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RESTORATION

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AFFORDABLE
DVD Authoring and Duplication Packages

THE MIX
INTERVIEW
Margouleff and Biles on Surround

GANGS OF
NEW YORK

"An Inspired Working Environment"

Ray Bardani, Engineer / Mixer
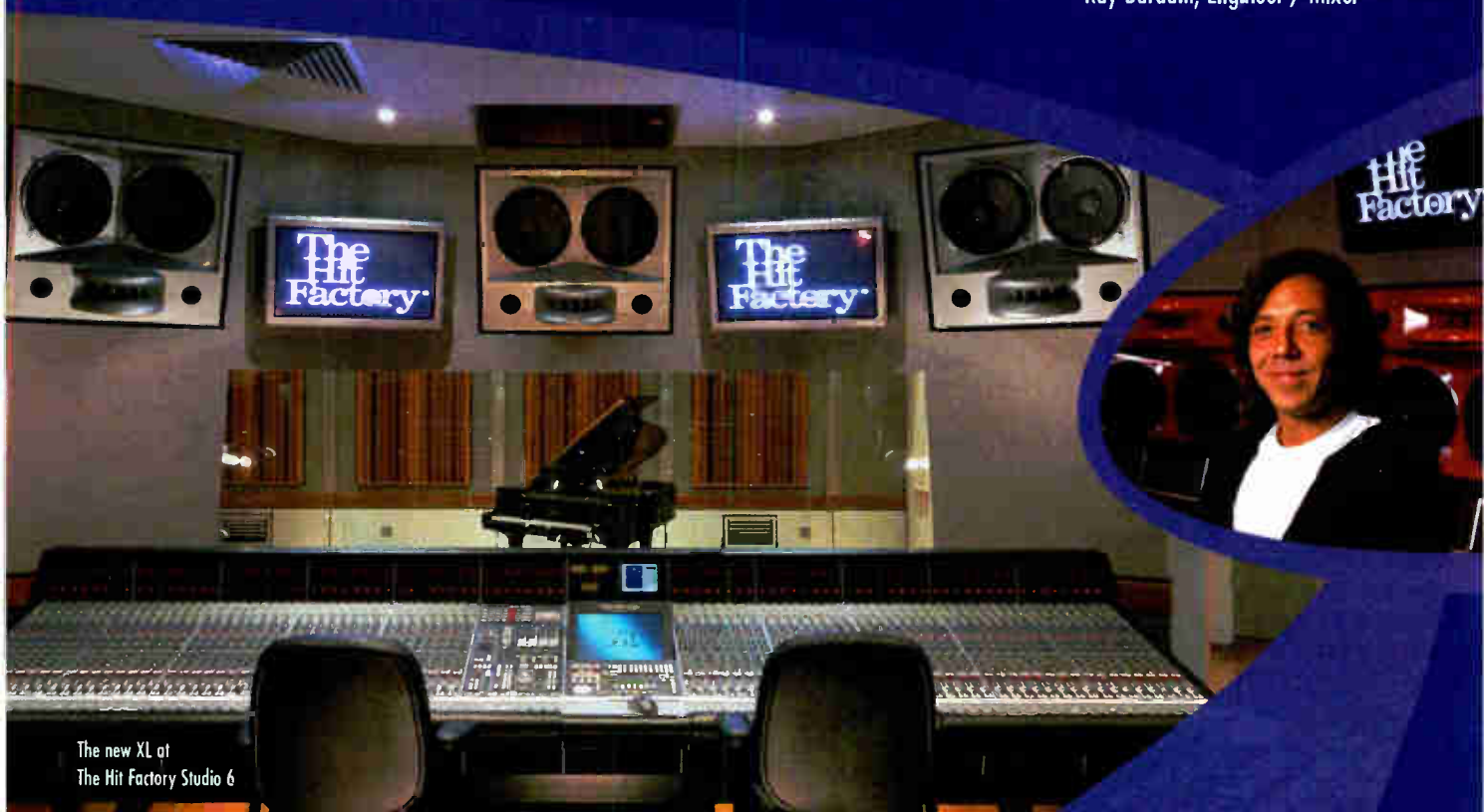
The new XL at
The Hit Factory Studio 6

The new XL at
The Hit Factory Studio 7

XL Session Report

The first session on one of two Solid State Logic XL 9000 K Series
SuperAnalogue™ consoles newly installed at New York's legendary
Hit Factory was BMG/RCA's massive 30 track CD collection of No. 1 Elvis
songs 'Elvls 30 #1 Hits'. Engineer Ray Bardani and producer David Bendeth
mixed songs from the original 1950s-70s masters in stereo on the SL 9000 J Series
SuperAnalogue™ console, and then in surround on the XL 9000 K Series.

"From the moment I sat in front of the XL 9000 K Series console, I was instantly impressed,"
reports Ray, whose credits include work with Prince, Miles Davis and Luther Vandross. "The sonic
clarity is amazing with a tight low end and transparent high end. Also, the XL is built from the
ground up for surround mixing. The routing is very easy and the automation is lightning-fast.
Everything is so instantaneous, the computer does the job within what seems like a blink of an eye.
Working with the on-board computer allows me easy access and flexibility to achieve the level of precision that
I look for when mixing. SSL has made the XL 9000 a production tool that guarantees an inspired working
environment in the studio. The technology never gets in the way of the creative flow – and creative flow is what
this industry is all about."

Meanwhile the XL message continues to spread world-wide with new installations at
Larrabee West, LA. • Pacifique, LA • Planet Kingdom, Tokyo • Paragon, Nashville • Pressure Point, Chicago
Angel Mountain, Bethlehem, PA • MG Sound, Vienna • Plus XXX, Paris • Mega, Paris • Sing Sing,
Melbourne • Mix Room, LA • Olympic Studios, London.

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• Greater Bandwidth than 192kHz recorders
• Amazing Surround Sound Capabilities

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www.solid-state-logic.com

Soundtracks.

Danny Elfman was challenged to create music as spectacular as the visuals in Spider-Man. For such a complex project, Danny knew he first had to get his ideas on paper or, more specifically, on his Power Mac: "When I compose, I like to experiment with many different ideas," says Elfman. Using Digital Performer, Elfman can easily play hundreds of parts into his Mac* and listen to them all synchronized to picture. Outside the studio, Danny takes hundreds of hours of music with him in the palm of his hand with his Apple* iPod." "I don't get on an airplane without an iPod because it's got half of my library on it all the time."

Made on a Mac.

World Radio History

PAGE 30

PAGE 38

PAGE 48

PAGE 78

On the Cover: Sterling Sound just opened its new digs in New York City's thriving Chelsea Market. Boasting state-of-the-art equipment, signature quality design by Francis Manzella and a top-notch crew, Sterling is back in its groove. Take a look around. The tale begins on page 20. **Photo:** Richard Pare. **Inset Photo:** Courtesy Miramax.

MIX

features

Check Out Mix Online! http://www.mixonline.com

World Radio History

Who Do We Blame Now?

According to a recent study, CD sales are down 11% over this same period a year ago. Finding the reason is simple enough: A little finger-pointing to any convenient villain and the record industry's off the hook.

Twenty years ago, the ogre *du jour* was cassette tapes. Too much of that home-taping stuff going on for record labels to make any money. Does anybody remember the battle royale of the RIAA vs. the Home Taping Coalition? The WWF had nothing on them; somebody could have made a fortune selling tickets to that triple tag-team match.

Fifteen years ago, the first DAT decks arrived, followed by a flurry of failed CD copy-protection schemes. Eventually, DAT proved to be a consumer failure, but the stench of its SCMS copy protection lingers, making it difficult for bands working on home digital equipment to create backup copies of their own works.

Over the years, the industry found other excuses for low record sales. One of my favorites was that teens spent too much leisure money on video games, leaving nothing for music purchases. Meanwhile, record companies had *lots* of money coming in, especially with warehouses of older, highly profitable (and no-risk) catalog material to release to baby boomers.

When the Internet became a household appliance, file-sharing sites became the new scapegoat. Yet, once sites such as Napster were dismantled, others cropped up. And these days, nearly every home PC has a CD-R drive. So why didn't record labels use this new distribution model to their advantage, putting up their own sites to download 99-cent singles?

Maybe we should look to the film industry for answers. With the dawn of DVD, movie studios banded together, adopted a (copy-protected!) standard and dove into the most successful new format launch since the Berliner disk in 1887. The key here is "a standard"—not seven, not five, not three—but a *single* medium. Meanwhile, while millions of DVD players were being sold worldwide, the audio industry whined, complained and argued over which high-performance standard was the best. No one bothered to notice that 99% of consumers didn't care about ultrafidelity; they were buying and enjoying DVD releases that sounded great (for a few examples, check out *Saving Private Ryan*, The Eagles' *Hell Freezes Over*, *The Matrix* or *James Taylor Live at the Beacon Theater*), looked great, had tons of cool bonus material (sometimes with a second disc to hold it all) and were priced just a few bucks more than a CD.

Record labels need to abandon the blame game and put the "repertoire" back in A&R. There are still too many rushed-to-market, "one great tune/11 songs of filler" releases. And, where's the bonus material? Adding a second CD to that $16.98 package with artist interviews, rough demos, CD-ROM clips/images, etc., could add extra appeal. These days, when movie tickets and paperback novels hover around the $10 mark, the $16.98 list on a CD may not seem so bad—especially compared to 25 years ago, when you could buy a really nice house for $50 grand, and the list on vinyl records was $7.98. Music could still be "your best entertainment value," but only if the industry stops looking for villains and starts looking for solutions.

George Petersen
Editorial Director

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'The Master' BB5/XBD Active

Letters to Mix

THANK YOU, GEOFF

Many thanks for interviewing Geoff Emerick. I named my (now 13-year-old) first-born son in his honor, both for my enjoyment of his work and the fact that I thought "Geoffrey with a G" was just a super-cool name (and this was back in 1989!).

Any chance of a similar interview with Norman Smith? I'd love to hear his tales of sessions with the Fab Four and the Floyd, and haven't heard of what or how Norman is doing in some time.

Mark Zampino
Owner, Ledge Vu Media

ROUTERS, ROUTERS EVERYWHERE

I would like to add a couple of comments to Gary Hall's article on AES routing switchers (October 2002). While routers are relatively rare in audio studios, they are commonplace (in fact, indispensable) in television broadcast and production. I have noticed that some companies that make AES routing products aimed at the "studio" market do not always implement them similarly to broadcast routers.

For example, the typical broadcast-type router (whether for AES audio, analog audio or video) allows any input to be routed to any number of outputs simultaneously. This means that the router effectively acts as a "distribution amp" to send the same signal to multiple destinations. However, some smaller AES routers I have seen do not allow this function; each input can only be routed to a single output at a time. This is an important point to keep in mind.

I also want to mention that almost all broadcast router manufacturers have products that will handle AES signals. Usually, these are independent modules that are linked with modules that route other signal formats, but can also function alone with a variety of control panels and other options. These manufacturers include some mentioned by Hall, plus Leitch (one of my personal favorites), Sigma,

Utah Scientific, Grass Valley Group, Philips, Sony and others.

While it may not be worthwhile for a small studio to investigate all of these options, I wanted *Mix* readers to be aware of the larger world of routing switchers outside of studio applications.

Eric Wenocur
Lab Tech Systems

BUT WHAT ABOUT HOSA?

As the industry leader in quality, affordable cables and adapters, it's easy to understand how some may not be aware of our other strengths. What Gary Hall did not mention ("Digital Audio Routers," October 2002) is that Hosa (www.hosatech.com) also offers leading-edge digital and cabling solutions.

Our PBP-362 Optical Patchbay transfers S/PDIF Toslink and ADAT formats with the tactile joy of an analog patchbay, which was nominated for a 2002 TEC Award. The OGC-361 Optical Extender (S/PDIF Toslink or ADAT Lightpipe) allows TOS fiber to be extended as far as 500 feet, and our new FXT-401 FireWire Extender transcends the 15-foot cable limit for up to 162 feet.

Our Zaolla cables (www.zaolla.com) use the atomic superiority of silver for transference, which is simply unavailable from copper-based products, no matter what the brand. Since AES, industry titans are calling us, creating a buzz; we welcome the challenge.

Rob Manning
Zaolla & Hosa Technology

DON'T NEED NO STEENKIN' POLITICS

I guess I shouldn't have been surprised by the recent column written by Paul Lehrman ("We Don't Need No Steenkin' Ethics!," October 2002). After all, I haven't met many advocates of free markets among the music community. Although your ethics advice was good, the political commentary was way off the mark.

Mr. Lehrman, I have enjoyed reading your column for years, but when it comes to politics and economics, you would do very well by picking up a few books or enrolling in a couple of courses. I would suggest starting with anything written by Ayn Rand or Thomas Sowell.

To portray government regulation as the cure to all of our economic problems ignores the history of the 20th century and the idea of how freer a country is, the more prosperous it is. It's preposterous to suggest that the Roosevelts' government-intervention policies were

a good thing. But the real circus is the antitrust laws. Did you know that under those laws if businesspeople set their prices lower than their competition, they could be found guilty of "unfair competition"; if they set them higher, then they could be found guilty of a successful "intent to monopolize"; and if they set them equal to their competitors, they could be guilty of "collusion" or "conspiracy"? I guess we entrepreneurs are all criminals then.

If I wanted to read the same leftist rhetoric, there are many magazines where I can get it, but *Mix* would be the last place I would expect to find it. Please, Paul, with all due respect and admiration, go back to audio-related subjects.

JLRevelo
New York City

AN ETHICAL LIFE

Your "Steenkin' Ethics" article in the October issue is so dead-on. Your thoughts on the steady decline of corporate ethics and moral responsibility echo my personal sentiments to the core. The *big* question is how do we reverse this trend as a nation and as an industry? The question I ask myself at the end of each day is, "Did I perform today with integrity?" Sometimes, I fantasize about being a happy moral slacker. It would be so much easier, but I just can't do it. You could have been a slacker and not printed that article. Go forth and inspire.

Pat Hutchinson
Nashville

KEEP ON DANCING!

Thanks for your "Mixing for the Dancefloor" article (October 2002). I was excited to see that article on the cover. It's great to know you guys are paying some attention to electronic/dance music. Please keep more articles like that coming! It's so hard to find an American magazine that actually writes about creating dance music that speaks to working professionals in the music industry. Every American dance-music magazine I've picked up seems to think that its target audience is all high school or college kids, and I find the dumb-downed articles not only useless but annoying. So keep it up and I'll continue to be a very happy *Mix* subscriber.

Matt Druid
President/CEO Fusion Sound Lab Ltd.

Send Feedback to *Mix*
mixeditorial@primediabusiness.com

TOM DOWD, 1925-2002

The recording world lost one of its true giants when legendary engineer, producer and audio innovator Tom Dowd succumbed to emphysema on October 27 at the age of 77. His career spanned six decades and encompassed sessions with a mind-boggling array of great artists in rock, pop, jazz and R&B from the mid-'50s until just before his death. He never lost his enthusiasm to work with musicians or cut a hot track in the studio: "It's still a rush," he told *Mix* in 1999, the year he was elected into the TEC Hall of Fame. "You get a glow, and you think, 'Hey, I'm lucky to be here.'"

And we were all lucky that Dowd decided to forego a promising career in physics to pursue his love of music. In New York City in the late '40s, he worked as a freelance engineer; then, he latched onto the fledg-
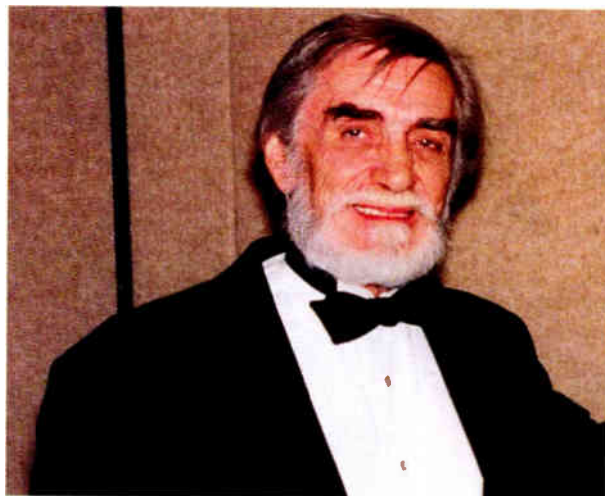
Eric Clapton and Tom Dowd, circa 1971

Left to right: Steve Cropper, Rod Stewart, Roger Hawkins, Tom Dowd, Jimmy Johnson and Barry Beckett recording Atlantic Crossing at Muscle Shoals in 1975.

ling Atlantic Records label for a quarter-century, working as the company's technical guru, principal engineer and later a top producer. It was Dowd who introduced Atlantic to stereo in 1952, and who designed the label's pioneering 8-track studio on West 60th Street in 1960. He built consoles and other equipment from scratch, and single-handedly came up with miking principles in the late '50s and early '60s that are still popular today. Though he is perhaps best known for the work he did in New York, he also made extraordinary records in Muscle Shoals and Memphis. From the '70s on, Dowd worked mostly out of Miami, where he helped put Criteria Studios on the map. His records were noted for their naturalness and their clarity; he was, in a sense, one of music's great documentarians, capturing the magic in the room but not imposing his own sound on the artists with whom he worked.

And what a collection of musicians benefited from Dowd's easygoing but conscientious manner! In the jazz world, he engineered multiple projects with such notables as Ornette Coleman, John Coltrane, Hank Crawford, Eddie Harris, Mose Allison, Herbie Mann, Milt Jackson, Charles Mingus, the Modern Jazz Quartet, Bobby Short, Nat Adderly and Freddie Hubbard. He was behind the board for all of The Drifters' early hits and for early rock-era titans such as The Coasters, The Clovers, Ben E. King and Bobby Darin. He engineered some of the greatest soul records to come out of Atlantic, cutting classics by Aretha Franklin, Ray Charles, Otis Redding, Wilson Pickett, Solomon Burke and The Bar-Kays. He produced or engineered scores of important rock albums, too, including numerous dates with Cream, the Young Rascals, the Allman Brothers, Eric Clapton, Derek & The Dominos, Lynyrd Skynyrd, Wet Willie, Dr. John, Delaney & Bonnie, Black Oak Arkansas, Dusty Springfield and Rod Stewart, to name just a few. If you want your mind blown away by the sheer scope of his career, check out his listing on http://allmusic.com.

Dowd had great ears and a big heart; few figures in our business were so universally loved and respected. Up until his last days, Dowd had a twinkle in his eye and a good story on the tip of his tongue—he was quite the raconteur, his sharp memory overflowing with anecdotes about the business that he loved so much. And though now we'll miss his warmth, his graciousness and his *joie de vivre*, his legacy is both enduring and inescapable.

—Blair Jackson

SKYWALKER HOSTS "LA BOHEME" CAST RECORDING

The Scoring Stage at Marin County's Skywalker Sound recently hosted sessions for the cast recording of Baz Luhrmann's *La Boheme*. Produced by David Frost and engineered by Shawn Murphy for Dreamworks Records, the recording featured the entire cast for the new production, directed by Luhrmann, which previewed in San Francisco before opening on Broadway this month.

More than 60 musicians, plus *La Boheme*'s principals and chorus, fit comfortably in Skywalker's large scoring room, but because the studio was in the midst of installing a new Neve 88R (shipped direct from the AES show floor), Frost and Murphy had to set up a temporary control room in the artist's lounge area. Working with editors Bob Wolff and T.J. Lingren, Murphy recorded direct to 64 tracks of Pro Tools|HD at 24-bit/88.2 kHz, monitoring on a Yamaha DM2000, provided by DMT Rentals, and a Sony DMX-R100, provided by Sony Music Studios, New York. All A/D conversion was via dB Technologies dB-4496 Blue Series converters, and Murphy monitored on Skywalker's B&W Nautilus 802s powered by Chord amplifiers.

The original cast album for La Boheme was recorded at Skywalker Sound. The sessions were produced by David Fox and conducted by Constantine Kitsopoulos.

The extensive microphone setup included both a Decca Tree (3x Neumann M50s) with outriggers (2x AKG C-12s) and, for additional "bite" if necessary, DPA 4060 clip-on mics for each of the string instruments, which were premixed via Studer analog consoles. Murphy also selected Neumann M49s and M149s for each of the principal singers, and arrayed a range of Schoeps MK4s and Sennheiser MKH40s, Neumann U67s and U47s, plus Royer and AEA 44 BX ribbons as spot mics. The chorus was captured with Schoeps MK21s and MK2Hs, and the seven-piece Banda, which had an offstage cue, carried wireless Neumann/Sennheiser SKM 140/43 models. Preamps included models by Grace, Millennia Media, Avalon, GML, SonoSax and Boulder.

La Boheme director Baz Luhrmann

"While a challenging project to do, given the state of our control room, *La Boheme* proved to be a fantastic experience for the technical and recording staff," commented Skywalker director of music recording and scoring Leslie Ann Jones. "The Skywalker scoring crew and the Sony Music Studios crew worked together to support Shawn Murphy and David Frost, and the results were quite spectacular. I'm looking forward to hearing the CD."

Skywalker's Dann Thompson assisted, along with Judy Kirschner and Andre Zweers. Technical assistance was provided by Skywalker's Clayton Wood and Sony's Mark Betts for the week's worth of recording sessions.
—Chris Michie

ENGINEER ANDY TAUB OPENS NEW STUDIO

Designed by the Walters-Storyk Design Group, lead engineer Randy Taub's new 4,500-square-foot Brooklyn Recording Studio complex in Brooklyn's Cobble Hill area is open. The complex takes up the full second floor of a pre-existing office building.

The 2,500-square-foot main studio is 5.1-capable and features two iso booths, a vintage 60-channel custom Neve 8088 console, Pro Tools|HD 192 system and Genelec 1039A speakers. A second room for mastering/overdubs is in the planning stages.

Taub has worked with such artists as Huey Lewis, the Neville Brothers, The Breeders, Squirrel Nut Zippers and Los Lobos, and has already booked sessions for producers Joe Chicarelli, J.D. Foster and Joe Henry.

Brooklyn Recording Studios, 69 Warren St., Brooklyn, NY 11201; 718/935-0249; www.brooklynrecording.com.

Pictured in the Brooklyn Recording Studio control room are, from left, producer J.D. Foster, lead engineer Randy Taub, John Storyk and WSDG partner/project manager Scott Yates. Seated: second engineer Suzanne Kapa.

10 YEARS OF MAKING WAVES

At this year's AES convention, Waves co-founders Gilad Keren (left) and Meir Shashua celebrate with their L2.

THE CROWN JEWEL

A mid-'50s picture of Clarence Moore and his son, Clyde, with a "few" of Crown's early tape recorders

55 YEARS OF AMPS, MICS, CONTROL

In 1947, an Elkhart, Ind.,-based minister named Clarence C. Moore returned to the United States after a missionary tour in Ecuador. A longtime radio enthusiast, Moore wanted to supply Christian broadcasters with quality electronic products; that year, Moore's International Radio and Electronics Corporation opened inside a converted chicken coop.

Moore's wife (and company co-founder), Ruby, suggested that the company name was a bit too long. After looking at its brand names such as "Royal" and "Imperial," as well as the fancy crown emblem, both agreed that "Crown International, a division of International Radio and Electronics Corporation" was more fitting. In 1975, the stockholders changed the name to just Crown International Inc.

Since then, Crown has introduced a slew of groundbreaking technology products: In the 1980s, the pro audio industry saw the implementation of "Grounded Bridge" circuitry that is used in Crown's Macro-Tech and Micro-Tech amplifier lines; in the early '90s, Crown introduced its patented IQ System; and 1997 saw the arrival of the K2 amplifier, which features Balanced-Current Amplifier circuitry.

Crown's international senior VP' of R&D Gerald Stanley (who joined the company in 1964 as a tape recorder line technician and amplifier design engineer) said, "In an era of cookbook designs and buggy software, it would seem that the most basic lessons of history have been forgotten. Crown's recipe is simple: Design, build and service each product as if you were the customer."

NOTES FROM THE NET

Rock the vote: The United States Copyright Office is now taking public comments on the section of the Digital Millennium Copyright Act that prohibits users from breaking encryption technologies, such as those used in peer-to-peer file-swapping services. When the DMCA was signed in 1998, a provision was included that requires the registrar of copyrights and the assistant secretary for communications and information to revisit sections of the act. This time around, the Copyright Office seeks comments from librarians, academics and researchers. Responses are due by December 19; visit www.copyright.gov/1201/comment_forms/. Rebuttal comments to the new files will be taken until February 19, 2003. If applicable, the new version of the DMCA will be released on October 28, 2003. Meanwhile, several bills have been introduced into Congress that currently seek to modify the DMCA. Reps. Rick Boucher (D-Vt.) and John Doolittle (D-Calif.) introduced a bill that adds fair-use protections to copyright law (which would re-establish the "Betamax" standard that allows users to make copies of a copyrighted material for home or personal use) and also imposes tough labeling requirements on watermarked CDs. On the flipside, Sen. Fritz Hollings (D-S.C.) crafted the P2P Privacy Prevention Act, which requires electronics manufacturers to create and implement security technology on their products. Working off of the privacy issue, Rep. Howard Berman's (D-Calif.) bill gives media companies the right to "peek" into users' computers to see if they are illegally trading files. Of course, this would require the cooperation of the user's ISP.

Take it to the street: In the newest series of assaults on the end-user, the recording industry—under the auspices of an umbrella organization dubbed MUSIC (Music United for Strong Internet Copyright)—began taking out full-page ads in *The New York Times*, the *Los Angeles Times* and the congressional paper *Roll Call* with the punchy headline "Who Really Cares About Illegal Downloading?" What follows is a slew of quotes from top-selling musicians, including Britney Spears, Luciano Pavarotti and P. Diddy, condemning online file trading. Similar TV spots are set to air this month.

Industry News

Chris Shepard is the new manager at Chicago Recording Company's (Chicago) music department… Sound reinforcement manufacturer **Apogee Sound** (Petaluma, CA) promoted **Steven Walker** from general manager to managing director. In other company news, **Keith Vanderkley**, director of North American sales, is responsible for sales efforts east of the Mississippi River in the U.S., as well as in Ontario and the eastern provinces

Dave Lewty

Jared Seidman

of Canada…Maintaining his role as COO at **Phoenix Gold** (Portland, OR), **Timothy G. Johnson** also adds president duties…Oscar-winning film composer **Hans Zimmer** has joined **Euphonix's** (Palo Alto, CA) Board of Directors…In charge of operations and services for **Sony Disc Manufacturing**'s Springfield, Ore., facility is **Quintin P. Mikell**…Former VP of engineering at Lexicon **Jan Wissmuller** takes that title to **DTS** (Agoura Hills, CA)…Just around the corner, **Dave Lewty** has been appointed to the newly created applications specialist position at **Allen&Heath USA** (Agoura Hills, CA)…**Ex'pression Center for New Media** (Emeryville, CA) promoted **Andrew Britt** and **John Scanlon** to the positions of director of digital video media and director of sound arts, respectively… Boston-based **Digital Bear Entertainment**, an indie artist development and production company, welcomed **Adam Nelson**, studio manager/director of artist relations, and **Dean Pasalis**, head of music-publishing department, to its staff…Audio post-production facility **Photomag** (New York City) gets a fresh perspective with new audio engineer **Jared Seidman**…Systems integration specialists **Doyle Technology Consultants** (Renton, WA) added **John Hartwell** to its team in the dual role of managing the company's advanced system development and directing systems backlogs.

CORRECTION

In the "Survival of the Fittest" feature on L.A. recording studios (October 2002), the text reads that Western Recording was the site of such historic recordings as Frank Sinatra's "It Was a Very Good Year," which was actually recorded at Ocean Way's Studio A, formerly United Recording.

Mix regrets the error.

A FRONT-OF-HOUSE CONSOLE
THAT TAKES A BACK SEAT TO NO ONE.
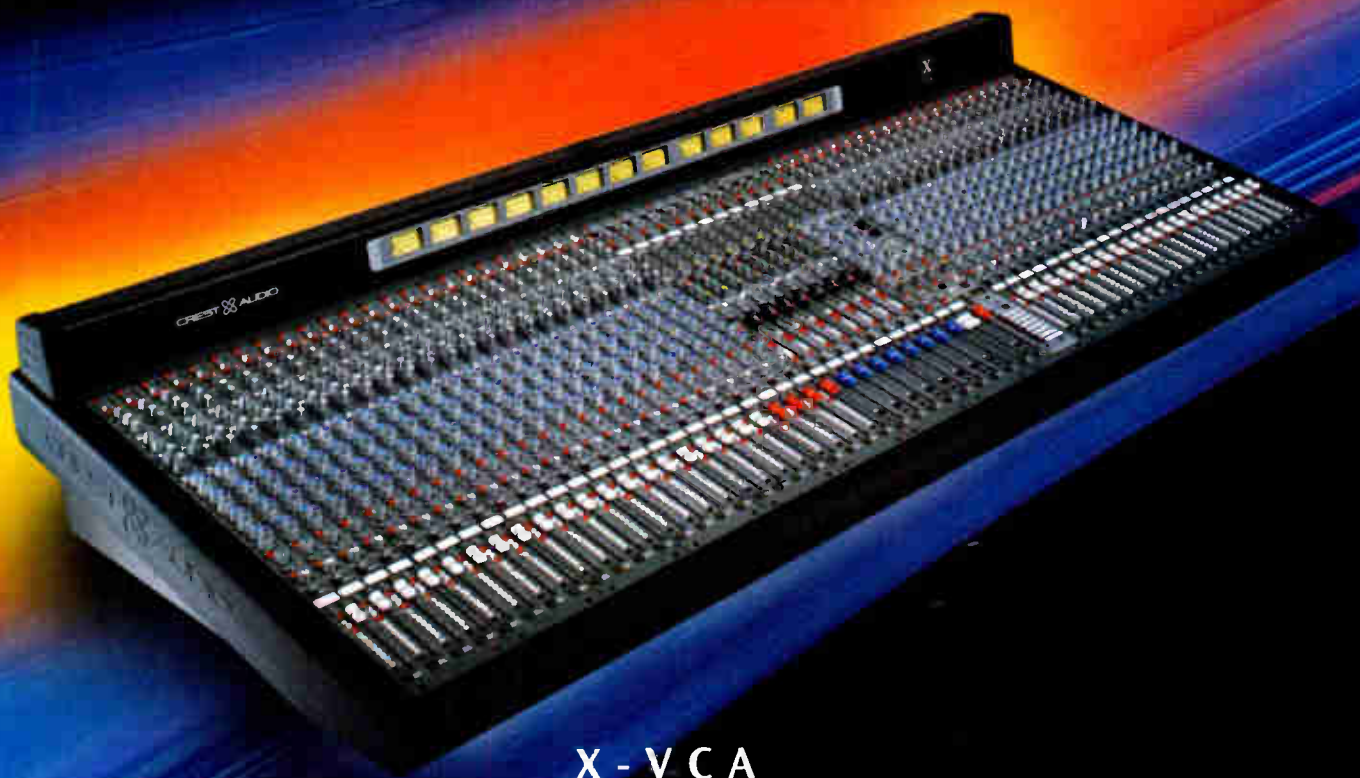
X - V C A

The X-VCA was designed to satisfy the most discriminating Front-of-House mixing engineer with superior sound quality at every level and a feature set generally found on more expensive consoles. X-VCA is designed for experienced operators requiring the most sophisticated level of performance. Featuring superior VCA performance (Noise/Distortion), the X-VCA uses the finest "THAT" brand VCA elements.

Does Your F-O-H Console Do This?

- Full 4-band parametric EQ switchable between "bell shaped" or "shelving" for High Frequency and Low Frequency EQ.

- All input channels can operate with true LCR panning, conventional L-R panning and/or Mono assignment. All analog group assignments are discrete, and a pan on to groups is included to assign a stereo analog pair to a subgroup.

- Microprocessor based mute system with preview and safe functions.

- "Soft" VCA assignment with a simple assignment system that can be set up from an input or group channel and can store up to 128 VCA assignment presets for theater applications.

- The only console with analog group channels capable of full VCA control with Compressor/limiter and a gate in the form of a downward expander on each analog subgroup. A switch links odd and even channel if a stereo subgroup is required.

- 5-band output EQ with 24dB/40Hz High pass filter and RMS Limiters on main Left/Right and Mono Outputs (with separate Left, Right, and Mono faders).

- 4 channel on board matrix reduces overall console size while a rear panel Matrix output connector can be coupled to external X-Matrix rack units to add an unlimited number of matrixes.

- Five year limited warranty on Crest Audio mixing consoles

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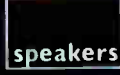
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MIX LOOKS BACK

For *Mix*'s 25th anniversary this year, we begin looking back at where we started. Here are the Number One album and single from *Billboard*, December 1977, with special props to the engineers, producers and studios who make the magic.

NUMBER ONE ALBUM

Simple Dreams, **Linda Ronstadt.** **Producer: Peter Asher. Studio: Sunset Sound.**

NUMBER ONE SINGLES

The Bee Gees' "How Deep Is Your Love?" Producers: Karl Richardson, Albhy Galuten. Studio: Le Chateau Studios (Paris).

FEARLESS MUSIC HITS THE WEST COAST

Bob Kulick (left) and Billy Sherwood

For six years, Fearless Music (www.fearlessmusic.net) has provided full-service commercial music production on the East Coast. Now, signing on industry vets and composer/producer/musicians Bob Kulick and Billy Sherwood, Fearless Music owner/composer Jamie Lamm takes his success to Los Angeles.

You may have heard Kulick's expertise on *SpongeBob SquarePants*, *Entertainment Tonight*/NBC promo, *Tales From the Crypt* and WWE. He's also played guitar and cowrote songs for Kiss, Alice Cooper, Motörhead and Wasp, as well as Diana Ross, Michael Bolton, Patti LaBelle, Lou Reed, Meatloaf and many more.

Sherwood was last seen working at Elias Music as a staff composer, where he created tunes for Audi, Nintendo and Hewlett-Packard spots. Sherwood also produced songs and albums for Yes between 1996 to 2000.

ROBERT A. GAULT, 1925-2002

On October 4, 2002, Robert A. Gault, founder and former president of loudspeaker manufacturer Eminence, died after a long illness. Gault founded Eminence in 1966 after working as an engineer for Magnavox and CTS (Chicago Telephone Supply). Under the guidance and leadership of Gault and, most recently, his son Rob, the company's capacity has grown to over 10,000 speakers a day, with over 200 employees.

FELICITACIÓN!

At the Latin Grammy Awards, held September 18, 2002, Kike Santander took home the Producer of the Year Award. Recent work includes *Azul* (Cristian); "Perdidos En La Noche," "Por Ti Yo Iré," "Que No Me Pierda," "Quisiera," Si Tu Te Vas" and "Soy De La Gente" (Diego Torres); and *Una Vez Mas* (Jaime Camil).

EUPHONIX, STEINBERG TEAM UP

At AES, Euphonix and Steinberg announced that they will jointly develop integrated pro audio products for the music and audio post-production markets. As of press time, a new product had not been announced.

According to Andrew Wild, VP of marketing for Euphonix, "The music and post markets are moving to digital workstations because of the convenience of having recording, MIDI, editing, mixing and plug-in functions in one system. This is especially true in project music, short-form post and film editorial applications. We believe that although this is the case, many engineers and musicians miss having a professional control surface for fast and intuitive access to mixing functions. Our strength is in the design and manufacture of such digital control surfaces, so it seems a natural progression for us to team up with a workstation company such as Steinberg to provide an integrated workstation/control surface combination. In Steinberg's case, we also have a lot of converter hardware that we can package with this system for a fully professional integrated solution. Steinberg understands and supports this philosophy and has an open approach to protocols and file transfer, which we embrace."

Keep tabs on latest product news from these two companies by pointing your browser at either www.euphonix.com or www.steinberg.net.

At Steinberg's booth: Euphonix System 5 control surface controlling Nuendo as proof of concept.

From mic-pre to CD...

Sterling Sound

By Paul Verna

One could endlessly debate the relative merits of the world's great mastering studios and the engineers who work in them. However, few would argue that, in terms of engineering firepower and sheer scope, Sterling Sound is one of the most impressive mastering facilities ever built.

In its original incarnation—before a management buyout in 1998, and before a relocation to a new future-minded facility—Sterling was a trendsetter. Its Midtown studio featured state-of-the-art rooms and a top-flight creative staff that included Ted Jensen, Greg Calbi, Tom Coyne and George Marino.

Then, in late 1998, Jensen, Calbi and Coyne—along with businessman Murat Aktar, who would become the studio's president—purchased Sterling from its former owner and devised a plan that was as ambitious as it was logical: to build a new mastering complex that would house six full-service, surround-ready studios, each with its own production room and client lounge. Less than four years later, Sterling completed its dream facility.

The new digs—in the thriving Chelsea Market, which spans a long block between 9th and 10th Avenues and 15th and 16th Streets—are swanky in the extreme yet comfortable and homelike, if your home happens to be a high-ceilinged New York City loft. A large, sunlit reception hall gives way to a cafeteria with a kitchenette on one side and a bank of desks on the other.

On the other side of the building are the mastering studios, which are staffed by an engineering team that is unrivaled in its ability to turn out hit after hit in musical genres ranging from pop, rock, hip hop and heavy metal to jazz, Latin music, world music and R&B: chief mastering engineer Jensen; senior mastering engineers Calbi, Coyne, Marino, Chris Gehringer and Chris Athens; and mastering engineers Steve Fallone, Dominick Maita, UE Nastasi and Michael O. Drexler. In addition, Chris Muth serves as technical director, overseeing the implementation of the equipment in every room. With so many top-notch engineers who are as talented as they are opinionated about room design, equipment and ergonomics, the design team was challenged to create a facility that would satisfy everyone's wishes.

Above: One of the six identical mastering suites. Top, the Sterling crew, left to right: George Marino, Tom Coyne, Ted Jensen, Murat Aktar, Chris Gehringer, Chris Athens and Greg Calbi.

Led by Sterling's Aktar, Jensen, Calbi, Coyne and Muth, the crew also included studio designer Francis Manzella, architects Julian Powell-Tuck and David Abelow, contractor Chris Bowman and electrical engineer Andrew Collins.

"We wanted the rooms to be identical for various reasons: It simplified construction and lessened the budgetary burden," Manzella says. "If you say to a contractor, 'Build six of these,' they can price them modularly and buy materials accordingly. We also wanted everybody to have the same type of room so that no one would say, 'So and so has a better room than mine.' The rooms are very soft—not physically and acoustically, but functionally. You can move things around quite a bit without affecting the sound of the room."

That flexibility extends to the facility's entire studio region, which has a floated slab raised eight inches above the level of the offices and reception areas. "Clearly, the studios had to be raised for isolation, but we decided to keep everything surrounding the studios—the corridors, the walkways—raised, as well," says Aktar. "That makes the whole facility much more flexible, because the wire troughs run along the floor and can be accessed instantly, so there's nothing we couldn't update in the future."

Even for specific sessions, a room can be customized at a moment's notice, according to Muth. "For instance, if you need to run fiber optics to get a Sonoma editor going, you pull open the floor, shove the cable in, and you're ready to roll," he says.

The work may seem effortless now, but relocating is never an easy project. Jensen, Calbi and their support teams moved to the new space in early 2000, and the rest of the engineers followed by the end of 2001. But a hidden benefit of making the move in two stages was that Aktar and company could fine-tune the layout of the rest of the facility even as Jensen and Calbi were working in their new rooms. The transition coincided with a period of significant growth for Sterling, with new engineers joining the staff, new formats entering the mix and the studio's production needs growing accordingly.

"We weren't ambitious enough in making it dense in terms of the number of rooms," says Aktar, referring to the original plan. "The original design happened back in 1997 and 1998, before we had that much experience working together. The years that followed were real growth years for our business, when we brought in Chris Gehringer and Chris Athens and started having enormous production requirements."

Now that the move is complete and Sterling is in a groove, Aktar and the design team marvel at how well the project turned out, notwithstanding the intense pressure under which everyone worked to get it done.

Aktar says, "I've never been involved in anything that when I was finished with it, I wouldn't have changed something. To be able to break it up into manageable bits and have the experience of a couple of years in between them and be able to refine the ideas was invaluable." ∎

World Radio History

BY STEPHEN ST.CROIX

Is It Real?...Or

Do I Remember My Ex?

Now that we are all grown up, we sometimes look back and realize that, while many things have improved, some of our early experiences had a simplistic beauty and power that is a bit harder to find today.

The problem is, though, that the way we remember them is not necessarily the way they were. And even if our memories are accurate, any physical artifacts that may have been part of those experiences may no longer be in such good shape.

Know where I'm going yet? Nah—you don't.

Was your first true love really as beautiful as you remember? Or have the years polished the rough edges and reshaped her personality and appearance until no existing human being could ever match this idea?

I certainly enjoy a nice St. Pauli Girl, but I remember her being a bit more personable on the first bottle that was handed to me long ago.

And I certainly remember the stunning French girl that I met on a raft 200 feet offshore in a totally secluded cove on the most perfect tropical island in the world. I remember that I never returned to my hotel and had to check out by phone from the States five weeks later. I remember that she was perfect—no, she redefined perfection.

But now, somewhat older and wiser, I think back and realize that she was just—wait a minute. As I type this in a cold castle in the Cotswolds, 70 miles outside of London, while rain flies across my window at 45°, I remember very clearly. She was perfection. Okay, forget this example.

But, if I met her today, how would she fare? Certainly she would have changed, as have I. Our subsequent experiences have expanded our grasp on the universe and our lives within it. And I have aged a few hundred years, though I am sure that she has not. I know this because I am totally unable to conjure up an image of her looking any way other than how she looked when I swam out to that raft and she stood up and offered her hand to help me on. She smelled like cool salt water and warm honey. She—oh, okay.

UH, YES...THE CHALLENGE

Physical artifacts. Not the Girl on the Raft, but ancient Roman oil urns, pre-Columbian contact lenses, the Mona Lisa, a 99-year-old Harley, Gone With the Wind, "Jailhouse Rock" or a 1962.5 Ferrari 250 GTO.

Awhile ago, I spent some time with one of the wealthiest automobile collectors in the world and asked his opinion on restoration. Amazingly, I then happened to sit next to another individual on a flight from Maryland to Orange County, Calif., who looked just like the former. I also asked his opinion and got the exact opposite answer. Later that day, I went to the beach and he bought Irvine.

What exactly is restoration? Do you find an old Bugatti and spend a year and a fortune bringing it up to original specifications? Or do you go on to bring it as close to perfection as possible—polishing and plating metal parts that were originally only brushed to a satin finish? Do you lovingly apply 30 coats of color and another 10 of clear where there were originally only two coats of primer and one color coat? Would you treat a Ferrari differently? Or an aluminum-engine Plain-Jane Camaro?

Let's narrow the scope a bit. Some time ago, a true Golden Ear named Bob Bradford and I did the audio

How do you remember "The Wanderer" or Del Shannon's "Runaway"? And perhaps more importantly, how would you restore it to what you remember?

restoration for MGM's Gone With the Wind. I went on to restore a great deal more for MGM, including The Wizard of Oz, Yankee Doodle Dandy and many more of that ilk. Because Bob could actually hear, there were running discussions about what we were doing and what our historical responsibilities were. This was complicated by the fact that MGM wanted the end product in stereo, while, of course, the original had a long way to go before it even qualified as mono.

What to do? Technically, it was clear that I needed to develop new equipment for the task—which I did—but the real question was how far to go and how creative to be. With an MGM VP standing over us, these questions were rapidly, if not arbitrarily, resolved: "Make it impressive."

But as the contract progressed and I found myself doing Oz alone in my Maryland studio, I was constantly double-guessing as to where to draw the line. They like them quiet, clean, but impressive. Several other studios that did restoration were mainly lopping off everything above 5k, claiming

that this was the original Academy curve: That the theater speakers at the time did no more than this, so the films were mastered with that expectation. This certainly got rid of a great deal of noise, but made the films sound just like how you think they would. I aggressively disagreed with this rationalization and developed technologies to extract everything that could possibly be buried in the transfer from 20 to 20k.

As a result, my movies sound quite different than the others.

So, the question again: Who was really right? Was I correct in doing what I felt was the most honest, accurate full-bandwidth restoration possible, or were the other guys, who chose to re-create the "original band-limited theater experience"? As you can see, I can't bring myself to describe the two approaches without significant bias, but I don't have the answer.

Of course, I chose a considerably more complicated solution when I discovered that there actually was usable 20 to 20k data buried in there and felt that it was historically correct to extract it. In the end, I did every film that MGM

restored and went on to do a great deal of album work for them, as well.

COMPLICATIONS...

And that is when things got complicated. I stuck to my values and developed more and more elaborate audio-recovery equipment, eventually developing a technology that reliably extracts valid but missing low-frequency audio using exotic LF Doppler diaphragm-modulation analysis to reveal energy present at the original microphone but was never actually recorded on tape. At that point, I could produce dramatically wide response re-masters. In fact, I often got a much wider frequency response than the original release, typically 40 to 19k on stuff that was 3 dB down at 95 and 12k. The right or wrong thing to do?

Usually it was right, but there were projects that sounded pretty ratty when recovered, because the original recordings had a great deal of distortion or hum that my work clearly enhanced.

BUT ENOUGH ABOUT ME. DO YOU COME HERE OFTEN?

Yep. That was then, and this is now. With

all of the high-paying properties already restored, recovered, reconstituted or just plain rehashed, the second tier of lower-paying projects is well under way. And for them, a plethora of noise reduction and restoration equipment has emerged. Where there were once four or five of us doing this type of work, there are now several hundred studios offering to recover our lost memories. And if you think *I* had decisions…

How do *you* remember "The Wanderer" or Del Shannon's "Runaway"? And perhaps more importantly, how would you restore it to what you remember?

There is no question that each of these songs, unfortunately dubbed "oldies," is incredible. Each time I score a pristine copy of one and fire up the ol' laser turntable, I am amazed by how great it sounds, and how horrible it sounds. I guess the truth is that it *feels* great and sounds like crap. The limited dynamics are always a shock, and the bandwidth limitations are always much more severe than I remember. (I could have *sworn* that there were kick drums back then, and maybe even bass guitars.) Well, I first heard these anthems on a little

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THX

21 51

BY PAUL D. LEHRMAN

Can Audio and Video Get Along?

The Real Video Revolution Will Not Be on Tape

ILLUSTRATION RICHARD DOWNS

Ah, the tapeless studio. A dream of so many for so many years, it is now upon us. There's no longer a need for an 8-track digital multi-track tape deck when you can get a 24-track, random-access disk recorder with better specs, not to mention built-in nondestructive editing and mixing capabilities, for pretty near the same amount of money. Backup media? You can find 20-gig hard drives—that's a thousand track-minutes, even 24-bit at 96 kHz—for less than the cost of a six-pack of S-VHS tapes. Mastering? Whether you're working in stereo, in surround or on sound-for-picture, everything goes right to CD or DVD thanks to your new computer's Superdrive.

In one crucial area, though, I still find myself dependent on a linear medium: video. Despite DVD's ascendancy, as far as all of the filmmakers I work with are concerned, the exchange medium is still VHS. It's how I get rough cuts and final cuts, scratch music and final audio. It's cheap, the timing is accurate, the hi-fi tracks don't sound bad, and it's reliable. It also looks awful, and the transports for it are slow and clunky.

Not to mention if I let a deck get too far out of alignment, it starts to chew up tape.

MiniDV, as I've opined here before, is a far superior format, but I am loath to invest in the $1,000 that a reliable deck costs (no, I'm not interested in getting a cheap camcorder and having it break down in the middle of a crucial session), considering that it is still far from a universal medium and I'm afraid that I wouldn't get much use out of it. And it's still not random-access.

The answer, of course, is to somehow get the video into a computer so that I can zip around the program as fast or as slowly as I can around my audio track. Digidesign, of course, started doing this some years ago with a fabulously ungainly and expensive program called PostView, but since then (and since the widespread adoption of Apple's QuickTime), being able to open a video window within an audio-/MIDI-sequencing program is commonplace.

But I have trouble with this mainly because making my computer do video at the same time it's doing

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audio uses up two things that I consider to be extremely valuable: screen real estate and processor cycles. If the picture is too small, it's hard to watch and hard to discern details. If it's too big, I resent the room it's taking up, which I'd rather use to monitor a few plug-ins. If I slow down the frame rate to save CPU load, it drives me crazy, and it's also impossible to find the hit points. If I run it at full NTSC rate, I can feel the MPEG decoder straining as it skips frames that still end up pixelated.

You'd think that as each new faster generation of computers is introduced, it would make this option more practical. But, inevitably, somebody comes out with another amazing must-have audio application—sample processing with granular synthesis, real-time surround encoding, 6-channel compression, whatever—that sucks up all of those new CPU cycles. The video is once again sent to the back of the class. It's a fine irony—although not much help—that this is the reverse of what happens in the video world, where sound is all too often the last and least part of the production process. But no matter which side you're on, having both audio and video on one platform is problematic.

So what I really want to do is use a second computer for the video and have it talk to my main machine. A couple of months ago, I sent an e-mail out to a group of *Mix* readers asking if they had any cool ways to do this, and I received

Making my computer do video at the same time it's doing audio uses up two things that I consider to be extremely valuable: screen real estate and processor cycles.

dozens of responses, some of which were pretty ingenious. One reader suggested running Pro Tools Free on the *non*-audio computer and just using its video window. Another reader thought that I could digitize the video using QuickTime Pro

and lay the SMPTE timecode on one of the audio tracks. Others came up with elaborate schemes involving Final Cut Pro, DVD recorders and other expensive components. But two products were mentioned more than anything else: One is software, and the other is hardware. They're not from the same company; in fact, they're made about 11,000 miles apart. But they work really well together. Or at least, they should.

We'll start with the software, a clever piece of kit (as they say over there) from a small British company called Gallery, which specializes in high-end programs for film audio. There are over a dozen products in Gallery's catalog, including sound effects organizers, an ADR add-on and a suite of file-management tools for Pro Tools, Teleprompter and Sony 9-pin emulators, batch-file converters, and even some hardware, like a surround-panning joystick and an adorable 5-inch USB touch screen.

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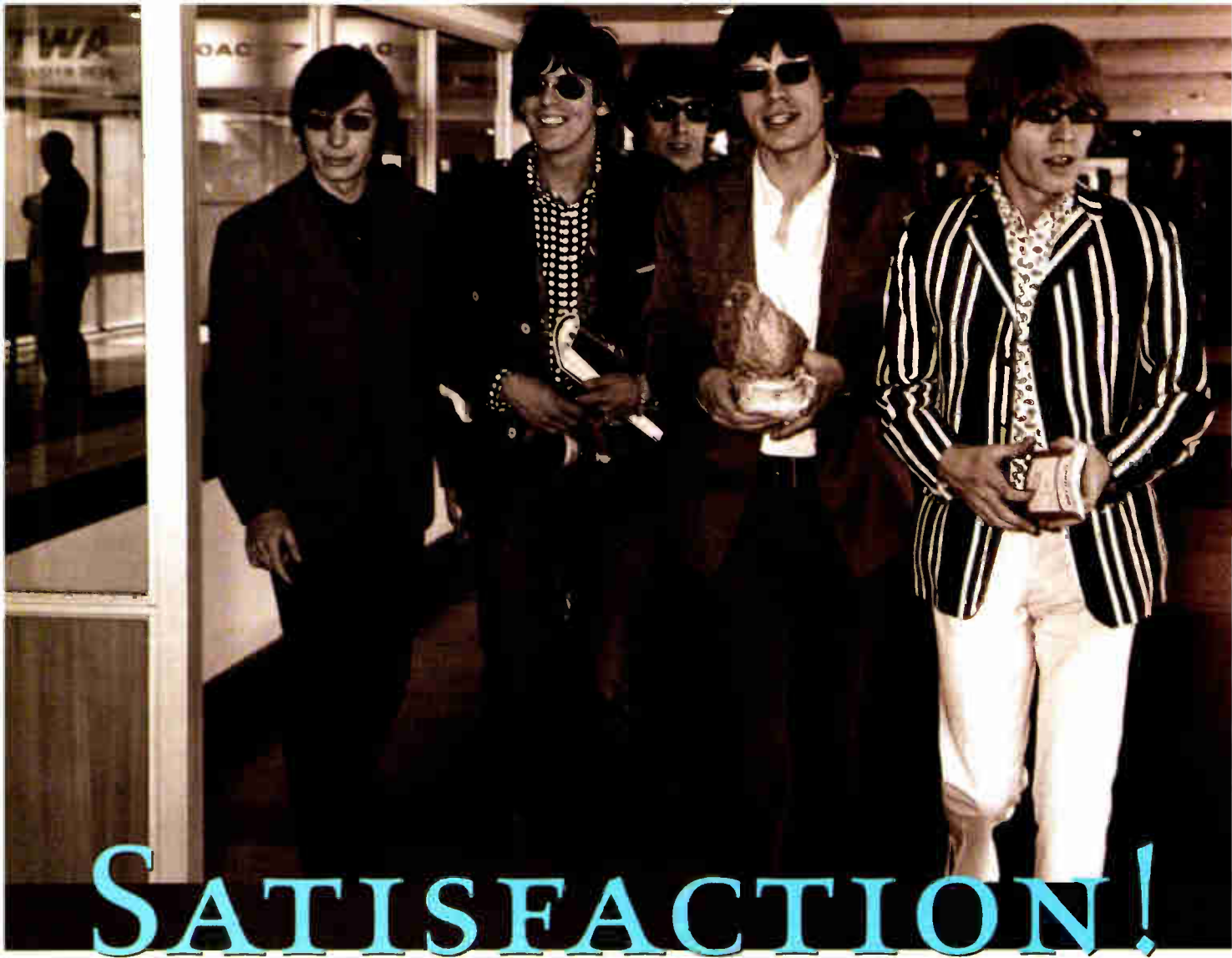
Early Rolling Stones' Catalog Re-Released on Hybrid SACD/CDs

By Paul Verna

When Sony and Philips laid the foundation for the Super Audio CD—the sound carrier based on their Direct-Stream Digital encoding process—they could not have envisioned a more ideal showcase for their fledgling product than the reissue of 22 classic Rollings Stones albums on Abkco Records.

Released en masse in August 2002 on dual-layer discs that feature SACD and Red Book streams, the Abkco Series encompasses the Stones' '60s and early '70s catalog—considered by most fans and critics as the high-water mark in the band's career. The titles include *England's Newest Hit Makers/The Rolling Stones, December's Children (and Everybody's), Let It Bleed* and *Beggars Banquet.*

Overseen by Abkco senior VP Jody Klein for more than two years, the Stones campaign was researched, archived, restored, transferred, remastered and reissued by a small team of audio luminaries that included Abkco in-house engineer Teri Landi, Magic Shop owner/engineer Steve Rosenthal, Gateway Mastering & DVD president and chief engineer Bob Ludwig, and David Kawakami, director of Super Audio project for Sony Corp. of America.

The project began as a massive archiving operation to restore the Stones' Abkco catalog to its full splendor and rectify problems with the materials' earlier pressings. In particular, Abkco's mid-'80s CD reissues of its Stones catalog—which were done with early transfer equipment—were widely criticized for their poor sound quality. Also, some of the vinyl editions were pressed from safety masters that were made at slightly incorrect speeds. The speeds were checked thoroughly and corrected for the current SACD/CD reissues, and the sound quality is markedly better.

Furthermore, there were inconsistencies between the British and American versions of some Stones records, like *Out of Our Heads* and *Aftermath.* For those, Abkco chose to reissue both British and U.S. versions. The first step in Abkco's archiving project consisted of locating the masters—a monumental task in itself—and transferring them to the highest-quality analog and digital media available.

"Unlike The Beatles, who recorded mostly in one place under the supervision of men in white lab coats, the Rolling Stones recorded everywhere, using different producers and different tape formats and alignments," says Klein. "We were pulling things from the UK and from var-

ious places in the U.S.— from barns, from the black market, even from eBay. It took us two years to put it all together."

Luckily, the tapes were in remarkably good shape despite their age, the diversity of brands and the less-than-ideal environments in which some of them were stored.

"The Stones used varying kinds of tapes, like Scotch, EMI, Agfa, and most of them were in good condition," says Steve Rosenthal. "We didn't have to break out the convection oven to bake the tapes. We also had a lot of luck with tones."

THAT MAGIC TOUCH

As the masters were collected, they were meticulously transferred at the Magic Shop in the Blue Room, a suite that Rosenthal—a veteran archivist who has done large-scale projects for Abkco and Smithsonian Folkways, among others—built to handle restoration and mastering work.

"We were determined to transfer this material only once and go to three formats with it," says Klein. "We wanted to go to half-inch, 30 ips analog tape. Then there was the PCM world, which we knew how to do. And then there was this DSD thing, which I'd heard about. We set up a chain where we could listen to all three. We played the analog against the original master as it was transferring, and it sounded okay; the PCM was better. The DSD button didn't work, because I didn't hear any difference between the source and the DSD! Then, I finally got it. The DSD sounded like it didn't work because it was *exactly* like the master."

The three destination recorders were the Magic Shop's Ampex ATR-102, a Sonic Solutions 24-bit 96kHz system with Mytek converters and a Sonoma DSD workstation with Ed Meitner converters. The switching system that allowed the engineers to toggle between each format at the monitoring level— and perform all three transfers simultaneously—was also designed and built by Meitner

A ROCK 'N' ROLL ARIA

The source deck was Abkco's ATR-102, which is equipped with ¼-inch and ½-inch headblocks and custom Flux Magnetics heads. Rebuilt by ATR Service Co. president Michael Spitz, the Abkco unit features Aria Reference Electronics, an all-discrete, Class-A package designed by David Hill (of Summit and Crane Song fame) with Spitz. Ludwig, who mastered the entire collection after it was transferred at the Magic Shop, raves about the Aria system's sonic properties. "Whenever I'm A/B'ing between tubes and solid-state, I think, 'Give me the bass of the tubes and the speed of the solid-state,'" says Ludwig. "These are the first electronics that do that."

Spitz adds, "This is one of the most intense design projects Dave Hill has done to date. It blends the best of analog and the best of digital. It features a separate power supply, which gives us a bit more noise and hum immunity from the electronics, and it also sports quite a bit more record and playback headroom than what's been previously available. We feel that this is the evolutionary step that has not happened since 1986."

The project's archive, restoration and transfer phases allowed Klein's team to "restore the original albums to the way they once were," as he puts it.

Although SACD allows for multichannel streams, Klein did not want to reinvent the Stones catalog for surround sound. He says, "Where stereo was stereo, we put stereo back. We got rid of all the reprocessed electronic stereo and replaced it with mono."

Along the way, the engineers made startling discoveries. For instance, Landi noticed that the version of *Let It Bleed* that came out on both vinyl and CD was cut from a safety of the master, which was made on a machine that played slightly faster. Accordingly, the finished record played back at a slightly lower speed than what was intended by the band and original album producer Jimmy Miller.

"For two days after we discovered this, I wouldn't let anyone speak about it, because it was just too mind-blowing," says Klein. "So we went back to the singles,
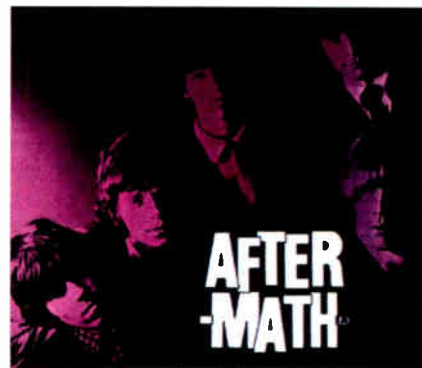
because those were cut at the right speed, and, sure enough, the singles matched the master. But it was still too big of a mistake to have been made, so we wanted to be extra sure. I remembered that the recording of 'Sympathy For the Devil' had been filmed for the Jean-Luc Godard movie *Sympathy For the Devil,* So we went back to the Nagra tapes, which had to be in sync because they matched the picture. Again, they matched the original album. At that point, we decided that's what we would go with. It wasn't slowed down for any artistic reason; it was a mistake."

RESPECTING THE ORIGINAL MASTERS

The transferred masters were brought to Ludwig's Gateway complex in Portland, Maine, where the veteran engineer methodically compared them to previously released versions of every song.

"On every single song, we had all of the original pressings—some mega-valuable pressings of these things, like the Ffrr recording of *December's Children* from Decca, which is worth hundreds of dollars," says Ludwig. "We compared every version, sometimes the single and the album cuts if we were working on the album or the previous CDs that Abkco

Bob Ludwig, of Gateway Mastering & DVD, mastered all of the Abkco reissues.

did. The thing that really checked out was the singles; they were considered the Gold standard. The speed of the singles was right, and whatever was on the singles is what the producers [i.e., Miller, Andrew Loog Oldham, Glyn Johns and the Stones themselves] had really liked."

Some of the singles were extremely bright because they were cut for AM radio. Ludwig decided to respect the originals, even if they were mastered differently than the way he might have done them.

"Sometimes, I'd do what I thought was a good EQ, and then I'd put the record on and it was like, 'Whoa, they got a hell of a lot of vocal EQ out of that, boosting the midrange like crazy!' I wouldn't have thought to have done that much, but that's what came out at the time. That's what they were thinking, and that's, in fact, what people grew up with. For this project, I had to respect that."

David Kawakomi, director of the Super Audio project for Sony Corp. of Americo.

Ludwig kept his use of compression to a minimum: "We used as much compression as was needed to make it sound like the original, but in no case did we over-compress anything by a long shot. In fact, a lot of the cuts do not have compression on them at all. The idea was to have a really good-quality version of what they originally did."

For the downsampled CD versions of the reissues, Ludwig used Sony's new Super Bit-Mapping Direct process, now available as a software option on the Sonoma.

"The SACD is the Rosetta Stone that represents the ultimate quality, and the SBMD can downsample from it to almost anything in the PCM world," says Ludwig. "It's the best downsampler I've heard."

Klein adds that SBMD gave him the confidence of knowing that the CD versions of the

ATR Service Co. president Michael Spitz rebuilt the Abkco ATR-102, which features Aria Reference Electronics.

reissues—which are the ones the majority of the record-buying public will hear, at least initially—represent the highest-quality, 16-bit audio that can be achieved. He says, "It's the best-sounding CD that you can buy today, and it's the best-sounding disc that you don't have to buy for the future."

TWO FORMATS, ONE DISC

From a manufacturing perspective, the Stones series—which is distributed by Universal Music—presented a unique challenge because of the volume needed to fill the global demand for the product vs.
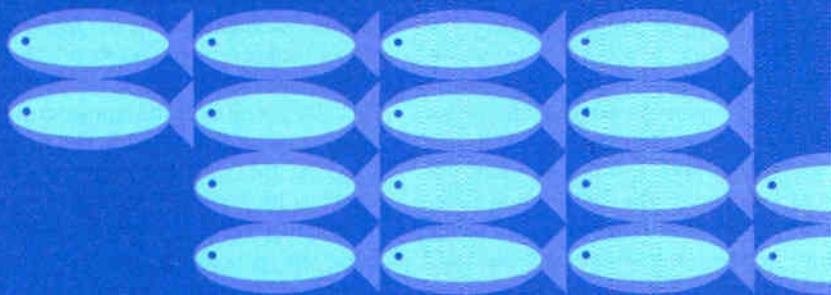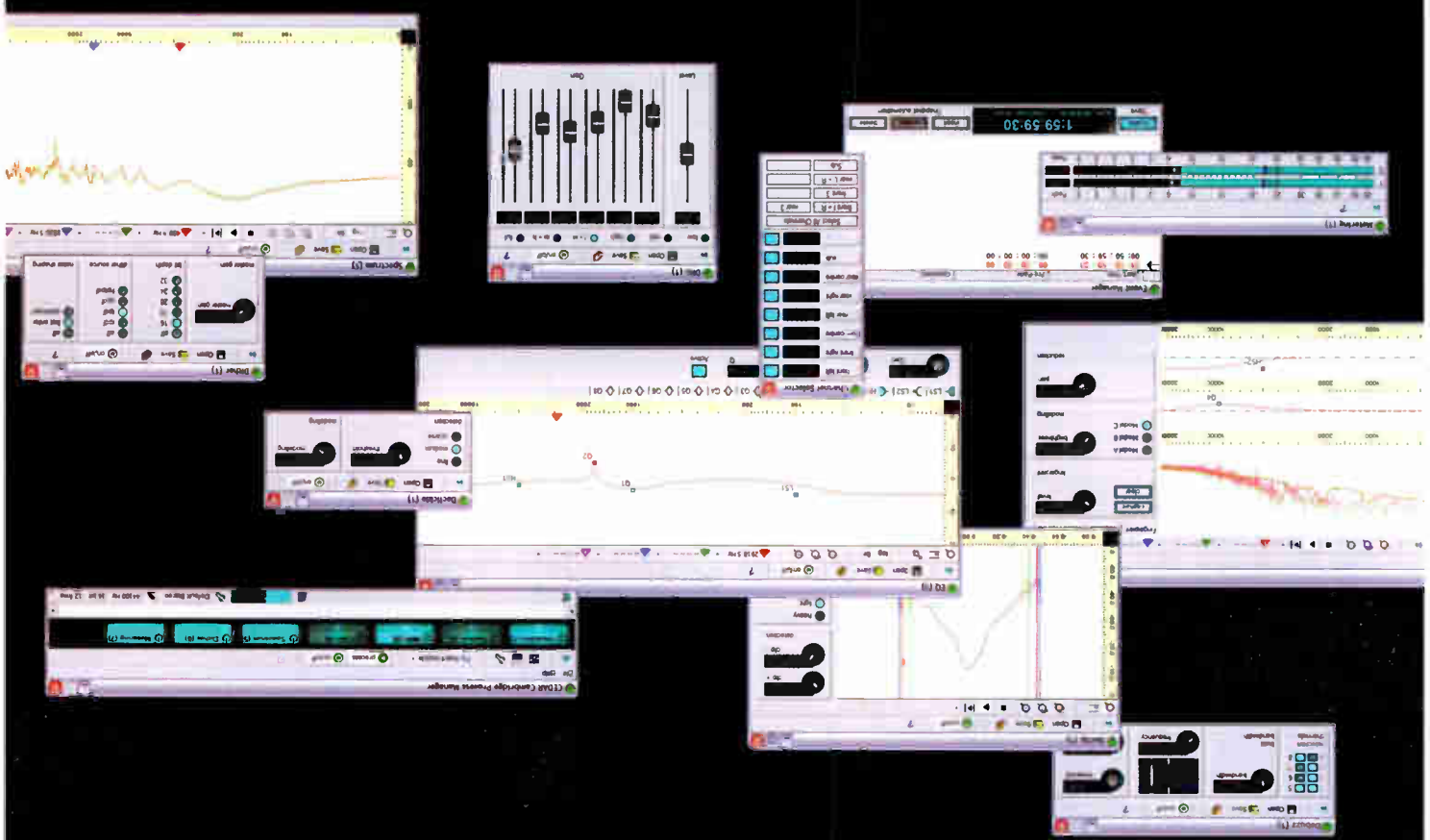
the relatively small number of plants equipped to make SACD hybrid discs.

Asked why he chose SACD over DVD-Audio, Klein says that he wanted to avoid having to issue separate CD and high-resolution versions of each title. Because the DVD-Audio specification does not allow for simultaneous Red Book and uncompressed DVD-Audio streams, his only choice for a single-inventory release was SACD. Plus, he adds, the simplicity of SACD appealed to him.

"Because the marketplace is so confused right now with all of these different mediums, the consumers have to be doubly confused," he observes. "They've had a lot of things thrown at them—MD, DCC, DAT, CD ripping, MP3, etc. They don't know what to make of all that. Our philosophy is simple: You don't have to know what you're buying; that's not important. What's important is it fits in your player, and it sounds incredible. And then, you open up your CD jacket and read about this new technology, which is the reason it sounds so good. And you realize that, with the next player you get, it'll sound even better."

Once Klein decided to run with SACD, he approached Sony Corp. with a marketing proposition. David Kawakami, director of the Super Audio project for Sony Corp. of America, recalls, "Jody threw down the gauntlet and said, 'If you think this is important and it could help your format, why don't you make us a proposal that involves leveraging what your electronics company can bring in terms of copromoting it and lifting it above the level of just another reissue series?' So we went to Sony Electronics and they were very excited. They recognized that this was a good opportunity—something that mass-market retailers could get behind. The [SACD] players were already cheap, the distribution was in place, and this was the perfect vehicle on so many levels, especially with the Stones going on tour in the fall of 2002."

The Stones campaign broke with the pattern whereby a high-profile Sony Music title would appear on CD and later, separately, on SACD. If the CD sold in the millions, the SACD would typically sell in the tens of thousands, according to Kawakami. "This is the reverse case," he says. "It's marketed as a CD and it's the same price as a CD, but it's an SACD. It's reverse stealth. It allows us to whisper in the ears of millions of consumers."

SACD FOR THE MASSES

The mass-market appeal of the Stones should help Sony augment the audiophile base it has already established with SACD.

A further element in the marketing campaign for the Stones titles is the idea that they may represent an answer to the industry's business woes. Klein explains: "We are concerned about the way the music business is going and the way copyrights are going. Piracy is terrible. But instead of going around and crying about it,
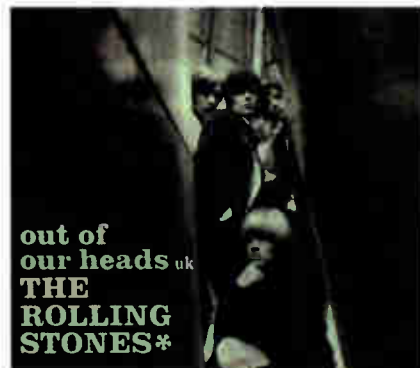
The original UK version of Out of Our Heads. Moving away from their blues roots, the Stones covered Sam Cooke, Solomon Burke, Otis Redding and Marvin Gaye—some Stones fans call this the "soul" album.

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SATISFACTION!

we asked ourselves, 'Why aren't consumers buying our product?' Well, if you want to think in the commercial sense, the reason consumers aren't buying our product is that they can get it for free. So, we have to sell something they can't get for free, and they can't get *this* for free. There's a value to what they're buying. The down market is forcing the majors to take another look at SACD and say, 'Well, maybe chasing this phantom business model of electronic downloading is nev-

er going to pan out. We're getting killed by the perception that you can rip and burn music for free. Maybe the answer is packaged media that we can sell.'"

Kawakami cites an e-mail from a consumer who had been listening to the Stones SACDs at home and in his car CD player. Then, the consumer decided to make MP3 files of the CDs so that he could play them on his computer, but decided that they weren't worth listening to in a compressed format. Kawakami says, "I sent that post to Jody saying, 'Eureka! Herein lies the problem—and the solution.'" ■

AN SACD PRIMER

The Super Audio CD (SACD) is a second-generation consumer sound carrier based on Sony's and Philips' Direct-Stream Digital (DSD) encoding process, a 1-bit digital audio system with a sampling rate of 2.8224 MHz.

SACD's physical dimensions are identical to that of a conventional "Red Book" CD—ensuring backward-compatibility between the formats—but in other respects, the two products are different. SACD has a "hybrid" architecture, meaning that two distinct data streams—a high-resolution DSD bitstream and a standard-CD Red Book stream—can be encoded on two separate layers of the disc. An SACD player distinguishes between the two and plays whichever one is chosen by the user. When placed in a standard CD player, the laser reader sees through the high-resolution layer only to read the standard Red Book layer, which is encoded at the standard rate of 16 bits sampled at 44.1 kHz.

The data "pits" of the SACD layer are smaller and closer together than those of the CD, allowing up to eight audio channels (two for stereo and up to six for multichannel) to be packed onto the high-resolution layer. In this respect, the pit structure greatly resembles DVD, with a capacity of 4.7 GB per layer available to accommodate the high-resolution audio.

SACD's underlying technology, DSD, differs substantially from pulse-code modulation (PCM), the encoding process used for CD and most professional digital audio systems. Whereas PCM requires each digital audio sample to undergo a complex mathematical conversion, DSD streamlines the process by eliminating the "decimation" and "interpolation" stages. The result, argue DSD proponents, is a more direct digital representation of the original

analog waveform that can reproduce the "air" and "warmth" associated with high-quality analog recording.

In many regards, SACD resembles DVD-Audio, the other leading successor of CD. However, there are important technical differences between the two formats. Whereas DVD-A employs PCM technology—with word lengths of up to 24 bits and sampling rates of up to 192 kHz—SACD is based on the single-bit DSD architecture. Also, while SACD stresses CD compatibility by allowing high-resolution and Red Book audio streams on the same disc, DVD-Audio does not offer Red Book as an option in conjunction with DVD-Audio. In other words, if producers wanted to release an album on DVD-Audio *and* CD, they would have to issue two separate discs.

DVD-A can, however, deliver a layer of uncompressed, multichannel audio (using a technology called Meridian Lossless Packing) and a layer of multichannel audio compressed with Dolby AC-3. Using this approach, DVD-A has staked its claim among home-theater enthusiasts whose DVD players are equipped to play AC-3 audio.

Since SACD was introduced in 1999, the format's hardware has undergone a drastic price reduction, from a whopping $5,000 for the early players to the $200 range for the latest generation. As a sign of its intention to maintain compatibility with the 500 million CD players in existence, Sony has added SACD playback capability to most of its CD, DVD-Video and "home-theater-in-a-box" products. Some industry observers say that the fate of SACD and DVD-Audio will rest on the success of truly universal units that can play all formats: CD, SACD, DVD-Audio and DVD Video.

—Paul Verna

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Burn THIS!

BY RANDY ALBERTS

AFFORDABLE DVD AUTHORING BUNDLES AND DUPLICATION SYSTEMS

I T WASN'T THAT LONG AGO WHEN Pioneer introduced the first recordable DVD-R drive. Even at $17,000, it was considered must-have technology for serious content developers and duplication plants, yet far from the reach of studios, producers and home-recording enthusiasts. Back then, DVD was just another format-in-the-wings for the rest of us.

There have been dramatic changes since the introduction of the first DVD-burner. Today, a growing majority of home owners watch DVD videos. DVD-Audio, though still climbing the "consumer-approval" ladder, is gaining a foothold. Sub-$1,000 DVD-A authoring and burning solutions are so far a rarity (see the Minnetonka discWelder Steel review on page 116), but that

doesn't mean that the average commercial and project studio can't add DVD authoring to its list of services.

Mix checked into what's currently available in the way of affordable, entry-level DVD drive/software bundles and duplicators, and you'd be surprised with what we found. Turn a band's new tracks and live DV footage from the previous night into an interactive DVD-Video in 30 minutes? No problem. Back-up recording sessions to high-capacity, 4.7GB (DVD-R) or 9.4GB (DVD-RAM) discs? Fast and easy. Experiment with basic DVD video-editing effects without taking a deep financial plunge? Absolutely. For under $700, and in most cases under $500, the following baker's dozen-plus of affordable, entry-level DVD

drive/software packages can do all that and more.

Pioneer's A04 DVD drive, the basis for most of the following DVD bundles, is the same SuperDrive that is included with Apple's new G4s, iBooks and iMacs. Apple installs its own basic DVD authoring, editing and burning software into each, such as iDVD and iTunes. Similar packages are also appearing on the PC side of the aisle, and a number of original and third-party DVD software titles are being bundled with internal and external DVD drives for both platforms. Often offered in these packages are basic and very easy-to-use authoring tools such as Sonic Solutions' DVDit! and MyDVD; Roxio Toast 5 Titanium, MedioStream neoDVD
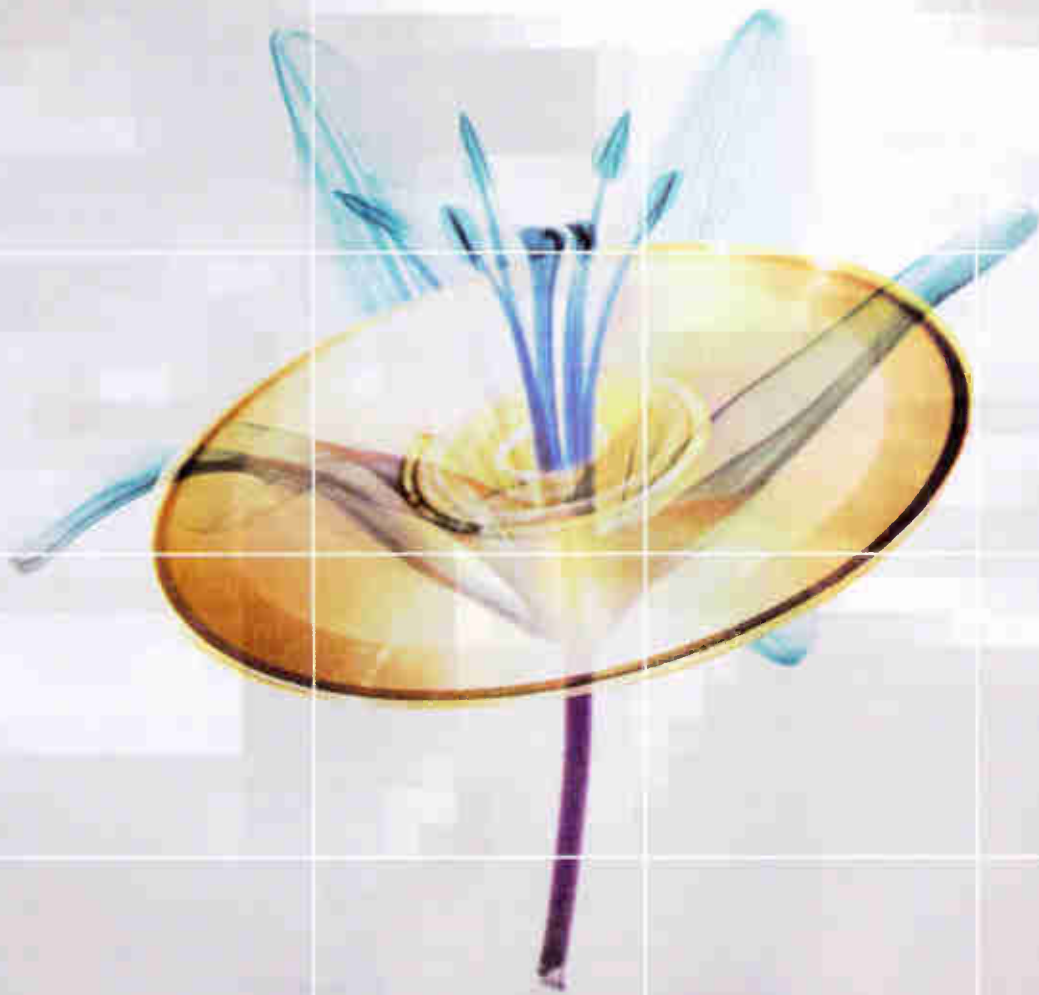
Standard and ArcSoft Showbiz; archival tools from Veritas Software such as RecordNow and Backup; and a host of other playback, editing, authoring and archival software tools.

The DVD Revo DVD-R/RW Recorder ($599) from CD CyClone (www.cdcyclone .com) is a sleek, external FireWire drive for Mac and PC that creates DVD-R, DVD-RW, DVD-ROM, CD-R, CD-RW and CD-ROM discs in one package. The drive's 2x DVD can write a full 4.7GB disc in about 30 minutes, and can write/rewrite an 8x CD-R/RW disc in under 10 minutes. A stylish handle is handy for sneaker-netting DVD- and CD-based content from station to station, and several DVD Revos can be stacked, if necessary. Mac users receive Roxio Toast 5 Titanium software in

the Revo bundle for DVD- and CD-Video and Audio authoring; PC buyers land Veritas' PrimoDVD. The latter software, available only in drive bundles, allows users to create DVD-Video and DVD-ROM discs, master to DLT tape, create image files of existing CDs for replication, and record to as many as 16 DVD-R drives simultaneously.

One of several companies to repackage Pioneer's A04 SuperDrive is Formac Electronics (www.formac.com), and what a good-looking, Apple-specific package it is. The company's Devideon drive ($549) not only looks great, but it is also bundled with Formac's Devideon DVD-authoring software, which supports OS 9 and OS X and can run on any G3, G4, PowerBook, iBook or iMac. The latest version increases en-

coding speeds by up to 30% and supports Super Video CD (SVCD), and NTSC and PAL video formats. iMovie and Quick-Time files are encoded to MPEG-2 movies, and video-encoding quality (1.0 to 9.8 Mbit/s) and audio (32- and 48kHz rates) are user-adjustable.

For PC users, Hewlett-Packard (www. hp.com) offers two DVD-burn bundles: the 200e DVD Writer ($550) and DVD Writer 200i ($449). In addition to the external 200e supporting USB 2.0, both drives share identical specifications and a generous software-bundle package for DVD-RW and DVD-R authoring, backup and creation. Included are Sonic Solutions' MyDVD; ArcSoft Showbiz; Cyberlink PowerDVD; and RecordNow, DLA and Simple Backup from Veritas.

Burn This!

Also onboard both H-P bundles are IEEE1394 FireWire and USB2 cables and one each of a blank DVD-RW, DVD-R and CD-RW disc.

LaCie's (www.lacie.com) 2x/24x external FireWire DVD-RW/CD-RW Drive ($450) is another portable DVD-/CD-burning bundle solution. PC (Win 98 Second Edition/2K) and Mac platforms are supported, and the package includes a FireWire cable and four blank media to create rewritable DVD and CD discs. The Mac version comes bundled with Toast Lite for CD recording, whereas PC users receive a healthy software bundle including Veritas PrimoDVD, Sonic Solutions DVDit! and MyDVD, and Cyberlink PowerDVD, a handy DVD-playback program.

Microboards Technology's (www.microboards.com) PlayWrite DVD ($649) is a portable, external version of the Pioneer A04 drive that offers the standard software bundle of MyDVD, RecordNOW, DLA and the PowerDVD player. Housed in a silver, acrylic-coated case, the PlayWrite drive adds IEEE1394 FireWire and USB 2.0 interfaces and support, and enough cables and blank media to get Mac or PC users started on their first burn.

The Pacific Digital (www.pacificdigital .com) IDE DVD-Recorder Drive ($299) is an internal DVD-R/RAM with a software bundle for PC users. Capable of 1x DVD-R and 2x DVD-RAM (9.4GB) recording, this drive also supports the DVD-Video, CD-DA, CD-ROM, CD-Bridge, Photo CD, CD-I and Video CD formats, and can read/transfer from 1x and 2x

Disc Makers Elite Pro 1

DVD-RAM, 6x DVD-ROM and 12x and 24x CD-RW/R and CD-ROM discs. Pacific Digital packages this drive with MedioStream neoDVD, a complete software solution that allows anyone with a mouse in hand to easily transfer, edit, author and burn a DVD or CD from a digital video camcorder's footage directly or from existing MPEG-2, DV, AVI and QuickTime files. Another program named Muvee is bundled with the package, which defines "point-and-click music video production." The company also plans to release an external DVD-R/RW drive bundle that will support USB 2.0 by the time this story prints.

Panasonic's (www.panasonic.com) LF-D321U DVDBurner DVD-RAM/R Drive ($275) reads virtually every DVD and CD format and burns DVD-RAM and DVD-R discs for video, data and imaging applications. PC software bundled with the internal burner offers users the ability to backup hard drives to 9.4GB discs and play, capture, edit and burn video/audio files. Included is DVD-Movie Album to author and create menus for the above-mentioned disc formats, as well as to

edit video on digital video equipment that is connected to a computer.

The same Pioneer (www.pioneer electronics.com) DVR-A04 SuperDrive used in new Macs is offered as a drive/software bundle combination on its own, as well. One such package, found at www.Sharbor.com for $645.99, includes the DVD-R/RW and CD-R/RW-burning drive with Sonic's DVDit! SE software. Reading almost every DVD and CD format, including CD-Extra and Photo CD, the A04 sports a 2MB data buffer, can be mounted horizontally or vertically, and is offered with a five-pack of Pioneer media.

Two DVD drive bundle solutions are offered by QPS Inc. (www.qps-inc.com). The Que! USB 2.0 DVD-R/RAM Drive ($438) is an external PC that claims to be the first combination drive available for the faster USB 2.0 port. Able to create DVD-R General and DVD-RAM discs, this drive can also be used as a scratch disc to experiment with and author various video and audio edits safely. Que! Archiver DV encoding/decoding software is included, which allows the user to capture, transcode, pre-author, author, pre-master and master high-quality video and data DVDs. The Que! FireWire DVD-R/DVD-RW/CD-RW Combo Drive ($489), which reads and creates CD-R media at 8x and CD-RW media at 4x. Included with QPS' DVD combo drive bundle is MedioStream neoDVD Standard software to encode/decode and PC DVD and CD author.

Sony's (www.sony.com) 2.4x Internal EIDE DVD-RW Drive is offered in a number of bundles. One package ($450) includes Sony's second-generation DRU-120A DVD-RW drive, which can also write to DVD-R and CD-R/RW discs, and a bountiful software package for PC

As we went to press, Pioneer (www.pioneerelectronics.com) began shipping its next-generation DVR-A05 DVD-R drive, which features 4x DVD-R, 2x DVD-RW, 16x CD-R and 8x CD-RW capabilities. Using high-speed media, the unit's 4x DVD-R record speed can burn a 4.7GB DVD-R disc in approximately 15 minutes. The DVR-A05 has an MSRP of $299; watch for it to appear in future authoring and duplication systems.

World Radio History

Burn This!

users. In addition to MedioStream neoDVD Standard for authoring and Cyberlink PowerDVD for playback, this Sony package also comes with Dantz Retrospect Express for backup and disaster recovery and B's Recorder Gold (recording) and Clip (packet writing) software.

SHORT-RUN DVD-DUPLICATION SYSTEMS

Some time during the authoring process, directors, labels, producers and just about everyone else needs a copy of the project, whether it's an in-progress rough cut or those all-important client/A&R/artist approvals. Pretty soon, the list of "who needs one" grows to the point where the project's producer may spend more time cutting dupes than authoring or cutting the tracks.

At this point, a basic duplication system—capable of burning 10, 50 or more discs while unattended—can prove to be a worthwhile investment that recoups its initial cost rather quickly. As a bonus, most of these systems double as CD duplicators. In either case, a short-run DVD burning system may end up being a profitable adjunct to your DVD authoring suite. Let's take a look at a few compact systems that have recently debuted.

Known as a leading duplication house for audio projects, Disc Makers (www.discmakers.com/duplication) introduces its Elite line of CD/DVD replicators. The Elite 1 ($3,990 for CD; $4,790 with DVD-R) combines a 125-disc input loader, onboard 1,200 dpi color inkjet printer, Padus DiscJuggler software and can be upgraded to include a second drive. The Elite 1 can duplicate and print at least 12 CD-Rs or two DVD-Rs per hour. Taking the concept one step further, Disc Makers' Elite Pro 1 adds a built-in, Intel-based PC for turnkey duplication out-of-the-box, and retails for $4,790 with CD or $5,790 with DVD-R.

Mediaform's (www.mediaform.com) Scribe EC (Endless Configurations) Series allows users to customize systems to their particular needs—CD-R, DVD-R, one/two/four drives, with or without disc printing, etc. Offering pro-grade automated CD-R/DVD-R authoring/duplication/printing, systems feature the SmartDRIVE "anti-piracy" CD-R drive equipped with copy protection, electronic watermark-
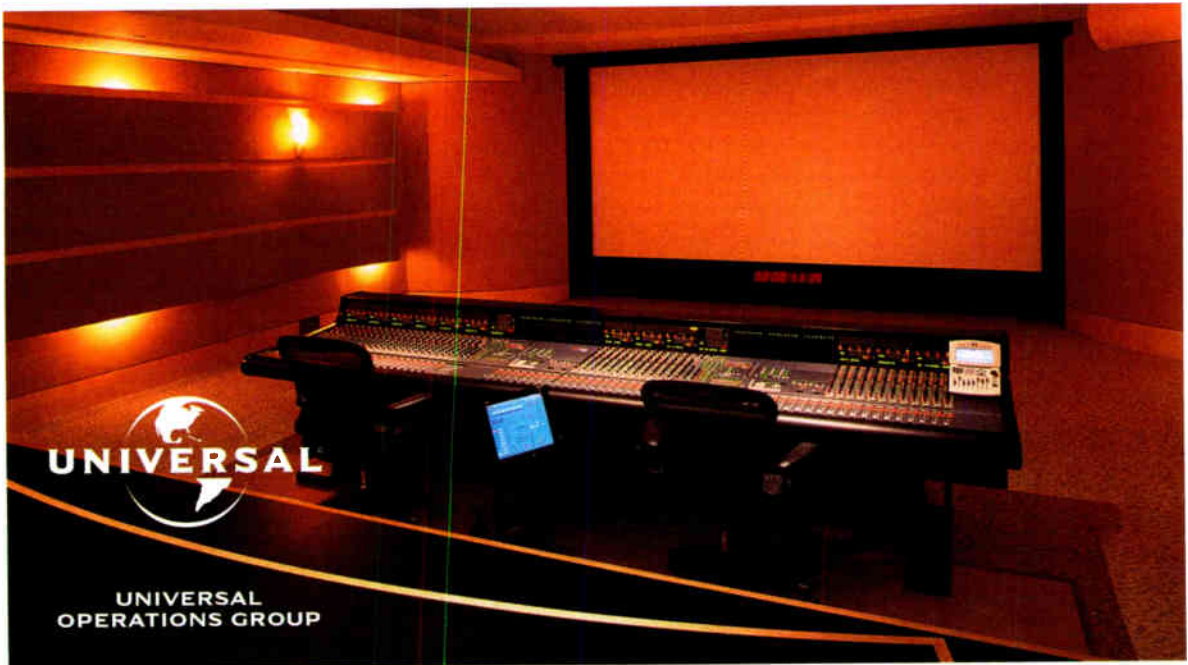
DVD DRIVE CAVEAT

Pioneer took the early lead in offering low-cost, but dependable drives for DVD-recording applications, whether sold as a Pioneer-branded product or as OEMs/repackagings with other systems and computers. And, now that the DVD Forums released standards for high-speed recordable discs (4x for DVD-R and 2x for DVD-RW), these new recordables are now coming to market. However, Pioneer Electronics recently announced that many of its popular DVD-R/RW drives and DVD recorders will require a firmware update before using the new media to avoid potential damage to loaded discs and units. The affected drives include models DVR-A03, DVR-103, DVR-A04 and DVR-104, as well as DVD recorders DVR-7000 and PRV-9000 DVD. The update is free and relatively simple; visit www.pioneerelectronics.com for details.

—George Petersen

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ing and SmartGUARD Media; and 100-CD spindle capacity and a Relay mode where multiple masters and multiple copies can be recorded and printed in a single, continuous process for unattended operation. CD systems begin at $2,999; DVD-R systems start at $3,999; and all systems require a user-supplied PC.

The Pact 4DVD from Mediatechnics (www.mediatechnics.com) is a series of stand-alone desktop duplicators that offer the same features as the company's Impact line but in a smaller "desktop" footprint. Features include a 400-disc capacity, support for up to four DVD writers, auto-format recognition, direct copying, 40 GB of onboard master-image storage and selectable write speeds.

Now offered in CD or DVD versions, the CopyWriter Pro Series from Micro-boards (www.microboards.com) is a multi-drive, manual-loading system available in configurations of two through 16 drives. The stand-alone system uses a menu-driven display and simple two-button control interface integrated into a sleek remote module, which allows the flexibility to position the interface in different ergonomic locations, whether on the drive enclosures themselves or on the user's desktop for easy control and status access. The onboard hard drive is standard and permits CD image archival and track extraction for audio compilations.

Unveiled at the October AES show in Los Angeles, the DVD-R Duplication System from Otari (www.otari.com) consists of the DVM-100 DVD-R Mastering Unit and VDP-100 DVD-R Duplicator. The DVM-100 writes a DVD image file created on a removable hard disk drive by the mastering unit or disc image captured from a master DVD-R disc for a maximum of five DVD-R discs at the same time. The VDP-100's disc-handling system can stack up to 90 blank discs, allowing for long and unattended operation.

The Bravo Disc Publisher Duplication and Printing System ($1,995 w/CD drive, $2,495 w/Pioneer DVD-R/CD-R drive); from Primera Technology (www.primera technology.com) is an all-in-one duplication/authoring system. The PC-based FireWire/USB bus Bravo CD Publisher can replace a single CD-R/RW drive with the Pioneer A04 DVD drive. The Bravo DVD Publisher burns 2x DVD-R discs and 8x CD-R discs, the latter in less than three minutes each. Both Primera packages are bundled with Veritas software for CD and DVD creation and the SureThing CD Labeler, the latter including templates to create and print four-color background labels.

The Desktop Publisher 800 from Rimage (www.rimage.com) provides a complete CD/DVD-publishing solution with fully automated processes and multitasking—burn and print while using other applications. Features include a 60-disc input bin/120-disc output bin, QuickDisc software and a 1,200 dpi color inkjet for direct on-disc printing. ∎

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Rear Panel (not visible) Six 12AX7s and Rear Input Jack

BY BARBARA SCHULTZ

Kindred Spirits

SINGER/SONGWRITERS HONOR JOHNNY CASH

Johnny Cash and Marty Stuart go way back. "The first two country records I ever owned were *Flatt & Scruggs' Greatest Hits* and *The Fabulous Johnny Cash*," Stuart says. "And while everybody else at kindergarten was bringing in their pet ducks or card tricks or baton twirling for show-and-tell, I went as Johnny Cash and played 'Don't Take Your Guns to Town.'

"Most people would just get over it," he continues, "but I had to follow it, pursue it, collect every record, join the band, marry his daughter, get a divorce. Johnny is one of my best friends, and I still champion the cause to this very minute. It was bigger than me. I still love the music the way I did when I was a kid."

It was Stuart's deep emotional connection to Cash's songs, as much as it was his talent as an artist and producer, that made him the perfect choice to assemble *Kindred Spirits*—a tribute to the Man in Black's artistry as a composer and a celebration of Cash's 70th birthday this year. "I don't remember a record being done before this where he was triumphed as a songwriter," Stuart says. "A guy whose pen has influenced almost every culture and every genre of music out there."

To illustrate Cash's broad sphere of influence, Stuart reached beyond the world of country to include previously recorded tracks by Bob Dylan and Bruce Springsteen, as well as make new recordings with Keb' Mo' and Little Richard. The country artists represented are all outside-the-lines types, many of whom deserve their own tribute records: Steve Earle, Emmylou Harris with Mary Chapin Carpenter and Sheryl Crow, Travis Tritt, Hank Williams Jr., Dwight Yoakam, Stuart, Charlie Robison, and two of Cash's illustrious family members, Janette Carter and Rosanne Cash.

Sheryl Crow twiddles the knobs for the perfect level during recording sessions for "Flesh and Blood."

KINDRED SPIRITS
A TRIBUTE TO THE MUSIC OF JOHNNY CASH

"His songs are about feeling and emotion and story," Stuart says. "Those kinds of songs and performances are about personalities. The people who showed up to work on this are powerful personalities—every one of them. I think that if anybody in this world would understand taking somebody else's song and making it their own, Johnny Cash would."

"FLESH AND BLOOD"

Sessions for *Kindred Spirits* began in Nashville at Masterlink Studio, with Emmylou Harris, Mary Chapin Carpenter and Sheryl Crow performing the sweet, passionate ballad "Flesh and Blood"—the album's first track. Stuart notes, "That was one that Emmy and Mary Chapin, Sheryl and myself played at a concert up in New York City, and we resang and replayed it the same way because it felt magical up there."

To Stuart, the magic of live performance was the key ingredient in this project, and it was the one mandate that he handed to each of the engineers he worked with. All were instructed to capture performances as live as possible to just one 24-track analog machine—no workstations, no digital editing and very few takes.

"That's one of the things I love about Marty," says Chad Hailey, who recorded all of the album's Nashville sessions. "Something he and I had going for our relationship right off the bat is that we both love live, and you can tell that from listening to this project."

Hailey is a Nashville-born, old-school engineer, though his background also includes work with New England Digital Corp., servicing and installing the manufacturer's disk

recorders, PostPros and Synclaviers. He's engineered sessions with J.J. Cale, Eric Clapton and others, and now does almost all of his work at Masterlink, which he loves for its vibe and its well-maintained gear. Another estimable old-school trait about Hailey (who provided the track sheet for "Flesh and Blood," page 50): He keeps impeccable notes and has no trouble recalling the most minute details.

For all of the Nashville sessions, Hailey had the drummer, bass player and electric guitarist(s) on the main room's floor, using a bit of baffling. Lead vocalists sang in one of the studio's three iso booths, and all of the lead vocals, with the exception of Travis Tritt singing "I Walk the Line," were miked with Hailey's AKG C 12: "Serial number 22, which Bill Bradley at the mic shop keeps tweaked up really well," Hailey says. Tritt requested a Manley Gold Reference mic that Hailey says was "equally pure and great."

All of the vocals went through a UREI 1178 compressor/limiter or a dbx 160 compressor/limiter. On drums, Hailey used a pair of Shure

Chad Hailey recorded all of Kindred Spirits' Nashville sessions.

SM57s top and bottom through an Avalon AD2022 mic pre, and blended them to one track: "It gives you a little more tonal control over the drum," he explains. Hailey also blends an AKG D 12 and an Electro-Voice RE-20 on kick drum.

On electric guitars, Hailey typically uses at least three mics, sometimes as many as five: "For the main work, I had a Beyer M 160, a ribbon mic, through a Telefunken V76; an SM57 through a 1073 Neve; and a Sennheiser 421 through a 1073 Neve. All of those are summed down to a mono track. I blend everything on-the-fly going to tape, so you really have to be committed. I'm not one of those people who says, 'Oh, let's print all of these different tracks, and then we'll figure it out later.' Marty knows that's not the way I work. I want to hear it really well when we're doing it, and that adds to the liveness of it. I'm a big believer in mono guitar: big, nice, fat mono guitar tracks."

The sessions for "Flesh and Blood"

Little Richard takes a break during a recording session for "Get Rhythm" with Marty Stuart on guitar.

were more complex than the other songs', because Stuart and Hailey wanted all three of the vocalists to be able to sing and play live with the other musicians. "Sheryl was in the main booth that we did all of the other vocals in," Hailey ex-

plains. "Emmylou was in one of the other booths, and she used a [Neumann] U67. [Carpenter's vocals were recorded by John Jennings in Virginia and over-dubbed to a stem mix created by Hailey.] All of the vocals at Masterlink were done

"Flesh and Blood" track sheet

1-25 BASS VTBS, 1176 BS STEVE	**2-26** BD D-112 RE-20 GREGG	**3-27** SN SM-57 ∅ AD-2022 SM-57 ∅ AD-2022	**4-28** HH C 451	**5-29** ← TOMS MS-421 EV-408 T3	TOMS → MS-421 EV-408 T3 **6-30**	**7-31** OHL U-87	**8-32** OHR U-87
9-33 ← ROOM U-87-V76m	ROOM → U-87-V76m **10-34**	**11-35** ALG M-260 1061 MARTY	**12-36** ALG M-49 512b BRIAN	**13-37** % MANDO KM-56 1081C KM-54 1081b MARTY	**14-38** % SHERYL OU4's 3:33 PM	**15-39** % SHERYL OU4S 3:23 PM	**16-40** % EMMY OU4S 3:23
17-41 ALG KM-54 1081C KM-54 1081b EMMYLOU	**18-42** % TAMB M-49, 512b	**19-43** % VOCAL ONE LINE FIX C 12, 1081 A 160 C NOTE 2 SHERYL CROW	**20-44** VOCAL C 12, 1081A 160C SHERYL CROW	**21-45** VOCAL U-67 1081B 160 D EMMY	**22-46**	**23-47** % ACCORDION U-47, 512b SHERYL	**24-48** SMPTE 29.97 DF BLACKBURST

PULL DRUMS OUT IN BREAKDOWN   KLEFIK →
NOTE 2 - VOCAL FIX ON ONE LINE 151 "YOUR ME OVER I NEED" only   Locate 26:02   End 09:55
10:17   14:44

Masterlink STUDIO

Title FLESH É BLOOD

Title # 1 Of Project   Reel # 1 Of ___ Cut # ___ Key A   BPM ___

Program SHERYL CROW É EMMYLOU HARRIS   Producer MARTY STUART
Date TH 11.08.01   Time Of Day 1:45 PM   Slave 25-48 ☐ no ☐ yes   Slave Of Reel # ___
1st Engineer CHAD HAILEY   2nd Engineer CHRIS SCHERBAK   Tech   Clone Of Reel # ___
Tape Type 499   Tape Speed 30   VSO / PCT   Resolved ☐ no ☐ yes
Reduction NO   Machine MTZ 100 ODD JOB   Type / nWb D-S10   Level / Flux +5/250

World Radio History

To one film director, it's Utah. To another it's Mars.

Are your studio microphones this versatile?

World Radio History

through Neve 1081 preamps and EQs. But what made this difficult, and where I think Justin Niebank [mixing engineer] did a really great job, was where Emmy played acoustic guitar and sang at the same time—that's not an easy thing to capture. But Justin did a great job pulling it all together." The only other over-dubbed part on "Flesh and Blood" was Sheryl Crow's accordion, which was captured with a U47 through an API mic pre.

Like all of the Nashville sessions, "Flesh and Blood" was recorded to an Otari MTR-100. The performers recorded only three takes on the day after Hailey and some of the artists worked into the wee hours on this year's CMA Awards. "By the time I got out of the CMA Awards, it was 1 or 1:30 a.m. But at the session the next day, everyone really focused on the track, and I think it worked to every-body's advantage. On some things, you come in and you're fully rested and everybody's very up, and it makes for an edgy kind of thing. The kickoff of this track was just really sweet and lovely. It was a pleasure to do. The take we chose was the first take."

"GET RHYTHM"

Hailey recorded many of the country artists on the album, including Dwight Yoakam, Hank Williams Jr., Charlie Robi-son, Steve Earle and Stuart. Two of the most distinctly noncountry sessions, however, took place in Los Angeles at
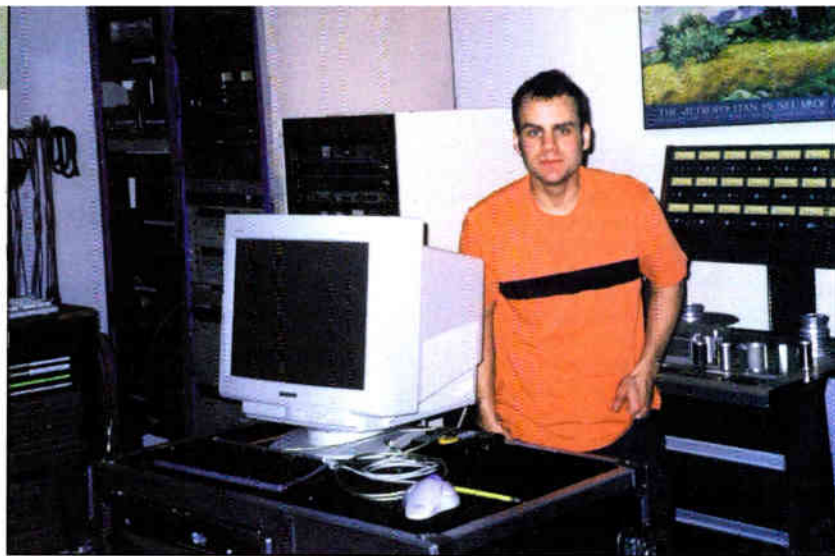
Tom Schick recorded the sessions at Sear Sound in New York.

The Village. Keb' Mo's Southern blues version of "Folsom Prison Blues" was recorded by Mark Johnson, and Little Richard's rock 'n' roll take on "Get Rhythm" was engineered by Claude Achille, whose diverse decade-and-a-half of experience includes sessions with artists such as James Cleveland, Fiona Apple, Ice Cube and Mariah Carey.

"We just went for it like they did in the old days," Achille says. "Let's not worry about pitch correction and making it sound like a perfect record. Let's get the feel of this, which is what Marty was looking for. Let Richard do his thing, which is always great."

"Get Rhythm" was captured during one fast six-hour day, with the legendary star determining much of the arrange-ment's shape. "As Richard played the pi-ano runs, he would definitely say, 'I'm going to do that there,' or 'Don't crowd me there,' but they were great musicians, and they could edit themselves—listen to his playing and his vocal and play around that."

Achille set up the musicians in the Vil-lage's Neve 8048-equipped A room, with Little Richard on the right side of the main room. To his left and facing him was drummer John Ferraro, who was sur-rounded by Plexiglas gobos. Electric guitarist Stuart was sit-uated behind Little Richard, and next to him was bassist Jesse Boyce. Guitar, bass and drums were recorded first, with Little Richard doing scratch versions of his piano and vocal parts. The next recorded parts were piano, Jesse Boyce's dou-ble-duty on organ and Plas Johnson's sax. Then, it was Lit-tle Richard's incendiary vo-

cal—undiminished by time—recorded to a U47 through a UREI 1176, to the Studer A800 out in the middle of the studio. "It was determined that we would only use two tracks to do vocals," Achille ex-plains. "So we did one, we did another one, and then we went over the first one—only three takes. We didn't want to overdo it and lose that rawness, that energy."

Stuart says that when he played the finished album for him, Johnny Cash "was really taken by Little Richard, who is the only person in the lineup who was a contemporary of Johnny Cash. I didn't know Little Richard [before this project], but I was a fan, and my instinct told me that Little Richard would absolutely get it. I wanted to give him a song that he could absolutely tear alive, and we made some real rock 'n' roll that night."

"I STILL MISS SOMEONE"

Even given the brilliance of the A-list per-formers on *Kindred Spirits*, none brought more pure feeling to the album than Cash's daughter, Rosanne. On "I Still Miss Someone," she sings with a sweetness

Rosanne Cash sings through a Neumann U49 on "I Still Miss Someone" at Sear Sound, New York City.

World Radio History

and a beauty worthy of one of her father's most heartfelt creations.

"She's got such a great voice. She's so easy to record," says recording engineer Tom Schick, who manned the sessions at Sear Sound in New York City. He also recorded Rosanne Cash's most recent album, *Country Side.*

Schick began his engineering career as a staffer at Sear Sound; now, he's independent but tries to bring as many of his projects back to Walter Sear's place. "This is one of the last studios where they do things the old-fashioned way," Schick maintains. "They have the world's greatest mic collection and the world's greatest outboard gear."

Daughter Cash's vocal was captured with a Neumann U49, which Schick chose after quickly testing a couple of other models. "We tried the U49, an AKG 251 and a U67 that Walter has that's serial number 3 or something ridiculous like that, and the 49 ended up winning out, through a Fairchild 660."

Schick set drummer Shawn Pelton up in a small booth with two Coles ribbon mics overhead, a Shure SM57 on snare and an AKG D 112 on kick. The snare mic went through a U.S. Army compressor: "Just one of those crazy things Walter has," Schick says.

Acoustic guitar was miked with an AKG C 60 and played by John Leventhal, who also served as arranger. Stuart's electric guitar amp had a Shure SM57 mic on it. Schick also used a UREI LA-2A on each guitar.

"I just remember it going really fast and really smooth," Schick says. "Everybody came in, they ran it down a few times and then went with the first or second take. I do remember doing a tape edit on something between two takes; I think maybe using the outro from take 3 and the rest of the song from take 2. But there was no digital editing and not many fixes. It was a performance."

"I Still Miss Someone" was actually the only track that was embellished with additional recording after the original sessions. Stuart and Hailey added a string section and backing vocals by Vince Gill and Cheryl White, all recorded at Masterlink. But most of the tracks were pared down, if anything, before making it onto the album.

"There were a couple of songs that we stripped the arrangements down just a little bit to make the vocals come forward more," Niebank says. "But, in general, our job was just to make sure it kicked as hard as possible. On something like the Little Richard track, for example, it was all about getting the vibe, because I was simply blown away by his performance. I just wanted to make sure I stayed out of the way. That's one of the best recordings of him in 20 or 30 years."

Niebank comes from a roots-oriented background: He recorded dozens of albums for Alligator Records in Chicago before moving to Nashville eight years ago. He now works with a variety of rock and country artists, including George Strait, Keith Urban, The Iguanas and Stuart. He mixed *Kindred Spirits* on East Iris' 9000 J console.

"This is a really wonderful studio in Berry Hill in Nashville," Niebank says. "It's got a fantastic collection of outboard gear, and it's a really nice, vibey one-room studio.

"I didn't feel like I needed to slam on anything, but we had some fun with some compression, and I probably used a little more spring reverb than I do on other records, because I love that, and we really made sure that our [Studer A800] analog 2-track sounded great."

The main monitors in East Iris are Tom Hidley models, but Niebank listens on the studio's Genelec 1031 reference monitors. He says that typically he'd work a while on a track and then ask Stuart to come in and listen. When Stuart was satisfied with the mix of a song, they'd send it off to the artists to make sure that they were satisfied, as well.

Niebank insists that his job was pretty simple, because Stuart and his engineers managed to capture such exceptional performances. "Marty, as a great producer, was able to get everyone to let their hair down," he says, "so that their true artistry came through. I love the Keb' Mo' track; I like the Dwight Yoakam track; I like the naturalness of the guitars. I've never been a huge Hank Williams Jr. fan, but I love that track ["Big River"]. It has a natural toughness, and I think the slap bass on it is amazing.

"One of the good things about pushing up this record was that the character of the record absolutely wrapped around me, and it's a good reminder to people to just put up a few mics, let people rock and see what happens. You don't have to tweak and program and cut and paste till it's so perfect that you can't remember what you started with."

"The thing that I walked away from this project with is the same thing that inspired me when I was five years old," says Stuart. "Johnny Cash is a fearless kind of artist, and I walked away from this rededicating myself to being a fearless artist, being true to what God gave me in my heart to play and sing, and I think it makes us more pure artists if we take our cues from masters like John. God gave him a powerful gift. Let it rip. It's for the rest of the world to enjoy. We can only stand and marvel at it." ∎

Barbara Schultz is the senior associate editor of Mix.

HAPPY BIRTHDAY, DEAR JOHNNY

Johnny Cash turned 70 this year and to celebrate, Columbia/Legacy is releasing another handful of remastered reissues from Cash's catalog. The latest crop, produced by Al Quaglieri, includes *Johnny Cash Sings Songs of Our Soil, Silver, Johnny Cash Sings the Ballads of the True West* and *At Madison Square Garden.*

Cash fans will also want to check out *Dressed in Black: A Tribute to Johnny Cash,* the Dualtone label's "alternative" collection of Cash covers. On this album, the approach is very retro, very Sam Phillips. Artists on this Dave Roe- and Chuck Mead-produced effort include Americana heroes such as Rosie Flores, Hank III, Robbie Fulks and Dale Watson. It's a narrower take than on *Kindred Spirits,* but quite entertaining.

—Barbara Schultz
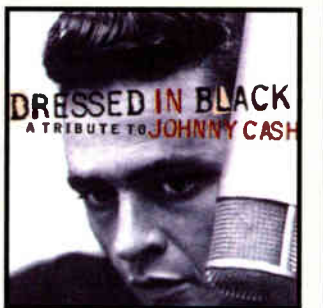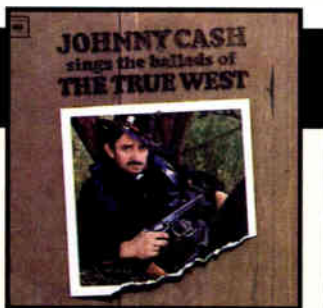
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BY PHILIP DE LANCIE

Mi Casa Studios

Come Home to High-Profile DVD Mastering

The music industry has long understood that an audio project isn't really ready to distribute until it's been polished by expert hands in the mastering room. In recent years, a handful of top-flight mastering engineers have even achieved a sort of mythic status within the recording biz, like holy men who can turn water into wine. But in the film world, there's generally been little attention paid to those who perform the analogous function of preparing soundtrack audio for home-video release. Transfer engineers may have done their best, but VHS afforded limited opportunities to make a big impression, and the work was largely anonymous.

With the rise of DVD-Video, the situation is changing. It's obvious to anyone with ears that the collection of disparate materials that finds its way onto the typical disc needs some attention in order to flow together as a unified whole. Specializing in this work, Brant Biles and Robert Margouleff of Mi Casa Studios, Los Angeles, have developed a lengthy list of credits and a place on everyone's short list of experts on audio for DVD. "We aim like a laser beam and concentrate on one thing," Margouleff says, "which is the preparation of audio—mastering and mixing—for DVD."

Margouleff's DVD-Video work is a change of pace from his extensive background in music production, including the co-producing and co-engineering of the classic Stevie Wonder Grammy-winners *Innervisions* and *Fulfillingness' First Finale*. He's been engineering with Biles for some 15 years, during which time the pair worked closely with DTS to fill the surround music pipeline with both classical and contemporary releases. As DVD took off, they made the transition into

Brant Biles (left) and Robert Margouleff inside The Livingroom

sound-for-picture and founded Mi Casa—originally in Margouleff's apartment. It's now a three-room facility in a home in the Los Angeles hills.

Margouleff has now moved away from day-to-day engineering duties, concentrating more on the business side of the operation. "As chief engineer at Mi Casa," Biles says, "I have two engineers who work with me, Holger Thiele and John Bird. Robert deals with production and operations."

Mi Casa's current DVD-Video credits include some of the highest-profile films of the past year, including *Lord of the Rings: Fellowship of the Ring, John Q* and *Austin Powers in Goldmember*. There are also classics such as *Rio Grande* and *High Noon*, as well as upcoming work remixing eight early James Bond films in 5.1 surround from the original 3, 8 and 16-track recordings. Given the pair's record industry backgrounds, we began our interview by discussing how they moved from music to movies.

Your projects these days are pretty much

Reverse angle on The Livingroom, with Sony DMX-R100 and SADiE Artemis workstation

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all related to audio for feature-film DVD-Video releases. How did you wind up in what is essentially an extension of the film industry?

Margouleff: Prior to doing DVDs, we had about a two-year stint preparing surround materials for DTS. We met David Del-Grosso [VP of marketing at DTS Entertainment], who said he needed to have some stuff mixed in surround, and I had some experience in quad mixing from my Stevie Wonder days. So, Brant and I started repurposing some classical music for them. And then through my Motown connection, we got a little group called Boyz II Men. And not only did we mix it in surround with Brant at the helm, but we also sort of introduced the then-new Capricorn console as a surround mixing system at the Enterprise. We came out with a very, very good product, which I still think in many ways stands up today as a good example of what surround can really be.

Biles: After the Boyz II Men project, I did some work with Ed Cherney on Bonnie Raitt. We also did an anthology of Marvin Gaye's greatest hits for DTS. Everybody thought that the DTS surround format was going to take off like gangbusters, and everybody and their uncle were going to want to have their album mixed into 5.1. But as we know, that has not been the case. There was a time when, we were knocking at record companies doors, and they didn't really get it, didn't want to hear it.

So Bob and I then asked ourselves how we could apply this newfound technology, knowledge and experience to do surround music mixing on a broader scale. Who really needed our services? As it turned out, the people who really understand surround are film mixers and film composers, and translating that to DVD just seemed like a natural step for us. We found that, for the most part, people were just digitally transferring their 6-track mags, and what you got was what you got. Some were better than others, and some were downright terrible. So we moved into doing theatrical DVD work and haven't really looked back.

What was your first step down the DVD path?

Biles: Our first movie was *Pleasantville*, which New Line gave us as a test. The idea was that it would not be released; it was just sort of an experiment. They said, "We're going to take a chance on you guys and let you remaster this movie and see what happens."

Margouleff: We now do about 90 percent of the audio that goes in New Line's DVDs. We also do work for MGM and Artisan, and we just did a Miramax project. So we're working for a lot of different people. We try to take our time; we're not really a rush act here. This is really mastering and mixing in the audiophile mode. It's a niche market.

How do you justify to people in the film industry that their films need a fresh pass for DVD, even though they may have spent a lot of time getting the theatrical mix just the way they wanted it, and the movie has been very successful in theaters?

Margouleff: The home-theater platform is a distinct format in itself and requires a certain degree of preparation. It's not just a direct transfer from theatrical 5.1; it requires translation. You have speakers that are six to 10 or 15 feet away from you at ear level in the home theater versus speakers 75 feet away from you in a large movie house. The quality of the audio necessarily has to be different.

Biles: Because the platforms have different physical characteristics, one size does not fit all. We have to be able to understand the differences between the two. Five equidistant, direct-radiating monitors at ear level with a subwoofer is very different from the movie house, where they have tiny bipolar radiators around the auditorium because they have to broadcast the audio to 500 or 1,000 people. In theatrical, everything is weighted to the screen at the front of the house, and the other speakers really are just satellite speakers. In the home theater, on the other hand, what has evolved is really equidistant, equal monitors, where we can really start to move the sound around inside a space for five or six people.

But a lot of the home-theater systems that are marketed to consumers themselves do not use a matched set of equal, full-range speakers.

Biles: With the smaller systems that people buy for their homes, the difference between not having a surround system and having a surround system is pronounced enough that it doesn't have to be the best system in the world. The fact that you've

Quality control room where the SADiE 2496 is also used for prep work, feeding the main room through digital tielines.

got sound coming from behind you is exciting enough for most people. The smaller systems have a system of bass management, which is very useful in the home. And those systems still have five roughly equivalent speakers, where the left, right, center and left-surround/right-surround speakers are compatible and somewhat interchangeable because of their frequency response. It's not like in a theater, where you have the huge front mains and then satellite speakers. So, our rooms are set up not for theatrical mixing, but for home-theater mixing. It's a different animal.

What are some of the things you start noticing when you play back a theatrical mix in an environment designed for home theater?

Biles: I find consistently that if you put up stems or listen to a print master, dialog levels are just too low for home theater. You can't understand half of the words that the actors are saying. It may be that in a movie theater, there's better coverage from the center channel than from left and right, and when you get into a home-theater situation, that whole balance tends to change a little bit. Sometimes a lotta bit.

Margouleff: Another problem is that a lot of movies that come in are badly conformed. And when you're sitting very close to a screen, you can see some stuff desperately out of sync. We go through and make sure that they

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don't look like Japanese horror movies. *So part of your role is to deal with things for DVD that may have been overlooked in the theatrical mix?*

Biles: Yes. It's all in the prep work. If your ducks are all in a row, and everything has already been carefully gone over and cleaned and EQ'd, you should pretty much be able to put your faders up and make a few adjustments as the movie rolls along and be done with your mix. The problem is that when they mix for theater, they're getting down to the end of their production line and they don't always have a lot of time.

For example, on the set, directors often have three or four video monitors to look at what's coming off of each camera. Then they've got boom mics over the top for recording dialog. Guess what they're also recording? The refresh rate of all three or four monitors: 15,750 cycles for NTSC, and 15,625 for PAL.

Margouleff: Video refresh rates are a classic problem. You have no idea how it makes the fillings in my mouth fall out. Another thing is that most movie houses are set up and calibrated to the "X curve," which is much like the RIAA curve for the home, but a lot steeper. So many films, especially older ones, are really mixed to that theatrical curve, and when we get them here, everything sounds excessively bright, and we hear all of the noise of the mag, of the medium, all the "shhhhh," all that kind of stuff. So we have to make that change from the theatrical curve to a home-theater curve. We use CEDAR Retouch processing on our SADiE systems to remove all of the clicks and pops, and we build CEDAR noise-reduction models to actually reduce the noise of the medium itself.

This is the part of your work that is closer to remastering than mixing.

Biles: Right. Also, DVDs have many elements on them—not only the movie, but they have the menu audio, deleted scenes, commentaries. Anything they can think of, they'll shove on the DVD. And the fact of the matter is, all that stuff needs to be level-matched.

Margouleff: There is a consistency issue there, where we want to make sure that the DVD stands as an entity, as one piece, as a performance. It's not just the movie and a whole bunch of little pieces. So just like all of the audio elements on a record album, you have to master it. You have to make sure that things are consistent and EQ'd, and that the explosions don't blow the chandelier off of the ceiling because
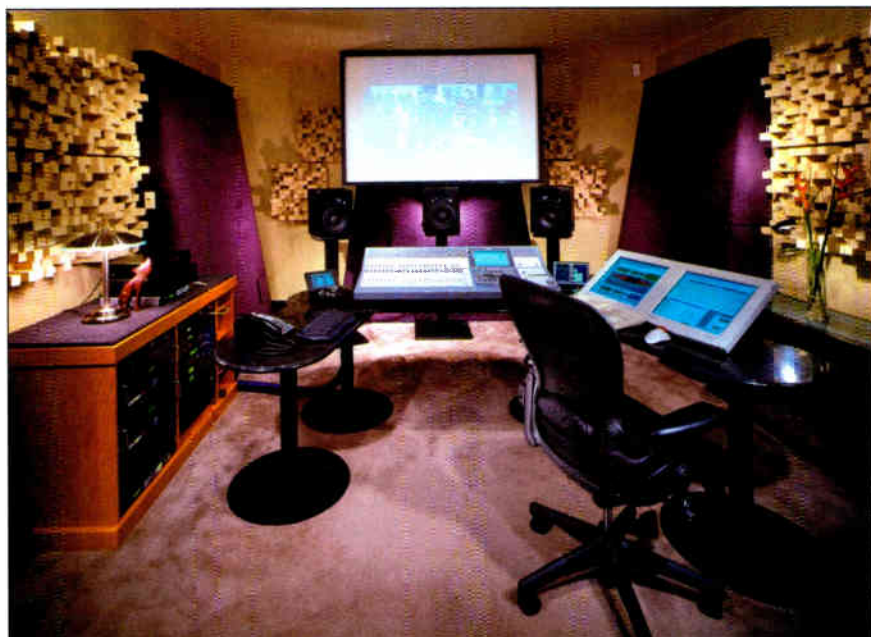
The Diningroom, with Sony DMX-R100 console and SADiE workstation

you have the level up because you couldn't hear the dialog in the scene before it. And we've learned that we need to do all of the audio, because the audio for the menus has to be at the same level as the film content. And when everything's done

> So just like all of the audio elements on a record album, you have to master [DVD]. You have to make sure that things are consistent and EQ'd, and that the explosions don't blow the chandelier off of the ceiling.
>
> —Bob Margouleff

in separate houses, the guy at home is working his volume control like crazy because the menus are too loud, and then the movie's not as loud as the menus, and then the deleted scenes are a different level.

What else have you learned over the years as far as preparing multichannel sound for home-theater playback?

Biles: When we first started doing the music mixing in surround, we were just setting up rooms with a sound-pressure meter and setting the subwoofer up so it had the same sound pressure as our center speaker, which wasn't a good thing to do for people who had their home theaters set up "theatrically." The subwoofer level would blow them out the back wall. After some conversations with Jeff Levison, DTS and Tom Holman, I was made aware that there's a reason for boosting that in-band subwoofer level 10 dB, and that you really need to set it up properly with a third-octave analyzer or a real-time analyzer. So for a long time now, our rooms have all been set up and calibrated. Bob Hodas just did our Studio C.

So you've gone from just The Livingroom to three rooms, but you're still working in a private home.

Margouleff: Remember, we do home theater here. So this is still a home. I live here. We now have The Livingroom, The Diningroom and The Study. There are two SADiE Artemis systems in the house, and one SADiE 2496. They're all 24-track systems. We also have two Sony DMX-R100 recording consoles, one in The Livingroom and The Diningroom. The room upstairs is used for QC'ing, and it's also used for prep work—CEDAR'ing and conforming and setting up.

Biles: The rooms all have different complements of speakers in them. We have Genelec 1032s in our main room, JBL LSR28Ps in our Studio B and Meyer HM1s in Studio C. We have digital tielines, so we can throw a mix into any room at any time. In order to do our final check, we also have a Sony Trinitron 20-inch TV with little crappy speakers built in. You've got to check your mixes on there, just to

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Alan Howarth, Engineer, Composer

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Michael Wagener, Double Trouble Productions, Inc.

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Tony Widoff, Programmer: David Bowie *Heathen* Tour

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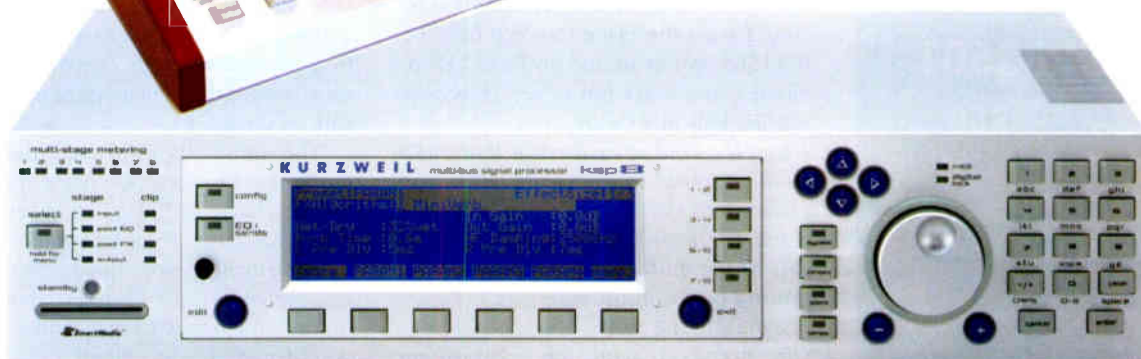
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flexible signal routing - dedicated EQ and panning - multi-stage metering - fully MIDI controllable
RSP8 remote controls up to 7 units - flash-expandable - SmartMedia™ storage
analog, ADAT, TDIF, AES, and mLan™ I/O - wordclock sync

make sure it's okay for people who take DVDs and play them on their combo DVD/television set.

Despite the fact that the rooms are all in one house, they're all acoustically independent?

Margouleff: Yes, they are. The trick was finding the right house to pull it off in.

Because you're mostly working on material that's already been prepared for the theater, do you ever run into resistance from people who've put a lot of work into the soundtrack who don't want you messing with their baby?

Biles: Yeah, I've sat here with people who come in upset, thinking that we're saying that the work they've been doing for years isn't good enough. But it's not that it's not good enough. It's that it can be better, and we are here to make it better. We also often work with directors, and sometimes they're not quite sure why they're here. They're thinking, "Didn't we already mix the movie once?" And we sort of walk them through it, showing them the "before" and "after" of previous movies. Then they say, "Wow, there's that much difference?"

When we were working with Roger Donaldson, the director of *Thirteen Days*, he thought he would be here for about two or three hours. Four days later, he was jumping up and down in the control room, waving his arms around, going, "It's a DVD! Push the supertanker louder. Now I want the plane to come from behind and swoop around my head." He really got into it. It's fun to see grown-ups act like kids in a candy store.

Given the kind of excitement that multichannel sound can generate when associated with visual material, why do you think it's been such a challenge to get any of the multichannel formats off the ground on the music side?

Margouleff: The movie business gets it totally. Everybody works on one platform, everyone knows what it is, and the product goes through that pipeline. The film people have discovered that, yes, 24-bit/48k, or 16-bit Dolby AC3, or DTS 24-bit format works. It's on a disc, and it reminds people of a CD. It's simple to store, it's simple to ship, it's simple to rack in the stores, it's easy to order on the Internet. It's a delivery system that's viable, that people can touch and feel and know they own it.

The music business, on the other hand, is always in a state of confusion, and then they don't understand why things aren't working for them. Everybody has to have their own system and their own way of storing it. As a result, there's no clear, defined platform for the storage aspect of the music business in 5.1. And until that sorts itself out, I don't think we're going to see a lot of sales. The record business should learn a lesson from the film business and converge to their platform.

So you think that DVD-Video currently offers a better opportunity to develop a real market for multichannel music releases than alternatives such as DVD-Audio and SACD?

Biles: There are just too many audio formats. There will come a day, when blue laser comes down, when we can have a totally uncompressed PCM format that everyone can use, whether it's 2.0 or 5.1 or 6.1, or whatever people want to put on there. But for now, DVD-Video is fine.

Margouleff: All of the formats for music work—and they're all very good—and have their advantages and their disadvantages. I'm not putting these things down, because everyone did a lot of thinking to create these formats.

The problem is that everybody—the consumer and many producers, too, especially in the music world—is totally confused by all of the stuff that's out there. Also, a lot of these formats do not yet have complete, really good, first-class authoring tools to support the format. And the music companies don't know what to release, so they release stuff in three and four different formats, and drive all the mastering engineers nuts to have to go through and remaster everything with a view toward the limitations of each of the various media.

The music business and the video business agree about the home theater as the playback platform, so if everyone could just start to focus on content instead of being totally preoccupied with the storage medium, the consumer could settle on one ubiquitous format. And I will tell you, if you are disciplined and do your job the right way, when you put a music score as big as *Lord of the Rings* into a DTS 6.1 or Dolby Digital 6.1 EX, it delivers as much music as anyone could want. So there's no reason why we can't put on just music, without any picture, in the same medium, on the same disc, and gain access to the 22 million players that are already out there. DVD-Video is already there in millions and millions of homes across the country, so there really is no need for DVD-Audio or SACD. ∎

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

Andy East

Chairman of the UK Music Producers Guild

Mark Twain may have been right about England and America as quite similar cultures separated by a common language. Although an increasingly global music business and the proliferation of pro audio technology have made album production more accessible and more homogenous, differences remain, both in the language—"desk" and "console"; "valve" and "tube"; "teaboy" and "hey, you," etc.—and in the culture of the business.

As chairman of the three-year-old UK Music Producers Guild (MPG), Andy East has watched the industry evolve on his side of the Atlantic. A former session musician and recording engineer, East, 42, worked for the Vox amplifier company before starting his own consulting and management company. As a record producer and artist manager, his discography is all over the map: He developed and produced the girl band Synergy, signed to BMG in Southeast Asia in 1996, as well as the Paris-based band Broken Eyes, whom he signed to Disney Village Records in France in 1998. Then, he went on to work with Pills, a French techno act on Mercury Records, and the UK's Sugar Plum Fairies, led by ex-Wildhearts/Honeycrack singer/songwriter Willie Dowling. Today, in addition to continued production and related pursuits, East heads up an organization that has more than 450 producer members in the UK alone; hundreds more belong to the European Producers Union.

The role of the record producer in the States has changed during the past decade. The rise of independent record labels and the contraction of the major-label sector have pushed producers into A&R. What sorts of evolutions have UK and European producers gone through lately? And what's in store for the future?

In my view, the UK, and to a degree Europe, is suffering from what I term a lack of throughput. Labels are not signing many acts, and their A&R departments often lack experience. Hence, the producer is picking up the reins. With fewer acts being developed by major labels in particular, producers are now doing the development. To a degree, it's simi-

lar to the U.S., but you have a bigger market [in America]. Another point is that the majors are always going to be responsible to their shareholders and want a quick high-value return, so catalog music is a big attraction to them. But as a result, producers find themselves fighting for fewer projects. A leading producer manager tells me that it's not uncommon now for him to have five of his producers up for the same job.

The trend has been overwhelmingly toward personal studios in the U.S., particularly by top-tier producers. Is that the case in Europe, or do they rely more on commercial studios?

Technology and falling prices have given UK producers that capability, as well. Project and personal studios are more attractive because of the costs. Unfortunately, many of our studio facilities are suffering from this, particularly those that don't have large recording spaces, 5.1 expertise or [multi]media capability.

Speaking of studios, what's the state of that business in the UK and in Europe? It appears from afar that after a relatively brief return to rock with Oasis and Blur in the mid-'90s, music has gone back to techno and other genres that are better suited to control room recording. How has this affected the fortunes of commercial recording studios in the UK and on the continent?

Commercial studios are fighting for business, in my opinion. Many studios are adding "writing or programming" suites or doing deals with guys like myself for mixing. I have to work with smaller budgets, so I often record the drums in a rehearsal studio on my portable studio, track in my home studio and then mix

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at a commercial studio. Studios will often be very happy to give you a rate below the published figure. At the same time, [rates] don't seem to have increased in a good while. "Deals can be made" is the best answer, as they want your work. But there are some innovative solutions. For instance, there's certainly been growth in small in-house labels and production teams who then license product.

Besides cheaper technology enabling more people to start their own personal studios, do you also think that changing music-consumption tastes—specifically, declining rock sales—are also hurting studios?

For sure, but I think that the music industry can be blamed for it, as well. There is a thriving pop/rock/alt indie scene, but most of it is going out via the indie-label market and can be held back by the lack of high-powered marketing and distribution.

Tell us a bit about the Music Producers Guild in the UK and the European Producers Guild. What has the experience of organizing producers been like? Some have likened it to "herding cats." There's been interest in the notion in the U.S., and there is an MPG here that is now part of the NARAS organization. However, U.S. producers have always been a bit wary of organizing.

Well, my experience as MPG chairman has been a positive one. UK producers do stand as a collective, and the past 12 months have seen us achieve some very positive results in a number of different areas; in particular, royalty payments. At present, our membership is 450-plus, covering a wide number of genres. I'm pleased with this after us being in existence for three years, but my goal is for this to increase in the next year. In my term of office, I set out to increase our profile via a number of different methods, including the press. At first, it was very much word-of-mouth, but I knew that we had to change this and underline our mission.

Is the MPG affiliated with any other organizations, such as the Association of Professional Recording Services [APRS]? And does it attempt to set or suggest producer rates?

There's this rumor circulating that we are affiliated with the APRS, but it's not true. The APRS represents the manufacturers and commercial studios, while the MPG is a completely separate organization whose aim is to represent the creative people working on the factory floor, as it were.

We do, however, work closely with [APRS] and other UK industry organizations such as Music Managers Forum [MMF], Music Publishers Association [MPA] and the British Academy of Composers and Songwriters [BACS], to name a few. While we don't set rates, we can offer advice and we do hold regular business-affairs seminars to address our members' needs with these issues.

How do you think European record labels feel about producers organizing? I would think that some labels would prefer them not to so that they can put pressure on younger, newer producers in terms of rates and royalties and other contractual points.

It's a good point, and there is an element of truth there. While the budgets are tight, there's work. The younger guys who are new to the business are put under pres-

sure, though, and it's very competitive, as I said earlier.

Perhaps the biggest coup of European organization has been that Euro producers have participated in airplay royalties for some years now. How much could a producer of a hit record expect to have his/her income augmented by that?

Well, as you know, the MPG has recently been involved in this subject with PPL [Phonographic Performance Limited, established by the UK recording industry in 1934 to administer the public performance and broadcasting rights of the recordings] in the UK, as well. At the end of the day, all income helps in a competitive business, but it is hard out there. My advice is that as an independent producer, or independent anything, you have to be able to multitask your skills.

What about the situation for audio engineers? What have rates been like and, perhaps more importantly, have many of them adaped to changes in the studio and record businesses?

The engineers are, in my view, the people

who really suffer the most in the current state of the industry—no royalty base, studios closing, etc. Many of them, in particular the freelancers, are now carrying their own recording systems, such as a RADAR system, and working with acts on this level, as opposed to working with them in [commercial] recording studios.

Would you say that producer management has become more important in the industry and more prevalent in recent years?

Absolutely. It's a highly competitive market out there, and you need all the help you can get, particularly if you are new to the industry. But it's kind of a catch-22. If you don't have anything happening, why should a manager take you on? Also, it's hard to make a living if you have the added cost of trying to live in one of the most expensive capital cities in the world where the majority of the industry is based.

The overarching technical trend in the U.S. has been to hard disk recording, particularly to Pro Tools. In Europe, though, I still see a lot of RADAR and other platforms not often seen here. Where are the de facto UK and European recording media standards headed in regard to recording platforms and other technical standards?

Pro Tools figures into many studios, particularly in post-production, but not everyone can afford it. RADAR is as popular as ever, as is hard disk recording via Logic Audio and my own personal choice, Digital Performer 3. Nuendo is getting a push here, as well. As with others, I'm very into the future of SACD and DVD-A. I've just started my first 5.1 project.

The record business is truly global now, for better or worse. Have you noticed an increase or decrease in artists from the U.S. or other places who choose to record in Europe in recent years?

I think there has been a decrease, again due to the growth of project and personal studios. However, if an act wants to work with a particular producer or facility, they will still make the trip. I was at Abbey Road the other evening, and that place has a certain magic!

Where, besides the UK, are the hot spots for music recording in Europe these days?

France and Scandinavia; look at the success of people like Max Martin. I was based in France between 1997 and 2000, and that was a real hotbed of talent. It's now possible to see the influence [of France] coming out in UK acts.

How has Eastern Europe been faring? When the Berlin Wall came down in

> The MPG is a completely separate organization whose aim is to represent the creative people working on the factory floor, as it were.

1991, certain cities, such as Warsaw and Prague, became magnets for U.S. film-scoring projects, because quality orchestras and recording sites suddenly became accessible for relatively very little money. Is that still occurring?

European film and TV budgets are a lot less than their U.S. counterparts, and musicians' fees are a vital factor in where to record. However, the UK has been losing so much work to Eastern European orchestras that the musicians' union has now adopted a more realistic approach and more work is staying in London.

[That's resulted in more] big-budget U.S. movie projects done here, like *Harry Potter*, *Star Wars*, *Lord of the Rings* and *Reign of Fire*, to name a few.

European DJs rule the world, and they are lionized in the U.S. In a sense, are they becoming the new generation of music producers in Europe? Is the DJ culture becoming a leading part of the pro audio and music businesses now? Is it nice to have an export product again?

It's a huge genre and, as you say, an export, finally! But for me, there is a gap between what may be termed the "old

> The MPG is working on trying to make better relationships between record producers and DJs. They're still a bit wary of the mainstream music business. Ironically, many are unfamiliar with the fact that many of our members at the MPG were once as radical as they are, in their own way.

guard" and these guys, and it needs to be bridged. Unfortunately, we, as traditional producers, are often seen as the establishment instead of creatives or allies. The MPG is working on trying to make better relationships between record producers and DJs. They're still a bit wary of the mainstream music business. Ironically, many are unfamiliar with the fact that many of our members at the MPG were once as radical as they are, in their own way.

What's the state of audio and media education in Europe? U.S. studio owners used to scoff at the notion of formally trained entry-level employees. Now, virtually no audio post facility will hire someone without their having attended such an academy.

For me, this is a very difficult area and my response is a personal one and not in anyway an MPG policy statement. There have become two paths to employment in our industry: formal education, or becoming the tea boy and working your way up. For me, both have merit. With the industry downsizing, the latter has become harder. It's important that anyone considering employment in this industry considers those options carefully to suit their own abilities. Not all creative minds are academics. ■

Dan Daley is Mix's *East Coast editor.*

sorcerer s**o**und

ELECTRONICS WIZARDRY TURNED INTO RECORDING SPACE

Expressing a boundless passion for the recording craft, a unique design aesthetic and uncompromising standards for electronics and acoustics, Al Fierstein does not give off the impression of a man who entered the studio business by accident. But Fierstein—who built Sorcerer Sound in 1974—never intended for the facility to serve as a stand-alone recording venue; he merely wanted it to showcase his burgeoning equipment design and acoustics consulting businesses.

At the time, Fierstein was doing freelance maintenance for such heavyweight New York studios as Electric Lady and moonlighting as an equipment inventor. Because he wanted to build a device that would measure reverberation time, Fierstein needed a room in which to test his prototypes.

By Paul Verna

"I'd read up on acoustics and knew that if you wanted to build a good studio, you had to measure the reverberation time at different frequencies," Fierstein recalls. "There was a measuring device that was reasonably inexpensive, but it was a little too much for my budget, so I designed one, built it and used it for my room. Then, [studio architect] John Storyk heard

about it through a mutual friend and suggested some changes for one that would be rackmounted. So I made a rackmounted version for Storyk and then decided to market the product, since it was already on circuit boards."

In 1976, buoyed by the success of his reverb tester and his growing consultancy business, Fierstein founded Acoustilog, a multifaceted company that integrated acoustics consulting, custom equipment design and manufacture, gear rental, maintenance and the Sorcerer recording studio. A generation later, Sorcerer and Acoustilog continue to flourish together, despite the massive changes wrought on the industry by MIDI, MDMs and DAWs—not to mention the economic ups and downs that have taken a serious, sometimes fatal, toll on other New York studios.

The studio gathered momentum soon after it opened, attracting a clutch of hip artists including the Bush Tetras, Sonic Youth, Steve Forbert and David Byrne. Many up-and-coming acts were also exposed to Sorcerer thanks to the studio's association with the Radio France live show "Feedback." The New York correspondent

Inside Studio B is a custom Neve 8068 console with GML automation.

for Radio France, Jean-François Vallée, served as the MC, and Sorcerer was the studio from which it was broadcast over a 15kHz telephone line.

"People like John Zorn and David Byrne were coming by, and this was before they were well-known," recalls Fierstein. "Sometimes, we recorded them for broadcast; other times, they performed live. Sometimes, we'd set them up on the roof of the building so that the listeners in France could hear the ambience of New York, complete with sirens and street noises."

As Studio A expanded and Studio B was built in 1984 in the basement of the building—which Fierstein owns—Sorcerer's fortunes continued to grow. Throughout the '80s, '90s and the current decade, it has entertained clients across a wide spectrum of music styles, including rock, R&B, Latin, gospel, hip hop and jazz.

Today, Sorcerer is a grown-up version of its former self. The sprawling Studio B features a 62-input, GML-automated Neve built from two vintage boards: a 32-input 8068 from the legendary A&R Studios in New York, and a custom 30-input console from Studio D at George Martin's AIR Studios in London. Fierstein streamlined and modified the consoles so that they would function as one continuous board, added the automation and joined them in a V-shaped arrangement (one of his design hallmarks) because "it's a good idea to locate the engineer at the center of the room."

The console also features Acoustilog's Spectrum Multilyzer, a spectrum analyzer with peak and average meters that are superimposed on the same scale. The Multilyzer allows engineers to maximize the dynamic range of their recordings by setting non-peaking sources, such as distorted electric guitars and Hammond organs, as high as +14 dB, and high-transient instruments like pianos and triangles much lower.

"We get calls from other studios saying, 'How come this track is way off the top on the machine? It looks totally distorted.' I say, 'Does it sound distorted?' And they say, 'Well, no, it doesn't sound distorted, but how would you know? It's off the meters.' And I say, 'Your VU meters only go to +3 dB. The way you know is because it sounds clean.'"

If Sorcerer's custom electronics reflect Fierstein's purist approach toward equipment design, the layout of the console, speakers, outboard gear and tape machines evince a clear sense of ergonomics and a sensitivity to engineers' and recording artists' needs. Everything in Studio B's control room is mobile, including the outboard racks and the 3,000-pound console, which is set on tracks.

"The reason for the Siamese-twin Neves being on tracks is to allow clients to sit in front of the console, as is customary during tracking, or behind the console during mixing without wasting space in either location," says Fierstein.

Studio B also features custom Gauss co-ax monitors, designed in-house and protected by Acoustilog's POP-110 peak-overload protector. "It's basically a peak-responding limiter with boosted high-frequency sensitivity to compensate for the lower level of treble in most music," says Fierstein. "The POP-110 mutes the speakers for one second if the monitor volume exceeds the preset threshold. Nothing blows; nothing has to be re-

set, but the sound resembles a giant hiccup. After hearing it once, most engineers turn it down a few dB, and it never happens again. The main difference between the POP-110 and a limiter is that there are no relays or active components in the signal path during normal operation, only when the system is muted. I laugh when I hear about how studio owners are glad they *only* blow one speaker a week."

The Neves' monitoring section is another of Fierstein's ingenuities: It features a milled-aluminum slot lined with photocells that soundlessly adjust the level in 10dB increments. It also has precision stereo VCAs, which provide a left-right balance accuracy that Fierstein says is unavailable in most consoles' monitor pot.

While many studio owners are content to leave "vintage" gear alone, Fierstein is an irrepressible tinker who loves to improve upon a design. His LA-2As have all been rigged with in/out switches, metering of both the input and output levels in addition to the gain reduction, and a 20dB-lower noise level. Similarly, the extra parts from the two Neve consoles have been refashioned.

"We used the extra transformers to make multichannel Neve direct boxes, which are built into the patchbay and available in both studios," Fierstein explains. "We've also sold them to other studios. But the best Neve mod was the series of changes that minimize the signal path while providing full-functioning normal and remix modes on the whole console. This provides a significant side benefit: reduced maintenance, since there are fewer contact points and more redundant relay contacts. Since I do the maintenance myself, I do everything I can to increase the studio's overall reliability."

Unlike studio owners who pay a premium for their vintage gear, Fierstein got his from bartering services years ago, when the tube equipment was temporarily out of favor. He got Pultecs from a 4-track studio in exchange for wiring it up, and six Neumann U47s from George Adams' widow, whose United Recording Labs was one of Fierstein's early hangouts.

"In 1972, one of my customers gave me an old junky tube limiter that I decided wasn't worth the continual maintenance on

> We emphasize the acoustical space and the equipment. We're not the type of place that gives you fresh flowers every day. It's not designed to be a health spa or a catering hall.

Al Fierstein

sorcerer sound

it, what with the 15 or so tubes in it," says Fierstein. "So I just threw it out. It was a Fairchild 670 Stereo. But I kept the Pultecs."

Fierstein is no less attentive to his acoustics than he is to his electronics. Eight large rotating panels in the vast, 25-foot-high tracking area in Studio B can totally change the sound in the upper half of the room, where most of the ambient miking is done.

"Most engineers love the idea of being able to vary the room sound," says Fierstein. "But when Lou Reed was looking to do his album at Sorcerer, he took one look at the panels, which are controlled by Radio Shack antenna rotators, and decided that there were 'too many possibilities' to record there."

Other acoustical features include a drum booth with a 100-year-old stone wall, a dead iso booth and a sound lock equipped with mouse holes that allow wiring to be run in and out.

While Studio B—the larger and newer of Sorcerer's two rooms—represents the pinnacle of Fierstein's skill as a designer and builder of recording spaces, the original Studio A reflects his original vision for a funky, cool downtown studio that serves as a demo room for his hardware products.

Studio A started out as a small 8-track space in 1975, and over the years has evolved into a respectable mixing/tracking/overdubbing facility with a comfortable—if cozy—control room and four isolated spaces that permit the tracking of up to six players. Studio A features a 32-input Acoustilog GB-1 console, also arranged in Fierstein's trademark "V" shape and equipped with Optifile 3-D automation. Other amenitites include a Multilyzer and a hydraulic lift that houses extra cue sends.

"We have a lot of custom features—a lot of stuff you won't find in other studios," says Fierstein, who started out as an electronics hobbyist and drummer. "We emphasize the acoustical space and the equipment. We're not the type of place that gives you fresh flowers every day. It's not designed to be a health spa or a catering hall."

Not that anyone would mistake Sorcerer for either of the above. When clients arrive at the studio, they enter through industrial metal doors found in most downtown New York lofts. In the lounge, however, Sorcerer's loft-like aura

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Standing on the catwalk, looking down into Studio B's live room.

gives way to an atmosphere more typical of a zoo or natural history museum than a recording studio. A vast collection of insects is displayed on the walls. A live tarantula and snapping turtle occupy cages above a pool table. A huge python lives in the space between the dual-glass window that separates Studio B's control room from its tracking area.

"The lounge is always fun for the musicians when they're on a break," says Fierstein. "They like to play pool and feed Samantha the snake, who eats rats. It's educational; it gives them an appreciation of nature—just like watching Ike the tarantula and Tommy the turtle."

Some clients find Sorcerer's ambience macabre. Suzanne Vega, who is a Buddhist, did not like the vibe of all the dead animals, according to Fierstein. The "fuzzy ones," like the deer head, were more upsetting to her than the Goliath beetle, he says. Similarly, a gangsta rapper asked the studio staff to cover all of the tarantulas, including a dead one mounted in the lounge lunch table, with paper. ("Some of those guys aren't as tough as they come across on record," observes Fierstein.)

But most musicians love Sorcerer's menagerie. Keith Richards, while working on a Johnnie Johnson album, fashioned a ring out of aluminum foil for George, the human skeleton who lives in the bathroom.

"We used to have a fake human hand that would pick up the phone on the producer's desk and hand it to the client,

along with a human thumb to select the incoming phone line, until someone decided to shake hands with it one day and bent the mechanism," says Fierstein with a touch of nostalgia.

It matters little to Fierstein whether Sorcerer's impossibly diverse clientele—from Bob Dylan to De La Soul to Tom Verlaine, from Iggy Pop to Miles Davis to Pussy Galore—has kept coming back to the studio because of its unique ambience, its superb acoustics or its venerable collection of customized gear (to which Verlaine, the first client in Studio B, has contributed many rare pieces). The point is the business has thrived even in the most uncertain conditions.

Recently, in the aftermath of the September 11 terrorist attacks in New York and, a rumor circulated that Sorcerer was closed—a rumor erroneously reported by this writer in *Mix*. Fierstein refutes the rumor and says Sorcerer is as healthy as ever. He adds, however, that he has floated the idea of selling part of the studio, which may explain how the rumor got started.

"Selling part of Sorcerer is a possibility," says Fierstein. "But I would hate to see it turned into a store. With 9/11 and the unpredictable real estate market in New York, who knows what will happen. What I do know is that Sorcerer will run as long as there are clients and enough business to keep it going. I still use the studio a lot as an acoustics demonstration room, which is what it was always intended to be." ∎

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Nearly 700 people attended the 18th Annual Technical Excellence & Creativity Awards on October 7, 2002, at the Wilshire Grand in Los Angeles, where master of ceremonies Harry Shearer of Spinal Tap, *The Simpsons* and NPR talk show fame provided equal-opportunity skewering. The evening's highlights included the induction of producer/engineer Geoff Emerick into the Hall of Fame by George Massenburg, Elliot Scheiner and Al Schmitt and the presentation of the Les Paul Award to Robbie Robertson by Daniel Lanois. Proceeds of the ceremony will go to assist the outreach efforts of the House Ear Institute and H.E.A.R., and to scholarship funds for students of the audio arts and sciences.

For a complete list of winners, please visit www.tecawards.org.

Gibson chairman and CEO Henry Juszkiewicz (left) and Daniel Lanois (right) with Les Paul Award winner Robbie Robertson.

A star-studded lineup (l-R): George Massenburg, Elliot Scheiner, Hall of Fame inductee Geoff Emerick and Al Schmitt.

Nathaniel Kunkel (left) and Frank Filipetti announce the winners.

Comedian Harry Shearer was a hit as master of ceremonies for the 18th Annual TEC Awards.

Tascam's Jeff Klopmeyer accepts the TEC Award for Small-Format Console Technology for the DM-24.

Presenters Dweezil Zappa and Lisa Loeb wait for the winner to come to the stage.

Tim Ryan accepts the TEC Award for Musical Instrument Technology for Propellerhead Software's Reason.

(L-R) Composer Paul Williams, AMD's Charlie Boswell and producer Phil Ramone enjoy the VIP reception.

Mark Brunner, portfolio director, pro audio products for Shure Inc., accepts the TEC Award for Wireless Technology for the Shure ULX.

Walter Reuhrig, AKG Vienna (left), and Tom Stolter, AKG U.S., accept the TEC Award for Microphone Technology/Sound Reinforcement for the AKG C900.

(L-R) Marc Repp of MTV Networks Digital Audio Truck (Remote Facility/Remote Engineer), Karen Brinton of Remote Recording Services (Remote Facility) and Bob Clearmountain (music mixer) accept the TEC Award for Remote Production/Recording or Broadcast for The Concert for New York City.
—CONTINUED ON PAGE 187

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GANGS OF NEW YORK

PHOTO MARIO TURSI

THE SOUND OF A GROWING CITY
SPLITTING APART AT THE SEAMS
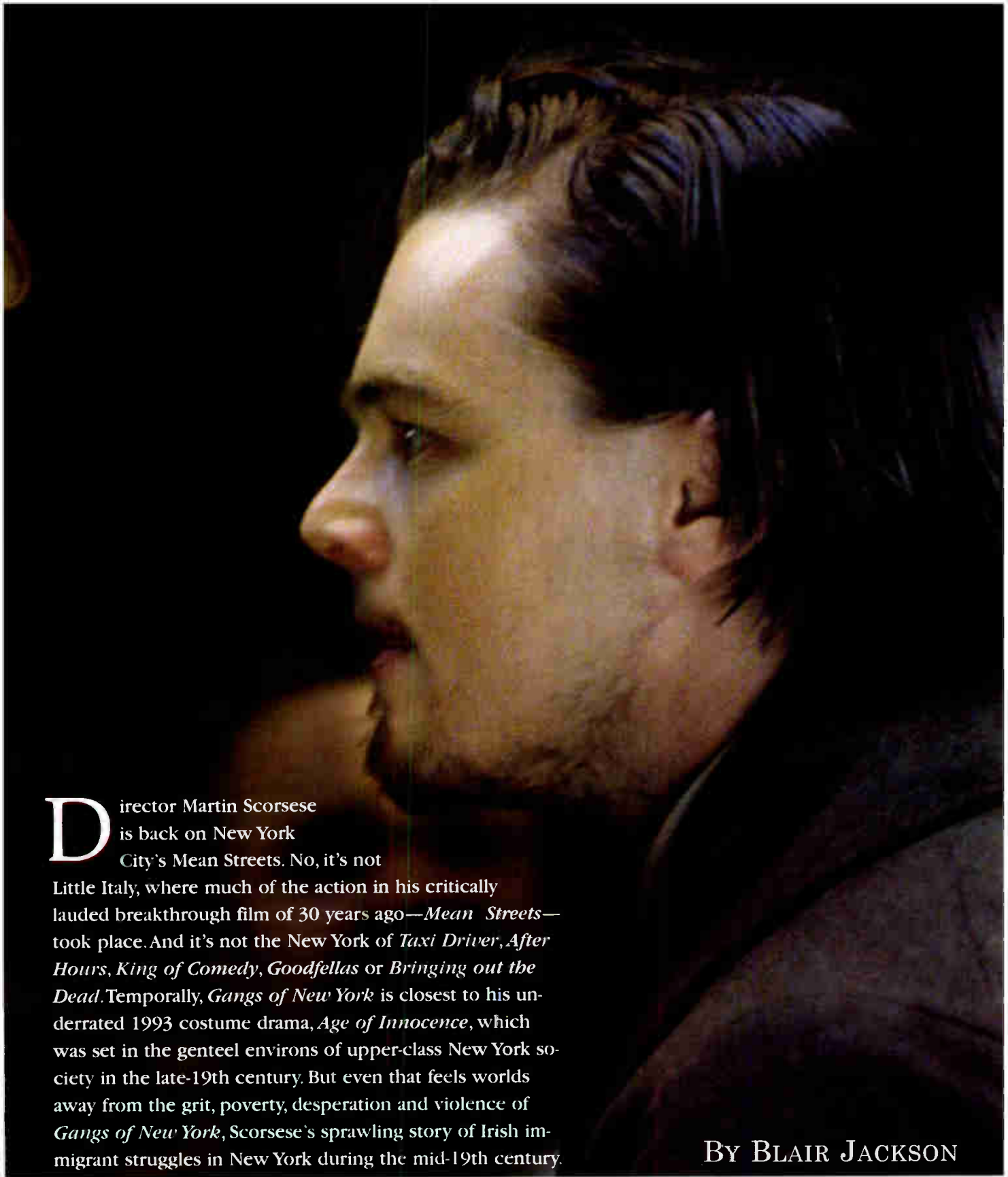
D irector Martin Scorsese is back on New York City's Mean Streets. No, it's not Little Italy, where much of the action in his critically lauded breakthrough film of 30 years ago—*Mean Streets*—took place. And it's not the New York of *Taxi Driver*, *After Hours*, *King of Comedy*, *Goodfellas* or *Bringing out the Dead*. Temporally, *Gangs of New York* is closest to his underrated 1993 costume drama, *Age of Innocence*, which was set in the genteel environs of upper-class New York society in the late-19th century. But even that feels worlds away from the grit, poverty, desperation and violence of *Gangs of New York*, Scorsese's sprawling story of Irish immigrant struggles in New York during the mid-19th century.

BY BLAIR JACKSON

Fleeing from famine in their homeland, Irish immigrants arrived in New York by the thousands in the 1840s and '50s; by 1860, the city's population was more than one-quarter Irish. Most arrived with little more than the clothes on their backs and were forced to move into dense, squalid neighborhoods—such as Manhattan's notorious Five Points area—where they eked out a meager living however they could. They were treated terribly by the local powers-that-be and despised by other groups in the city because they represented competition for already-scarce menial jobs. When the Civil War came, Irish men were quickly made citizens and then drafted into the Union Army against their will. This led to the infamous Draft Riots of 1863 and the horrific mur-

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der of many blacks by Irish immigrants who resented having to go to war over the issue of slavery.

All of this serves as the backdrop for *Gangs of New York*, though the story itself is centered around a young immigrant (Leonardo DiCaprio) and his obsessive desire for revenge against the anti-immigrant gang leader, Bill the Butcher (Daniel Day Lewis), who killed his father. It's a dark and at times brutal period piece—these "gangs" are light years away from the Jets in *West Side Story* or even the Ducky Boys of *The Warriors*; this is life, death and survival played out on some *very* mean streets, with clubs, axes, knives and fists. It isn't pretty…but it happened.

The New York of the 1850s and '60s is long-gone, of course, so Scorsese and noted production designer Dante Ferretti had to build their own version of it from

Re-recording mixer Tom Fleischman and sound designer Eugene Gearty at the Neve DFC in Sound One's Mix D.

scratch—on the outskirts of Rome at Cinecittá Studios. The huge back lot became home to block after block of rough tenement neighborhoods, huge urban squares, tony uptown streets and a bustling, teeming seaport. Hundreds of Italian actors and extras were brought in to play the masses who populate the growing metropolis. And that's where our sound story begins.

PRODUCTION SOUND

The shoot at Cinecittá took place from August 2000 to April 2001. (The original release date was Christmas 2001.) Veteran British production sound mixer Ivan Sharrock had his work cut out for him because so many scenes are epic in scope, with multiple speaking parts, long shots and close-ups, and—most problematic of all—large crowds. Normally, an unruly mob doesn't pose a problem for location

recordists; in fact, they *want* to get the sound of the crowd down on tape so that they can blend it with the radio mics and the boom on the principals to truly convey the scope of the unfolding drama. But because all of the extras were Italian rather than Irish, they were instructed, for the most part, to be silent so that the background walla wouldn't have an Italian flavor. As it was, the sound editors in New York still had to cut around some accents in crowd scenes, but it wasn't that tough.

"I'm facing the same thing on the film I'm working on right now," Sharrock says with a laugh from the set of the Civil War drama *Cold Mountain* in South Carolina. "We shot for five weeks in Romania, doubling as North Carolina, and we had to tell all of the Romanian extras to keep quiet. On *Gangs of New York,* the crowds did keep fairly quiet, which was good, but it meant that they had to do more work later."

Indeed, after shooting was complete, there were extensive group ADR sessions in England with scores of Irish actors, under the supervision of editor Marissa Littlefield. As a rule, Scorsese tries to avoid doing a lot of ADR, believing, as re-recording mixer Tom Fleischman says, "that the natural track, even if it's technically problematic, is usually better dramatically and emotionally than what you'll get when you bring the actors back in for ADR and try to match the performance."

Sharrock uses a Nagra D 4-track on location. "I put a boom on channel 1, a radio mix on channel 2—those are roughly combined for rushes, for the mono track," he says. "Tracks 3 and 4, I split out the radios and try to do it in such a way that the dialog is never next to each other on the same track so there's a chance of having clean tracks without much, if any, overlap. A lot of people like to use multitrack these days, but I haven't gone for that yet."

He uses a variety of mics: Sennheisers outside, Schoeps indoors, and lavs by Sanken, Trans, Sony and Countryman. "Although we did use a lot of radio mics," he says, "I wanted the sound to have some depth, too, particularly on some of the interiors that were done on these huge five- and six-story sets. So we backed off with the mics there to open the dialog up and give it a little ambience."

Once the shooting was completed in Italy, the action shifted to editing rooms and sound suites back in (the real) New York. There, Scorsese and his longtime film editor Thelma Schoonmaker began assembling the film and working on an early cut, while the post-production sound crew—most of them veterans of many Scorsese films—kicked into gear.

FOLEY, EARLY AND OFTEN

Working out of C5 Editorial, supervising sound editor Phil Stockton waded through dozens of hours of production audio, while sound designer and effects editor Eugene Gearty worked up some preliminary ideas. Intensive Foley work began at C5's new Foley facility in Northfield, N.J. Elmer Bernstein was brought onboard to write the score, though as is often the case with Scorsese's films, from the outset the director planned to use a lot of source music—period folk music and modern songs/pieces that fit the mood of the storytelling—rather than relying on a conventional score. He and Schoonmaker began cutting scenes to music very early in the process.

"In May 2001, we started pulling things together for Marty and Thelma," Stockton says. "I would edit the dialog tracks and we'd send it over to them as a single track that they could put into their Avid Lightworks. At the same time, Eugene was providing them with mono mixdowns of backgrounds and effects that they asked for. And we started recording the Foley very early, too, because they felt like they needed that."

The street battle scenes were quite Foley-intensive, with Gearty and Foley supervisor Frank Kern working with a crew to make sure that every club-thwacking, knife-stabbing, fist-punching moment sounded natural but dramatic. The Foley was recorded to Avid, with a chain that included Neumann mics, Millennia preamps, Apogee converters and a Yamaha 02R console.

"That was only the second job in our new Foley studio," Stockton says. "It's a huge room—a warehouse space. The main room is about 30 by 65 feet with an 18-foot ceiling. There are scenes in the film that take place in an old brewery, and there are scaffolds and platforms of wood. We were able to build these wooden structures in the studio to do all of the scenes that were in the brewery. A lot of the sound of the movie was done in the Foley studio, building our own sets for different parts. We did boat horns and guns. A lot of the horses we already had from other projects."

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THE TEMP MIXES

"Nearly all of the Foley ended up going into [Scorsese's and Schoonmaker's] temp mixes, and we were doing mixdowns of maybe 20 tracks of Foley to one mono track," Stockton says. "So we were giving them an effects track, a Foley track and a dialog/ADR track in mono pretty much from the beginning for whatever scenes they asked to have it for."

Schoonmaker's role in all of this should not be underestimated. She and Scorsese cut the film together, and she acts both as his "ears" in the early stages of the soundtrack work, as well as the

From left, C5 sound editor Larry Wineland, sound designer Eugene Gearty, re-recording mixer Tom Fleischman and C5 supervising sound editor Philip Stockton.

powerful architect of the film that she is—free to make her own suggestions and judgments on sound issues.

"You come in knowing that the sound of the movie is going to be determined through the picture-editing process. On a daily basis, I'm feeding ideas to Thelma as they're cutting picture," says Gearty. "Generally, [Marty's] very interested in organically conceptualized sound design; in other words, the sound design comes out of the fabric of the production track [to determine] where we might process something. But other times, it's manipulating sound effects to more appropriately work with the music. As he's shown over and over again, he's very involved with music as part of the storytelling. The other thing Marty likes to do—which is very much appreciated—is he'll do scenes that are entirely sound *without* music, and he'll challenge us to make it interesting."

"Marty doesn't usually come in until we've got something ready to show him," adds Tom Fleischman, who mixed the film in Sound One's Studio D on a 72-fader

Neve DFC. "We'll predub the dialog—Phil and I and the dialog editors—and Thelma will often come to those sessions. In this case, she was still cutting the film; it wasn't locked, so we were pretty much on our own. Then she would come in and review it with us and give her input, and we'd work with her to refine it. Then, when all of the predubbing was done and we started putting music in and doing final stems, Marty would come in and review it and guide us to the final adjustments."

Stockton again: "Thelma doesn't miss much. She knows the tracks and everything very, very well. If you cut something out, she might say, 'Where's that sound that was here?' 'You mean that dolly creak?' She'll say, 'Yeah. Marty really likes that.' 'Okay, I'll put it back here.' But then she might want you to take the same kind of creak later on in the scene. My dialog editors are always nervous: 'Should I cut this out or leave that in? Should we have 18 versions of this?' The answer is, 'No, just do what instinctively feels like the right thing to do in the way you would do it, and then I'll fix it when we get to the mix.' You cannot predict what they're going to ask for. So I just do what I think is right, and 80 or 90 percent of the time, I nail it; the times I don't, I just do it right there on the stage."

AUTHENTICITY

For Gearty, whose resume, in addition to several Scorsese works, includes multiple films with the Coen brothers, Spike Lee and Barry Sonnenfeld, *Gangs of New York* posed many creative sound opportunities. "Probably my biggest challenge was to replicate New York circa 1860," he says. "We had a full-time historian who did a lot of research for me tracking down what sounds you would hear, what the streets were like, what the port would have sounded like. One thing that was surprising to me is the number of steam whistles. New York was a tremendously busy port, and steam played a significant part. It turns out that the Pratt Institute in Brooklyn has a significant collection of period steam whistles, which they took out and propped up in the courtyard of the college one Saturday so I could record them. I recorded dozens of steam whis-

tles using a Schoeps stereo MS pair and the Schoeps preamp to an HHB DAT recorder. You wouldn't believe how loud those whistles are: They're frightening—easily 110 dB or higher. I literally had to turn the mic away from the source at 60 yards away to get more reflection."

Asked whether he went to great pains to make sure that what pistol shots appeared in the film were authentic to the period, Gearty laughs and says, "Of course, but we ended up not using them. The guns of that period are what they call 'cap and ball.' I had very good recordings because I also did Ang Lee's *Ride With the Devil*. So I put those into *Gangs*, and Tommy [Fleischman] and Marty both said, 'Eugene, what's up with that gun? It sounds like a cap gun.' 'Well, fellas, that's authentic. That's what they sounded like.' They were very good, accurate recordings, but a lot of the sound is the *poof* of the gunpowder, which isn't dramatic enough. I'd sweeten them sometimes with some low-end *oomph*. In the end, we put in more of a big *kaboom* to beef that up. There are also some group muskets that required a more stylistic underpinning of elements, and I took more liberties there, but the basis is still authentic musket sounds.

"We took the opportunity to premix everything in my 5.1 sound-design suite at C5," he adds. "I used to have a Mackie [console] in there, but now I'm entirely internal in the Pro Tools, and I absolutely love it. Larry Wineland, my assistant, did an excellent job keeping me up to date with conformations from the picture department, and he's very knowledgeable with Pro Tools. We weren't just editing or conforming effects, we were conforming mixes with automation, including reverb settings, and that was the beauty of doing everything in Pro Tools. Everything got conformed as we went on, and that was the *coup d'etat*—we could continually update our premixes, which was really efficient.

"We premixed the Foley and the effects using the Pro Controller, and the plan was that in my premixing, I would set things up for the delivery format for the mix. For instance, everything was going to be delivered on 8-track Akai MO, so in the case of the effects, an 8-track MO would consist of a 5.0 bus and an LCR bus. I generated four or five of those, which included the backgrounds and the effects. The Foley was mixed down to 16 tracks, and one thing I did that was a little different there is I had a principal's footstep LCR and background footstep LCR."

"There are advantages and disadvantages to the Akais," notes Fleischman. "The advantage is that there is a very good ed-

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iting utility for them through the DL1500 [controller], which allows me to move stuff around very quickly during the mix. If I want to move a line of dialog or I want to cut out a pop or something like that, it doesn't have to be taken out of the playback machine, put in a workstation, edited and then put back in. The downside is that it's a little bit nonstandard; you can open those drives in Pro Tools, but you have to export it. So if the editor is using Pro Tools, which most of them are now, it's not as convenient. That's probably why the West Coast has gone the Tascam [MMR] route. But as a mixer, I prefer the Akai because it allows me greater flexibility."

In addition to his mix work on the film, Fleischman was also instrumental in "trying to find spatial environments, in terms of use of reverbs, for all of the different locations," he says. "Since the production track used radio mics so much, it was often very dry, and we had to come up with the sound of all these places the film keeps coming back to. One that was particularly challenging was this cave under the old brewery where several scenes take place. Leonardo DiCaprio's gang meets down there; that's sort of his sanctuary. So Eugene did a lot of stuff with winds and water drips, and I had to find a reverb to put on the dialog. I primarily used the TC 6000, which is a really flexible unit. You can use it as four stereo pairs, you can use it as a 5.1, as a pitch changer…You have a lot of machines in there that you can use simultaneously, which is great when you're working alone, as I often do. For a reverb, I usually start with something that sounds like it might work and play around with it, customize it and then rename the patches so that I can always get back to them."

He adds, "A lot of the exterior action in the film takes place in a square with buildings all around, so I did a little bit of a slap reverb for those exteriors, and then I altered it slightly for winter and summer. There's a scene that takes place in the snow, so I deadened it down a little, used a little less of it."

SOUND SCENES

There are a couple of scenes in the film that presented special challenges to the sound crew. "At the beginning of the film," Fleischman elaborates, "there's a large bat-

tle sequence that is like a montage of very quick cuts, and we wanted to make sure that we had good group ADR and good sound effects for it. There are no guns; they're just fighting with knives and axes and clubs and their fists, so it really had to be done with Foley. The sound effects part of it—the hard effects—are really just used as sweeteners, and there's some sound design, as well. Then there's a large piece of music—a Peter Gabriel song ["Signal to Noise"]—that plays over that, as well, and really glues the whole scene together. The music is played quite boldly, and it works beautifully with all of this carnage on the screen; it's sad. So that was a scene that really had to be designed and thought out and worked and reworked."

"That battle in reel one is one of the most vicious I've ever seen," adds Gearty.

PHOTO: MARIO TURSI

"We started out pretty authentic, and during the process of premixing and feeding the material for their scratch mixes early on in their picture edit, they liked the sound effects and the visceralness of the punches and the hits. Then they got feedback from Miramax to soften the violence, and they thought that lightening up on the effects would help that. So we did that, and then when we got to the final, of course Marty wants to hear everything back to where it was. So we did that, and it was also an opportunity for us to go one step further and put in a lot more sound-design elements within the realistic fight sounds, and that comes across as a texture under Peter's music. It allows you to see these men and women in this animalistic orgy of killing, so the obligatory [SFX] animal growls and pitched-down noises come out, but it's still subtle; it's a compelling element."

"There's another sequence that was

interesting from a sound standpoint that takes place toward the end, when the draft riots have started," Fleischman says. "Marty wanted to convey to the audience that riots were going on all over the city, but the film coverage was tight, so in order to make it understood that there was rioting all over, he used these inserts he shot of telegraphs transmitting news about the riots in Morse code. Of course, you can't expect the audience to understand Morse code, so they had voice-overs—almost as if they were speaking over radios, which didn't exist then—reading the text of the telegrams: 'Rioters on 31st Street; the cops are overwhelmed. 15th Street; they're tearing down the armory,' and so forth; one after another. Marty's notion was that he wanted it to sound like it was sort of coming out of the ether, almost like a radio being tuned from one station to another. So, we used panning, reverb, we repeated phrases—we'd take a part of each phrase at the beginning and the end and pan those around and bring it out of the surrounds, pan it from one side to the other, spin it around the room and use reverb and delay. There's a lot of stuff going on, but it's very effective."

"I generated all the pre-delay and echo and slap and reverb in Pro Tools," Gearty notes, "and then Tom took that and added his own to that and worked with the panning and the surrounds. It was a nice collaboration."

However, Fleischman notes that toward the end of the final mix, this sequence was reworked yet again and simplified to make it more straightforward and accessible; a case of making do with less rather than more.

TIME TO MAKE IT RIGHT

Although *Gangs of New York* was originally scheduled to be released this time last year, by the fall of 2001, it was clear that the film was still a long way from completion, and the sound post-production was all but shut down from October 2001 until February 2002, while some inserts were shot and Scorsese and Schoonmaker re-thought the structure of the film. To Stockton, getting the time off and not having to rush the release was a blessing, though most of the material they had cut by October ended up being used.

"They ended up having to redo the first four reels," Stockton explains. "There are a few different scenes, and they recut

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some of the battle scenes, moving things in different order, cutting things way down. We're talking about going from the rough cut to the fine cut. There are rumors out there about how Marty had this three-hour film and [Miramax boss] Harvey Weinstein saw it and said, 'No, you have to cut this.' That didn't happen. The three-hour version was the rough cut; nobody expected that to be the film."

Having the additional time resulted in some changes to the soundtrack, however. Although some of the cues Bernstein wrote for the film did make it into the final version, Howard Shore was brought onboard to write additional original music—laying in that score, recorded in England in October 2002, was the last major hurdle for Fleischman. (Before that, Fleischman was mixing using synth sketches of Shore's orchestrations.) And the search for interesting source music continued all of the way through the summer of 2002. Robbie Robertson, who has worked with Scorsese on a few films, helped dig up some old blues and Irish music to drop in here and there, while U2 contributed an original song for the end credits: "The Hands That Built America." Of course, there was also considerable re-balancing and tweaking of effects up until the last minute, too.

"Marty likes a full track, but he really wants to hear the dialog," says Fleischman. "He will sacrifice just about anything to hear the dialog, and we struggle with that. We want to get in all of the music and effects and this and that, but if he's not hearing the words, he'll let us know we have to take stuff out until it's clear."

"You know Marty," Stockton adds with a chuckle. "He wants to hear everything, and he's certainly not afraid to put a lot in there. Most directors don't have his sensibilities when it comes to sound. There'll be voice-over with gunshots underneath and 10 more things and he wants to hear all of them, and we just work on it until we get the balance right. He says, 'You're going to think I'm crazy, but can't we get more music and still hear the dialog?' And we say, 'Well, I don't know, Marty.' But then we do it, and it always sounds great. And it's been like that on every film I've ever worked on with Marty and Thelma. Their soundtracks are always very, very interesting, and it has to do with their own taste and what they ask for." ∎

Blair Jackson is Mix's senior editor.
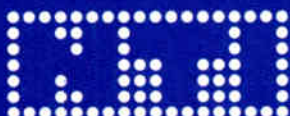
MUSIC & SOUND EFFECTS LIBRARIES

What a difference a decade makes. Ten years ago, the world of production music libraries was populated by a few major, general-interest collections that found a home on the shelf of every commercial post house in the country. The tracks were used in spots of all lengths, stingers, promos, trailers…every place that needed a quick hit. Esoteric, special-interest libraries existed, but not in mass-market form.

Then in the late '80s/early '90s came a flood of libraries, many of them catering to specific areas in the market. Production values increased, competition became intense and custom scoring became a value-added proposition. The inevitable shakeout came, and the top of the market was still occupied by the top players. Around 1997-98, the Internet brought the promise of online delivery in this brave new world of targeted music and production.

"Everybody was very excited about this great new revolution in technology," says Ron Mendelsohn, co-owner/CEO of Megatrax, founded in 1990 specifically to target the on-air promo market. "It's been a much quieter revolution than anticipated, but it's been a revolution nonetheless." Again, a number of libraries flooded the market, buoyed by the notion that the cost of entry was lower in cyberspace. But as they soon found out, the ability to deliver tangible, physical product still served as a solid business model.

So again, the shakeout came, and the major players remained the major players. Some were bought up by major conglomerates; others remained independent. Many new libraries have proven successful, and with even more options today than in the heyday of the early '90s. However, there's a reason the libraries presented in "Music & Sound Effects Libraries: Best of 2002" have withstood the ravages of time and competition: These companies have continually adapted to new music trends and increased production values while intently focusing on client service. With that in mind, we present this advertorial supplement and hope you find it useful.

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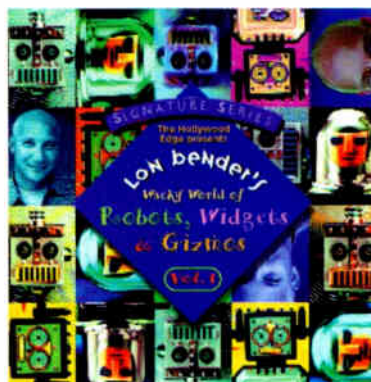
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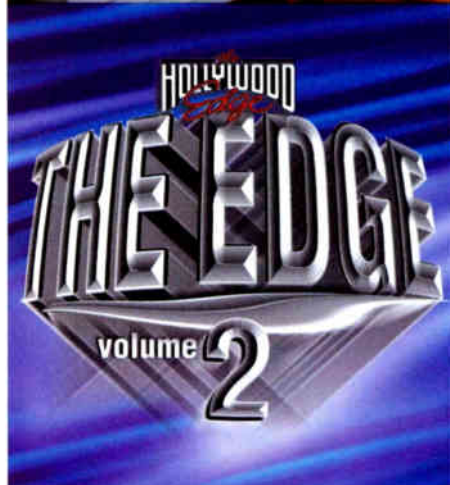
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Killer Tracks (www.killertracks.com) continues to set the standard for quality and excellence in production music, with 15 libraries and over 900 CDs. From full orchestral movements to musical cues and sound effects, Killer Tracks' music is used by many of the most prominent names in the TV/film, advertising, post-production, consumer goods and services-provider industries. Killer Tracks' client base includes the likes of media conglomerates such as Fox, Warner Brothers and ESPN, as well as many other major clients around the world. Killer Tracks' comprehensive collection has been featured in well-known productions such as *Saturday Night Live, American Idol* and *My Big Fat Greek Wedding*, to name a few.

Since its inception, Killer Tracks has consistently provided products and services that are ahead of the technology curve, offering its clients the most advanced and convenient ways to experience unmatched music quality and service. With BMG MusicSearch (www.bmgmusicsearch .com), registered clients can search or browse all of the dynamic Killer Tracks libraries, as well as audition, license and download their ideal tracks online. BMG MusicSearch ensures quality, ease of use, speed and reliability, while making available features like online track searching, audio licensing requests and more.

Also pushing the technological envelope is Killer Sonifier (www.killer sonifier.com), the company's recently released breakthrough that takes the traditionally complex process of incorporating sound into a Website and makes it simple through an intuitive drag-and-drop interface. Killer Sonifier allows users to browse and collect sound files from a world-class library of bandwidth-optimized vocal cues, music, audio logos, sound effects, ambient environments and user-interface sounds. After dropping them onto their Website or other digital document, users can instantly preview and/ or publish their audio-enabled pages. Killer Sonifier does not require any knowledge of complex Website design or programming, and therefore eliminates the need to hire a programmer. Killer Sonifier allows anyone to enhance their online advertising and branding efforts, and provide a more dynamic experience for Website visitors. Audio-enabled sites may assist potential customers, increase page views, boost sales and enhance presentations, among other benefits. Another technological innovation offered by Killer Tracks is the Ultimate FX Surround Sound Library, available for both Windows and Mac OS. Ultimate FX is a multimedia DVD that features an exclusive collection of premier-quality sound effects. All sounds are original works, recorded in the field using six microphones for true 5.1 recording and mastered using multiple files and tracks. This process creates such a rich and textured effect that our stereo versions of these surround sounds are deeper and more resonating than any standard stereo effects library.

With products such as Ultimate FX and Killer Sonifier, Killer Tracks bolsters its position in the production music/sound effects market. Add an impressive world-class collection of CDs from both domestic and international libraries, and Killer Tracks stands out as an ideal solution for all audio-production needs. ∎

Megatrax Music: Film/TV, Broadcast and A/V

As a result of their success across an enormous array of media clientele, Megatrax Music founders Ron Mendelsohn and J.C. Dwyer report that the company has expanded with the addition of Ben Trust as general manager, and has streamlined itself into three primary divisions: Megatrax for Film & TV, Megatrax for Broadcast and Megatrax for A/V.

Megatrax for Film & TV, with Andrew D. Robbins at its helm, specializes in providing original music, from pre-production through post, for

the major motion picture and television studios, as well as independent TV and film-production companies. The division licenses existing Megatrax catalog music and offers original custom scoring from a broad array of

professional composers with top film/TV credits. A one-stop shop for its clients' needs, the Film & TV unit can provide everything from temp music cues and music for playback to replacing cues in post, whether for creative or financial reasons. State-of-the-art, in-house live and electronic recording studios, equipped with Pro Tools|HD and outfitted for 5.1 surround sound, allow the Film & TV division to quickly turn around virtually any scoring project, from a :30 spot to a full-length feature film.

Aaron Davis is head of Megatrax for Broadcast, a division that works primarily with TV/radio stations and cable networks. The Megatrax library is ideally suited for broadcast applications in terms of both style and format; 20 new update discs are released annually (including the recent *Atomic Lounge*, *Hyperactive* and *Nu Metal*), and most titles are available in :60 and :30 lengths. The Broadcast division operates under a simple philosophy: base annual blanket prices on the frequency and media of synchronization, not on the number of discs provided. A TV or radio promo producer's creative control stems from an abundance of quality choices, and broadcast clients are able to enjoy unlimited access to the entire Megatrax library.

Megatrax for A/V is the newest unit of the Megatrax family, under the direction of Caitlin Hill. This new division provides access to the entire Megatrax collection (under annual license agreements and on a needle-drop basis) to a wide array of clients, including ad agencies, ad producers, network promo producers, consultants, corporations, government agencies, independent promo producers, infomercial and multimedia producers, not-for-profit organizations, online/interactive companies, religious organizations, schools and other entities. In view of this wide spectrum of companies, the philosophy of the A/V group is

to cater to the individual needs of each client, realizing that not every company has the music budget of a major studio, and that different markets require different pricing structures.

Megatrax strives to build successful working partnerships with each and every one of its clients, priding itself on its ability to produce and supply top-quality music, whether original or library, that will enhance each client's production. Megatrax's experienced team delivers personalized and highly professional customer service coupled with access to one of the finest and most comprehensive production music catalogs in the world. ∎

Megatrax Music
7629 N. Fulton Ave.
North Hollywood, CA 91605
818/503-5240
www.megatrax.com

Sound Ideas: The One-Stop FX Shop

Since 1978, Sound Ideas has devoted itself to producing unique and authentic professional sound effects of every description and variation. Sound Ideas established itself as an audio industry leader with the release of the Series 1000 General Sound Effects Library on compact disc in 1985—breaking ground with the first commercially available sound effects library on CD. In April 1987, Sound Ideas released the first digitally recorded sound effects library—the Series 2000 General Sound Effects Library.

reputation for excellent customer communication and service.

The Sound Ideas product line now includes more than 100 collections, used by recording studios, radio stations, television and cable networks, post-production houses, corporations, Web designers and game developers all over the world. At the Audio Engineering Society Convention in October 2002, Sound Ideas added seven new products to its ever-expanding lineup:

Just Boom Trax: A sweetener for

faces, many different impact styles and tons of debris. 698 smashing effects on one CD.

Just Birds and Animals II: Featuring more animals, birds and natural settings from around the world. 346 SFX from our audio ark on two CDs.

Series 8000 Sci Fi Warp 3: Explore the sounds of new lifeforms, intergalactic transmissions, drones and deep space ambiences. 420 out-of-this-world SFX on three CDs.

Just Noise: A unique collection of vintage media noise, static, buzz and hum. 140 vintage noise effects on two CDs.

Imaging Accents: A complete orchestra section of musical flourishes, trills, glisses and fanfares, also including 30 different percussion instruments. A generous 600 elements on two CDs.

XV MP3: A gallery of Sound Ideas' very best sound effects drawn from many of its most popular libraries presented in media-friendly MP3 file format. 3,117 general effects on two CD-ROMs.

From humble beginnings, Sound Ideas has grown into the one-stop shop for sound effects and music. Congratulations on the first 25 years, Sound Ideas—the leading publisher of professional sound effects on the planet. ■

Sound Ideas' commitment to quality is absolute, and its state-of-the-art recording studio in Toronto is one of the few recording facilities in the world dedicated to the recording, mixing and mastering of sound effects. Sound Ideas' professional production consultants provide unique insight and assistance to their clients, and the constant development and upgrading of the Sound Ideas Website (www.sound-ideas.com) helps them maintain the

use in the subwoofer channel in surround sound productions, Just Boom Trax rumbles with more than 250 tracks of real-life, fantasy and utility sound effects, all at low-frequencies that allow the audience to feel the sound. 257 low-frequency effects for 5.1 productions on two CDs and two DVD-ROMs.

Impact Effects 2: Spectacular impacts of every description, including a wide variety of objects and sur-

BY OLIVER MASCIAROTTE

Hey, Santa, Is the Beard Real?

What About SACD, CD-DA, CD-R, CD-RW, DVD-V, DVD-R…?

W ell, another year draws to a close. We've looked at interesting technologies and summoned enough pluck to discuss some pretty hairy subjects. This month, we're going to slow down and check out a few toys, er, products, that, if you're good, just may show up in your holiday stocking.

First, let's look at optical disc players and the format war that resulted from what many see as too many formats and not enough consumers. I'm going to weigh in here and say, "SACD? DVD-A? Who cares?!" I'll admit that surround is the killer app, at least in home theater and popular music. And, despite the trickling rollout, there are more and better choices for disc fulfillment this holiday season than before.

From HTIBs (Home Theater-In-a-Box) with stealth multichannel SACD playback to blessedly affordable audiophile systems, the consumer electronics folks have all of the bases covered. If you're looking for the highest-fidelity reproduction of a surround aural experience, then go the SACD route. With Sony's Dream Systems priced around $500 to $700, there's no excuse not to pick one up. If better quality and more capabilities are attractive to you, then Eindhoven has your number: Philips' LX8000SA includes, as does Sony's, multichannel SACD playback hiding among its other HTIB attributes. For more discerning palates, Philips' DVD962SA is a stand-alone multichannel player with SACD, CD-DA, CD-R, CD-RW, DVD-V, DVD-R, DVD-RW, VCD and SVCD capabilities. It's easy to use and makes even dusty old CDs sound sweet because all PCM is upsampled to 192 kHz. Remember, only SACD can provide multichannel audio playback with the highest subjective fidelity and no stinking TV to distract your enjoyment of a pure musical moment. As an audio professional, it's also comforting to know that you don't have to spend an unreasonable amount of time and money to create a really great SACD title.

Now, if you're looking for something that combines a potential authoring headache with all of the sights and sounds of a multimedia extravaganza, then DVD-A will keep even the most comatose couch potato amused. Only DVD-A combines quality multichannel audio with video if you just want to sit and be entertained rather than think. Onkyo's DVD-Audio players are priced for every budget, down to its entry-level DV-SP300 at a suggested retail price of just $200. The step-up DV-SP500 and DV-CP500 five-disc DVD changer go for $300. All three, like Philips' DVD962SA

ILLUSTRATION MAE LAROBIS

mentioned previously, upsample to 192 kHz so the obligatory filtering exhibits better transient and phase response. Unfortunately, DVD-Audio can't do multichannel 192k, so the King of Quality Subjective Listening award still goes to SACD.

For old-fashioned stereo, both SACD and DVD-A provide first-rate playback. But if you're a producer and want to put off the decision until later, then pick one of the new "universal" players that can handle whatever disc you throw at 'em. For the past few years, you could choose either Apex's SACD/DVD-A combination player, a product so bad that it wasn't worth the plastic it was made from, or really great but way too expensive examples from Pioneer and Accuphase. Finally, vendors broke the price barrier with combination players, providing you with both SACD and DVD-Audio playback in affordable packages.

Continuing in its leadership role, Pioneer de-

Put your whole sound in the sweet spot.
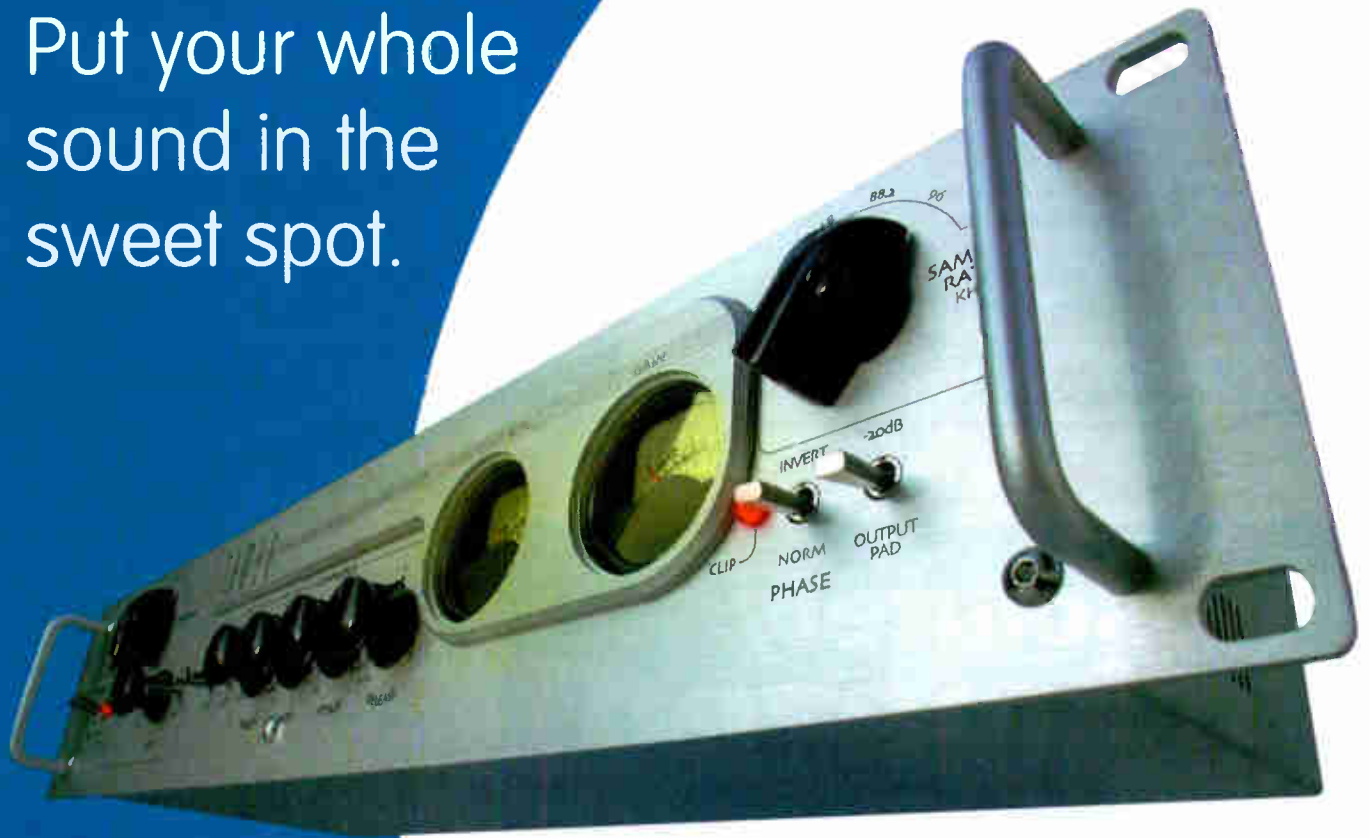
TAMPA-The Professional Mic Preamplifier and Compressor with Temporal Harmonic Alignment™

TAMPA is a professional microphone/instrument preamp unlike any other. That's because our design team set out to discover just why expensive tube technology sounds so good, and devise a way to land that sound at affordable solid state prices. The result is far beyond tube modeling. It's a whole new technology called Temporal Harmonic Alignment™. TAMPA even comes with direct digital output and world-class dual optical servo compressor built-in.

Unlike most solid state electronics, tube-based devices strike the ear as having such a "warm" sound because the added mid-range harmonics have the same temporal relationship as natural mechanisms like strings, drumheads and vocal chords. This results in a sweet spot that makes vocals, guitars and other midrange-rich content sound especially pleasing. TAMPA's revolutionary new Temporal Harmonic Alignment technology produces that same phase relationship found in both tubes and nature. And unlike tubes, TAMPA's sweet spot spans the full spectrum of your sound from bass to cymbal.

>> Class A circuitry throughout

>> Built-in dual optical servo compressor/limiter

>> Variable impedance optimizes vintage mic performance

>> Available 66dB system gain

>> S/PDIF and AES/EBU output to digital recording gear

M-AUDIO
Redefining the Studio™

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buted the DV-47Ai, a $1,200 combination player with iLink out to its upcoming VSX-49TXi preamp/processor with iLink inputs. Okay, $1,200 isn't affordable for many of us worker bees, so how about the $700 DV-45A with scaled-down video performance and no iLink? But wait, there's more! Both Marantz and Onkyo have heard the siren song of interoperability (had to get the "i" word in at least once). Marantz has the DV8300 that, at $1,500, won't be on my shopping list any time soon. Another audio-/videophile-grade product, the DV8300 includes multichan-

nel DVD-Audio, DVD-Video, SACD playback, and MP3, CD, CD-R, CD-RW and Video CD. Not to be left out, Onkyo announced its DV-SP800 reference universal DVD/SACD player at a suggested retail of $1,000, and its high-end Integra division introduced the $1,200 DPS-8.3. Sweetness.

And now for something completely different, I give you the Vestax VRX-2000.

Vestax VRX-2000

Actually, I'm not sure this product even exists; it might be an urban legend in the making. I assume it *can* be purchased for whatever undisclosed sum but cannot confirm that, because its marketing contact, along with Elvis, appears to have left the building. The VRX-2000 is a mastering lathe for the desktop crowd. Lacking only a vacuum system and active cooling, it claims to be able to cut a 14-minute song on special vinyl blanks. The perfect gift for the DJ who has everything.

On to computer toys. Let's start with the simplest of controllers, Griffin's little dude, the PowerMate. Small, metallic and always affordable, the PowerMate is the adult's minimum daily requirement now set by the U.S. government for USB controllers. Joining the PowerMate and me in the "Tiny Is Good" category is JLCooper's new CD-sized MiniDesk. After leaving one of its full-sized controllers in the dryer too long, the company found that it shrank to a convenient size for traveling engineers. The result was the CS-32, a miniature USB/MIDI control, surface for the most commonly used functions in audio software. It sports 32 dedicated channel strips with 20mm faders, six rotary encoders and transport controls with a nice jog wheel. Another compact item of great utility is IOGEAR's MiniView III USB two-port KVM switch. With onscreen display and built-in cross-platform emulation, it makes CPU sharing with a single keyboard, monitor and mouse easier than most KVM alternatives.

What else? Apple's iPod—sheesh, what's not to like? The price point seems high, but check out the competition, and you'll see why it's a peerless product. The 20-gig version holds enough high-quality audio to make anyone happy, while simultaneously acting as a boot volume and PIM, not to mention as a backup for those session files and all of the other crap one

tends to accumulate while out and about. The ability to carry PCM files of mixes in progress is great for a reality check. Now, if someone would make an Optimod emulation plug-in for iTunes and the iPod, life would be complete.

Since big iPods arrived, only my Handspring is singing the blues. Just when you thought your goofy PIM would forever gather dust, Philips has given it a new lease on life. That company's Pronto-Lite for Palm is a simplified version of Pronto software that turns a color Palm OS PDA into a really decent-learning universal A/V remote. With ProntoLite, you can teach your PDA to send infrared signals to control up to 10 A/V devices. Not bad for $19.95. Download it for free at www.pronto.philips.com.

I know my studio/office could use a little snazzing up, and I'm sure a nice Xserve would make my day. Trouble is, it's noisier than all get out. So, both AcoustiLock and XtremeMac have come to the rescue with iso booths for your rackmount gear. AcoustiLock's Silent Server is a stealth black box either 4U or 7U high and features a home-grown, heat-pipe-cooling technology. It has a huge flat top, perfect as a coffee table for your clients or as a landing pad for the RC helicopter under the tree. The XtremeMac crew has chosen to go with a more metallic look with the Xrack iso product, keeping with the Xserve's brushed-metal face. With a slew of options and plenty of space, both products work equally well to house your host computer or fan-ladened outboard gear.

This year saw the passing of audio pioneer Henry Kloss, though his legacy lives on in may ways, including in Tivoli Audio's Henry Kloss Model Two AM/FM radio. Forget the cheesy computer speakers from Fry's and lose the overpriced deck from Bose: This puppy will more than do justice to that less-than-awe-inspiring sound card you have—all with the look of real wood.

Though you claim you've been good this year, only Santa knows for sure. So, you may find yourself as the proud new owner of a nice lump of bituminous fossil fuel, in which case, whip out the credit card, log in or head on over to your favorite CE retailer and do your part to help the U.S. spend its way out of this slump! ∎

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Tools of the Trade

BEHRINGER UB SERIES MIXERS

Behringer's (www.behringer.com) UB Series of utility mixing consoles feature "invisible" mic preamps (IMPs), low-noise circuitry, Alps pots and low-tolerance components. The IMPs provide 130dB dynamic range, 60dB gain range and +30dBu line-input capacity. The FX PRO models in the line have onboard, 24-bit digital Virtualizer© technology with 99 stereo effects. Internal auto-range, switch-mode power supplies automatically adjust to voltages from 80 to 240 VAC.

TC WORKS NATIVE BUNDLE 3.0

Native Bundle 3.0 is TC Works' (www.tcworks.de) latest collection of processing tools for VST and MAS, including the
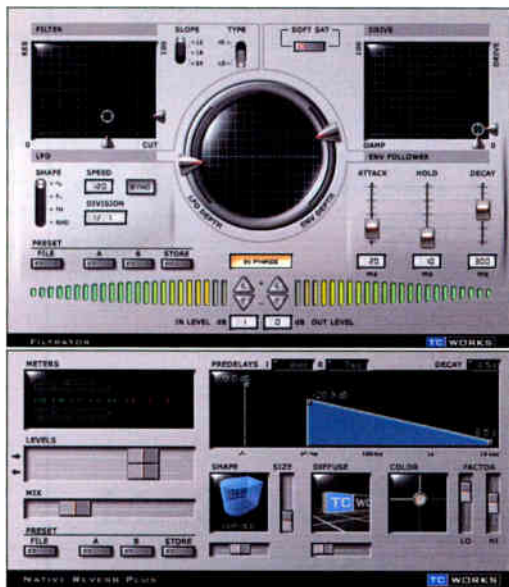
Compressor, DeEsser, Graphic EQ, Parametric EQ, Limiter, Single-Band Limiter/Maximizer and SideChainer, plus two new plug-ins (shown): The Native Reverb Plus is a new version of the original Native Reverb with an enhanced algorithm, a new user interface, and additional parameters and presets. The Filtrator plug-in's envelope follower allows classic filter effects, with the filter modulated by the incoming audio signal's amplitude. LFO modulation can sync to MIDI clock for modulated filter sweeping. Selectable 12/18/24dB slopes, low/highpass filters, a separate Drive section for filter distortion and a saturation algorithm are also standard. Native Bundle 3.0 supports Mac OS X, Mac OS Classic and Windows. Retail is $499; existing Native Bundle users can upgrade for $39.

GRACE DESIGN LUNATEC V3

The Grace Design (www.gracedesign.com) Lunatec V3 is a 2-channel mic preamp/converter for field-recording applications. The rugged chassis houses two transformerless preamps, a 24-bit, 192kHz stereo ADC and new analog noise shaping for dithering to 16/20 bits. Channels have precision 11-position gain switches and a continuously variable rotary-trim pot. Other features include phantom power, a 4-frequency highpass filter with selectable slope for each input and MS-decoding matrix. Analog inputs are XLR, analog outs are XLR, and digital outs are AES/EBU and S/PDIF.

Single and dual-wire AES modes are supported for 192kHz operation, and users can bypass the converter for analog operation. Metering is via 8-segment LED meters; a dedicated LED shows battery status. The V3 can be powered via an optional 6VDC battery pack or external AC adapter. Price: $1,695.

BENCHMARK DAC1 ADC

Benchmark Media Systems (www.benchmarkmedia.com) offers the DAC1, an affordable, 24-bit, 96kHz stereo digital/analog audio converter. Featuring selectable AES and S/PDIF inputs and simultaneously available balanced XLR and unbalanced RCA outputs, the DAC1 handles conversion through 96 kHz, and can play back 192kHz material with a 48kHz bandwidth. HPA-2 headphone amplifier technology allows for distortion levels of 0.0003% under load. The DAC1's performance specs include a THD+N figure of -106 dB (0.0005%) measured at 0 dBFS, at any playback frequency, at any sample rate, with any degree of input jitter. Output levels can be preset precisely over a +10 to +29dBu gain range, and built-in 115/230VAC power is standard. Price is $795; a rack kit is optional.

SOUNDELUX IFET7 MICROPHONE

The dual-identity Soundelux ifet7 (distributed by Transamerica Audio Group; www.transaudiogroup.com) is a phantom-powered FET condenser mic that combines a quality German-made capsule with two sets of completely different-

sounding internal electronics. True to vintage mic tradition, the ifet7 is fully transformer-coupled but offers several improvements such as a large core transformer that dramatically improves LF headroom. A Vocal/Instrument switch selects either "I mode," which incorporates the standard features of the vintage 47fet, or "V mode," which captures the vintage 87fet's sound and features. Both modes offer clear high- and low-frequency performance. Price is $2,100 with wood storage box; shockmount is optional.

MB QUART PRO HEADPHONES

The QP 805HS Pro Headphones from MB Quart (www.mbquart.com) have a rugged design for use in the harshest environment. These closed, dynamic, circumaural phones feature an unbreakable steel bow and foam-filled cushioning for long wear, and a frequency response of 10 to 33.4k Hz. Output is greater than 98dB SPL, and continuous power rating is 100 mW (DIN 45582). Provided with a 10-foot cable terminating in a gold-plated, ¼-inch stereo connector, the QP 805HS Pro Headphones list for $149.

FRONTIER OPTICAL PATCHBAY

Apache, from Frontier Design Group (www.frontierdesign.com), is a digital patchbay with 12 optical inputs and 12 optical outputs (96 channels of 24-bit audio). Featuring a precision PLL for each optical input, the single-rackspace Apache reclocks all incoming ADAT signals for trouble-free patching at all resolutions. Featuring easy-access routing controls, Apache can store and recall 12 complete routing setups and allows for an unlimited number of presets. Optical ports accept either ADAT or TosLink format signals, and all control/routing parame-

ters are controllable from a computer via MIDI Sys-Ex commands. A Scanning Status mode provides continuous information about all current patches, while an Activity Status mode provides detailed information about specific patches. MIDI ports can connect multiple Apaches to expand the patchbay beyond 12 I/Os. Price: $649.

MOTU 24I/O

Mark of the Unicorn's (www.motu.com) 24i/o is a single-rackspace interface for Mac and Windows that provides 24 balanced ¼-inch (TRS), 96kHz analog inputs and outputs. A 24i/o core system ($1,495) includes MOTU's PCI-424 card, which provides expansion up to 96 inputs/outputs, DSP-driven mixing and monitoring via its CueMix DSP matrix, plus legacy I/O support and onboard SMPTE sync. The 24i/o rack interface—also sold separately as a $1,195 expansion I/O for any MOTU PCI-424 system, such as MOTU's new 2408mk3 or HD192—provides 5-segment front panel I/O metering and software-switchable -10/+4 analog input levels.

HHB CDR830 BURNIT PLUS

HHB (www.hhbusa.com) introduces the CDR830 BurnIT Plus CD recorder, an enhanced version of its CDR830 BurnIT CD-R. The rackmount CDR830 BurnIT Plus features balanced XLR analog inputs/outputs with line/mic-input gain switching, balanced XLR digital I/Os, wordclock input, parallel remote input,

plus 24-bit A/D converters, 24-bit multilevel Delta Sigma D/A converters and a CD-Text facility to store/display disc, artist and track names. SCMS-free digital operation, onboard sample rate converter and a digital record gain control have been added.

BRAUNER PHANTOM C

Brauner Microphones (distributed in the U.S. by Transamerica Audio Group; www.transaudiogroup.com) introduces the Phantom C microphone, the company's first non-tube (FET), large-diaphragm mic. Designed for vocal and voice-over applications, the cardioid Phantom C is a phantom powered FET mic specially tuned for vocal applications. Specifications include 8dBa self-noise,

28mV/Pa sensitivity and 142dB max SPL at 0.5% THD. Supplied with case and shockmount, the Brauner Phantom C is priced at $1,380.

COLEMAN TALKBACK MONITOR

The TB4 DAW Talkback Monitor from Coleman Audio (www.colemanaudio .com) is a one-rackspace unit providing a talkback facility to the cue mix, plus a Dim function for control room monitors. The talkback section features a remote mic with a 12-foot cord. The TB4 has four balanced stereo inputs and two balanced alternate speaker outs on XLRs. All signal paths are completely passive, and level control is provided by a stepped attenuator accurate to 0.05 dB. A headphone output can be switched between control room monitor and cue mix signals. A separate stereo cue mix input and output with its own level control is available on TRS ¼-inch jacks. Price: $1,150.

SPL NUGGET MIC

Sound Performance Labs (www.spl-usa .com) announces Nugget, a studio condenser mic built to company specs by Audio-Technica and based on A-T's popular 40 Series. The mic features a 1-inch diameter cardioid capsule, fully transformerless circuitry, high-SPL capacity, switchable 50Hz low-cut filter, 10dB pad and a distinctive gold finish. Nugget ships this month; retail is $428, including shockmount.

LEXICON 960L UPDATE

Lexicon (www.lexicon.com) offers a LOGIC7® UpMix Option for its flagship 960L multichannel processor.

Based on the popular LOGIC7 technology used in Lexicon's high-end consumer gear, the upgrade generates 5-channel surround information from stereo inputs and yields a wide front image and full distinct Ls/Rs surround envelopment. Users have full real-time control of program elements, roll-off and surround delay, and the algorithm can be altered to suit stereo-source variations.

OTARI DB-10 DIGITAL CONSOLE

The Otari (www.otari.com) DB-10 is a digital on-air console with 10 faders that handle mic, line or stereo AES/EBU or S/PDIF pairs. Fail-safe operation, snapshot recall, onboard 3-band EQs and compressors on each channel, mix-minus buses and an affordable $8,500 retail round out the package.

SONIC SOLUTIONS DVD PRODUCER 3.5

Sonic Solutions' (www. sonic.com) DVD Producer Version 3.5 is its latest pro DVD-authoring system. Version 3.5 features real-time MPEG compression of video and Dolby Digital audio, OpenDVD-compliant authoring, enhanced file-transcoding functions, speed enhancements, a manual-button routing creation of complex DVD menus, and Sonic's JumpAnywhere automatic DVD navigation programming—a new DVD design engine with drag-and-drop operation. DVD Producer is available integrated with Sonic's SD-Series of hardware video-encoding solutions or as a software-only version, and supports a wide range of DVD-R devices.

SONY DMX-R100 EXPANSION

The SIU-100 system expansion interface for Sony's (www.sonyproaudio .com) DMX-R100 digital console features a 160x160-channel audio-routing matrix and format-converter function (analog, AES3, TDIF, S/PDIF, ADAT, MADI), plus eight slots to accommodate all DMX-R100 option boards. In addition to front panel operation, the unit offers PC/Mac control via Ethernet and 100-snapshot memory/recall.

BRAINSTORM MULTI-MACHINE REMOTE

"The Remote" SR-8000 from Brainstorm Electronics (distributed by plus24; www. plus24.net) is a multi-machine remote that controls up to eight machines via serial and MMC commands. The unit communicates with various synchronizer modules, DAWs and hard disk recorders connected to a breakout box by a single cable. Features include 100 memory registers (each with In and Out points), track-arming, 24-track status display, 10 user-defined "F" keys, and programmable offset, auto punch,

The source
for those who
kind of,
sort of,
maybe,
know exactly
what they want.

Audio professionals come to us because we often suggest alternatives that are more cost effective than the original idea. That's because we're committed to making sure you get exactly the right audio gear for your studio. Professional Audio Design has over a hundred lines of new, used and vintage equipment in stock. All serviced by our own staff and fully warranted. Put our ten years of industry experience to work for you. Call us. You'll get all that you want, and everything you need.

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World Radio History

loop (repeat), rehearse and ADR beeps. Also standard are illuminated transport keys, a precision jog/shuttle wheel, full-sized numeric keypad, large 80-character LCD and 8-digit timecode reader.

UA DIGITAL CONVERTER

Universal Audio's (www.uaaudio.com) 2192 Dual DA/AD Converter is a single-rackspace, 192kHz device that provides simple front panel controls, yet offers deep flexibility in signal routing and monitoring. For example, the unit accepts analog inputs at sample rates from 44.1k to 192k Hz, and can simultaneously output to AES/EBU (single- or dual-wire modes), S/PDIF and ADAT—with industry-standard S-MUX interleaving for sample rates above 48 kHz. The output monitor is selectable among any of the digital inputs or the analog input, without interruption to the transcoding.

DIGITAL MUSIC SYSTEMS DIGISAM

Digital Music Systems' (www.network promktg.com DigitalMusicSystems.htm) DigiSAM storage, editing and playback system combines a 1U Windows NT computer and a flat-panel touchscreen to record from balanced TRS or S/PDIF ins, or rip CDs from its 24x drive, tweak files and automate playlists. The standard version stores up to 130 hours of 44.1k stereo and can be expanded to 100,000 minutes.

SANKEN BOUNDARY MIC

The miniature CUB-01 cardioid boundary mic from Sanken (distributed by Plus24; www.plus24.net) overcomes the limitations of previous boundary mic designs, producing a rich, full-bodied sound. Thanks to its cardioid directional characteristics, narration and dialog are clearly recorded while unnecessary background noise is eliminated. The CUB-01's small size allows for discreet placement in film work using double-sided tape.

UPGRADES AND UPDATES

Elemental Audio Systems offers Firium (shown), a linear-phase paragraphic EQ plug-in crossed with a freehand drawing program, and Eqium, a software equalizer that creates bands and filters on-the-fly; the number of filters and bands available is limited only by host resources. Visit www.elementalaudio .com for demos, platform compatibility and pricing...The dbx DriveRack 260 (www.dbxpro.com) has all of the features of the Drive Rack PA plus more flexibility and a range of remote-control zone accessories for installers... Whirlwind's Multi-Snake (www.whirl windusa.com) is an 8-channel snake with four channels of Director DI's built right into the box. Perfect for acoustic front lines, keyboard setups and DJ positions...New from Rane (www.rane .com), the Empath DJ Mixer was designed with Grandmaster Flash and in-corporates extensive innovative features for playback mix flexibility and creativity....Syntaur Productions (www.syntaur.com) released Sample Set 29, Vintage Organs, and Sample Set 30, Mellotron, for Ensoniq ASR and EPS samplers. Each is a four-disc set selling for $29.95...Discrete Drums' Series Two: Integrated Drums and Percussion drum library features 16-track recordings of drums with matching multitrack percussion loops in varying styles. Listing at $549, the 18-CD Pro Set includes 11 CD-ROMS of 24-bit multitrack .WAV files, four CD-ROMS of 16-bit stereo .WAV (fully Acidized) mixes, two audio CDs for auditioning and a CD-ROM of 24-bit .WAV samples of drums and percussion elements. Visit www.discretedrums.com... A Designs enhances its MP-2 stereo tube mic preamp with a direct input that enables the unit to function as a DI box. A Designs offers the upgrade to existing MP-2 customers for $75, plus shipping. Visit www.adesignsaudio .com...Texas Instruments (www.ti.com) offers the DSD1608 8-channel enhanced multiformat delta-sigma audio D/A Converter (DAC). The DSD1608 supports both PCM audio data format and DSD audio data formats. The device also supports the TDMCA interface. Features include a 108dB dynamic range, an 8x digital interpolation filter and dedicated digital DSD filter optimized for SACD sampling rates of 192 kHz (PCM mode) and 64x 44.1 kHz (DSD mode)...To celebrate its tenth anniversary, DPA Microphones offers a special Anniversary Edition of the DPA 4006, the 4006-AE. Presented in an anodized-black aluminum case with table stand, the 4006-AE features a gold capsule. Visit www.dpa microphones.com/eng_pub/press/538 .html...Trillium Lane Labs (www.tllabs .com) offers the free TL Fauxlder plug-in, which helps users organize their Pro Tools plug-in menu...Symetrix has released SymNet Designer Version 2.0, the third software upgrade to the SymNet modular audio routing and digital signal processing system. For more information, visit www.symetrixaudio.com...Bit-Headz (www.bitheadz.com) offers Unity Topaz Studio Kits ($149), with more than 300 MB of multisampled drums by Zach Danziger, and Ultimate Acoustics ($149), with 450 MB of acoustic guitar and bass samples, for Unity 3.0. ∎

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UNIVERSAL AUDIO

Yamaha 02R96

Expanding the Line Once Again

Nearly seven years ago, the Yamaha 02R revolutionized the recording industry by bringing affordable digital mixing to small commercial and project studios. Shortly thereafter, the seminal 02R was given a significant software upgrade and dubbed the 02RV2 ("V2" for Version 2). That upgrade pales in comparison to the advances made with the release of the new 02R96 Digital Mixing Console ($9,999 base price). In fact, the 02R96 shares more features and functionality with its upscale sibling, the Yamaha DM2000 Digital Production Console ($18,300 base price), than it does with the 02RV2. Yamaha might just as well have called the 02R96 "Baby DM2000."

Imagine an 02RV2 blessed with expanded and improved analog I/O, vastly improved routing capabilities and a scaled-down version of the DM2000's control surface, and you've got a good idea of what the 02R96 is all about. The 24-bit, 96kHz-capable 02R96 boasts 56 full-function input channels, eight buses, eight aux sends, digital inserts on all input and output channels, four internal effects processors, true surround sound-production capabilities, a remote machine-control section and a remote-fader layer for external control of DAWs (including presets for Pro Tools and Nuendo). And that's just the beginning.

SIZE DOES MATTER

Measuring 9.4x27.4x26.3 (WxDxH) inches and weighing 75 pounds, the 02R96 is slightly larger and heavier than the 02RV2. Nevertheless, the 02R96 fits in my Omnirax MixStation/02R workstation furniture with a couple of caveats: The console's work surface sits roughly an inch higher than the MixStation/02R's flanking vertical sidecar panels. Also, the mixer's optional MB02R96 meter bridge ($1,099) squeezes under the MixStation/02R's monitor shelf with less than ⅙-inch clearance, greatly restricting visibility of the meter bridge under the overhanging shelf. (More on the MB02R96 shortly.) Fortunately, you can safely move the MixStation/02R's monitor shelf and its rear support higher to accom-

modate the MB02R96, and Omnirax (www.omnirax.com) will send you cover caps for the old shelf-attachment points for free. For those of you who will be placing the 02R96 on a tabletop, Yamaha offers the optional SP02R96 wooden side panels ($299) for decorative purposes.

EXPANDED ANALOG I/O

As mentioned earlier, the 02R96's rear panel analog I/O options have been expanded and improved over those of the 02RV2. You still get 24 A/D channel inputs with the 02R96 (+4dBu nominal level), but each of the first 16 A/D input channels are now served by a balanced XLR connector, balanced phone jack, TRS insert I/O jack (positioned pre-A/D) and independent phantom power switch. (The phantom switches are located on the mixer's control surface and serve XLR inputs only.) The detented gain pots that serve these first 16 A/D input channels can handle either mic or line-levels. Plugging into a balanced phone jack defeats the corresponding XLR connection, which precludes simultaneous mic and line input tieline connections.

Other amenities for each of the first 16 A/D input channels include signal-present and peak LEDs, a switchable 26dB pad and an insert on/off switch. When the insert switch is turned off, the pre-A/D insert return path is killed, although the send remains active. This provides a convenient method to, in effect, remotely bypass inserted outboard compressors and/or equalizers located in a rack across the room.

The 02R96's A/D inputs 17 through 24 are on balanced +4dBu phone jacks. These inputs offer signal-present and peak LEDs, but not analog inserts or pads. Each are served by a separate detented gain pot that is optimized to receive line-levels. All of the 02R96's A/Ds (as well as D/As) are 24-bit, 128x oversampled and can operate at 44.1, 48, 88.2 or 96kHz nominal sampling rate.

Rear panel analog master I/Os include separate L/R TRS jacks for analog 2-track return, control room monitor outputs, studio monitor outputs and XLRs for L/R stereo outputs (all balanced and +4dBu nominal). Provided on unbalanced RCA jacks for L/R stereo outputs and analog 2-track return are -10dBV connections.

Eight "omni outs" are also provided on +4dBu balanced TRS jacks. These multipurpose outputs replace the 02RV2's aux outputs and can be freely assigned to serve as master aux sends, bus outs, master stereo L/R outs, direct outs or surround channel outs (e.g., monitor feeds). The omni outs can also be patched to any digital-insert send for the stereo L/R outputs, eight auxes, eight buses and 56 input channels. You read it correctly: The 02R96 offers a total of 74 digital inserts!

CARD SLOTS AND DIGITAL I/O

Also on the 02R96's rear panel are four card slots that accept a variety of optional mini-YGDAI cards, which provide multichannel digital or analog I/O, yielding as many as 32 channels of bidirectional I/O. (See the table for more info, including list prices). If you mix with a lot of analog outboard processors and need to use the omni outs for surround monitor feeds, then you will probably need at least one analog-output card.

The 02R96 also furnishes AES/EBU digital input and output, two coaxial digital inputs and two coaxial digital outputs on its rear panel. BNCs provide one word-clock input and output each, and a 75-ohm termination switch is also supplied. Besides the internal clock and wordclock

input, the 02R96 can sync to any of its digital 2-track inputs or Cascade In port. (See the next paragraph for more on the Cascade function.)

CONTROL PORTS
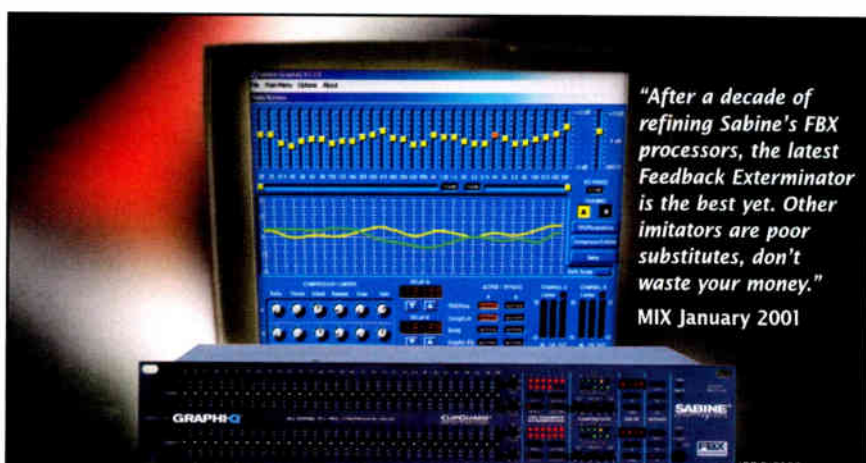
The 02RV2's RCA-type SMPTE input jack has been replaced with a balanced, cross-coupled XLR (pin 2 hot) on the 02R96. MIDI buffs can use the supplied MTC input to drive the mixer's automation. MIDI In/Out/Thru jacks facilitate, among other things, mixer scene changes and remote control of DAWs using MIDI commands sent by the 02R96's controls. USB and serial ports provide an alternative means to communicate between the 02R96 and your Mac/Windows-compatible computer. Cascade In and Out ports (on D-sub connectors) allow you to cascade up to four 02R96s (or three 02R96s and one legacy 02RV2) together. A rear panel GPI (General-Purpose Interface) can be used with any of the faders or 16 user-defined keys on the 02R96's control surface to trigger external equipment functions such as a "Recording" light located outside of your studio. A rear panel cooling fan keeps the 02R96 much cooler than the 02RV2, which should prolong life.

NAVIGATION AND METERING

The 02R96's backlit 320x240-dot LCD screen is the console's nerve center to view parameter readouts, metering, etc. Four function buttons (positioned just below the display in a row) provide direct and instant access to different pages for each function—nice. A parameter wheel, cursor, and Increment, Decrement and Enter buttons further facilitate LCD navigation and parameter adjustment. The supplied Studio Manager software displays and controls 02R96 parameters from, and archive mix data to, your Mac or PC.

The 02R96's switchable peak-hold metering allows you to see peaks after the fact in the EQ and dynamics sections, as well as within channel, master, aux, bus and effects I/O meter-display pages. Despite these and other thoughtful metering features, the optional MB02R96 meter bridge is almost a necessity in order to work with the 02R96. The console itself does not offer any hardware-based stereo L/R meters, although you can view stereo-bus output levels on one of the LCD's meter-display pages. More troublesome is the fact that the console's LCD screen does not show levels for 2-track returns unless they are routed back to a pair of input channels. Thankfully, the MB02R96's stereo L/R meters can view 2-track return levels by setting them to follow the control room's output.

CHANNEL STRIP CONTROLS

Each of the 24 physical channel strips has a fader; on (unmute), solo and channel-select buttons; an Auto button (used to arm or punch-in/-out channels in Automix mode); and an assignable rotary encoder.

All 24 channel faders (as well as an additional fader that serves the master L/R stereo output) have a 100mm throw and are touch-sensitive and motorized. You can simply touch a fader to select its associated channel to pan, route and EQ/dynamics processing, or to punch in the fader for automix moves. The 02R96's faders are vastly superior to those found on the 02RV2: The fader caps are metal-coated plastic, and the faders themselves glide smoothly and silently both in manual use and during automix playback.

The 24-channel faders actually serve four different layers (or banks, if you will), which you select in turn by pressing four buttons located above the master fader. When you call up the first layer, the 24-channel faders are assigned to input channels 1 through 24 (which you could delegate to A/D inputs, for instance). A second

layer assigns the channel faders to input channels 25 through 48, which, for example, can be patched to inputs from card slots 1 through 3. The master layer provides eight more inputs (say, for card slot 4's inputs or internal effects returns) on the first eight faders, eight aux master sends on the second group of eight faders, and eight bus outputs on the last group of eight faders. All input-channel faders are freely assignable to just about any input source that you can imagine. (I'll discuss I/O patching in a bit.) A remote layer is also provided so that you can use the 02R96's faders, on buttons and rotary encoders to control external MIDI equipment; control surface presets to operate Pro Tools and Nuendo are already set up for you.

The channel strip encoders can be chosen to serve as aux sends or pan controls. (Faders can also serve as aux sends.) Alternatively, encoders can be globally programmed to control any two of 42 available parameters, including attenuation, phase (normal/reverse), aux pre-/post-assignment, surround LFE level and a host of EQ, delay and dynamics parameters. Choose the two parameters that you would most like to have immediate access to, and the encoders become your highway to

speed-demon operation. Yeah, baby!

The 02R96 offers eight groups each for input-channel faders (which can be paired vertically across layers or horizontally within layers), mutes, EQs and compressors. Four groups each are also offered for output-channel faders, mutes, EQs and compressors. Adjacent input channels, buses and master auxes can also be paired.

THE INS AND OUTS

The 02R96's I/O-patching capabilities are nothing short of astounding: Each of the 56 freely assignable input channels can be patched to any A/D input, slot input (across all cards), internal effects output, analog or digital 2-track return, bus output or aux send. The 02R96 is one of the few consoles currently on the market that retains use of all input channels in 24-bit/ 88.2kHz and 24-bit/96kHz modes. (The DM2000 also boasts this capability.)

Every input channel, master aux send and bus, as well as the master stereo L/R outs, offer a digital insert. Digital-insert returns can receive a signal from any source that an input channel can, with the exception of feeds from the bus outputs or master aux sends. Each of the console's four internal effects (one surround chan-

nel and three stereo processors) can be fed a signal from any of the eight aux sends or any digital-insert out. Additionally, the internal effects can be daisy-chained to create multi-effects beyond what the console's stock algorithms offer.

Any card slot or omni output can dish out a signal from any bus, master aux send or digital-insert out. Card slot and omni outputs can also be patched to the main stereo outs or to surround-channel outputs. (More on surround sound capabilities in a bit.) Card slot, omni and digital 2-track outputs can be configured as pre-EQ or pre-/post-fader direct outs. All digital 2-track outputs can be patched to any bus, master aux send or digital-insert output, or to the stereo L/R or control room L/R outputs.

To help keep track of your I/O assignments, you can give short and long names to each input channel and master aux send, as well as store your patches in two dedicated 32-slot libraries (one for input patches, the other for output patches).

THE RIGHT EFFECT

The 02R96's eight master aux sends can simultaneously feed four internal effects and the omni outputs, and four encoders

are provided to quickly tweak internal effects parameters. The console's reverbs sound much better than those found in the 02RV2 and are generally quite usable. Early reflections, mono/stereo delays, chorus, flange, symphonic and phaser algorithms range in sound quality from excellent to positively outstanding. The pitch-shift algorithms sound great when used to detune tracks for chorus-type effects, but are wobbly when pressed into intervalic harmonization duties. Useful autopan, tremolo and distortion algorithms are also included. Finally, Waves offers a Y56K plug-in card—packed with some of the company's most popular signal-processing algorithms—for the 02R96.

EQ AND DYNAMICS PROCESSING

You'll absolutely love the user-friendly controls for the 02R96's EQ and dynamics processing. Four-band parametric EQ is available for every input and output channel. Each of the four bands has its own gain knob and a toggling frequency/ Q knob, allowing simultaneous parameter adjustments on multiple bands. High- and lowpass filters and shelving EQ can alternately be used in lieu of parametric filters. Best of all, the EQ sounds great.

Every input channel offers both a compressor and a gate, and all output channels offer a compressor, as well. You can alternatively assign five rotary encoders to compressor and gate parameters. These encoders allow lickety-split

adjustment of threshold, ratio, attack, release and makeup gain for the compressor, or threshold, range, attack, decay and hold parameters for the gate. The 02R96's compressors sound dramatically better than those offered in the 02RV2. At reasonable settings, they handle broadband percussive material on the stereo bus without pumping. And, when pushed hard, they don't dull the sound any more than a high-quality analog compressor would, if hardly at all.

AUTOMATION

02RV2 owners will feel right at home mixing on the 02R96 after just a few minutes of perusing the latter's automix displays. The 02R96 offers 99 scene and 16 automix memories.

The 02R96's selectable overwrite parameters now include aux and aux on, in addition to the familiar fader, on, pan, EQ and surround pan parameters. Separate libraries can store your favorite EQ, dynamics, effects, surround monitor and I/O-patching setups. All of these parameters, with the exception of EQ, can be edited offline on the Event Edit page along with scenes. Unfortunately, parameters you wish to erase, copy, move or trim must be selected in a submenu, which is somewhat inconvenient to access on the Event Copy page.

Absolute and relative fader, fader return and update to end modes are joined by an additional option called Fader Takeover mode, which continues fader

overwrites until your current fader position intersects fader data from the previous pass. Using touch-sensitive select-in/ -out modes, you can punch in automix moves on a channel simply by touching its fader and/or punch out by releasing the fader. Awesome!

STEREO, SURROUND MONITORING

The console's control room section can monitor any analog or digital 2-track return, the stereo bus output or two assignable sources such as a bus out and master aux send. (When tracking, you'll probably want to occasionally monitor the cue feeds.) For surround applications, you can switch between monitoring a surround mix in progress (e.g., the bus outputs) and playing back surround mixes from up to four multitrack recorders (sourced from slot inputs). Two pots are provided to adjust control room (stereo) and surround monitor-output levels, respectively; Dimmer and Talkback buttons are also provided.

The 02R96 supports 3-1 (LCRS) and 5.1 surround modes, bass management and downmixing. A built-in pink-noise generator, along with attenuation and delay parameters for surround monitor channels, helps calibrate your speakers. Surround panning is a breeze using the console's groovy joystick.

The studio monitor section can listen in on the stereo bus and/or auxes 7 and 8, or it can mirror whatever the control room is listening to.

Card	Format	Ins	Outs	Resolution/Fs	Connectors	List Price
MY4-AD	Analog in	4	N/A	24-bit, 44.1/48kHz	XLR x4	$319
MY8-AD24	Analog in	8	N/A	24-bit, 44.1/48kHz	TRS x8	$369
MY8-AD96	Analog in	8	N/A	24-bit, 44.1/48/88.2/96kHz	25-pin D-sub	$449
MY4-DA	Analog out	N/A	4	20-bit, 44.1/48kHz	XLR x4	$269
MY8-DA96	Analog out	N/A	8	24-bit, 44.1/48/88.2/96kHz	25-pin D-sub	$399
MY8-AE	AES/EBU I/O	8	8	24-bit, 44.1/48kHz	25-pin D-sub	$319
MY8-AE96	AES/EBU I/O	8	8	24-bit, 44.1/48/88.2/96kHz	25-pin D-sub	$449
MY8-AE96S[1]	AES/EBU I/O	8	8	24-bit, 44.1/48/88.2/96kHz	25-pin D-sub	$599
MY8-mLAN	IEEE394	8	8	24-bit, 44.1/48kHz	6-pin 1394 connector x2	$599
MY8-AT[2]	ADAT I/O	8	8	24-bit, 44.1/48kHz	Optical x2	$319
MY16-AT	ADAT I/O	16	16	24-bit, 44.1/48kHz	Optical x4	$499
MY8-TD[2]	Tascam TDIF-1	8	8	24-bit, 44.1/48kHz	25-pin D-sub, BNC word out	$319
Apogee AP8DA	Analog out	N/A	8	24-bit, 44.1/48/88.2/96kHz	25-pin D-sub	$1,195
Apogee AP8AD	Analog in	8	N/A	24-bit, 44.1/48/88.2/96kHz	25-pin D-sub	$1,495

The table shows the currently available mini-YGDAI I/O cards for the 02R96. Some cards, such as the MY8-AE96S, consume a lot of power and limit the combination of other cards that can be used with it; go to www.yamaha.co.jp/div/webmg/pa_card/e/check.php3#CheckSheet to view card-combination restrictions.

Note 1: The MY8-AE96S is essentially the same as the MY8-AE96, except that it adds onboard sample-rate converters.
Note 2: Can handle 24-bit/96kHz operation in Double Channel mode.

MACHINE CONTROL

The 02R96 can control the locate and basic transport functions of up to eight external recording devices that support MMC. Just hook up the devices to the 02R96 using the console's MIDI, serial, USB or slot 1 connections. (The latter method is possible only with a Yamaha mLAN I/O card installed in slot 1.) The 02R96 can set eight locate memories, and the console's parameter wheel can be used to shuttle and scrub the external machines.

CONVERTER AND PREAMP QUALITY

I had the foresight to record stereo acoustic guitar tracks (rigorously documenting the setup) using first the 02RV2's and then the DM2000's A/D converters a couple of months ago, knowing that I'd soon have a chance to A/B these recordings against those made using the 02R96's ADCs. The 02R96's ADCs sound almost identical to those in the DM2000. Compared to the 02R's ADCs, the 02R96's exhibited noticeably greater high-frequency extension, improved transient response, better overall bass response, and a smoother and warmer-sounding overall frequency response. Equally important, tracks previously recorded with my 02RV2 sounded more robust when mixed through the 02R96.

I also tested the 02R96's mic preamps (bypassing the A/Ds). I could only compare these to the 02RV2's preamps from memory, but I've owned the latter console for close to seven years, so my memory is pretty darn good! The 02R96's preamps lent more bottom end and an overall fuller sound compared to those in the 02RV2. In a perfect world, I wish the 02R96's preamps had faster transient response than they do. But I would, nevertheless, rate the console's pre's as very good performers for a board in this price range.

CONCLUSIONS

Yamaha has reinvented the wheels with the release of its 02R96. The 02R96's powerful and user-friendly control surface will floor you, and the console sounds fantastic for a product in this price range. Two thumbs up—way up!

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Michael Cooper is a Mix *contributing editor and owner of Michael Cooper Recording in beautiful Sisters, Ore.*

Cube-Tec AudioCube 5

Audio Mastering/Restoration/Archiving System

AudioCube 5 is an advanced 24-bit/192kHz, integrated audio workstation for analysis, restoration, editing, archival, CD/DSD/SACD mastering and DVD-A authoring. A product resulting from a partnership between Germany-based Cube-Technologies and Canada's Sascom Marketing, AudioCube 5 is an expandable, scalable, evolving system based on the PC platform. Audio-Cube 5 uses "off-the-shelf" nonproprietary hardware and runs Cube-Tec's software. The system comes turnkey—configured, tested and optimized for your exact needs with the ability to grow via additional hardware/software components.

THE BASICS

The base system is offered in two ways: AudioCube 5-II, the original German-made "Blue Box" rack-mount version; and the cost-effective AudioCube 5-D530 based on a Dell D530 workstation tower. Cube-Tec's factory-installed hardware for either system includes one or more Merging Technologies' Mykerinos boards and daughter cards; Cube-Tec serial I/O card/license module; SCSI controller; and dual monitor card. A basic AudioCube 5 comes with 24 channels of AES I/O that is expandable to 72 channels or 56/64 channels of MADI I/O using additional Mykerinos card sets. Both systems have dual 2.2GHz Intel Xeon microprocessors; 512MB RAM; ultrawide 160 SCSI; 18GB system drive and 36GB, 10k rpm audio drive (removable on the 5-II); 100Mbit Ethernet; integrated VITC and LTC connector; a combo CD-RW/DVD-RW drive; and FireWire and USB ports on the D530 system only.

Audio breakout boxes with eight, 16 or 24 channels of AES I/O plus wordclock and timecode I/O are offered for both systems. Hardware options include 56-/64-channel MADI, TDIF, SDIF and ADAT audio I/O; gigabit Ethernet; Sony 1610/1630 interface; and various archival/storage options.

For AD/DA conversion, Cube-Tec of-fers a line of 2-/4-channel ADCs and DACs. All are 24-bit/up to 96 kHz, and each have three sets of AES/EBU/S/PDIF/TosLink digital inputs/outputs, 115dBA dynamic range, sigma-delta conversion and balanced analog input/outputs. My demo sessions with AudioCube 5 used the Cube-Tec Model MDA-2-96, a 2-channel DAC with front panel source switching of eight different digital inputs, volume control and the ability to monitor summed mono, stereo and L/R channels separately.

AudioCube's Broadcast Wave File Editor

THE SOFTWARE

AudioCube 5 runs under Windows 2000, pre-installed with the latest versions of Steinberg's Nuendo (multitrack) and Wavelab (stereo). Merging Technologies' Pyramix program is specified for DSD/SACD work. All systems have a CubeRescue CD-ROM to restore the system should the need arise.

All other Cube-Tec software is created by Houpert Digital Audio, which also develops software for SPL, Discreet, Apogee and Steinberg, among others. HDA writes two versions of some audio tools: a high-quality proprietary version called a Virtual Precision Instrument (VPI) and standard VST plug-ins for Steinberg. The AudioCube platform VPIs require dual processors and Cube-Tec's hardware-licensing module to function. There are 36 VPIs available. After purchase, each is licensed and specifically registered to just one AudioCube 5; you cannot copy and use them on other systems—even another AudioCube 5. All analytical, restoration and mastering processors use up to 64-bit, floating-point arithmetic, which results in 52-bit resolution that is independent of audio level. This resolution is maintained throughout the system with batch files stored on the hard drive as 32-bit, floating-point files.

VIRTUAL-PRECISION INSTRUMENTS

The 36 VPIs are split between 30 stereo processors and six multichannel processors, including an 8-channel compressor, equalizer and a LFE-management tool. There are also Dolby AC3 encoding and decoding tools, as well as a .WAV-to-MLP (Meridian Lossless Packing) converter. To make difficult restoration decisions (such as whether to leave a sonic blemish in or remove it), the restoration VPI's monitoring feature lets you hear the removed audio beforehand. A typical use is removing a patch of high noise floor that contains reverb tails or room ambience. Another application is handling analog tape print-through—a conundrum not yet easily solved by any software algorithm.

There are lots of slick VPIs, but two impressed me the most: The Azimuth VPI identifies and corrects L+R phase errors and panorama (pan) shifting to the resolution of $\frac{1}{1000}$ of a sample. To correct tape recordings where the record head's azimuth, zenith, height or the tape path wavers randomly, Azimuth tracks this moving target as only a fast computer and smart software could.

NoiseDeModulator requires a 15-second sample from your audio file to learn and remove the amplitude and periodicity of a dynamic, heavily modulated noise. As far as I know, no other processor does this. Once amplitude and period are removed, the undesired noise—now in steady-state—is quickly excised using the DeNoiser or DeBuzz VPIs.

Cube-Tec's CubeDVD-A authoring software was developed in conjunction

with Nippon Columbia to create DVD-A masters. Presently, this is the only package that supports Version 1.2 of the DVD-A standard. CubeDVD-A can read audio files created in Nuendo without format conver-sion and encode a DVD-Audio disc ac-cording to CPPM Process 1 (Copy Protec-tion for Pre-Recorded Media). DVD-9 dual layer, MLP encoding, SMART, 4C/Verance Watermark are all supported. The best feature of CubeDVD-A is called Proof, which allows any part or the entire DVD-A scenario—all links, commands, menus and slide shows—to be previewed *with-out* actually burning a DVD disc. DVD-A authors say that this feature alone would save them two-thirds of the time it takes to author a DVD.

With a system this deep, and because standards and practices are evolving around DVD and SACD production, com-pany tech support is paramount. Cube-Tec uses NetSupport Manager from Productive Computer Software Ltd. and the Internet to diagnose your AudioCube system's opera-tion remotely. However, Internet access is not mandatory for complete tech support; Cube-Tec offers 24-hour phone numbers for emergency support.

CUBE-TEC AUDIOCUBE 5 SOFTWARE

The system offers numerous VPI and software op-tions. Here are a few, beginning with restoration tools.

DeNoiser is for broadband noise reduction of up to 20 dB. The noise floor is constantly ana-lyzed, and a large filter is automatically created and shaped to the noise's contour. DeClicker is an optimized click remover available in both VPI and plug-in versions. RepairFilter removes distur-bances without altering the original audio. This VPI will track wow and flutter shifts. DeCrackler removes crackles from vinyl or shellac disc record-ings and optical soundtracks. DeScratcher removes noises of up to 1,000 samples in length. DeClipper identifies and removes digital clips by automatically reconstructing their waveforms. DeBuzz removes steady-state buzzes and hum—including all harmonics—with an automatic notch filter. Azimuth identifies and corrects L+R phase errors and panorama (pan) shifting to $\frac{1}{1,000}$ of a sample.

DeMotorizer removes camcorder motor noise. SpectralDeHiss with Expert Page an-alyzes a fingerprint of noise but lets you edit parameters for more precision in diffi-cult situations. NoiseDeModulator learns just 15 seconds anywhere in your audio and removes both amplitude and periodicity of a dynamic, heavily modulated noise. De-Pop removes optical-film soundtrack noises. Playback EQ emulates any of 20 different playback de-emphasis EQ curves. For the proper EQ playback and restoration of any sound carrier ever invented, the history of recorded sound is represented with preset curves like Blumlein, Decca 78, Columbia, RIAA or Westrex. Cube Waveform Restorer is a set of seven manual-wave interpolation algorithms.

Mastering VPIs include Loudness Maximizer to increase loudness without tonal changes; Spectralizer restores brilliance and transparency; Magneto analog tape compression/saturation emulation; FreeFilter, a 30-band, linear-phase, ½-octave equalizer that matches EQ curves from other audio sources, develops an overall EQ "shape" and applies it to new audio; DoubleRate to halve/double sample rates; AnalogEQ, a 7-band digital filter with analog filters emulation; FreeShaper is a dither applicator/noise shaper, with the choice of uncorrelated stereo dither or cor-related mono dither; Automute mutes dither between songs where you do not want to add dithering noise; MultiComp is a 5-band mastering compressor; the DeES de-esser has both automatic and manual modes; and DynamicEQ is a dynamically modulated 3-band EQ.

DDP-Solution (Disc-Description Protocol) DVD-A premastering software is a sep-arate software module available in AudioCube and freestanding versions. Avail-able in AudioCube and freestanding versions, the CubeDVD-A authoring software provides DDP-Solution DDP (Disc-Description Protocol) premastering software.

The Stereo Analyzer Pack includes ZoomAnalyzer, SpectroGraph, MatrixScope and PhaseScope—a four-VPI bundle to help identify and monitor your audio.

All of the SurroundCube VPIs are available in both VPI and plug-in versions. LFE Divider and Merger are for LFE (Low-Frequency Effect) channel control and manage-ment; Ambience Eight is an 8-channel digital reverb; EQ Eight is an 8-channel mas-tering equalizer; and Loudness Maximizer Eight, Compression Eight and Magneto Eight are 8-channel versions of the stereo-mastering VPIs.

—Barry Rudolph

QUADRIGA FOR ARCHIVAL

The final step, archiving, is accom-plished by another Cube-Tec product called Quadriga. Quadriga uses the Audio-Cube platform for automated archival and quality control of all audio assets that you have restored and mastered. With complete database managerial software built in, Quadriga will run autonomously and (among many tasks) output a sepa-rate data file for music business person-nel to access and review—without touch-ing the archived audio files.

Simply, Quadriga converts all .WAV files into interim broadcast .WAV files (Broadcast Wave Format). After conver-sion or during capturing, these files are inspected to preserve and log the file's title, archive number and BEXT chunk (Broadcast Extension, part of the BWF spec). Clicks, dropouts, clips, phase shift, average and maximum level, S/N ratio, etc., are also logged to establish a base-line quality reference. An entire family of software interfaces, editors, batch proces-sors, file inspectors and legacy audio-carrier importation-control modules (tape, vinyl, cassette, CD, etc.) are offered to handle and completely automate any audio-archival task.

The Quadriga and AudioCube 5 sys-tems provide serious tools for "start to fin-ish" restoration, mastering and archiving. A basic AudioCube 5 system with several VPIs installed sells for under $20,000.

Cube-Tec, dist. by Sascom Marketing, 34 Nelson St., Oakville, Ontario, Canada L6L 3H6; 905/469-8080; fax 905/469-1129; www.sascom.com; www.cubetec.com. ■

Barry Rudolph is an L.A.-based record-ing engineer. Visit him at www.barry rudolph.com.

Minnetonka Audio discWelder Steel

DVD-A Authoring for PC Goes Affordable

Anyone who is waiting for easier-to-use, more affordable DVD-A authoring tools will want to check out Minnetonka Audio's discWelder Steel. This basic authoring/burning program creates high-res DVD-Audio discs from nearly any Windows-based PC that is equipped with a DVD-R burner. Programmed to quickly burn stereo and surround mix-reference discs that are recognizable by most DVD-A players, Steel's simple to operate, allowing even newbies to author, name and burn multiple mixes to a DVD-A disc in under 10 minutes.

Create surround discs for mix approvals on any DVD-A 5.1 system? Sure. High-res 24-bit/192kHz DVD-A discs for an ultimate stereo experience? Absolutely. And if you need to author more complex discs for replication, Minnetonka offers discWelder Chrome ($2,495) and SurCode MLP ($2,495), though Steel's real beauty is being able to burn great-sounding mix-reference discs for only $495. Minnetonka also offers a software/DVD-burner bundle on its Website (www.discwelder.com) for $825 that includes Steel, a Pioneer DVR-A04 DVD-R drive and a software bundle from Pioneer, which features DVD movie-making tools and file archival/backup-to-DVD apps.

I installed Steel and the bundled DVD-R burner on a Pentium 4 mini-tower in 20 minutes. From the Browse window, I quickly located my 2-channel projects' .WAV and .AIFF folders, and then went to the Soundfile window to click and drag the files into the program's Album window. Steel does not support more than one group (Chrome allows up to nine groups), though 99 tracks per group are plenty for reference mixes. I named the group "Randy's First DVD-A," and Steel automatically created a 6-channel sub-tree directory with L/R/C/LFE/Ls/Rs channel icons. The DVD-A spec also allows fewer than six channels, such as a L/R/LFE mix without surround.

I selected my stereo-left/right 24-bit/96kHz mix files for three new songs and dragged each onto its corresponding channel icon for each track. Steel auto-

matically changed its surround multichannel indicators (L, R, C, LFE, Ls, Rs) to S, recognizing my stereo files. Once my stereo mixes were in place, I named each song track, selected Save and clicked the toolbar's Record button. This brought up a Record Disc dialog box in order to choose the destination drive, confirming available DVD-RW disc space, and the verify, test and/or write-to-disc commands. Also, a TV System dialog box selects between NTSC and PAL screen systems.

Once the audio was set, I needed an onscreen interactive DVD menu. It's not exactly *Lord of the Rings* on DVD, but Steel creates a default DVD menu where I could pick one of two fonts and font size, style and color before going ahead with my first DVD burn. The screen menu's text is centered and placed on a generic steel-plate background. After a "closing time" (which can be up to 15 minutes for Steel to scan up to 4.7 billion bytes of data per disc), my finished DVD-A popped out of the drive.

I was impressed with how my 24-bit/96kHz stereo mixes sounded. I put the new DVD-RW disc in my Sony SACD/DVD player, chose the first of three tracks from the onscreen menu and now all of my CD-R mixes—which sounded fine before—sounded thin in comparison. Now, thanks to Minnetonka, I have to re-burn my old mixes to DVD-A if I want to enjoy the playback of those mixes this much.

Steel works with linear PCM audio and can import either .WAV or .AIFF files (no SD2 support) in 16, 20 and 24-bit word depths, and 44.1 or 48kHz 5.1-channel surround and 44.1 to 192kHz stereo sampling rates. Surround and stereo tracks may be intermixed on the same disc, and a discWelder Steel-burned disc will play on any DVD-A player that also supports DVD-R/RW. Sound files can be imported via network, DVD-ROM/CD-ROM or 1394/FireWire drives. Some sample rate/bit depth combinations require MLP en-

discWelder Steel's track list for a typical DVD burn project.
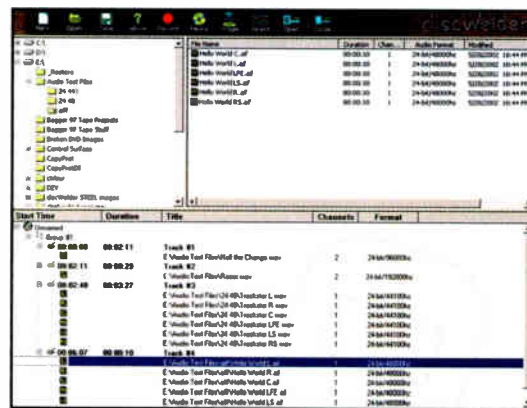
coding; Steel does not support MLP import, though Chrome does. (An MLP encoder [such as Minnetonka's SurCode MLP] allows you to have six 96kHz tracks playing simultaneously by reducing, or packing, the data rate to less than the DVD-A format's 9.6Mbps bandwidth ceiling, with bit-for-bit accuracy in playback.)

Steel doesn't offer high-level authoring and editing features, such as serious menu and text options, background images, slide shows, MLP import, VIDEO_TS import and DLT export, but if a high-resolution reference disc is all that you're after, who cares?

Those who require more advanced DVD-A authoring features, especially when creating master discs for replication, should consider Minnetonka's $2,495 disc-Welder Chrome. It has MLP and VIDEO_TS-import capability, allowing formatting of universal DVD-A/DVD-V discs, plus the ability to place up to 891 tracks (nine groups of 99 tracks) on one disc and output masters to industry-standard DLT (digital linear tape).

Considering that other DVD-Audio authoring programs can cost more than 10 times as much, discWelder Steel is ideal for those looking to get into the format, as well as anyone who needs to quickly and easily create high-resolution stereo and surround reference mixes.

Minnetonka Audio, 17113 Minnetonka Blvd. #300, Minnetonka, MN 55345; 952/449-6481; fax 952/449-0318; www.discwelder.com; www.surcode.com. ∎

Randy Alberts is a musician, engineer and author.

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TL Audio M3 TubeTracker

More Than Just a Mixer

The M3 is an 8x2 tube mixer, DAW front end and 8-channel microphone preamp.

Designed primarily for tracking, TL Audio's M3 tube mixer works well in a number of applications, but it excels as a front end to DAWs and other digital recorders. If you are a serious recordist looking to add tube warmth and color to your digital tracks, then your search may be over. Following in the footsteps of the acclaimed VTC tube console, the M3 TubeTracker delivers much of its larger sibling's sonic mojo in a smaller, less-expensive package.

This 8x2 mic/line mixer employs a hybrid tube/solid-state topology with balanced internal buses. The fan-cooled outboard PSU occupies two rackspaces and connects to the mixer via a 10-foot cable, providing 200 volts to its five 12AX7/ECC83 tubes—one for every two mic pre's and one in the stereo mix bus. (Because the 12AX7 is a dual-triode tube that contains two independent tube stages, it can be used in 2-channel preamps simultaneously.) The 28.6-pound M3 occupies 10 rackspaces, but comes with a wood-laminated particleboard surround for tabletop use.

In keeping with the "tracking" part of its name, the M3 has direct channel outs (post-fader, +4/-10 switchable) but no dedicated tape-return inputs. Balanced ¼-inch line inputs can be used as tape returns, but feed the same gain-control section as the mic pre's—selected via a mic/line switch—and are affected by the phase-reverse switch in the shared signal path. Each channel's gain pot has a +16 to +60dB range with a center detente for 0dB line; a drive LED indicates when the tube is overdriven.

Each channel's 4-band EQ has ±15 dB of boost/cut, fixed high- (12kHz) and low-(80Hz) shelving filters, and two sweepable mid-bands covering 500 to 18k Hz and 50 to 2k Hz (both with 0.7 Q). Also standard are a 90Hz HP filter, hardwired EQ bypass, two aux sends (one with pre-/post-fade switch), pan pot, mute and PFL switches, and 100mm fader. The EQ, mute and PFL switches have accompanying LEDs, and there's a peak LED on each channel.

The master section has two illuminated VU meters, global phantom-power switch,

master aux-send level pots (with up to 15 dB of gain and PFL switches), master aux-return level pots (with balance pots and PFL switches), master PFL-balance pot, master output-level pot (switchable stereo bus/2-track return) and headphone out.

All connections are on the rear (except headphones), with XLR mic and ¼-inch TRS line inputs on each channel, along with TRS inserts and ¼-inch (post-fader) direct outs that are +4 and -10dB switchable. The two aux sends, two stereo aux returns and stereo 2-track return are balanced ¼-inch connectors, all with +4/-10 switches—a nice touch. The main stereo outs are XLR, while the stereo-monitor outs are balanced TRS. Calibration trim pots are provided for each channel and the master outs. To use multiple M3s, two 15-pin D-sub connectors link the PFL, aux and stereo buses, with the M3 at the end of the chain serving as the master-output source.

We also tested the optional DO-1 digital-output card, which offers simultaneous output in AES/EBU (XLR) and S/PDIF (co-ax and optical) formats, as well as an internal/external sync switch and word-clock input. Switches in the mixer's master section can select word length (16/20/24-bit) and sampling rate (44.1/48/88.2/96 kHz). I used the DO-1's AES/EBU output to route stereo signals to my Yamaha 03D digital mixer and its coaxial S/PDIF output to record stereo tracks in Digital Performer via a MOTU 2408 MkII interface. The DO-1's converters sounded really good in both cases—much better than the 03D's onboard converters. Unfortunately, the optical output can't carry all eight M3 channels—it's strictly a 2-channel output.

The M3's frequency response is given as 20 to 40k Hz, and I had no difficulty believing it. The mixer boasts extremely open and crystalline highs, focused yet smooth mids, and a tight, solid bottom end. But there's more to it than that: There is a certain *magic* to the sound that no doubt has something to do with the tubes and the ultraclean signal path but, at the same time,

transcends technical specs. Just running audio through the M3—even with the gain at unity and equalizers bypassed—imbues it with this quality. That's why the M3 is an ideal front end to digital recording systems: After using it with Digital Performer for two months, I was spoiled. Plus, while recording bass, synth/sampled sounds and electric guitars, pushing it into gentle distortion created similar sounds to a tape-compression effect.

The EQs are super-sweet and beautifully voiced. The shelving filters add sparkle and roundness without brittleness or boom, and the swept mids retained their smoothness over their entire (and considerable) range. Time after time, the EQs imparted just what was needed and nothing more.

In case it isn't obvious, I *love* this mixer. Retailing at $3,549, it isn't cheap, but if you think of it as buying eight really nice discrete tube mic pre's, along with eight great analog equalizers—and remember that the direct channel outs allow you to configure it as eight separate outboard EQs—it's a pretty attractive package. Don't forget that those eight mic pre/EQ units can be mixed to stereo via a balanced tube mix bus (with optional digital outs), but that's just the gravy!

HHB USA, 743 Cochran St., Bldgs. E & F, Simi Valley, CA 93065; 805/579-6490; fax 805/579-8028; www.hhbusa.com. ■

Bay Area-based recording artist/engineer/producer Barry Cleveland (www.barrycleveland.com) authored Creative Music Production: Joe Meek's Bold Techniques *(MixBooks/www.artistpro.com).*

Wharfedale Diamond Series 8.1

The New NS-10?

Wharfedale's Diamond Series was introduced in 1981 and with each new iteration, continues to win hi-fi magazine awards for its great sound and value. The consumer-grade Diamond 8 Series is ideal for smaller studios looking for quality, inexpensive surround or stereo monitors.

The Diamond 8.1s are the smallest models in the series. Except for two powered subs, all models are passive two-way units with a 25mm silk-dome tweeter, and various sizes and numbers of Kevlar-coned woofers. You can freely exchange different Diamond monitors in your surround setup and maintain a consistent overall sound character. All U.S. versions are internally wired with Monster cable, and every model has two sets (HF and LF) of five-way binding-post terminals. This makes the 8.1 ready for bi-amping or bi-wiring, an audiophile technique where separate speaker cables are used for the LF and the HF drivers even though the cables are connected in parallel at the amp's output terminals. I connected the 8.1s with a single set of Monster cables, using the included link that connects the HF and LF terminals together for standard operation via the internal crossover.

The Diamond 8.1's 11.6x7.8x7.6-inch enclosure is ⅝-inch medium-density fiberboard and comes in black vinyl or wood-like maple-veneer finishes. The 8.1s have attractive and removable front screens that, for both sonic and aesthetic reasons, I preferred to leave attached. Considering the $199/pair MSRP, construction quality is good, with glued cabinetry and the drivers screwed down.

The 5-inch woofer's cone is made of bidirectional woven-Kevlar cloth with a rubber surround (making it self-damping and faster responding), while a profiled phase plug improves off-axis response. The Ferrofluid-cooled tweeter has a neodymium magnet and a naturally wide HF dispersion. The drivers are not shielded, but I could place the monitors near either side of my CRT monitor with minimal effect. Power handling is 100 watts and sensitivity rated 86 dB for 2.83 volts (@ 1 m). Frequency response is 55 to 20k Hz with the crossover frequency set at 2.2 kHz.

IN THE STUDIO

I compared the 8.1 to two other speaker stalwarts, Yamaha's NS-10M Studios (with dome-screened tweeters and *no* tissue paper) and Tannoy's PBM 6.5s, as many engineers are familiar with these. The Wharfedales are slightly smaller and about the same shape as the Tannoys, with the Yamahas being about one-third larger than both.

Listening in the near-field (about four feet away), comparing the NS-10M to the 8.1 was apples and oranges. The Tannoy's were closer to the Diamonds, with a similar sound character. The 8.1 had an effortless and silkier top end (but not over-bright) than the others, with the Yamahas sounding nasal, closed-down and boxy—in other words, rolled off in the super top end and missing the bottom octave. Wharfedale uses just one of these same tweeters in all of the models, even the largest; so in the 8.1, the tweeter is doing light duty.

Surprisingly, the 8.1's smaller woofer provided lows that were tighter, stronger and more pleasant-sounding than the Tannoys or Yamahas. That cross-woven Kevlar woofer makes a big difference compared to paper cones. The Tannoys were darker and slightly warmer-sounding than the 8.1s. The Yamahas are thick and warm to the extent that they emphasize the low midrange area (500 Hz to 2 kHz), contributing to their honky nature. The graph that comes with an NS-10M shows a response peak at about 1,600 Hz, right below the 2kHz crossover. The chart also indicates a peak in third-harmonic distortion at 1.2 kHz. Perfection would be to hear just a little more in that lower midrange area from the 8.1s. Compared to the Yamahas, the 8.1s sounded slightly "scooped out," making vocals and lead instruments sink back into the track mix.

Mixing music on the 8.1s was fine, especially at lower volumes. My vocal/lead instrument mix levels came out just right, and I could play the 8.1s much louder than the Tannoys or NS-10Ms. The 8.1s were as analytical as any small speaker I would mix on: Recording problems like sibilance, boominess or distortions were not disguised and I didn't feel like I was getting a "hyped" version of my mix. And during my days with them, I felt the least amount of ear fatigue with the 8.1s.

The "new monitor on the block," the Diamond 8.1s offer smooth high frequencies and bass extension that belies their diminutive size, making them winners for any small control room—stereo or surround. I liked their design, look and, most of all, their great sound.

Wharfedale Intl., dist. in the U.S. by IAG America; 508/850-3950; www.iag america.com.   ∎

World Radio History

MOTU 896

FireWire Audio Interface for Mac and PC

FireWire interfaces are wonderful tools because they are easier to install than a PCI card-based I/O. However, the fact that you can get more I/O from a PCI card-based breakout box does not mean that Fire-Wire interfaces are right for every setup. MOTU broke significant new ground with the 828, but with only eight ins and outs and missing key pro features (like comprehensive front panel meters, AES/EBU, wordclock and mic pre's on every input), it's essentially a home-studio interface. But the MOTU design team is clearly not content to rest on its laurels: A few months back, MOTU introduced the 896. This new interface targets audio professionals' needs, adding all of the above-mentioned features and much more.

The 896 is a solid-feeling, two-space rack unit that supports sample rates up to 96 kHz and 24 bits. Equipped with ADAT Optical and AES/EBU digital I/O, as well as eight channels of analog I/O, it can support 18 channels in and out running simultaneously at 44.1 or 48 kHz. (At high sample rates, ADAT Optical is disabled.) If this isn't enough I/O for you, the 896's second onboard FireWire port can daisy-chain up to four units. (MOTU reports that a single FireWire bus can handle 72 channels of audio running simultaneously.) Still not enough I/O? You can always add a PCI expansion card with a second FireWire bus for another chain of 896s.

Inputs are Neutrik Combo connectors, which makes connecting XLR or ¼-inch jacks a snap. Each input is switchable between +4 or -10 dB via dip switches on the unit's rear panel. Toggle switches for phantom power on/off on each input are found on the unit's face, as are individual channel-trim controls. The analog outputs are all balanced XLR, including the main stereo out whose source is a mix of analog outs 1-2 and any live CueMix inputs. (I'll explain this feature later.) The main out shares a level knob
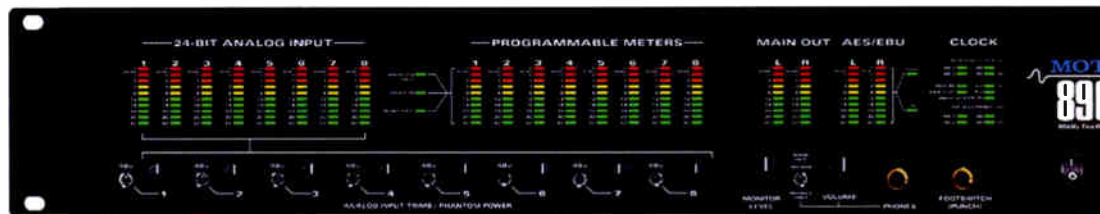
with the headphone jack on the front panel.

MOTU has developed a zero-latency monitoring system dubbed CueMix, which solves the inherent problem of monitoring latency when recording tracks into a computer. The idea behind CueMix is that the signal routing to input-monitor one mono or stereo input is done entirely within the 896. CueMix lets you bus any input or input pair directly to the main outs (via the 896 itself, bypassing the computer). A dedicated Level knob on the front panel lets you control the CueMix volume relative to the rest of the main out mix. Because the user is not input-monitoring through the computer, monitoring latency is sidestepped. The downside to this scheme is that you can't monitor input with your digital audio program's internal effects. (How about putting a stereo send/return exclusively for input-monitoring onboard the 896?) If you don't have a console and you must input-monitor more than two channels with effects, then lower your host program's audio buffers to provide lower-latency input-monitoring at the cost of higher CPU usage.

Metering on the 896 is well-implemented. All of the LED meters are a 10-segment type with easy-to-see peak and clip-hold indicators. (Hold times for both indicators are user-definable.) The clip-hold LED illuminates at a single sample over 0 dB. There are eight meters dedicated to the analog inputs, while another eight meters show either the analog outs or ADAT Optical inputs or outputs. A stereo pair of meters reflects the main out, and another pair will display either AES/EBU input or output.

Other amenities include Word Clock In and Out, ADAT Sync In (a wonderful feature that is happily continued on MOTU's interfaces), and a front panel footswitch jack to enable hands-free punching. The AES/EBU I/O can sample rate-convert on input or output—a convenient feature, especially when your project is at 96 kHz. Power is supplied by a detachable IEC Type-II power cable, and a rocker-style power switch is located on the unit's face.

The 896 works with a Mac running OS 8.6 or later, or a PC running Windows ME/2000/XP. (Although Mac OS X was not supported at the time of this field test, it should be supported when you read this.) ASIO drivers for Mac and PC are included, as are WDM drivers for PC. Even if you don't own multitrack digital audio software, MOTU's Audio-Desk application—a 24-bit/96kHz-capable recording program based on the audio portion of Digital Performer—comes standard. The catch is, AudioDesk is Mac-only. A 1394 FireWire cable that has a high-quality feel and is plenty long (12 feet to be exact—interfaces with really short stock cables can be a pain to set up) is also included.

I field-tested the 896 with a Mac G4 400MHz machine running OS 9.2.2. The digital audio sequencers I employed were Emagic's Logic Audio Platinum 5.2 and Digital Performer 3.0.2. Physically hooking the unit up is super-easy: Plug in the FireWire cable and that's it. Installing MOTU's FireWire Audio system extensions, control panel and ASIO driver from the included CD-ROM was a breeze. Only Logic Audio required the ASIO driver, because Digital Per-

former is also a MOTU product and addresses the MOTU FireWire interfaces directly.

All settings (such as clock source, AES/EBU sample-rate conversion, and peak and clip-hold times) for the 896 are made in the MOTU FireWire Audio control panel, which is the same one used for the 828. If you upgrade from the 828 to the 896, and you already have Version 2.1 of the control panel installed, you should be able to connect the 896 without touching the CD-ROM. However, remember to select the 896 as your new interface and assign it a proper clock source in the control panel because this is not automatic. (The 896 will actually operate with the 828 interface and 828 internal clock source selected, even though the 828 is not connected.)

The 896 worked fine with Logic Audio and Digital Performer. Admittedly, it felt slightly better-integrated with Digital Performer. For example, your CueMix monitor input is automatically selected when you record-arm a track in Digital Performer. In Logic Audio, as with all programs dependent on the ASIO driver, you must manually select the inputs you want to feed CueMix from the MOTU FireWire Audio control panel. For both programs, input-monitor latency (*sans* CueMix) with a Samples Per Buffer setting of 256k in the control panel was low enough to be acceptable in many situations.

The 896's sound quality is solid, with a clean, clear character that is very nice. I recorded acoustic guitar, voice and percussion parts and was pleased with the results. I could complain that it doesn't sound as good as Digidesign's 192 I/O with its built-in soft-clip limiters, but this would be a ridiculous comparison because the 896 retails for about a quarter of the price of the 192 I/O; MSRP for the 896 is $1,295. If you use Digital Performer and a laptop, this is hands-down the pro audio interface to have. Even if you work with a different digital audio application and have only a desktop computer, the 896 is an audio interface that you should seriously consider (particularly, if installing PCI cards isn't your cup of tea).

MOTU, 1280 Massachusetts Ave., Cambridge, MA 02138; 617/576-2760; fax 617/576-3609; www.motu.com. ■

Visit Erik Hawkins' indie label at www.muzicali.com and check out his best-selling virtual studio-recording book, Studio-In-a-Box *(Artistpro/Hal Leonard).*

BY GEORGE PETERSEN

Dynaudio Acoustics AIR 6

Network-Controlled, DSP-Driven Studio Monitors

It's often said that there's nothing new in studio monitors. Even with today's improved driver materials, high-efficiency amps and CAD-derived enclosures, the most modern designs are still based on cone and voice-coil technology that dates back 80 years or more. So whenever anything truly new comes along, we should all take notice.

The AIR Series—a co-venture between Danish high-tech leaders Dynaudio Acoustics and TC Electronic—is an example of such innovation. Available in stereo, 2.1, 5.1 and other configurations, AIR monitors combine DSP and networking intelligence to provide superb performance in a compact system, with convenient remote-control operation and the ability to store and recall all level/alignment/EQ/bass-management parameters. Everything required for a system install is provided—speakers, internal amps, interconnect wiring, remote, calibration tools and PC/Mac control software.

THE SYSTEM

AIR systems are based on a combination of master or slave speakers. Each master unit has a rear-input panel (analog/digital or digital-only) that is capable of handling one or two input signals. RJ-45 TC-Link ports on the masters connect to the slave monitors, which have link-in/-out ports. Besides providing an interface platform for remote system control—whether via a small consoletop remote or Air Soft (Mac/PC) software—the TC-Link network carries 24-bit/96kHz audio to the slave speakers and all system control data: volume, system balance, bass management, filters, EQ, crossovers, presets, etc. The AIR system accepts digital input at any sampling rate from 31 to 97 kHz. All interconnections are via the included standard-shielded Cat. 5 Ethernet cables, so spares or longer lengths (up to 15 meters) for custom installs are readily available.

Aside from the LCD readouts and data-entry buttons on the master monitors' front baffle, the AIR 6s seem fairly normal. The proprietary Dynaudio drivers (6.5-inch woofer with molded polypropylene dome and 3-inch voice coil, and 1.1-inch

soft-dome tweeter) are fed by dual onboard 200-watt power amps crossing over at 2,150 Hz (24 dB/octave), with DSP-defined slope and filter points.

The 20.5-pound AIR 6 cabinets feel surprisingly light for a 400-watt biamped system, thanks to the lightweight switching PWM amplifiers. The woofer slightly overlaps the tweeter surround, bringing the two closer to acoustical center. There are no grilles, and the shaped baffle edges minimize diffraction effects. The 13.3x8.5x15-inch MDF enclosures are rear ported, with large rear heat sink/connection panels, including the power switch, audio XLRs and/or RJ-45 TC-Link network ports.

The AIR Base-1 Subwoofer is a ported 12x19x16.7-inch enclosure with a high-output, 10-inch woofer driven by a 200-watt PWM amp, a combination that produces 113dB peaks and a 25 to 120Hz response. AIR Base subs communicate solely via TC-Link and can be used only with AIR Series monitors. Bass-management data—such as gain, polarity, phase and lowpass filter in/out—can be stored as presets and recalled for different user's tastes or varying applications.

READ THE INSTRUCTIONS

The setup/calibration/installation of any 5.1 monitoring system is complex, but with the AIR system's master/slave configuration and TC-Link interfacing, the process is more involved. The manual offers comprehensive setup instructions, as even connecting the correct wire to its speaker can be daunting. Fortunately, TC puts L/C/R/Ls/Rs labels on the backs of the speakers in a package.

This is *not* one of those "plug it in, see if it works and then read the directions" installs, and several procedures are less than obvious. For example, in a 5.1 system fed from +4dB balanced analog XLRs, the "left" monitor (remember those labels?) is a master fed from your board's left/right monitor-out feeds. The system's right channel is a slave that gets its audio—and control info—via the RJ-45 TC-Link from the left speaker. The left surround (also a master) receives your mixer's Ls/Rs output

signals, with an RJ-45 cable supplying the right-surround speaker with audio and data. The system's third master is the center channel, which takes your mixer's center and LFE feeds; another RJ-45 cable goes from the center speaker to the sub. If bass management is inactive, the sub only plays LFE; with bass management enabled, bass energy from all five main channels is extracted and summed with LFE signals, and then sent to the sub. Add a couple more Cat. 5 cables to link between the masters, plug the remote into any available link jack and you're ready to rock...sort of.

Next is system calibration, which is similar to programming a home 5.1 system for level, bass management, phase, crossover, highpass filtering to feed the satellites, etc. The process is made easier with the provided Air Soft software and stereo test CD and DTS-encoded discs offering tones, level, polarity, phase and delay routines. Dynaudio also includes presets to compensate for common speaker-placement anomalies: freestanding, back wall, corner, freestanding with console in front, back wall with console in front, and corner with console in front. These, along with all other parameters, can be set for each speaker. Each AIR monitor is factory calibrated to ±0.2 dB of a targeted response curve, and all AIR components can be user-aligned in 0.1dB steps, with ±6dB 2-band shelving EQ. An optional AIR PC/IP program is also available for installation pros, which offers parametric EQ, delay and security lockout to prevent unauthorized mods.

IN SESSION

I began listening with two AIR 6s (master and slave) as stereo near-fields. The speakers offer a surprising amount of bass for their size—solid down to 40 Hz—so be careful about tight corner placement or putting the enclosures too close to the wall. Here, the DSP placement presets came in handy, bringing the LF buildup under control in my 11x17 project room. The spectral balance of the mids/highs is excellent, even in the critical 2.15kHz crossover point. The monitors' overall timbre is good: Highs were crisp, yet natural, providing smooth reproduction of upper harmonics on percussion, bells and strings. Other than adjusting for reflective room surfaces, there was no need to EQ or tweak the AIR 6s at all.

Adding the AIR Base-1 to the stereo rig, the sub level had to come way down to avoid overwhelming the AIR 6s. Once under control, the sub brought a new dimension with "you can feel it" rumblings of deep kicks, synths and pipe organ—well below 30 Hz. The front-firing 10-inch driver has a metal screen to keep feet out of the cone in under-console placements, and its front porting offered a more predictable response when used near walls or corners.

In a surround setup, the AIR 6s really shine. In the standard ±30° fronts and ±110° surrounds configuration, the speakers' realistic imaging and defined soundstage provided excellent localization, leading to a precise placement of surround-panned elements, while their medium-wide dispersion yielded a seamless, "no holes" playback environment. Here, I really appreciated the versatility of the compact remote, with its smooth 112dB range volume pot and the ability to instantly solo or mute any channel in the 5.1 mix, along with providing quick access to presets and three programmable reference levels (which can also double as dim or global mute functions). The remote is addictive—why isn't everything this easy?

Overall, the Dynaudio AIR 6 system is an impressive combination of technology and the art of transducer design. It's not cheap—a full 5.1 AIR 6 rig is $8,295 with analog and digital inputs (the digital input-only package is $500 less). However, the system is plug-and-go, including everything you need, so when all of its attributes—system control, programmability, setup tools and great sound—are considered, it may be very affordable indeed.

Distributed by TC Electronic, 742-A Hampshire Rd., Westlake Village, CA 91361; 805/373-1828; fax 805/379-2648; www.tcelectronic.com. ∎

Snapshot Product Reviews

GRACE DESIGN MODEL 901 Reference Headphone Amplifier

There are times when only headphones can reveal fine details and nuances that engineers need to hear when choosing preamps and mics, listening for background noises or doing quality control. Unfortunately, the headphone jack on any piece of equipment is, at minimum, a convenience feature used to confirm signal presence. Some have noise, hiss or interference, inadequate headroom or other sonic deficiencies. By eliminating this often-overlooked weak link in the chain, Grace Design's Model 901 helps encourage users to match the quality of this device by listening on better-than-average headphones.

The 901's more than five-pound heft is due to its thick steel chassis, toroidal (no wall wart!) transformer and ¼-inch, aluminum-slab front panel. Inside, the build quality and components are top-notch in keeping with its impeccable specs, such as a 22 to 120k Hz (±0.25 dB) bandwidth.

As a converter, the Grace 901 justifies its $1,495 list, with its high-quality, 24-bit/96kHz DAC interfaced to AES, S/PDIF coax and Toslink ports. Few pieces of gear have this type of quality conversion, in terms of components and execution. Plus, the converter subassembly can be upgraded to a higher sample-rate module if and when it becomes available. A front switch selects a digital or analog input (XLR or RCA), and a rotary switch handles level settings with precision resistors for trouble-free operation and channel-to-channel stability. It's followed by a high-quality/high-power output amp. A Range switch ensures that the Model 901 can drive any-impedance headphones.

My first test was recording a jazz trio (acoustic bass/drums/piano) in a live space without a control room. [Visit www.tangible-technology.com for full session details and an MP3 sample.] While recording, I worked exclusively in the headphones: It was heavenly, because there was no isolated control area. The session was recorded to a Fostex DV-40 4-channel DVD-RAM recorder. Two channels came direct from the board, and another pair came from an Audio-Technica stereo shotgun in the balcony.

Audition various source materials over numerous headphones (Sennheiser HD-600 and HD-280 Pro, Sony V-6/7506, Fostex T20, AKG 240 and Audio-Technica AT D40FS and AT M40FS), and you'll find that the 901's silence is impressive: there's no hint of hiss, extraneous noise or hum. Partnered with the Sennheiser HD-600, the sound was open, effortless, extended and spacious. The top is delicate and the bottom full. Nearly everyone knows what the Sony cans sound like—not as nice as the HD-600—but very good considering that they're one-third the street price. Concerning the impedance difference (300 ohms and 70 ohms), the Model 901 had no difficulty driving either pair.

Anyone who relies heavily on headphones in classical and jazz environments will quickly recognize this product's value. For users doing difficult sonic comparisons where it's tough to distinguish whether the gear or the source material is at fault, the Grace 901 is highly recommended.

Grace Design; 303/443-7454; www.gracedesign.com.

—*Eddie Ciletti*

▽ SWISSONIC AD96 MK2 4-Channel A/D Converter

Swiss manufacturer Swissonic recently updated its AD96 4-channel A/D converter by adding a wide-ranging calibration trim pot for each analog input, and a new power supply and PLL circuit. The new model—dubbed the AD96 mk2—outputs a 16, 18, 20 or 24-bit signal (with dither and noise shaping automatically applied to shorter word lengths) at 44.1, 48, 88.2 or 96kHz nominal sample rate. The half-rack unit is compatible with +4dBu nominal levels. You can globally switch the range/resolution of its four 16-segment, tri-colored LED input-level meters or set up the meters to count digital "overs."

The AD96 mk2 generates, locks to and converts between wordclock (including half-speed sample clocks) and x256 Superclock via rear panel BNC I/O connectors. Other rear panel connections include four balanced XLR analog inputs and two XLRs for "single-wire/double-speed" AES/EBU outputs. (An internal jumper can switch outputs to consumer-format signals in lieu of AES/EBU.) Double-wire AES/EBU format is not supported. One AES/EBU output serves channels 1/2, and the other serves channels 3/4. You can also route the four digital-output signals to channels 1 to 4 or 5 to 8 on the provided ADAT Lightpipe output.

The Lightpipe out can also be used in S/MUX and/or B/MUX (bit-packing) modes to record high-resolution digital audio to legacy 16- and 20-bit MDMs/DAWs. S/MUX mode maps each channel of 24-bit, 88.2/96kHz data to two Lightpipe channels that transmit at 44.1/48 kHz. B/MUX mode maps each 24-bit, 44.1/48kHz channel to two Lightpipe channels by assigning the upper 16 bits to channel 1 and the lower eight bits to channel 2. The AD96

mk2 can also use S/MUX and B/MUX modes simultaneously to encode two channels of 24-bit, 88.2/96kHz audio to eight tracks of a 16-bit MDM.

Given its modest $1,349 list price, I was surprised at the AD96 mk2's impressive 118dBA dynamic range. In subjective A/B tests, stereo tracks recorded with the Swissonic unit exhibited a little less depth and channel separation than those recorded with my Apogee Rosetta (a much more expensive unit on a per-channel basis), but the differences were quite subtle. The AD96 mk2 imparts a darker, warmer timbre as compared to that produced by

the Rosetta. (Neither converter's spectral balance sounds better than the other does—just different.) Of all the numerous premium-quality A/D converters I've used, the Swissonic AD96 mk2 offers the best price for value.

Distributed by Plus24; 323/845-1171; www.plus24.net.

—*Michael Cooper*

▷ GLYPH COMPANION
FireWire Hard Drive

Known to supply hard drives with high-quality enclosures and power supplies to the audio industry, Glyph Technologies

has recently added FireWire drives to its SCSI-based product line. Some of these drives are being marketed as complementary products to specific DAWs. Companion is a desktop FireWire drive with a form factor matching Digidesign's Mbox.

Companion comes in 40, 80 and 120GB flavors (by presstime, these will be 60, 120 and 180 GB), comfortably allowing up to seven hours of 24-track recording at 24-bit/48 kHz. The ATA drives run at 7,200 rpm with a sustained data transfer rate of >36 MB per second, and the ATA-to-FireWire bridge circuitry uses the high-bandwidth Oxford 911 chip specified by Digi, in conjunction with Glyph for use with Pro Tools systems.

Made out of metal and built to withstand musician's abuse, Companion's casing is much more rugged than the Mbox. All elements are assembled to minimize acoustic vibrations and resonance; the drive didn't seem any quieter than a run-of-the-mill Maxtor FireWire unit, although the Maxtor unit has an external power supply and is fanless. While Companion's noise level is not obnoxious, I wish computer and drive manufacturers would explore combinations of whisper fans and baffling technologies to lower the background din. The Companion is heavier than you'd expect, but quality power supplies and fans weigh more than the normal stuff. Glyph's thermal-sensing cooling is designed to activate the fan to keep with the drive's temperature, although I never noticed a change in fan noise or speed.

Connection/use of Companion is straightforward. The Glyph ships with Mac and Windows FireWire drivers on CD, and comes formatted for the Mac. Reformatting the drive for Windows is trivial. Testing Companion with a Mac iBook and desktop G4, it performed like a champ.

I tested the Companion with two Pro

Tools systems: the Mbox and the Digi 002, both attached to a 600MHz Apple iBook G3 laptop. With the Mbox, the Companion recorded and played back 24 channels of 24-bit, 48kHz digital audio with plenty of edits and fades. For the torture test, I recorded and played back 32 simultaneous tracks of 24-bit/96kHz audio on a Digi 002. The Companion handled this chore effortlessly, although adding many more edits and fades eventually exceeded the drive's capacity. All in all, I was mighty impressed with the Companion's performance.

A bonus: Companion also features S.M.A.R.T. Manager diagnostic software, which monitors the "fitness" of your drive and warns of imminent drive failure.

Companion's case is designed to match the Mbox, with a similar form factor and matching curved-blue faceplate—a nice touch. On the downside, the case is somewhat larger than many FireWire enclosures, and the long flanges on the bottom make it a tad inconvenient to transport. On the other hand, the power supply is built-in, rather than the wall wart and line-lump designs of many off-the-shelf drives.

Glyph makes great stuff, and Compan-ion is no exception. If you are willing to pay an enhanced price (40GB, $549; 80GB, $599; 120GB, $799) for an enhanced drive with high-quality components, then Companion is worth checking out.

Glyph Technologies; 800/335-0345; www.glyphtech.com.

—*Nick Peck*

AUDIX D6
Dynamic Kick Drum Mic

I use a variety of mics for kick, such as a Sennheiser MD-421, Beyer M88, E-V RE20, AKG D112 and even E-V's 664 "ray gun," which transforms *any* bass drum into the '70s dry thud Steely Dan kick. Another fave, Audix' D4 offers thunderous LF, but requires some experimenting to find its sweet spot. With this in mind, Audix offers the new D6, a $349 car-dioid using a very low mass (VLM) dynamic diaphragm in a 4x6-inch rugged aluminum body. The D6 has a stand adapter (on mine, the swivel wouldn't cinch securely), but it also fits the Audix D-flex, other D-Series mounts and lots of other clips—A-T, E-V, etc.

In session, the D6 delivered exactly as promised. It's voiced for kick miking, with 144dB SPL handling and a response emphasizing the 60 to 120Hz "boom," while attenuating the wobbly 200 to 600Hz range and then extending to 15 kHz to catch those beater-snap transients.

Forget EQ. You don't need it. Outside, six inches from double-headed jazz drums (1962 Gretsch 18-inch and 1914 Ludwig & Ludwig 26-inch calf), the sound was rounded, full and woolly. Inside a 22-inch Premier rock kick, the result was punchy and tight, with soul-shaking lows. The D6 was consistent nearly anywhere within the kick, with a solid, no-hassle sound, although it can be easily tweaked by moving it slightly—i.e., closer/more on-axis to the beater. Onstage or in session, the D6 rocks—literally!

Audix; 800/966-8261; www.audix usa.com.

—*George Petersen* ∎

Restoration 101

Unearthing Sounds from the Past

The restoration engineer's idea of heaven is being provided with a collector's choice of record pressings and tapes, or, better yet, poring through a vault to find a lost treasure. But when handed a one-off acetate disc or cassette tape to salvage, the restoration engineer's process often shifts toward forensics, where improving intelligibility is a more realistic goal than traveling through time to recover nuance.

IT'S ARCHEOLOGICAL, DIG?

While this article's focus is on technique, the extent to which tools are required is determined by budget and the amount of work to be done. Of course, Sonic Solutions' NoNoise comes to mind, as do CEDAR's Series X products, which I had the good fortune of reviewing a few years ago.

Knowing what CEDAR can do at $6k per box, I wanted to know what was possible at the other end of the spectrum. Cool Edit Pro is a product that I frequently use to manipulate audio files. At $249, it is quite the bargain as a multitrack recorder/editor, and includes an assortment of plug-ins, some restoration-specific. I've also been playing with a beta version of DART Pro XP. At $399, it's a bit more expensive than Cool Edit and is 2-track, but does focus exclusively on restoration.

It's important to start with the best possible source material. I have chosen some rather extreme
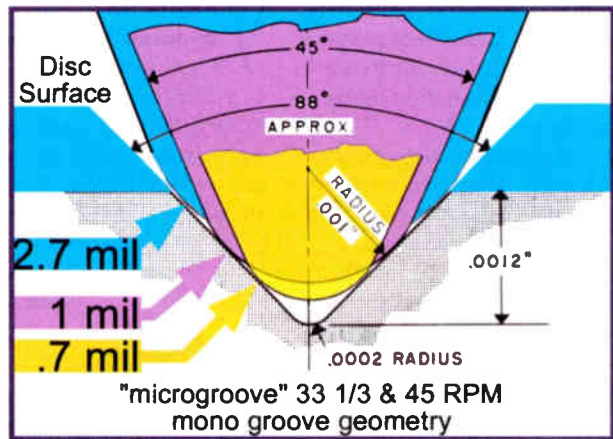
Figure 1: "Microgroove" geometry as detailed for mono LP and 45 rpm records. Here, it is augmented to show the relationship with styli optimized for 78 rpm and stereo playback.

examples—78 rpm records and a microcassette—to show how to prepare the material so that any soft- or hardware solution can do a better job.

The graphic in Fig. 1 originally began life detailing only the relationship of a 1-mil stylus to a "microgroove" record, the standard for mono LPs and 45 rpm discs from 1949 until the intro of stereo and color TV in 1957. The image was then augmented to show three styli, sitting in the groove from front to rear, where each stylus is designated by its radius at the point of contact. From the bottom up: yellow (.7 mil, stereo),
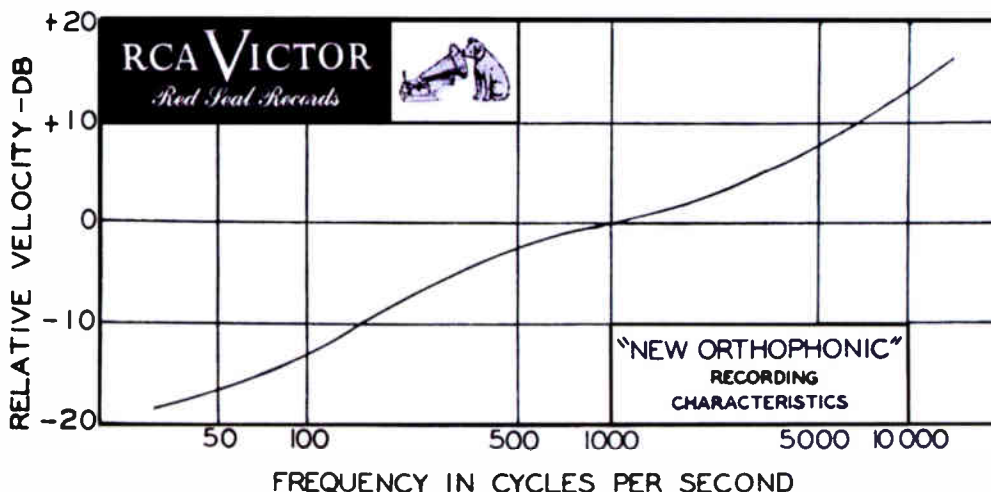
Figure 2: This record equalization curve was specified by RCA in 1951 for LP and 45 rpm records. An inverse curve is used for playback. When played with a 1-mil mono stylus, the HF response drops steeply after 7 kHz; but using a modern stereo stylus, the response at 15 kHz is only down 2 dB.

NUENDO

frank filipetti

nuendo…

untouchable sound.

To capture the sound of their new release **Untouchables**, heavy-hitting band **Korn** turned to digital recording pioneer Frank Filipetti and producer Michael Beinhorn. After painstaking comparisons, the group was unhappy with the way their tracks sounded using other popular DAWs, and found that they could edit and process tracks to their heart's content in NUENDO with absolutely no decrease in fidelity.

"I knew going in that the band was going to be especially vigilant about the sound of their instruments. That's why it was so important for me to find the right digital gear. Nowadays, everyone is accustomed to the manipulations we can perform on a digital platform. But the feature set has to be secondary to the fidelity set. And on that score we found NUENDO second to none."

One might even say…. untouchable.

phil ramone
rory kaplan
chuck ainlay
david tickle
frank filipetti
rob hill
greg ladanyi
elliot scheiner
alan parsons

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pink (1 mil, mono LP and 45 rpm) and blue (2.7 mil, 78 rpm). At that time, the only stylus shape option was conical (round). Later, elliptical and other shapes improved high-frequency tracking, lowered distortion and reduced groove wear.

SURFING FOR TIPS
Typically, Stanton phono cartridges have the most stylus options (available at www.kabusa.com and www.needledoctor .com). Shure (www.shure.com) has one stylus for 78 rpm playback. In the pre-DSP days, I chose a smaller stylus to play deeper into the groove away from the

major ticks and pops on the surface. The official tip radius is 3 mil, but the actual size for best performance is determined by the disc's material, condition and time period.

High note: Ticks and pops are primarily surface flaws, which require a noise-removal technique that responds to impulse. For this article, surface noise is defined as being generated from the material used to press the disc.

After 1949, many 78s were pressed from Vinylite and cut with the same stylus used for LPs and 45s but with a deeper groove. For these discs, a smaller tip radius yields better HF response, fewer ticks

and pops and less distortion by playing the groove in an area that is undamaged by previous and repeated play.

Pre-1949 records were made from shellac, a grainy substance *before* wear is factored in. While smaller and/or elliptical styli can better trace the groove at high frequencies, the enhanced resolution also reveals flaws in that disc compound. The optimum stylus choice is one that allows the decrackling algorithm the most leeway. If too small, the wash of noise will leave little wiggle room for the DSP.

Low note: If the bottom-of-groove radius is larger than the tip radius, the stylus will not be supported by the groove walls. The stylus will meander in the gutter and generate a "swishy" sound.

Figure 2 shows the record equalization curve that was specified by RCA in 1951 for LP and 45 rpm records. An inverse curve is used for playback, which was provided on a 45 rpm test record's cover. When played with a 1-mil mono stylus, the HF response drops steeply after 7 kHz; when played with a modern "stereo" stylus, the response at 15 kHz is only down 2 dB. Visit www.tangible-technology.com for more images and audio samples.

EEK-U
The final issue concerns equalization. Prior to the introduction of the LP and 45, record manufacturers used EQ to optimize the disc to their standards. The response curve in Fig. 2 dates back to 1951 when RCA referred to it as the "New Orthophonic Recording Characteristics." It is essentially the RIAA curve: A treble boost and bass cut are applied during record, and then a reciprocal curve on playback reduces noise and improves tracking, respectively. Any 78 rpm records should be played flat, thus requiring a preamp with that capability. This is as important to the record's sound because it is useful to the click-reduction algorithm, allowing transient ticks to be more easily identified. It is better to apply EQ after restoration is complete.

WHAT'S CRACKLIN'?
Removing ticks and pops is easy. How much further you go is a matter of taste, time, tools and money. If the disc condition and transfer are really good, CEDAR's DeCrackler takes less than a minute to optimize. Decrackling is a more difficult task if "record grunge" is not so far above the program material. The RIAA curve increases low-frequency

THE OTHER SIDE OF RECORD RESTORATION

By George Petersen
Restoration of vintage discs and removing clicks, pops, crackles and hiss from historical recordings is no picnic. However, beyond all of those formidable tasks, there are a few hidden pitfalls to be aware of, and one of them is playing the record at the correct speed.

It's a little-known fact that record labels adopted a number of "standard" speeds for 78 rpm discs that ranged from 71.29 to 80 rpm. In fact, the standard for "modern" 78s (spanning the period from the mid-1920s through the 1950s) was actually 78.26 rather than 78.00 rpm. Play an early Victor disc (intended for 71.29 rpm playback) on a typical modern turntable and the pitch change is nearly +10% (approximately 160 cents sharp)—over a step and a half! I cringe whenever I hear a 78 reissue where the engineers or producers didn't bother to play back the disc at the right speed.

Here are some "standard" speeds that are used by various record labels: 71.29 rpm—Berliner, Zonaphone and early Victor; 76.59 rpm—Victor acoustic (through the mid-1920s); 80.00 rpm—acoustic Columbia, Edison, Pathé, Emerson, Brunswick and Okeh; and 78.26 rpm— the "electric" recording standard, eventually adopted by all labels from the mid-1920s onward. Early examples of electrically recorded discs included Victor's "Orthophonic" and Columbia's "Viva-Tonal" releases.

Now, a few words about the difference between "acoustic" and "electric" recordings. Originally, all recordings were made using the acoustic process: Audio signals entered a sound horn pointed at the source, and the vibrations within the horn would vibrate a diaphragm that was attached to a needle, which etched a groove in the wax-record master. The acoustic *playback* system was exactly the opposite: The groove in the disc caused a needle to vibrate, thus moving a diaphragm linked to a horn that acoustically amplified the sound. This acoustical amplification isn't really much different from the *big* sound that is created by the tiny razz from a trumpeter's lips.

In the early 1920s, the perceived (or actual) threat of competition from the fledgling radio industry sent record companies on a quest to improve disc quality. At that time, radio was low-fi at best, but record labels felt that they needed a competitive edge. The result was electric recording, which debuted in 1925 and marked as radical of a departure from the status quo as the analog vs. digital debates of recent years. Actually, the electric recording process was a two-fold revolution: Along with motor-driven record players (as opposed to the hand-cranked Victrolas) came the then-farfetched concept of using microphones, vacuum tube amplifiers and electrically driven disc cutters to capture and reproduce sounds.

True to form, many critics hated the electric process. They claimed the electric process brought out individual instruments, thus destroying the smooth ensemble sound of acoustic recordings; other detractors believed that this new technology sounded harsh and unnatural. (Don't these comments sound familiar today?) Eventually, the acoustical recording proponents gave in and 78.26 rpm became the standard playback speed.

World Radio History

Figure 3: A composite of two EQ curves. Blue indicates curve applied during transfer of microcassette tape to MasterLink; yellow illustrates the curve after using Cool Edit Pro's De-Noising plug-in.

rumble that can modulate the noise-reduction process, a percolating or bubbling kind of sound that is similar to fluttering clarinets.

In terms of usable frequency response above 5 kHz, "que sera sera." A good pressing may reveal useful information that might otherwise be masked by surface noise. A funky pressing requires more patience and a larger selection of styli. Choose a tip radius that moves the noise spectrum outside of the usable response. That noise can either be tolerated, processed or filtered. I'm content when a pre-1949 78 rpm recording sounds like a noisy analog tape.

THE ULTIMATE TAPE HISS

Several years ago, I went to a Christmas party at Nola Studios, way up in the penthouse of the Steinway building on West 57th Street in New York City. Armed with a microcassette recorder, I captured stories from various Bell Sound alumni gathered there. Back in the '60s, Bell Sound was one of the hot independent studios: Many of the Burt Bacharach/Dionne Warwick recordings were made there, as well as cuts by the Stones, the Lovin' Spoonful and some Motown artists.

Alas, one interviewee, Harry "Hesh" Yarmark, is no longer with us. His first session as a recording engineer began with Little Anthony & The Imperials ("Tears on My Pillow"). Harry also recorded Peter, Paul and Mary, the Four Seasons, Laura Nyro, Richie Havens, Paul Butterfield, the Five Stairsteps ("Ooh Child") and The Toys ("A Lover's Concerto"). After leaving Bell, his first session at Allegro Studios was with Johnny Maestro and The Brooklyn Bridge recording "Worst That Could Happen."

So, Harry's gone and all I've got is this microcassette. I never paid much attention to the format except that, as with all analog media, faster is better for high-

frequency response. With the azimuth wandering all over the place and the electronics lacking headroom, this tape redefined the term "challenge." I decided to wind the microcassette tape into a new full-sized cassette shell, hoping for better playback.

THERE'S A SNAKE IN MY EARS

As expected, the tape played backward with one surprise, at double speed. Turns out that "fast" for a microcassette is 15/16 ips! I made a quick half-speed modification to one of several "spare" cassette decks. While preparing for transfer, it was difficult to hear enough high-frequency detail to optimize the azimuth, so I applied an inverse EQ curve (Fig. 3) to improve intelligibility and reduce low- to mid-frequency muck. (This basically undid the normal bias EQ curve inherent to the machine.) Still, the azimuth required tweaking about every seven to 10 minutes as is the nature of the original beastly recording. The transfer was made to an Alesis MasterLink, samples of which were dumped into a workstation for reversal, analysis and noise tests.

The improved transport and electronics made a huge difference in the recovered signal. The EQ curve gave the De-Hiss algorithm plenty to work with. Afterward, a modified reciprocal curve restored the warmth that was removed during the transfer. I tried both Cool Edit Pro and DART Pro XP. CEP Version 2—released earlier this year—did a remarkable job, especially after sampling the noise in a section that did not have dialog. DART Pro was still in beta when tested, which did not include the new noise-reduction algorithm.

RIDING THE RANGE

The beauty of dedicated hardware is real-time control and live on-the-fly tweaking. Two years later, the 78 rpm restoration still holds up. CEDAR really delivered the goods and made the job quick and easy. For the microcassette, software de-noising was not real time, although it was possible to audition before processing. I am amazed that such affordable tools like Cool Edit Pro and DART Pro can do so much for their price. ∎

For more Ciletti, including "before and after" audio samples from the projects described here, visit www.tangible-technology.com.

World Radio History

Coldplay's first album, the 2000 release *Parachutes* (Parlophone), has sold almost 5 million copies. Following on its success, the band spent most of 2001 touring the U.S., Australia and Europe. Back on the road through the second half of 2002 to promote *A Rush of Blood to the Head* (Capitol), which sold almost 2 million in its first week of release, the band returned to the San Francisco Bay Area in September, this time appearing at Berkeley's 12,000-capacity Greek Theater; previous San Francisco shows were at The Warfield, The Fillmore and the much smaller venue Bimbo's. The tour will return to the States in December and is scheduled to continue for another year or two.

FOH engineer Daniel Green has worked with Coldplay for the past 4½ years. "I was mixing on the London club scene, and they were one of the bands that came through," Green says. "I'm not the most technical of engineers—I'm young and haven't been doing it for very long—but it's just about understanding music, I think. Now I'm getting the opportunity to learn all of the technical stuff along the way."

Green is mixing on a 48-input Midas Heritage 3000. Outboard gear includes dbx 160 and tube compressors, Drawmer DS201 gates, a TC Electronic 2290 delay for vocals, and Yamaha SPX 990, Lexicon 300L and Lexicon PCM 81 units for reverbs. Green also uses XTA SIDD units on the guitars. "I haven't got anything really new," he comments. "The SIDD's the main thing that I'm getting into—they sound quite fat, and they're really useful tools for shaping the sounds."

COLDPLAY

Chris Martin (vocals/piano/guitar)   Jon Buckland (guitar)   Guy Berryman (bass)

PHOTOS AND TEXT BY STEVE JENNINGS

Monitor engineer Chris Wood is mixing for in-ears and wedges on a 48-input Midas XL250 console. The band, except bassist Guy Berryman, uses Shure IEM systems with Sensaphonic ear molds; Berryman relies entirely on wedges. Wood's outboard rack contains XTA crossovers and EQs, dbx compressors and BSS gates. "The show is technically very straightforward," notes Wood. "We've kept this touring package from a club tour we did three weeks ago, where we had to condense everything down as much as possible. Simple is many times better."

Drummer Will Champion's kit is miked with a Shure SM91 and a Beyerdynamic M 88 on the kick drum, Shure Beta 57s on the snare, Beta 87s on the toms and Audio-Technica 4050s as overheads.
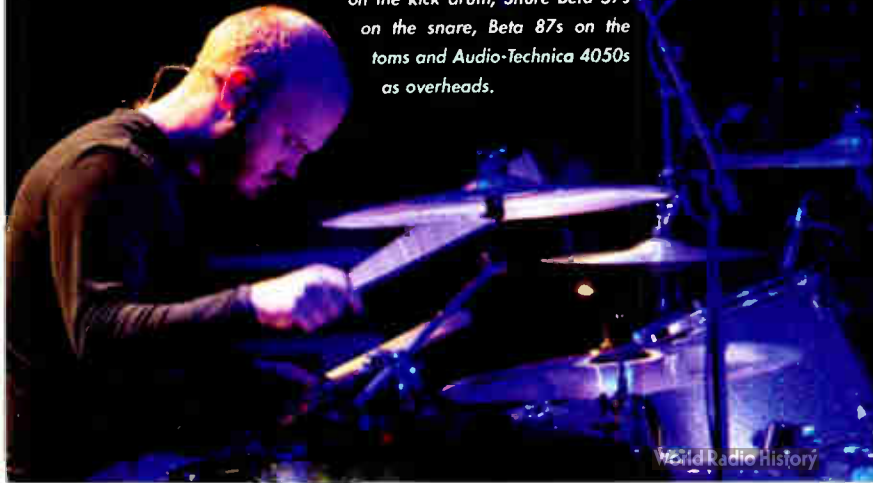
Vocalist Chris Martin sings into Shure Beta 58As, and may use as many as six during a show. "We change them regularly to maintain vocal clarity," says monitor engineer Chris Wood.

SOUND DESIGN
FOR AN AMERICAN TRADITION

THE 64th ANNUAL BARBERSHOP SINGERS' COMPETITION

Barbershop harmony, a uniquely American musical art form, drew some 14,000 attendees to Portland, Ore.,'s Rose Garden Arena over the 4th of July week. The 64th annual gathering of the Barbershop Society met to pick a champion from 44 competing quartets, each selected via regional competitions around the world. After two sessions of quarterfinals, the top 20 quartets advanced to the semifinals, with 10 going on to the finals. There were also competitions for Best College Quartet and Best Barbershop Chorus.

The Society for the Preservation and Encouragement of Barber Shop Quartet Singing in America (SPEBSQSA) has 16 North American districts and affiliate organizations overseas in the UK, Sweden, The Netherlands and Australia. Glen

Four Voices, winners of this year's competition.

Glancy, who has acted as the sound director for the Society for the past 28 years, originally became involved with the competition to minimize problems that he encountered when mastering the competition's recordings at United Sound. Glancy is now president of AMT Systems in Santa Clarita, Calif., and is also the sound contractor responsible for installations such as the Dream Center at the old Angeles Temple in downtown L.A. and at Cathedral of Our Lady of Angels.

This year, Glancy handed over his sound director duties to Daryl Bornstein, whose previous projects range from Leonard Bernstein to jazz at Lincoln Center to Broadway performances. Erik Von Ranson, who mixes the Internet broadcast, and who recently served on the Salt Lake City Olympics' audio crew for the opening and closing ceremonies, assisted Bornstein.

The competition's sound system was provided by Seattle's Morgan Sound, which also provided the system for last November's international convention of the Sweet Adelines, the female version of the

Schoeps CMXY-4V stereo mic

SPEBSQSA, also held at the Rose Garden. Morgan Sound ran out of JBL's VerTec speakers during the first busy week of summer and wound up subcontracting the system from Audio-Tek (ATK), based out of Burbank, Calif. The 48-box VerTec line array was engineered and installed by Andrew Waterman, ATK's lead engineer. "Andrew was instrumental in configuring and flying a great-sounding rig quickly," says Bornstein.

While Bornstein had used other line arrays, this was his first experience with the VerTec VT 4889 speaker cabinets and the first use of a line array for this event. "We achieved very even coverage and sound quality throughout the venue," he comments. "We accomplished this with a relatively lightweight and attractive P.A."

The entire system hung on eight 1-ton motors and was set up in what would be a typical arrangement for an arena rock show: a pair of 14-box vertical main arrays, with two 10-box arrays covering each side. The main array was split into two sections, which allowed for extra HF "spit" to be added to the upper array in order to compensate for high-frequency loss at the arena's far end. Powered with QSC PowerLight amplifiers (4.0 models on highs and mids, and 9.0s on the lows), the VerTecs were controlled via XTA 226 processors, as were the E-V 1152 frontfill speakers. Minimal foldback was provided via a single pair of floor monitors angled outward to favor the end singers in each quartet.

Morgan Sound's Ken Landis used eight floor monitors and eight Shure UHF mics needed for the Association of International Champions (AIC) exhibition, which showcases the previous year's winners following the first round of quartet competition. At FOH, Bornstein chose an InnovaSon Compact Live console for its ability to quickly write scenes and assemble the 32-input exhi-

by Mark Frink

bition show—which was, of course, re-hearsed out of sequence—and also to provide precisely recallable settings for the competitions.

CRITICAL LISTENING, NO MIXING
Although the competition is open to the public, the audience is predominantly made up of SPEBSQSA members, who have keen hearing and are intimately familiar with this musical style. Between

performances, a host announcer at the podium passes time while the audience is allowed to leave their seats, but movement during performances is strictly prohibited and enforced by ushers.

A hallmark of barbershop quartet singing is the ability to "make a chord ring" by creating overtones, which is achieved by modifying the tuning within the 4-note chords, and this feature is listened for during each song. "This might

be the most critical-listening audience I've ever encountered," Bornstein points out. "Nonetheless, we've had unanimous accolades for the sound quality this year."

After an initial two-song performance by designated "mic testers" at each session, adjustments on the sound equipment were not permitted. Operation of the console during competition is limited to switching between podium and the performance mics, a chore performed flawlessly by Robert "Bub" Phillippe, a veteran of eight years of competitions.

Onstage, each quartet arranges itself in a semicircle, which allows the singers at each end to hear each other better, as well as favoring the co-incident mic arrangement. A 3.5-foot-diameter semicircle of white tape on the carpeted stage helps the quartets line up properly around the mics. A heavy-based Atlas MS25 mic stand is placed off the front of the stage, with a long boom arm and stereo bar that positions a pair of mics at 42 inches above the deck (mid-chest height), an arrangement that isolates the mics from occasional footwork.

STEREO/MONO COMPATIBILITY
The recommended X-Y approach aligns the capsules of two matched-cardioid condensers with their axes separated by about 110°. The coincident approach guarantees mono compatibility, while still allowing a stereo recording. (It's a surprising fact that smaller ensembles actually require a slightly larger angle of separation than do larger groups.) Glancy has authored a technical paper on the Society's Website that describes the preferred method for quartet reinforcement using a matched pair of mics, along with a list of preferred "pencil" condensers, which include Schoeps MK 4, Neumann KM184, Shure SM81 and several AKG models, such as the C480 and C451.

In previous years, Glancy used a pair of Sennheiser MKH 40s, which he favors for their neutral sound. This year, however, all quartets were miked with Schoeps' relatively new CMXY 4V stereo mic, essentially a pair of Schoeps' side-address cardioid CCM 4Vs mounted side-by-side with interlocking gears so that they rotate in opposite directions to adjust the stereo spread. Bornstein points out that the coincident array can be replicated more consistently with a dedicated stereo mic than with a pair of cardioid microphones, an important consideration under contest conditions. "I

also feel that the Schoeps sounds better for this specific use, has better reach acoustically, requires less hardware and presents a lower profile on camera than other solutions considered," he adds. "It's simple, el-

egant and accurate." An MS mic array, which would allow the Society to move up from stereo CDs and VHS recordings to 5.1 recording for DVD release, is also under consideration. However, it remains to be seen if an MS pair has sufficient rear rejection to allow for adequate stage-monitoring levels.

The competition is highly structured: Each group sings two songs and is scored by 15 judges, each specializing in one of three distinct categories: singing, presentation and music. The judges sit in the first three rows and listen to the performance acoustically, thanks to the VerTec line array's ability to cover the arena with a sharp, defined edge of coverage, even at low frequencies. In the transition area between direct and reinforced sound, behind the judges in the fourth row, a coherent, natural sound is achieved by delaying the VerTec line arrays back to the acoustic sound of the quartets.

The single-session chorus competition, which takes place on the afternoon before the quartet finals, was miked with a Pearl

TL 44 stereo mic suspended upstage above and in front of the choral risers, with a Schoeps CCM 4 suspended eight feet to either side. The podium mics, used only for announcements, were redundant Schoeps CCM 5s in cardioid pattern on goosenecks.

After four days of some of the sweetest harmonizing heard, the winners were chosen: Four Voices, from Tennessee (the college champs in 1996), narrowly beat out Ohio's Uptown Sound. The next three quartets—Power Play from Michigan, Georgia's Riptide and Metropolis from Santa Fe Springs, Calif.—were separated by only 22 points out of a possible 10,000. The chorus competition was won for a fifth time by The Masters of Harmony, also from Santa Fe Springs, and the college quartet contest was won by Bowling Green, Wisc.,'s Catfish Bend. Next month, the Sweet Adelines meet at the Gaylord Center in Nashville. ■

Mark Frink is Mix's *sound reinforcement editor.*

THE REVEREND HORTON HEAT

The Reverend Horton Heat—Jim "Reverend Horton Heat" Heath (vocals/guitar), Jimbo Wallace (bass/background vocals) and Scott Churilla (drums)—are out on the road in support of their latest CD release, *Lucky 7.*

Production manager/FOH engineer Richard Belisle carries all of his own cables, mics, stands and FOH processing. "Actually, the band owns the vocal mics," notes Belisle. "They're Shure 55s, the 'old-school' mic, but they're reloaded with 58 capsules." Except for AKG C3000s on overheads, all of Belisle's other mics are Shures: a Beta 91 on kick, a Beta 57 on snare, an SM81 on hi-hat, Beta 98s on toms and under the ride cymbal, and Shure KSM32s on the Reverend's Fender amps. Belisle uses only 16 inputs in the Yamaha PM4000 console. "I'm at the age where less is more," comments Belisle. "I don't use a bottom snare mic, and I've never understood why people do."

For dynamic control, Belisle uses an Aphex 661 tube compressor on lead vocal, with another 661 on the bass direct out, but no compression on the bass mic. He also assigns dbx 1066s to the kick, snare and overheads, with Aphex gates on the drum kit. Other effects include TC Electronic M3000 and M5000 reverb engines, a Roland SDE 3000 for delay and a Yamaha SPX990 for doubling the vocal. —*Steve Jennings*

Chris Fulton (left) and Mikey Jiminez

MARC ANTHONY ON PARAGON II

Monitor engineers Mikey Jiminez and Chris Fulton are using dual ATI Paragon II monitor consoles to mix for Marc Anthony and his 18-member band on their current North American tour, which is promoting *Mended*, Anthony's second English-language release. Jiminez mixes for Anthony and the four backing vocalists. "I've got all the Sennheiser Evolution 300 Series in-ear systems on my Paragon II," explains Jiminez, who has been with Anthony for over 12 years. Fulton creates 14 mixes, all for wired Shure in-ear monitors (IEMs) except the two guitarists, who are on Sennheiser wireless IEMs. Fulton has been with tour sound equipment supplier Clair Bros. for 15 years.

MEYER M2D AT THE BRITT FEST

The summer-long Britt Festival in Jacksonville, Ore., was the first major outdoor festival to use a new Meyer Sound M2D Compact Curvilinear Array as the main system. Supplied by George Relles Sound of Eugene, Ore., the setup included eight M2D mid-high cabinets flown per side, supplemented by a pair of M2D Compact subwoofers per side. An underhung UPA-1P on each side provided frontfill, with two CQ-2 speakers adding sidefill. "The M2D works very well in this application," says Mike Sturgill, Britt's director of programming and production. "The coverage up the hill, past about 160 feet, is much better." The Britt Festival operates under a strict noise ordinance that specifies an hourly average of 92 dB (A-weighted) at the mix position.

NOTES FROM THE ROAD

The Synco Europe Network will purchase specially configured Martin Audio W8L line array systems for all Synco members, including Ampco Pro Rent and PAS Audio of Holland, DEE Sound and Light and Flashlight/APR of Belgium, Puro Audio of Portugal and RG Jones in the UK. The Synco W8L will feature specially badged W8L cabinets and MA amplifiers, matched to dedicated Synco loudspeaker controllers; systems will be compatible with standard Martin Audio W8L systems...Shaped Music, a full-service production company in Fort Collins, CO, supplied two InnovaSon Grand Live digital mixing consoles, one each at FOH and monitors, for this summer's Unlimited Sunshine 2002 Tour. Headlined by Cake, the tour included the Flaming Lips, Modest Mouse, De La Soul and Kinky, with bluegrass band the Hackensaw Boys playing between acts. "In four hours, I had all six bands programmed in," says Peter George, the tour's FOH systems tech, "and I never even cracked the manual. This board is pretty intuitive."

INSTALLATION NEWS

AKG Acoustics donated microphones and headphones for use at the Gibson Bluegrass Showcase, a 35,000-square-foot facility in Opry Mills, TN. The venue has features countless performances from country and bluegrass music's biggest stars, including Jerry Douglas, Alison Krauss and Union Station, Lonestar, Vince Gill, Amy Grant, Earl Scruggs, Brad Paisley, Ricky Skaggs and many more. Currently in use at the Showcase are three C2000B and two C3000B condenser microphones, 16 dynamic handheld microphones, eight D880 Emotion Series mics and eight D3800 Tri-Power Vocal mics... An InnovaSon Grand Live console has been installed in the 4,800-seat Oakdale Theatre in Wallingford, CT. According to production manager Chris Manganelli, the all-digital InnovaSon's onboard dynamics processing has allowed the theater to reduce the amount of space formerly occupied by racks of outboard signal-processing gear. A theater-in-the-round prior to 1996, the careerbuilder.com Oakdale Theatre is owned by Clear Channel Entertainment.■

SOUNDCRAFT IN THE ALLEY

Founded in 1947, Houston's Alley Theatre has installed a new 24-channel, 8-bus Soundcraft K3 Theatre mixing console, purchased from Full Compass Systems of Middleton, Wisc. According to Alley Theatre sound supervisor Phil Cassidy, the K3's compact footprint was one of the primary reasons the board was selected. The 296-seat theater has also added a BSS FCS-960 graphic equalizer, five Crown K2 power amplifiers and a variety of EAW speakers.

World Radio History

New Sound Reinforcement Products

SHURE SM86 CONDENSER

Shure's (www.shure.com) SM86 handheld cardioid condenser mic features a wide 50-18k Hz response, a two-stage windscreen/pop filter and a three-point internal shockmount to eliminate handling noise. Housed in Shure's familiar silver-colored, enamel-painted enclosure with steel-mesh grille, the SM86 delivers high gain before feedback and offers a tailored frequency response for clear vocal reproduction. Retail: $300.

JBL EXPANDS VERTEC

JBL's (www.jblpro.com) VT4888, VT4887 and VT4881 line array system elements for medium/small applications join the existing VerTec VT4889 full-size line array element and VT4880 subwoofer. These new products feature JBL's Neodymium Differential Drive loudspeaker technologies, and all include integral suspension hardware. The mid-sized VT4888 is a full-range, dual-12, three-way design weighing 108 pounds. The VT4887 compact (31x11x16-inch) line array element is a dual 8-inch, biamplified, three-way design weighing 62 pounds. Frequency range is 60-22k Hz. The 120-pound VT4881 is a compact, dual-coil, 15-inch, arrayable subwoofer with an 18-160Hz range. All feature composite-engineered panel enclosures and DuraFlex™ finishes. Transport dollies, rugged soft covers and a comprehensive selection of hardware fittings are available.

INNOVASON LIVE SOUND CONSOLE

The latest digital live performance console from InnovaSon (www.innovason.com), the COMPACT Sy40 is housed in the same chassis and offers the same footprint and number of faders as the Compact Live. Distributed in the U.S. by Sennheiser, the InnovaSon COMPACT Sy40 is configured with 40 input channels and 27 mix buses. As a stand-alone console, the COMPACT Sy40 supports 40 inputs and 16 outputs through 47 faders: 32, including eight stereo, for the 40 input channels, 12 stereo mix buses, plus three for the mono LCR masters. If linked to the InnovaSon Stage Box, the COMPACT Sy40 can be expanded to up to 72 inputs and 48 outputs.

MACKIE 18-INCH SUB

Mackie Designs' (www.mackie.com) SWA1801 is a high-output, 18-inch active subwoofer designed for live applications. Featuring an RCF Precision LF driver and a horn-loaded port design, the SWA1801 is driven by an integral 900-watt RMS high-current amplifier. The input panel has a polarity switch and recessed level control for the line-level input, with loop-out connectors and a highpass output to feed full-range speakers and/or amps. The 18mm, birch-ply, black-spatter finished cabinet has cast-aluminum handles and rear-mounted wheels. Dimensions are 25.1x30.5x29.7 inches (HxWxD); weight is 132 pounds. Price: $1,599.

E-V CDR-1000 UHF

Electro-Voice's (www.electrovoice.com) CDR-1000 frequency-agile, wireless UHF receiver features E-V's Advanced ClearScan™ Auto-Channel Select, Sound Check Screen, and 950-channel frequency agility and a USB port for real-time PC monitoring/control. A backlit LCD shows group/channel, transmitter battery status, diversity operation, RF and audio-level meters. Its antenna output jacks allow six receivers to operate on two antennas without a splitter; 24 receivers may be operated from two antennas and one APD4 antenna-distribution splitter. The companion CSH-1000 handheld transmitter has a silent power on/off, LCD channel display, low-battery indicator LED, 5mW or 50mW transmit power, and either an E-V N/DYM 767a dynamic or RE510 condenser element. A 9V battery provides up to 10 hours of operation. CDR-1000 prices begin at $2,400.

ELVIS: STILL NUMBER ONE!
POLISHING THE KING'S GREATEST HITS

by Blair Jackson

Elvis Presley's hits have been packaged and repackaged a zillion times, but it's safe to say that no single-disc Elvis collection covers as broad a swath and boasts as high a level of audio fidelity as this fall's collection, *Elvis: 30 #1 Hits*. It encompasses songs that hit the top of various U.S. and UK charts between 1956 and 1977 and presents the full range of Elvis' work, from rockabilly to sweeping ballads to country-flavored tunes to Vegas-y workouts—"Heartbreak Hotel" to "Burning Love," with lots in between. It even includes, as a bonus track, this season's surprise Elvis hit: The contemporary JXL remix of "A Little Less Conversation," which topped the charts in England. Fittingly, *Elvis: 30 #1 Hits* debuted at Number One on *Billboard*'s album chart and in several other countries around the world.

"I think it's one of the few collections out there that goes from mono all the way up to Pro Tools, with 3-track, 4-track, 8-track, 16-track and 24-track analog in between," says David Bendeth, who produced the compilation for RCA with the technical assistance of engineer Ray Bardani.

For Bendeth, whose production credits include Bruce Hornsby's latest CD, *Big Swing Face*, as well as discs by Crash Test Dummies, Cowboy Junkies and others, and Bardani, who's engineered projects for the likes of Luther Vandross, Aretha Franklin, Marcus Miller, Miles Davis and many more, the Elvis project involved more than merely digging up and dusting off the old masters. The goal was to sonically *improve* the tracks wherever possible, which meant going back into the original multitrack masters (more than half were 3-track or above) and putting them through improved sig-

nal chains to give the performances greater punch and clarity. A 5.1 version is likely to come out in the not-too-distant future, too.
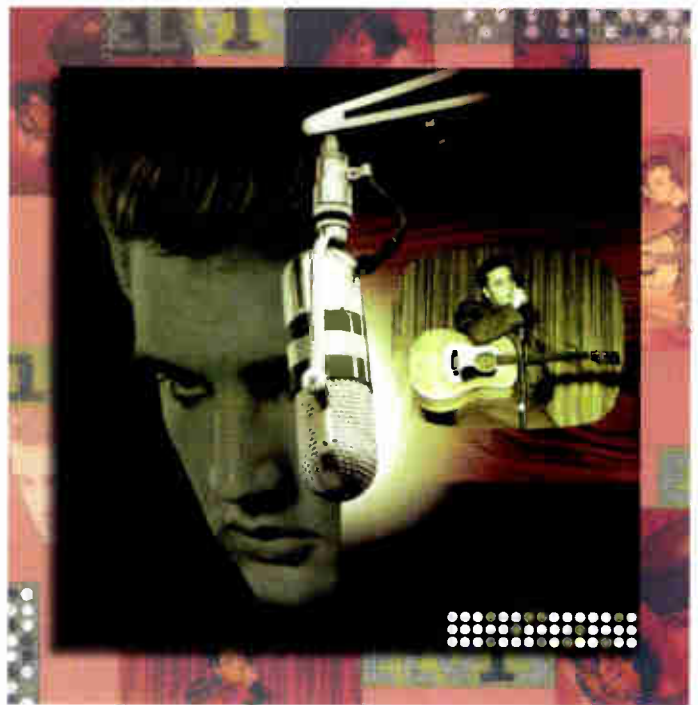
We spoke to Bendeth and Bardani about some of the technical aspects of this process.

Bendeth: At first, we didn't know what we were going to do or what it was going to end up being. We really had no clue. So I spoke to my assistant and we called up Elvis' master tapes, which had never been done before. We went to the original source for everything, which is at Iron Mountain in Pennsylvania.

I would have thought the masters had been used many times before for previous collections.
Bendeth: A lot of the early mono records had been re-EQ'd and remastered at some point; that's true.

Bardani: They might have taken out the master monos, but the multitracks had never been touched; that's for sure. So we went into the Hit Factory—Studio 4, which is an SSL 9000 room—and we made a transfer of "Burning Love" from the 16-track to 24-bit 3348HR.

So you stayed with tape?
Bardani: Yes, for solidity and consistency, and to make sure that we had a good tape copy in case anything happened to the master tape. You get back to the 3-tracks and they're 45, 46 years old.

Were they in pretty good shape?
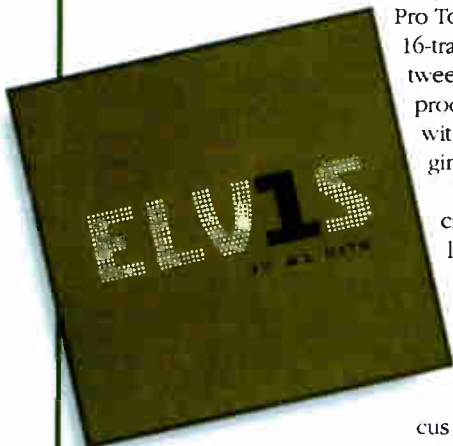
"PET SOUNDS" IN SURROUND

REWORKING BRIAN WILSON'S MASTERPIECE

by Blair Jackson

When considering which classic rock albums would seem to be natural choices to make the move to a 5.1 surround format, the Beach Boys' *Pet Sounds*—a true sonic marvel when it came out in 1966—would have to be high on any list. Considered by many to be Brian Wilson's great masterpiece, *Pet Sounds* combined some of the richness and depth of Phil Spector's most ambitious productions with radical arrangement ideas that influenced The Beatles and many other late-'60s trailblazers. It's one of the most influential albums of that decade, so who *wouldn't* be curious to hear Brian's magnificent achievement spread out over six speakers? There's just one problem, which many people forget: *Pet Sounds* was a *mono* album!

Brian Wilson in the studio, circa 1966.

Have no fear, though, because Mark Linett is here. Over the past 15 years, Linett has established himself as the *de facto* curator of the Beach Boys' sonic legacy. The Grammy-winning engineer/producer has worked with an impressive array of artists during his long career, including Randy Newman, Rickie Lee Jones,

"SINATRA IN HOLLYWOOD"

A NEW BOX CELEBRATES HIS FILM MUSIC LEGACY

by Blair Jackson

If you check the semi-authoritative online All Music Guide (allmusic.com) listing under "Frank Sinatra" and scroll *way* down to "Compilations, Boxes," you'll find a whopping *318* entries, encompassing everything from standard greatest hits collections to various "theme" albums (Christmas songs, Broadway show tunes, songs for lovers, young Sinatra, blues, etc.) to exhaustive box sets covering the singer's entire output for different labels. *The Columbia Years* consists of 285 tracks cut between 1943 and 1952, spread over 12 CDs; *The Capitol Years* (1953 to 1961) boasts 272 tracks on 21

CDs. But it's fair to say that none of those boxes and repackagings were quite as challenging to put together as this year's *Frank Sinatra in Hollywood (1940-1964)*,

a six-CD, 160-track set put out by Reprise (Sinatra's own label originally) that compiles nearly every song The Voice recorded for films, both well-known and obscure. It includes tunes from many musicals, of course, including *Anchors Aweigh*, *It Happened in Brooklyn*, *On the Town*, *Guys and Dolls*, *Pal Joey*, *Can-Can*, *Robin and the Seven Hoods* and many more. But there are also numerous songs from films—dramas and comedies—Sinatra appeared in that were not musicals, but for which he provided a new song or two, as well as some from films he didn't appear in at all but sang on the soundtrack.

Sprinkled among the songs—which are presented chronologically—are occasional promotional spots for the films, as well as snippets of interviews, Sinatra's Best Supporting Actor Oscar acceptance speech (for *From Here to Eternity*, 1953), a few outtakes and other rarities. Did you know that in 1954, Sinatra lent his voice to

"PET SOUNDS" IN SURROUND

Eric Clapton and Jane's Addiction; and he most recently produced and engineered live CDs for Dave Alvin and a reunion of his old band, The Blasters. But Linett always seems to come back to the Beach Boys. He's shepherded the CD releases of their greatest albums, as well as various compilations. At this point, he knows more about the Beach Boys' master tapes than anyone else on the planet, and he's lavished the group's catalog with a care and attention worthy of such distinguished work. Another go-around for *Pet Sounds*? No problem. Though it was no cakewalk, either.

"I do have a bit of history with *Pet Sounds*," Linett says with a chuckle from his Glendale, Calif., studio, Your Place or Mine. "To go back to the beginning, I su-

Mark Linett in his studio, Your Place or Mine

UA console, originally from Western's Studio Two

pervised the first CD release in 1990—talk about the ancient age of digital! That was the beginning of [Sonic Solutions] NoNoise, and I remember going up to San Francisco and sitting there at Sonic's offices and having them modify 15 seconds of a track, and then I'd listen to it on headphones and say, 'Too much!' and we'd go through a couple of tracks that way, adjusting things. Then I'd go back to my hotel room, and *overnight* they would process maybe three songs. It was really time-consuming. And then five years later, we scrapped that anyway. Then, later [in 1997], there was the *Pet Sounds Sessions* box set, and that included the first stereo version. That was the first time I went into the multis—to do the stereo version.

"Actually, I had listened to some of the

multitracks as early as '88, while we were working on Brian's solo record [*Brian Wilson*] for Sire. They sent over 8-track masters, which was about half of the album, and I remember renting a machine and a head stack, and we just sat there and played it, marveling at it—'Listen to just the vocals on "Wouldn't It Be Nice"! Here's just the track!' It was a total thrill to hear; still is in fact.

"For the stereo mix, I had to create discrete multitracks to work from, because the standard practice of the day in '66 was when you had a track, you just bounced it from machine to machine and off you went. On *Pet Sounds*, the basic tracks were done on 3- or 4-track, and if it was a live session, no more than three tracks were ever used, because even though they had 4-track machines at Western [Studios], the fourth track was usually just a mono reference mix for playback. Then Brian would mix that to mono and use another 4-track to overdub; or, in the case of about half of the songs, he took it over to CBS Recording Studios, where the only 8-track in town was at that point, and dubbed the track down to mono on one track of the 8-track, and then he'd use as many as seven tracks for vocals, although they almost never did use seven tracks. I think on 'God Only Knows,' they're actually using seven tracks, though not all of them got used on the finished record."

Linett says that although a number of Beach Boys multitracks are missing from the group's extensive tape archives, "in the case of *Pet Sounds*, more than 99 per-

cent is there. The tracking date for 'Don't Talk' is missing, although we do have the dubdown, with the overdub strings and the two lead vocals, so that was okay. The only thing of any significance that we're missing is the double lead vocal for 'You Still Believe in Me.' Now, typically, the way they worked back then, like on a song such as 'Caroline No,' you've got a 3-track—the basic tracking date—and then Brian put a lead vocal on track 4, and then as Chuck Britz mixed that down to mono, Brian sang live and doubled it. So the mix reel was done that way: You had three tracks of playing plus vocal and now you have a mono master with a doubled vocal. That would have been a problem for us [on "Caroline No"], because we wouldn't have had the discrete doubled vocal, except for some reason—and I assume it was just a patching mistake—right before the final master, there was a take where the only thing that got on the mono machine was Brian's two lead vocals, so I was able to use that plus the 4-track master to create a discrete master we could mix from.

"You have to remember that, in those days, nobody believed the multitrack tapes served any purpose other than to get you to the finished master. And that thinking permeated all the way to the record companies that, if they saved this stuff, it was almost pure luck. They usually threw away all of the outtakes from a session, at the very least."

When Linett worked on the stereo release of *Pet Sounds* back in 1996, his first step was to transfer and synchronize the multitrack elements using a pair of Sony DASH multitracks. For the 5.1 release, he switched to a DAW system that allowed him to work at 24 bit, 96 kHz: an en-

hanced Apogee Native Tools system, which combines Apogee's AD-16 and DA-16 converters with Steinberg's Nuendo software and 96/52 PCI-based digital I/O card. "The 24/96 really does make a difference," Linett says. "If consumers only hear one format—16/44—they probably think it sounds good, and it does, but if you compare it to 24/96, you can really tell that [the higher bit and sampling rate] makes a huge difference. It's almost like taking a whole layer of dirt off of a picture. It's never sounded better, and we've also remastered the mono and stereo mixes at 24/96 for the DVD-A [which will be released in January]."

For Linett, the first challenge was getting the material from the different multitrack sessions—usually the 3-track basic plus a 4- or 8-track overdub reel—in sync for the transfer to Native Tools, a task that required him to make minute adjustments on the varispeed of one of the two playback machines "until you can find the point where the two tracks will stay synchronous for at least 15 or 20 seconds if you line them up. You're trying to find a speed that is accurate enough for that period of time. Then I'd do the transfer. After the vocal transfer was done, the mono track mix was used as a reference to get the vocals in perfect sync with the original 3-track instrumental master. The vocals would be shifted several times during each song to keep them in alignment with the backing track, using the mono track mix as a guide. But that mono instrumental track wasn't used in the final mix."

Once everything was in Native Tools, "I mixed from Nuendo but mixed analog through my API 2488, and in some cases, also fed through tube outboard modules that are the same as the ones they used in the console at United Western," Linett says. "As on the stereo mix, I tended to feed the basic tracks, and in some cases, vocals back through the console just because the sonic footprint it would impart. The main plug-ins we used were the Universal Audio UAD-1 emulations of the LA-2A and the 1176 and the Pultec. And I used the [Forssell Technologies] CS-1 input channel strip quite a lot—it's got an EQ and a compressor and delays, which we didn't use. The nice thing about the UAD-1 is it doesn't soak up any DSP from the program.

"The other thing that made a big difference in this project," he continues, "is my Lucid external clock generator [the SSG-92]. I'm a total convert to using the

Track sheet for "I Just Wasn't Made For These Times"

best external clock source you can get, because we did some tests that prove that, especially when you're dealing with coincident material, it makes an enormous difference in the depth of the soundfield.

"We transferred everything at 24/96 and mixed back to Nuendo and also to analog [Studer] at 15 [ips] SR, which is where 90 percent of what we used came from. We used six tracks of a 2-inch 16-track."

Taking advantage of the extensive sonic real estate that 5.1 affords was more difficult than it would be on 16- or 24-track projects, because most of the individual tracks featured ganged instruments or vocals, rather than discrete parts. "A typical split-out for the 3-track [basic] would be horns on one track, maybe one of the basses and some of the percussion on another, and then everything else on the third track," Linett explains. "For vocals, before the advent of the 8-track, the requirement was pretty much to do the lead and the backgrounds all together. But by the time of *Pet Sounds*, there are more multiple parts being done rather than an entire ensemble. On the 8-track, you might find you'll have the whole group singing a background part, but then you might have some extra discrete vocals or answer lines or third parts. But the main thing is the leads have now been removed from that for the most part. There were a couple of exceptions, including 'Sloop John B,' which is the oldest track, recorded in '65. That was done

first on a 3-track, then bounced to 4-track, then bounced to another 4-track. The main lead and main backgrounds are on one pair of tracks, having been sung like that. Then there's another set of background vocals that were added on the final 4-track—the very, very high parts—and on that there's also actually a 12-string picking guitar part that was also added at the end.

"The way we make records today, the instruments are usually isolated because they're going on separate tracks and everyone's wearing headphones. What I started to realize when I listened to the full sessions from '66—it was cut mostly at Western 3, with two songs cut at Gold Star and one at Sunset Sound—is the musicians were in the room playing together and nobody was wearing headphones. You had all of these musicians playing in the room, and in the control room, you've got Brian and Chuck Britz [at Western] or Larry Levine [at Gold Star] combining all of this and adding reverb and adding tape slap and making the sound we all know, live. And nobody playing it heard that unless they walked into the control room and heard a playback. I realized when I was listening to the tracking date for 'Wouldn't It Be Nice' that the only person who's wearing headphones is drummer Hal Blaine, because the 12-string guitar lick [that opens the song] was played directly into the board. So Hal had to hear it so he knew when to bring the band in.

World Radio History

But no one else who wasn't in the control room could hear the 12-string.

"Leakage was everything. Not only did you work with it, it was a huge part of the sound. And that's why those smaller rooms were so popular for rock. You hear these huge records that Brian and Phil Spector made and you think it must be an enormous space. Well, no, it's a very small space, because that allowed the coincident information to be useful. If you were in a huge room like Studio 1 at Western, the bounceback from instruments to the other mics would have been objectionable, whereas in a small room, it added another dimension to the sound.

"What's ironic about all of this is that in the '60s, when Brian was doing these records, he greatly preferred mono, to stereo even, because, philosophically, the idea that you work that hard on something and present it in mono there's no question of how it's supposed to sound. There isn't much a listener can do to alter what you've created. In stereo, there are all these other variables: How far apart are the speakers? Are they in phase? In addition, the main outlet for this music in 1966 was still mono AM radio, and that's what Brian mixed for.

"So, in a way, it's strange that we did a stereo version of *Pet Sounds* and now we're doing 5.1. You've got so much latitude in what the playback environment is going to do to your mix that it's really tricky. There are an awful lot of variables, because now you're dealing in a more three-dimensional space. How do you place these same elements in that space and still keep the same vibe, but not have it sound like things are missing? The object was to make it feel like the original record but in this new format."

Not surprisingly, Linett opted to keep most of the vocals spread across the front of the surround mix, "and we have instruments and backgrounds that are predominantly in the rear, and also a lot of stuff to the sides between the front and the back, to try to make it a real surround experience. Of course, if I'd had everything on separate tracks, it would have been a completely different kind of mix. We would have probably pushed things much further into the corners so things were really popping out."

Asked about which song was best suited to the surround experience, Linett says, "Probably 'I Just Wasn't Made for These Times,' because in the B sections and in the chorus, there are all these vocal parts that come in, and they work re-

ally well when you can separate them out and move them—it increases the depth of awareness of what Brian was really doing. You've got a double lead vocal and in the chorus, there's a background part sung in Spanish that I never even realized was there until we worked on the stereo album. On the DVD-A, when the chorus comes in, the Spanish vocals are actually behind you and then the first part of the round comes in on the left, the second part comes in on the right and then there's a third part that's playing in the center.

"'Sloop John B' also worked really well because of those extra little tracks Brian put on. It's amazing."

What are Linett's feelings about the proper use of the center channel? "My center channel philosophy is 'No center channel,'" he says with a laugh. "I don't like to use it. I went back and forth over whether to put nothing in it or put a tiny bit in it. I ended up putting a teeny-tiny amount in it, just so people won't think their system is broken. We've done fine with a phantom center all these years."

The mastering was done by Joe Gastwirt and Steve Hall at Futuredisc. "I can't thank them enough," Linett says. "They worked really hard to get this new version of the album onto the disc, and 5.1 mastering is a lot harder than stereo mastering, believe me."

Linett *has* done a magnificent job of maintaining the integrity of the original recording while adding the depth and dimension we've come to expect from surround mixes. There's nothing gimmicky about the way voices and instrumental groupings have been placed in the surround field; rather, it all sounds like a natural extension of the mono mix—a heightened reality, if you will. Particularly effective are "God Only Knows," "I Know There's an Answer," "Pet Sounds" and "I Just Wasn't Made for These Times"; but it all sounds amazingly fresh. A bonus for hardcore fans is the inclusion of a number of extra tracks—session excerpts of "God Only Knows" and "Wouldn't It Be Nice" (where we get to hear Brian instructing Hal Blaine how to enter the song after the 12-string intro); a beautiful, vocals-only mix of "I Just Wasn't Made For These Times"; the instrumental "Summer Means New Love," originally released in mono on *Pet Sounds'* predecessor, *Summer Days (And Summer Nights)* and more.

With the completion of the *Pet Sounds* DVD-A, Linett has gone as far with those masters as he's likely to go for a while, but

that does not conclude his involvement with the music from that album: This past year, he engineered a live album of Brian Wilson and his 10-piece band re-creating the album onstage, and it's likely that a DVD-Video of that concert—in 5.1 surround, of course—will be on his plate in 2003.

And beyond that? "Well, I'd love to see what I could do with *Wild Honey* and *Smiley Smile*," he says. "Those would be a really interesting records to mix in 5.1. If only we could find the multitrack for 'Good Vibrations.' If anyone knows where that one is, I'd love to hear from you!" ∎

Linett and Your Place or Mine Recording can be reached at mhline@aol.com.

ELVIS: STILL NUMBER ONE!

FROM PAGE 148

Bardani: Absolutely. They were in very good shape.

Bendeth: It's funny, the only problem we had was with a 2-inch 24-track from the '70s that we had to bake. There were some leader problems—leaders were breaking on the 3-track, and the 3-track machine overheated every hour, so we had to reset the alignment constantly.

Did you have information on what kind of machines they were originally recorded on?

Bardani: The 3-tracks were done on an Ampex 3-track, and that's what we had. And there aren't many of those around these days. Actually, we got ours from some guy—a collector—who had one in really good condition.

Those machines—their tubes—get hot, and the transport's not great, either. So we had to make sure that when we played it, it was aligned perfectly and we got through it before anything could possibly happen. You're sitting there listening, and all of a sudden, everything stops. You don't know. Did the tape break? Did it overheat? It was a pretty laborious process. It took us several days to transfer everything. Every recording had to be checked for the right recording level and alignment level, but, luckily, we were able to find that information on all of the reels, so we had the right alignment curve for each tape.

Bendeth: Except, of course, the 24-track, which wasn't marked. [Laughs]

So you started with "Burning Love" [1972]

to see what you could do sonically?

Bendeth: Exactly. "Burning Love" was 11 tracks on the 16-track. We basically took the approach going in that we were never going to either add anything or take anything away; we were going to use what was there and build upon that by using different chains of EQ and compression. There was a big experimental phase of what we went through, going back and forth between many pieces of gear. It was a matter of finding the right chain. When we put up the original, we were pretty sure we could beat it.

Bardani: Because there was more information on the master tapes than I think anyone's ever heard before. The actual recording was pretty good, considering everybody was always live in the studio; nothing was ever overdubbed. That's the way he always worked. Elvis was in the middle of the room, everything was bleeding on his track, his vocal or echoes or effects were on his track, as were every other instrument; if a guitar had echo on it, it was on there like that.

Bendeth: So, we sat at the console for a couple of days and went at "Burning Love" with a real fervor. We knew the bottom end was on the bass and could be brought out more. We knew Elvis' voice was pretty well-recorded but could be improved. The backgrounds were buried, so we brought those up and compressed them and made them sit [in the track].

We mixed a few songs over a long period—we did "Burning Love" and then "Return to Sender," "Can't Help Falling in Love," "Wooden Heart." And the point was to play this music for my company [RCA] and see if they liked it. Everybody loved it, so we got to keep going.

Was this project modeled after The Beatles' 1?

Bendeth: I guess there are similarities, but that's really a marketing consideration. Our job was different because we were actually working with the master multitracks and not just remastering. Although the remastering was very important. In fact, one of the interesting things about this project is that the mastering was done at the same time as we mixed. We would finish a mix and get George Marino and Ted Jensen [of Sterling Mastering] to master them, to see where we were at sonically. We ended up using George on all of the songs we mixed, and we ended up using Ted on all of the mono tracks, which we didn't touch. Then, at some point, Ted did the whole compilation as one work, too.

I would think that with the different eras

and tape formats, you would have run into a lot of anomalous things—basses recorded differently, panning issues, etc.

Bendeth: That's true. It was all over the map. Like with the 3-track, we had this chain going that we were really digging on "Return to Sender." Ray was looking at me like, "We're going to be able to breeze through these songs."

Bardani: On "Return to Sender," the music was all on track 1. Elvis was on track 2, in the middle, with the music bleeding through on his track; and then on track 3 were the background vocals with their echo, with the music again leaking slightly into their track. On that particular song, we went through a Neve compressor, a Neve 1081 EQ, and then some console EQ with some slight filtering to make sure that the low end and top end were clean. So that was the music. Elvis' vocal went through a dbx 160S compressor and then a Massenburg EQ. That was the chain before it hit the console.

We thought we were cool with it; this was going to be the layout. Wrong. Because the same year even, there might be another session and the split of the music and the vocal and the sound was com-

pletely different—sonically different, different placement, track spread differences. Different vocal EQ and echoes. So, basically every song was a new journey for us, and sometimes, the Neve [EQ] did-

> We basically took the approach going in that we were never going to either add anything or take anything away; we were going to use what was there and build upon that.
>
> —David Bendeth

n't sound right. Sometimes, it was an API EQ; sometimes, it was a Massenburg EQ that worked best.

Bendeth: A lot of the work came in through the detailed riding of the vocals.

Once we would get the music to fit where we wanted it and have the balance of the third track, we would ride the vocal. Also, we were doing moves on the music; even on the one track with the music on it, we would raise certain things at certain times.

Bardani: If there was a guitar on the right side, we might poke it up a little for a bar and then bring it down, but you had to be really careful. All these moves were very detailed and this is where the SSL automation comes in, with the auto-takeover and the accuracy in small increments of moves where it was inaudible, but you would *feel* the energy.

We had to be really careful when we did the moves on Elvis because when we'd ride him, the sound of the record would change because so much music was bleeding onto his track. You had to be really careful and focus on what kind of EQ you used to make sure it sat well, and then when we did the ride, to make sure that, say, the drum ambience didn't get too loud if we raised his vocal.

Bendeth: One thing we got to do that I hadn't done in many years is, even though we had the SSL, we ended up doing some manuals on Elvis' vocals, on the

1081s. Something would go by where Elvis' voice was distorted and breaking up and the EQ was wrong, so we'd get it to the point where we really liked it and then right at that point in the mix, we'd kick it in and start moving stuff down a dB and up a dB. We just looked at each other and said, "This is so cool! We're doing it like we used to do it!" Hands on the console or, in this case, on the EQ.

Bardani: It was necessary because there were certain points on there where Elvis was singing and he obviously overloaded the mic pre and the mic, and all of a sudden, it got really distorted and bright and weird. We would soften those for consistency. So when you listen to his vocals, especially on the mixes we did from track 14 on, you can hear that his vocals fit right there. Every year was different, but generally, his performances were really solid.

Bendeth: Sometimes, we would put up the original tracks and they already sounded better than the masters just going through the SSL. We put up "Marie's the Name" and looked at each other and thought, "This is incredible!"

What does it say about the original recordings that you could improve them so much?

Bendeth: I think everything was recorded pretty well before, but I don't think everything was mixed really well, and I don't think everything was really mastered very well before. We didn't do anything particularly unusual. We just used modern technology—although if you look at the list, it's mostly classic stuff—and used a combination of balance with EQ and mastering.

But everything was put down fine originally. I think they used Neumann microphones to record Elvis' vocals and had RCA ribbon mics on the sessions. Good tape machines. What we did was just take what was there and polish it.

Bardani: We were very conscious that whatever panning or split was on the original classic record, we didn't tamper with that at all. If the bass was on the left side, it stayed on the left side. There was no trying to make things stereo that weren't stereo. We wanted to keep the integrity of the original tracks, but we wanted to get it up sonically to what we like.

David Bendeth (left) and Ray Bardani

Bendeth: We were tempted to change the panning a zillion times; I'm not going to lie to you. When you've got a song like "In the Ghetto," where the drums are all the way to the left and the bass is all the way to the right, and you put them in the center and they sound better, you want to do that. But we didn't.

We ran into a couple of interesting problems, too. On "Suspicious Minds," which was an 8-track, there were no horns on the master tape. And on "It's Now or Never," which was a 3-track, there was no piano. What probably had happened is those things had been overdubbed at a later date and then the tape of the overdub had been lost. We didn't know what we were going to do, but we started mixing the songs anyway. Then I got this wacky idea: I realized that in both of those situations, the missing instruments were on the far right, so what we did was grab far right and filter out all of the bottom and top and got it to a point in Pro Tools where we had isolated it, and then, piece by piece, I flew it back into our master and brought it up so it doesn't flange. And I did the same thing with the piano. That's all we used the Pro Tools for on this. It allowed us to put these parts back in time with the song. We even made the horns sound a little bigger. That was the only manipulation that was done on the whole record.

Was anything done to the mono tracks? They sound better, too.

Bendeth: That was all Ted Jensen; he did a great job. Basically, he took out the other side of the mono—the noisy side.

What do you mean?

Bardani: They were 2-track mono. They mixed it to mono, but it was from a 2-track and they panned everything in the middle. So, what Ted did was pick the

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best side of the mono and work with that. In a lot of cases, I guess one side was a little dirtier or more distorted.

Bendeth: He did his thing. We couldn't believe it when we heard it. He definitely took them to a place they'd never been before.

Bardani: It certainly helped working from the absolute master, too. We knew it was from the best source we could have.

It must be cool to get to work with the master tape of a classic like "Heartbreak Hotel."

Bardani: It was. Everybody was scared!

Well, it's like the Holy Grail of rock 'n' roll in a way.

Bardani: People were lining up at the studio just to look at the tape!

Can you sum up your experience working on this project?

Bendeth: Well, we've never worked with an artist of this magnitude before. And I don't know if we were the "right" guys to do it or not. There are many phenomenal mixers out there who could've taken this on and done a good job. But I think the advantage we had is that we were two people working on this together and we were always able to be objective about each other's ideas. I'm not sure one mixer could've done this—sat in a room and mixed it by themselves. So, we realized the magnitude of the artist and the importance of the record, and also we were going to put our names on this record.

Bardani: You work with Elvis and you're putting yourself up on the firing block.

Bendeth: I kept saying, "We're going to get crucified by someone for this. We're messing with the Mona Lisa—like putting longer hair on her and better makeup." I was pretty scared, but Ray was always confident about it, and he's such an Elvis fan he wasn't going to mess with it. And once we had the four-man team in place—us and Ted and George—there were enough people with a knowledge of sound that we were always going to check each other and give each other a lot of feedback.

Bardani: It was musical respect. The music was always going to be most important over the technical considerations. We always went with feel. We were always in sync on everything, because the concept was designated from the get go to try not to be clever with it. We always had the original record right there because we wanted to be sure everything was as it was.

Bendeth: Only better. ∎

"SINATRA IN HOLLYWOOD"

an unreleased animated film version of *Finian's Rainbow* that found the singer paired with such notable jazzbos as Louis Armstrong, Ella Fitzgerald, Ray Brown and Oscar Peterson? Well, there are nine tracks from that "lost" production here. Other discs feature duets with greats such as Gene Kelly, Maurice Chevalier, Kathryn Grayson, Bing Crosby and his various Rat Pack buddies, as well as such unexpected delights as numbers with Jimmy Durante and Groucho Marx. There are songs by some of America's greatest songwriters (Cole Porter, The Gershwins, Jule Styne, Sammy Cahn, Jimmy Van Heusen, Rodgers & Hart, etc.), and there are, truth be told, a few utterly forgettable songs that are for Sinatra completists only—they weren't all gems, folks. Ninety percent of what's on the box has never appeared on CD before, and there has never been a collection with this sort of scope. It represents one of the last unexplored frontiers of Sinatra's career. (His multitudinous television appearances make up the other major one.) The box is lovingly packaged with a 120-page book that includes a number of fine essays and rare photographs.

The producer/masterminds of *Frank Sinatra in Hollywood* are two well-known Sinatra experts: Didier Deutsch is a producer and music historian who has worked on many compilations, soundtracks and cast albums through the years, including the Sinatra *Columbia Years* box; and Charles Granata is the author of the 1999 book *Sessions With Sinatra: Frank Sinatra and the Art of Recording* and has produced several smaller collections of Sinatra songs. According to Granata, the Hollywood box was seven years in the making from conception to completion. There were years spent tracking down the material from libraries, film studio vaults and private collections—finding the best source for each song—and then the difficult and time-consuming task of transferring the source material to digital media, cleaning them sonically and, in some cases, remixing songs from primitive multitrack recordings.

"We didn't want to just have a bunch of scenes from the films [on the box]," Deutsch says. "We didn't want sound effects and dialog; we wanted original recordings before mixdown, and I'd say about 95 percent is that. There were a couple of tracks where we had to rely on the optical track because that's all we had. The problem you encounter with the optical tracks is when you have a scene where Frank Sinatra is singing in a nightclub, the camera might switch to two people talking, and all of a sudden, the music behind it dips; you can't avoid that. So we wanted to get the songs without all that, but that material is more difficult to find."

"We were fortunate that, by and large, our original source material was in very good shape," adds Granata. "We were using nitrate film, magnetic film, acetate discs, metal stampers and metal playback parts, and regular magnetic tape. The recordings span 1940 to 1964, so there's a wide range of technology reflected in the box.

"When they recorded the earliest of these tracks, in the 1940s at MGM," Granata continues, "they recorded them on nitrate film. They also created playback discs so that the performers could practice lip-synching. Before pressing the shellac playback discs, they created a stamper—a metal part that is the 'mother.' For a substantial number of tracks from the '40s, we were missing the nitrate film, which had deteriorated, and in the absence of any analog transfer, we turned to either the playback disc or the stampers. In many cases, the shellac playback discs had been destroyed. Fortunately, one of our associate producers—George Feltenstein, who had worked at Turner and MGM for years—happened upon a cache of MGM stampers secreted in an attic above the studio control room. Finding those stampers helped us in two ways: First, we recovered a number of missing recordings; second, we came one generation closer to the original nitrate session recordings. Michael Feinstein—an amazing musical archivist—also stepped in and gave us complete access to his collection, which provided original source material for long-lost recordings from RKO and MGM. He also transferred all of the MGM stampers to digital for us in his home studio."

Alas, the film studios were not, generally speaking, very careful about preserving either the raw materials that went into the making of their films or even the finished films. The nitrate in film stock was prone to deterioration and was explosively flammable. There were fatal fires in MGM's film-storage areas in 1955 and 1960 that led to the Culver City Fire Department demanding that they purge the lot of nitrate films. At that point, Granata says, some of the engineers who understood the value of the condemned film library "transferred whatever they could to open-

reel ¼-inch tape at 7½ ips. Some of those transfers were recorded at the correct level, and some were recorded at a very low level. Some of the transfers are over-modulated and distorted. Then they used bulk-erased tape, which increased the chances of having bleed-through and crosstalk from the previously recorded program—some of the reels had been marked 'My Favorite Martian'! Though they made some effort to preserve the dis-integrating nitrate film, only 1,200 analog reels survived the original session record-ings for the whole MGM library. As late as the '80s, they were still getting rid of things—they discarded all of the playback discs that had been carefully stored, and most of the stampers, except for the ones George Feltenstein discovered in 1993. Overall, the film studios have a long his-tory of mishandling a significant portion of our cultural heritage."

"At least a large portion of those soundtracks were salvaged," Deutsch notes, "and in a sense, that constituted the vault of what we were looking for—the

Producer Charles Granata

great MGM soundtracks like *On the Town* and *Anchors Aweigh*; they were there." It should be noted, too, that other film stu-dios were equally, if not more, cavalier about the preservation of precious audio and visual material. "With *Pal Joey* [a Co-lumbia picture], all of the tapes had been

destroyed; they'd been erased to put an-other recording on top of it," Deutsch says with disgust in his voice. "Fortunately, we had a tape that came from a transfer of ac-etates that had belonged to George Sid-ney, the director.

"At these big companies, there's al-ways some guy who has no knowledge of what the history of the recordings they own is, but has a mandate to make room on the shelf so he allows these recordings to be destroyed. I've never understood the philosophy of hiring people who don't know what they are doing, but that's another story."

Both Deutsch and Granata are highly complimentary of the quality of the orig-inal recordings that have survived, espe-cially ones from the MGM musicals: "The MGM soundstage was the best recording studio in Hollywood; they had the best musicians and the best engineers," Deutsch says. "Even Capitol, which I cer-tainly don't want to dismiss, could not re-ally compete with MGM."

"In many ways, the film industry was

way ahead of the commercial recording industry in terms of technology in the '40s and early '50s," Granata says. "A lot of people don't know that when Sinatra was at MGM, they were already recording with discrete channels to multiple optical recorders. They didn't do that to create a stereo film soundtrack; they did that because when they reduced the individual channels to a single mono track, they wanted the flexibility to emphasize certain portions of the orchestra. For example, if Sinatra were sitting at the piano and singing in a scene, they could raise the level of the piano if it was recorded on its own track. Generally, they would place three or four microphones across the orchestra—to get an even spread—and give the vocalist or vocal group one or two mics. Each microphone was channeled back to a separate optical film recorder; later, the sound engineers would reduce these prerecording elements—adding dialog and sound effects—to a single mono track. When we go back to these existing 'angles,' as the individual channels were called, we can create a stereo mix, even though the recording engineers never planned for that 50 years ago.

"When we remixed some of the 'discrete-angle' MGM tracks in Los Angeles, we put up the tapes and transferred them to digital. After we synched them up with timecode, we noticed that on occasion one of the tracks would 'drift,' because of the slight speed variations between the original optical recorders and the analog transfer machines used in the early '60s. Once this was corrected, we used the different orchestral and vocal views to make our 'stereo' mix."

Songs from the mid-'50s films *The Tender Trap, Young at Heart* and *High Society* are among those that benefited from having multitrack elements. But by this time, the studios were using magnetic "safety" film instead of unstable nitrate stock.

Film editors were already used to working with multiple sources to create soundtracks—combining different music, dialog and sound effects tracks into a single mono track, first on the nitrate stock, later on mag film. "Each medium has its own sound," Granata says. "Optical film sounds kind of burnished and warm; it's got a nice range, but it's not as wide a range as a good transcription disc or magnetic tape. But it's fairly high-quality nonetheless; it's not usually distorted, and it doesn't have a lot of anomalies."

Sinatra was famously impatient as an actor—often doing re-takes only if he felt

like it—and he hated having to lip synch in his films; he often groused that he'd like to be able to do live takes in front of the camera. Still, he always treated his recording sessions, whether for record or film, very seriously. "His method of recording was pretty much the same in both mediums," Granata notes. "He didn't do any fewer takes. He wasn't any less careful with

Didier C. Deutsch

his vocal performance. He strove for the best performance, and he really insisted on the very best from everyone around him— the players, the engineers and himself."

When I mention that Sinatra was notorious for being a control freak, Granata agrees, but adds, "I've interviewed scores of people who worked with him in the studio and I can't think of one person who said that he was a control freak in a negative way. They all had great admiration for his ability and his innate musical sense. He'd come to a session and hear things in the orchestra that usually only a trained musician or arranger would hear. All he wanted and expected of the people he worked with was the same he expected of himself."

Not surprisingly, getting all of the tracks on a box of this sort up to snuff sonically required a fair amount of technical work, both in the transfers and the cleanup. Using a CEDAR system at Sony Music studios in New York, Andreas Meyer did a first pass on the material, eliminating noise where possible but also understanding that, as Granata puts it, "There's a fine line in audio restoration that you don't want to cross. You can very easily destroy the integrity and the ambient sound of a recording with a little bit too much processing. It

may sound good, but it might not be true to the original recording.

"In most cases, we were able to remove almost all of the fine surface noise with one pass through CEDAR as we were making the transfer. Later, we removed major anomalies, such as loud ticks or pops, that hadn't been caught by the 'decrackle' portion of the CEDAR system. We were able to go in further and excise those noises on a case-by-case basis. With few exceptions, the recordings didn't require much in the way of processing. Our mastering engineer did a fabulous job of smoothing everything out in the end, and the continuity from track to track is excellent."

Another problem, Deutsch says, is that "some of the recordings, particularly some of the ones that had been transferred earlier [in the '50s and '60s] to tape had low levels, so we had to make some adjustments. When you raise the level by 10 or 15 dB, which we did in some instances, obviously you raise the level of the white noise and hiss, and this is something we had to contend with and treat."

In a number of extreme cases, songs went through both the CEDAR and a Sonic system operated by the project's mastering engineer, Darcy Proper, who has worked with Deutsch on numerous projects over the past eight years, including the Sinatra Columbia box. "Darcy and Andreas [Meyer] went beyond the call of duty because they realized the importance of this set," Deutsch says. "They did a magnificent job." Meyer was also involved with the tracks that needed remixing, along with Doug Schwartz of Mulholland Music in L.A. and Sony New York's Jen Wyler.

In the end, the producers managed to get nearly everything they wanted for the set, albeit not always in the optimum format or condition. All things considered, though, it's a remarkable set that Sinatraphiles will certainly cherish. Asked if there were any major disappointments or regrets about the box, both Deutsch and Granata point to the same "lost" song: "Farewell Amanda," a Cole Porter tune Sinatra sang for the film *Adam's Rib*. "It was in the log at MGM, but the optical film had completely disintegrated," Deutsch says. At one point, after the box was essentially completed, Granata believed that he had finally tracked down a copy, only to find that both sides of a recently discovered metal acetate contained the same piano track for the song, without Sinatra's lead vocal. "That was the one that got away," Granata says. "'Farewell Amanda' would have put this collection over the top." ∎

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B.B. KING
BEENIE MAN
BERNIE TAUPIN
BRIAN McKNIGHT
BRIAN WILSON
BRYAN ADAMS
BUSTA RHYMES
dcTALK
CAPONE
CARL STURKEN
CHUCK MANGIONE
DIANA KRALL
DIANA ROSS

DIANE WARREN
DIRTY VEGAS
DR. DRE
DMX
ELTON JOHN
EMINEM
ENRIQUE IGLESIAS
ERYKAH BADU
EVAN ROGERS
FABOLOUS
FAITH HILL
FAT JOE
50 CENT
FOXY BROWN
GENE SIMMONS (KISS)
GLEN BALLARD

GODSMACK
GOO GOD DOLLS
HOOTIE & THE BLOWFISH
INDIA.ARIE
JAY-Z
JOHN KAY (STEPPENWOLF)
JONNY LANG
KYLIE MINDGUE
LAMONT DOZIER
LENNY KRAVITZ
LUDACRIS
MADONNA
MANA
MANDY MOORE
MARC ANTHONY
MARILYN MANSON

MARTINA McBRIDE
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MUSIQ
NAS
NATALIE COLE
N.E.R.D.
NOREAGA
OK GO
P. DIDDY
PHIL COLLINS
PETER FRAMPTON
RENÉE FLEMING
RENEE GILL
P.O.D.
RUDY PEREZ

RUSH
SARAH BRIGHTMAN
SHAGGY
SHERYL CROW
SMASH MOUTH
STEVEN CURTIS CHAPMAN
STING
THIRD EYE BLIND
TWEET
3 DOORS DOWN
UTE LEMPER
VANESSA CARLTON
VINCE GILL
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L.A. GRAPEVINE

by Maureen Droney

Some people are going to find that their lives are a whole lot easier now that multitalented engineer Bruce Maddocks has opened Cups 'N Strings, a one-stop studio in Hans Zimmer's Media Ventures complex in Santa Monica. Maddocks, a veteran of such top facilities as The Hit Factory, Record Plant, Capitol Recording Studios, Paramount Pictures and Sony Pictures, has put what he's learned over the years to use in an elegantly designed,
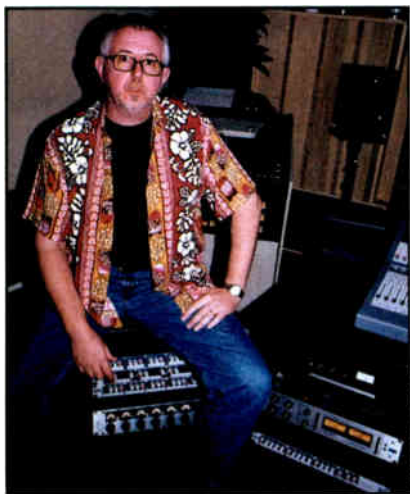
Bruce Maddocks inside his Cups 'N Strings studio.

multipurpose room. Need to do a surround mix? A multichannel transfer in a multitude of formats? ISDN, FTP, MP3 or Internet transfers? Digital archiving of a precious analog master? Or maybe rent a 2-inch 8-track head stack for your Studer? Yes, yes, yes—and more yes.

"I can do that," seems to be one of Maddocks' favorite phrases. "It's something I learned from Record Plant and its founder Chris Stone," he says with a laugh. "We were doing everything there—studio recording, live remotes, location sound for sitcoms—and we also had Scoring Stage M at Paramount. It was always, 'Say yes.' That was a great learning experience."

Since his very first music-biz job, Maddocks has worked at both the mixing and the technical sides of the board. He started in the tech shop at New York's legendary A&R Studios, and a day or so later, he found himself working on, and providing technical assistance on, a Phil Ramone session. It went on from there; years later, at Sony Pictures in Los Angeles, when he wasn't mixing sitcoms he was modifying equipment in the engineering department.

"I've worked in every area of audio," he comments. "With all of the different disciplines, I've learned to deal with situations quickly and efficiently. What's happening now is that the different functions and services from those different areas have been blurred. Take ISDN. Traditionally, all of that point-to-point communication was used in broadcast. Now, we're using it to record remote vocals, etc. Something that started out in broadcasting and then became a post-production tool has been embraced by the recording industry. Seeing that, and also the continuing move toward surround sound, I wanted to offer high-quality stereo and surround mixing, with digital-transmission capability, in a comfortable environment. For example, we have full ISDN: Dolby Fax and MPEG for remote mix approvals, vocal overdubs or even real-time 5.1 streaming, and we can burn .WAV files, DATs or CDs from it. It's all coming together, and I've incorporated it all into the studio."

The heart of Cups 'N Strings is a Sony DMX-R100 digital console, which was configured to create eight channels of digital and analog outputs simultaneously. There is also a very classy collection of outboard, including specialty items such as an Altec tube mic preamp; ARX mic pre's, gates, EQ and compression; a Behringer Magician; and a rare Magnatech 29 EQ. Mixes can be made from the studio's vintage Ampex ATR 124 2-inch 24-track, or to almost any configuration of analog or digital multitrack, or digital hard drive systems. Surround mixes can

NASHVILLE SKYLINE

by Rick Clark

Recently, I received a call from a Cyril Vetter, a multitalented renaissance man from Louisiana, who wanted to turn me on to a project he had been producing called *Deacon John's Jump Blues*. This multimedia tribute to great New Orleans music and the artistry of slide guitarist Deacon John is a combination film, studio CD and HDTV concert document done earlier in the year at the Orpheum Theater in New Orleans.

Vetter asked me if I would meet him at Seventeen Grand (one of Nashville's best surround sound mixing facilities), where he was overseeing the mix of the project with studio co-owner/manager and mixing engineer Jake Niceley. I didn't realize when I arrived at the studio that I would be in for such a fine audio-visual treat—*Deacon John's Jump Blues* features inspired playing and wonderfully filmed and edited footage of some of the most legendary artists from the Big Easy, including Dr. John and Allen Toussaint.

Deacon John might not be one of the most recognizable names outside of the Crescent City, but he was part of Toussaint's recording band, playing guitar on such notable tunes as Ernie K-Doe's "Mother In Law," Lee Dorsey's "Workin' In a Coalmine" and Irma Thomas' "Ruler of My Heart," among many others. To underscore his importance in the region's classic music, Deacon John Moore was inducted into the Louisiana Blues Hall of Fame in 2000.

Vetter—who also wrote the 1960 Swingin' Medallions frat rock anthem "Double Shot (Of My Baby's Love)"—first came upon the idea to do the project when he caught Deacon John, Wardell Quezergue and Teedy Boutte performing on the same bill at an after-party show for the 1999 Big Easy Awards.

"The repertoire at that gig was primarily jump blues tunes typical of the kind of seminal recordings produced during the '50s and early '60s. Jump blues is the big band/rhythm-and-blues hybrid that

formed the bridge between World War II-era big-band swing and early rock 'n' roll," recalls Vetter. "I believe these recordings signaled the transition from swing to a more R&B-influenced dance-band repertoire [jump blues], which eventually mainstreamed into what came to be known as rock 'n' roll. The performance innovations from piano players like Fats Domino, Little Richard, Ray Charles, Allen Toussaint and Professor Longhair; drummers like Earl Palmer, Charles Williams and Smokey Johnson; and sax players like Lee Allen and Red Tyler forever changed the way those instruments were played in popular music. Cosimo [Matassa] was willing to experiment and innovate with the recording technology. Producers like Dave Bartholomew, Bumps Blackwell, Ahmet Ertegun, Allen Toussaint, Dr. John and Wardell, and writers like Bartholomew, Toussaint, Dr. John, Dorothy Labostrie and others created hits that became the standard to which other early rock 'n' roll recordings were judged and later recordings were informed.

"After the gig, I asked Deacon why he never recorded an album of those kinds of tunes. He asked me why I hadn't produced one," says Vetter. "So over the next —CONTINUED ON PAGE 170

NEW YORK METRO

by Paul Verna

The New York mastering community, which has been quiet following the major reshuffling that occurred in the late '90s, is again showing signs of movement. New studios have opened, veteran engineers have changed affiliations and a relatively young studio has taken a prominent place among older, more established facilities.

The most far-reaching realignment of the stars occurred at the Hit Factory, which hired former Classic Sound and Masterdisk veteran Scott Hull and re-hired hip hop/R&B icon Herb Powers, who had left to open his own shop. The Hit Factory also hired Joe Yannece, formerly of Trutone Mastering in Hackensack, N.J.

In other staffing shifts, Phil Klum and Dennis Ferrante left longtime positions at Master Cutting Room and BMG, respectively, to join the startup Jigsaw Sound.

A mastering suite at Jigsaw Sound, with a plush couch in the back that co-owner Michael Iurato says encourages clients to attend sessions. The studio was designed by Francis Manzella.

Another new studio, Engine Room, opened its doors this year, led by engineer Mark Christensen. Amid this entrepreneurial activity, the Lodge—owned and operated by young engineer Emily Lazar—reinforced its position as a vital player on the scene with such high-profile album projects as David Bowie's *Heathen* and Khia's *Thug Misses*.

HIT FACTORY REVAMPS MASTERING OPERATION

At the Hit Factory, Hull says that he is delighted to join a studio with a commitment to excellence, a longstanding reputation in the industry and a staff of brilliant engineers. "This is really about the future," says Hull. "The association with the Hit Factory looks like it's going to be great for my clients and for me, in terms of surround and other future formats. There's a lot of excitement here about the improvements that are coming to mastering that are simultaneous with my arrival. We're making some pretty substantial upgrades."

While Hull is awaiting the completion of his mastering suite, he is researching the most sensible workstation platform for himself and the other Hit Factory engineers. "We're looking to improve work- —CONTINUED ON PAGE 172

Seventeen Grand co-owners Dave Cline and Jake Niceley (seated) inside the Sony Room.

COAST TO COAST

SESSIONS & STUDIO NEWS

SOUTHERN CALIFORNIA
Bob Dylan spent some time at Scream Studios (Studio City) cutting overdubs and mixing new material with engineers Biff Dawes and Chris Shaw for the *Masked & Anonymous* and *Gods & Generals* movie soundtracks. Also at Scream, Faith Hill was in mixing the song "Baby You Belong" with producer Dan Huff and engineers Tim Palmer and Mark O'Donoughue. DJ Lethal of Limp Bizkit was in with engineer Michael Parnin, overdubbing and mixing a few songs from his forthcoming debut album on Geffen Records. Chester Bennington (Linkin Park) and Method Man were two of the featured vocalists on the project…Producer/engineer Ron Saint Germain recently booked some time at Glenwood Place Studios (Burbank) to cut tracks for the upcoming Black Eyed Peas single "Express Yourself," which features contributions from the band 311…Producers Rob Hoffman and Heather Holley just finished up three tracks with Christina Aguilera for her new album. The sessions were split between Conway Studios (Los Angeles) and Enterprise Studios (Studio City). The tracks were mixed by Hoffman and Peter Mokran.

NORTHEAST
Eve 6 stopped in at Avatar Studios (NYC) to track overdubs for their upcoming RCA release. Greg Watterberg was tapped to produce the effort with engineer John Angello and assistant Ross Petersen…Bon Jovi treated an audience of contest winners to a live performance inside Indre Studios (Philadelphia). The session was recorded for a radio broadcast on WPST by Bon Jovi's engineer Mike Rew and house engineer/co-owner Michael Comstock.

SOUTHEAST
Recently at Reflection Sound Studios (Charlotte, NC), Korn guitarist Brian Welch (aka Head) recorded with engineer Andrew Scheps and house engineers Tracey Schroeder and Dave Puryear Welch recorded pieces for an upcoming collaboration with Limp Bizkit. Schroeder has also been busy putting the final

Inside Studio C at NYC's Sound on Sound Recording ore (L-R) Britney Spears, producer Bilol, bodyguord Big Rob and producer Rob Fusari.

touches on the debut album for the Virginia-based band Law of the Plague. The band spent much of the summer inside Reflection's Studio C.

NORTHWEST
DreamWorks artist The K.G.B. were back at Studio 880 (Oakland, CA) to work with engineer Marco Martin and assistant Brian Barnes on some new material. Also at 880, Transmetal tracked some sketch material for an upcoming double album. The band brought along James Murphy (Testament) to produce and engineer; Martin and Brad Kobylczak were on hand to assist the sessions. Roadrunner Records' Machine Head were also in putting the finishing touches on an upcoming album. Martin assisted Chris Hanson with engineering duties.

SOUTHEAST
New artist Avalon just finished recording a five-song CD at SugarHill Recording Studios (Houston) with producer Dan Workman. ∎

Please submit your sessions and studio news for "Coast to Coast" to Robert Hanson. Submissions can be sent via e-mail to RHanson@primediabusiness.com. Photo submissions (JPEG at 300 dpi) are always encouraged, and please include the name(s) of the artists, producers and engineers on the project, and the location of the studio.

Bon Jovi stops in at Indre Studios (Philodelphio): (L-R) Richie Sombora, Tico Torres, studio monoger Noncy Folkow, Jon Bon Jovi, co-owners Michoel Comstock and Todd Strine, and Dave Bryan.

be encoded into Dolby Digital (AC-3), DTS or DVD-A bitstreams. For those with budget constraints or missing multitrack masters, Maddocks has had good luck creating surround mixes from 2-track or mono sources using TC Electronic's Model 6000 Unwrap software.

Monitoring, in addition to Yamaha NS-10s and Genelec 1031As, is by Maddocks' own TEC Award-nominated TLC 3s, powered by Hafler Trans•nova amplification with calibrated bass management.

Obviously, with so many formats available, transfers are a specialty. So is "asset digitization": Maddocks has expertise in creating digital-storage archives for entire catalogs or single masters. Tapes are evaluated, with repairs or restoration, including convection oven "baking" provided as needed.

Next to the comfy 300-square-foot control room is an overdub suite, which gets used frequently for voice-overs that often use ISDN technology, which, because of the facility's dedicated lines, has particularly fast transfer rates. Clients also have private parking and full use of Media Ventures' rooftop patio and art deco-style indoor lounge and kitchen.

Maddocks especially enjoys working in the creatively charged atmosphere of the Media Ventures complex: "My first session, which I did even before I finished building the studio, was mastering a reel for one of the composers whose office is

A look inside Cups 'N Strings studio.

here. It's great working in an environment with so much going on. There's a wonderful energy here."

As you'd expect from someone so tech-savvy, Maddocks has an efficient, fast and informative Website at www.cupsnstrings.com.

Stopped in for a visit with another busy one-man operation: Bruce Hanifan Productions in the Beverlywood section of West L.A., where composer/producer/

Bruce Hanifan inside his West L.A. facility.

mixer/sound designer Hanifan provides services for feature film, television, commercial and corporate clients.

Recently, Hanifan's skills have been tapped for a large number of sports and travel/adventure shows such as *Outdoor Life* specials on mountain biking and rock climbing, main title music for *The Cousteau Chronicles*, scoring for radical sports on *The Extremists*, and music and sound design for the NBC expedition special, *Into the Tsangpo Gorge*, a documentary about kayaking in Tibet.

A classical pianist who started his music career as a first-call piano tuner (for picky artists like Steely Dan, so you *know* he's got great ears), Hanifan's composing credits include such movies of the week as USA Network's *Secret Cutting, A Crime of Passion* and the documentary *Breaking the News* on CBS, and commercials for Lexus, Intel and Microsoft.

What was the path from tuning to scoring? "I was tuning for all of the studios, as well as for a lot of successful musicians," Hanifan explains. "Some of them began asking why I wasn't out doing my own music. It finally started to eat at me that I wasn't expressing my creative side. I went back to mu-

sic school, where I got a real education in the practical realities of being a composer. When I finished, I hung my hat out as a composer. I started doing radio spots and then TV spots—it just kept going from there."

Movies of the week kept him writing music until trends changed; fewer MOWs are being made and those that are head to Canada. For Hanifan, documentaries have taken up much of the slack. "For me right now, it's about diversification," he comments. "From the documentaries to trailers and promos to doing music recording and voice-overs, working as a music producer for other artists and even demo reels for voice-overs. I also have a huge library of my music that I can just plug in to projects."

That library includes over 800 pieces. Hanifan's work ranges from classical and avant-garde to traditional orchestral and techno, and often incorporates ethnic and world music touches. "I've got a world-class sample library," he notes. "I'm known to be able to get the sound of an orchestra, which seems to be a requirement for TV these days. Nobody has the budgets for orchestras, which is sad. We're definitely in the world of low budget these days; a lot of producers are searching for ways to save a buck, and small project studios like mine are making their mark."

Hanifan's studio runs on "the mighty G4." He composes on Logic and mixes on Pro Tools MIXplus. "I love the new version—5 something—of Logic," he enthuses. "It's got great automation features. I love Pro Tools for mixing, but Logic is definitely nipping at Digidesign's toes."

Hanifan is also a fan of Genelec 1031As, his main monitors. The main keyboard controller is a Kurzweil PC88, from which Hanifan runs a collection of Roland, E-mu and Korg hardware samplers and synths, as well as a growing collection of soft synths. Two Mackies give him 112 inputs. "When I'm doing music, every one of those faders is used," he says. "If you have a lot of hardware samplers like I do, it's all about having a lot of faders."

You'd expect a classical pianist/piano tuner to have a fine piano; the Yamaha C7 housed in a separate recording room is, according to Hanifan, especially sweet. It's also starting to bring him business—the piano is available for recording, with or without Hanifan engineering. His pet piano-recording setup? A pair of Neumann KM184s through a Brent Averill-restored Neve preamp. "It's hard to find a piano perfectly maintained like this that records well in studios these days," he

says. "Most studios can't afford it. People can come here and do a CD master of a piano recording, from tracking to final mastering."

Hanifan's other favorite gear includes Lexicon PCM 80 and 90s and his trusty Motormix—the "low-budget, automated-fader package for Pro Tools," with which he's developed a novel use. "*Tsangpo Gorge* was shot in Tibet," he explains, "Almost all of the location recording ended up unusable. I had to re-create all of the water sounds, which was a considerable task. They traveled through a whole canyon, with the point of view constantly chang-

ing—from up on a cliff looking at the rapids to down in them. I had to replace all that audio quickly; there wasn't the budget for two weeks of sound design."

Hanifan met the challenge by constructing a multitude of hour-long water loops from "big Niagara Falls to streams and splashes," and then running Pro Tools with Motormix and playing the faders while watching the footage. The producers were thrilled; he now finds himself the "go-to" guy for surf and kayaking films—since *Tsangpo*, he's replaced the water sounds on two other films.

Part of the current niche Hanifan has

carved out for himself includes completing projects in a day, if necessary, as he did on the main title for CBS' *Breaking the News*. To accomplish such quick work, Hanifan often insists that clients attend the entire session. "If you're on a fast track and the budget is low," he says, "there's no time for revisions, or for doing five versions and hoping one sticks. I say, 'I'll do this, but you've got to sit in that chair, and every step of the way it's got to be approved.' That works."

Turning out so much music so quickly, one wonders from where Hanifan draws inspiration. "Sometimes I wonder myself," he muses. "From the visuals, of course, because I'm writing in sync to the frame. For me, music is very visual anyway. Sometimes I think of it as a landscape, where I'm creating musical backdrops for various characters to live in. I guess there's somewhat of a channeling thing there, too," he says with a laugh. "I'm really big on improvisation. One of my favorite things is to just sit down at the piano and go off. I guess I'm really good at reacting to outside stimuli and then bringing it, through myself, to music." ∎

E-mail MsMDK@aol.com with L.A. news.

NASHVILLE SKYLINE FROM PAGE 165

few months, Deacon and I selected a list of tunes that we felt represented the music we were trying to re-create. We wanted to do an homage to that special era at Cosimo's. Armed with a song list from Dave Bartholomew, Ray Charles, Smiley Lewis, Professor Longhair, Shirley & Lee, and a couple of other tunes maybe not quite so identified with the Governor Nicholls Street Studio, but with points I wanted to make in the film, we set out to produce *Deacon John's Jump Blues*.

Since Deacon has worked as a professional musician in New Orleans for almost 40 years, and played guitar on many of those seminal recordings, his life provides an ideal platform from which to tell the story of that music, that studio and those people."

The show was co-produced with Vetter and his daughter, Gabrielle. It was recorded by David Farrell of Ultrasonic Studios in New Orleans and

Seventeen Grand's Jake Niceley using a Euphonix 40-channel hard disk recorder in order to provide 5.1 surround audio to the HDTV video via timecode. David Niles of Colossalvision HDTV in New York directed the video recording using the HD-Net 1080i truck based at DirectTV's HD-Net in Dallas.

Besides *Deacon John's Jump Blues*, Vetter has also worked with Niceley on another Colossalvision project with Niles for an HDTV cinematic tribute to 9/11 that will be part of a permanent memorial museum a few blocks from where the World Trade Center used to be.

"David Niles contacted Cyril and myself and we put a session together to record music for this tribute film at Ocean Way," says Niceley. "It was all done live with an orchestra and rhythm section, singers and background singers. Everything was done live like back in the old days. It was filmed in HDTV."

Niceley mixed the track—a version of the old Harry Nilsson classic "Remember Christmas"—on Seventeen Grand's new linked pair of Sony DMX-R100 digital consoles, which replaced the facility's Euphonix CS3000.The switch to the new Sony was partially due to the fact that the DMX-R100s are much easier to use for many of Seventeen Grand's clients.

"Many engineers and producers who may have only had a few days to mix a project or do overdubs just really didn't want to have to take the time to learn all of the idiosyncrasies of a complicated console like our Euphonix. They just want to put their stuff up and go. It's easier to do that with these Sony consoles," states Niceley. "The Sonys perform very well, and the EQ and dynamic sections work very well. I really like the way the surround folds down into the stereo, and I can do a separate stereo mix simultaneously for about the same price that I could mix a typical stereo album."

Deacon John's Jump Blues *was shot live at the Orpheum Theater in New Orleans.*

Down the road from Seventeen Grand, I popped in at Masterlink Studios (which is part of Al Jolson Enterprises) to check out Grammy-winning producer and engineer Bil VornDick's latest project.

Acoustic Syndicate, from Shelby, N.C., has worked with VornDick for several years, and comprises brothers Bryon McMurry (banjo, vocals), Fitz McMurry (drums, percussion, vocals), their cousin Steve McMurry (guitar, vocals) and Jay Sanders (acoustic and electric bass). The band plays an engaging synthesis of acoustic and electric music that showcases the jamming

Acoustic Syndicate takes a break. From left, Jay Sanders (bass), Fitz McMurry (drums/vocals), producer/engineer Bil VornDick, Steve McMurry (guitar/vocals) and Bryon McMurry (banjo/vocals).

sensibilities of ensembles like the Dave Matthews Band, Leftover Salmon and String Cheese Incident.

"Acoustic Syndicate plays all of the major festivals in the U.S.," says VornDick. "They've done the Tellurides and Merle Fest. They opened up for Widespread Panic at Bonnaroo, and they recently sold out the Fox Theater in Boulder [Colo.] a couple of nights in a row."

Their last CD (*Crazy Little Life*), produced by VornDick, made it to the top of the Americana charts and featured solid tracks like "Carnival," "Sunlight Falls" and the seven-minute-plus "Brown Mountain Lights." The new album, titled *Terra Firma*, is due out in March on the Sugar Hill label.

While I was in the studio, VornDick and the band played some new material that they had recorded that week. Among the songs I heard was the up-tempo title track "Terra Firma" and "Marie St. Lauriat," which everyone was very enthusiastic about.

"We're really excited about this album," enthuses Jay Sanders. "The drum sound is bigger and the songs are much more edgy, rock-oriented. Still, it is all done with our acoustic instruments. What we have done has been called folk rock by some people and we've also heard it called grassrock, but there's nothing bluegrassy about this record. It's as far away from that as we can get. We like to think about it as just good acoustic rock 'n' roll."

VornDick recorded this project on a Tascam MX-2424 hard disk recorder, 24-bit/ 48 kHz, and mixed it through the Manley SLAM! at 96 kHz simultaneously to an Ale-sis MasterLink and an Ampex 104 2-track half-inch machine set at +5 on GP9. Tracking and mixing were done at Masterlink, while overdubs were handled at VornDick's Mountainside Audio Labs.

"Even though I'm able to cut and paste, the musicians are so good that I hardly did any of that. Most records right now are cut-and-pasted to hell, but these guys play really well; it's just not needed," says VornDick. "This album is much edgier than the last album, and the songwriting is directed to a much larger audience. 'Redbirds,' a progressive light jazzy song, is a highlight."

While "edgy" was the theme of the day at the Acoustic Syndicate sessions, VornDick was also celebrating the International Bluegrass Music Association Recorded Event of the Year Award for his production of Ralph Stanley's *Clinch Mountain Sweethearts* (Rebel Records). ∎

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flow and productivity," he says.

For the studio, Hull's arrival is a key component in an upgrade strategy that includes not only the mastering division but also the recording and mixing rooms. The facility recently closed its Broadway studios to consolidate its holdings in its flagship space at 421 West 54th Street where it added two new rooms—Studios 6 and 7, both equipped with Solid State Logic's top-of-the-line XL analog consoles.

Hit Factory VP Troy Germano says, "We're making a large commitment to mastering, which has worked very well for us since 1988. We're very excited about Scott. I've had great respect for him over the years; he's a fantastic addition to this place. We now have a stable here of very talented, high-powered mastering

engineers that rival any place in New York, including my friends at Sterling Sound, whom I look to for competition."

In addition to Hull, Powers and Yannece, the Hit Factory mastering team also includes Tony Gillis and Tony "Tippy" Tarochione.

A PIECE OF THE PUZZLE

As the Hit Factory solidifies its already powerful mastering unit, the new kids on the block—Jigsaw Sound and Engine Room—are vying to compete in a market crowded with both world-class facilities and bedroom operations. Finding a middle ground has proven to be a hefty challenge, but these companies seem to have the ingredients to make it work.

Jigsaw Sound is a gorgeous-looking, Francis Manzella-designed studio that features state-of-the-art equipment and the talents of veterans Klum and Ferrante; Jigsaw co-owner Michael Iurato is also on the engineering staff. Collectively, their clients include the Alan Lomax Project, Sony Music, TVT, BMG, RCA, Capitol/EMI, Def Jam/Island, Windham Hill, Bar None and Beggars Banquet. Among the artists whose projects have been mastered by Jigsaw engineers are Jay-Z, Nine Inch Nails, Henry Rollins, Norah Jones, Dave Stewart, Elvis Presley, Bo Diddley and Esquivel. The TVT soundtrack to *Swimfan* was handled by Jigsaw's Klum.
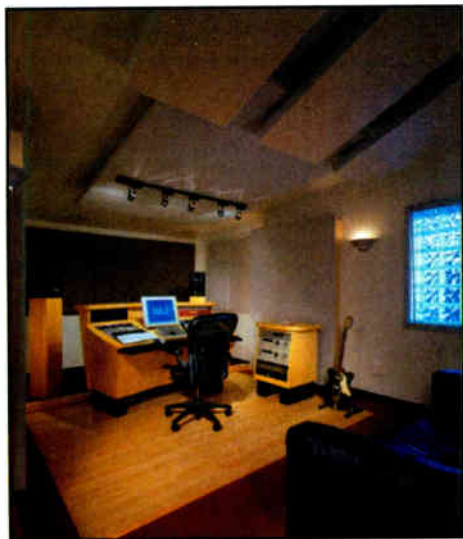
Owner/engineer Mark Christensen's Engine Room mastering suite, a collaboration between Chris Bowman and John Storyk.

Iurato says, "We believe in our business, and we're taking a long-term approach. In 10 to 15 years, we want to be considered the future of mastering in New York City. At some point, there's going to be a changing of the guard, and we want to be around for that."

Jigsaw features a wealth of world-class gear, including a Manley analog console, an Ampex ATR-102 deck equipped with Flux Magnetic heads, a Sonic Solutions HD workstation, Duntech Sovereign 2001 monitors and processors by Sontec, Prism, Manley, Avalon and others.

DOWN IN THE ENGINE ROOM

At the Engine Room, the mastering division is an outgrowth of the facility's thriving recording, post-production and duplication businesses, which consist of six editing suites, two live rooms and a replication outfit. The studio, which underwent a huge upgrade last year, was designed by Chris Bowman and John Storyk, who handled original construction consultation and acoustical design and installation, respectively.

"When we entered the final stage of the build, our budget was stretched pretty thin," says owner/engineer Mark Christensen. "We weren't planning to build a room of this caliber, but Chris convinced me that with John's help, this could become an A-list room."

Among Christensen's recent credits are an album by Tony Jarvis, produced by J Mascis of Dinosaur Jr. fame; several classical albums for Museovitch Productions; a new project by Nashville-based singer/songwriter Ned Massey; albums for Hong Kong-based alternative dance label Respect Music; and a trio of CDs for Broadway producer Joe Baker's Bakerboys Music label.

Christensen's room features a mix of digital and analog gear, including a SADiE 24/96 digital audio workstation and Tube-Tech, Manley, Universal Audio, Avalon and Crane Song outboard gear.

LAZAR STEPS UP

Back at the Lodge, Lazar has been as busy as ever and raising her profile to the level of top facilities in the city. She recently mastered Bowie's *Heathen* (ISO/Columbia), produced by Bowie's longtime collaborator, Tony Visconti. Lazar also mastered Khia's breakthrough album, *Thug Misses* (Artemis), propelled by the hit single "My Neck, My Back (Lick It)."

Previously, Lazar had worked on projects by Sinéad O'Connor, the *Saturday Night Live* 25th Anniversary boxed set, the *Hedwig & The Angry Inch* cast album, several titles in the Putumayo World Music series and soundtracks including *Pokemon: The First Movie* and *American Psycho*.

NEW YORK ON THE MOVE

The latest developments in New York represent the most significant shifts in the local mastering scene since the late '90s, when the industry was jolted by a flurry of major staff changes and business activity. The trigger event at that time was the management buyout of Sterling Sound by longtime engineers Ted Jensen, Tom Coyne and Greg Calbi, in conjunction with London's Metropolis. Calbi's

The Lodge owner and chief engineer Emily Lazar and David Bowie take a break from the mastering session for the artist's Heathen album.

role in that transaction was especially significant because he had left the facility several years earlier to work at crosstown rival Masterdisk. His return to Sterling left a void at Masterdisk, which was exacerbated the following year when chief engineer Hull left Masterdisk to join Classic Sound. The studio responded by hiring Leon Zervos—who had built his career at Absolute Audio—and creating a state-of-the-art surround room for him.

While New York was undergoing its upheaval, L.A. was buzzing with the departure of Stephen Marcussen from his longtime perch at Precision Mastering. Marcussen worked for a while at the former A&M Studios' mastering division and eventually opened his own shop, taking one-time A&M engineer Dave Collins with him. Tom Baker, a veteran of Oasis and Future Disc Systems, stepped in at Precision.

Since then, things have been quiet on the mastering front on both coasts. However, the latest round of staffing changes and entrepreneurial moves in New York suggests that there may be more surprises in the near future. Stay tuned. ∎

Send your New York City-area news to pverna@vernacularmusic.com.

—FROM PAGE 24, IS IT REAL?
GE AM portable radio out in the blazing desert sun, so I guess there was no way for me to know that there was nothing solid in there under 200 Hz.

And the signal-to-noise ratio? Do I have to say it? No, I didn't think so.

But they still give me the same feeling I had back in 3 A.D. when they first aired.

So with all of this new gear out there, what do *you* do? What does the world want? The original recording, with all of its flaws but without vinyl-surface noise and pops? Or a little broader frequency response? Maybe add a tiny bit of stereo field? Maybe enhance a bit of the dynamics? Or a nice rich reverb to cover the ancient springs and oil tanks of the era? Maybe some nasty synthetic HF edge to compete in today's 20 to 20k world (a bit o' the ol' Aphex?) or a little subharmonic generation to go with the newer elaborate stereo-synthesis techniques?

Do you give 'em what it *was* or what they *remember*? Or maybe neither—maybe what it *could* be? And if you do any work other than removing noise that was not part of the original recording process—in other words, reducing only vinyl artifacts

or tape hiss and print-through on historic masters—who decides what is right?

DON'T LOOK AT ME, BUDDY!
You know that I always have the answer to any question or problem that I pose in my columns. This is achieved by religiously following a few well-evolved rules. I'll give them to you:

ample of this. Fun was had by all.

[Editor's note: Five SSC articles on CD-Rs ran in Mix *in October and November '94 and February, March and July 1995.]*

2: *Always provide an answer even if I don't know what the hell I'm talking about, hoping that my experience will cover my ass and I'll be right.* This is known as "opinion." If you look carefully,

> Do you give 'em what it was or what they remember?
> Or maybe neither—maybe what it could be?
> And if you do any work other than removing noise
> that was not part of the original recording process,
> who decides what is right?

1: *Never start a column unless I know damned well what I am talking about.*

My favorite is providing hard tech facts that are either extremely obscure or, better yet, go against everything that most people have heard or believe. The TDK CDR Games of 1994-5 were a good ex-

I always bury a sentence or two that tells you when I am doing this. Bury is the operative word here. I do not do this when it comes to hard tech.

3: *Make up answers.* This works only if there are no absolute answers to the question at hand and an opinion is too

weak. I usually prefer to provide the most unpopular of available answers in these situations, because it is most likely to get you thinking. You don't have to agree with me; I just hope you think about it.

Without a doubt, my biggest joy in this column is telling you insane stuff and letting you go out into the world to find out if it's true. Credibility was invented to be stretched. I don't want to actually break it, just stretch it—stretch it good.

And so, with all of this in mind, I have no answer today. I have never reached a stable conclusion on what I like to hear in restoration.

There are times when I like it straight up—quiet, no noise-reduction artifacts, no sample replacement on the pops, but straight. But then there are times when songs sound needlessly thin and wimpy, and I know they could be pumped up to the way I *thought* they used to sound.

So in the end, dear readers, I leave this one to you. You decide.

Just remember—I will be listening. ∎

SSC just returned from London, where he once helped make some of these ancient artifacts, and that triggered this column.

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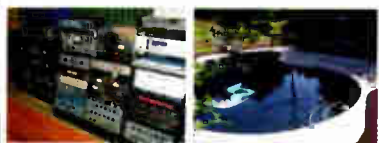
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conform, resettable and back-timeable timecode, a clippings bin with instant recall and control over most of the important file parameters, from video frame rate to audio-compression algorithm. It's compatible with Pro Tools, Fairlight's DREAM and most other high-end DAWs that speak either Sony 9-pin or MIDI Machine Control (MMC). Templates are provided for dedicated USB controllers like JLCooper's MCS-3 and the Contour Design Shuttle-PRO, which Mr. St.Croix raved about in October's "Fast Lane." (By the way, that touch screen can be used to display and access the clippings bin, and it looks very cool sitting on top of an MCS-3.)

You can use VirtualVTR in a number of synchronization modes, the most common and simplest being slave. Unlike the usual setup where the DAW locks to the video source, in slave mode, VirtualVTR locks to MIDI Time Code that is generated by your DAW. According to Mark Gilbert, chief programmer at Gallery, most Pro Tools owners who use the program love having their audio platform be the master. "It gives a much better user experience," he says, "since you are not waiting for the sequencer to lock to timecode." Also, because the DAW is the clock master, there are fewer chances that you'll run into timing conflicts between the video and the audio sampling rates.

An important advantage for Pro Tools users, in particular, as one reader reported, is that you are able to watch the video while tweaking or automating plug-in parameters. In Pro Tools' native Quick-Time window, playback stops whenever you do this, so VirtualVTR "solves a huge complaint by traditional post mixers and sound designers," says Gilbert.

If you want VirtualVTR to be the effective master, there's another mode where the program sends MMC commands to the DAW, locating it, and starting and stopping it. As soon as it starts running, the DAW sends MIDI Time Code back to VirtualVTR. In yet another mode, an external SMPTE generator, perhaps locked to house sync, controls everything, and it, in turn, is given machine-control commands by the program.

VirtualVTR has a smooth interface, the manual's not bad, and, in general, it feels like a solid program. Yet despite its impressive pedigree and features (and price: $699 U.S.), there are things about it that I'm not happy with. If all you are using the DAW for is to edit audio, having your computer constantly generate MIDI Time

Code is fine. But what happens if you're scoring to the video and you also need to send MIDI to a bunch of outboard synths and samplers? In my studio, I still pump a lot of data down my MIDI lines, and especially now that I am being forced by Apple to run multiple MIDI streams on an eminently unsuitable USB cable, the idea of adding all that overhead makes me anxious.

But if you want VirtualVTR to be the *true* timecode master, you either have to use a dedicated timecode generator (which needs to be able to respond to MMC, and that means that old Opcode Studio 3 or pre-A/V MIDI Time Piece you have sitting around won't cut it) or, as one reader suggested, you have to record SMPTE on one of the audio tracks while digitizing the video. Of course, if you do

If the audio and video didn't come in locked to a common clock, then there's little you can do to get them back together again.

this, you're stuck with the SMPTE numbers you've recorded, and you can't take advantage of the program's very useful time-slipping features. Not to mention that a Mac's audio section isn't exactly the ideal place to store "live" SMPTE code. Because I prefer to work with the video as master—I don't mind the half-second or so it takes my sequencer to lock to it, and I enjoy the freedom of moving the video around to look for hit points without worrying about whether I'm "online" or not—this is a bit of a problem. And the solution, in fact, is no better than just using Quick-Time Pro on a second computer.

I have also found that the software is rather finicky: Every time you digitize another piece of video, the audio settings go back to their (rather useless) default settings. Gilbert told me that there is a preference that can be set to remember the audio settings, but it's rather obscure and poorly documented. Forget to check them, and you'll end up with a silent movie. If your program's MIDI Machine Control implementation is flaky (and some older sequencers fit this description), then Virtual-VTR will not get along with it—it will work haltingly, if at all. And several times, as I

was trying to set the audio parameters, the program crashed. (Gilbert says that the fault for this lies in the video-device drive, but I'm not sure I agree with this.)

The program's copy protection requires a key floppy disk. I'm not sure how, but the company has managed to deal with this since Apple stopped shipping floppy drives. But Gilbert tells me that Gallery is now planning on going to a (presumably USB) dongle, which, to my thinking, may be an even worse solution, given how poorly USB networks deal with excess electrical loads. But the most lethal problem is that whenever I played back clips I had digitized, I simply couldn't get VirtualVTR to play the audio tracks. I knew they were in there because I could hear them being recorded, and even the QuickTime player application had no trouble finding them, so I can't imagine what's wrong.

Gallery says that it has had great success with VirtualVTR in the high-end post and broadcast markets, and I don't doubt it. But for single-room studios, especially composing rooms where MIDI still plays a major part, it could fairly easily be made much more usable. How? The software should be able to generate SMPTE timecode all by itself. It won't be as rock-solid as a dedicated device locked to house sync, but through most of the scoring process (and for short projects like spots), it doesn't need to be—as long as the code generated and the frame numbers displayed match the video. It could send the timecode either as an audio signal from the computer's headphone jack or an audio interface, or it could send MTC using a plain-vanilla MIDI interface—or better still, send both. Perhaps it could also have a feature that emulates vertical timecode by sending timecode when the picture is in fastwind or stopped. And if they also dropped the price, I think an awful lot of smaller studios would jump on it enthusiastically.

Now to the hardware, which is a happier story. It's a little box—6x4.5x1.25 inches, weighing in at a little less than nine ounces—made by Canopus, a Japanese company with U.S. offices in San Jose, Calif. Canopus manufactures a range of video cards, converters and software, mostly for Windows machines, including the nonlinear editing package DVStorm, about which my friend Howard, whose six-month nightmare with a different video editor was chronicled in excruciating detail in these pages last year, says, "If it wasn't for DVStorm, I'd have committed hara-kiri by now."

It's called the ADVC-100, and it's simply a video AD/DA converter, or what the video folks call a "bridge." It's not a unique product, but it has a unique feature that makes it extremely useful for us audio types.

First, the ADVC-100 works with composite video, S-Video or FireWire, either 4-pin or 6-pin, and any of these can be the input or the output. Besides allowing you to dub your old VHS tapes to your new DV camcorder (which does not interest me), it lets you bring said VHS tapes right into your computer using nothing

more elaborate than QuickTime Pro or iMovie—and it works great with Virtual-VTR's digitizer module. The controls are absurdly simple: a power switch on the back and an input select (digital/analog) on the front, which can even be disabled in favor of automatic signal detection. Besides inputs and outputs for the three video types, there are also separate left and right audio ins and outs as RCA and stereo minijacks.

Underneath the case are six DIP switches. One selects between NTSC and PAL video; another selects the black level;

another sets whether the unit will power up in analog- or digital-input mode; and another toggles the automatic input select. Then there's a switch that enables 4-channel audio (32kHz/12-bit) to pass through the box. This last one isn't terribly important to you and me—it's more for the wedding videographer who uses this feature on his or her DV camcorder (to mike the bride, the groom, the preacher and the mother-in-law) and needs to mix them all down to two channels when he or she makes VHS dubs.

Finally, we get to the most important switch, the one that turns on "locked audio" mode. When this is enabled (and confusingly enough, the switch has to be in the Off position for it to work), the box locks audio and video together. It looks at the frame rate of the incoming analog video and uses it both to generate its digital frame rate and the 48kHz audio clock.

Thus, with the click of a DIP switch, the ADVC-100 solves one of the nastiest problems of dealing with A/D video conversion: audio drift. If you've ever worked in this medium, then you know that once a program is digitized, if the audio and video didn't come in locked to a common clock, then there's little you can do to get them back together again. A little experimenting with QuickTime Pro shows that in Unlocked mode, the audio and video drift from each other about one second every two minutes—not great performance, no matter how you look at it—while in Locked mode, the tracks are still dead on after 10 minutes.

Not surprisingly, a lot of the folks in Canopus' U.S. office say that they are "audio guys," and when the ADVC-100 was in development, they insisted that this feature be included. The company has competition in the same price range from Dazzle, Formac, Pinnacle and others, but as far as I can tell, they all lack the locked-audio feature, which means that this box is the only device in its class that is suitable for us folks on the audio side. And it's such a joy to find a little box that's so useful and just *works*.

In the meantime, however, I'm happy. Even if QuickTime Pro doesn't have all of the features of VirtualVTR, it's a heck of a lot cooler than using my old, clunky VHS decks. And maybe Gallery will fix the software. Meanwhile, I gotta get me one of them ShuttlePROs. ∎

Paul Lehrman stresses that the opinions expressed are entirely his own, so please don't blame the helpful Mix *readers.*

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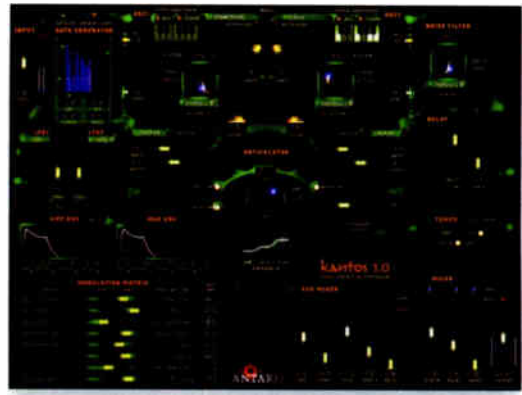
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Waves, the most sought-after plug-ins for Digital Performer, have just undergone the most sweeping performance enhancements ever in Version 3.5. Enjoy support for DP3's fully symmetric multiprocessing, sample-accurate automation, 96kHz operation, and optimizations that allow you to run dozens more Waves plug-ins simultaneously. Available in various-sized bundles at numerous price points, including the Platinum Native bundle (shown). With 25 plug-ins, it's an amazing value and covers the full spectrum of audio tools. Waves 3.5 is native processing in full glory.

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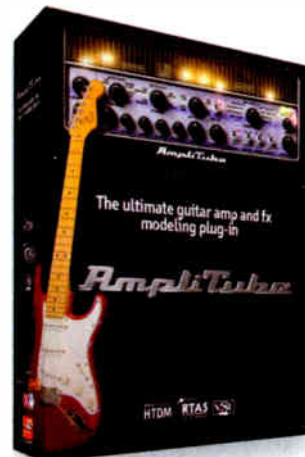
Mackie UAD-1 Powered Plug-ins

UAD-1 is a PCI card that allows you to run dozens of sophisticated effects plug-ins inside Digital Performer without bringing your Mac to its knees. What's the secret? A custom-built, monster DSP. It's like adding an extra $20,000 worth of effects gear to the dozens of native plug-ins included with DP. UAD-1 ships with this growing list of powered plug-ins:

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The most flexible, natural sounding reverb available. Design your own rooms, down to the smallest detail.

Pultec Program EQ
Stunningly realistic recreation of this classic analog EQ. Dangerous amounts of boost with musical results.

1176LN Limiting Amplifier
Another analog classic reborn inside Digital Performer. Apply liberally with host CPU cycles to burn.

Teletronix LA-2A Leveling Amplifier
This beauty defines "vintage audio gear". If you want warm, authentic analog in your DP mixes, this is it.

Nigel
A complete palette of guitar tones combined with every effect a guitar player could possibly ever need.
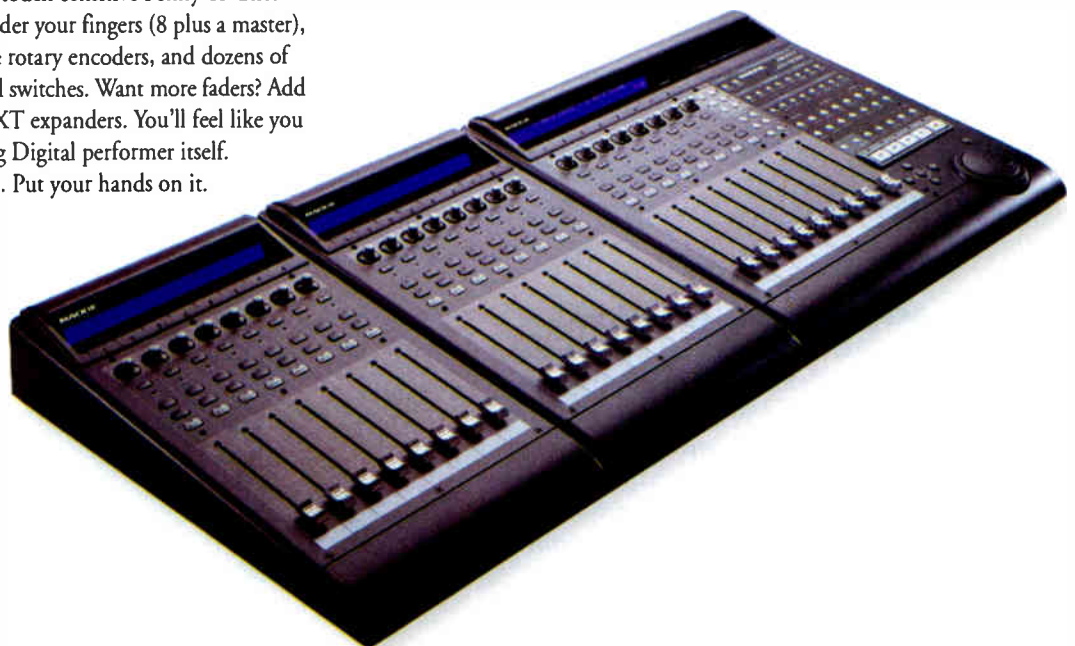
CS-1 Channel Strip
Whopping punch on a single DP plug-in insert: EQ, compression, delay and reverb all in one plug-in.

Mackie Control for DP3

Designed in direct collaboration between Mackie and MOTU, the new Mackie Control automated control surface puts nine touch-sensitive Penny & Giles automated faders under your fingers (8 plus a master), 8 motion-sensitive rotary encoders, and dozens of custom-programmed switches. Want more faders? Add 8-channel Control XT expanders. You'll feel like you are touching Digital performer itself. Go ahead. Put your hands on it.

TC Works Spark

Making Version 2.5 Burn

TC Works' Spark 2.5 is truly one of the most powerful audio editing, processing and sound-design applications available today for the Macintosh platform. I find Spark to be the perfect application to put finishing touches on stereo mixdown files, as well as the perfect experimental work space for sound design.

A TALE OF TWO CURSORS

Spark's dual cursors make setting regions and creating fades both fast and intuitive. The red playback cursor starts its way across the audio file as soon as you start playback. When you reach a point where you wish to start a region, fade, edit, etc., simply click the mouse or press the Option and Return keys, and the edit cursor will instantly appear at the playback cursor position. When you reach the operation's end point, simply click the Stop button on the transport or press the spacebar again. With your edit cursor at your left boundary and your playback cursor at your right boundary, you can double-click between them to select everything inside.

At this point, you have many options. If you want to create a region, simply press Command and the R key (or select Create Region in the Edit menu) and a region with your selected boundaries appears in the file browser. You can easily zoom in right to your selection by pressing Control and + (on the numeric keypad). You can easily zoom in and manually edit drawing resolution by pressing the Option and + (on the numeric keypad) keys. For a fade out, follow the above procedure, stopping playback at the audio file's tail end, and then press Command and F to bring up the Fade dialog.

WELCOME TO THE FX MACHINE

Spark 2.5 comes with the brilliant Spark FX Machine, a matrix of up to 100x100 slots for native Spark and VST 2.0 plug-ins, which allows for nearly infinite routing and re-routing experimentation. The FX Machine also doubles as a VST plug-in itself; this is a great way to get some fantastic and unique processing in other VST hosts, but the FX Machine with Spark's Wave Editor

becomes a flexible and fast, real-time sound-design application.

To create some radical effects or process a slice of audio using Spark, it's easiest to operate on a short region of your file. Using the procedure above, create your selection, and then press the "/" key to enable cycle playback and the spacebar to continuously loop playback of your selection. Press the Option and Tab keys to bring the Master view to the front. The quickest way to add effects to slots in the Matrix is to use the Contextual menu, which can be brought up by pressing the Command key and the mouse button. Better yet, right-click with a two-button mouse. This menu contains a list of all your native Spark and VST 2 plug-ins, as well as options to add a "line through" routing cable to the slot, mute/unmute and bypass/activate plug-ins.

As soon as you add a plug-in, its Edit window appears. Normally, Spark only keeps the currently selected plug-in's Edit window open, but by pressing Option when adding/selecting a plug-in, the plug-in opens in a new window. The real fun is with all of the routing options you have. As you insert plug-ins in the FX Machine matrix vertically, you create parallel effects streams. When you insert an additional plug-in horizontally, Spark will automatically route every plug-in from the different vertical levels through the new plug-in. However, you can change this by inserting a "line through" in one of the vertical levels; this keeps that vertical level parallel to the other streams, regardless of how many plug-ins you have on any number of vertical levels that are included in the chain up until that point. You can even press the P key to bring up the Phase dialog box and switch the outputs' phases! With unlimited options and Spark's unlimited undo, you are free to experiment without fear of reaching a point of no return.

UNDERRATED GEMS: MP3 AND SRC

It might seem overkill to use an audio editor to export MP3s instead of any consumer

Spark's Browser view

application with a quality MP3 encoder. After all, Spark uses the same Fraunhofer codec as other consumer applications, right? The difference is that Spark creates MP3 files from any bit depth and sample rate, whereas other applications do not. If you think that all MP3s are created equal, take the same source material and make a 192kbps MP3 from a 16-bit, 44.1kHz stereo .AIFF file of that source material in Audion or iTunes, and then create a 192kbps MP3 in Spark from a 24-bit, 48kHz .AIFF file of that source material. The Spark-created MP3 will sound closer to the original non-compressed source material than the MP3 exported from other applications.

Sample-rate conversion algorithms have improved over the years, but Spark has achieved a new pinnacle for resampling. The Resampling dialog, in addition to a pull-down menu to select your target sample rate, presents you with three quality options: Good, Better and Best. Spark's Better setting is competitive with the best software SRC algorithms available in any application. Spark's Best setting is in a league of its own by offering the level of conversion expected from stand-alone hardware boxes that cost thousands of dollars. Some mastering engineers prefer to change sample rates by capturing audio through high-quality converters and a second computer/recording device. But for price and convenience, Spark 2.5's Best quality mode is unmatched. [*Visit www.mixonline.com for an extended version of this article, featuring additional Spark tips.—Eds.*]   ∎

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High Definition Audio
Redefined

Does high definition audio need to break your bank account? **Not anymore.**

Is the new MOTU HD192 system affordable? **Absolutely.**

Does the HD192 cost more than the MOTU 1296? **No.** The new HD192 offers more and costs less.

Are the HD192's A/D converters the same as another popular 192kHz audio interface? **Indeed.**

Does the HD192's dynamic range exceed 120dB? **Yes.**

Is this a theoretical number? **No.** It's a real-world measurement.

Does the HD192 core system include MOTU's powerful new PCI–424 card with CueMix DSP™ monitoring? **Yes.**

Will I hear host buffer latency (delay) when monitoring live inputs? **No!** CueMix DSP eliminates monitoring latency.

Is CueMix DSP flexible? **Yes.** It's a 96 x 96 digital mix matrix that you control with our redesigned, intuitive CueMix Console software (included).

Is it time to reconsider high definition audio? **Definitely.** Think HD192.

- **12 XLR analog ins/outs** — transfer 12 channels into or out of your computer at 192 kHz.

- **Expansion** — connect up to four HD192's for 48 analog inputs and outputs at 192 kHz.

- **Extension** — mix and match with any MOTU PCI audio interface (2408mk3, 24I/O, 2408mkII, 2408, 1296, etc.)

- **PCI-424 card** — connect four interfaces and monitor live inputs with zero host buffer latency via CueMix DSP.

- **On-board SMPTE sync** — resolve the HD192 directly to time code with fast lock-up and sub-frame accuracy.

- **Digital I/O** — AES/EBU with sample rate conversion.

- **Compatibility** — works with all audio software for Mac and Windows 98SE/Me/2000/XP.

- **Available** as a core system (with PCI card & Macintosh AudioDesk software) or as a PCI-424 expansion I/O.

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