedure to ensure that your hardware and software will work glitch-free.

My new Creation Station Audio PC is the cat's meow. I like the CPU speed, fast bus architecture, default RAM, dual drives, and ultimately its quietness. There have been times when I've had to check if I left it on because I couldn't hear it running! — *Dave C.*

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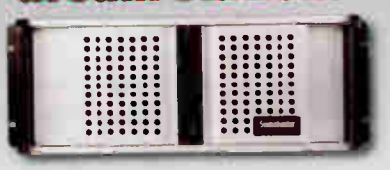

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BY JOE HANNIGAN

Lipinski L-505 Passive Monitors

Audiophile Speakers By Audio Engineers, For Audio Engineers

My new year got off to a great start when FedEx dropped off a pair of Lipinski L-505 speakers for evaluation, polywrapped in their own foam-padded, zippered nylon carrying cases—perfect for going out on remotes and for shipping. The Lipinski product line is a new venture for noted recording engineer Andrew Lipinski and son Lukas. Lipinski's goal is to create high-resolution audio production and mastering equipment that satisfies *him* first.

OUT OF THE BOX

The L-505s (and the larger L-707s) are a passive design in sealed enclosures. Lipinski states that the presence of an internal amplifier creates unacceptable results—up to 15-percent second-harmonic distortion—on its speaker's response curve. Furthermore, a few feet of good heavy-gauge wire won't diminish performance, rendering any "self-powered" issues moot. The beefy connectors certainly won't impair signal flow either.

The heart of the magnetically shielded L-505 speaker point-source design is the 1-inch neodymium ring-radiator tweeter and its placement. Time alignment is accomplished acoustically with depth positioning instead of electronic or crossover-induced delay. The crossover is built with premium-quality parts: foil inductors and oxygen-free copper wiring throughout. The tweeter is center-positioned between the two 5-inch (top and bottom) glass-fiber mid woofers. Specially designed textured Belgian foam eliminates side reflections, resonances and other anomalies—all designed for the best imaging and flattest frequency response possible. It is suggested that the tweeters should be at head level for the best imaging and the speakers should be placed on a solid, stable surface. Sand or lead shot–filled, heavily anchored supports are recommended, or use Lipinski's L-36 36-inch stands.

On the rear, two 1-inch gold-plated brass connectors per post give plenty of surface contact area for spade lugs, 2AGW wire or banana plugs. Although rated to run efficiently on as little as 75 watts RMS, the L-505s are stated to accept much more power than that; the company's only caveat is to not use them for P.A. work.

Lipinski recommends using a subwoofer with these speakers and makes its own supplementary subs: models L-150 and L-150G. The smooth 70Hz roll-off matches my own sub perfectly; the hand-off is smooth and coherent. Even with the sub switched off for testing, the L-505s delivered a smooth, solid sound all the way down to 40 Hz. Mid bass didn't get muddy or sloppy; everything stayed tight down to the subwoofer crossover point. This is a critical area that can be easily missed, with overcompensated bass tracks and kick drums often the result.

STUNNING REFERENCE DETAIL

In my listening tests (A/B'ing them with my trusty KRKs, Tannoy 800s, etc.) using some current works in progress (24/96 studio and location recordings, CDs ready to be mastered, commercial CDs, etc.), the first thing I noticed was the startlingly clear, solid top end. Not overly bright, not sizzling, just *there*. I spent the first two hours eagerly playing everything I could get my hands on, everything I thought I knew well. Eventually, I had to take a break—it was that stunning, exciting and revealing. I didn't get listener fatigue; I was actually getting over-stimulated and couldn't quite believe what I was hearing.

The level of detail that the L-505s reveal is simply jaw-dropping. Mono is truly mono, perhaps like you've never heard before. (I certainly hadn't!) When positioned properly and seated in the middle, you'll swear the soloist (or anything panned center) is roughly an inch in front of your face. Close your eyes, and the rest of the music spreads out all around the sound field—nearly three-dimensional. On more than one occasion while testing a DVD soundtrack in stereo, I was startled into thinking that there was someone behind me.

On location, it's quite an experience to monitor with the L-505s (instead of on headphones). I brought the L-505s out on a multitrack live operatic concert recording (full orchestra, soloists, chorus and audience) for the Academy of Vocal Arts production of Pietro Mascagni's *L'amico Fritz* at the Philadelphia-based Kimmel Center's Perelman Theater, and got

superb results. The ability to monitor a live recording onsite accurately and cleanly is a huge help for later mixdown. Hearing the final results on a local NPR broadcast proved to me that the L-505s gave me exactly what I needed to hear in critical tracking, mixing and mastering work.

SOLID, BELIEVABLE MONITORS

Accurate playback and mix transportability are critical for anyone in the mixing and mastering business. "Good" speakers are worthless if they're too sexy or lie to you, creating an inaccurate frame of reference. While working with these speakers, my mixes sounded more precise and held up solidly—with no surprises—when played on other systems. This is a speaker that will motivate you to get the best mix possible.

A friend of mine recently underwent corrective eye surgery and hasn't stopped raving about how fantastic life is now with her new "eyes": seeing things almost as if for the first time again. I can fully relate now in aural terms. To experience your own recordings with stunning new details and clarity, you *must* hear these speakers. Your ears will feel brand-new again—without the lasers. Price: $1,495.

Lipinski Sound, 301/229-4360, www.lipinskisound.com. ■

Joe Hannigan runs Weston Sound & Video in Philadelphia.

"Slammin'!"

Anthony Roberts, Monitors - Tower of Power

"I'm in the studio with R.O.D and layin' the i-5 on guitar cabs. Great punch in the upper mids and perfect for heavy guitars that need that special drive. Also fantastic on snare - it can sure handle some serious SPL's!"
Travis Wyrick, Producer, Engineer, Mixer - R.O.D.
Charlie Daniels, Filler

"So how does it sound? In a word, impressive.....and on snare drum, it rocked hard. Overall, there's a clarity and openness to the mic that you don't hear from a lot of dynamics..."
Phil O'Keefe, EQ Magazine

"On the road I use it with The Dead and Phil Lesh and Friends. At home, I use it at the Phoenix Theatre in Petaluma with every mic imaginable. From the top to the bottom, the i-5 sets a new standard!"
Ian DeBlois, Monitors - Phil Lesh and Friends, The Dead

"Audix really delivers with the i-5. Performing well in about every application on which I tried it, the i-5 does justice to many sources both on stage and in the studio."
Karen Brockpahl, Electronic Musician

"During our recent tour, I was very pleased with the results using the i-5 on guitar cabs. The sound was smooth and clear with great presence in the mix. The i-5 is rugged and solid. It qualifies as THE all-purpose dynamic workhorse in any mic collection."
Gary Hartung, FOH - Crosby, Stills & Nash

"The i-5 is an awesome utility mic—it is much tougher and sounds better than the 'old faithful' I am now able to replace."
Dave Rat, Rat Sound

"I've used the same mic on snare drum for recording and live sound applications for 30 years. I've tried other mics from time to time but always returned to the old favorite. Recently, I tried the Audix i-5. No matter what style of music, the i-5 sounds great and now has become my new choice for snare drum."
Tom Edmonds, Engineer - Lenny Kravitz

"I have dreamed of this day—I can now retire the last of my BM57's. Now that I've been exposed to the future, why would I want to live in the past?"
Eugene "Gino" Michelig, Lead Audio Engineer - Mohegan Sun

"This mic is slammin'! And if you're tired of having the cap of your snare mic being blown into pieces from a heavy stick hit—you'll love the i-5!"
Anthony Roberts, Monitors - Tower of Power

"On guitar amps the i-5, compared to the 57, was less tipped in the high mids, but had a fuller overall tone...I'm really digging using the i-5 and will be buying the second mics I was sent, if that tells you anything."
Larry Crane, Tape-Op Magazine

"The i-5 is very impressive as a bass mic. It handles the SPL's and captures the clarity of the notes while still maintaining the warmth of the low end. It's a great new tool."
Deanna Franklin, FOH - Tom Waits

"With the i-5 on my snare drum, there's just no going back. I've just started using it on guitar with very good results there too. The i-5, it's my new little weapon."
Neil Citron, Head Engineer - The Motorhead

"The i-5 is truly a multi-purpose microphone, it sounds great on a wide variety of sources, but it particularly shines on snare drums and toms. Sounds like a winner in my book."
Mark Parsons, Modern Drummer

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BY NICK BATZDORF

Audio-Technica AT2020 Condenser Microphone

Affordable Fixed-Cardioid With Mid-Sized Capsule

The AT2020 is Audio-Technica's entry-level, side-address studio condenser mic. It brings the company's build quality and consistency into the same street price range ($100) as many of the Shanghai-made Neumann U87 look-alikes.

This is a no-frills mic that lacks a highpass filter or shock-mount. It has a single pickup pattern—cardioid—and therefore needs only one diaphragm. That diaphragm has a fixed charge and is 16 mm, about halfway between most small- and large-diaphragm models.

Audio-Technica lists the 2020's frequency response at 20 to 20k Hz. Between those points, it has a slight high-end rise (about 3 dB) between 5 and 20 kHz. At about 200 Hz, it starts a gentle dip that gets to about 5 dB down at 80 Hz. With a slightly bright but neutral sound and a 144dB specified input handling capability, the 2020 is more of an all-purpose mic than a specialist model with an opinion about what it's picking up.

SOLID BUILD

The AT2020 ships in a foam-fitted cardboard box, but it also comes with a vinyl pouch for storage. In place of a shock-mount, it has a pivoting stand clip and includes the two standard thread sizes. The clip is nicely made and holds the mic securely in position; however, I found that the mic sounded smoother in a standard shock-mount. It's hard to say whether that's due to the way AT2020 couples with the mic stands I used, which are not particularly fancy.

Regardless, this mic doesn't suffer from the body resonances that a lot of budget mics have when you tap them; in fact, it appears to be built every bit as well as the more expensive ($895 list) AT4050 in my arsenal. After discovering that the shock-mount helped, I mounted the 2020 in the AT4050's shock-mount (AT8441) for this review. (*The company says its AT8458 shockmount [$99] also fits the AT2020.—Eds.*)

GREAT ON GUITAR

The first test was to try the AT2020 on the acoustic guitar part for a library cue I was working on. I also put up the AT4050 and an MXL V57M for comparison, running them through a Millennia Media STT-1's mic preamp section in its uncolored solid-state (as opposed to tube) setting.

During my tests, the average mic position was about 14 inches away from the location where the sound hole meets the neck. Rather than being clinical and putting the mics in the same exact position, I moved each one to where it sounded best. At least in a spot-miking situation, I consider this the only valuable way to audition mics because that's how mics are actually used.

Both Audio-Technica mics had a similar high-end boost and featured the pick noise that the test part needed, whereas the MXL V57M mic had less. While the Audio-Technica mics have a similar overall sound, the higher-end 4050 sounded rounder and had less of a dry, constrained sound. To remedy the lack of low-end roundness, I moved the 2020 closer to the instrument for some proximity boost, making it sound more similar to the 4050. With its more rolled-off low end and drier sound, the AT2020's unequalized sound was actually the most appropriate of the three for this particular guitar part. The AT2020 is a credible choice for strummed, percussive acoustic guitar parts.

CHECKING OTHER SOURCES

Next, I tried the three mics on recorder, solo cello, shaker and tambourine. Both the 2020 and 4050 sounded slightly bright—yet reasonably faithful—to the sound of the actual cello, while the V57M emphasized the cello's resonance too much.

The 2020 would not be my first choice for shaker, which wants a more exaggerated low and/or high end. However, it worked fine on tambourine (an indicator of solid transient response) and especially on recorder, producing a brighter rendition of the original sound.

In general, I would recommend using the AT2020 very close to the source. Its proximity effect is fairly controlled, but I also found that room tone tends to spotlight its less-pleasant characteristics rather than its strengths. Normally, one would make this suggestion for a noisy mic, but that's not the issue here. The 2020 is intended for personal and project studio applications in which you'd normally want to mike close to the source to disguise the untreated recording rooms.

WORTHY CONTENDER

With the AT2020, Audio-Technica has succeeded in bringing its standard of construction quality into the entry-level price range. While it didn't excel in every situation, it displayed admirable qualities when used up close to maximize the direct-to-reflective balance, emphasizing its stronger qualities. It also worked very well on strummed acoustic guitar.

Some inexpensive mics are character mics, designed to add an interesting color to the sound. With them, you tend to focus on that color rather than the sound quality. The problem is that they don't work well on everything. Conversely, the AT2020 is designed to be pleasingly bright, yet accurate-sounding: to my ears, the trade-off to its greater versatility is that this design makes the shortcomings inherent to its price range more apparent. Nevertheless, it would make a credible choice for anyone looking for an affordable, all-purpose mic to start or build up their collection.

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Nick Batzdorf is an L.A.-based composer, producer, engineer and writer.

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BY EDDIE CILETTI

Upgrades, Switches and Pots

Maintaining Classic (and Just Old) Gear

Audio gear has a metamorphic history of first being essential, then "standard issue" and later disposable, until it's ultimately reborn as a "classic." Some gear is timeless in that it can be reincarnated with affordable off-the-shelf parts throughout its many lives. And then there are the exceptions.

During the past five years, I've written at least two articles about component upgrades—capacitors and op amps—and applaud everyone who has taken the plunge. While I'm very much into remote consulting, I'm hesitant about helping people choose op amps at a distance because of potential tweeter-damaging oscillations. So far, that's not stopped anyone.

My other concern is the inspiration for this month's column—the need to prioritize the work. That is, to determine if routine service should take precedence over an upgrade.

PHOTO: MIKE CRUZ

It's been more than 10 years since I made regular house calls, but my memory is still very good. Most consoles with some years on them—such as the Neve 8128, MCI/Sony 600 Series and Trident's Series 80 and Series 65—had developed very scratchy pots and switches, even back then. Any time a customer reported a few funky modules, a quick survey proved that many more modules exhibited similar problems. I can't imagine them being in any better condition now.

My recent experience in the educational environment bears this, not only with a Trident Series 80 (a '96 reissue) and SSL 4000, but also with outboard gear. There is always something to clean, repair or replace. For example, the switch that activates on the front/rear pan pot on the SSL I/O module may not get used, but it is *the* link to the mix bus. Fortunately, the switch has an open back. A cotton swab dipped in 99-percent alcohol and placed into the opening will put enough fluid into the contact area. A little exercise and it comes back to life. That's only half of the procedure.

WHEN "DIFFERENT" ISN'T COOL

When chemical treatment does not work, finding a source for new parts can be challenging. While switches are mostly off-the-shelf items, many potentiometers (aka pots) have been customized, which is costly whether or not the manufacturer is still in business *and* supporting the model in question.

On older products, rotary pots and switches were connected by wire to the PCB. This provides the user with great freedom when upgrading and replacing. But, as late-model products crammed more parts into less real estate—by directly soldering to a PCB—every dimension, including pin spacing, becomes critical.

In terms of quality, it's fairly easy to upgrade a pot—from "open-case" carbon to conductive plastic, for example—but sometimes that opens the proverbial can of worms: The original knob may not fit on the "better" part. In single and small quantities, off-the-shelf pots sell from $1 to $15 when purchased from a distributor such as Digi-Key (www.digikey.com).

Most off-the-shelf pots are singles, while many circuits, such as sweep EQ, require two or more resistive elements. Multiple element pots are priced exponentially higher—costing around $50—because they are considered custom and, as such, require a setup charge and a minimum quantity purchase. Customized pots also have dimensional issues, such as bushing size, shaft length and diameter. In addition, resistive taper can be logarithmic (as in audio), linear or some variant.

Conductive plastic parts are considered better, both in terms of materials and precision, as well as being

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sealed so that dirt does not get in. Carbon is a cheaper material and the pots typically have an "open" metal casing that is less protected from the elements, but more easily treated when they get funky. Sealed pots may last longer, but when they do get scratchy, cleaning is not an option. I'm not big on spray cleaners and prefer the pinpoint applicator because it is not as messy. (See the "Better Audio Through Chemicals" sidebar.)

CONSTRUCTION AND DESTRUCTION

Well-designed electromechanical devices—pots and switches—should be self-cleaning, but that requires pressure and enough material to survive tens of thousands of exercises.

Panasonic's 9mm (single) and 12mm (dual) audio pots are good for 10,000 to 15,000 turns, respectively. Keep in mind that these standard-issue parts cost $1 to $3 in single quantities. Clarostat's conductive plastic pots range in price from $5 to $15 and are good for 25 to 50K cycles of abuse. These are single-element parts only. Most sweep equalizers and total recall parts require two to five elements.

Cheaper pots typically use carbon as the resistive material and are open, making it easy to inject a cleaner or lubricant. The older a pot is, the more likely it can be fully disassembled for a more thorough cleaning. More expensive pots are sealed and are therefore a done-deal. Carbon is not a bad material, but certain manufacturers have used cheaply constructed pots that will not respond to any treatment and are destined for the trash can.

Switches come in many varieties, but the most poplar in vintage gear is the latching type—push once for in, push again for out—as required by EQ in/out, bus assign and insert routing switching. The ITT Schadow switch was most popular from the 1970s into the '80s. Some versions can be disassembled.

HOLY LEGS

Early transistorized gear, like API and Neve designs, used single-sided PCBs. By 1975, dual- and multilayer boards became more common. Although wire jumpers and pins can be used to link one layer with the other, it is more common to "plate" a through-hole with conductive material. The problem with the plating process is that it changes the hole's dimension, and if that space must be shared with a component, then the original through-hole size must have a larger diameter to compensate.

One console that suffers from undersized through-holes is the MCI 600 Series. Extreme care must be taken to remove all solder first, and even then, it is very difficult to remove pots, switches and IC sockets without pulling out the plating and damaging a PCB trace. It is sometimes easier to cut all of the component legs first and then individually remove each leg.

SOLDER BE GONE!

There are two ways to remove solder: Use suction or a flux-treated wire braid. Solder suckers come in two flavors: manual and motorized pump. The former is used with a conventional soldering iron; the latter is an integrated iron using special tips with various hole options, depending on the type of components being extracted. The manual type is okay for small jobs; the motorized variety is better for massive overhauls. Both require frequent cleaning and tip replacement to maintain full functionality.

De-soldering braid is a woven copper mesh that is placed between the soldering iron and the work. I prefer Chemtronics' Chem-Wik®. It comes in various widths; a 25-foot spool of the 0.05-inch width is $7.49 at www.hosfelt.com. Both de-soldering methods sometimes require that solder be re-applied if things don't go well the first time around.

UPGRADE?

So now you see why I might have several reasons to defer an op amp upgrade. If you need one more reason, then try pumping 40 Hz through your favorite pot or switch—it's very revealing. ■

For more Eddie Ciletti, visit his Website at www.tangible-technology.com.

Better Audio Through Chemicals

Gold is most resistant to corrosion as it's the only precious metal found in nature in its raw form. It is also the most expensive. All of the other metals, including silver, attempt to return to their natural state by recombining with airborne agents, such as oxygen, sulfur, chlorine and fluorine. Silver is one of the more popular contact materials for switches and XLR connectors, for example. Surely, you've seen it turn black. That's silver oxide, and it behaves as a diode if the mating contact doesn't self-clean on insertion. Silver sulfide is a non-conductive and less-obvious film that gets in the way of signals. Cigarette tar and nicotine also contribute to the contamination process.

For visibly exposed contacts such as connectors, a cotton swab or cloth, alcohol and a little elbow grease will remove most oxides and sulfides. But for contacts you can't see or access, it's worth trying products that are specifically designed for oxide and sulfide removal, such as those manufactured by Caig and Stabilant. Both manufacturers offer various application-dependent concentrations.

Due to the wide range of products offered, the support section on Caig's Website (www.caig.com) provides a mentoring card—a PDF download—detailing the entire line and some basic FAQs and tips. In essence, a two-step process is suggested for cleaning pots and switches, starting with DeoxIT to remove surface contaminants.

Follow-up treatment depends on the environment: ProGold for typical studio applications and PreservIT for more aggressive environments. Components should be exercised to help the process along—you may even want to allow DeoxIT to work overnight before moving on to step two.

I am less familiar with Stabilant *[reviewed in the March 2004* Mix*—Eds.]*, but the site intrigued me as it offered a bit more insight into the product and its application, as did www.posthorn.com, the product's American distributor. Both concentrated and diluted versions are available; the diluted version includes isopropanol and ethanol. Stabilant recommends using an applicator filled with isopropyl alcohol to flush out contaminants and old lubricant from switches before applying its product.

No matter which product you choose, I prefer the needle dispenser over spray cans, as it concentrates the solution where it's needed most. *—Eddie Ciletti*

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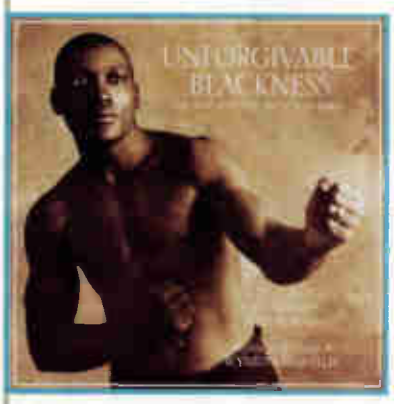
PHOTOS: CHRISTOPHER EWERS

L-R: Sandy Palmer-Grassi, Delfeayo Marsalis and Wynton Marsalis at Right Track A509's SSL J Series board

WYNTON MARSALIS AND KEN BURNS IN JACK JOHNSON'S WORLD

By Blair Jackson

The issue of race is a thread that goes through nearly every documentary that the outrageously talented and amazingly prolific Ken Burns has made. Whether painting on an epic canvas—as in *The Civil War*, *Baseball* and *Jazz*—or creating smaller portraits, such as *Mark Twain* or *Huey Long*, Burns is fascinated by how intolerance, racism and segregation have affected nearly every facet of American society. *Unforgivable Blackness: The Rise and Fall of Jack Johnson* is Burns' latest look at the uncomfortable clash of black and white cultures, seen through the troubled career of the brash, early 20th-century African American boxing great. The two-part, four-hour series debuted on PBS to great fanfare and strong ratings this past January, and has been available on DVD since its airing.



Music always plays an enormous role in defining the historical settings for Burns' documentaries, as well as amplifying the emotion of the events depicted. He has a knack for uncovering popular and obscure music that transports us back in time. The music doesn't have to be *of* the period the film depicts, but it must resonate with the era onscreen. The wonderful soundtrack for *Unforgivable Blackness* sounds like it is filled with turn-of-the-century and jazz-age pieces, but, in fact, it is overwhelmingly the work of great modern jazz trumpeter and composer Wynton Marsalis.

Marsalis played a significant role in Burns' *Jazz* Series: Onscreen, he was the supremely articulate historian, able to talk about the grand sweep of the story and the mechanics of actually playing in the idiom. Offscreen, he was a principal advisor. For *Unforgivable Blackness*, Marsalis wrote more than a dozen short pieces that explore different styles of late-19th and early 20th-century music, from stride piano to vaudeville-style numbers and, of course, lots of early New Orleans jazz. It is part of Marsalis' genius that he can write music that sounds both authentic and original; old, but with unmistakable traces of modernity. In addition to cues written for the film, the soundtrack also contains a handful of songs previously recorded by Marsalis, including two by Jelly Roll Morton.

Remarkably, all of the original music for *Unforgivable Blackness* was recorded in a single day—September 3, 2003—at Right Track Studios in Manhattan. The session was produced by Marsalis' brother, Delfeayo, also a fine composer and trombonist, and—from Florentine Films—Ken Burns and Paul Barnes. Sandy Palmer-Grassi, who has a long history of working with Marsalis (and many other jazz and classical artists, and Broadway cast albums), was the tracking engineer.

—CONTINUED ON PAGE 138

BEN FOLDS

A NEW APPROACH TO POP/ALT IN NASHVILLE

By David John Farinella

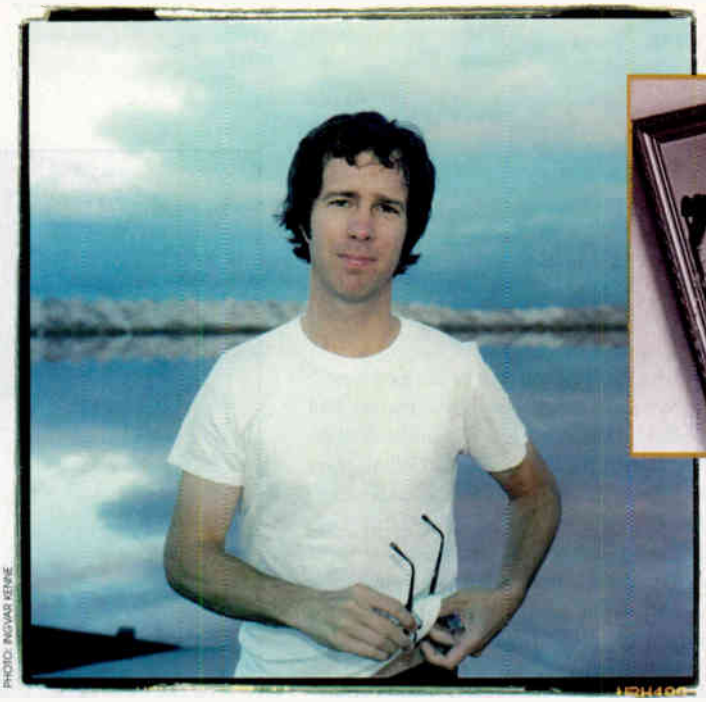


PHOTO: INGVAR KENNE

Walking down the street in Nashville one day, Ben Folds saw a sign that a studio was for lease. Upon further inspection, Folds discovered that the studio in question was the complementary room to the legendary RCA Studio B, where Johnny Cash, Elvis Presley and Carl Perkins laid down some of their most memorable tracks. The A Studio was also home to Folds while he was recording some demos very early in his career, when the studio was known as Javelina Studios.

Folds picked up the lease and moved in four pianos, two drum kits and a handful of recording equipment. The room—originally designed as a large orchestral space—became Folds' musical home while he went through one of his most prolific recording periods—three solo EPs (*Speed Graphic* in 2003, *Sunny 16* in 2003 and the 2004 *Super D*), an EP with Ben Lee and Ben Kweller and the 2004 William Shatner release, *Has Been*.

"I was writing and recording whenever I had a chance and I thought, 'Hey, it's time to put an album out,'" Folds says of the inspiration to record *Songs for Silverman*, his latest offering. "I had nine songs left over from the [EP] process and it seemed like I could finish it really quickly and turn it into an album. The songs were really good, but the recording of the songs didn't sound any different than the EPs; it kind of seemed like a leftover from the EPs. So I went back to the drawing board and thought about how I wanted to record."

That led to inviting drummer Lindsay Jamieson and bassist Jared Reynolds to come and knock the songs out in a live set-

—CONTINUED ON PAGE 140

KEREN ANN

MAKING THE PARIS/NEW YORK CONNECTION

By Blair Jackson

PHOTO: JAN WELTERS

It is the rare French act that makes waves in the U.S.; in recent years, only the Afro-French hip hop sister act Les Nubians created much of a stir. But the folkish Paris-based singer/songwriter known simply as Keren Ann has insinuated herself into the American music scene in a different way: by spending months at a time living in New York and writing and singing songs in English and French. In 2003, her English-language debut on Blue Note's Metro Blue imprint, *Not Going Anywhere*, drew critical raves, respectable sales and led to full houses at the Manhattan clubs she haunts when she's in town. Her latest CD, *Nolita* (after her New York neighborhood, "North of Little Italy"), is filled with impressions of her adopted second home, along with musings on relationships and life in general, sung in English *and* French. Keren Ann has a fragile soprano that at times recalls American influences such as Joni Mitchell and Suzanne Vega, but also feels like it's part of a grand tradition of breathy French singers, from Françoise Hardy to Jane Birkin, who seem to be whispering directly into the ear of the listener, using the song as an intimate confessional. Her songs can seem disarmingly simple, yet they are more complex than they appear, and the arrangements

—CONTINUED ON PAGE 142

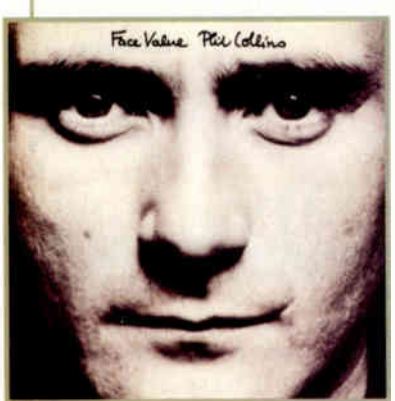
PHIL COLLINS' "IN THE AIR TONIGHT"

By Robyn Flans

If you see someone playing air drums in the car stopped beside you at the red light, there's a decent chance they're playing Phil Collins' "In the Air Tonight." The song is the quintessential air drum number. In fact, during his live concerts, Collins plays the song on piano and leaves the drum fills for the audience to play—in the air. Like most great lyrics, "In the Air Tonight"—and much of his smash hit 1981 solo debut album, *Face Value*—was born from Collins' personal pain: When he returned home from a tour with Genesis, with whom he had played drums for a decade, he found his marriage broken and his family gone.

"Around the time of that tour, all the band bought home studios, although they were very primitive in those days," Collins recalls. "But they bought a desk—an 8-track 1-inch machine—and I remember in Japan, they gave us the early Roland drum machines, but I said I didn't want one. But when I got back to find that I had a lot of time on my hands because the family wasn't there, I rang up and said, 'Can I have my drum machine?' because I had to start writing some of this music that was inside me. *Face Value* was all written over a period of a year-and-a-half, and some songs were written overnight. 'In the Air Tonight' was just a drum machine pattern that I took off that CR78 drum machine. You could eliminate certain sounds and program bass drums and snare drums, so I programmed a bass drum part into it, but basically the rest of it was already on there.

"I had a Prophet 5 and an acoustic grand piano and a Fender Rhodes and that was really it," he continues. "If I got it on tape, I was pretty lucky. I didn't like manuals, I didn't really know anything about electronic recording, so if I saw the meter moving, I was happy. I got the drum machine working, I got a nice sound on the Prophet 5, which was the sound of 'In the Air,' and I found some chords I liked and recorded them.



"I probably added an acoustic Fender piano pretty early. I was coming from Genesis recording and rehearsing history where sometimes we didn't know what the vocal was going to be doing when we recorded the track because lyrics were sometimes written after the track was recorded. I remember the first principle I had for making my record was that I would get a voice down very quickly so everything else would fit to the voice. The lyrics you hear for 'In the Air Tonight,' I just sang. I opened my mouth and they came out. I never wrote anything down and then afterward, I listened to it and wrote them down. I still have got the bit of paper it was written on, a piece of business paper from the decorator. I'm never going to let go of that. [Laughs]

PHOTO: BRUCE C. PLATO

"I did have a drum kit in my studio at the time," Collins continues, "but recording drums was always difficult because I'd hit the drum and then rush to the fader and then hit the drum and rush to the fader, so I did record some drums on it, but originally, there was no drum fill. It came in where the drums would have come in after the drum fill; very straight-ahead. It wasn't angry, there were no sound effects, just very cool drumming as a guide. I put a vocoder on my voice and all that was demo'd."

Later, while delivering Genesis' *Duke* album to Ahmet Ertegun in London, Collins shared some of his solo demos with the Atlantic Records guru. "He said, 'You've got to do this and I'll help you any way I can. You've got to record them,'" Collins recalls. "I said, 'I can't record them again. I've sort of sweated blood getting this far.' So he said, 'You tell me how I can help.'" Ertegun agreed that somehow Collins could work with the demos as masters and when Collins called engineer/producer Hugh Padgham into the project, he also agreed.

Padgham had met Collins while engineering *Peter Gabriel [3]*, which Steve Lillywhite produced. And it was working in Townhouse Studios' Studio 2, recording Gabriel's "Intruder," that Padgham first stumbled on a new drum sound that was based around the capabilities of the studio's brand-new SSL console—one of the first made—which had compressors and noise gates on every channel. "Up until then, that had not been seen before and was deemed to be either unnecessary or an extravagance," Padgham recalls. "But this was the first console where you didn't have to say to the assistant, 'Can you plug in a compressor please or a noise gate?' You pressed a button and there it was. It allowed us to be more immediate.

"It was also one of the first consoles to have reverse talkback," Padgham continues. "On a normal console, you have a button to press to talk to the musicians in the headphones, but you did not have a button to press for us to listen to the musi-

cians. To do that, you'd plug a microphone into a spare channel on the desk and listen to your musicians through that. But the SSL had a reverse talkback button and there was a microphone hanging up in the studio already, a dedicated input into the reverse mic input on the console. And on this microphone, they had the most unbelievably heavy compressor, so you could hear somebody who was over in the corner.

"One day, Phil was playing the drums and I had the reverse talkback on because he was speaking, and then he started playing the drums. The most unbelievable sound came out because of the heavy compressor. I said, 'My God, this is the most amazing sound! Steve, listen to this.' But the way the reverse talkback was setup, you couldn't record it. So I had the desk modified that night. I got one of the maintenance guys to take the desk apart and get a split output of this compressor and feed it into a patch point on the jack field so I could then patch it into a channel on the board. From there, we were able to route that to the tape recorder."

Six months later, Padgham found himself working with Collins as co-producer on *Face Value* and "In the Air Tonight," with its Roland drum machine foundation, recorded on a 1-inch 8-track analog recorder made by a company called Brennell. "We transferred my 8-track demos to 16-track," Collins says, "which is all we had at the time. My eight tracks comprised stereo Prophet, stereo Rhodes, my voice, vocoder and a drum machine. I sang it again because the quality of what I had recorded really wasn't as good as we needed, but on all of the tracks, I kept all the instruments, and that's been my method of recording ever since. I always use my demos as the masters: Whatever I do at home ends up being the blueprint for the song."

"We then recorded the drums, which we decided would have a great big crashing drum sound at the end, the idea being that the song would be moody and quiet and the last thing you would expect would be the big drum thing," adds Padgham. "When I was mixing the record, it was difficult to find the right dynamic. When the front of the song was quiet enough so the end was loud, the front was generally not loud enough. Plus, we were mixing onto analog tape and we didn't want too much tape hiss. Also, there were no CDs then and it had to go onto vinyl, so there were all these restrictions that you don't have nowadays. So it was very difficult to get the dynamic right."

The famous drum fill, Collins contends, could have been anything. What is on the record is what came out at the moment. "When people talk about the 'Phil Collins

drum sound,' that is actually a huge variety of drum sounds," Collins says. "We never left the setup; we always broke it down and started again so we could end up somewhere different. The Townhouse Studio actually wasn't that live. It was quite tall, but not really a big room—probably smaller than most people's bedroom. The Genesis studio we designed had a much livelier, bigger room, glass and reflective surface. So when you listen to "In the Air Tonight," it is not really that live, it's big. The snare drum and tom toms kind of bark, but it is made from a lot of compression with ambient mics as far away from the drums as possible, and those are noise-gated."

The drums were recorded with two Neumann U87s compressed with UREI 1176s, 12 or 15 feet from the drums, the reverse talkback room mic [called a Ball and Biscuit, made by a company called STC] with the heavy-duty compressor and a U47 close on the bass drum and a Shure SM57 close on the snare drum. "But 90 percent of the sound was the live room mics and then I'd add a touch of close bass drum and close snare drum to give it a little more snap," Padgham says.

The vocals were recorded with a Beyerdynamic M88 and an Allen & Heath limiter, which gave him his signature guttural sound. "This limiter probably cost 100 quid or something, and it had one slide kind of knob that let you get either more compression or less compression, and it gave very basic forms of fast attack, slow attack, fast release, slow release," Padgham says. "Doing the demos at home, Phil realized that if he had the limiter on a very slow attack but fast release, and if he sang a word that began with a sharp consonant like a 'k' or 't,' the initial front of the 'k' would get through the limiter before it started limiting, so we'd have this very pronounced front to a word that had that kind of consonant. He would sing into this limiter, using it almost as an instrument. Also, there's a vocoder on the words 'I remember' in the second verse."

The guitars and bass were recorded fairly conventionally, Padgham asserts. John Giblin played bass and Darryl Steurmer contributed guitar "with lots of echo and sound effects. He was probably using digital delay, which was in its early stages then," says Padgham. "We were made fun of later on because of some of the delays; like on the 'I remember,' the delay is a little too fast for the track and it sounds like it speeds up a bit."

The album was recorded on an Ampex MM1200 24-track analog tape machine, mixed to ¼-inch 2-track Ampex ATR-100. During the mastering of "In the Air Tonight" at Sterling Sound in New York, a visit from Ertegun altered the "In the Air Tonight" single. "He said to us, 'If "In the Air" is going to be a single, you should have a backbeat on it before the drums come because nobody knows where the front of the bar is,'" Collins says. "And we went, 'Oh shit, if Ahmet Ertegun says you should put a backbeat on it, we'd better put a backbeat on it.' So we went back to England and there was no way we were going to get the track out and re-record the backbeat, so we went to 10CCs' studio in the town of Dorking in the south of England, and we took the ¼-inch master and put it into the console. We plugged a snare drum into the console and we overdubbed the backbeat onto the master. We re-recorded it and edited it back into the main one when the big drums came in."

The single hit the Top 20, the album the Top 10 and established Collins as a viable solo artist. Today, he has slowed down the touring, but he remains active on many fronts: His new live DVD, *Finally...The First Farewell Tour* contains all of his best work and 224 minutes of extras. He is also working on a Broadway stage production of *Tarzan*, based on the Disney animated movie, which contains a number of his songs.

Collins says that when he hears "In the Air Tonight" these days, "I don't think it dates at all. I used to be very insecure about my vocal performances, so I used to cover it up with all sorts of effects," admits Collins, "but everything is in its right place to me. Not every song on that record would I feel that way about, but certainly 'In the Air.' It had very little on it, but it sounded huge and everybody who came into the studio to hear it was blown away by it. I didn't quite get it because I had lived with the song for so long, but when I hear it today, I do." ■

WYNTON MARSALIS

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"We went into Right Track's big studio—A509—and did 20 cues in one day," comments Palmer-Grassi, whose current responsibilities also include recording concerts for Jazz At Lincoln Center. "I had worked in that room probably three or four times previously. It's a very nice room. It has under two seconds of reverb, but that's a little drier than I usually like." Originally, she says, the plan was to record the cues to analog tape and Pro Tools, "but we ended up going live to Pro Tools alone."

She also veered from her standard way of recording in that she used the preamps in A509's SSL J Series console rather than outboard ones: "Normally, I use True Precision mic pre's and I just mix on a console. I go right from the mic pre's to whatever the recording unit is, out of the recorder, into the console and do my monitor mix. But I can't complain; the SSL preamps sounded fine." True to form, however, she resisted using EQ or compression to the multitrack.

Wynton Marsalis working his trumpet magic

The basic band comprised trumpet, trombone, clarinet, sax, piano, bass and drums/percussion, but different cues required different configurations of instruments: some just two or three players; others had two clarinets or a banjo or a guitar. "Wynton has a way that he likes to work," she says. "If you think of people playing on a stage, like having a line of horns in front of the rhythm section, he likes to do it similar to that, but he likes to spin the horns around so they're looking *at* the rhythm section. We had the drums in the middle, piano on the right-hand side open toward the horns and the bass on the left. Then, the four [horn/reeds players] were standing there facing them. So each time the ensemble changed, they didn't really move." A video monitor played cues from the film and the musicians played off written charts to the visual.

In terms of miking a group such as this, "I like to use a spaced omni array as my main [source]," Palmer-Grassi relates. "Sometimes, I'll use a Decca Tree, but it worked out better having three U87s in omni, placed not in a straight line, within [the lateral spread of] the ensemble, and in a way to give more depth to the room and flatter the rhythm section.

"I tend to use the room mics first, but we had spot mics to assist the room mics or for when someone needs to be emphasized for a solo. I always use TLM 170s on the reeds—they never let me down. Wynton was using an [AKG] C-12VR; he usually uses that or a U67. For the piano, I love the [AKG] 414EBs. I'll mike it in stereo: one high, one low. I always [pan it] high-low and then I find it in the spaced omnis so there's no phase cancellation, no ghosts, no shadows.

"Bass was a FET 47 and then up above it a B&K 4011. On the drums, I had an [AKG] D12E on the kick, and I like an omni on the snare so I don't have to mike the hi-hat. I

used a B&K 4007 because it takes the power of the drum hit and still has a lot of clarity, and you also hear the kick drum and the hi-hat and all the cymbals in the omni, but you can work with it. I had 414EBs over the cymbals, and I think I put some 421s on the rack and floor [toms]. But usually the overheads cover them."

Most cues required only a few takes and everything was performed completely live with no overdubs. "They couldn't have been more professional," Palmer-Grassi says. "Typically, Wynton would first explain the premise of the cue: 'This is the one where they're talking about his girlfriend and her reputation, and *this* is what we need to convey.' With the caliber of the musicians and the fact that it's people Wynton has played with a lot, it was pretty straightforward. So we really didn't need many takes for a cue."

What was Burns' role in all this? "He was very hands-on," Palmer-Grassi says. "He was

Musicians used cues from the film, playing off of charts matched to the visual.

very decisive, and if there was something he wanted to modify, he could tell you exactly what it was. And he and Wynton work together so well. If he had something to say, it was usually right on point—something to adjust or wait for Wynton to change something in the writing. Or, 'Here, let's bring this up in the mix and maybe it will do more of what we wanted.' Or, 'I'm really looking for something to emphasize this other aspect of the film. Is there something we can add?' And they'd work on it right then. It all went by so fast. We went all day, but there were so many times at BMG/RCA [Studios, where Palmer-Grassi worked for many years] I remember going for *weeks* doing these movie cues. The directors would come back and scratch a whole day's work and the writer would write something new. This was so smooth."

The mix for the CD was done later at Glenwood Place Studios in Burbank, Calif., by Pat "Jatty Q" Smith, who is Delfeayo Marsalis' regular engineer. Other engineers

(for the previously released tunes) on the soundtrack included Todd Whitelock and Jalmoose Rowe.

Even though Palmer-Grassi has worked often with Marsalis, even she is awed by his output. "He's always writing something new," she marvels. "Every season there's another commissioned composition that exposes something new in his writing and his playing; it's really amazing. And then you go to a concert and hear him play classical trumpet and he's great at that, too. He has so much to say with his music and it's a privilege to be there when he does."

MIX ONLINE EXTRAS

BEN FOLDS

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ting. "Then I wrote a few other songs and I had an album," Folds says. The choice to produce these sessions himself, Folds says, came easily. "I was ready to be really picky about things that producers weren't going to be picky about. And I don't really care to go over certain things that a lot of producers are going to want me to do. I really don't want someone to stop the machine in the middle of one of my takes and tell me to start again," he says.

Folds and engineer Joe Costa had previously come up with a standard process of working together during the EP and Shatner sessions. "Joe just gets it," Folds says. "He's a good engineer, and the two of us have come up with collective opinions and approaches on how we like to record. And, I trust his ear a lot."

In fact, Folds turned most of the engineering chores over to Costa. "I can do it, but I don't really like where my brain goes when it goes there," Folds says. "I mean, I'm aware that Joe is always working on things. My thing with engineering is that I'm very opinionated about how something is going to be recorded and how it's going to fit into the mix and the arrangement. To me, the arrangement and the recording are always married and holding hands. I don't say, 'Well, here's the bass drum sound and that's my sound.' I go into a song and I think, 'Well, this is going to have a lot of space in it. Let's open up the bass drum.' And, 'I don't really like that RE-20 there. Let's try something else.' I know my mics and my pre's and what I like."

That said, Costa selected the mics to be used during the tracking dates. On the drums—the kits were Folds', a former drummer, but were played by Jamieson—Costa put a Shure SM7 on the kick, a 57 on the snare and SM7s on the rack and floor toms. Costa also put up a pair of Neumann 582s over the kit. "I was never the type of person that used omni mics as overheads before because I just never dug 'em," Costa explains. "But in this giant room, they sounded great." On some tunes, Jamieson's tracks were recorded in an iso booth, but the 582s didn't work in there: "It just got too washy, so we got a pair of Sony C-48s and I would do those in an ORTF [configuration] above the drums, kind of close." On a couple of songs where Folds wanted a mono kit sound, Costa took the C-48s off the kit and added a pair of U47s.

Bassist Reynolds played through an Ampeg B-15 while the team tracked the first two songs of the sessions: "Jesusland" and "Bastard." "The Ampeg sounded so great and then, all of a sudden, half of the tubes weren't working," Costa says, laughing. "We thought we'd get it fixed, but we never did. Ben had a Hiwatt hanging around, so we plugged it in and it sounded pretty cool." Costa miked the Hiwatt with an SM7 and also ran the signal through a Demeter tube DI. "On the first two tracks, I had him going through those UA 610 tube mic pre's into LA-2As, but I ended up switching him to APIs and 1176s because of the way he was playing."

> I'm a live performer, and I think the process of having too much choice and control in the recording puts me off my game just a little bit. I don't want to know that I can do this and this and this.
>
> —*Ben Folds*

To live up to Folds' desire to have *Songs for Silverman* sound different than the previously released EPs, Costa moved away from the Neumann CMV-563 mics that he'd used on the piano. "We would do a high-low miking on it and maybe a pair of UA 610s and a pair of 1176s, and it sounded huge," Costa reports. "But as we started doing the record, he kind of wanted to get away from that hugeness." So they turned to a pair of gray Lomo microphones from Russia. "They all sound completely different," Costa says, "and have these weird power supplies. I'd plug a pair in and everything in the studio would start humming. I'd fix the ground on

one of them and the hum would go away but the other mic wouldn't work. It was a nightmare." Eventually, a new power supply was built and, along with a ribbon mic at the back of the piano for the low end, the tracks came together.

"There are two tracks on the album, 'Gracie' and 'Sentimental Guy,' that were recorded at an earlier time with the CMVs and the piano sounds a lot bigger," Costa points out. "We went away from the big piano sound and when the band was hitting it hard, the Lomos sounded great because I found myself EQ'ing the CMVs to make them cut through and I didn't have to do that with the Lomos." The piano signal also went through a pair of Neve 1081s and 1176s before going to RADAR.

Folds sang into a white Lomo mic rather than the Neumann U47 that was used during the EP dates. "That was pretty cool because it was a different sound," Costa recalls. "And instead of going tube after that, we used the UA 2108 solid-state mic pre's, a Pultec EQ and a dbx compressor after it."

When Folds recorded the first EP, he was aiming for an all-analog experience, but he abandoned that approach after a multitrack malfunctioned and he had to re-record several songs. Now he is learning to embrace digital, using RADAR as his recording medium, though he admits to still being somewhat mystified by the plethora of choices. "I'm a live performer, and I think the process of having too much choice and control in the recording puts me off my game just a little bit. I don't want to know that I can do this and this and this. I've been caught up in that thing where you're looking for a plug-in to slow your track down and that takes four days of crunching numbers and synching things up and listening for artifacts when I could have just f***ing played it again."

The album was mixed by Michael Brauer on Folds' Neotek Elite console, a considerable challenge as several songs required complex mix moves and there was no automation. Folds asserts that he loved Brauer's style of mixing because, "he has a way of putting the vocal so up front that the singer wants to crawl in a hole somewhere. He manages to keep it attached to the rhythm section with this really weird organic thread."

Some months later, as Folds takes some time off in his adopted homeland of Australia, he looks at this recording as one of his best. "I wish I could figure out in what way it's better. I really like most of what I've done for one reason or another, but I had a problem with most of my records and I don't know what it is, really," he says. "I don't have that problem with this record. There's something that's not bothering me about this record." ■

KEREN ANN

FROM PAGE 135

frequently progress in unusual ways as the songs build.

Keren Ann's first three albums—two French discs and *Not Going Anywhere*—were collaborative efforts with French producer/writer/multi-instrumentalist Benjamin Biolay. His imaginative stamp is all over those discs. On *Nolita*, however, Keren Ann was the driving force in every respect, and she's clearly learned much from being at Biolay's side. She wrote the songs, produced the album, played many of the instruments (multiple guitars, keyboards, programming) and even did much of the engineering, often working alone at home, recording to Pro Tools in her apartment in the Montmartre section of Paris and then later in her Nolita studio.

The daughter of a Javanese-Dutch mother, a Russian-Israeli father, and raised in Paris since the age of 11, Keren Ann Zeidel started recording her songs long before she had a label deal. "When I was a teenager, I had a Tascam 4-track and I'd make tapes of my songs," she says in her precise, lightly accented English. "Later on, I got an 8-track but I kept the 4-track, and I still sometimes use it as a preamp because I like the sound of it. Then, I got the Roland digital 16-track, and from there I went to Cubase and then I moved on to Pro Tools MIXPlus, with the Mackie board I've had for a quite a while. I will never be an amazing technical engineer who knows how to get any sound, but I do know what I want to hear, and when I don't know how to get it, I work with an engineer. But in terms of recording instruments, like strings and trumpets and guitars and keyboards and my vocals, I can pretty much get what I'm looking for through my preamps or compressors. I also like to use a lot of guitar pedals to get interesting sounds.

"My favorite preamp is the D.W. Fearn [VT-1]; I've always recorded my vocals through that and a Neumann U87. For guitars, I usually rent a U47 while I'm recording; those are my two favorite mics. Depending on the song, I'll go direct or maybe through the amp only, or through pedals. When I'm recording electric guitar, I use this great old 1967 Chet Atkins Gretsch that I love."

Keren Ann usually records her own voice and guitar demos, then starts methodically building tracks. On *Nolita*, bass and drum basics were mostly recorded by engineer Bruno Dejarnac at Studio Deux, a small studio outside of Paris. Then the action shifted to her Paris apartment studio setup, which she calls Studio Philipsen, named after her grandmother. "It's very small, but I have a great view and I love the way it sounds, so I left the walls and ceilings as they were. I'm very comfortable working there." Occasionally working with engineer Hubert De Cottignies, Keren Ann tracked the layered string parts, which are so striking on the title track: Although it's just a cello and violin, it sounds like a full string section. "I always work out the string parts on a keyboard and then someone writes it," she notes. "*Nolita* took a long time to do."

In February 2004, during a trip to New York, Keren Ann found the Nolita loft/workspace that she would transform into the studio she dubbed Yellow Tangerine. She booked it for six months beginning in June and shipped the gear from her Paris studio. She still spent most of her time in New York recording alone, but she also brought in a couple of local players, including a guitarist named Jack Petruzzelli, who added some wonderfully *moderne* parts and ambient electronics to a few tracks, and trumpeter Avishai Cohen.

Asked about the intriguing ambient noise tracks that creep quietly through a few songs on the album, she laughs and says, "Sometimes it's just for mood, but sometimes it's to cover up the noise of New York or Paris. I like to record ambiences in places. Like in 'Chelsea Burns,' there's some New York in the background. That will happen in a home studio in a city."

Another striking aspect of the album is Keren Ann's intricately layered background vocals, which range from simple harmonies to elaborate choral washes, as on the song "Greatest You Can Find." "On that one," she says, "the song was starting to bore me and I needed to change it. First, I thought I wanted horns on the ending, but I didn't have the opportunity to have horns, so I did it with the voice instead, but it's almost like a horn part. Since I have the time and I have my own setup, I can try things that are ridiculous and play around with them."

As with Keren Ann's other albums, *Nolita* was mixed on a mid-'70s Neve console at ICP Studios in Brussels, Belgium, by Erwin Autrique. "He's so fantastic," she says. "He's familiar with the way I work and he can understand my notes, my tapes or Pro Tools files, and he knows how to read me. And he makes everything sound bigger. On my own, I tend to make things moody in my choice of sounds rather than big. But on certain things, like the guitars, I want him to take them further and make them bigger. He always seems to understand what I'm after." ■

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COOL SPINS

The Mix Staff Members Pick Their Current Favorites

Kings of Leon

Aha Shake Heartbreak (RCA)

Already enormously popular in Britain, the Nashville-based Kings of Leon—brothers Caleb, Nathan and Jared Hallowell, and their first cousin Matthew—are on the verge in America. They play a raw, stripped-down rock 'n' roll (and the occasional odd ballad) that's loaded with familiar riffs and progressions, but are put together in interesting ways. Lead singer Caleb is one strange cat—mostly incomprehensible, sometimes downright annoying—but powerful and different: gruff one moment, sensitive the next and actually pulling off a yodel of sorts at one point. I love the way this album is recorded: The instruments are captured relatively dry for a powerful in-your-face sound that works as a nice counterpoint to Caleb's sometimes cryptic ravings. A strange, but compelling slice of rock 'n' roll high and low life.

Producers: Ethan Johns and Angelo. Tracking engineer: Jacquire King. Mixed by King and Johns. Studio: Three Crows. Mastering: Greg Calbi/Sterling Sound. *—Blair Jackson*

Aimee Mann

The Forgotten Arm (SuperEgo Records)

Instead of assembling a dozen literate but unrelated songs onto her exceptional fifth album, beloved artist/songwriter/D.I.Y. queen Aimee Mann weaves all of them together, telling the love story of Southern girl Caroline and Vietnam vet/boxer/addict John. Despite its specific characters, when Mann sings "Maybe there's something wrong with me" on "King of the Jailhouse," or pleas "I Can't Help You Anymore," anyone who has suffered through a traumatic, dramatic relationship (aka mostly everyone?) can find at least one melodic nugget to relate to. Mann's distinctive vocals merge with a mix of piano-driven pop and '70s countrypolitan, complete with sinewy guitar solos. Recorded in only five days, *The Forgotten Arm* is also one of Mann's strongest.

Producer: Joe Henry. Engineer: Ryan Freeland. Studios: Sunset Sound, Sound Factory, Stampede Origin. Mastering: Gavin Lurssen, Mastering Lab.

—Heather Johnson

David Bowie

A Reality Tour (Columbia Music Video)

I picked up this DVD at Tower Records a while back for just $9.99—what a bargain! Culled from a November 2003 show in Dublin, the nearly two-and-a-half-hour concert features 30 songs, including many of his hits—"Rebel Rebel," "Fame," "Changes," "Heroes," "Ziggy Stardust," "Young Americans"—plus a few more obscure older numbers and a couple of tunes he's associated with but hasn't played much himself: "All the Young Dudes" and "Under Pressure." Equally impressive, though, is the plethora of more recent, less well-known songs that Bowie and his fantastic band (Earl Slick, Gail Ann Dorsey, et al) invest with the same kind of imagination and enthusiasm as the classic tunes. The sound mix is superb; however, a lot of the video editing is more frantic than I like.

Stereo and 5.1 mixer: Tony Visconti. Pro Tools engineer: Mario McNulty. Creative director: Marcus Viner. Show producer: Philippa Pettett.

—Blair Jackson

Eli Young Band

Level (Carnival Recording Company)

In just five years, the Eli Young Band catapulted themselves from playing the college club circuit to 6,000-seaters as openers for the likes of Jack Ingram, Pat Green and Cross Canadian Ragweed. Now, they've finally released their debut album, *Level*, and it's filled with that "the road is home, the tour bus is my bed" feeling. In fact, *Level* seems to be an attempt to recapture the band's dynamic stage presence—it's easy to imagine the crowd swaying back and forth on "Highways and Broken Hearts," going nuts on the raucously fun show-opener "Small Town Kid" and holding lighters in the air for the romantic lament "That's the Way." My only wish is that vocalist Mike Eli would just belt it out once in a while; this seems more of a safe outing for him. Still, the album is a rollickin' good time.

Producers: Erik Herbst, J.J. Lester (four songs). Recorded and mixed by Herbst. Studio: Panhandle House (Denton, Texas). Mastering: Jim Demain at Yes Master (Nashville) and Rob Wexler at WexTrax Mastering (McKinney, Texas). *—Sarah Benzuly*

Little Milton

Think of Me (Telarc Blues)

Along with B.B. King and Buddy Guy, Little Milton (Campbell) is one of the few remaining links with the blues of the '50s and '60s. The Mississippi-born singer/guitarist has worked steadily for more than 50 years, and it's easy to see why: He has a rich, distinctive voice, a fluid guitar style and is comfortable singing classic and modern blues, R&B and even dipping into soulful rock and pop. His first disc for Telarc Blues is a solid work from beginning to end. Working in front of a top-notch band (some of whom helped co-write 11 of the 12 songs), Milton really stretches himself here, going from sultry Stax-style R&B to gospel-flavored blues and even a couple of songs that flirt with modern rock. He truly seems to be getting better with age.

Producers: Jon Tiven and Randy Labbe. Tracking engineers: Tiven, Earl Drake. Additional recording by Danny Ramsey, Paul Gannon, Jack Murray. Mixing engineer/mastering: Lincoln Clapp. Studios: Hormone (Nashville), Little Hollywood (Nashville), Big Ears (Nashville), Big Sound (Portland, Maine). *—Blair Jackson*

Nic Armstrong & The Thieves

The Greatest White Liar (New West Records)

Cut straight from the stylistic cloth of the '60s and obviously emulating The Beatles and the Rolling Stones, this debut disc full of guitar- and vocal-driven tracks will appeal to lovers of retro rock, but those looking for a modern spin on the era, or an original voice, may feel only superficially sated. The band, comprising vocalist Nic Armstrong, drummer Jonny Aitken and bassist Shane Lawlor, has the talent to replicate the sound of their influences, but the thing that's missing most is this band's own distinctive voice. Still, songs like "I Can't Stand It" and "I Want to Be Your Driver" (a Chuck Berry cover) are delivered with the kind of conviction that hints at real soul and demonstrates their potentially creative personality.

Produced and engineered by Liam Watson at Toe Rag Studios, an all-analog facility in London, also known for The White Stripes sessions for 2003's *Elephant*.

—Breean Lingle

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PMD660PKG

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L.A. GRAPEVINE

by Maureen Droney

More changes among L.A.'s major studios: Larrabee owner Kevin Mills has sold his two-room Neve facility, Larrabee East, to a group of investors that include his former studio manager, Jamie Way, and her husband, mixer Dave Way, who have renamed it The Pass.

At The Pass (as in the Cahuenga Pass, the divide between Hollywood and the Valley where the complex is located), both studios will be open to the public. That's contrary to rumors that Way, best known for his work with artists Sheryl Crow, Macy Gray, Christina Aguliera, TLC and Pink, among many others, would be taking over one of the rooms.

PHOTO: MAUREEN DRONEY

Jamie (right) and Dave Way at the Neve 8078 in The Pass' Studio T

"I've had Waystation, my own private SSL studio, for almost two years," explains Way. "That's where I do 99 percent of my work [including Crow's "The First Cut is the Deepest," albums for Ringo Starr and Robert Downey Jr., and songs for Shakira and Lisa Marie Presley]. Of course, if I'm tracking or I want to mix on a Neve, The Pass will be my first choice."

Originally the site of Tom Jones' Brittania Studios, the facility was rebuilt as Andora in the late '80s by engineer/producer Doug Perry (currently owner of Rack Attack Rentals). Known for solid construction and quality acoustics—as well as its two 40-input Neve 8078 consoles—the facility has quietly built a stellar reputation among Golden Ears live recording types.

When Andora joined the Larrabee family in 2000, it was partly at the urging of the Ways, who had, incidentally, met at Larrabee North when Jamie Way (then Jamie Romero) was managing the various Larrabee facilities and Way was a client.

"Kevin was in Australia when the opportunity to buy Andora came up," Jamie Way recalls. "Neither of us had been there, so he asked me to check it out for him. I took a look and told him that Andora's Neve consoles and tracking capability were what he needed to complement his SSL mix rooms. We all agreed it would make Larrabee truly full-service. On our recommendation, Kevin bought the studios—sight unseen."

After that purchase, Jamie Way spent two more years running a total of seven rooms in three locations for Larrabee, and then left to start a family. This year, when an offer for the Cahuenga complex fell through, she convinced her husband that they should consider purchasing it themselves (along with investor/partners attorneys Tony and Diana Richardson and actor Brent Spiner).

"At first," Dave Way says with a laugh, "I said, 'Are you crazy?' But after looking into it, it made sense. In recent years, people didn't think they needed a big live room or a lot of expensive microphones. Now, there are very few [of those studios] left and, due to the cost, it's unlikely that more will be built. Andora was constructed with an incredible attention to detail, and the Neve consoles are in fantastic shape. The

—CONTINUED ON PAGE 152

NASHVILLE SKYLINE

by Rick Clark

I was knocking around Berry Hill and dropped in at Fred Vail's classic Music City studio, Treasure Isle (www.treasureislenashville.com) and discovered Rodney Crowell and Peter Coleman working on another great album.

Crowell's previous two efforts, *The Houston Kid* and *Fate's Right Hand*, were landmark albums in a career already loaded with 25 years of critically and commercially successful releases. Crowell's latest, *The Outsider*, is perfect for anyone seeking out adult music that offers a provocative marriage of heart and mind.

In many ways, *The Outsider* is a travelogue of observations Crowell has made during two long European tours last year while the U.S. and its allies were ramping up the Iraq invasion. "I felt like an expatriate during an election year, and I seemed to be writing a lot while I was on the road, so my sensibilities and my perspective in the songs were sort of framed in that light," muses Crowell.

"Don't Get Me Started," an angry mid-tempo rocker, is inspired by an encounter with a patron in a Scottish pub. "It's really about being misunderstood and actually having to argue, 'Wait a minute! I'm on your side, guy! I see this situation the same way you do!'" explains Crowell.

On "Obscenity Prayer," Crowell sets his sights on "taking the piss out of greedy people. It's not right-wing conservatism that I bristle at—it's heartless greed, like the kind you see in the corporate world," explains Crowell. "There is no moral center to white-collar corruption and that's what I really bristle at."

But *The Outsider* also offers some wonderful observational sketches of moments on the road, particularly in "Glasgow Girl" and "Beautiful Despair." The latter tune, Crowell says, "is based on a dialog with a friend at a party in Belfast, Ireland. We were sitting on the floor listening to Bob Dylan. It's 3 a.m. and he kind of turned to me and said, 'I drink because I'll never write like that.'" It was that dynamic that Crowell labeled "beautiful despair."

TO COAST

NEW YORK METRO

by David Weiss

Michael Rhodes, who has played bass on *The Outsider* and many of Crowell's recordings, singles out "Beautiful Despair" as a personal favorite. "I think it's perfect," he says. "That's a song I have listened to over and over again. It's so dead-simple that it's an exercise in restraint. From the time Rodney showed us the song, strumming an acoustic guitar, we almost automatically went straight for this thing to its final form very quickly."

Musically, *The Outsider* runs from straight-ahead rockers ("Say You Love Me," "The Obscenity Prayer") to mid-tempo funk ("The Outsider") to reflective numbers ("Ignorance Is the Enemy"), and even an amazing Dylan cover ("Shelter From the Storm," a duet with Emmylou Harris).

Besides Rhodes on bass, the album features a number of Nashville's finest players, including drummers Greg Morrow and Eddie Bayers; guitarists Will Kimbrough, Steuart Smith and Pat Buchanan; and guest artists John Prine, Buddy & Julie Miller and others.

These days, when digital is the primary way people record, Crowell and Coleman

—CONTINUED ON PAGE 152

Rodney Crowell and Peter Coleman

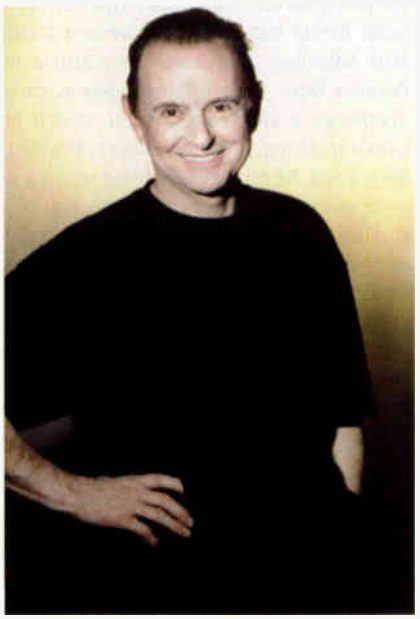
PHOTO: RICK CLARK

Shocking news isn't always that much of a surprise. Case in point is the February closing of New York City's legendary Hit Factory, which—toward the end of its amazing 30-plus-year history hosting the likes of Stevie Wonder, John Lennon, Bruce Springsteen, Madonna, Michael Jackson and all the other best of the best—seemed to be on permanent death watch.

Not a month seemed to go by in the past year without rumors circulating that Hit Factory had been deep-sixed to cash in on the valuable real estate under its six SSL rooms. Finally, in 2005, the gossip came true as founder Ed Germano's widow, Janice, sold the W. 54th Street complex for an eight-figure sum, with unconfirmed reports as high as $20 million and consolidated the family business to Hit Factory/Criteria in Miami. (Janice Germano did not return calls for comment.)

As owner of one of the few large-scale recording facilities still remaining in New York City, Dave Amlen of Sound on Sound (www.soundonsoundstudios.com) had been keeping tabs on the situation all along. "I thought there were other places that would have closed down first," he observes. "The one thing they had that few others have was that they owned their own real estate and were immune somewhat to the cycles that plagued New York City real estate—but that's a bad thing if your real estate becomes worth more than your business."

Kirk Imamura, president of Avatar (www.avatarstudios.net), agrees with Amlen that the Hit Factory closing was essentially a real estate story and took serious issue with national mainstream media reports that held it up as the death knell for large recording studios. "There's a shortage of housing here, and if you have nice real estate, you can sell it for a song and walk away happy," he says. "But my point is you can still make an operation like this work. It just requires a bit more



Simon Andrews of Right Track

ingenuity and resourcefulness in addition to doing recording sessions. We're installing a mastering room, for example, and we have a label, 441 Records, so if something that's recorded here fits, we can put it out.

"The bottom line is you want to reduce the unproductive time by being sure the staff is competent and the equipment is reliable and working," Imamura continues. "It's about economies of scale—we have a multiroom facility with a full-time maintenance staff that's on duty, not just on call. I'm not saying we have zero down time, but we definitely work toward minimizing down time."

At Right Track (www.rttrk.com), another among New York City's circle of heavy-hitters, president and founder Simon Andrews looks at the big picture when diagnosing the challenges of Manhattan's large facilities. "The industry is in such a downturn," states Andrews. "The industry needs to be able to control the illegal file sharing of music over the Internet. The statistical evidence is overwhelming: 4.5 million iPods sold in the 4th quarter of 2004, with each iPod holding an average of 5,000 songs. Each customer buys an

—CONTINUED ON PAGE 153

BARBERSHOP STUDIOS

LAKESIDE FACILITY OFFERS "PARK AVENUE" SERVICE

For years, Barbershop Studios' (www.thebarbershopstudios.com) CEO Scott Barber had envisioned owning a studio on a lake. President Mark Salamone always wanted a studio housed in an old church. Decades later, both partners' dreams came to fruition when they discovered a 100-year-old stone church in New Jersey nestled on Lake Hopatcong, which now houses the tristate area's newest facility for 5.1 and 7.1 recording, editing, mixing and mastering.

Fran Manzella of Francis Manzella Design Inc. supervised the studio's design, which includes cathedral ceilings and hints of the original stone in the spacious live room, which is built, like the two control rooms, on a floating floor. Studio A offers a 72-channel SSL XL9000K, custom-designed Griffin loudspeakers and 5.1 monitors, Pro Tools|HD5 and ample mics and outboard gear, both new and vintage. The smaller Studio B features an additional HD rig, a Genelec 8050A surround system and an iso booth.

The facility offers choice amenities such as its own Italian restaurant (came with the space) and a full-service marina (owned by Salamone's brother), but alas, no disco ball, an accessory that was undoubtedly in place when the building housed Lighthouse Disco, home to shows by The Ramones, Cheap Trick and Twisted Sister. Barbershop does, however, house its own production company, Wafflemakers, which offers production, publishing, artist development, marketing and distribution services.

Scott Barber (left) and Mark Salamone behind Barbershop's SSL K

With a target opening date of May 1, 2005, Salamone says that his phone has been ringing with booking inquiries for months. And despite recent blows to their area's studio climate, Salamone feels that this is the "perfect time" for he and Barber to launch their business. "We see a spot for ourselves," he says. "We both have faith that the music industry is coming back. Sound quality will grow and we'll grow with it."

MASTERS CORNER

GARBAGE CLEANS UP

NEW ALBUM AT THE LODGE

From left: Garbage guitarist/bassist Steve Marker, assistant mastering engineer Sarah Register, vocalist Shirley Manson, Emily Lazar, guitarist/bassist/keyboardist Duke Erikson and drummer/producer Butch Vig

Garbage recently visited The Lodge (New York City) to master their new album, *Bleed Like Me* (Warner Bros.), with chief mastering engineer Emily Lazar. The album was recorded at the Trident A Range–equipped Smart Studios (Madison, Wisc.), co-owned by Garbage drummer/producer Butch Vig, with engineer Billy Bush.

INDIE SPOTLIGHT

SONICA RECORDING

DELIVERS RED LETTER AGENT

PHOTO: JOHN BRIGLEVICH

From left: Red Letter Agent's Travis Jones (guitar), James Templeton (vocals/guitar) and Russ Norton (drums) practice handclaps in Sonica's main tracking room.

Atlanta indies Red Letter Agent (www.redletteragent.com) wrapped up their latest D.I.Y. release, *Burn the Good Ones Down*, at Sonica Recording (Atlanta) with studio owner John Briglevich co-producing and engineering.

Briglevich says that the studio's vintage API console and tracking room played a key role in RLA's "ambient" sound. "We were constantly experimenting with mics, instruments and spaces," he adds. "From $10 toy mics to the BLUE Bottle, Lawsons and Neumanns, we tried it all. The 1176s and LA-2As got quite a workout, as well. Most important, the band has great songwriting and performing chops and an open mind about production."

Local alt-rock superstation 99X recently placed the album's title track in heavy rotation—an opportunity given to few unsigned acts. The CD is available in Atlanta-area retail outlets and on iTunes.

BEHIND THE GLASS

ONE PHISH, BIG GROOVES AT EAST IRIS

Phish frontman Trey Anastasio (pictured) and band migrated to Nashville to cut tracks for his forthcoming solo album at East Iris Recording's Studio A. Rick Beato produced, while engineer Peter Carini manned the room's SSL 9080 desk.

FUTURE DISC MASTERS AMY GRANT'S LATEST

Standing: producer Brown Bonnister (left) and engineer Steve Bishir. Seated: Vince Gill, Amy Grant and engineer Steve Hall

Amy Grant and hubby Vince Gill stopped by Future Disc in Los Angeles to oversee mastering of Grant's latest release, *Rock of Ages...Hymns and Faith*, out May 3 on Word Records. Producer Brown Bannister and engineer Steve Bishir tracked the album at Oceanway Nashville, and mixed at their own studio, Oxford Sound.

TRACK SHEET

NORTHWEST

Michael Bard mixed indie documentary *Cowboy Del Amor* in surround with sound designer Matt Meyer at **StudioBar** (Portland, OR)...**Hyde Street Studios** (San Francisco) opened its doors to artist/songwriter **Joanna Newsom**, who teamed with producer **Hal Willner** and engineer **Gabriel Shepard**. S.F. jam band **New Monsoon** tracked with engineer **Paul Kimball** and producer/Santana drummer **Michael Shrieve**, while **Government Mule** tracked with engineer **Michael Barbiero**...At **SF Soundworks** (S.F.), owner **Tony Espinoza** mixed albums for **Oranger, I AM SPOONBENDER** and **Why?** Also at the studio, **Joe Chicarrelli** mixed **The Bedroom Walls'** forthcoming release, and **Russell Elevato** mixed albums for Bay Area acts **Goapele** and **Blackalicious**...Producer **Adam Rossi** wrapped up the new **Luce** CD, tracked at **Prairie Sun** (Cotati, CA), **ARA** (Palo Alto, CA) and **Hyde Street Studios** with **Oz Fritz** engineering. Fritz also engineered a project for **Eric McFadden** and **Wally Ingram** at Prairie Sun, while **John Vanderslice** joined engineer **Steve Solter** for a **Mountain Goats** tracking session...Producer **Tom Hambridge** brought Transylvania-Romanian singer/songwriter **Attila Weinberger** to **Acoustic Chambers** (Kent, WA) to track with engineer **William Reedy**...**Nettleingham Audio's** (Vancouver, WA) **Kevin Nettleingham** mastered releases for PDX artists **Eric Messler, Stop Watch Trauma, Missing Jimmy** and **Joshua Fire**. Engineer/producer **Mark Bosnian** mastered CDs for **Robin Tudor, Blood Ritual** and Seattle's **Three Legged Dogs**.

SOUTHWEST

Engineer **Steve Chadie** continues tracking **Los Lonely Boys'** sophomore record at **Pedernales** (Austin). Chadie also recorded **Willie Nelson** and band for a live set for iTunes. Chadie then moved to **Casa Studio** (Austin) to record tracks with artist/producer **Jesse Dayton**.

SOUTHEAST

At Paradigm Park (New Orleans), owner **Danny Kadar** is producing an album for **Ryan Edwards**...**Cartee Day Studios** (Nashville) saw **Willie Nelson, George Jones** and **Jerry Lee Lewis** tracking with the **American Studio Group**; **Chips Moman** produced and **Steve Crowder** engineered. **Chicago** tracked with producer **Jay Demarcus** and engineer **Ben Fowler**, and **Mike Clute** mixed **Diamond Rio** tracks in Studio B..."Reality rap" group the **Round Up Click** tracked and mixed their new album at **SugarHill Studios** (Houston), which was produced by bandmember **6 Figga** and engineered by **Steve Christensen**... *Mix* contributor (and new dad!) **Strother Bullins** produced two songs for his band, **The Verses**, at **Catalyst Recording** (Charlotte, NC). **Rob Tavaglione** also produced and engineered singer/songwriter **Jay Mathey's** latest there, and a new album from punk band **Drat**...**Bass Propulsion Laboratories** (Dallas) welcomed production team the Pipes Bros.' return when they recorded tracks for Texas group **Fallen From the Nest**...Producers **Bob Wright** and **Paul Whitehead** chose **Spectrum Recording Studios** (Pompano Beach, FL) to record vocals for the **Four Tops'** 50th anniversary video...Despite the sad fate of Hit Factory NYC, **Criteria/Hit Factory** in Miami is running strong as ever, with recent projects from **Twista, Izzy Stradlin, Missy Elliott, Mariah Carey** (remixes), **Black Eyed Peas, Sean Paul** and **Stocklan**, a Boston-based indie rock band produced by Matt Knobel.

Tori Amos visited Dubway Studios to record a piece for Live@VH1.com, produced by VH1/Original Media. From left: engineer Jason Morcucci, Tori Amos and assistant engineer Patrick McLemore

NORTHEAST

Sean Lennon returned to the **Magic Shop** (NYC) to work on his latest with **David Kahne**, while Sony/DMZ group **Ollabelle** tracked and mixed a song with studio owner/producer **Steve Rosenthal** and engineer **Matt Boynton**...**Avatar** (NYC) hosted **Eric Clapton** with producer **Simon Climie** and engineer **Alan Douglas**; **Fefe Dobson** was in with producer **Jay Levine** and engineers **Ross Petersen** and **Kyle Kelso**; **Bill Frisell** and trio with producer **Lee Townsend** and engineer **James Farber**; **Bebel Gilberto** with producer/engineer **Jason Corsaro**; and **Rich Costey**, who mixed the new **Rick Rubin**-produced **Weezer** album in Studio G...Producer **Fanatic** mixed a track for **Deborah Cox** with engineer **Ryan West** at the **Cutting Room** (NYC)...Six-month-old **Mixopolis** (NYC) kept busy with audio post projects for **Macy's, Pathmark, Saab**, a promo for **VH-1** and the **Wayans Brothers**, who recorded voice-overs for an upcoming cartoon...**The O'Jays** tracked at Sound on Sound (NYC) with producer **Bojan Dugich**; **Remy Martin** recorded vocals with producer **Sean C** and engineer **Tats**; producer **Kevin Law** and engineer **Rich Traveli** mixed *The Longest Yard* soundtrack; and **Slick Rick** recorded vocals with engineer **Isaiah Abolin**..**Andy Vandette** spent time at **Masterdisk** (NYC) mastering Lava Records debuts for **Blackout Effect, Click Five** and **Breaking Benjamin**...**East Coast Mastering** (NYC) has aligned itself with **B&G Entertainment** to handle all of B&G's recording/mixing needs, while concentrating its remaining resources on outside clients. They've finished projects for Sony artist **Sinopoli**, pop group **Blondsense** and industrial band **Walter Ego**. ■

Send your session news to hjohnson@primediabusiness.com. High-resolution photos encouraged!

L.A. GRAPEVINE FROM PAGE 148

big tracking room, Studio T, is a beauty, with high ceilings, iso rooms, a baby grand piano and a large lounge that looks down over the live room. It's very comfortable for the long haul, and everyone loves the way it sounds. We don't plan on making any changes to it."

However, cosmetic changes are planned for The Pass, and studio designer Vincent Van Haaff is consulting on adding a booth for Studio X, the mix room, to serve last-minute overdubs and as a machine room. The studios remained busy through the transition; recently, producer/engineer Bill Bottrell produced Rosanne Cash, Annie Stella and Sierra Swan, while Dave Sardy brought in Jet, The Thrills, Oasis and Supergrass. Also in recently were Rick Rubin, Jerry Finn, Rob Schnapf and Dr. Dre.

The facility's equipment is included in the deal Larrabee-style, which means a huge amount of outboard, including two EMT 140 plates. And while Jamie Way will take on overall management duties, the studio's popular location manager, Anne Kadrovich-Johnson, remains in her position.

The sale, along with last year's sale (and closure) of the original Larrabee in West Hollywood, still leaves Mills with three SSL mix suites at Larrabee in North Hollywood. Those rooms have just been completely redone and a second SSL K Series desk has been added. Besides serving as home base for star mixers Manny Marroquin (Kanye West, Twista) and Dave Pensado (Christina Aguilera, Destiny's Child), Larrabee has recently hosted such producer/engineers as Brian Springer, Dave Reitzas working with India.Irie and Dave Russell mixing Toni Braxton.

"Dave and Jamie are friends, and Dave was one of my best clients," comments Mills. "I can't think of anyone else I would rather have take over. Gearworks Rentals, the remaining studios and my real estate interests keep me very busy. While East was a great investment for me, it's an exciting opportunity for Dave and Jamie, who are already bringing in some great new energy."

Like everybody else, Recorded Media Supply (www.blankmedia.com) has been scrambling to acquire analog tape stock. Unlike many, when they have it, they're selling it for the same prices they were charging before Quantegy went into reorganization. Now, with a back order of several thousand reels in place, RMS is expected to be among the first to receive product when Quantegy starts filling orders.

"That's not the way we do business," says RMS co-owner W. Scott Mullen on the rampant price gouging of recent months. "Many of our customers have been with us a long time; we feel it's important to be steady and offer items at fair prices. Also, we don't want to push people out of the analog format. We don't want to make a difficult situation worse; we want to help analog stay alive!"

In addition to analog tape, CD-Rs, DVDs and just about any kind of backup format, RMS now offers a wide variety of portable hard drives by Glyph, Avastor, Rocstor, LaCie and EZQuest. "We used to keep just the high-end products," explains manager Tim Davis. "But as people have gotten more familiar with the format, they've developed preferences. Now it seems like drives get matched to the project.

"For example, we sell a lot of Avastar drives to bands who are traveling to Europe or the UK because they like the sturdy carrying case. Other people like the pocket size of the Rocstors, and there are some people who will only use Glyph because, if there's ever a failure, they'll overnight you a replacement."

Http://Data.mediastore.com is RMS' online sister division, offering all of the usual supplies and more. Those ordering online get breaks: free UPS ground shipping and "more aggressive pricing."

"On datamediastore.com, we sell a broad mix," explains Davis. "One of the benefits is, if you can wait until tomorrow for your order, you can get a substantial savings. Of course, we still deliver the same day when you need that, but now there's a choice."

The online division is adding customers from outside as well as inside the music business. RMS is now one of the largest West Coast distributors of MAM-A Mitsui CD-Rs and DVD-Rs, about which Davis says, "The MAM-As have worked out very well for a lot of our customers like labels that buy discs in bulk."

Also available from datamediastore.com are Digidesign items such as Digi 002 and Mbox. "because, while we want to maintain our presence as a pre-eminent analog tape distributor," Davis says, "we also have a strong commitment to the digital format.

"We have faith in analog as a dependable format," Davis concludes, "and we'll continue to support that with high-end customer service, while also bringing our strengths to the Pro Tools market." ■

Got L.A. stories? E-mail Maureen Droney@aol.com.

PHOTO: MAUREEN DRONEY

The Recorded Media Supply team, from L to R: manager Leandro Menjivar, co-owner W. Scott Mullen and manager Tim Davis

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still believe that analog is the way to go. They track on a Sony APR24. "A lot of people won't cut with analog anymore because they just won't spend the money on the tape," Coleman says. "They say, 'Hard disk space is free and analog tape is a buck sixty [$160] a roll,' so they won't do it—but Rodney does. I still feel like it's the best-sounding format out there."

After tracking, they do overdubs on Coleman's second setup of choice: an iZ RADAR with Nyquist converters. Coleman, however, prefers to mix to digital at 24-bit/44.1 through a pair of 100 Series Apogees. "The biggest advantage for me is that I can listen to the output of digital as I'm mixing and then I can compensate for what is going on," says Coleman. "I also listen back, even off a DAT machine at 16-bit, and that gives me some idea of what's going to happen when it gets down to CD format. I've been doing that for years."

For Crowell's vocal chain, Coleman says, "We use a Fred Cameron–modified [Neumann] 87. Fred tubes it all up and gives you the power pack and the whole works and it's a great-sounding microphone. My mic pre of choice is a Telefunken V76-M. "I also use an 1176, but I don't kill it going to tape. I generally kill it coming back in the mix," Coleman says, laughing. "I really like limiting. I think it adds a certain angst to some things and it seems to work well with Rodney's voice."

Coleman also takes the time to find the right mic that captures the tonal characteristics he is seeking for voice or instrument. "I don't EQ his voice and I tend to stay away from EQ'ing things too much, unless I absolutely have to," he says. "If I don't like the way something sounds, the first thing I usually do is switch microphones. It takes a little bit of time, but it's well worth it in the end."

Compared to pop records that can employ more than 100 tracks of information,

Coleman says that Crowell's albums are comparatively minimal. "It's very rare when we actually used all 24 tracks. One of the biggest downfalls these days is people putting more and more shit on everything because of the abundance of tracks available, as opposed to coming up with a handful of parts that are really cool that would really work well as a complete picture. Any engineer will tell you that, from a mixing standpoint, the less they have, the better they're going to make it sound. It's because they have space, and if you listen to anything Rodney and I have done, you know it's usually pretty spare and simple, and that allows stuff to breathe and let the sound to develop. It sounds *honest*."

Coleman also has high praise for Vic Anesini, the album's mastering engineer. "There are a lot of really good mastering guys around, but a lot of them get absolutely obsessed with volume, and the by-product of doing that is you take all of the dynamics out," Coleman says. "I have to say that Vic's mastering came back sounding as close to my original mixes as I've ever heard. It was 3 or 4 dB louder than my mix, but it was extremely recognizable. I have no idea what the hell he did. [Laughs] I just know I like it."

When I ask Rhodes about *The Outsider*, he sums it up this way: "To me, this is a progression of Rodney as a songwriter—I mean, if he could get any better. He's honed it lyrically and musically, and he just keeps getting better. Everybody that's worked on this record feels the same way." ■

Special thanks to Scott Campbell and Taner Shores for their help. Send Nashville news to MrBlurge@mac.com.

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average of 29 songs on Apple, and put on perhaps a few hundred of their own. That leaves 4,770 songs taken for free from the Internet. The makers of the hardware are enjoying a boon from the stealing of songs by the customers.

"Music consumption is higher than ever," Andrews continues. "That can be proven by the performing rights society's collections and the amount of downloading going on. When the industry is able to get legal controls over Internet file sharing, we can expect a new golden age of music that's being sold at a profit. This money will flow through the chain again, which will then come down to all the professional studios."

Besides the larger studios needing to dig in, an additional question is whether smaller, high-quality studios in the area can expect more sessions to trickle down to them or will they face an even tighter crunch themselves? "I suppose we get much of their business," Will Schillinger, owner of Pilot Recording Studios (www.pilotrecording.com) says, reflecting on his Neve VR-60–equipped facility's potential new positioning. "Pilot is in that mid-sized niche that seems to work in this economy. We have also built a substantial client base over the past 13 years. We seem to do very well as both a tracking and mixing facility. Much of our business is repeat business.

"The recording standards that have become acceptable in the industry have declined with the inception of home digital recording in the hands of the novice engineers—this along with the reduction of recording budgets eliminating the ability for these artists to otherwise record in professional facilities," Schillinger continues. "I am confident that the need for real tracking rooms with great acoustics, microphones and real engineers will have resurgence. All I can really do is advertise, spread the word and hope for the best."

The added built-in expense of doing business in Manhattan, with noticeably higher costs for things such as food and lodging, doesn't help New York City studios either when budget-conscious A&R people have to watch their dollars more closely than ever. "I haven't done any recording in New York City in 15 years," says a senior VP of A&R at a large indie label, whose signings have so far accounted for 17 million units in sales worldwide, speaking on condition of anonymity. "I've always been less concerned about the studio's name and more about what we're going to get for our money. A lot of studios are like, 'We're so-and-so,' and they want at least 50 percent more than what I'd pay somewhere else. I just can't justify that. It's not worth it. I'm not saying it's anyone's fault: In the industry's fat-cat days, they'd charge high-end rates and the major labels would pay it. We're a large indie and we're probably a lot more frugal. I treat the budget like it's my own money.

"If I've got some amazing producer/engineer and he wants to do it in New York City and we've got the money, I'm not going to fight him on it," the A&R executive says. "But very seldom do I have a major New York City studio reaching out to me. Other than small guys, I have had nobody call me up. If somebody called me up and said, 'Come to our studio and we'll cut you this competitive deal with anything you can get anywhere,' I might be inclined to do it.

"Another factor is New York City's cost of living is obviously a lot more expensive. If I can have a band in, say, Atlanta or Orlando or Memphis or even L.A., I can put them up in a corporate housing apartment for a month, but it might be for what you pay for a week in New York City. If I have $200,000 all in, I have to figure out what best serves the record. Usually, it's not in New York City."

With the Hit Factory no longer in the mix, it will be interesting to see what happens next for everyone else who, consciously or unconsciously, thought of it as the biggest, baddest player in a big town. "It's a significant event, but it should not be taken out of context," Andrews says. "If the real estate hadn't become worth what it is, Hit Factory would have kept going. It was busy, albeit at a lower rate, but it was still busy. As far as the future is concerned for New York City, I'm optimistic simply because professional recording will always be needed."

"There's less competition, so I'm optimistic on that level," Amlen adds candidly. "We don't have to play a competing rate game with somebody that doesn't exist, so there are two selfish reasons that it's a good thing for Sound on Sound. But from the standpoint of the bigger picture, a flagship facility that could be a draw to New York City, that's a bad thing because Hit Factory was a great facility with fantastic rooms and attention to detail. Having a facility that good here definitely raised the bar for everyone else. But, ultimately, I think New York City itself is more of a draw than the Hit Factory." ■

Will Schillinger of Pilot Recording

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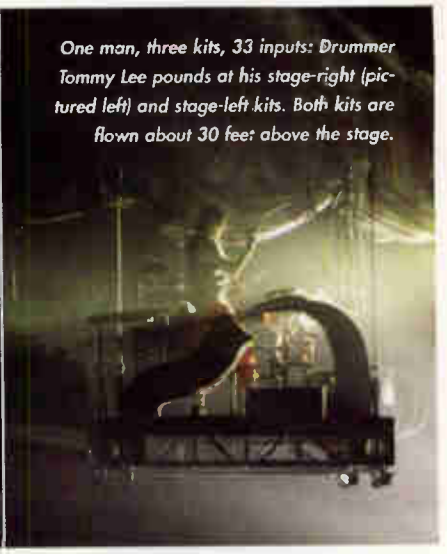
—FROM PAGE 100, MÖTLEY CRÜE

the deck and project through grilles. Tommy's drumfill is stereo wedges/mono subs [three Showco Prism subs, six Showco B1 subs and four Showco SRM wedges] and the sidefills [eight Showco Prism Blue cabs that fly and eight Showco Prism subs that are decked] are in stereo." Amps are Crown 3600 X12 on the SRM wedges and Prism Blues and Crown 3200 on the Prism and six B1 subs.

"I don't have a problem with the stage volume," Adams says. "It's loud, make no mistake. I have worked with Dave to not interfere with his FOH mix as much as possible. This includes keeping things sonically neat and tidy up here. The highpass filter is your best friend in this circumstance."

Other outboard gear that Adams relies on includes two Eventide H3000 Harmonizers, two Yamaha SPX-990 digital effects units, four dbx 160A compressor/limiters, 12 dbx 903 compressor limiters, six Drawmer DS320 noise gates and an Avalon AD2044 stereo compressor/limiter. With all of this gear in his arsenal, Adams chooses to stay as much out of the way of the band's sound as possible. "They do it all," he contends. "I just turn it up or down. That's my job. But I'm not alone out here. My 'dog' is Jon Edmonds, a spectacular systems engineer who is basically a 'second' mixer out here. Joe Manges is our other little fighter on deck and is an i4 P.A. hanging mofo. Kirk 'Eek' Shriener is one of the finest crew chiefs in the business. I can't say enough about the sound team out here."



One man, three kits, 33 inputs: Drummer Tommy Lee pounds at his stage-right (pictured left) and stage-left kits. Both kits are flown about 30 feet above the stage.

And good thing, too, as the tour heads off to the UK and Europe through mid-June. In August and September, the band will play 40-plus North American amphitheatres before heading to Australia, New Zealand and Japan in November and December. ■

Sarah Benzuly is Mix*'s managing editor.*

—FROM PAGE 26, ON THE ROAD WITH KRONOS

and they see that quiet pieces won't work." At the Ithaca show, in fact, they made a last-minute decision to switch the order of two works.

Kronos is amplified for two reasons: so that the audience can hear the music better and because a lot of composers call for—and take advantage of the group's willingness to use—electronic effects on the instruments.

"Ideally, you don't want it to sound like a sound system," Fraser says. "What we're trying to do is make everyone in a 2,000-seat concert hall, even the people 150 feet from the stage, feel like they're sitting in the fifth row. We don't do it by cranking it; we do it by paying attention to image and detail. I've brought in an Ivie analyzer, which showed that the increase in level is only about 1 dB over the acoustic sound of the instruments. But the increase in clarity is significant. They do a piece by Alfred Schnittke in which he specifies they play *ppppp*: one hair of the bow on the string. You can't hear that 80 feet from the stage, but you can with our sound design."

One of the key strategies Fraser uses is to make the amplified sound image not much larger than the original image. "The idea is that the musicians should be the apparent source, not speakers that are separated spatially from the acoustic source. We bring the stacks in from the wings and angle them in—all the stuff you're not supposed to do," he says with a laugh. "Part of it is to keep the sound from bouncing off the side walls, and part of it is so that you can be sitting outside the stereo field and still hear left and right. We don't want people to hear stuff coming from one speaker or another. When I see the performers in the middle and the sound is coming from 50 degrees off-center, that doesn't work.

"We'll sometimes take out all of the house's main speakers and build pyramids out of wedges and monitors. And if they have a center cluster, even if it's garbage, we'll always use it, taking the sound out of the left and right speakers a little so that the reinforcement is not as easily discernible as if it were emanating solely from the left and right stacks.

"We have a pair of Meyer Sound UPM-1Ps with us—they fit in the Pelican cases—which are designed for under-balcony fill, but we use them for frontfill in mono, putting them in front of the quartet. We'll use a delay to push the system 'back' a few feet since the stacks are usually about six feet in front of the fiddles. We always bring the sound back to the players.

"Our biggest problem is that many venues fly their systems. We put it in the rider in capital letters that the main system must be ground-stacked. You just can't be up in the air, and no amount of delay can bring the sound out of the air when it's flown. Sometimes, like at a big festival, we have to back off from that—it is what it is, we're here for only one night and there are a lot of other things going on."

You don't want it to sound like a sound system. What we're trying to do is make everyone in a 2,000-seat concert hall, even the people 150 feet from the stage, feel like they're sitting in the fifth row.

—Scott Fraser

There are two sets of microphones on the group, reflecting the two purposes of the system. Neumann KM150s are mounted on sidearms attached to the music stands, facing upward. "We use those for the more 'acoustic' pieces," says Fraser, "to give a transparent sound. They had been using cheap AKGs, and one day, I brought in some KM140s and David [the first violinist] right away said, 'We have to get these.' The second set are Countryman ultra-miniature Isomax omnis taped to the instruments' bridges. These are used for pieces that have processing, and when there is a lot of processing, the Neumanns are taken out of the mix completely.

Though many different types of processing are called for in the group's vast repertoire, Fraser and his colleagues have reduced their touring kit to just three devices. The workhorse is a Boss VF-1 half-rack multi-effects box. "It's great for analog-style distortion," says Fraser. "It's good at the really radical stuff; it's nowhere near as polite as the others. It has a very flexible architecture. In *The Star Spangled Banner*, I'm using a distortion preset that emulates a Strat going through a Dallas Arbiter Fuzz Face and a Marshall stack, with a little Univibe-y chorus and some delay and reverb."

A terrific piece that I heard the group play called *Potassium*, by Michael Gordon, involves long slides on all of the instruments resolving into major chords. The composer heightens the effect tremendously by pushing the fiddles through distortion so that all of the odd harmonics clash really nastily until the resolutions. "Originally, [Gordon] called for an Ibanez Tube Screamer," Fraser says, "but after we toured it for about a year, I programmed the Boss to do the same thing. It's hard to interface a stomp box with a Midas console, and now I also get more gain before it feeds back."

The second box in the processing rack is a Yamaha SPX-990. "Mark and I use it differently," says Fraser. "Mark uses it as a general-purpose reverb, but I use it to emulate the hall we're in, which means re-programming it every day. The whole idea of the P.A. is not to make it louder, but to move the critical distance so that more people are in the direct field. But I don't want the P.A. to sound different from the hall, so I program the SPX-990 starting with the Echo Room program, and I match the parameters to the room using an impulse generator to measure it. That's sort of the opposite of the way you're supposed to do it, but it ends up working. When everything coming out of the speakers sounds like the hall's acoustics, it blends with the acoustic sound better and it draws less attention to the fact that you're listening to a P.A. system." In addition to simulating hall reverb, Fraser uses the SPX-990 for some amplified effects, such as "super-heavy" flanging and a 20-second reverb.

Finally, there's a TC Electronic FireworX box, which Fraser uses when he needs to stack three or more high-quality effects in series, like a reverb, delay and phase shifter.

Kronos plays a number of pieces that have pre-recorded tracks, and for that reason—and not much else because, as classically trained musicians, they are most attuned to hearing the natural sounds of their instruments—they have always needed stage monitoring. "Until about three years ago, we had two wedges," says Fraser. "But it was always unwieldy, and it often crashed

the front-of-house sound. When the new cellist [Jennifer Culp, who replaced Joan Jeanrenaud, the group's only personnel change in the past 25 years] joined, the balance changed, and we went to three wedges with active individual monitoring. But then the level started rising. So one day, I pulled the Furman headphone monitoring system out of my studio and plugged it in for them. I explained how they each get their own little mixer with control over themselves and everyone else and the playback tracks. Since then, I've never heard a word about changing monitors. Soundcheck now takes about a half-hour less and the stage sound got cleaned up immediately.

"All of them use just one ear, and all the 'phones have to be on-ear: they don't want to have anything blocking them acoustically. I told them to go out to the store and buy whatever they wanted and I'll make it work. The violinists use Audio-Technica ear-clip–on types, which swivel out so you can move them off. The violist uses a Sony Walkman earphone; it was a pair, but I just cut one off. The cellist uses an over-the-head Walkman single headphone."

Fraser's unconventional approaches and attention to detail can even be seen when he tunes a system before a concert using a MiniDisc player for source material. "I have a recording of a male vocalist that I did in my studio that I use to EQ the room," he says. "I can't use *Aja* because, well, I wasn't there.

"I check channel identity and leakage with that old 'Left, Right' file that came with the original *Sound Designer* software. We need to make sure there's isolation when the group is playing with a click track since we don't want the audience to hear it. I also have signals with reversed polarity to check phase—I've come across more than one system that was wired backward. Then 10 minutes of pink noise, during which I walk the room, move speakers around and balance the center cluster with the stacks, then clicks, 2.2 seconds apart, to program the reverb."

It was the morning after Kronos' concert in Ithaca that I met Fraser at breakfast, and after I introduced myself (and he told me he was an avid *Mix* reader), all I could think of to say was to tell him what a great gig he had. He hardly disagreed. "I get to hear incredible music played fantastically every night," he admits. "There are moments of illumination when I'm standing close to the ensemble. There is a vibrancy and detail and juiciness to that sound, which is just overwhelmingly wonderful. That's what I want the sound system to do. In smaller rooms, you're really aware of the presence of the instruments and the way they move air, and that's what I'm trying to do in a 2,000-seat concert hall. When it works, it's great."

And he has one more treat: Later this year, Kronos, who have recorded with the likes of Leslie Anne Jones, Joe Chiccarelli and Craig Silvey, will release their first album project that Fraser engineered (and co-produced). It's a collection of Indian "Bollywood" film score music and features the quartet playing instruments they've never played on record before, such as electric sitar, accordion and autoharp. A lot of it was done at The Plant (Sausalito, Calif.), but true to form, Fraser didn't use a conventional workstation or tape recorder. "We did it all in *Digital Performer*," he says. "I ran it on an 800MHz G4 with up to 120 tracks, dozens of plug-ins and tons of automation. As soon as it's finished, I'm going to send a copy of it to Mark of the Unicorn. I want to let them know what can be done with their program when you don't know what you can't really do." ■

Paul D. Lehrman amplified his bassoon in 1970 and immediately blew out his best friend's guitar amp.

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The new Waves IR convolution reverb series brings unprecedented realism to your MOTU studio, while also offering the flexibility of traditional parameter control not found in other convolution reverb systems. IR-L lets you start with exact reproductions of well over 50 acoustic environments, and then tweak things like pre-delay and reverb time while maintaining the character of the original space. IR-1 V2 adds even more parameter control, plus the ability to sample your own acoustic spaces. No matter where you track, Waves can put you in control of your aural environment!

Native Instruments Komplete™ 2

Software Bundle with 11 Standalone or Plug-in Instruments/ Effects

For DP4 users who want it all: the legendary sound of the B4 Organ, the endless possibilities of REAKTOR 4, the incredibly unique ABSYNTH, the futuristic power of FM7T — KOMPLETE 2 delivers an infinite universe of sound, uniting every essential type of instrument and effect in a 10 gig sonic workstation for your DP4 desktop studio. Komplete 2 is also an amazing value: for less than the combined retail price of Kontakt 2 and Reaktor 4 you also get Absynth 3, Battery 2, B4, FM7, Pro-53, Kompakt, Intakt, Vokator and Spektral Delay. Expand your Digital Performer studio today!

Spectrasonics Stylus™ RMX

The power of groove production

Stylus RMX is the first product to offer the combined power of Groove Control™ with Spectrasonics Advanced Groove Engine (S.A.G.E.™) giving you dramatic new control over groove production. Dozens of new features include a completely redesigned interface, a new 7.4 GB core library of cutting edge grooves and sounds produced by Eric Persing, and the ground-breaking, always changing Chaos Designer™. Expand Stylus RMX with 9 new S.A.G.E. Xpanders, featuring live drums, percussion, remix elements, and more. The ultimate real-time groove module for DP!

IK Multimedia Sonik Synth™ 2.0

Synth Workstation Plug-in with 8.5GB Sample Library

Imagine creating new and unique sounds from a combination of traditional instruments, one-of-a-kind acoustic textures and classic synth sounds, all in a plug-in. Sonic Synth 2 gives you thousands of samples from its 8.5GB sound set developed by Sonic Reality which is powered by the flexible synthesis and effects capabilities of IK Multimedia's SampleTank engine. Includes orchestral soundscapes, ethereal vocal layers and wine glasses, plus traditional keyboards, guitars, drums and ethnic instruments and a comprehensive selection of analog and digital synth sounds. Sonik Synth is the perfect way to bring sound of a powerful synth workstation to your Digital Performer desktop.

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Glyph GT 051™

High Performance Desktop Hot Swap FireWire Hard Drive

Perfect storage for a PowerBook/Traveler-based studio, the GT 051 tabletop chassis works with highly portable, Seagate 7200 RPM-equipped GT Key hot-swappable drives, available in capacities up to 400GB. Using Integrity™, Glyph's proprietary FireWire hot-swap technology, you can swap drives without rebooting your computer or restarting drives. GT Keys are housed in sound-dampening metal for ultra quite operation. With a stainless steel fan-cooled enclosure, the GT 051 has a built-in power supply and is rack-mountable. The GT 051 comes standard with a three-year warranty, while GT Keys carry an additional overnight advance replacement warranty for the first year.

PreSonus Central Station™

A Console Master Section Without the Console!

The PreSonus Central Station is the missing link between your MOTU recording interface, studio monitors, input sources and the artist. Featuring 5 sets of stereo inputs (3 analog and 2 digital with 192kHz D/A conversion), the Central Station allows you to switch between 3 different sets of studio monitor outputs while maintaining a purely passive signal path. The main audio path uses no amplifier stages including op amps, active IC's or chips. This eliminates coloration, noise and distortion, enabling you to hear your mixes more clearly and minimize ear fatigue. In addition, the Central Station features a complete studio communication solution with built-in condenser talkback microphone, MUTE, DIM, two separate headphone outputs plus a cue output to enhance the creative process. A fast-acting 30 segment LED is also supplied for flawless visual metering of levels both in dBu and dBfs mode. Communicate with the artist via talkback. Send a headphone mix to the artist while listening to the main mix in the control room and more. The Central Station brings all of your inputs and outputs together to work in harmony to enhance the creative process and ease mixing and music production.

Gator GRC-Studio-2-Go™

Road-worthy case for your MOTU gear

The GRC-Studio-2-Go is a road ready, ATA style 2U rack case constructed of rugged Polyethylene with an extra, plush adjustable laptop compartment with web strap tie-downs for extra protection. Permanently connect your PowerBook, Traveler and rack gear through an accessory hole between compartments — convenient!

Apple AppleCare™

Extend the life of your PowerBook

Of course, the tech support wizards at Sweetwater can help you with any operational issues you might encounter, but if you want complete peace of mind, the AppleCare Protection Plan is the perfect insurance policy. No matter what dangers may meet your portable rig on the road, with AppleCare, you're totally protected.

Call the DP 4.5 and MOTU experts.

Mackie Onyx Mixers with Optional Firewire Interface

High-quality compact mixers with direct connection to your studio

When you're on the road and looking to record a full band, the Onyx series of mixers from Mackie is the perfect complement to your MOTU Traveler. Whisper quiet and built like a tank, Onyx mixers feature an all-new mic preamp design capable of handling virtually any microphone. With the optional Firewire card, you can connect an Onyx mixer to your laptop with a single Firewire cable and have all the extra mic preamps and line inputs you need to capture every drum mic, vocal mic, individual synth output and DI the band throws at you. Since Digital Performer works seamlessly with multiple Core Audio devices, configuring a Traveler/Onyx system is a snap.

Mackie HR-series Active Studio Monitors

Nearfield monitors for your MOTU studio

Mackie's HR-Series Active Studio Monitors are considered some of the most loved and trusted nearfield studio monitors of all time, and with good reason. These award-winning bi-amplified monitors offer a performance that rivals monitors costing two or three times their price. Namely, a stereo field that's wide, deep and incredibly detailed. Low frequencies that are no more or less than what you've recorded. High and mid-range frequencies that are clean and articulated. Plus the sweetest of sweet spots. Whether it's the 6-inch HR-624, 8-inch HR-824 or dual 6-inch 626, there's an HR Series monitor that will tell you the truth, the whole truth, and nothing but the truth.

Mackie Control Universal and Extender

Automated hands-on control for the DP studio

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.

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Final Words On Quality...

In this issue, we've exhausted the topic of "quality" on many different levels, but we'd like to acknowledge that in the end, music is what stirs the soul. That said, before taking the following quiz, please go back and read Stephen St.Croix's "Fast Lane" column, where he emphasizes the importance of quality music. Then flip back to this back page and see if you can match up the quotes below with the musical legends who uttered them. The first person to e-mail the *Mix* editors (mixeditorial@primediabusiness.com) with the correct answers will receive 10 free CDs of our choosing from the artists featured below, along with a photo in an upcoming issue.

Artist	Quote
1. Sid Vicious	**A.** If you don't live it, it won't come out of your horn.
2. Brian Eno	**B.** The worst crime is faking it.
3. Luciano Pavarotti	**C.** All the good music has already been written by people with wigs and stuff.
4. John Lennon	**D.** A nice blend of prediction and surprise seem to be at the heart of the best art.
5. Tom Waits	**E.** Musicians don't retire; they stop when there's no more music in them.
6. Kurt Cobain	**F.** These can't be the only notes in the world; there's got to be other notes someplace, in some dimension, between the cracks in the piano keys.
7. Ella Fitzgerald	**G.** You don't need any brains to listen to music.
8. Frank Sinatra	**H.** I can't stand to sing the same song the same way two nights in succession, let alone two years or 10 years. If you can, then it ain't music. It's close-order drill or exercise or yodeling or something, but it ain't music.
9. Charlie Parker	**I.** It's so sweet, I feel like my teeth are rotting when I listen to the radio.
10. Wendy Carlos	**J.** I'm not very good technically, but I can make it f****in' howl and move.
11. Frank Zappa	**K.** Making the simple complicated is commonplace; making the complicated simple, awesomely simple, that's creativity.
12. Charles Mingus	**L.** The best music is essentially there to provide you something to face the world with.
13. Marvin Gaye	**M.** You just pick up a chord, go twang and you've got music.
14. Billie Holiday	**N.** Rock 'n' Roll: The most brutal, ugly, desperate, vicious form of expression it has been my misfortune to hear.
15. Bruce Springsteen	**O.** Music is like making love: all or nothing.
16. Bono	**P.** I stole everything I ever heard, but mostly I stole from the horns.
17. Louis Armstrong	**Q.** I'm struck by the insidious, computer-driven tendency to take things out of the domain of muscular activity and put them into the domain of mental activity.
18. Elvis Presley	**R.** Don't play what's there, play what's not there.
19. Miles Davis	**S.** I like a beautiful song that tells you terrible things. We all like bad news out of a pretty mouth.
20. Isaac Stern	**T.** I don't know anything about music. In my line you don't have to.

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