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- TV Composers
- Jerry Gepner of NMT

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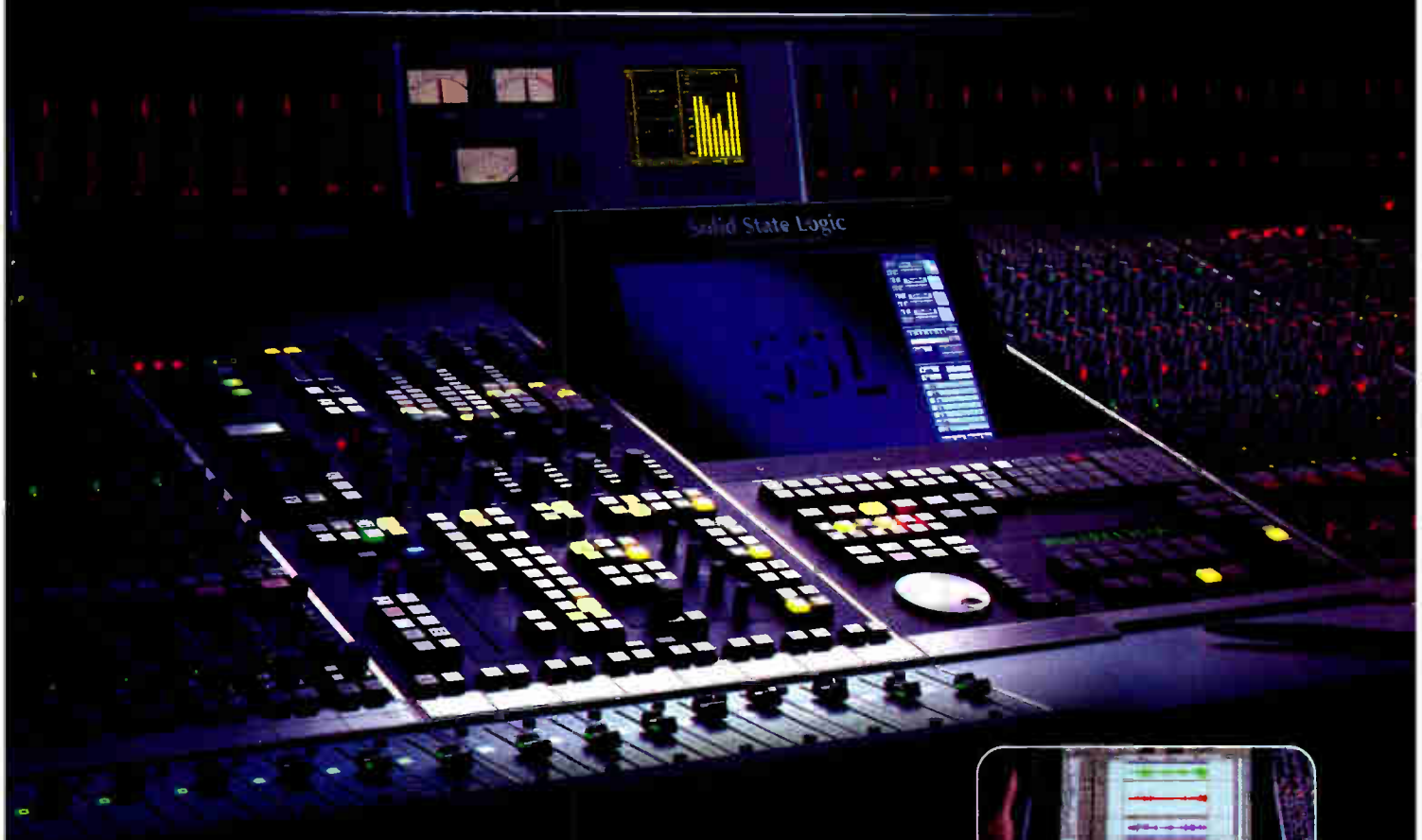

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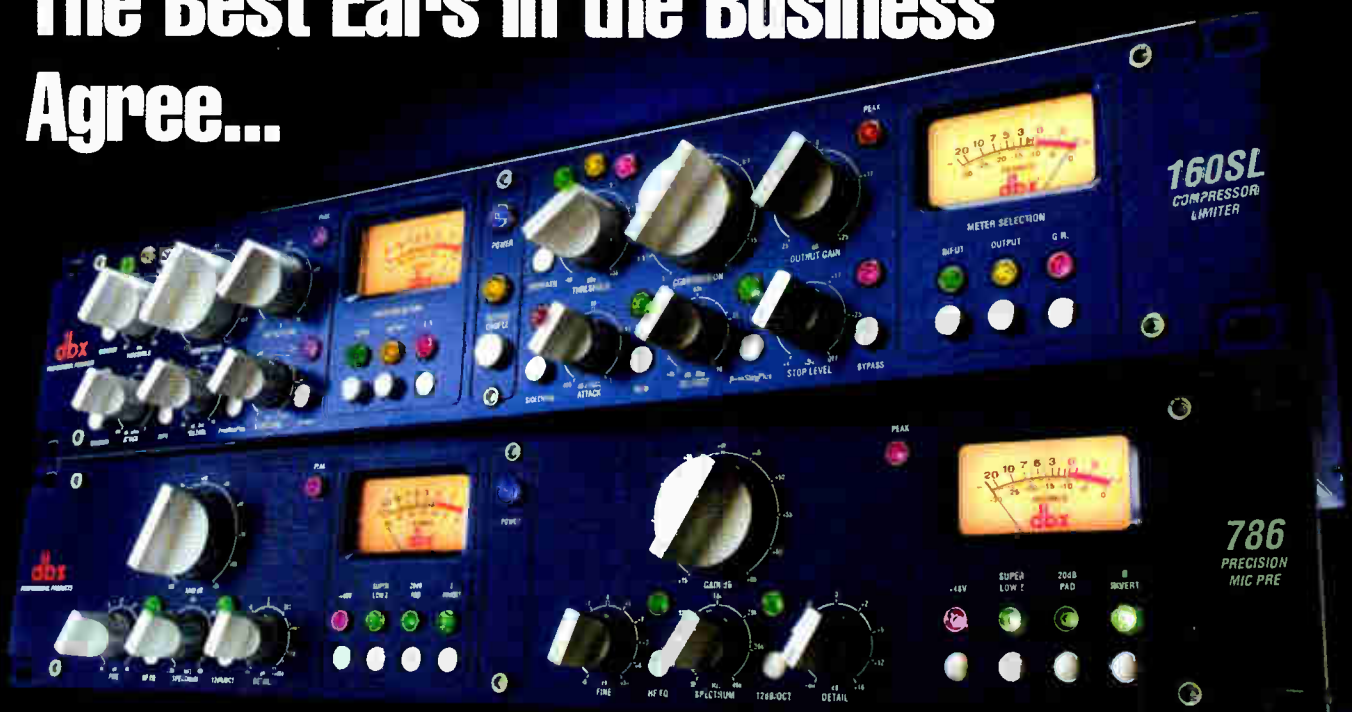

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Producer/Engineering team **Michael Beinhorn and Frank Filipetti** are currently working on the forthcoming Korn CD.

"We're using the dbx 160SL on our vocals. It sounds amazing. We tried other compressors but none of them did even remotely what the 160SL did. It just details things so nicely."

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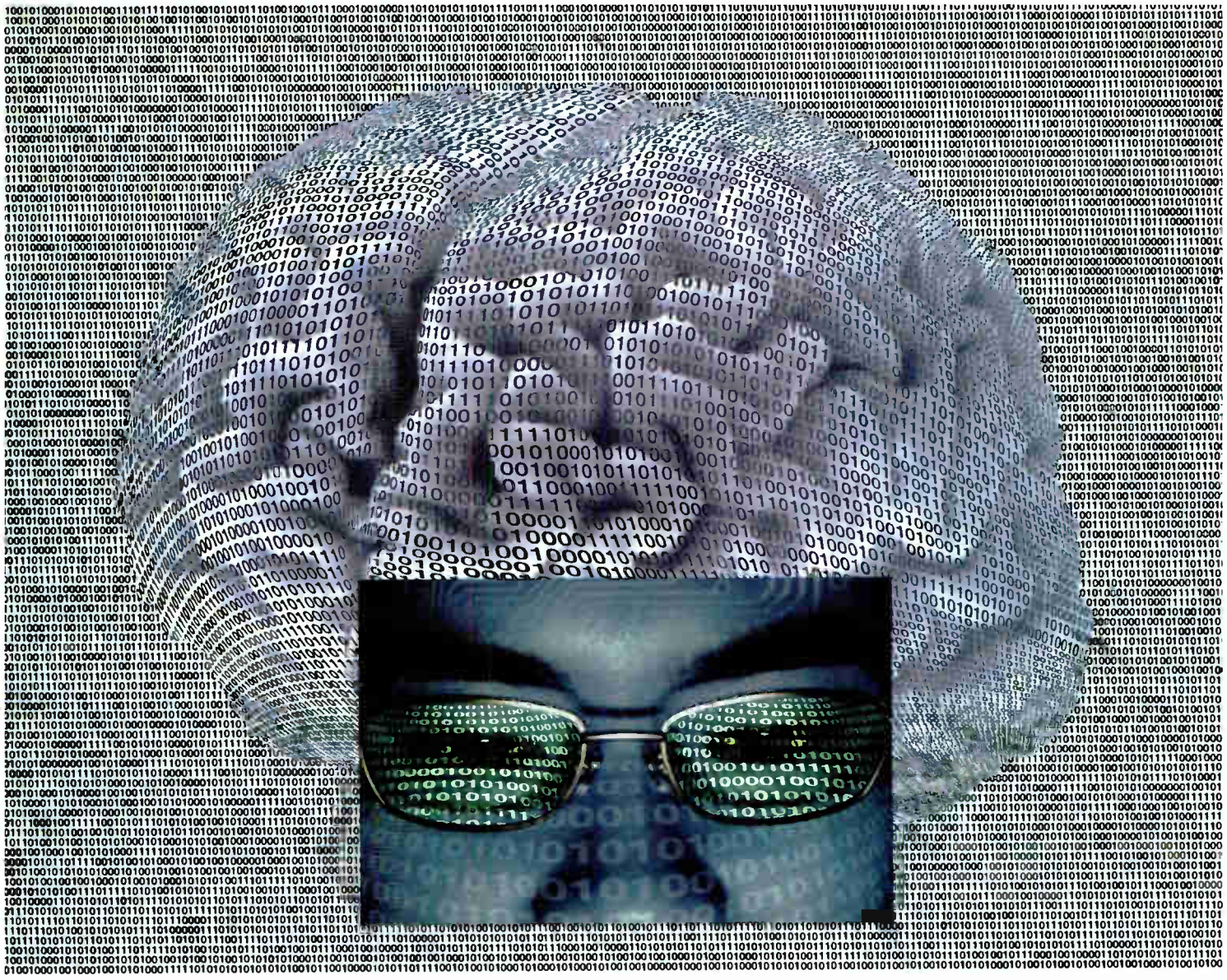

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PROFESSIONAL AUDIO AND MUSIC PRODUCTION
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On the Cover: National Mobile Television's new supertruck, DX-11, includes an SSL Axiom MT-P console and Genelec 5.1 monitoring. For more on NMT, see the "Mix Interview" with company president Jerry Gepner, on page 70. **Inset Photo:** Annie Liebowitz.

features

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

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World Radio History

Image Is Everything—Almost

We are an industry of audio fanatics. In fact, we're so hooked on sound that we've taken the vows of poverty that accompany an audio career. Walk around this month's NAB show and you'll see crowds packed around booths showing the latest in high technology—for picture. Audio still takes a backseat, but little by little, the perception of audio's importance has increased, thanks mainly to the rise of multichannel sound for theater, television and home DVD systems. In terms of advocating audio, we still have a long way to go, but we're miles ahead of those backwater days when sound for picture was defined by the phrase "just throw a mic in there."

Ironically, when we retreat to the safe havens of our control rooms, we're surrounded by imaging devices. In my studio, this means a lot of displays: one picture monitor, two matched 19-inch screens for Pro Tools, a 17-inch for PC-based stuff (sequencing, Acid and virtual synths), a 15-inch mixer automation display and a small console-top phase meter. Of these, all except the 5-inch phase LCD are good-old (well, old), low-tech, traditional cathode-ray tube models, which are bulky, heavy and hot. The last is especially aggravating, as multiple CRTs will quickly heat up a confined space, such as a control room, leading to the added cost and noise of air conditioning.

Heat aside, other drawbacks of multiple CRTs include that annoying 15kHz whine that displays can produce, and the nasty effects of electromagnetic interference when guitar or bass pickups are used too close to a typical CRT. The combination of a monitor's large choke and the coils of a nearby Strat creates a most effective transmission chain. Ugh!

If transforming your control room into a buzz-laden convection oven wasn't bad enough, then consider placement issues. The weight of single or multiple 17- or 19-inch glass displays is formidable and can be hazardous to your meter bridge. In a traditional studio, placing a picture monitor above the fishbowl front window requires a large soffit for a flush-mounted appearance. And, as the dimensions of the soffit determine the size of the display, going from a 27- to a 32-inch screen can be very expensive. Perhaps the worst indignity comes from CRT picture distortion caused by stray magnetic fields from speaker magnets. The solution comes in the form of shielded monitors, but their effectiveness varies widely. In many cases, engineers must compromise speaker placements to accommodate picture displays.

Fortunately, flat-panel LCDs offer an affordable alternative to CRTs, with low power-consumption products that run cool, are lightweight and immune to magnetic field effects, and don't emit strange EMI. On the larger side of things, projection systems and plasma displays are ideal for studio applications, especially in wallmount or unobtrusive swing-down/pull-down installations. With that in mind, in "The Fast Lane," Stephen St.Croix continues his three-part examination of high-performance projection systems and plasma technologies.

As any audio pro will attest, image isn't everything. But sometimes a little image enhancement isn't such a bad idea, and with prices for large-screen products dropping to record-low levels, NAB provides an excellent opportunity to check out some new offerings for sound *and* picture.

See you there!

George Petersen
Editorial Director

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EDITORIAL DIRECTOR George Petersen *gpetersen@primediabusiness.com*
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GRAPHIC DESIGNER Lizabeth Heavern *lheavern@primediabusiness.com*
PHOTOGRAPHY Steve Jennings

VICE PRESIDENT Pete May *pmay@primediabusiness.com*
PUBLISHER John Pledger *jpledger@primediabusiness.com*
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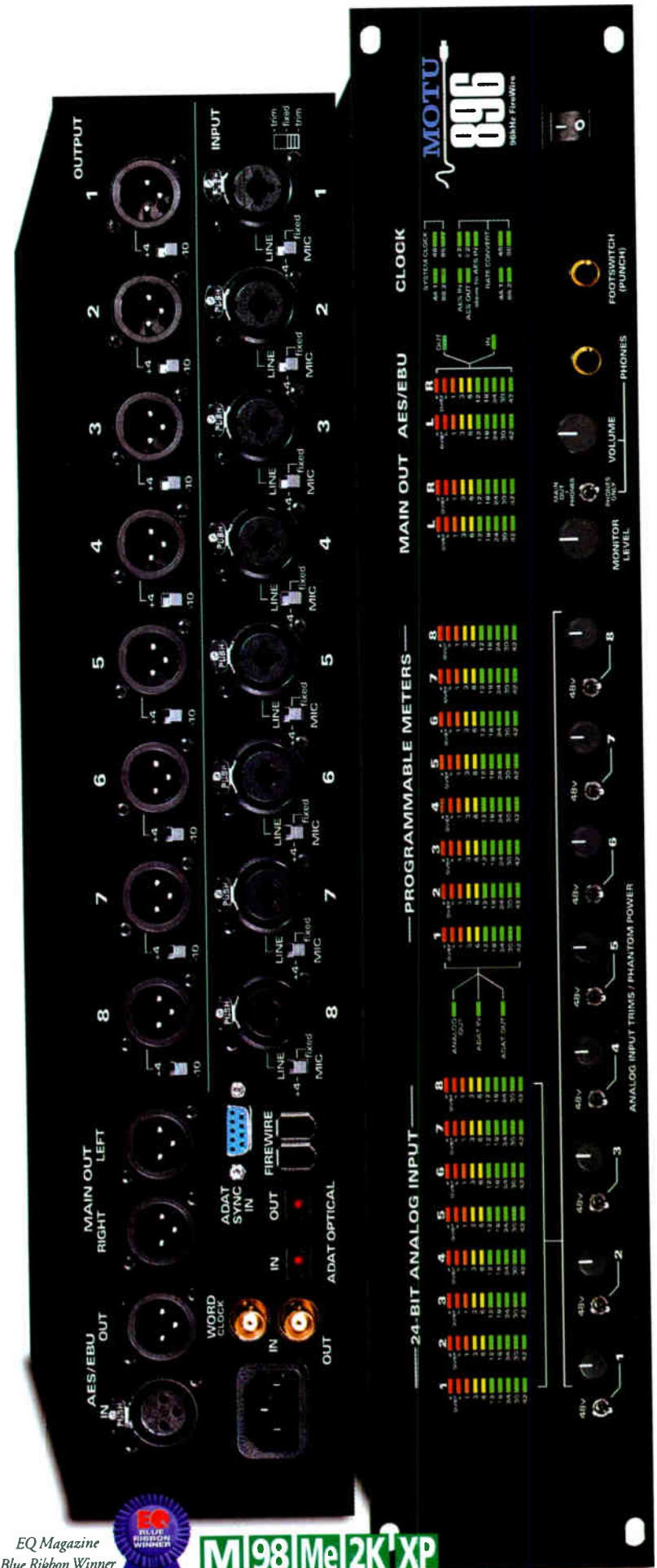

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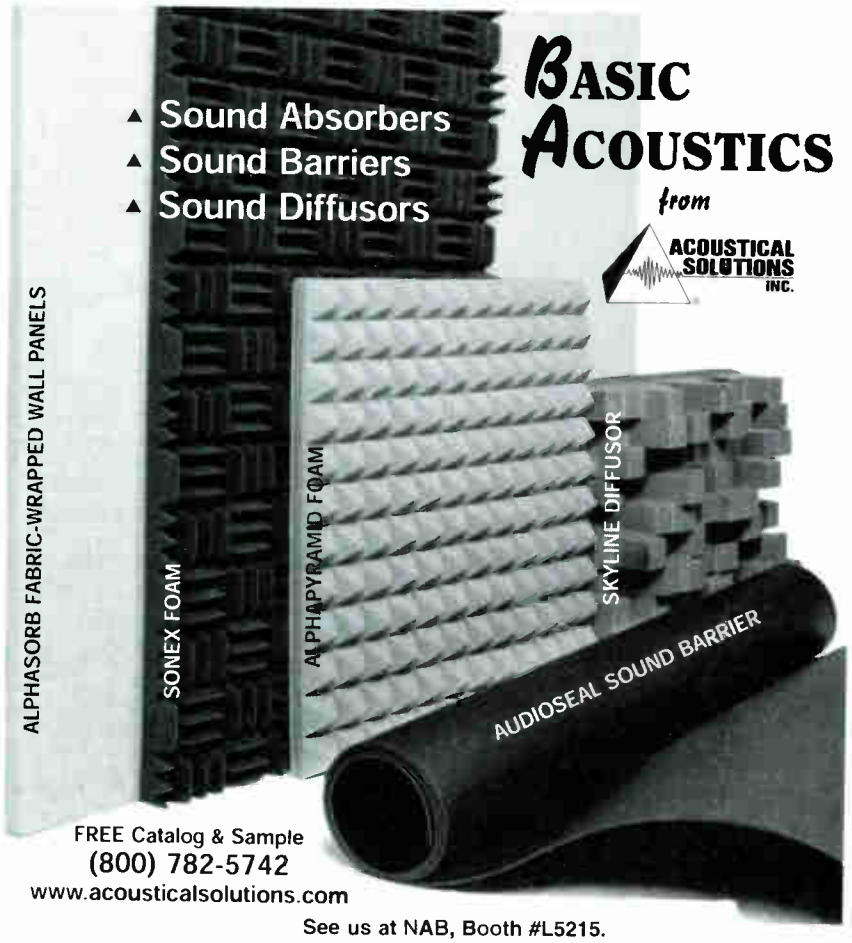

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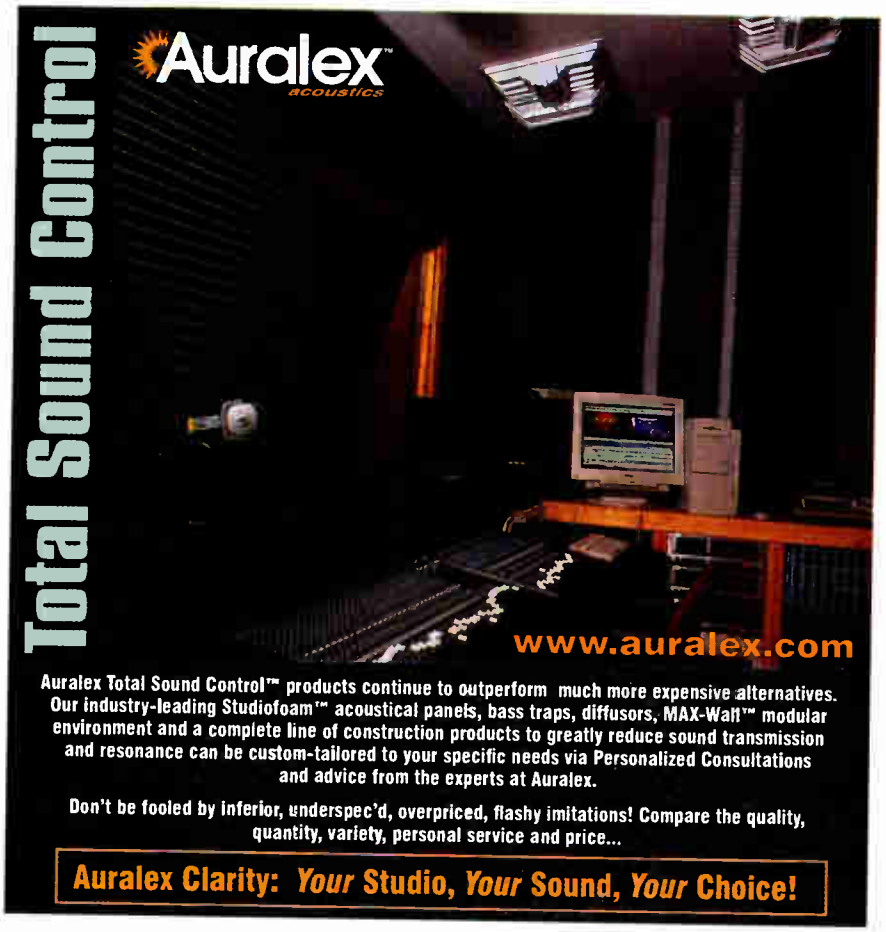

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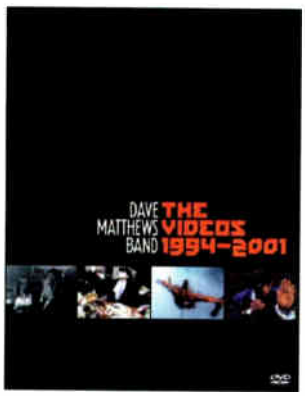
Letters to Mix



DOWNSIDE OF UP-MIXING

Your article "DVD Does Music" (February 2002) about DVD authoring for the Dave Matthews Band's *The Videos* does a first-rate job of explaining how complex the DVD authoring process is for this kind of content, and how it requires more navigation programming and QC testing than many feature-film DVDs. And it certainly confirms that Crush Digital is a very capable authoring facility.

But, there are two specific quotes about the surround audio that underscore what's drastically wrong with much music on DVD, and demonstrate how artists get their music screwed with by careless record labels, DVD producers and/or authoring houses.

Crush's audio engineer Greg La Porta reports that he "created *up-mixed* versions of the stereo mixes...to create a surround field through a combination of delay and EQ that allowed us to emphasize separate elements. In this process, we push the vocals and lead guitar to the center and front speakers, while using the surrounds to emphasize the rhythm."

Up-mixed! What chutzpah, what baloney, what a bad idea! The record label wants to say it's 5.1 on the package, so they ask the authoring house to scramble all to hell the original mixes that the band and folks like Steve Lillywhite, Tom and Chris Lord-Alge, Glen Ballard, John Alagia, and many others sweated over and approved. This kind of faux-5.1 is phony. It's a fib that can only reflect badly on the band and their music by ruining the integrity of the original mixes.

Authoring specialist at Crush, Jay Crumley, says, "What I really like about this disc is that it shows much more respect for music videos as a medium. You have the best audio quality and surround mixes to support the music."

These surround mixes aren't native 5.1 like on DMB's spectacular *Listener Supported* DVD. They are phony'd-up; sorry, "*up-mixed.*" Of course, this is not Crush's fault. Crush's client spec'd the job this way, so they did the work requested. We've done the same thing many times at CRC in our DVD Lab when the client demands it. But it still needs to be actively discouraged.

It's critical that DVD authoring houses educate their clients and DVD producers to the fact that this kind of surround audio treatment is profoundly disrespectful to the artists, their music and the audience. And for audio professionals, let's be mindful of how it diminishes the 5.1 surround format itself.

Hank Neuberger
Chicago Recording Company

SOFT SOUNDS

I read Paul Lehrman's recent column ("Insider Audio," February 2002: "Is It Time To Go Soft?") about switching over to software synthesis.

My day job is as a software developer. I have been writing software for 16-plus years, some of it "behind the scenes" and some of it with a UI. In the music world, I'm a fan of the older analogs and hardware in general. However, I recently decided to use a PC for multitrack recording.

Paul's recent column discussed the pros and cons of soft synths in detail. The only thing missing was any discussion of how they sound. Some of the soft synths sound pretty good, but others have that plasticky, small sound sometimes associated with VA synths. This may not matter in a mix, or in certain styles of music, but it should at least be addressed.

Next, the user interface issues he brought up. I spent some time using Reaktor to build a vocoder from scratch, so my comments will be about that particular program, but it applies to most of the others I have sampled. I spent a lot of time clicking and selecting and clicking again to open up various components to modify a value. Building up something nontrivial from scratch was fairly tedious. It would be like starting with an empty modular frame in the hardware world and walking over to a large filing cabinet and pulling out a module, wiring up the power, setting the knobs to some default and then patching it up. In addition, on a large monitor, the modules were small enough that when I tried to click on them to edit a value, it often picked up the click as an attempt to build a patchcord connection. Even with a large screen, I still couldn't fit everything on it comfortably.

To ease some of this, maybe the current crop of software designers could take some guidance from other operating systems. Instead of making the user click on everything to activate it, activate a window/module whenever a mouse hovers over it. It's not the Windows paradigm, but it would make other things easier. Instead of building everything to emulate real hardware, throw away knobs and sliders and implement a basic control that has the value in a display and a simple up arrow/down arrow above it. This way, you could hover above the control and then either click/hold on the up or down arrow, or use the left mouse button for decrement and the right for increment (user-definable). Hover over the number and you could type it in directly. Also, use tear-off menus.

Finally, use the one cool feature from DEC's VMS operating system: file versioning. Put a "working save" button in the bottom-left corner of the screen. Every time you click on it, the current version of your work is saved with a simple version number extension. If users try to exit, then prompt them to save their work under a "real" file name and then ask them if they want to purge the works in progress. This keeps the file system fairly clean, and yet makes saving works in progress easy.

Even with these issues, I still use a PC for multitrack recording. I want the machine to be a recorder/editor only. No plug-ins, no MIDI, no soundcard. Use my external mixing board, external hardware sequencer. The goal is a single-purpose box that is stable and allows me to record and play back easily. So far, it's going well.

Tom Moravansky
Via e-mail

Tom, you bring up some great points. Interestingly enough, a lot of the operational features you are looking for have existed in Macintosh music programs for many years. David Ziccarelli's "numericals," used in Opcode sequencers and patch editors and in Cycling '74's "M," have both the up/down and the direct-typing features for setting values, only they do it with one button. BIAS's Peak audio editor has unlimited Undo buffers and a History window, similar to Photoshop, which has the same purpose as the "file-versioning" feature you cite. And Pro Tools and BIAS's Deck use file versioning to save edits on individual sound files.

The real problem is not that these issues haven't been solved. It's that some designers think that they are doing such pioneering work that they have to re-invent the wheel, when in fact, there are already many wheels out there, and there are lessons to be learned from them.

—Paul Lehrman

Send Feedback to *Mix*
mixeditorial@primediabusiness.com

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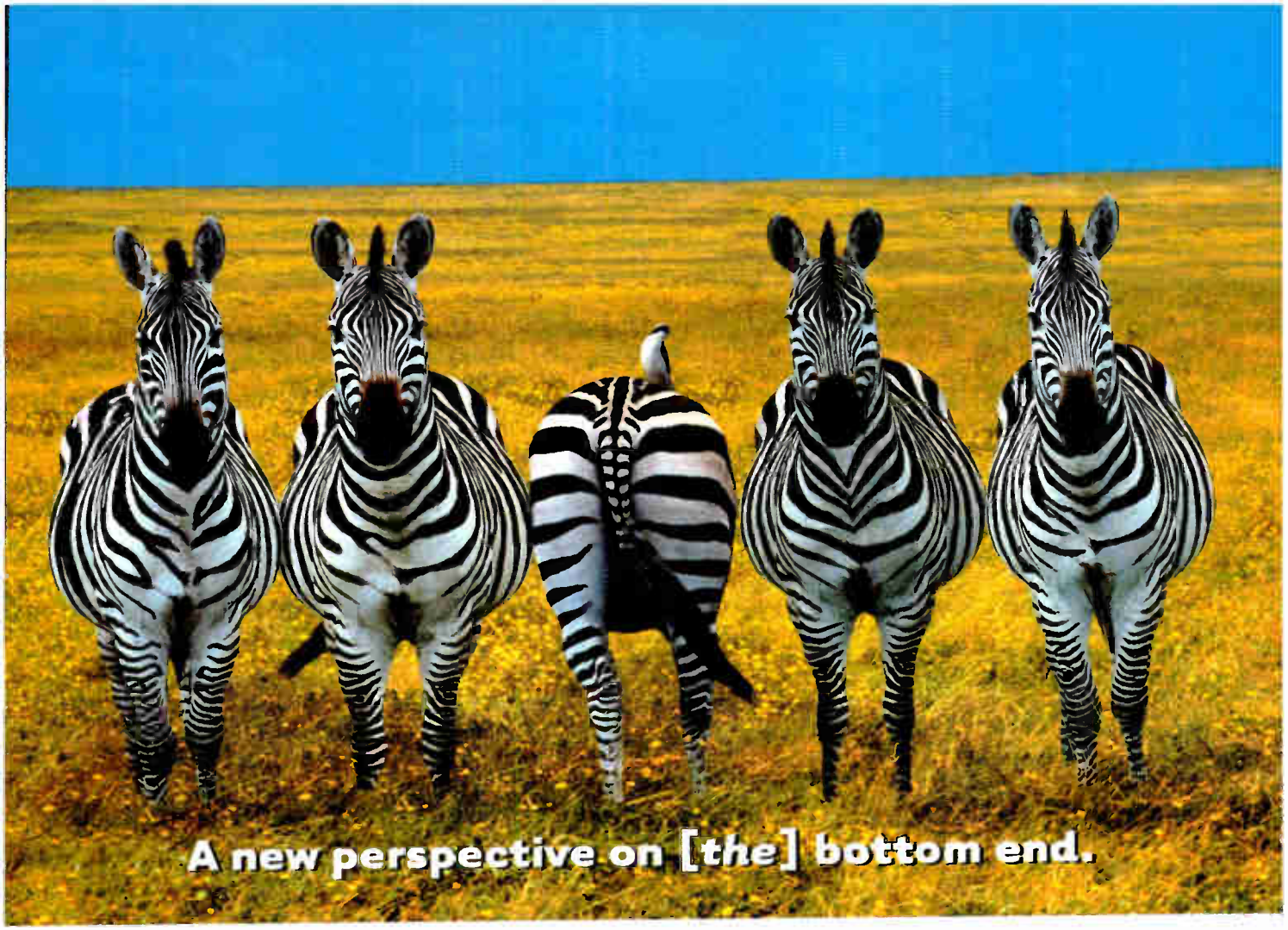

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NEWSFLASH UPDATE: TGI ACCEPTS TC PROPOSAL

Last December, TC Group, the Danish parent company of TC Electronic, TC Works and TC Helicon, announced a proposal to the shareholders of TGI plc (holding company of Tannoy, Martin Audio, Lab Gruppen and GLL) to purchase their holdings in the company. The offer has now been accepted by the shareholders.

For more, visit www.mixonline.com.

EUPHONIX GOES PRIVATE


Dieter Meier

After a six-year run on the NASDAQ, Euphonix (Palo Alto, Calif.) announced on February 7, 2002, that it is buying back the company. The board of directors unanimously approved the filing of Form 15 with the Securities and Exchange Commission (SEC), allowing the company to suspend its obligations to file periodic reports.

Before the move, Euphonix also garnered the necessary shareholder approval for its $6 million line of credit secured in November 2001, and the restructuring of the company's existing promissory notes, which included extending the maturity dates to December 2003. The line of credit will be used to support investment in new-product development and future operations.

Chairman of the Board, musician and filmmaker Dieter Meier explained the reasoning behind the new investment and the company's goals: "Being a private company saves about $350,000 a year in legal and financial fees. I believe we can be profitable by the end of this year. I think our aggressive move into the broadcast market will ensure this."

WAYLON JENNINGS, 1937-2002

Country music lost a pioneer and an outlaw on February 13, 2002, when Waylon Jennings died of complications from diabetes.

Jennings' career began in the early days of rock 'n' roll, when his first record was produced by Buddy Holly, with whom he toured as bass player. His first Top 5 hit, "Only Daddy That'll Walk the Line," was followed soon after by a Grammy® for his version of "MacArthur Park," and he was the Country Music Association's Male Vocalist of the Year in 1975.

Jennings was best known, however, for the *Wanted: The Outlaws* album on which he collaborated with Willie Nelson, Tompall Glaser and Jessi Colter, his wife. With its electric sound and artist-driven production, the *Outlaws* album broke the country/rock barrier in a way that many in the country establishment considered subversive, but it tremendously increased the genre's following at the time.

Over the course of his career, Jennings received two Grammys; 13 Gold albums; and one Platinum, two double-Platinum and one quadruple-Platinum albums. He was inducted into the Country Hall of Fame in October 2001, long after he would have been if he had broken fewer rules. In 1998, Jennings told *Mix*, "When it ceases to be fun, then I'll go where I want to. I have a home here [in Nashville] and a home in Arizona. I don't have to have music or the business in my life, because I'm very happy. I've had a good run at it." Jennings' deep and honest voice will be missed by *all* music fans.

—*Barbara Schultz*

THE UNIVERSAL TONY BROWN


Tony Brown


Tim DuBois

Nashville has a new record label, Universal South Records. Tony Brown (former president of MCA Records/Nashville) and Tim DuBois (former president of Arista Records/Nashville) started the new company on January 2, 2002, to fulfill a vision they've both had for some time.

"For the past several years," DuBois said, "Tony and I dreamed of being able to work together."

"It would've been 18 years this March [2002] that I'd been at MCA," Brown noted. "I needed a new challenge."

The new label is a joint venture with Universal Records in New York, but Brown and DuBois have autonomy to sign artists. Universal South is already off to a running start, with Brown bringing in four artists—Dean Miller, Holly Lamar, Allison Moorer and Bering Strait—from MCA with virtually completed projects. New artist Joe Nichols has also joined the roster.

Brown—who is largely credited with the early '90s resurgence in country music, producing hit records for Vince Gill, George Strait, Reba McEntire, Trisha Yearwood and Wynonna Judd, among many others—said he was open to continuing to produce those MCA acts. He expects to produce records for Universal South once the new company is "fired up."

Universal South's musical direction won't necessarily be limited to mainstream country music. "We might get involved in pop and contemporary Christian music down the road," Brown said.

Universal South Records, 40 Music Square West, Nashville, TN 37203; 615/259-5300.

—*Michael Cooper*

"POWER OF TWO" ...AND A CREW

The Indigo Girls visited* Tree Sound Studios *(Norcross, Ga.), where they tracked songs for their new album,* Become You *(Sony Records). Left to right: Amy Ray (Indigo Girls), Carol Isaacs (piano, accordion, keys), Robert Hannon (chief engineer at Tree Sound), producer Peter Collins (Elton John, Jewel, Rush, Shawn Mullins), Glenn Matullo (engineer), Emily Saliers (Indigo Girls), Clare Kenny (bass) and Brady Blade (drums).

World Radio History

COMPILED BY SARAH BENZULY

LEXICON HONORS PHIL RAMONE

From left: George Massenburg, Elliot Scheiner, Tom Dowd, Phil Ramone, Burt Bacharach, Ahmet Ertegun and Al Schmitt.

Renowned producer Phil Ramone was awarded the first Lexicon Lifetime Achievement Award the night after the 44th Annual Grammy® Awards at the Beverly Hills Hotel. The presentation celebrated Ramone's status as one of the top producers in the history of the recording industry, known for his innovative work with legends such as Billy Joel, Paul Simon, Barbra Streisand, Frank Sinatra, Paul McCartney, Bob Dylan and Gloria Estefan.

"The Lexicon Lifetime Achievement Award was created to honor true innovators for their outstanding achievements and contributions to the recording industry," said Buzz Goodwin, Lexicon VP. "We present this award tonight to Phil Ramone for always being on the cutting edge of the music scene and for his contributions to the recording arts."

"In the recording process, the key for me has always been studying what others want and keep thinking of new ways to do it better," commented Ramone. "I thank Buzz and Lexicon for this award and for giving me the tools to let me shine for my artists. I love the music and I love you all. Thank you."

Buzz Goodwin, Lexicon VP, Phil Ramone and Mark Terry, president Harman Pro Group

EARGLE AND JBL TEAM, HOLMAN GARNER OSCARS


Tomlinson Holman

John Eargle, Mark Engebretsen and Don Keele received a Scientific/Technical Award from the Academy of Motion Picture Arts and Sciences, honoring their development of cinema loudspeaker systems using constant-directivity horns and vented-box, low-frequency enclosures.

Eargle, in addition to being a Grammy-winning recording engineer, is an author of standard textbooks on audio, a consultant to Harman International and a past president of the Audio Engineering Society. Keele is an engineer who designed the first constant-directivity horns for Electro-Voice and the bi-radial horns for JBL. Engebretsen now works for JBL Professional and has designed professional loudspeaker systems for a number of American and Japanese companies.

Tomlinson Holman of TMH Corporation will be awarded an Academy Award for research and systems integration resulting in the improvement of motion picture loudspeaker systems. For over 20 years, Holman has been involved in the research and integration of the constant-directivity, direct-radiator bass type of cinema loudspeaker systems. He is the technical architect of Skywalker Ranch and invented the THX businesses that were named after him. Twice governor of the Audio Engineering Society, Holman holds six audio and video patents, lectures worldwide and teaches sound at the University of Southern California School of Cinema-Television in L.A.


From left: John Eargle, Don Keele, Mark Engebretsen

ON THE MOVE


Chris Pelzar

Who: Chris Pelzar, CEO at Fairlight USA

Previous Lives:

- 2001-2002, president Euphonix
- 2000-2001, executive VP sales & marketing AMS Neve
- 1997-2000, VP Euphonix
- 1991-1997, VP AMS Neve
- 1989-1991, acting president WaveFrame
- 1980-1989, independent manufacturers representative and shareholder in LaSalle Music & Pro Audio

Main Responsibilities: Entire operations P&L in the U.S., Canada and South America; setting the direction this organization chooses to go now and in the future.

If I could do anything else as a profession, it would be: Head Coach of the world champion New England Patriots. I have been a season ticket holder for almost 10 years, and my colleagues call me "Coach."

The most important lesson I've learned since being in this field is: People are your business' life blood. I feel that if you get enough truly talented people together who are motivated by a single goal, you cannot fail. I always seek people that are self-assured and self-motivated. You cannot teach someone those attributes. I have been lucky to have worked with several people who fit that description in my career, and I am very fortunate to work with two of them, Mike Mueller and Brad Eisenhaure, at Fairlight right now.

My biggest accomplishment in this field was: Being at the forefront of large-format digital consoles in music, post and broadcast. I was involved in some of the very "firsts" in this industry category, including the first use of an all-digital console in a live television show at TNN and the first all-24-bit digital recording and digitally mixed album projects at Right Track Recording.

Currently in my CD player are: Van Halen *5150*, Aerosmith *Pump*, Dave Matthews, Steely Dan *Greatest Hits*.

When I'm not in the office, I enjoy... Skiing at Vail/Beaver Creek Colorado. I have been going there for many years and I love it more each time. I love traveling to Europe, Florida and the Caribbean, and I have just returned from my first trip to Australia and am looking forward to going back after 10 years to South America this year.

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VINCE GILL, AMY GRANT HEADLINE BENEFIT FOR SCHOOLS


PHOTOS: JOHN REUTER

Vince Gill

Sometimes a worthy cause can attract the big names, with no MTV exposure, no Entertainment TV. Recording artists Vince Gill (MCA) and Amy Grant (Word) headlined a sold-out concert on February 16, 2002, in rustic Sisters, Ore. (pop. 900), to benefit local schools. Warner Bros. recording artist Leslie Satcher, keyboardist Tim Lauer and guitarist Jerry McPherson joined Gill and Grant onstage.

The show was part of the ongoing Sisters Starry Nights Concert Series—now in its sixth year—organized to raise money for the Sisters Schools Foundation. Proceeds from the thrice-yearly concerts are used to preserve co-curricular programs and activities for the Sisters elementary, middle and high schools that are threatened by state budget cuts. Although the emphasis is on funding music and arts programs, a wide range of sports, technology and other programs also receive money. In its first five years, the Sisters Starry Nights Concert Series has raised approximately $250,000 in net proceeds for Sisters schools.

Left to right: Grant, Gill and Leslie Satcher

The concerts' charitable cause, the area's spectacular scenery and the venue's intimate setting (the concerts are held in the Sisters High School auditorium, which seats roughly 800 people) have inspired an impressive list of artists who donate their time. Past performers include Lee Ann Womack, Deana Carter, John Hiatt, A. Anderson, Christopher Cross, Kim Carnes, Michael McDonald and the Nitty Gritty Dirt Band. "The clientele of folks that have been drawn here over the years says a lot about the venture," Gill noted in an interview held during soundcheck.

"What's unique about it is that it's an ongoing series of [school-benefit] concerts," Grant added. "Nobody else has done this."

For more info, e-mail kaneala7@aol.com.

—*Michael Cooper*

A VISION FOR REVOLUTION

Visioneering Design Co. (Los Angeles), a turnkey audio/video/film design and integration firm founded by Ron Lagerlof in 1992, celebrates its tenth anniversary this year.

The company recently completed an executive screening room for Revolution Studios, currently celebrating the release of *Black Hawk Down*. The new room features the first commercial L.A. installation of TMH-qualified Tesseract loudspeakers designed by Tomlinson Holman and manufactured by Visioneering. Lagerlof provided consulting and design services, complete systems integration and equipment acquisition, including Kinoton film projection, Christy video projection and custom control by AMX.


PHOTO: DAVID GOGGIN

Pictured at Revolution Studios are Ron Lagerlof (right), president of Visioneering, and Tomlinson Holman, president of TMH Corp.

Industry News

Bil VornDick

Martin Kloiber

Dave Christenson

Eric Rosenberg

Producer/engineer **Bil VornDick** has been elected chairman of the **Audio Engineering Society's** Nashville chapter...**Euphonix** (Palo Alto, CA) board of directors member **Martin Kloiber** was promoted to the executive VP of technology...**Solid State Logic** has hired **Dave Christenson** and **Eric Rosenberg** to be the manager of post-production for North America and Western regional manager of broadcast sales, respectively ...**DMOD** (Boston) announced new hires: **Ted Healey**, VP of engineering, and former Avid Technology VP of sales and marketing **Martin Vann**, VP of sales...With previous stints at Digidesign, Otari Corporation and WaveFrame, **Doug Wood** joins **Grace Design** (Boulder, CO) as VP of sales and marketing...The new national sales manager over at **Event Electronics** (Santa Barbara, CA) is **David Hetrick**...Provider of production music **FirstCom Music** (Dallas) promoted **Michael J. Baer** to general sales manager...SEK'D, Swissonic, Friend-Chip, Music and More and Sommer Cable America have joined forces with the Hollywood-based team of Audio Intervisual Design and Developing Technology Distributors to form a new company, **plus24** (West Hollywood). Plus24 is now the international distributor for Brainstorm Electronics, dB Technologies and SEK'D, and the American distributor for Friend-Chip, Music and More, Sanken Microphones, Swissonic and Sommer Cable. In addition, the office has moved to: 1155 N. La Brea Ave., West Hollywood, CA 90038; 323/845-1174; toll-free 800/330-7753...New distribution deals: **Midiman/M-Audio** (Arcadia, CA) will begin distributing a new line of **Groove Tubes Microphones**; and **Audio Distributors International** (Boucherville, Quebec) will begin Canadian distribution for **Future Sonics Inc.** (Pineville, PA) ...Change of year means change your name: **AZ-IZ Case Company** (Culver City, CA) has changed its name to **ProCases Inc.**; **Ego Sys** adopted the shortened version of its name, **ESI**. Its new headquarters is at 3003 N. First St., Suite 303, San Jose, CA 95134; 408/519-5774; fax 408/519-5786; and **Bang & Olufsen** brought in the new year with a new corporate identity of **Bang & Olufsen ICEpower a/s.**

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MIX LOOKS BACK

NUMBER ONE ALBUM

Rumours, Fleetwood Mac. Producers: Fleetwood Mac, Ken Caillat, Richard Dashut. Engineers: Ken Caillat, Richard Dashut. Mastering: Ken Perry, Ken Caillat. Studio: The Plant (Sausalito, CA).

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

NUMBER ONE SINGLES

ABBA's "Dancing Queen." Producers: Benny Andersson, Bjorn Ulvaeus. Engineer: Michael B. Tretow. Studio: Polar Recording Company.

David Soul's "Don't Give Up on Us." Producer: Elliot Mazer. Engineers: Elliot Mazer, Smiggy. Assistant engineers: Dan Goldstein, Willy Deenihan. Studio: His Master's Wheels (S.F.).

Thelma Houston's "Don't Leave Me This Way." Producer: Hal Davis. Studio info not available.

Glen Campbell's "Southern Nights." No credits available.

CALENDAR

Registration for **2002 NSCA Systems Integration Expo** (April 25-27, Denver) is open. Badges, class tickets, housing reservations can be found at www.nscaexpo.org.

Syn-Aud-Con seminar dates and locales for "System Optimization" and "System Design": April 8-12, in Atlanta; May 6-10, in Louisville, Ky.; and July 29-August 2 in San Francisco. www.synaudcon.com.

Streaming Media West 2002 Conference and Expo, April 23-26, in Los Angeles, for the latest in digital and streaming media. www.streamingmedia.com/west.

Institute of Videography **IOV2002 Convention and Trade Exhibition** in Birmingham, UK, will be held April 24-25, at the National Motorcycle Museum.www.iov.co.uk.

CORRECTION

In the Crane Song HEDD 192 "Field Test" (December 2001), the Minilyzer that was pictured should have been referred to as NTI Minilyzer and not Neutrik Minilyzer. The two companies are strictly separated. *Mix* regrets the error.

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

NOTES FROM THE NET

The winds have changed: Instead of **Napster** continuing to be under the scrutiny of the law, U.S. District Judge Marilyn Hall Patel is now taking a different look at the record labels. In a mid-February hearing, Patel told lawyers that she will begin a discovery phase in the ongoing Napster trial, allowing the upcoming *legal* pay-for-play music service to examine whether or not the Big Five record labels have misused their copyright claims. Patel ruled that the Five must prove that they own the music copyrights, and prove that these copyrights weren't used to monopolize and stifle the distribution of music on the Internet. This ruling means that if the labels can't prove ownership, then they can't ask the courts for copyright infringement damages. The labels have three weeks to produce documentation to a third party who will advise Patel on copyright laws.

Despite this turn of events, online music services continue to expand, though this time in content form. As stated before, the life expectancy of these services was to be seen in audience acceptance. As such, numerous services, including **AOL Music** and **Rhapsody**, have added features to attract paying customers: AOL Music plans to entertain its audience by offering them a one-stop shop for news, downloads, live concerts, chats and the streaming subscription service. Likewise, Listen.com's Rhapsody hopes to add video on-demand later this spring.

TEC AWARDS SUPPORTS HEARING CONSERVATION

Hillel Resner (right), president of the Mix Foundation for Excellence in Audio, and board member David Schwartz (present a check for $25,000 to Dilys Jones of the House Ear Institute. The donation, part of the proceeds of the 17th Annual TEC Awards held last December, will support the ongoing programs of Sound Partners, which promotes hearing safety to audio professionals.

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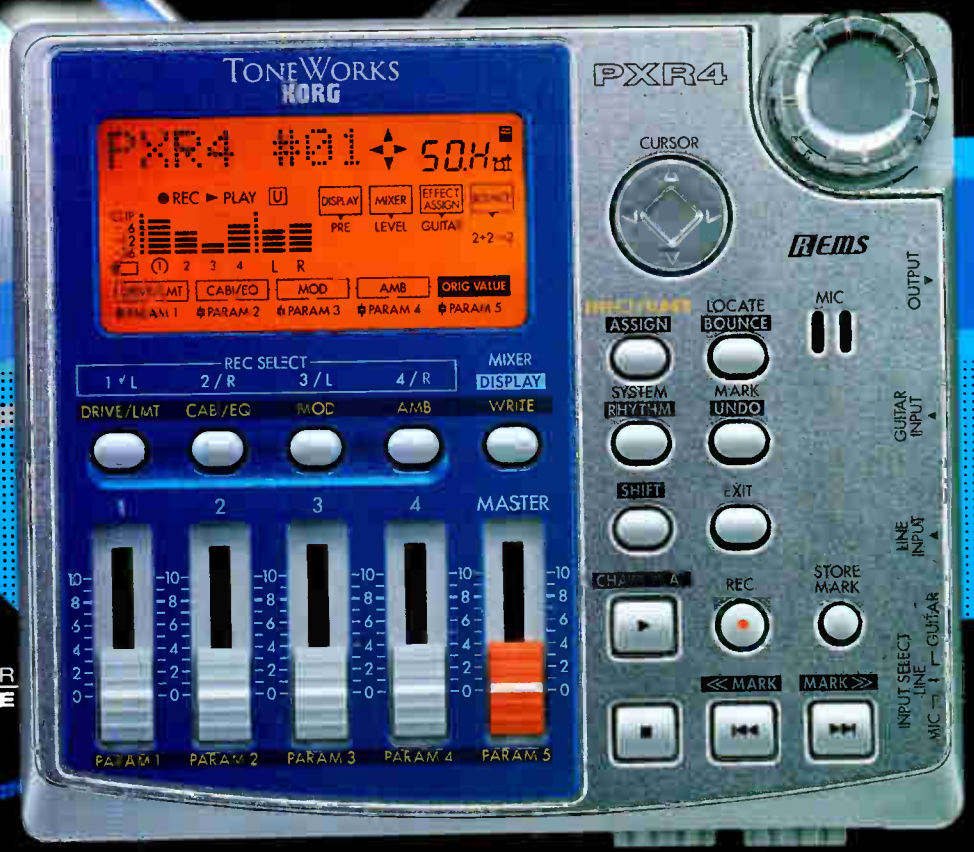
EASY COME. EASY GO.



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BY STEPHEN ST.CROIX

Whatever You Do...

Don't Look Into the Light

ILLUSTRATION PETER BENNETT

This is the second part of a three-part assessment on recently released video projectors, followed by an evaluation of 50-inch plasma displays. If you did not read last month's column, then you might want to.

THE PREPOSTEROUSLY PROLONGED PROJECT OF PRECISELY PRIORITIZING PRAISEWORTHY (PROCURABLE PRODUCTION) PROJECTORS

Last month, I promised a final decision on which 1,280x720 DLP projector was better—the Sharp XV-X900U or the Marantz VP-12S1. To find out how we (there were actually five people involved in the comparison and evaluation process) got down to just these two machines, see last month's column.

But, as usual, a short history will precede. I looked at every projector technology that I could get my hands on for my studio. Mind you, the projector that I finally chose for the job would, of course, never, ever, ever be used in any home entertainment capacity of any kind. I am far above such frivolous desires as wanting to watch movies at home—even though both of these machines blow away any analog film movie theater that I have been to in the past decade, and even though I do happen to have a 12-foot screen hanging from my ceiling. I also seem to have 28 sealed DVDs waiting...

BEGIN COMPARISON MODE

Note: The following data is based on tests using a white screen with a gain of 1.3, the highest gain I felt I could get away with—at the time.

The Sharp XV-X900U is pretty bright, surprisingly so. In fact, I was surprised by the way explosions and other official test video actually hurt my eyes with raw luminosity, even on a 12-foot screen.

But when using mid-color temperature settings, this machine can't seem to make red, unless you give up yellow. If you set it up for a proper general tint and color balance, yellow is fine, but red is magenta. If you set the red up right, yellow is green. However, in other scenes, the sky-blue and rock-browns are truly excel-

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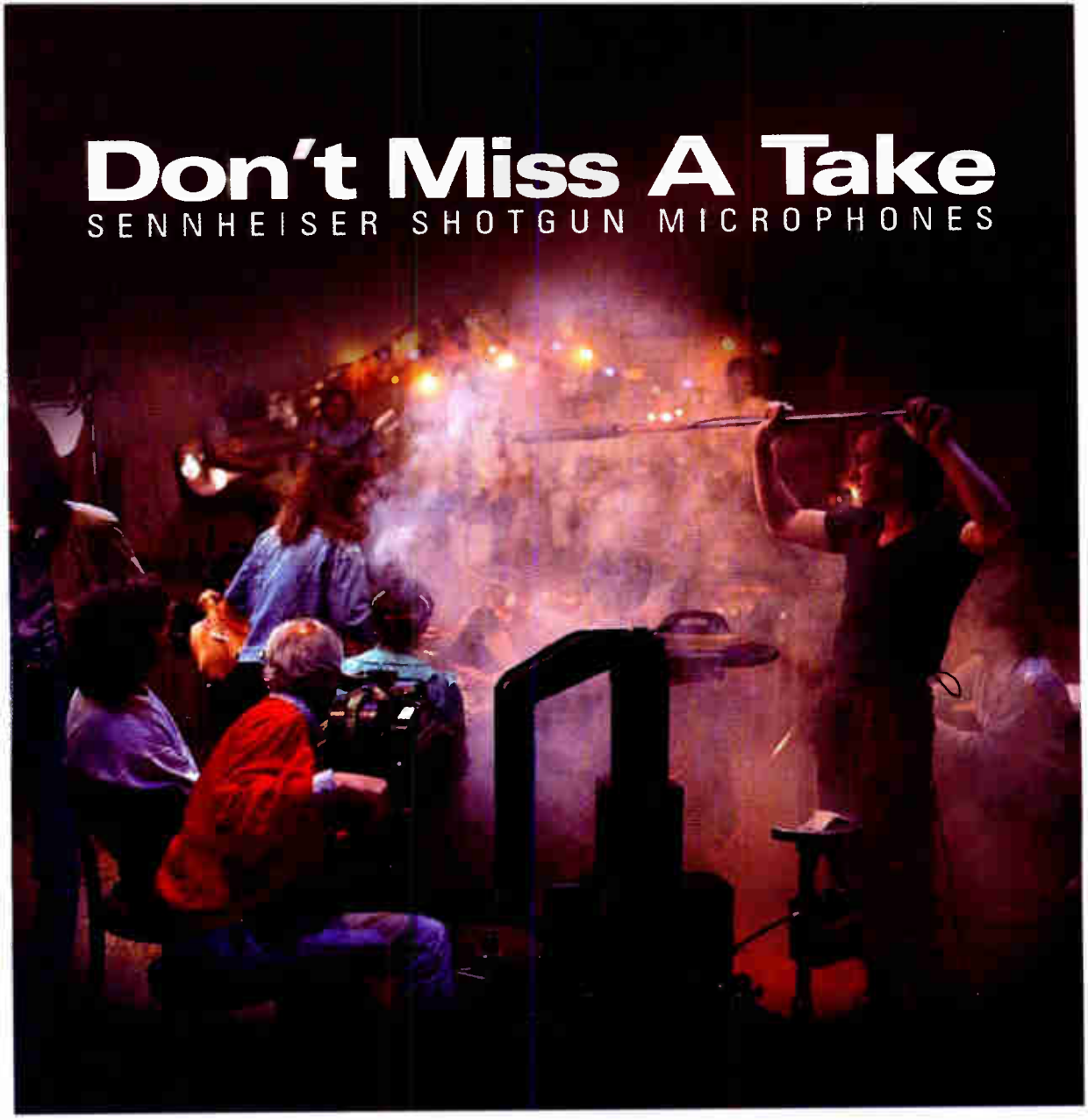
Don't Miss A Take

SENNHEISER SHOTGUN MICROPHONES



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lent. These observations were made using the official Industry Standard red-over-yellow test image: the first daylight alien ghost appearance in *Final Fantasy*.

On the other hand, the Marantz VP-12S1 *can* make proper red and yellow at the same time—in High Bright mode. But it seems that High Bright overrides any color temperature (white balance) settings with a new color temp of its own, somewhere between its warm and mid settings. Pale (sky) blues are faded and more of a pink tan, while more saturated blues are solid, though not as intense as the Sharp.

It is important to note that this machine has only three color temperature settings, and the higher (more blue) you get, the more its light output diminishes—in huge steps. If you choose the coldest (highest) color temp, it then *can* make pale blue, but it is not bright, and it then exhibits the same red-or-yellow problem as the Sharp. No matter how you set up color temp, it is overridden when High Bright is on.

The High Bright function does blow out some detail in bright images, but makes mid and dark scenes much more colorful and transparent, and doesn't hurt black at all.

The Sharp, on the other hand, has *six* color temps, with a very wide range, and there is *no* significant loss of brightness at any of the settings. Two very different approaches, to put it mildly.

The Sharp, all the way warm, is roughly the equivalent of the Marantz in High Bright, with color temp defeated. There is a bit of a green cast to the Marantz in High Bright mode.

> It didn't take long to determine that only one panel was advanced enough to be worth bringing in for further testing.

The Sharp makes more color than the Marantz, which must be turned almost all the way up to equal the Sharp in mid-position.

Surprisingly, the Sharp, with its 250-watt light, runs cool to the touch, while the Marantz, with its little 150-watt light, is actually uncomfortable to touch; this is probably the price of the super-quiet, baffled cooling system, which does, in fact, make the thing the most quiet projector I have ever heard—obviously quite important in studio applications.

But here is the clincher: The Marantz makes black. For the first time ever, almost real black. And there is no way to describe how much that contributes to the quality and impact of a picture.

The Marantz optics are far superior, as well. The Sharp image is pretty damned impressive, but the Marantz image is actually downright thrilling, providing dramatically more detail and a profound sense of reality. And, although the optics and the amazing black of the Marantz contribute significantly, it's the Faroudja processing that's included inside that keeps the picture super-sharp. This thing is sick.

Oh, yes, there is something else. The

—CONTINUED ON PAGE 255

Bill Schnee, Grammy Award winning engineer,
Owner of Schnee Studio, North Hollywood, CA.

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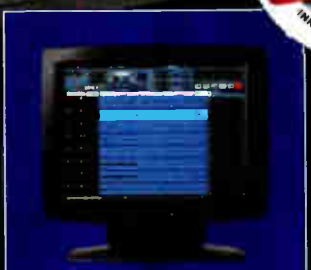

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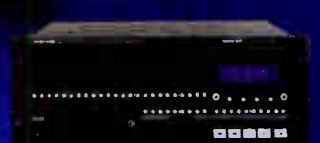

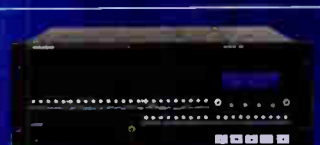

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BY PAUL D. LEHRMAN

Son of Grumpmeier

Notes From the Underbelly

ILLUSTRATION JACK DAVIS

Once in a great while, I get the chance to talk to and write about a rising young musical star like the one in this month's interview. He has stunned and thrilled the music industry with his revolutionary approach to making hit records. His five triple-Platinum CDs have dominated the Hippity-Hop and Alternative Geek Dance charts on *Bullbored* magazine for the past year, and his award-winning videos have been in heavy rotation on all of the major cable music channels including Groove24/7, Moshvision and GaKk-TV. He has been profiled on public television's extremely serious *Great Pretensions.* And he's been nominated for 14 Grammy®©™ Awards, most recently Best Classical Producer, for his brilliant, "original" composition *Beethoven Bytes.*

I have known this young man since he was merely a glint in his father's eye (which was immediately followed by a look of disgust in his mother's). His father is none other than my old friend, and sometime nemesis, P.T. Grumpmeier, audio engineer, producer, raconteur and world-class cheapskate, a gentleman whose rantings are well-known to loyal readers of this column. Both of you.

P.T. Grumpmeier Jr., whom his father affectionately refers to as "Hey you," is only 19, yet erudite beyond his years. He started out in the business very young, when his crib was used by his father as a bass-drum weight in his father's studio, when his (the son's) mother wasn't watching. This early exposure to extreme SPLs of low-frequency sound no doubt helped mold his (the son's) later passion for extremely loud, beat-oriented music, with not much going on above 3k.

The young man's big break as a solo *artiste* came at his best friend's Bar Mitzvah, when the hired DJ fell (or perhaps was pushed) into the champagne fountain. Young Grumpmeier immediately took over the turntables, and brought the entire crowd to its feet with a

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Fred Eyerman

E-mail
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From: D. Snellbaker

Dear Sweetwater,

I appreciate the fact that if I had a question, you guys were there to help and provide any information necessary to help me understand. Not many companies are willing to do that these days. This attribute died out a long time ago, which makes what you have done for me that much more special!

David Snellbaker

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breathtaking journey through time, space and the animal kingdom, starting with the "Bunny Hop" and "The Alley Cat," then "Muskrat Love" and "Rocky Raccoon," followed by "A Horse With No Name," "Piggies" and finally roaring into "Who Let the Dogs Out," all the while rapping spontaneously about the 12- and 13-year-old "ho's" and "bitches" on the dance floor. The father of one of those girls, a VP of A&R for mega-label Dreque Records (a subsidiary of Getouttamaway Communications, owner of more than 5,000 radio stations and several small former Soviet Republics), signed him on the spot to an eight-figure multi-album contract.

With the label's backing, the young man saw his albums, released on vinyl and 8-track tape only ("I consider the sound of the tape mechanism going 'clunk' every few minutes to be an integral part of my art," he told *Rolling Boulder* at the time), rocket to the top of the charts within minutes of their release, and sometimes before. But the artist was unhappy about the label's treatment of him ("They tried to pay me in XFL stock," he later told *Money or Your Life* magazine), and so he hired famed litigator, and family friend, Johnnie Cochrane to get him out of his contract.

Free of his obligations to the corporate empire, the teenaged superstar formed his own totally independent record label, Re-Gurge Records, which is distributed by AOL Time Warner Reprise Atlantic Nonesuch CNN Headline News. He dropped the DJ moniker ("That's so, like, last year," he told *Behind the Music* last year) and—following the example of celebrated artists like Bush, Bjork, Beck, Jewel, Joe, Moby, moe., Charo, Cher, Sleepy, Dopey, Doc, Pink and Floyd—adopted the single-word *nom d'artiste* "Grump."

I punched in numbers on the phone at random and we'd record the voice that says, "This number is not in service" and the number we'd dialed.

Let's talk about Beethoven Bytes. ***How did you come up with the inspiration for this incredible record?***

M'ol' man had this, like, pile of 78 plattahs down in the cella', ya seen 'em, right? Really heavy mutha*****s? So, like this one day I was flipping them in the street, like a frisbee, numsayin'? And ma homey goes, "Yo, there's a ittle-bitty pitcher of a dog on this one." So I'm like, "Whassup widdat?" And ma homey goes, "Hey, y'all down with animals, let's hear what this sucka sounds like!"

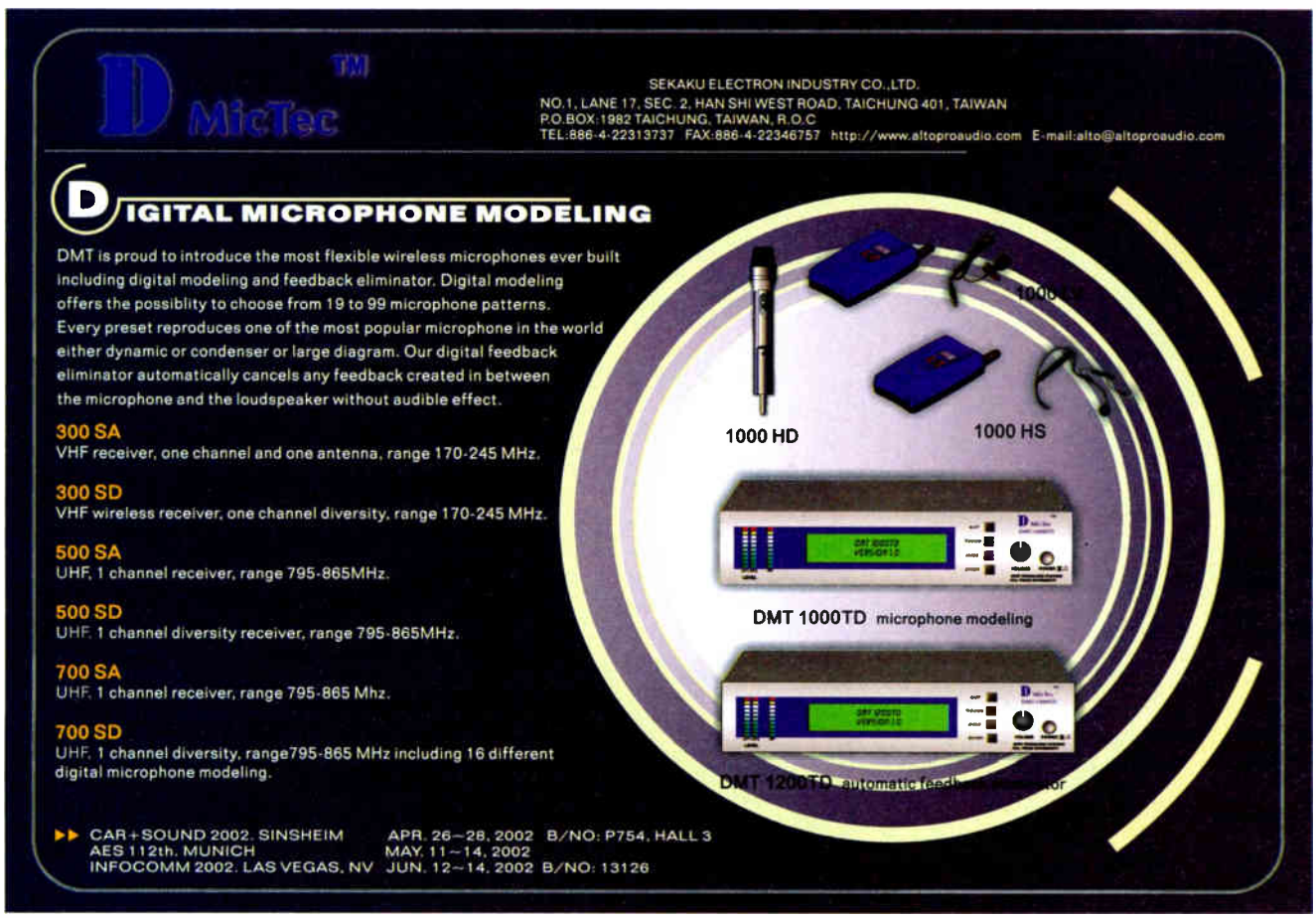
You grew up in Scarsdale. Why do you talk like that?

Oh, I'm sorry. There was a guy here from *MTV News* this morning, and they really like it when you sound "city," especially if you're white. Guess I got into it.

So you played the 78s. Did you have trouble finding something to play them on?

My father never throws anything away, you know? And my mother hates that, because we got a whole basement and two

—CONTINUED ON PAGE 258



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Sweet and Warm

BY BARRY CLEVELAND

Avolon VT-737SP

ART DI/O Preamp System

SPL 9945 Channel One

Behringer T1953

Presonus DigiTUBE

Few pieces of gear get serious audio hounds salivating like a nice, juicy tube microphone preamp. Whether it's a dusty relic recently rescued from an ancient studio, or the latest state-of-the-art innovation, when the tubes light up, the listeners do too.

Our survey of manufacturers confirmed that there's no shortage of tube preamps available, many offering additional processing, such as high-impedance DI inputs, EQ, compression and de-essing. These units may be used as alternatives to console preamps or as the front end of digital recording systems, and several sport AES/EBU or S/PDIF outs for connecting directly to the digital domain.

Many companies offer more than one model of tube mic pre (including multichannel versions of the mono or stereo units), but for the purposes of this article, we limited the scope to one product per manufacturer, so the two dozen on our list are basically the cream of the current crop.

A DESIGNS MP-2

Unveiled at Winter NAMM 2002, the MP-2 is a two-rackspace chassis housing two tube mic preamps. The unit uses a zero feedback design with transformer-balanced I/O, using Jensen transformers on the inputs and custom-wound transformers on the outs. The straightforward front panel includes independent controls for polarity, phantom power and level, as well as two large, backlit, true VU meters. Also standard is 10k/600-ohm output impedance switching. Retail: $1,499.

ANTHONY DEMARIA LABS MTS-2

Best known for its handcrafted studio compressors and DI boxes, Anthony DeMaria Labs will release its

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Top-of-the-Line Tube Mic Preamps

first microphone preamp later this year. The stereo MTS-2 will use three tubes per channel—two 6922s and a 12AT7a—and features stepped gain, a level pot, and mic/line and phase-reversal switches. Its ¼-inch instrument and XLR (with 48V phantom power) inputs and outputs will be transformer-balanced, and early indications are that it will have a frequency response of 20 to 50k Hz, 0.15% THD and +4dBm output. Retail: TBA.

APHEX 1100

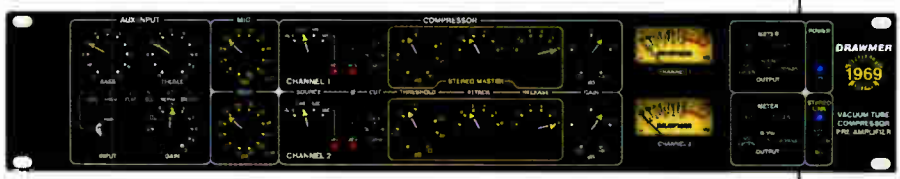
The midnight-blue, dual-channel Aphex 1100 features an all-discrete, Class-A PNP first stage, Reflected Plate Amplifier (RPA) tube circuitry in the second and analog output stages, and 24-bit/96kHz AES/EBU digital outputs. Aphex's proprietary MicLim protection circuit prevents clipping prior to preamplification, and internally optimized A/D converters eliminate overloading of the digital outputs. Both channels have 12 stages of preamp gain in 4dB steps (21 to 65 dB), 11 steps of low-frequency cut (30 to 195 Hz), a Mute function (>60 dB), a 20dB pad and a three-turn output matching pot. The 1100 syncs to an internal crystal clock (44.1, 48 or 96kHz sample rates), or to word- or AES/EBU clock. There are balanced XLR and ¼-inch analog outputs, and AES/EBU digital outs. Retail: $2,495.

ART DI/O PREAMP SYSTEM

The single-rackspace DI/O Preamp System (DPS) from Applied Research & Technology delivers twin discrete preamps coupled with ART's Variable Valve Voicing (V3) 12AX7a gain stage, which includes the ART OPL Output Protection Limiter. The unit accepts mic and instrument sources—there are pro-

Aphex 1100

A Designs MP-2



Drawmer 1969 ME

D.W. Fearn VT-2

Monley/Langevin Mic/EQ 500 Combo

Pendulum Audio MDP-1

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grammable presets for voice, guitar, bass and acoustic instruments—and insert loops on each channel allow additional patching flexibility. Monitoring is via two analog meters. Analog and digital outputs are provided, with separate gain controls for each for simultaneous use. Digital outputs include S/PDIF, Toslink and ADAT. The A/D converter is adjustable from 44.1 to 96 kHz, and syncs to ADAT or external wordclock (32 to 100 kHz). Retail: $319.

AVALON VT-737SP

This high-voltage, discrete, Class-A device consists of a preamp, a passive optical compressor/limiter (with stereo link), and a 4-band EQ with passive high/low bands and overlapping dual-mid bands with variable frequencies and adjustable Q. The equalizer can be switched pre/post-compressor, or inserted into the sidechain for de-essing and other spectral processing. The preamp section has transformer-balanced mic, unbalanced instrument (¼-inch) and XLR line inputs. There's also a passive variable highpass filter (-6 dB per octave, 30 to 140 Hz) and a High Gain switch that boosts the overall gain of the preamp. A large VU meter monitors output level and compressor gain reduction. Retail: $2,295.

BEHRINGER TUBE ULTRAGAIN T1953

The dual-channel Tube Ultragain T1953 features twin 12AX7 tubes and Behringer's proprietary Ultra-Tube circuitry, allowing users to vary the amount of tube "warmth" added to the signal. There are discrete line and mic (with 48V phantom power) input stages, and independent line drivers for converting 10dBV signals to +4 dBu. Tunable and switchable 12dB highpass filters, phase-reverse switches and true RMS level meters are also provided, and a "soft mute" feature eliminates nasty noises when the unit is being powered up or down. XLR and ¼-inch TRS servo-balanced inputs/outputs are standard. Retail: $399.

BELLARI RP533

The RP533 combines a tube mic pre, an optical compressor/limiter and spectral enhancer in a two-rackspace unit. There are transformer-balanced mic (XLR, with 48V phantom power) and unbalanced ¼-inch inputs, and electronically balanced (XLR) and unbalanced (¼-inch) outputs. Unbalanced ¼-inch compressor sidechain I/O is also included. The compressor uses new dynamic gain-reduction circuitry and has controls for ratio, attack, release and output level. There's also a large VU meter (switchable between input level, output level or compressor gain reduction) and switches for polarity reverse and 30dB pad. Frequency response is 20 to 40k Hz. Retail: $700.

D.W. FEARN VT-2

The bright-red VT-2 dual-channel tube preamp is wired point-to-point and assembled on a rugged aluminum chassis. The active circuits in each channel utilize four Class-A triode amplifier sections (in two tubes), and 1% resistors and polypropylene caps are used throughout. Monitoring is via amplifier-isolated "true" VU meters, and switchable phase reversal and -20dB pads and 48V phantom power are available on both channels. Gold XLR I/O connectors lead to/from custom-designed Jensen transformers, and all audio switching is through gold-contact relays. Line-level processing can be accomplished using an optional LP-1 Line Pad accessory. Retail: $3,500.

DBX 576

The two-rackspace 576 Vacuum Tube Preamp/Compressor is a combo mic/instrument preamp, compressor/limiter and EQ unit. The preamp uses 12AU7 tubes and features a Drive control, a 20dB pad, a highpass filter and a phase-invert switch.

dbx 576

The 3-band EQ has sweepable mids and adjustable Q. The compressor offers OverEasy™, Auto and Contour functions, as well as a sidechain and PeakPlus™ limiting. Analog VU meters monitor tube drive, insert level, gain reduction or output level. There are electronically balanced (XLR) mic and line inputs, an unbalanced (¼-inch) line input, balanced (XLR) and unbalanced (¼-inch) outputs, and (¼-inch TRS) insert I/O on the preamp. The optional Type IV Conversion System adds AES/EBU and coaxial S/PDIF digital outputs at 16/20/24-bit resolution. Retail: $1,299.95.

DEMETER HXM-1

The HXM-1 Mic Preamp is a single-rackspace, dual-channel hybrid unit combining a 12AX7-driven tube input stage and solid-state output stage in a cobalt-blue aluminum and steel casing. High-quality components such as film capacitors and metal film resistors are used throughout, and a fully regulated internal power supply delivers 225 volts to the tubes and -18 volts to the solid-state components, resulting in expanded headroom. Jensen transformer-balanced mic and ¼-inch instrument inputs, and both XLR and ¼-inch TRS active-balanced outputs are provided. Retail: $1,399.

DRAWMER 1969 ME

The Drawmer 1969 Mercenary Edition results from a transatlantic collaboration between Drawmer and Mercenary Audio. Roughly based on the Drawmer 1960, the 1969 is a hybrid tube/solid-state design featuring dual mic/line preamps and soft-knee compressors. The mic pre's produce up to 66 dB of gain in 6dB steps, and feature 48V phantom power, filters and phase reverse. The instrument (DI) pre's include 2-band EQ, phase reverse and brightness boost, and can create guitar overdrive effects. The J-FET cell-based compressor has adjustable attack/release and threshold controls. True stereo linkage (with a "Big" position), inserts and sidechain access are provided. Illuminated VU meters indicate output level or gain reduction. Retail: $2,995.

ESOTERIC AUDIO RESEARCH EAR 824M

The EAR 824M Microphone Amplifier is a stereo device that functions as a microphone preamp and as a level booster/line driver. Gain is switchable over a range of 16 to 60 dB in 4dB steps (though 2dB steps can be ordered as an option). The 824M provides 48V phantom power, but other options such as 130V power for B&K mics and the EAR matching transformer for ribbon mics are also available. EAR proprietary hand-wound input and output transformers are utilized, and output is balanced using wide-band 650Ω transformers capable of driving long lengths of cable. Onboard M/S decoding is also available as an option. Retail: $5,345.

GROOVE TUBES VIPRE

The sporty-looking black and silver VIPRE (Variable Impedance Microphone Preamplifier) is a single-channel, balanced, Class-A device that incorporates eight Groove Tubes into a fully differential signal path, resulting in extremely wide bandwidth (7 Hz to 100+ kHz). Its variable impedance mic input loads mics at 300, 600, 1,200 or 2,400 ohms using a custom transformer, and there are trans-

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Groove Tubes VIPRE

custom-built ceramic deck attenuators regulate 75 dB of gain in 5 and 1dB stepped increments. A large VU meter can be switched between five viewing ranges. Retail: $3,000.

JOEMEEK VC2 TUBE CHANNEL

The two-rackspace VC2 Tube Channel is a combination mono mic preamp, photo-optical tube compressor and enhancer/exciter, with a tube gain makeup amp. A highpass filter (25 Hz, 12 dB per octave) and phase-reverse switch are also included. There's a transformer-balanced, floating mic input (XLR, with switchable 48V phantom power) with two amplification stages and a switchable 20dB pad; a floating, balanced line input (XLR); an unbalanced mix input (¼-inch); and an unbalanced insert (¼-inch TRS) switchable from the front panel. Balanced high- and low-level XLR and ¼-inch TRS outputs are provided. Retail: $1,999.99.

MANLEY LABS/LANGEVIN MIC/EQ 500 COMBO

The two-rackspace Manley Mic/EQ 500 Combo's mic pre section sports fully differential topology (using two 5751, and single 6414 and 7044 dual triodes), offers up to 46 dB of gain with a frequency response of 5 to 60 kHz, and has 48V phantom powering and phase-reverse capabilities. Its EQ 500 passive EQ circuitry is coupled to a second differential line-amp, with a choice of Peak or Shelf modes for each band, and includes an insert point. Separate input and output gain controls allow the unit to produce overdriven tube effects, which can be monitored on an illuminated VU meter. All I/O is balanced transformer-coupled. Special mastering versions with calibrated and detented controls are available by custom order. Retail: $2,900.

MILLENNIA ORIGIN STT-1

The single-channel STT-1 incorporates Millennia's HV-3 discrete hybrid solid-state mic pre, M-2b Class-A tube mic pre, NSEQ 4-band Class-A parametric EQ, TCL opto-compressor/limiter, an opto-de-esser and a Class-A tube instrument DI in a single unit. The EQ, compressor and de-esser can be switched between tube-based or solid-state-based amplifiers, and combined with a preamp in any configuration, with a choice of transformer-coupled or transformerless audio paths. Balanced monolithic direct, unbalanced XLR (from a Class-A discrete J-FET amp) and XLR balanced monolithic outputs are available. A backlit analog meter indicates output level or gain reduction. Retail: $2,895.

PEAVEY VMP-2

Housed in a two-rackspace chassis, the VMP-2 is a stereo unit with two tube mic preamps and two tube EQs. Each channel also includes a ¼-inch, high-impedance

Millennia STT-1

instrument input and switches for -20dB pad, 48VDC phantom power, EQ bypass, and -12dB/octave highpass filter at 40 or 80 Hz. XLR transformer-balanced inputs and outputs and ¼-inch unbalanced outputs are standard. The 2-band EQ is a shelving-type (±10 dB at 100 Hz and ±10 dB at 10 kHz). Frequency response is stated as 10 to 40k Hz (+0 dB, -3 dB). Retail is $949.99.

PENDULUM AUDIO MDP-1

The MDP-1 is a 2-channel pure Class-A mic/DI preamp with a transformerless output stage. The MDP-1 can be ordered with either Jensen I3K7A or custom-wound transformers, and the DI signal path is completely transformerless, with a selection of three input load impedances for piezo-electric acoustic instrument pickups, magnetic pickups and line-level sources.

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The MDP-1 also includes a phase-reverse switch, a 20dB input pad, a low-cut filter with 10 frequencies, and large, illuminated VU meters. Retail: $2,495.

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The bright-blue, half-rackspace DigiTUBE Mic Pre/EQ is a combination tube preamp and EQ with a 24-bit digital output. The preamp has a dual servo input that accepts mic, instrument and line signals, with 70 dB of gain and 22 dB of headroom. The 3-band sweepable EQ has overlapping bands and a Bypass switch. Analog output is via XLR connector, and there's a ¼-inch TRS insert. Digital output (at 44.1 and 48kHz sample rates) is via a coaxial S/PDIF connector. Retail: $299.95.

REQUISITE AUDIO Y7S MK III

The dual-channel Requisite Y7s Mk III is handcrafted using point-to-point wiring and uses four 12AY7, two 12AX7 and two 6414 tubes. There are four input types: transformer-balanced mic (XLR) with 48V phantom power, transformer-balanced line (XLR), transformer-balanced ribbon mic (XLR) and unbalanced line (¼-inch)—selectable with five-position rotary switches. Outputs are transformer-balanced (XLR). Gain, feedback and output level controls are also included. The Y7s Mk III produces more than 75 dB of gain with a 10 to 100kHz frequency response. Retail: $3,500.

SPL 9945 CHANNEL ONE

The Channel One is a channel strip device containing a tube mic pre, a de-esser, a compressor/limiter with noise gate, an EQ and a headphone monitor. The preamp stage provides three input options: mic (XLR) with 48V phantom power, phase reverse and subsonic filter; low-impedance line (XLR); and high-impedance instrument (¼-inch). The compressor/limiter section is based on SPL's Double-VCA-Drive circuitry; the de-esser includes a proprietary Auto-Threshold mode; and the EQ features low, mid-hi and air-band filters, along with a field-effect distortion stage. XLR outputs and insert points are included, and a 24/96 AD/DA converter is available as an option. Retail: about $1,700.

SUMMIT AUDIO MPC-100A

The robustly constructed MPC-100A is a single-channel tube preamplifier and tube compressor/limiter combined in a two-rackspace unit. It uses two 12AX7a tubes, two 990 discrete operational amplifiers, 15 integrated circuits, three transistors and two compression cells; it accepts electronically balanced line and mic, and unbalanced high-impedance input signals. Output is at +4 dBu via balanced XLR and unbalanced ¼-inch connectors. The compressor/limiter section has very fast attack times, making it ideal for optimizing signal prior to entering the digital domain. Frequency response is 5 to 65k Hz. Retail: $1,950.

TL AUDIO PA-1

The dual-channel PA-1 is a hybrid preamp that employs transformer-coupled inputs feeding an EF86 pentode amplifier stage, followed by two ECC83 triode stages, with a solid-state output amp. Both channels

TL Audio PA-1

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TUBE-TECH MP1A

The Tube-Tech MP1A is a combination dual mic pre/DI amplifier with independent preamps for mics or instruments. The balanced mic inputs provide 48V phantom power and a switchable 20dB pad. Gain is adjustable from 20 to 70 dB in 5dB steps. The DI inputs are unbalanced with a gain range of 10 to 60 dB. The amplifiers are all tube-based, the heaters are fed DC voltage and the transformers are enclosed in mu-metal cans—all greatly reducing hum. Input and output transformers come with a static-screen between primary and secondary wirings to eliminate ground loops. Mic inputs and outputs are balanced and fully floating. Retail: $2,395.

UNIVERSAL AUDIO 2-610

The Universal Audio 2-610 is a 2-channel tube microphone preamplifier based on the amplifier section of the Universal Audio 610 modular console. It uses one

Universal Audio 2-610

12AX7 and one 6072 tube in each channel, and produces up to 61 dB of gain, with a frequency response of 20 to 20k Hz. A 2-band shelving EQ section offers up to 9dB boost/cut at 4.5/7/10 kHz (high) and 70/100/200 Hz (low). There are balanced mic and line (XLR, with 48V phantom power on the mic inputs) and unbalanced high-impedance line/instrument (¼-inch) inputs. Output is via a balanced (XLR) connector. Retail: $2,295. ■

Barry Cleveland is a Bay Area-based recording artist, engineer and producer (www.barrycleveland.com), and author of Creative Music Production: Joe Meek's Bold Techniques *(www.artistpro.com), a book about the visionary British producer's contributions to the art of recording.*

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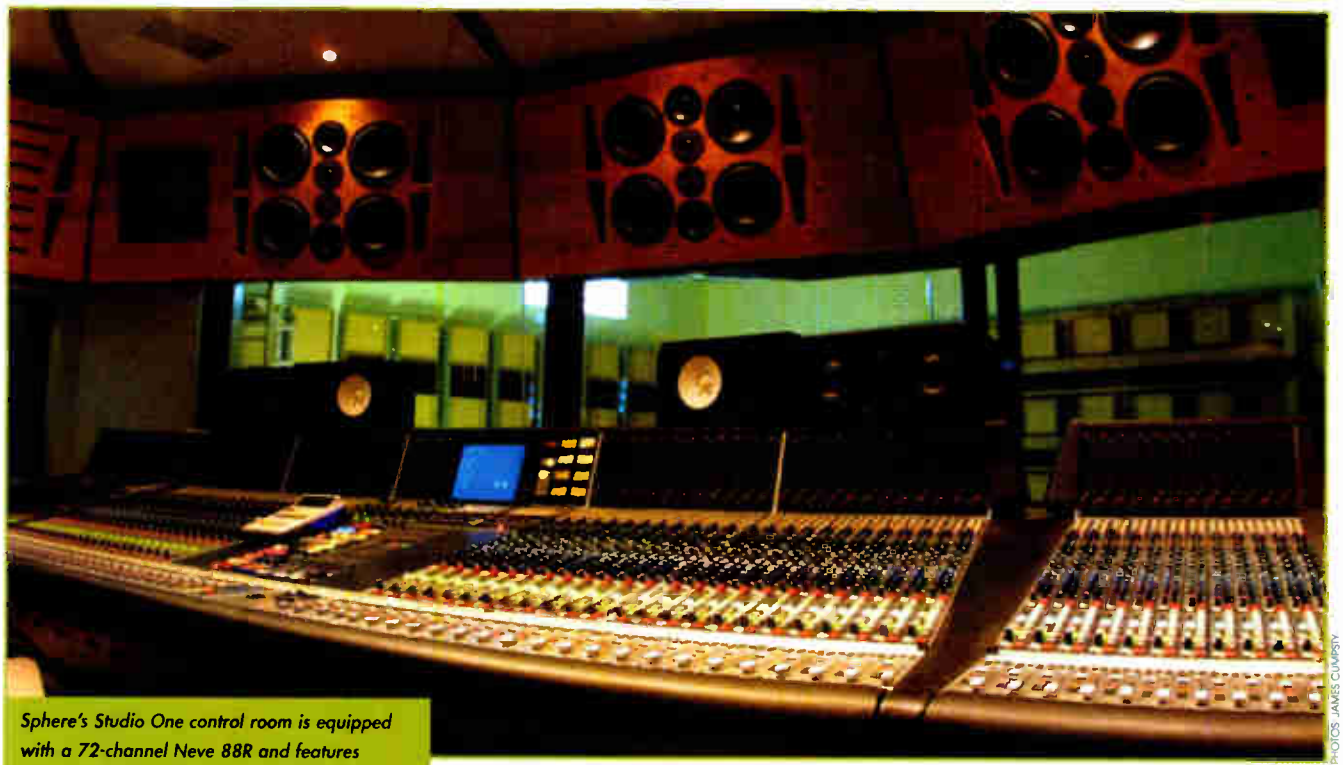
SPHERE OF INFLUENCE

Interconnectivity Rules at London's Newest Studio Complex



PHOTOS: JAMES CUMPSTY

Sphere's Studio One control room is equipped with a 72-channel Neve 88R and features modified Dynaudio M4 monitors.

by Mike Mann

Take the guy who used to run AIR Studios, add some of Europe's top-name producers, a broadband audio transmission outfit and a few million pounds' worth of custom-built facilities and you get a remarkable result—Sphere Studios, London's newest studio complex.

Sphere is located in a converted laundry—which is an ideal environment, according to co-director Malcolm Atkin, formerly general manager at AIR Studios. "We were actually very lucky to have found an industrial building that had such a solid frame," explains Atkin. "This is extremely important for a studio installation, and our foundations here are extremely strong. We're only a few minutes outside the heart of London's A&R community, and our transport links even include a local heliport."

Atkin recounted the start of the project, with partner Francesco Cameli: "Frank had already bought the building with a view to putting his own studio into it, but it was really too big for a personal project. Luckily, we found each other at exactly the right moment and joined forces." Funding for Sphere comes from a delicate balance of private money, the bank and the directors' formidable reputations. Atkin points out that the mixing room's first project—a Genesis DVD produced by Nick Davis—was a huge endorsement. "Even bank managers have heard of this band," says Atkin. "We couldn't have wished for a better start."

The compact 10,000-square-foot site houses six production suites, a large tracking room, a 5.1 mix room, and a 5.1 mix and MIDI suite. Because Sphere makes the production rooms available as empty shells, producers can equip them exactly as they wish, and the multiformat connection system allows for an

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almost infinite variety of gear. All of the rooms are situated radially around a central machine room, a concept lifted from the broadcast industry. "We realized very early on that connectivity was the name of the game for a 21st-century studio," Atkin explains. "Just because a producer or composer is working in a small space does not mean that they should be denied access to big facilities."

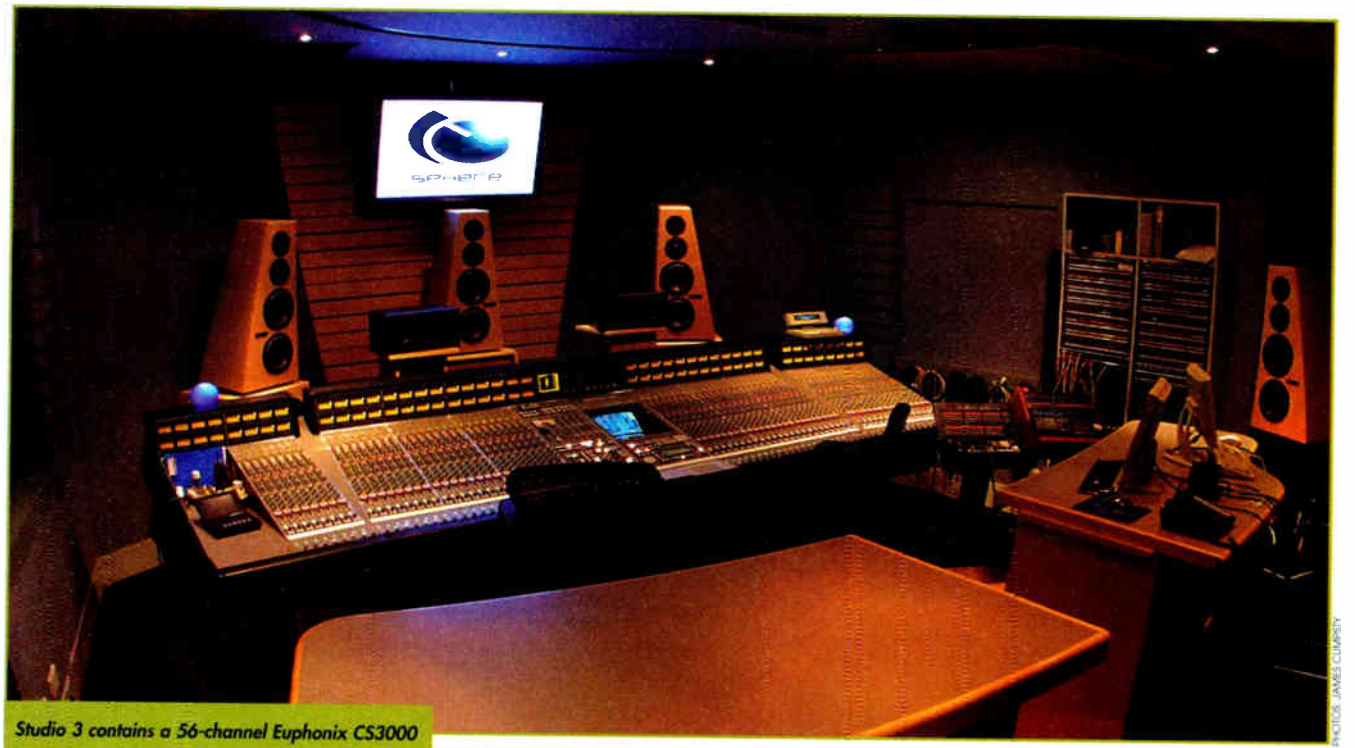
Connections between each studio and the machine room include analog/digital tielines, CAT5 lines, MADI video links, 50-way control cables and optical ties. Also, 2MB broadband and ISDN 30 lines ran into the building at the start of the project. "We knew that if we were going to do this, we'd have to really go for it," says Atkin. "This is the first real new studio complex to be built in London in a long time, and we wanted to make it as future-proof as possible."

The entire design and build operation was carried out by Munro Associates, with Westwick Installation handling the audio systems installations. The technical system design was done by Sphere's technical manager, Tom Schlum. Atkin notes that the complexity of the infrastructure called for extremely accurate and comprehensive planning. "I knew it was vitally important to have the complete picture before we started," says Atkin. "I brought Tom [Schlum] to the project at a very early stage. He has done a superb job and created a very comprehensive design database for the complete system and for coordinating the installation."

The 500-square-foot Studio One boasts a 19-foot ceiling and can accommodate 38 musicians in the main studio area. (There are also three independently floating isolation rooms.) The control room monitors (modified Dynaudio M4s) are soffit-mounted to preserve sightlines between the console and the booths and live area. Two-track machines are located in the control room, while conventional multitrack machines are located in the central equipment room.

The Sphere team has taken the unusual step of making its production rooms available on either short or long leases, and has already attracted some very high-profile clients. First to sign on was Chris Kimsey, a producer whose client list features the Rolling Stones, Johnny Hallyday, Killing Joke, Ash, The Chieftains, Soul Asylum and INXS. Kimsey's all-digital suite (based around a Pro Tools system, Sony DMX-R100 console and KRK monitors) was the first to be installed at Sphere.

Kimsey says that the combination of having his own gear in a ready-built, networked environment is a great idea. "I hate moving from one studio to another as a project progresses," he explains. "I like to be able to get to know a room, and also the people around me, and Sphere is a community, not just a studio. Especially with software-intensive systems, it's so useful to have someone knowledgeable on hand all the time. Creatively, to be surrounded by other people in the same business as yourself is very productive." Future plans at Sphere incorporate an exclusive communal lounge bar, which will further enhance the community feel.



PHOTOS: JAMES CUMPSTY

Studio 3 contains a 56-channel Euphonix CS3000 and surround monitoring.

Having six rooms that can be linked to each other and/or the tracking room is proving to be a major benefit. Sphere enjoys a constant revenue stream from producers like Kimsey and Pete Vettese, who have each leased a production room, while short-term clients are naturally inclined to use the adjacent tracking studio for acoustic instrumental parts and vocals. The multiroom design makes it easy to start a project in a production room or Studio One and finish it in the impressive mixing room, all without leaving the building.

Atkin is anxious to point out that the studio does not insist that its production room clients use the larger facilities. "Production suites like these are not new, but ours are unusual in that you could easily produce an entire album in them—thanks to the connectivity between rooms and equipment," he says.

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"Of course, we'd like to think that they'll give the big rooms a try, but the intention is that all the rooms will be busy in their own right. We're not interested in putting barriers up."

CONSOLES FOR EVERY TASTE

With three very different types of recording space available, Sphere offers something for every taste. "One of our hardest decisions to make was over consoles," recalls Atkin. "When the time came to get down off the fence, we knew that we had to go with the most commercially viable option, provided that the audio quality was there." The tracking room (Studio One) is equipped with a 72-channel Neve 88R, while the mixing room (Studio Two) has an SSL 9000 J. Studio Three contains an extensive keyboard selection and a 56-channel Euphonix CS3000. "The Neve is fitted with Encore automation and 36 remote mic preamps," explains Atkin. "[For this console,] Neve used a very similar design to the Montserrat console they built for AIR, which has a brilliant sound. This time around, the control system runs under Windows NT, which means that it interfaces completely with our network and can be used from any of the production rooms, so our tenants will find it very easy to use."

The SSL was chosen after extensive research into engineers' and producers' preferences, though Atkin expresses his disappointment with one important feature: "Even though the control room monitor pot is calibrated from 0 to 11 in true Spinal Tap style, I'm sure I asked for one that that went up to 12," he says. On a more serious note, the console features the latest modifications from SSL, including 6-channel compressors and 5.1 alternate speaker-switching. "The mixing room is unique in the UK in being the first built for 5.1 surround sound from the ground up," notes Atkin. "Most 5.1 rooms are old stereo rooms with more monitors in them. Here, even the walls are in surround."

The Sphere team chose not to install permanent soffit-mounted monitors in the 5.1 room (Studio Two). "I'm sick to death of having big monitors that clients moan about and which can't be moved," he says. "The silly thing is that because the big monitors are not the producer's choice, they only get used for five minutes a day, while the real mixing is done on the near-fields. I believe that film scoring mixers have the right approach—when you mix, do it for the most expensive, best-sounding system out there. It's just not true that most people have poor quality hi-fi these days, so the technique is relevant in music as well."

For the SSL room, the freestanding monitor system is, by its nature, fluid. After experimenting with monitors from PMC and others, the Sphere design team selected Dynaudio C4s with custom bass cabinets. "We set up our own favorites, but if someone doesn't like our choice,

L-R: Sphere director Francesco Cameli, managing director Malcolm Atkin and chief engineer Ben Georgiades.

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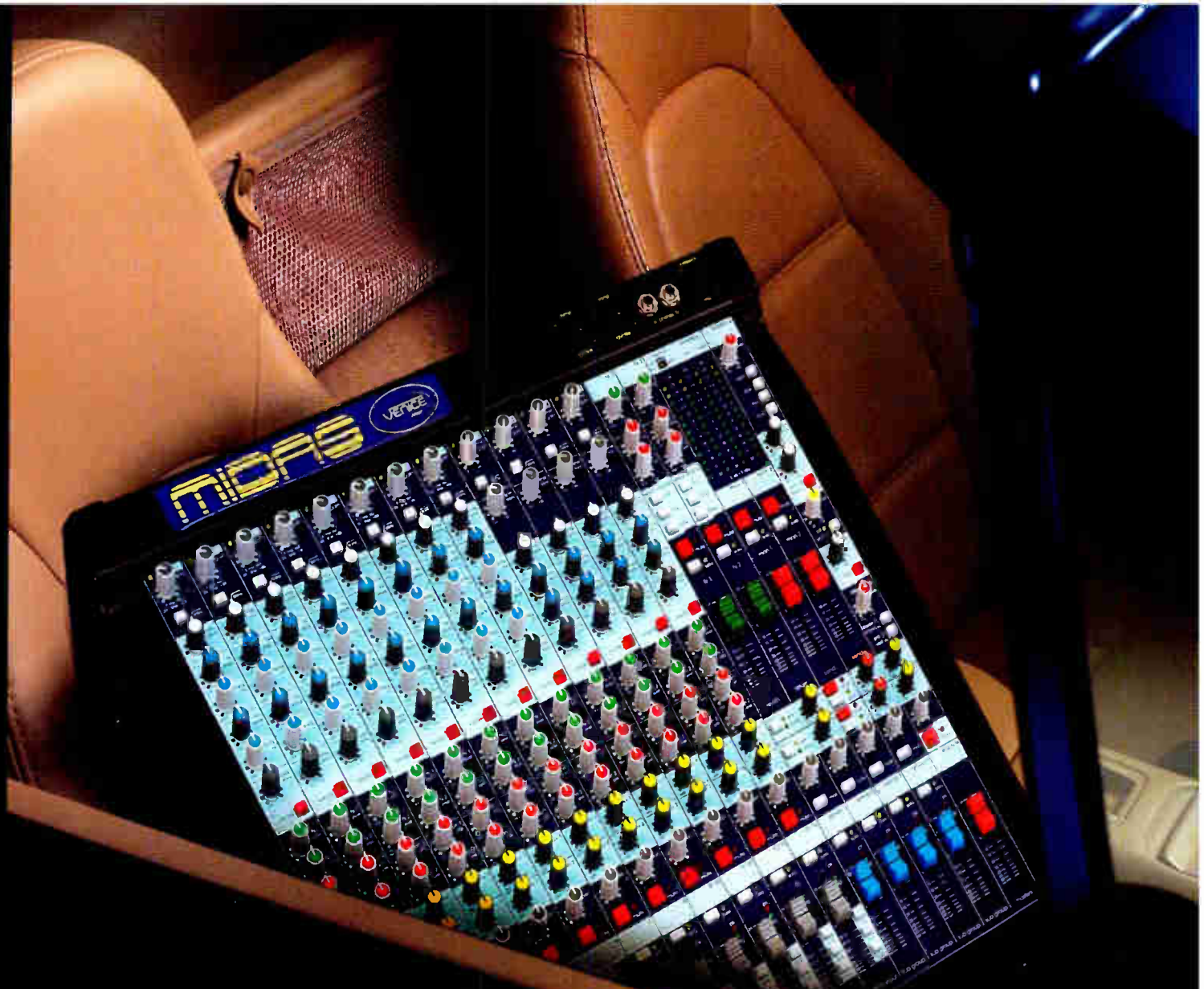

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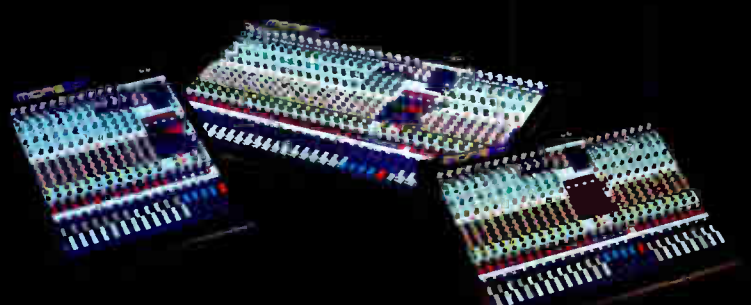

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we will happily let them use their own monitors," Atkin notes. "Everyone has their own opinions about monitors, and we don't want to lose clients over one element of our installation."

Outboard equipment choices were slightly more straightforward. "When we looked at what equipment each room should have, we put everything into three categories," explains chief engineer Ben Georgiades. "These were absolute essentials, studio staples that everyone expects you to have, and then a big, long wish list." Though not every item on his wish list was purchased, Georgiades was pleased to see a few "specials" added to the studio's inventory. "Some things are best left to rental companies, but there are others that are almost impossible to find," he notes. "Some [pieces of gear] are so well-thought-of that you end up paying considerably more at auction than they would have cost new." Among the more venerable items in the racks are GML equalizers and an MXR phaser/flanger. As Georgiades points out, not every "classic" is old: "We have Manley Massive Passive EQs, and I don't think I've ever heard a more musical piece of equipment except possibly the Fairchild, which we had at AIR," he says.

I CAN SEE FOR MILES

Though Sphere's studio specifications are top-notch, it is the company's attitude toward the future of the record business that is most interesting. "For the moment, it's important for us to be physically near to record companies," says Atkin. "These people still use bikes and couriers to move media around, yet I'm sure it won't be long before the bulk of what is produced here is transmitted electronically, rather than committed to a reel of tape. This means, of course, that communication with the outside world is vital. We can't afford to be just another stand-alone facility like so many others. There is a huge amount of trans-Atlantic business going on, with American artists working with British producers and vice versa. With the right communications, we can become the portal into London for clients who take this sort of international approach."

While Atkin and his colleagues have all the studio experience anyone could wish for, they recognized that specialist talent was needed to optimize worldwide communications, and have entered into a deal with H2O, the London-based audio transmission and recording consultancy. H2O's previous projects have included virtual overdubs for the likes of Mariah Carey and Coolio, and the company has contracted to provide 'round-the-clock access to the broadband technology that will allow Sphere's remote clients to see and hear work in progress. In addition to providing the ISDN-based audio technology that allows collaboration in real time among musicians and producers who are thousands of miles away, H2O will maintain DolbyFax, APT and Musicam codecs, IP-based video links and MediaManager browser software, which is used by A&R personnel for keeping track of remote work in progress.

"Whether people choose to use this just as a file-exchange system, for instant approval from remote clients, or for recording an album on five continents at the same time doesn't really matter," concludes Atkin. "The important thing is that it will save an enormous amount of time and trouble for everyone, and make so many more exciting international projects possible. Then we really will have shrunk the globe." ■

Mike Mann is a freelance writer living in England.

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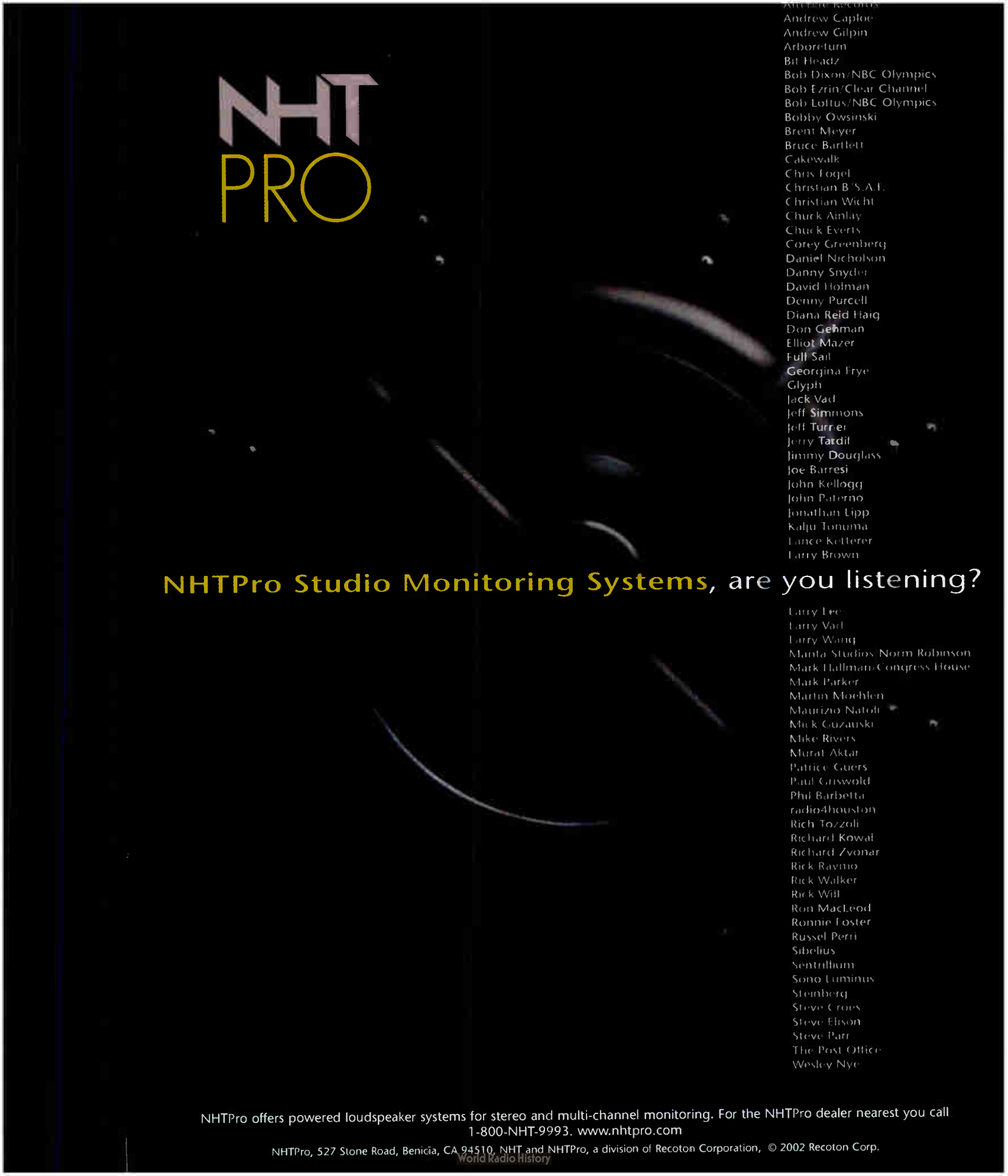
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Maine's CSP Mobile Productions

Unit 6 at the Portland Head Light in Cape Elizabeth, Maine.

by Paul Verna

When Maine Radio & Television subsidiary CSP Mobile Productions launched its first video truck in 1989, the company was building on a 60-year tradition as a pioneering broadcaster in the Portland market. The remote truck was an extension of Maine Radio & Television's core business of creating and capturing programming for its TV and radio outlets. The location business grew to the point where a second truck was added to the fleet, and the client list expanded accordingly, ranging from sports giants ESPN, Major League Baseball and the National Basketball Association, to entertainment events such as the Country Music Awards' "Backstage Pass" and concerts by Aerosmith, Brandy and Wynton Marsalis. Focused on the video broadcast side of the business, CSP specialized in delivering high-quality visuals to its clients, with the audio usually mixed live and seldom multitracked.

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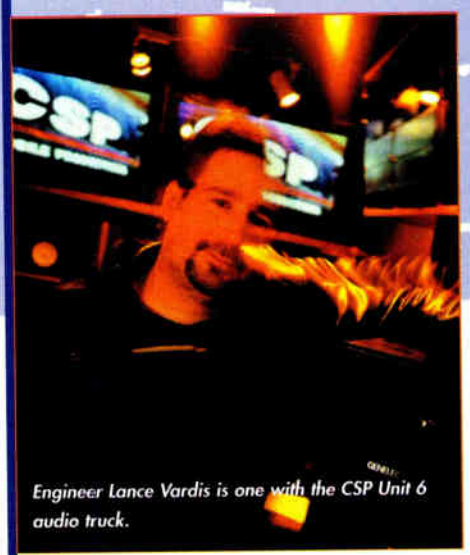

Engineer Lance Vardis is one with the CSP Unit 6 audio truck.

However, the rise of the DVD market suggested to CSP's principals that many of the special events that the company covered—particularly music-based ones—might benefit from being recorded in a high-quality multitrack format and archived for future use. To that end, CSP president Nat Thompson commissioned a state-of-the-art audio truck that could compete with the industry's remote recording elite—a close-knit group of competitive, passionate and fiercely independent owner/engineers. The result of Thompson's vision was Unit 6, a single-body, 28-foot truck equipped with a 96-input Yamaha PM-1D digital console, six Tascam DA-78s, two Tascam MX-2424 hard disk recorders, surround monitoring via Genelec 1031s (with a 1092A subwoofer) and top-notch processing gear.

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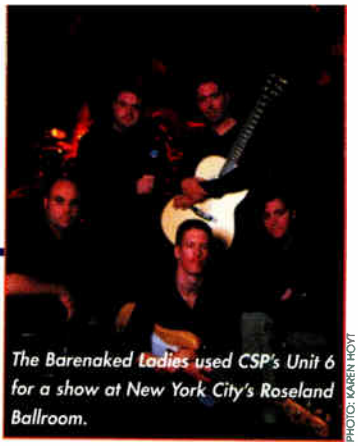
Maine's CSP Mobile Productions



The Barenaked Ladies used CSP's Unit 6 for a show at New York City's Roseland Ballroom.

PHOTO: KAREN HOYT

"The rise of the DVD market has certainly been one of the factors why we felt this truck would be able to sell itself," Thompson says. "Being able to do the multitrack records is essential, because so often a band will come back after the fact and say, 'Gee, could we do a remix on that show? We had a particularly good performance that night, the video's looking really good and we'd like to make something of it.' That kind of scenario had a lot to do with the whys and wherefores of this truck."

Unit 6 could not have come at a better time for CSP. Since launching the vehicle in late 2000, it has been used for a wide range of events that have taken advantage of the truck's live mixing, multitracking and surround capabilities. A Foo Fighters concert in Atlanta in October 2000 was a case in point—CSP was hired to do the event as a live, pay-per-view project, with video and audio broadcast live. "We were focused on capturing the show live and doing a great job that night, but we had the multitracks running," says Lance Vardis, an independent engineer who does the lion's share of his work for CSP. "The band had such a good time that night that they decided they wanted to potentially do a DVD release. We got the call to do a remix of the audio in surround, which we did in the truck. Everything fell right into place."

That yet-to-be-released Foo Fighters project—which was authored and mastered nearby at Bob Ludwig's Gateway Mastering and DVD studio in Portland—proved to be a turning point for CSP. "That was when we realized, 'Wait a minute, these projects have a life after the initial event,'" says Vardis.

Another show that exploited the multitracking and mixing potential of Unit 6 was a concert recording by contemporary Christian music superstar Carman. The event was taped by CSP for broadcast on Easter Sunday, 2001, so Vardis captured the audio (80 tracks' worth, bringing in additional gear to accommodate the extra material) onto the Tascam tape and hard disk units, rough-mixed the show live and then spent several days afterward working on the broadcast mix. "They had every intention of doing a home video release after the fact, so we had that in the back of our minds," says Vardis. "They're still debating whether they want to do a DVD, but in the meantime, we have the tapes filed away, so if they decide they want to do something, say, next holiday season, it's always there."

From an engineering standpoint, Vardis gets excited by the energy of live events, but he also appreciates the chance to go back and tweak his mixes. "Live events are great," he says. "When they're done, they're done. You do the best job you can that night and it's exciting. But, as every audio engineer knows, if you have a chance to do a remix, you take it. You think, 'Hmm, that could have been a little better.'"

Recently, CSP drove Unit 6 and one of its video trucks (which are labeled Unit 4 and Unit 5) to New York for a Barenaked Ladies pay-per-view event. Although a planned multitracking component to that show fell through, the event still illustrated why CSP's investment in an audio truck is paying off.

"The Barenaked Ladies show coincided nicely with the Audio Engineering Society Convention in New York," observes Thompson. "That allowed us to park the truck at Roseland Ballroom for the show on Friday night, and then drive the truck a few blocks downtown to the Javits Center to exhibit it at the show." On the second day of the AES show, CSP set up video and audio monitors outside Unit 6 so that passing convention attendees could catch a glimpse of the previous night's Barenaked Ladies show.

Besides the day-to-day production projects that make up the bread-and-butter of CSP's mobile recording business, Unit 6 is also destined to serve the company in another capacity: creating broadcast-ready programming in-house. Thompson says, "There are programming things we felt we might be able to generate internally, from the standpoint of being able to do a live-to-tape project, a multitrack record, a remix, a post-production job or whatever it might be, and take a full show to, say, HBO on the programming side of things and sell it that way. In the entertainment industry, that crossing over between music and visuals has become such a big thing. We're in a perfect position to take advantage of it because we've been in the broadcast business for a long time, and now we're concentrating on the mobile production business."

As CSP's projects move downstream, they—like so many music productions these days—end up in Digidesign Pro Tools workstations. Although CSP does not yet have its own Digidesign system, recording is to the Tascam MX-2424 in Sound Designer II format, ensuring full compatibility with Pro Tools users on the post-production side. And, with a TDIF digital audio connection between the MX-2424s and DA-78s, the tape machines serve as a real-time backup system, saving CSP the headache of archiving its hard disk data onto a third-party storage device.

The layout and design of Unit 6 were largely the work of CSP VP of technical operations and production Len Chase, who developed plans to build a dedicated audio truck in mid-1999. "Len approached me with the idea of building a state-of-the-art truck where we could do high-quality multitracking and surround," says Vardis. "I took the equipment and acoustics side, and he took the mechanics and electric side of it. Initially, it was going to be three Yamaha 02Rs and Tascam DA-78s, but when we found out that Yamaha was introducing the PM-1D, we jumped at the chance to get it."

Although CSP made a substantial investment in Unit 6 (approximately $500,000), the price tag was actually small by comparison to some of the company's competitors. "We're not trying to compete with the big Neve Capricorns and the Euphonixes and the SSLs out there," says Thompson. "We found a board and a truck that work well together; it's fairly simple from an engineering standpoint, and it interfaces with a video truck nicely. I'm very happy the way that's worked, and everyone who's seen it has been very happy, so I'm thrilled."■

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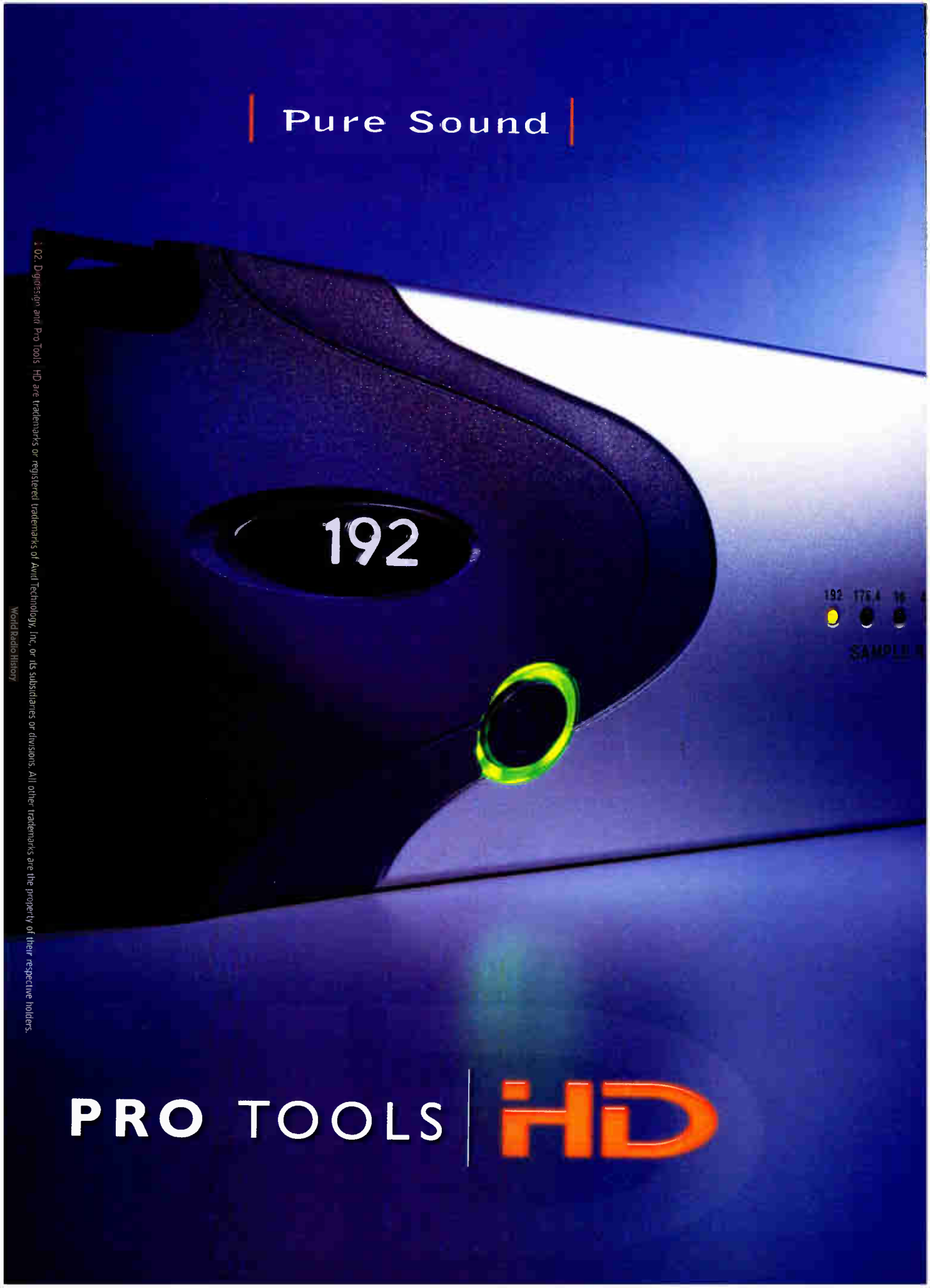

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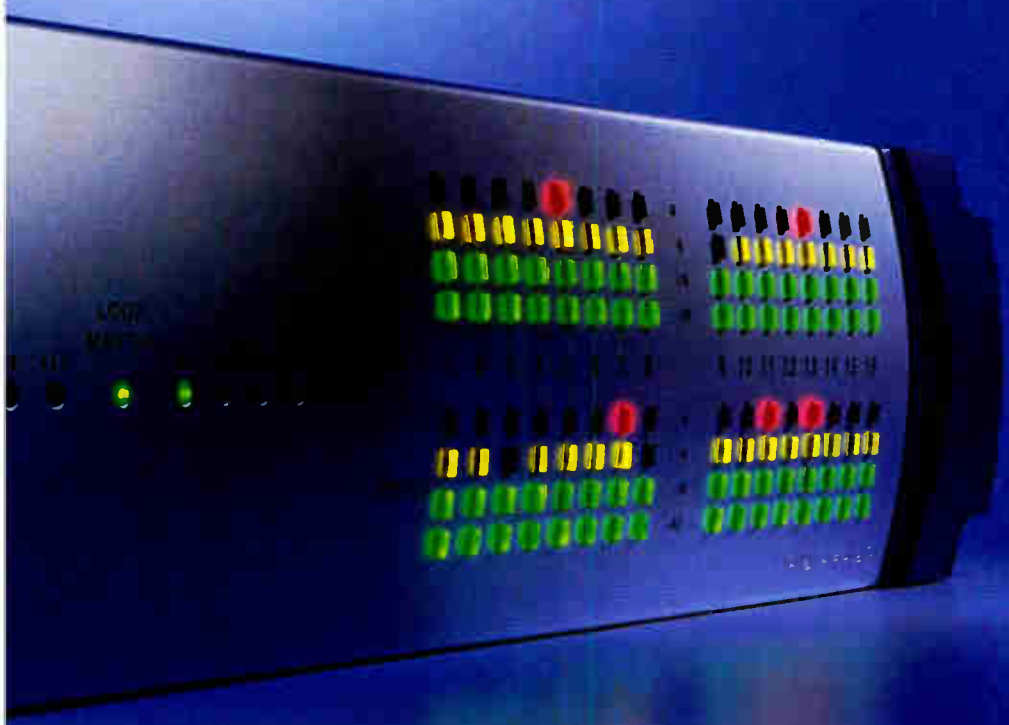

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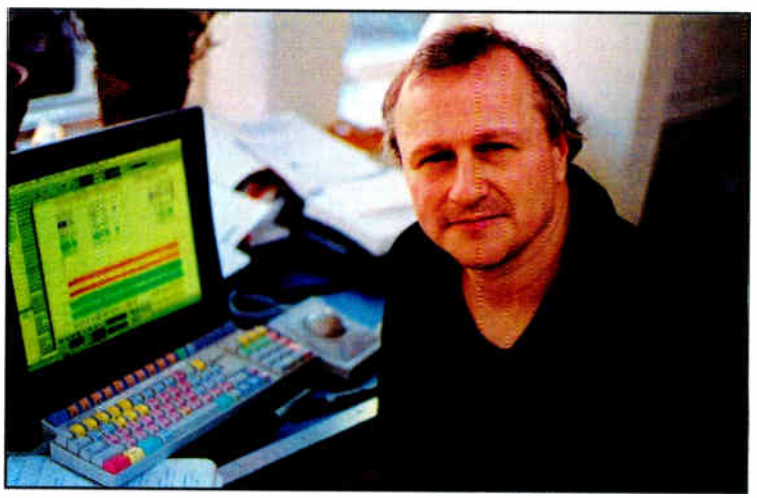
World Radio History

BY MAUREEN DRONEY

Neil Dorfsman

Award-Winning Engineering and Production



Just a few minutes into a conversation with Neil Dorfsman and you get the feeling that he'd be a great guy to hang with. A lot of fine musicians have felt the same way; Dorfsman's unique array of engineering, production and people skills has connected him with such artists as Sting, Mark Knopfler and Dire Straits, Paul McCartney, Tina Turner, Bruce Hornsby and Bob Dylan, to name a few. Unlike most in the business, he's equally adept at production and engineering, and has taken home Grammy and TEC Awards in both categories. Among them: a Best Engineered Album Grammy for Dire Straits' *Brothers In Arms* with its ultracool single "Money for Nothing," two Grammys for Producer of the Year (Sting's *Nothing Like the Sun* and Bruce Hornsby's *Scenes From the South Side*), two additional Best Engineered Album Grammy nominations (for Dire Straits' *Love Over Gold* and Paul McCartney's *Flowers in the Dirt*), and an Engineer of the Year TEC Award; that same year, he was also nominated for the TEC Award for Producer of the Year. Most recently, he was one of the engineers on the 1999 Grammy winner for Best Pop Album, Sting's *Brand New Day*.

I spoke with the amiable Dorfsman by phone as he was holed up in his Westchester County home one bitter cold winter day. He was spending time with his family after wrapping up a project that he'd produced, recorded and mixed: *The Edge of Silence* by the critically acclaimed Solas, an Irish-American band with deep Celtic music roots.

Um Neil, I'm kind of thrown off by your accent. I'd always assumed you were English.

[Laughs] Most people do. They're always shocked when they meet me. It's probably the name. Everybody thinks I'm some furry little British guy, as opposed to a tall, balding New Yorker, but I was born in Manhattan and grew up on Long Island.

And you started your engineering career in New York.

Actually, I first went out to California to try to be an engineer. I was one of those guys with a massive record collection, and I always listened from a producer's point of view. So I went out to L.A. in the mid-'70s trying to get a job at a studio. I didn't know anything or anybody; I just figured that was the place. And I had absolutely no luck. An example: There was an ad in the newspaper to interview for a job with the Beach Boys. And there I was in L.A., dead broke, with no car! I took a bus all the way to Santa Monica from Hollywood, which took about two hours, and the first question of the interview was, "What's your sign?" I didn't have a clue, and I didn't get the job. I also realized at that point that maybe heading west was the wrong direction for me.

Eventually, I went back to New York and got a job at a voice-over studio, recording radio commercials. We had no multitracks. We'd use two 2-track machines, one for stock music, one for the voice-over, and we'd mix and bounce down to a third machine. I was learning, but I was still frustrated. But I kept at it. I sent out about 100 resumes and finally got a job as an assistant at Electric Lady.

I was there about a year when I did a project with Eddie Kramer that ended up getting mixed at what was then the Power Station. I went to help on the mixing, and Bob Walters, the owner, asked me if I would stay on.

A lucky break; Power Station was legendary then.

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Dorfsman (pictured with bandmember Seamus Egan) engineered and produced Solas' The Edge of Silence at Bearsville Studios in Woodstock, N.Y.

It was great. Everyone had heard about the place but few people had really seen it—it was like, "They've got a Pultec on every channel! They've got this giant room, and they've got a parking lot inside the building!" All of which was true. I was completely over the moon just to visit there, never thinking they'd actually ask me to stay. I guess Bob must have liked my completely subservient attitude! I was there for several years, then I went freelance and have done that ever since.

Let's talk about the Solas CD that you've just finished up for Shanachie Records. It has a very warm, un-Pro Tools kind of sound.

Funny you should say that; actually, it's a total Pro Tools record.

Oops. There goes my "golden ears" rep.

It's my first project recorded start to finish into Pro Tools, which was pretty daunting, because I had my doubts about both sonics and operation.

I'm a huge fan of digital; I have been from day one. I loved the fact that what you heard was what you got, in the sense that every day your tape would sound the same. One of my big frustrations recording with analog is that every day, while you're overdubbing, your mix sounds different. I don't know if it's humidity or temperature or particles on the tape—whatever—it drives me crazy. I don't get the whole reverence of analog tape at all; once I used a Sony 3348 and that was it for me. And there are even better-quality machines out today, like the Euphonix R1, which I think sounds incredible.

Having said that, I was still very worried about the sonics of Pro Tools. Of course, I'll never know what it would have sounded like in another format, because my motto has now become, "Don't A/B." Because there's always going to be something out there that you think might sound better technically than what you're currently using. But, considering the small budgets of most projects these days, you have to make the best of what you've got. I'm very curious about gear, and I always like to try new stuff, but for my own sanity, I just put blinders on and go.

Take what you've got to work with and make that great. Isn't that kind of the engineer/producer job description?

What you're working on at the moment has to become your world. You're given a certain set of tools, and that's the way it is. Hence my motto, "Never A/B."

How was it working at Bearsville, up in Woodstock, New York?

It was great. It's a really nice place, and you can completely focus on the work because there's not much else going on. We had two weeks in the barn for rehearsal, which was great. It's all acoustic music, and the sound of the instruments in this big wooden barn was lovely. It allowed us to hear everything very clearly. Also, the console in Studio A, where we recorded, is an old Neve, which I would rather work on than anything. It's an early 80 Series that used to be at The Who's old Ramport Studio, a beautiful-sounding console. We also mixed there, in Studio B, the SSL room.

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That's great to hear, because I'm *still* not

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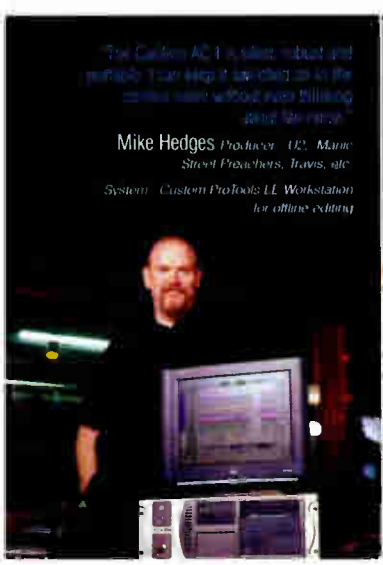

Mike Hedges *Producer U2, Manic Street Preachers, Travis, etc*

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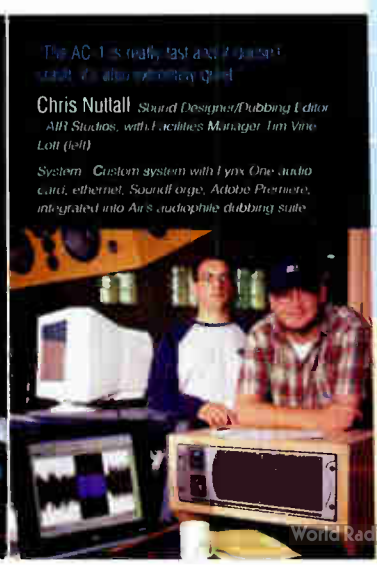

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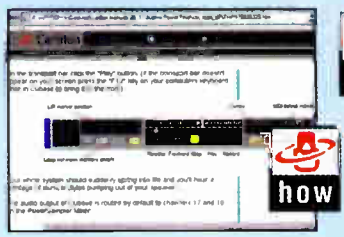

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sure. We had a heck of a time mixing because we had synching problems between Pro Tools and the SSL. I found that when I changed whatever clock I was using, the sound of the record suffered drastically. Which was disconcerting, because I was running on Apogee clocks for the whole of recording, and I thought it was one of the better recordings I'd done. Then when it came to mixing, the clocking was set up a little differently, and the sonics really suffered.

What went wrong?

At first, I didn't have a video card for my Apogee converters. We had to use an analog multitrack tape machine as the interface between Pro Tools and the SSL 4000 computer, and Apogees are not happy when the wordclock and the positional reference are even the slightest bit off, which—invariably—they are with analog tape machines. The video card allowed both the Apogee and the Studer to clock to house sync via a Lynx, so my positional reference from the tape machine was identical to my wordclock reference.

> What you're working on at the moment has to become your world. You're given a certain set of tools, and that's the way it is. Hence, my motto, "Never A/B."

What was your approach to recording this very acoustic band to a computer?

I took what is for me a completely different approach in recording this album; that is, I hardly EQ'd anything during the entire record. Usually when I'm tracking, I pretty much go for it. I try to make things as punchy as I can so that I start building the structure of the thing sonically. I use that as a production tool, because, if you get the mix sounding strong, you can tell right away whether an overdub is competing sonically and musically, or whether you have enough performance energy. It's funny, I think I have this reputation as being this audio purist and I'm not at all; I've never been hesitant to heavily process stuff while I'm recording. But on this record, I took a pretty pure approach.

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You made nice use of ambience.
A lot of that was thanks to Seamus Egan, the bandleader. We worked really hard on arranging the songs, which left space for ambience, much of which came from the room at Bearsville. It's a beautiful room, really large. I generally recorded with some room ambience, although we cut it down in size quite a bit. They also have EMT plates up there, which sound really good. And I used TC stuff, which I'm a big fan of: the 3000 and M5000. I like very clear reverb, something you can make really long without it starting to sound grainy. I tend to set up a lot of different reverbs at the start of my mix—maybe eight or nine—then I play with things as I go.

Do you set them up any special way?
I'll use a tone burst or a click to get them nice and balanced, then listen to a voice—something natural and acoustic—to see if they sound too dark. I like to have it all set before I start putting up faders, so I don't have to spend any time between thinking of something and trying it. I used to work at one studio and had the luxury of assistants who knew what I liked and had it ready when I came in. Now I'm working everywhere, so I usually spend a half-day before we start getting all that set.

Speaking of working everywhere, what's in the rack you bring with you?
Actually, I'm "Mr. Rackless." I own an Aguilar bass preamp, an Eventide H3000 and an SSL stereo compressor, which I use on drums. I have a LittleLabs guitar splitter box, which I love because it makes reamping stuff so easy—and I have a SansAmp. [Laughs] Really, I've got nothing. I used to be so into gear; now, I just try to make do with what I've got.

What was the instrumentation on the basic tracks, and what was your setup like?
It was one of the more live records I've done. The band is incredible onstage, and I thought if I could capture 60 percent of that, we would be in great shape. I still don't know if we got it as great as they are live.

For most tracks, the instruments were an accordion, or concertina—some sort of squeezebox—a fiddle, an acoustic rhythm guitar, an acoustic or electric melody guitar, electric bass and some sort of drums.

We had homemade booths in the room in kind of a circle, and we built a baffled house for Mick McAuley's accordions. I was more worried about him leaking onto other things than stuff leaking onto him because he was close-miked with two TLM 170s.

For drums, I used the normal assortment of stuff: [Sennheiser] 421s, AKG 451s, [Shure SM] 56s and 57s—each song was different. We had an amazing drummer, Ben Wittman, for the record. He brought 40 or 50 percussion devices and built all these hybrid drum kits.

I relied a lot on the overheads, which were two, sometimes three, 451s, with -20 pads, which were about five feet above him. I miked everything very closely as well to get some impact. During overdubs, I often miked him with Neumann 254s—

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about eight feet back and pretty widespread—along with a close mic, generally a Neumann 149.

We had 17 or 18 mics on the drums, which is not unusual for me because I tend to top and bottom mic drums.

Phase-reversed?

I always reverse the phase on the bottom mic and often find that the kick drum also needs to be reversed relative to the overheads. That's something you've got to play with that can totally change the sound of the kit.

What about those really low-frequency drums? There were some tones that sounded like they'd be pinning meters.

Those are Irish Bodhrans and Brazilian hand drums. They were squashed pretty hard while I tracked them and again a little in the mix with the channel compressors on the SSL.

Were you compressing the overall drums and percussion?

Only in the mix. I generally create a "subsqueeze," where the natural-sounding drums are also split out to a pretty radical squasher—usually an SSL stereo compressor. The percussion I usually leave untouched, unless I compress it for an effect, like a "sloshy" tambourine.

How did you treat guitars?

I compressed the acoustics a bit, usually with an LA-2A or 3A. The same with clean electrics. On heavier stuff, I'll often use an 1176. Again, I mult signals a lot so as to get a natural sound mixed in with a "smashed" one. With all the tracks available in Pro Tools, I'll usually record a DI as well as the amped tracks, keeping them separate so I can re-amp the DI in the mix if something's not fitting in. No Amp Farm!

> If in doubt, I'll always sacrifice the engineering for the producing, making sure the performance is right rather than that the sound is "perfect."

Between all the polyrhythms and all the instruments, there's a lot going on. How did you keep the bass present?

I took it through two different DIs; my Aguilar and the Avalon 737. The Avalon, which has a preamp, compressor and EQ, sounds really good flat. And I really like the tone controls on the Aguilar. I use it when necessary to make the bass more "poky," or more nasal, or more "bassy." I also used my modified LA-3A.

The famous "Clearmountain" mod! What is that, anyway?

[Laughs] It's supposedly just a 75-cent modification—a different capacitor, I think—that somehow makes it sound much better. Ed Evans, back at Power Station, came up with it.

Winifred Horan's fiddle never sounded harsh, as that instrument sometimes can.

More than with a lot of things, that seems to almost completely depend upon the instrument and the player. I have found that a Telefunken or Soundelux 251 can sound really great on solo violin, but this time we used an M149 as a center mic and two Neumann 254s as a stereo pair. The 254s are vintage, cigar-shaped tube mics, which are incredible; you can have them six feet away from the sound source and it will sound close-miked.

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Did you use any outboard preamps?
My secret weapons were a Trowbridge all-tube preamp and compressor. They're handmade in Ohio by Jack Trowbridge, and they're incredible—super-transparent, with tons of headroom. We used them on most of the overdubs—vocals, percussion, woodwinds. The Neumann 149 was a particularly great combination with the compressor.

The attack and release on the Trowbridge compressor are really independent, which is unusual; usually, you change one and the other changes. It also has an amazing range of attack and release times. You can squash the heck out of something and not really hear it as compression—just more impact. The mic pre has three amplification stages; if you need more gain, you change stages. It's got amazing amounts of headroom, and it's very clear-sounding.

Did you stereo-compress the mix?
I almost always use the bus compressor on the SSL, usually at 4:1. I'll change the attack and release to suit the material. To me, that thing *is* the sound of SSL.

Is your Pro Tools system pretty stock?
Yes, except I have my Apogee SE converters, which I think are noticeably better sounding than most of the ones out there.

Did you mix in Pro Tools as well?
I hopefully will never have to mix in Pro Tools. We mixed to DAT with an Apogee PSX100 converter. But I mixed through a half-inch analog machine in record and repro, because I wanted to make sure it didn't sound too "Pro Tool-ian." The stereo bus fed the half-inch and, while it was recording, it was playing back into the DAT. I'm not really a fan of how tape changes the sound of your mix like a lot of guys are, but I wanted to hedge my bet and smooth some of the edges and give it some fatness.

Clarity must have been especially challenging on this project with so many midrange instruments: tons of percussion, rhythm squeezeboxes...
You've got to choose carefully while you're recording, because you get used to parts, and you build your arrangement around what's already on tape. The track can fall apart musically if you start to take that stuff out just because it seems busy.

We made sure things worked acoustically before we started to record, which made my job a whole lot easier. It was totally great that we got to rehearse in the barn where we were playing unamplified. You could really tell if something was going to speak in a song, or carry enough weight. I recorded the rehearsals with one mic direct to DAT, which was really telling.

I generally try to get by with as few parts as are necessary to get the job done. Even if I hear another part, I'd almost rather you hear it in your head when you listen, rather than recording it. That's a hard trick to pull off; only the really masterful records achieve that sense of being a little understated.

What monitors did you use?
I've been through every speaker out there, buying stuff and hating it two months later! The ones I've stuck with are ProAc Studio 100s; I switch between them and Auratones. I know that they're a little bit flattering, so I work around that. The philosophy I learned at Power Station was, "Use the least flattering speaker you can, and it will make you work harder." I appreciate that, but at a certain point when you're mixing, you really need to get some pleasure from the speakers and to be able to listen for a long time without fatigue. The ProAcs do that for me. They do need a lot of power; for this project, Richard Rose from Hothouse Amplifiers was kind enough to loan me a really great Hothouse amp, a Model 500 Mosfet.

You've gotten awards for both engineering and production, and you seem to move easily between those roles.
Actually, it's more like I crawl between the two! [Laughs] It's very difficult to do both. If in doubt, I'll always sacrifice the engineering for the producing, making sure the performance is right rather than that the sound is "perfect."

I was trained to work very fast. When I first started at Power Station, I used to do a lot of jingles, and that's served me well. Sounds shouldn't take a lot of time. But it's still demanding. And these days, of course, you're expected to be an engineer, a producer *and* a Pro Tools guy!

But when it's all happening, there really isn't a better job. I've been very lucky to work with some amazing guys who have very strong points of view, and who are really looking for a sounding board, a partner to help push things along. Sometimes I'm a little embarrassed for getting accolades for producing and engineering things that probably would have sounded just as good if I weren't there! Of course, there are also those projects where you really get in there and get a workout!

Not everyone has the personality to be able to do both kinds of projects.
I try to be what you might call "pro-active," and to give an honest appraisal of what's going on. I've also tried to develop a better bedside manner over the years! I'm still very excited about the opportunity to be doing this for a living, and, hopefully, when I'm doing a record, I bring good energy to it. I've also learned not to get too picky, and to stay positive. ■

Maureen Droney is Mix*'s Los Angeles editor.*

SELECTED CREDITS

PRODUCED, MIXED AND ENGINEERED

Bruce Hornsby: *Scenes From the South Side* (1988)

Dire Straits: *Brothers in Arms* (1985), *Love Over Gold* (1982)

Paul McCartney: *Flowers in the Dirt* (1989)

Richie Sambora: *Stranger in This Town* (1991)

Solas: *The Edge of Silence* (2002)

Sting: *Nothing Like the Sun* (1987)

Tina Turner: *Break Every Rule* (1986)

ENGINEERED

Billy Idol: *Whiplash Smile* (1986)

Bob Dylan: *Infidels* (1983)

Bruce Springsteen: *Tracks* (1998), *Greatest Hits* (1995), *The River* (1980)

Bryan Ferry: *Boys and Girls* (1985)

Carly Simon: *Hello Big Man* (1983)

Def Leppard: *Hysteria* (1987)

KISS: *Love Gun*, *KISS Alive II* (both 1977)

MIXED

Crowded House: "World Where You Live" (1986)

Footloose Original Soundtrack (1984)

Jacky Terrasson: *What It Is* (1999)

Laurie Anderson: *Strange Angels* (1989)

Marty Stuart: *The Pilgrim* (1999, five tracks)

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BY GARY ESKOW

K.C. Porter

Bringing Latin and Anglo Worlds Together

There are many roads to success, and K.C. Porter's parents steered him down the road less traveled. His dad was an orchestrator whose credits included arranging music written by Nathan Scott (sax great Tom Scott's dad) for the television hit *Lassie*. Their strong feelings for the Baha'i faith led the Porter family on a faith ministry to the dusty streets of Guatemala. There, Porter absorbed the rhythms and harmonies of Latin music.

The pull of his native country was strong, however, and Porter returned to California to study music at Cal State Stanislaus. Armed with his knowledge of Latin music and the Spanish language, Porter was hired as a staff arranger at A&M Records before he'd even graduated. Within a few years, his career had developed along two parallel lines: Major English-language acts, including Boyz II Men, Sting, Bon Jovi, Brian McKnight and Toni Braxton, sought Porter's help in their efforts to expand their audiences with Latino listeners—Porter worked as a vocal coach and producer. At the same time, he was helping to break Ricky Martin and other Latino artists into the Anglo market.

Things came together in a big way for Porter in 1999, when a pair of projects he worked on became huge hits. Carlos Santana's *Supernatural* featured Porter's writing, producing and singing (he would win a pair of Grammys for this work), and he wrote and produced material for Ricky Martin's debut album in English. More recently, Porter received a Producer of the Year nomination in the Latin Grammy Awards. In addition to his commercial recording work, Porter is the creative director of Oneness, a nonprofit organization whose goal is to eliminate racism and promote racial unity through music and the arts.

We caught up with this busy young producer in his studio near Malibu, Calif.

Does being dubbed the white guy who understands Latin music get old?

It helps in certain contexts, and it may be an interesting angle about me. I also end up being the bad guy in the studio at times. We deal with great artists every day, but the work they do with me is hard.

Artists like Chaka Kahn or Jon Bon Jovi might not be experienced singing in Spanish. I break down every syllable to make sure the performances are perfect. That's hard work. Sometimes I feel like my job is being producer, engineer, translator, vocal language *and* vocal coach. I have to do everything! There are different types of producers. Some are hands-off; I'm definitely hands-on.

You've worked with some artists who have enjoyed long careers, particularly Carlos Santana. How can artists keep from repeating themselves while still maintain the signature elements of their sound?

Let's consider Santana. He was at the point in his career where he'd done a lot of albums. He was hoping that this album would crack open the wider market for him. Carlos knows himself, he knows that who he is and what his music is all about will never be lost. And so he was open to letting himself be produced on *Supernatural*. He trusted the people around him. For example, I was so flattered when I'd ask him what he wanted to play and he'd turn the question back to me.

What did you bring to Santana on that project?

I produced four tracks and sang on one, "Primavera," which I wrote. I was hoping to get him music that was in sync with his spiritual side. "Primavera" ended up being one more color in the picture Carlos was trying

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to paint. He's very color-conscious and likes to think of music like a painting. He'd say, "It sounds 2-D rather than 3-D!" So how do you achieve that next dimension? More reverb, less compression? I was often trying to translate his images into engineering terms.

What do you do best?

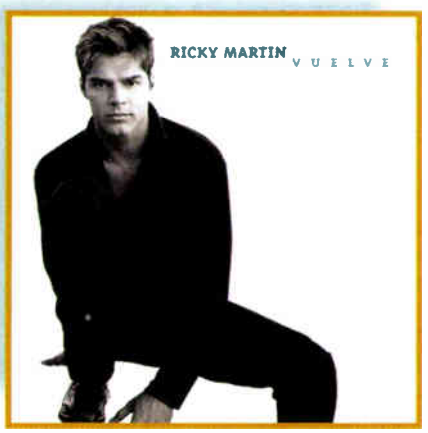
I'm a restive soul, and I like to do a lot of things. It may spread me too thin at times, but if I can write a song today, produce a song in a week and do some programming in between, I'm happy!

Right now, I'm executive producer on an album for Laura Pausini, who's Italy's Number One female artist *and* one of the top Latin artists in the world.

How involved do you get with the recording process itself?

Very. Microphones intrigue me the most. I adhere to the principle that says if you can record things right, you don't have to fix them later. Every time I open a copy of *Mix*, I study who's using what mics! I like to be as pure as possible in this area.

I recently worked with Allan Sides at Capitol Studios. I was complementing him on how great his sound is and was asking him about equalization. I noticed that he was using a pair of Neumann M50s on the orchestra. He also had some other mics set up for closer work, but I noticed that when he soloed the M50s, the orchestra sounded great; his balance was impeccable.



I rely on my [Neumann] U47s a lot. I'll stick one on a nylon string guitar. Even though I may have to add a little high end in the mix, I know that the U47 will give me the body I need. I also use [Neumann] KM84s on guitars, as well.

One story you might find interesting involves the guitarist Raymond Stagnaro. We were doing an instrumental version of the song "Casi Un Bolero" on Ricky Martin's *Vuelve* album. We set Raymond up with a 47 and let him rehearse the song all the way through while recording him. Benny Faccone, who mixed this album, and I were listening and realized his performance was *perfect*. The song wasn't even listed on the album, but it's there! Again, most people wouldn't ever think of using a 47 on a guitar because it doesn't bring out the high end, but the size it gives is great.

Can you describe your home studio setup?

We have a 96-input Euphonix CS2000 console with their 3000 software. I felt that this board would be a good, real-world interface. Pro Control might work better with Pro Tools, but we do lots of mixes that aren't Pro Tools related. With Santana, for example, we tried to make sure everything was analog, complemented with Pro Tools. We relied heavily on our Studer 827. I've resisted being fully Pro Tools-based. Space is also a consideration for us. If we had more room, we'd probably have a big [SSL] 9000 in here.

We have a lot of vintage gear, including racks of Neve stuff. We did everything on *Supernatural* using a Neve 8038. I really liked the sound of that board, but it only had 32 inputs, so I tore it apart and kept as many of its modules as I could. We've also got tons of API stuff. I'd really love to find an amazing hardware reverb unit. All of the great old stuff is hard to get serviced.

How do you interface your studio with the outside world?

With Santana, I take 2-inch tape reels around. Most of what I do these days is done in my studio here in the mountains near Malibu, where I live with my wife and daughter. If I'm doing overdubs in another city, I might try to get swappable drives for Pro Tools.

What engineers do you like to work with?

Jeff Poe worked with us on a lot of Santana's stuff. He's a phenomenal engineer who's got a natural sense of how to go about things. Jim Scott did a lot of tracking for Santana. Jim Gaines worked on the album in the Bay Area. He did all the Huey Lewis records that sound so good! We also have a full-time in-house engineer, Luis Quine.


A colorful moment with Carlos Santana

Has your work method changed as you've taken on production assignments for more visible clients?

I've been a programmer and keyboard player for so long that it got to the point where I was sitting down all the time. I'd go into the studio and work, then eat, then come back into the studio and sit some more. I had to stop sitting so much!

Seriously, the role of executive producer requires some distance and objectivity. By hiring the best programmers and players, I can see the whole project, not just a part of it. The good thing is that I know every little thing that's going on. If an engineer plugs in the wrong compressor for a vocal, I'll ask for the [dbx] 160 rather than the 160X. It's like being a contractor who knows everything about putting together a house, but oversees other people. I do want to get back to some more hands-on work, though. For a while I was working so hard that I had to stop. I didn't know what happened for the first four years of my daughter's life! We've recently adopted another daughter, and I want to be there for her. ■

Gary Eskow invites readers to check out his Website, www.garyeskow.com.

Microphones intrigue me the most. I adhere to the principle that says if you can record things right, you don't have to fix them later.

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BY TOM KENNY

Jerry Gepner

Driving New Technology at National Mobile Television

PHOTO: DAVE KING

To work in, or even understand, today's mobile production environment, you have to know systems. Graphics systems, camera systems, video switching systems, digital routers, audio and video recording systems, communications systems, IFB systems, wiring systems, digital and analog transmission systems, satellite systems...Jerry Gepner knows systems.

As president of National Mobile Television, he's responsible for the operations and engineering team that keeps 45 vehicles on the road, handling upward of 6,500 events a year—from regional sports to the World Series, from corporate launches to Janet Jackson Live From Honolulu in 5.1. Most of it is live, much of it is high-profile. Some of it is digital, much of it is still analog, with a sprinkling in High Definition. As television transitions to whatever digital future awaits, there are a heck of a lot of systems to grasp.

Gepner graduated from the University of South Carolina with a degree in mass communications and a background in live P.A., with a bit of studio time. He landed a job with South Carolina Public Television, then, after reading an ad in one of the trades, he went north to Philadelphia for an interview with EJ Stewart Productions.

"As part of the interview, the chief engineer took me out to the trucks and took out all the parts of a camera," Gepner recalls. "He said, 'I'm gonna go away, you just set this up.' He came back an hour later, and I barely had the tripod set up. I had no idea what I was doing. At that point, he said, 'Can you drive the truck?' [laughs] So I became a driver."

He admits to not being a very good driver, and further admits that he was lucky, in that he got a chance to learn by making mistakes and became familiar with every aspect of a remote. "Our original audio board in that truck was made by Carvin, I think," he says. "I hate to sound like an old guy, but in those days, when you got six cameras working, it was time for a cup of coffee and a high-five. And if you happened to get them to match so they all looked like they were in the same stadium, that was a big win! It was a great remote! Dealing with things at that level, you had to truly understand the technology. Because I do understand that, I am amazed at what we're doing today."

After a dozen years at various mobile vendors, Gepner moved on to CBS, when they were the top network, saying he just happened to be at the right place at the right time. He then moved on to Fox in 1994 to build—in 16 weeks!—its field operations for the NFL. Then Fox took on the NHL and Major League Baseball, and the president, David Hill, whom Gepner credits with providing an ideal atmosphere for growth, gave the operations and engineering team the mandate to innovate. At Fox, mics were placed everywhere around every field, the concept of the crowd submix was born, Dolby Surround was ushered in—the audio bar was raised.

He left Fox in 1998 to co-found Sportvision, where he took the blue-hockey-puck concept he had worked on at Fox and helped to develop the "first and ten" line for football, among other innovations. In early 2000, he went back to Fox as an executive VP to help with the integration of their regional and national operations. In the Spring of 2001, with Fox's full knowledge, he was approached by NMT.

Now, Gepner has come full circle and finds himself in a position, as president of the world's largest mobile production company, to provide real solutions to his network compatriots. Again, at the right place at the right time.

You spent a dozen years in the mobile industry, then worked for the networks, then headed up a tech company. How has this all come together in your current role as president of the largest mobile vendor in the world?

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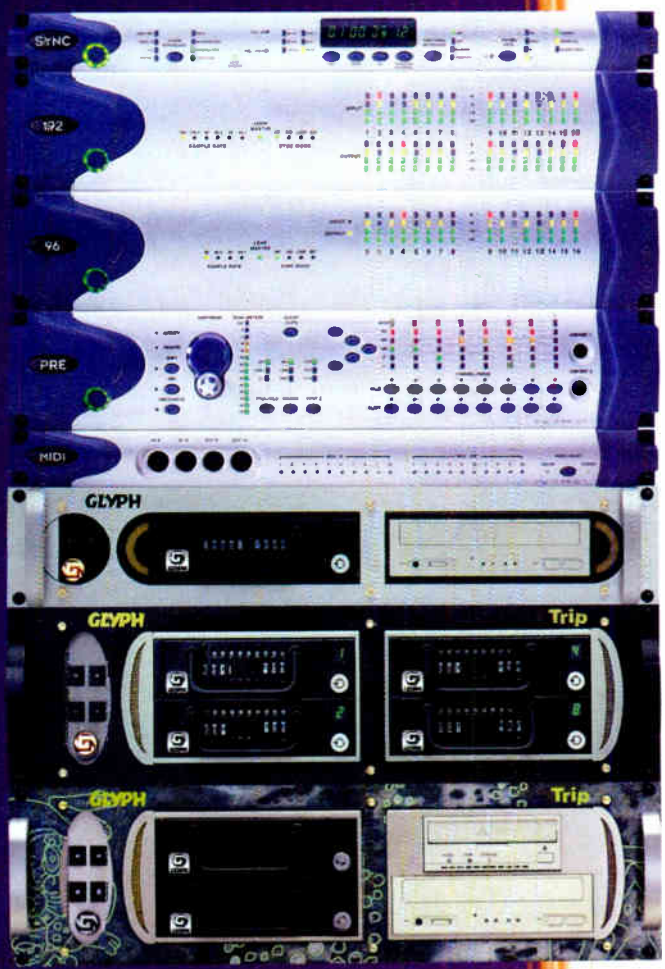

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When I was at CBS, they, like all the networks, had huge technology resources in-house. It was my dream job. There were people you could sit with who could teach you so much. In days of yore, there were things like CBS Labs, and the late Julius Barnathan had this massive broadcast operations and engineering group at ABC. They brought the lavalier microphone to life. What we know as the ECM Series with Sony was developed mainly from the push from Julius. The super-slo-mo can be attributed entirely to him. At Fox, the onscreen clock and score has actually spawned a couple of companies. CBS Labs, in their day, was responsible for more audio innovations in the broadcast area than probably any other company to date. It was such a library of material and experience and technological knowledge. I was fortunate to be around at the time and make mistakes. That's the best way to learn: to make a mistake and have somebody willing to correct you and teach you.

But things have changed. The networks have largely divested themselves of a lot of their in-house technology expertise. And over the past 20 years, there has been a consolidation in the mobile production industry. One of the big things my network experience brought is an understanding of their challenges and goals, and to a certain extent their financial limitations. Then, being able to take this tremendous resource—45 trucks, 120 engineers, 6,500 remotes a year—to be able to take that as a resource to our network clients and say, "We have some solutions here. We think there are efficiencies you can gain, some cost savings you can gain, some technological advantages you can take."

There was a day when there was a little more tolerance of using technology for its own sake. What people have realized is that if it brings a larger audience, if it enhances the quality of the product, if it provides some sort of efficiencies, whether on the labor front or the hardware side—people still want very much to find solutions.

Are you, then, responsible for building the technological infrastructures in the absence of network developments?

The trick now is to bring solutions to real problems, not solutions for imagined problems. "First and ten" is a good example. In terms of broadcasting, I think our recent agreement with SRS Labs is the same thing, where we addressed three distinct issues. The first is the cost of moving from mono production to stereo production, which is not a huge number, but it's a number—there's a real cost associated with it. It's not earth-shaking. It's a stereo synth, but a very good stereo synth.

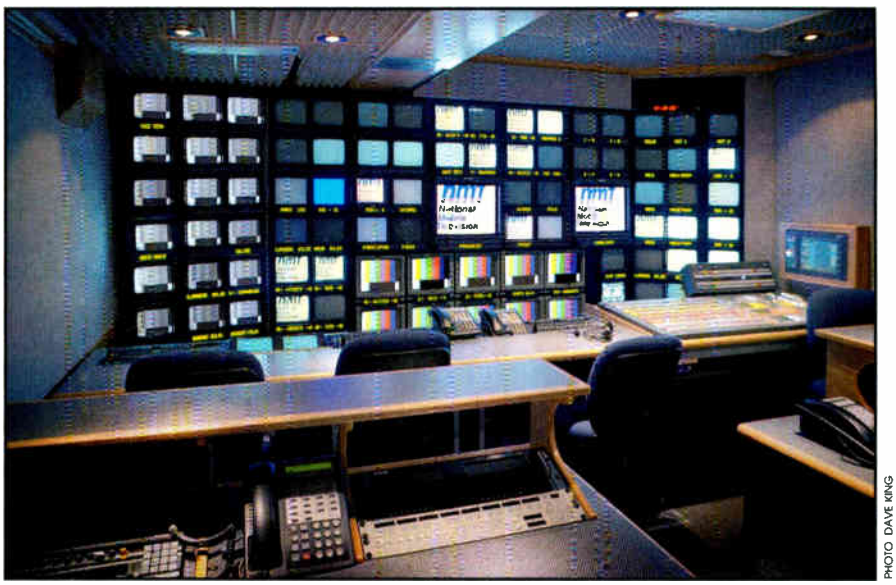

PHOTO DAVE KING

The 93-monitor video wall inside DX-11

The second is the Broadcast Phase Protector technology they've come up with, which I think is one of the only viable solutions for solving the downstream problem that you get once you go to a stereo production environment. You can't go into somebody's home and reverse the red and black wires in the back of the speakers, which has made the announcers disappear. This solves the symptom; it doesn't solve the problem. But, very frankly, when you look at what's needed, that's what's needed.

The third piece is the sports audio processor, which does remarkable things, and this is where SRS's technology really shines, in separating the announcers from the background. One of the unfortunate side effects of this huge push from the early '90s to get more field sound is that you run the risk of burying the announcers. It's something that drives mixers and producers nuts. You don't want to give up that in-venue or in-stadium experience you get from having this tremendous sound. But if you bury your voice of the network, that content is gone. What the SRS technology does is separate the two without forcing the mixer to reduce the background mix level. So you can do one of two things: You can take the space and use it for what it is, or you can push that background up more and actually get more headroom. This is the exciting part for me. We're going to make a lot of hay with this technology.

You see, what this allows a network to do is to leverage their existing investment. You have good equipment in the field, good people, and you can't take any more time. They're gonna drop the puck or kick the ball or throw the opening pitch at 7:05, right after "...home of the brave," and it's going to happen. And if you're not ready, shame on you. We have a hard deadline to work with, but by the same token, our clients are looking for ways to not spend any more money. "Don't tell me I need my mixer in three hours early...I can't afford this right now."

This is what I mean by a solutions provider, because it's a real problem. Audio's become something that your content is judged by—not just how may cameras you have or how many replay angles. The audio portion of the program is now really part of the program; it's not the radio show that goes along with the pictures.

We're running into SRS for Internet audio. When you made that deal, were you also thinking toward the future?

Absolutely. We're doing a limited amount of Webcasting now, more in the corporate area. As the number of media outlets for the content increases, then technology solutions have to span the outlets, not just be focused on a single area. SRS is addressing both the broadband community and the over-the-air and cable television community. Their solutions are very broad, which fits well with my thinking for NMT.

Well, you said that you have a three-year plan; how does the Internet figure in?

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I would like to see an application that allows a mixer to configure a console from home or from any Internet connection, and be able to store that configuration so that when the mobile unit arrives on site, the engineers have received a file by email. And before the mixer even shows up, it's downloaded, into the board, and the board is configured. We can do the same with the switcher. You lay your switcher out, and it's configured before you even walk in the door.

We need to use technology to solve real problems. And that's a time and energy problem. It also helps when you start talking about introducing new technologies to the group of users and technicians in the field—the mixers, technical directors, video engineers. You can provide help and support files online.

You mean training, like on the Axiom MT.

Yes, some online help so that when a mixer sits down and configures the console, and if they do something illegal, the application could be set to recognize potential problems. When I was a college student, the mainframe computer was programmed to recognize common mistakes by beginning programmers, to catch them for you and suggest an alternative. You could do the same thing very easily, where if somebody wasn't familiar with the console and wanted to walk through an input strip, they can do it online and get all this front-end work out of the way, do the basic configuration. I can even envision an optimize function, where once you have it done and saved, you can ask the program to optimize it. Then you can accept it or reject it. You can learn a lot before you even walk in the door.

You can do it on a plane on the way to the Stanley Cup Finals...

Exactly. Now a lot of that falls on the manufacturers to develop the applications. But this also goes to the role of NMT. We have an obligation, not only to our customers but to the manufacturers, to work with them. You have to remember, research and development and manufacturing are where they're focused. We're the ones who are in touch with the customers on a day in, day out basis. We're the ones who are hearing about the budget cuts and the need for efficiencies, while at the same time nobody wants to sacrifice in terms of quality. We know what our customers want because our engineers have to go into the control room and explain to a producer why something isn't ready on time. So, if we can come up with solutions that make that person's life easier...The criteria change so rapidly now. The tools you have to work with, the constraints you have to work within—everything's dynamic these days.

Speaking of dynamic, let's talk about high-definition TV. It once had such momentum. What happened?

Well, we're looking at the emergence of high definition as a real, viable broadcast technology. From a core level, we do own two high-definition production trucks, and we do more than 350 events a year between the two of them. Now a lot of that is due to Cablevision and Madison Square Garden, both huge proponents of HDTV. We also do work for CBS, and we're finding that the entertainment community is much more eager to use HD.

The criteria change so rapidly now. The tools you have to work with, the constraints you have to work within—everything's dynamic these days.

We recently completed a show for WNET, *Fosse on Broadway*, the Dance in America series, done exclusively in HD. Every week there are more inquiries: "Can we do this in Hi-Def? Can we afford to do this in Hi-Def?" So, part of the challenge from the executive side is to try to find a way to make it affordable.

Is it still a loss-leader?

Not any more. [Laughs] It can't be. The cost of the hardware is too much. To do a Hi-Def truck, a big truck today, you're talking $7 million and up. You can't afford too many of those as loss-leaders. But by the same token, you can talk about how much of a premium you can charge. This is where the role of the CFO comes into play. I'm continually beating on them to lower the price, and they're continuing to say that we need to make this pay for itself in three to four years.

What's the current state of Hi-Def standards?

The whole thing about standards has become almost a religious issue at this point, because it almost doesn't matter. You buy a Hi-Def receiver today, and it will receive all of the accepted formats. It will convert them to whatever its native format is, but it's almost a religious issue that's argued about among engineers at this point.

From our standpoint, we understand that the big division is that the feature film community is looking very favorably at the 1080p24 format as a replacement for film. It's generally accepted in the live production industry that 24p probably won't work. It's the same difference we've run into with film vs. video over the years, so that's not a tough one. The good news is that manufacturers are now making equipment that is multiformat. Almost all big camera manufacturers—Sony, Thompson, Ikegami—are making multiformat cameras that will originate signals in 1080p24, 1080i, 720p, 480p and 480i. It's software, so you can configure the camera as you want. Sony has introduced a multiformat switcher, and Thompson/Philips is right there with them. Grass Valley, Snell & Wilcox.

What's going to push HD? Will it be sports and entertainment?

I don't think sports is going to drive it so much as showcase it. I think that everybody, myself included, felt a few years ago that sports was going to be the driving force for the penetration of HD. CBS has been in the forefront with their 1080i. ABC did a full season of Monday Night Football in 720p, with help from Panasonic.

But the thing that probably is going to drive it, in my mind, is the entertainment industry. When you can go down to Blockbuster and rent an HD VHS or DVD...if you can watch *Top Gun* in quality equivalent to 35mm negative. When people see it, they are amazed. Then when you have the set, and there are eyeballs watching the content, then events like the Super Bowl, World Series, Stanley Cup Playoffs, NBA Finals—the real showcase events—are going to start being very meaningful.

Enough video. Let's talk about the DX11, the truck on the cover. What makes this special? What was the push to develop?

Interestingly enough, it was an accident. Its predecessor, DX1, was involved in an accident about a year-and-a-half ago. We had to replace it, so we wanted to break the mold a little bit because the industry is changing. We approached it from a workplace standpoint, little details. Like

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you can walk from one end to the other inside. It's got a 47-foot expandable side, which is the largest on the road today. The monitor wall, to my knowledge, is the largest in the industry. It has 93 monitors, and to accommodate that, we're set up with about a 33-degree rake, so it can wrap around you. We made expansive use of LCD and plasma monitoring throughout the truck to reduce weight, to reduce heat, and to allow a higher density for monitoring.

And then when you start looking at the infrastructure of the truck—the routing system, the cabling, everything—the core of the truck is HD-ready. The audio console was part of that decision. It's a digital console that operates both in and out of our analog/digital world, and it gives almost infinite headroom. I don't think that they could actually tell you what the internal headroom of the board is. But as long as you don't overload that first analog-to-digital input, you can't distort it. The Axiom has proven to be a huge benefit.

That truck served as the pregame show for the AFC Championship for CBS [in Pittsburgh], and it actually did three things: the pre-game show; as a backup, if you will, for the main game, where the majority of all the microphones and cameras for the main truck were brought in on a backup basis; and it served as a transmission point for the entire show. There are very few trucks that could have done that, with the digital routing capability and the ability to reconfigure on-the-fly. I didn't say it was the only truck that could have done it, but it certainly handled it well. Again, it's a solution, it provides people options, it provides them features without huge overhead. And that's why I put in the digital desk. Prior to DX11, trucks seemed to be built as either sports trucks or entertainment trucks. Unitel has some of the best entertainment trucks in the world. They don't do sports with those trucks. By the same token, we and some of our competitors, like NEP and GameCreek, have some of the best sports trucks in the world. Nobody's built one yet that can effectively cross that line. And while we don't claim this to be the end all, be all, it certainly was part of our thinking.

> You're in a room and you know there's an alligator under the rug. But you're not going to lift it up. And the person next to you isn't going to lift it up. That's where we're at with storage.

Can you talk to me a bit about the digital routers. It seems to me that recording and post-production studios could learn something from the television world.

There are actually two audio routers that operate inside of DX11. One of them is inside the Axiom. The digital consoles, in general, have tremendous internal signal routing capabilities. Obviously, this plays to their ease of setup and recall ability,

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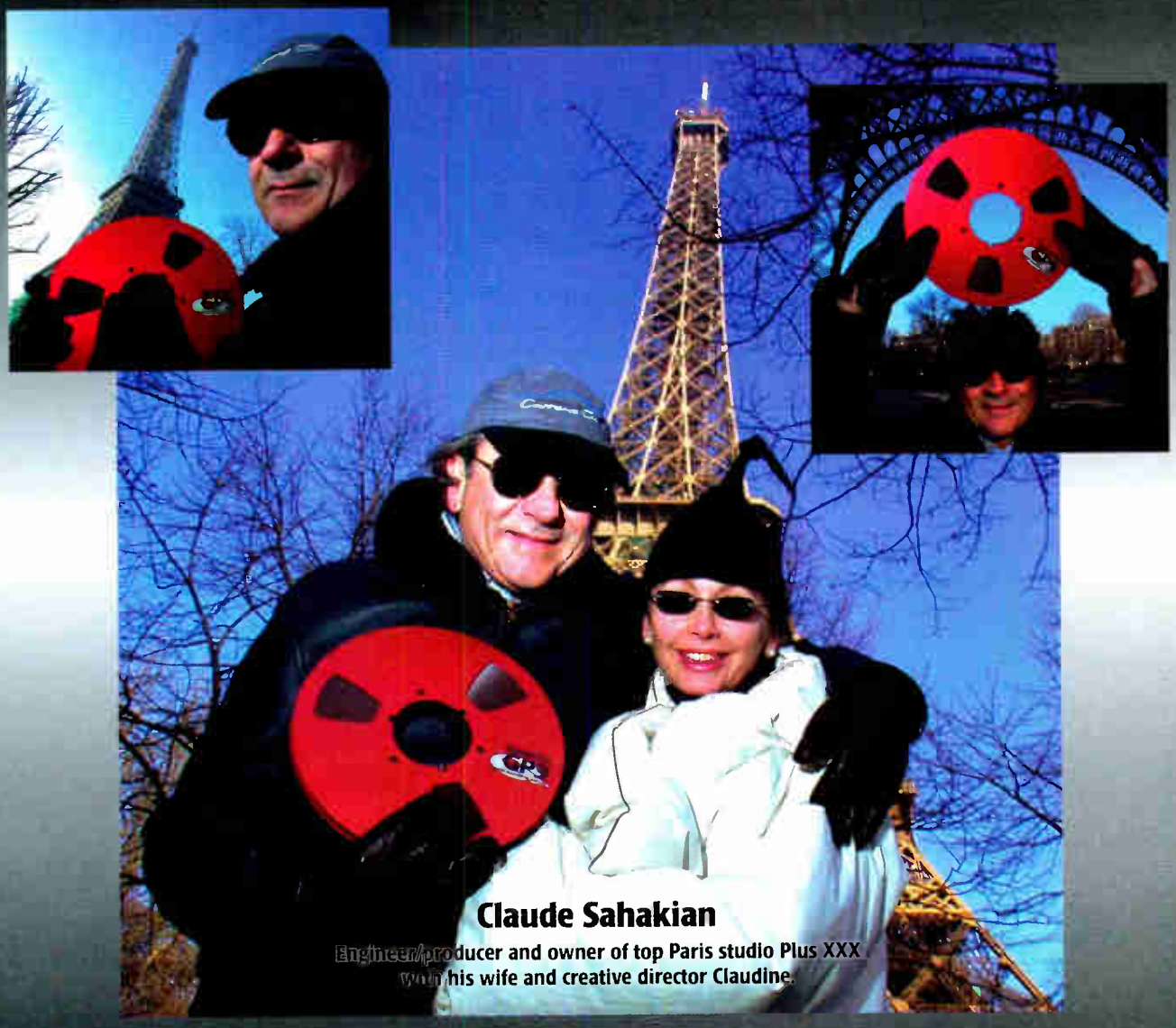

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and just sheer signal path power inside the desk.

The overall audio routing system in the truck is 128x128 right now, which is not considered overly large for a mobile unit. It's a Philips routing system, and it's good-sized. We can scale this particular router to 1,024x1,024 if we needed to.

For Mix readers who live in a studio, how does the router work with tape?

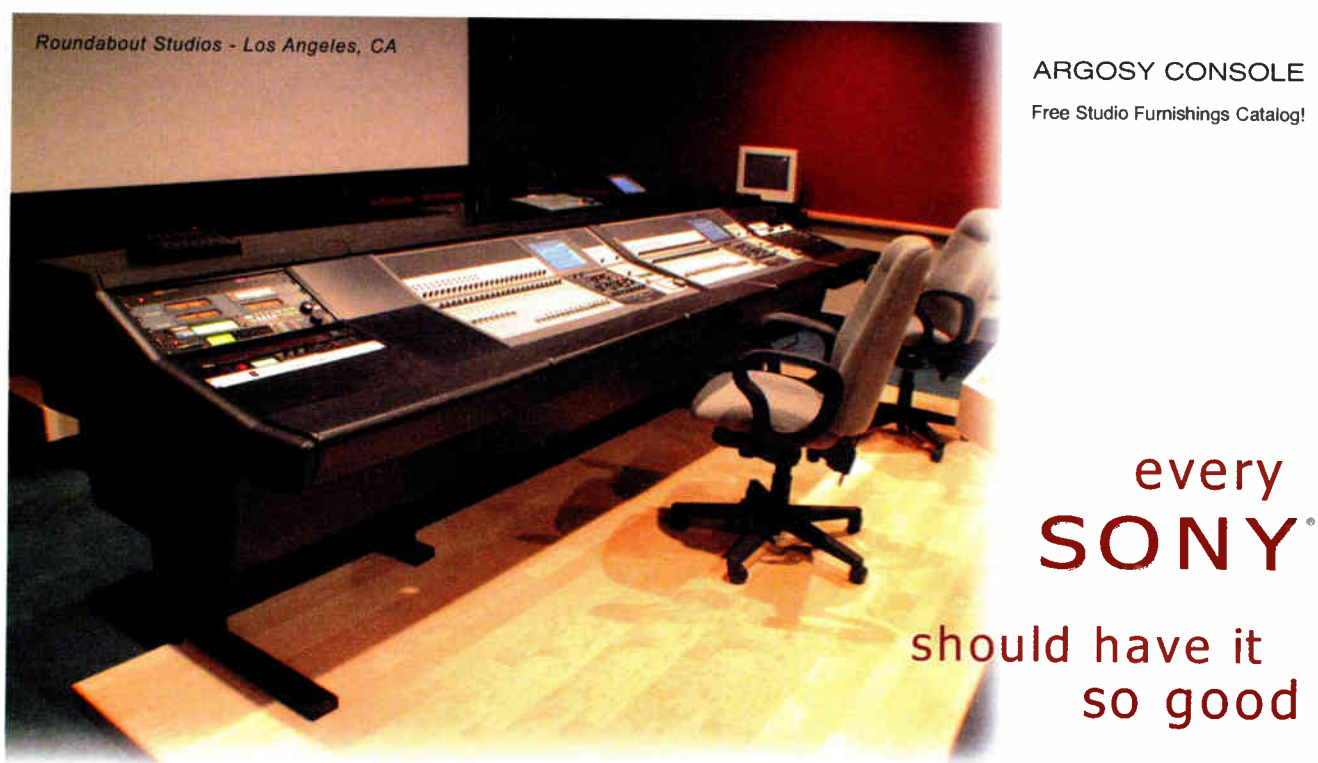
Every tape machine has a bus from the router feeding it, and you have multiple router outputs feeding inputs to the desk. You have four channels in every tape machine, and you bring each in on a router, so you don't have to tie up four input channels on the board. You can then preload memory so you say, "Okay, for preproduction for this game I need VTRs 1-8, 32 channels," and you lay it out as a two-mix. But I can reconfigure my system in a snap so when we're done with preproduction and ready to go live, I need the announce booth and I need these other tape sources and all my effects mics and I push the button. And because the truck router is interfaced to the board router, your signal path linkages are already set up. So it gives you instant ability to get at any source—access to things much more quickly, and access to sources that you just would never have had before.

What about Dolby E and true 5.1 transmission?

Not right now. We planned for it and designed for it, but right now we use Dolby Surround encoding. Dolby E will really benefit from digital transmission. Now digital transmission is not ubiquitous. Fox is doing it a little bit, and most others are still using analog transmission. One of the more ironic parts of the industry is that we have a truck like DX11, a totally digital plant, full SDI-compliant so you can embed all the audio into the video, and all these wonderful features of the serial digital interface. We have a digital console. All the video through the truck moves digitally, and most of it originates digitally. And we convert to analog for transmission. When we connect up to the existing wide area distribution in this country, or we feed a satellite....now it *is* changing, and Fox is one of the companies pushing that change. They've been experimenting and putting on the air MPEG2 backhauled material for a couple of years now. They really are leading it, and I'm hoping other people start doing it because I want to put MPEG codecs on the truck. And I want to be able to just push an MPEG stream out at whatever bit rate the client wants: SDI stream in, MPEG-code it, and we shove it down a DS3 or whatever the transport is, whether it's frame-relay or ATM or whatever.

Last year at NAB, it seemed everybody was looking for storage. You call storage the "alligator under the rug." Can you explain?

Well, you're in a room and you know there's an alligator under the rug. But you're not going to lift it up. And the person next to you isn't going to lift it up. That's where we're at with storage. What we're finding is that our producers really like the nonlinear aspects of digital storage. Unfortunately, it's not transportable yet, and that's the rub. You can't walk out with a disc. Or you're stuck with taking the time to transfer to videotape format or some other media. And that's a real-time process today. You can use all of these features and enhance your production, but you raise your costs on the back end



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because you have to select and assemble those highlights you want to take, transfer them and preserve them. That's the problem with storage right now.

I believe that within the next couple of years, we will see wide area connections that will carry multiple channels of content in real time from the truck to some central storage area. This way, they can use the nonlinear features of disk storage on the truck, and we'll get away from videotape as a transportable medium except as prepackaged material brought into the environment. Replays and everything else will come off of disk, but at the same time all these channels will be streamed and recorded somewhere else. Like bandwidth becoming a commodity, storage is becoming a commodity. Prices are getting that low. People don't even talk about cost per meg anymore, it's cost per gigabyte, or terabyte. This would solve the problem of transportability. The producer can go home and connect and pick the highlights he wants, assemble, the edit list is stored, it's rendered out anywhere in the world. It just takes secure bandwidth between the truck and some central storage facility.

Any final thoughts?

The skill that you need today is being able to maximize the value of the tools. And that is systems—being able to help somebody solve a problem, being able to sit with the mixer and have the mixer explain to you what kind of power and flexibility is needed. "How do I take this system and bend it to my will?" Audio guys are perfect for that, because to a large extent, in field production, the tools we use haven't changed. The announcer headset is better quality, it's lighter, it's stronger, all of that. But it still has a 3-, 4- or 5-pin XLR connector on the end of it. One of the things that has helped field production go smoothly is a good understanding of how the entire system works. I like audio guys as techs because audio guys, more than say video engineers, have had to have a broader cut of the entire process to understand how it all works together. A ground problem on the other end of the stadium can all of a sudden cause a problem in the IFB system for your announcer up in the booth. So you have to understand how this all comes together—that kind of background is really helpful in today's world, where you have to maximize the use of the tools. ■

Mix *editor Tom Kenny can be reached at tkenny@primediabusiness.com.*

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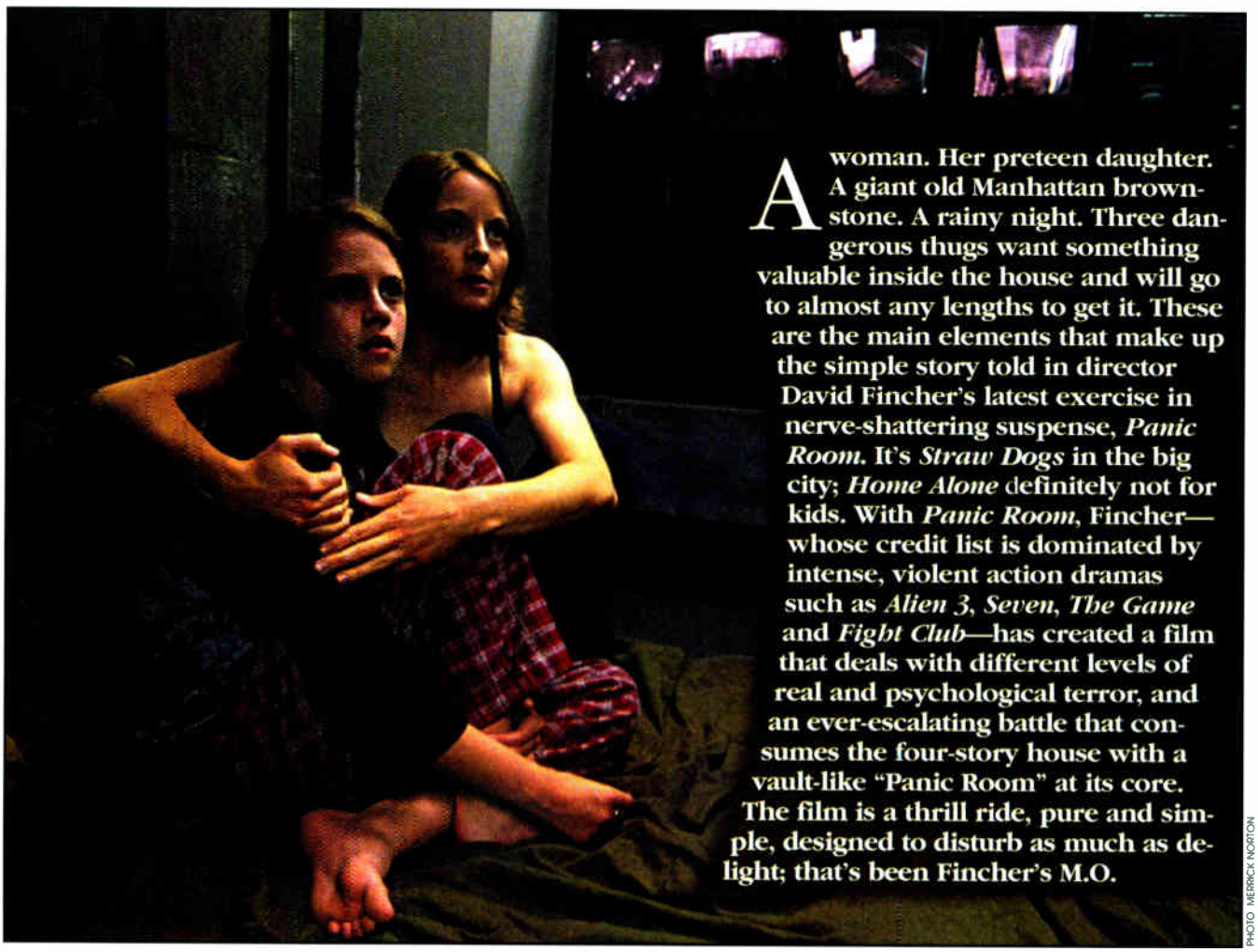
Trapped in the "Panic Room"

Sound Design for David Fincher's Latest Suspense Film



A woman. Her preteen daughter. A giant old Manhattan brownstone. A rainy night. Three dangerous thugs want something valuable inside the house and will go to almost any lengths to get it. These are the main elements that make up the simple story told in director David Fincher's latest exercise in nerve-shattering suspense, *Panic Room*. It's *Straw Dogs* in the big city; *Home Alone* definitely not for kids. With *Panic Room*, Fincher—whose credit list is dominated by intense, violent action dramas such as *Alien 3*, *Seven*, *The Game* and *Fight Club*—has created a film that deals with different levels of real and psychological terror, and an ever-escalating battle that consumes the four-story house with a vault-like "Panic Room" at its core. The film is a thrill ride, pure and simple, designed to disturb as much as delight; that's been Fincher's M.O.

PHOTO: MERRICK MORTON

by Blair Jackson

From a technical standpoint, *Panic Room* is very interesting, with the entire film taking place in and around a single building. The house is very much a leading character in the film, and Fincher and his crew have gone to great lengths to give each room or hallway its own visual and sonic personality and characteristics, much as a haunted-house movie revels in the creepy differences between one dimly lit chamber and another. This isn't horror fantasy, however; it feels frighteningly real, and it plays on our primal fears about freedom, security and family.

Sound plays a key role in the film, too, what with all the lurking and tiptoeing and creaking floors, the relentless rain, slamming doors, shattered windows and assorted violent calamities. Going into the project, Fincher's longtime sound designer/supervising sound editor Ren Klyce says he believed it might be a fairly straightforward job, but he quickly discovered otherwise.

"This film takes place inside a house, all in one evening," Klyce says during a break at Skywalker Sound, where the film was being mixed. "And when you read the script or watch a rough cut of it without anything added in, it seems like, 'Oh this will be pretty easy to do. All you need is some rain and some hard effects here, and the panic room door, a gun—easy.' But it turned out to be very complicated and very difficult; in fact, it was one of the hardest things I've ever worked on. I think that part of the challenge in keeping being stuck inside of a house for two hours interesting is that you really have to reach for the subtle little nuances to keep your ear engaged."

SOUND FROM THE SET

Rather than trying to find the perfect building in New York City, Fincher had one constructed to his specifications on

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Sony's Manhattan Beach (California) lot, at an estimated cost of more than $8 million. "This isn't just some set, either," Klyce says. "It's a four-story house, completely built, with 18-foot-high ceilings on practically every floor. It was absolutely wonderful from a sound perspective. All the doors are solid wood core. All the walls are solid. I'll never forget when he was showing me the set for the first time, he said, 'Look, we put floor creaks in, just for you!' And they did, which was great. I don't know how they did that, but I'm glad they did."

Building the house from scratch gave Fincher, Klyce and cinematographer Conrad Hall Jr. much more control than they would normally have on a location shoot. In fact, Klyce notes, "Fincher pre-visualized the film in a computer before they started filming. They designed the building and they put the architectural plans into this CAD-type program, and then he could film virtually in the house and figure out in advance which lenses he would need for which shot, how much track they'd need to run for doing this tracking shot, or if they needed to remove a wall to get the camera back a bit.

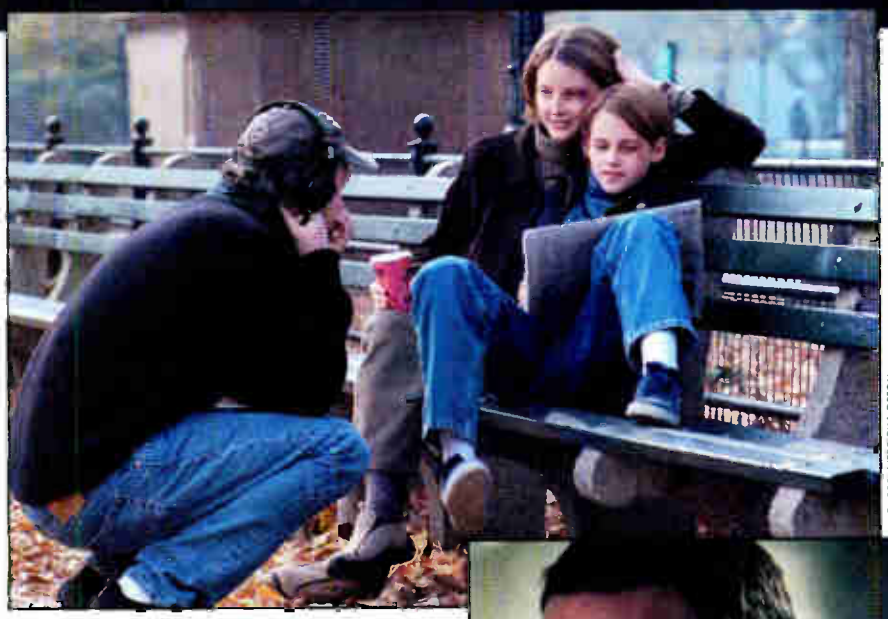

PHOTO: MERRICK MORTON

PHOTO: SUZANNE HANOVER/SMPSP

David Fincher, right, and with Jodie Foster and Kristen Stewart.

"The camera is like a character in this film," Klyce continues. "If you look at, say, a Spike Jonze film [Klyce worked on Jonze's *Being John Malkovich*], where the camera is handheld, it has a very different feel from something that's staged, like a Jim Jarmusch film, where he puts the camera on a tripod, turns it on and presents a scene. What Fincher's trying to do is the best of both worlds. He wants the intimacy and spontaneity of handheld photography, but with the accuracy and precision of a dolly move. It ends up being a choreographed dance between the actors and the camera crew. For example, when an actor bends down to the ground, the camera moves with the actor in perfect sync. Not anticipating his move, not lagging behind his move, but exactly *with* his move, to the point where you don't notice the camera moving at all. To get this right, unfortunately, takes a lot of time and many takes. So they had billions of takes," he says with a laugh. "I'm exaggerating, but typically Fincher would shoot anywhere between 10 to 30 takes...sometimes 40."

The fact that the film was shot in such a tightly controlled environment was not enough to prevent a number of problems from creeping up during production. "For one thing," Klyce says, "they had a rain machine going constantly, which completely and drastically affected our [production] sound. It was quite hissy. Then, he had Panavision modify their cameras to operate on three-perforations per frame rather than four-perforations. Knowing that the camera moves were going to be quite elaborate, he wanted to get the most amount of time per roll. Because three perfs requires one less perf per frame, he could get 20 percent more time per reel, which saved the production hundreds of thousands of dollars in film stock. The three-perforation innovation was fantastic, but because of the modification, the cameras started making a horrible whirring noise at about 500 feet into the magazine. No matter what they did—sound blankets, what have you—the crew couldn't get rid of that sound. *Whirrrrrrr*. And to make matters worse, the whirring noise wasn't constant. We couldn't find the perfect filter setting and filter out the noise. It was a moving target, constantly rising in pitch. It was a lot for our dialog mixer, David Parker, to deal with. Fortunately, Willie Burton, the production sound recordist, managed to do a great job under the circumstances."

At least Klyce's experience on *Fight Club* (which earned him and Hymns an Oscar nomination) helped the crew avoid one of that production's problems: "We'd be premixing on *Fight Club* and Fincher

"PANIC ROOM" CREW

Ren Klyce *Sound Designer*
Richard Hymns *Supervising Sound Editor*

David Parker *Re-recording, Dialog*
Lora Hirschberg *Re-recording, Effects*
Todd Boekelheide *Re-recording, Music*

John Roesch *Foley Artist*
Alyson Moore *Foley Artist*
Malcolm Fife *Supervising Foley Editor*
David Hughes *FX Editor*
Gwen Whittle-Yates *ADR Editor*
Rich Quinn *Dialog Editor*
Ewa Sztompke-Oatfield *Dialog Editor*
Michael Silvers *Dialog Editor*
E. Larry Oatfield *Conforming Editor*

Eric Dachs *Asst. Sound Designer*
Misa Kageyama *Asst. Sound Designer*
Dug Winningham *1st Asst./Asst. Effects Editor*
Karen Brocco *Asst. Dialog Editor*
Luke Dunn *Asst. Foley Editor*
Stuart McCowan *Asst. ADR Editor*

Howard Shore *Composer*
David Gleeson *Music Co-producer*
Michael Tremante *Music Co-producer*
Mark Willsher *Music 2-Track Editor*
John Klepko *Music Asst.*

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would change the picture, so we'd need to do premix fixes. But the problem was that we were working at different bit rates. We shot our production audio at 16-bit/30 frame, but we were premixing at 24-bit/29.97 [fps]. We couldn't combine the dialog cut sessions and the premixes in the same Pro Tools session. It was a nightmare. So what we learned from that was, 'Let's just do everything 24-bit from the get-go, keeping all the speeds the same, and that way, if we needed to bring the dialog premixes into Pro Tools for a fix or conform, we could do so.'

"We shot all the production dialog and sound effects at 24-bit on a Deva hard disk recorder at 48k, which we could then immediately copy to the computer, no real-time transfer required. [The Deva records directly into SDII format.]

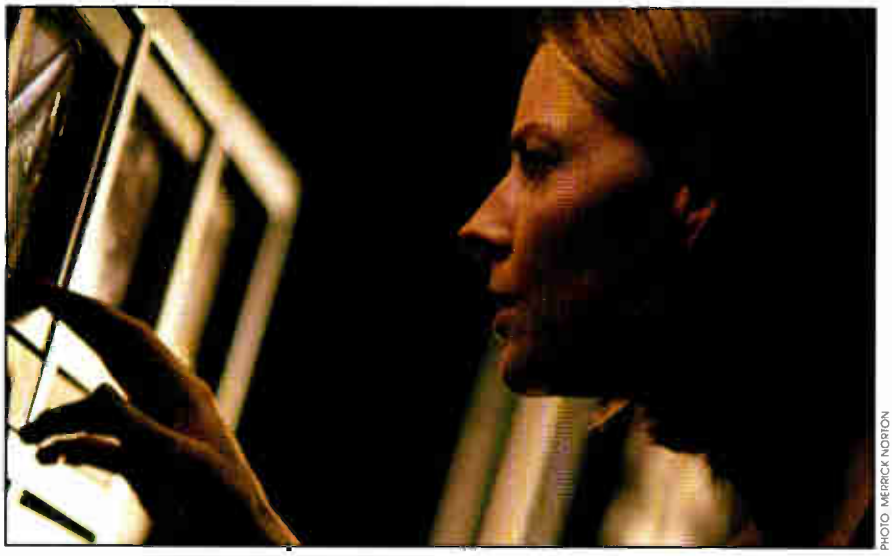

PHOTO: MERRICK MORTON

DIALOG LIBRARY

"Normally, with production audio, only the 'circle' takes are transferred for editing. The takes that aren't chosen don't get printed, and the accompanying sound roll for that take never gets transferred. But we decided that there were a lot of great performances in the non-printed material that we could use for dialog alts and splices. We created a sound category for the non-printed takes in addition to the printed takes. We'd receive the Deva disk from the production, copy the audio into Pro Tools, time-stamp the take, name the file appropriately to the scene and take, and then we had this fantastic online library of every single dialog line recorded.

"Eric Dachs, our sound design assistant, developed an Internet-based information hub, which allowed the dialog crew to research and audition every piece of audio recorded during the shoot. The site let the editors search by sound roll, scene or take to get a list of everything that was shot for a particular setup. If a suitable alt was found, the site would import the audio into the workstation and the editors would cut it into place.

"Compared to the old method, where an assistant would search tediously

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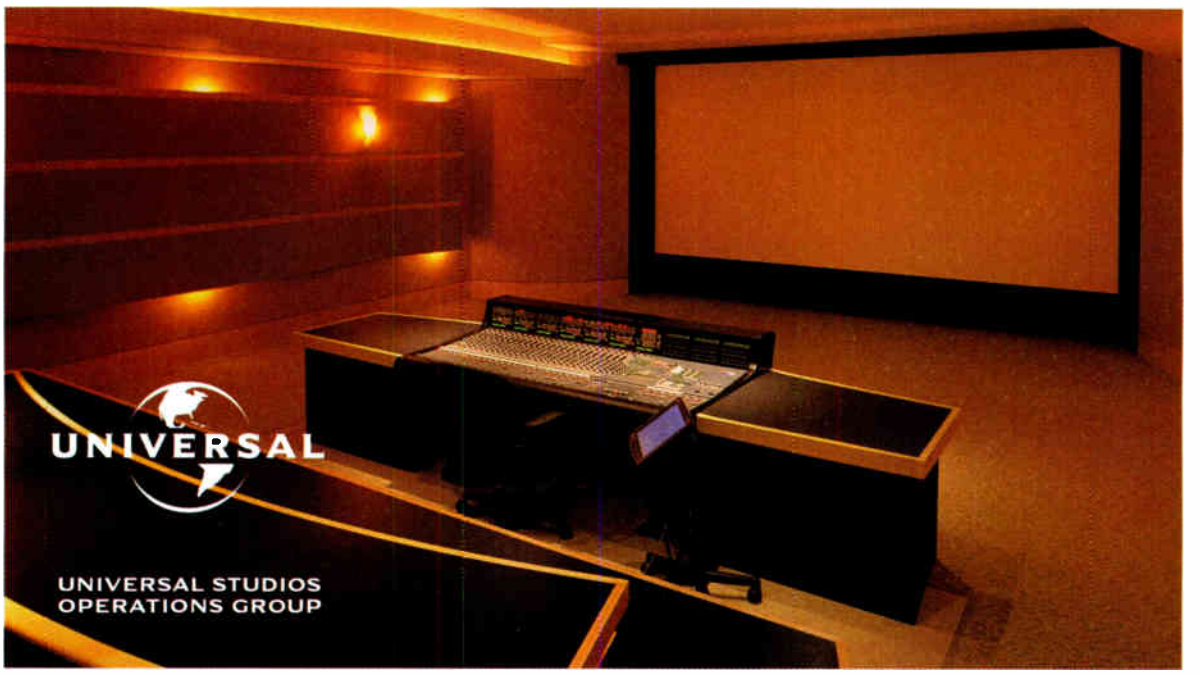

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through the sound rolls for production alts, this new system allowed dialog editors Ewa Oatfield and Rich Quinn to search for a missing word or part of a word as soon as there was a need. This way of working also gave Fincher the confidence of knowing that each take was explored for usable production material before having to resort to ADR."

EFFECTS & FOLEY

Klyce did the bulk of his sound design work at his Sausalito, Calif., studio—Mit Out Sound—but recorded some of the original elements on the L.A. set during a period when most of the production had moved to New York to shoot some outdoor sequences. "It's a very Foley-intensive film," Klyce notes. "There's a lot of running around; it's all wood floors. So it was great to be able to go down to the set and shoot our own sound there. We had our own Deva, and we had a Powerbook · Mac running Quicktime Mini-DV, and we had Pro Tools with timecode on it, so we could autolocate to anywhere visually in the film, and then the timecode would come out of the Powerbook into the Deva. So we always knew where we were.

"We had our Foley walkers—John Roesch and Alyson Moore, who normally work on the Warner lot and have done all our films—come out to the set and walk for us. There are some really complicated running sequences in the film, and they performed them perfectly. Malcolm Fife edited and premixed the Foley, while Luke Dunn cut and conformed all the LCRs.

"Fincher also gave me and the crew carte blanche to get anything we wanted, so we had access to all the props from the prop department. The set dressers would even save shards of glass, pieces of stucco and wood chips from scenes where things had been broken and smashed for us to record.

"We kind of painted ourselves in a corner, however, because we couldn't shoot all the Foley on the set, so when we shot other Foley, there was a big difference between what was shot on the stage and what was shot in the acoustic space. So we ended up reaching

Ren Klyce, left, setting up location Foley with assistant Eric Dachs. Below, a ball-fall.

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for different reverbs and sometimes layering reverbs on reverbs. We did that with the dialog, as well. We sort of did a first coat of lacquer, so to speak, in premixes, where we added a little bit of reverb, and then we'd do another pass where they'd add a little more. It was fairly difficult matching them at points." David Parker and Lora Hirschberg mixed dialog and effects, respectively, at Skywalker Sound.

Instead of recording only in stereo, Klyce decided to "go one more and record it in LCR with the Deva. So we used a KMR81 Neumann for the center and two Neumann KM140s for the L and the R, and we printed those discreetly, and it sounded great." Klyce also used the LCR approach for his own recordings of rainstorms: "Luckily, it rained a lot this year," he says with a chuckle. "It would start raining in the middle of the night, I'd have my tape recorder ready and I'd be like, 'Oh man, I don't want to get up.' But I would, and I got some good stuff. I cut a reel of rain myself pertaining to the different rooms in the house—the bedroom would sound like this, the bathroom like this...I spent a lot of time working on establishing rain tones and room tones."

And that, not surprisingly, became a complicated and time-consuming task. For the Panic Room itself, which has thick, virtually impenetrable walls, and is filled with surveillance monitors and other electronic equipment, Klyce combined more than two dozen different noises just to create an overall ambience. "It's got this low, rumbling sound, these oscillating sounds," he says. "I used samples of choir pieces that we slowed down to create this sort of *groan*. We've got television buzzes. Fincher wanted to have this feeling that when you're closer to the television monitors and the VCRs, you're hearing the whirring. You hear the buzzing of the fluorescent light; a whole lot of different subtle things.

"We created a Pro Tools session where any time you're in the Panic Room, these are the sounds that make up that ambience. We figured out a good blend and then took a snapshot of that in the console, and any time we premixed, Lora would recall the automation. Dachs made a floor

—CONTINUED ON PAGE 158

MEANWHILE, ON THE SCORING STAGE...

By Maureen Droney

For the *Panic Room* orchestra sessions at Sony Pictures' scoring stage, Paul Levy, owner of L.A.'s Advanced Audio, designed a Fibre Channel SAN (Storage Area Network) that allowed several different operations to be accomplished simultaneously. Most notably—in a scoring stage "first"—while engineer John Kurlander was recording Howard Shore's score, music editors Mark Willsher and Lisa Jaime were onsite cutting cues assembled from just-recorded elements of that score.

The 84-piece orchestra was recorded through three Prism ADA-8 converters to 24 channels of a 48-track Pro Tools system, while a second 24-channel Pro Tools rig provided pre-record playback. A simultaneous safety was also made by using a Euphonix FC-727 to convert the AES outputs of the recording Pro Tools system to MADI, which fed a Sony 3348-HR running in the background. All of the systems and the 3348 were synched to house wordclock, which, in turn, was referenced to house video sync.

"On most scoring dates, the orchestra is first recorded to a master machine," comments Levy, "whether it's a Sony 3348, multiple analog 24-track or a Pro Tools system. Once recording of a cue is completed, the program material is transferred to a workstation to assemble an edited master for overdubbing. In this case, the Fibre Channel SAN connected the separate record and editing systems to shared storage, so the editors were able to audition and assemble edits of a cue at the same time that subsequent cues were being recorded. With everyone online simultaneously, there was no time lost waiting for drives to be composited and transferred back to the record system."

"Because of the compressed time frame, where we had to record, edit and remix the score all in six work days," says Kurlander, "and because we often need extensive and sophisticated editing, this was a particularly efficient way for us to work. We could record a cue at the beginning of the session, then set the edit

—CONTINUED ON PAGE 158

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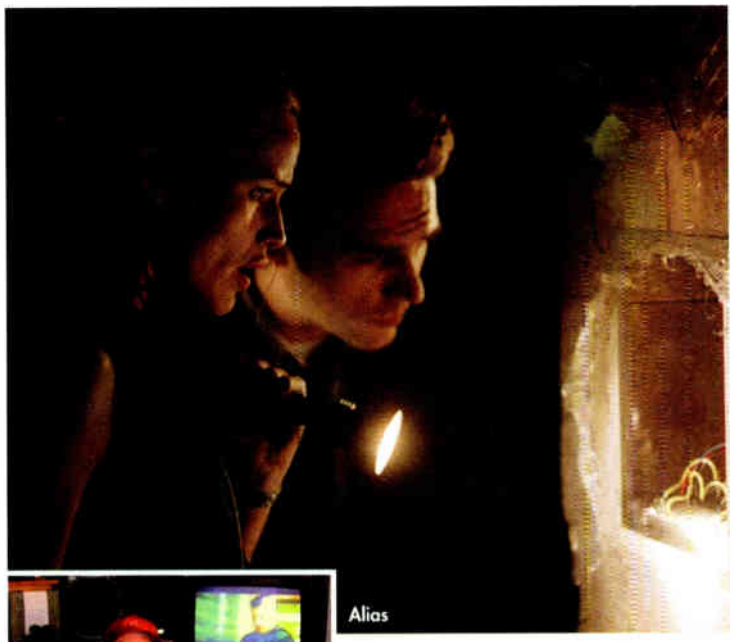
Small Screen, Big Music

TV Composers on Writing Under Pressure

by Gary Eskow



Alias

PHOTO: MICHAEL ANSELL/TOUCHSTONE

Michael Giacchino

No corner of the music industry calls for a blend of composing chops, speed and production skills more than episodic television. Often working with only a few days to score a half- or even a full-hour show that will be seen and heard by millions of viewers, today's most successful television composers operate under intense pressure. They must create something unique, they must develop signature themes, and they must add weekly variance. And it's usually not their only gig.

Mix recently spoke with three musicians who are turning in stellar tracks day in and day out. We wanted to know how they deal with the pressures—time-related and otherwise—that go with the job. What techniques help them turn out music that leaves them satisfied artistically and stays in bounds with the writers, producers and network executives they must also please? And what technologies help them in their creative endeavors? Our panel includes Rick Marvin (*Six Feet Under*), Michael Giacchino (*Alias*) and Danny Pelfrey (*Spin City*).

Longtime L.A. session ace/keyboardist Richard Marvin spent lots of time in the studio with Mike Post, starting with *Hill Street Blues* and progressing through a passel of hits, including *Hunter*, *A-Team*, *Magnum P.I.* and *LA Law*. He scored the recent film *U-571*, and now he writes weekly (Thomas Newman wrote the theme) for the new Emmy-winning dark comedy *Six Feet Under*.

Michael Giacchino's work scoring PlayStation video games ultimately brought him the plum assignment of *Alias*. Writing full orchestral scores and producing sessions first for *The Lost World* and then for several other DreamWorks Studios games, Giacchino's success prompted Steven Spielberg to recommend him to the Gorfaine Schwartz Agency, which helped him land the one-hour weekly series.

Writing from the heart hasn't hurt Danny Pelfrey. A dozen years ago, he penned a piano piece for his wife. The emotions that he tapped were picked up by the fans of *Felicity*, when the prime-time show's producers first used it as background music during its second season. They have been replaying it regularly ever since. Now known as "Felicity and Ben's Theme," this music can be found on Pelfrey's Website, www.dannypelfrey.com, under Piano and String Quartet (samples 11 and 14).

When the shows you score are in production, how much time do you have to compose and produce the music that's needed? How many minutes do you have to churn it out?

Rick Marvin: I generally have about a week to turn out a score. Compared with some other shows, *Six Feet Under* doesn't use a whole lot of music, generally about 10 minutes per episode. And remember, we only turn out 13 shows a season for HBO, not the 26 or so that the networks can ask for.

Michael Giacchino: I don't know exactly how much, but *Alias* uses a lot of music. Half of my work is loop-based, with lots of percussion, and the other half is live orchestral material. It's a nice balance. I get about three days to compose and produce the score.

Danny Pelfrey: *Spin City* is a half-hour comedy that will have a bunch of cues, maybe three to four minutes' worth per show. I find that I tend to take as much time as I have to score a show. If I have a week, I use it; if I have to turn something out in a day, I will. Initially, you're designing a sound palette for a show. Once I've got that done, the actual amount of minutes that's required isn't that critical.

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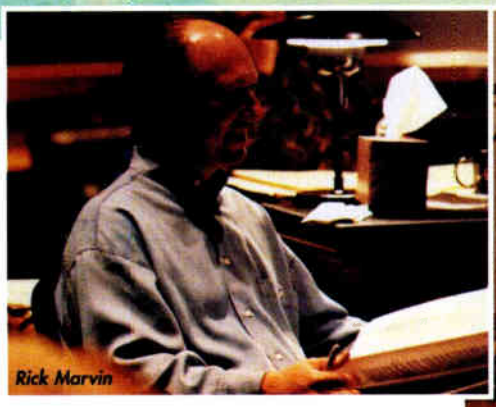
Rick Marvin


Six Feet Under

PHOTO: ART STREIBER/HBO

Do you have weekly spotting sessions with your producers?

Pelfrey: Not on *Spin City*. It's pretty obvious what kind of music is called for. However, I always spot the dramatic television shows—like the CBS show *That's Life* that I'm currently working on—especially the ones that are an hour long.

Giacchino: I have weekly spotting sessions with J.J. Abrams. He's the creator of the show and a fantastically talented guy. J.J. wrote *Regarding Henry* and *Armageddon*. He heard about me through one of the show's producers, someone who's a huge video fan. J.J. contacted me out of the blue. We met and became really good friends.

We're far enough into the season that the picture editor will generally temp a show with the previous episode's music, which is most often not quite right but it gives a sense of the mood. We usually go quickly through each scene, with J.J. giving me verbal descriptions of what he'd like the music to add. These sessions happen every Thursday, and I have until Sunday to create the score.

Marvin: We do spot the shows. I work with Alan Ball, the creator, producer and writer, and producer Alan Poul. These are fabulous guys who are a joy to work with.

The Number One thing that makes the show special is the fact that it's so well-written. It's a really good job for a composer, because they don't want anything that's obvious, and, in particular, they want me to make sure that the music doesn't sentimentalize the show. That frees me to come up with unexpected ideas.

We're now on the fifth show of the second season and have developed a vocabulary together. Alan and Alan will usually come to my studio, where all of the music is created, a day or two before the dub and hear the cues I've developed. If something doesn't work for them, we'll make alterations on the spot.

Who does your tracking and mixing? How much do you rely on automation?

Giacchino: Although I definitely don't consider myself an engineer, I often end up creating the stems myself. I have two Mackie D8Bs in my home studio, Edgewater Park Music, along with a pair of Mackie HDR 24 digital recorders.

I'll take one of the HDR 24s over to Stage M at Paramount Studios, or Capitol Records, to record the orchestra. Dan Wallin tracks all the live sessions for me. Then I bring that material—up to 24 tracks wide—and lay it out on one D8B. The second console handles all my synths and samplers.

Since time is so limited, I had Steve Smith, who occasionally mixes for me, set up my studio in a way that lets me get the best possible mixes. Steve mixed all the game stuff I did for DreamWorks in Seattle. Basically, he helped me set up automation templates on the D8Bs for both the orchestral and synth setups, and I rely on these templates a lot, tweaking as needed. I use the same channels and settings for all of my synths, all the time. I couldn't turn out the amount of music that's required without the automation of the D8Bs and Steve's initial setup work.

Marvin: I mix everything myself. I have a pair of [Yamaha] 02Rs, and I've created automation templates for *Six Feet Under* on both of them. I rely a lot on the dedicated GigaStudio computer that Craig Segal [Zipper Technologies, Tucson, Ariz.] built for me, and I've got templates for that as well. Eventually, I'll get to the point where I mix on software exclusively, but the technology is not quite to the point where I can trust it not to crash or

PHOTO: SCOTT HUMBERT/ABC


Spin City


Danny Pelfrey

World Radio History

cause latency problems. I'm now starting to mix within Digital Performer, though.

By the way, I scored *Brian's Song*, a TV movie, last fall, and I took my G4 over to Signet Sound to record 12 or 15 orchestral tracks against a stereo dump of synth material. I recorded this material through a MOTU 1296, which works flawlessly and sounds great. I also have a MOTU 828 FireWire box that I use with my Titanium PowerBook.

Pelfrey: My studio has three Panasonic DA-7s. These boards are made to gang together in pairs, so I use the third as a submixer. The DA-7s sound great, but the automation package is limited, so we don't use it at all. Instead, Greg Townly, my engineer, and I use Digital Performer's automation more than we otherwise might. Greg, who just finished working on *Black Hawk Down* with Hans Zimmer, is a great engineer. He likes to move faders!

I've worked with DP since its earliest possible version, [Version] 5 I think it was, and I use it as an instrument. I have a Kurzweil K2500 controller, and I input automation and panning information as I'm playing in parts, for the most part. Then I'll tweak on DP's software mixer, or with its graphic editor.

None of you has mentioned Pro Tools so far. What format do you use to deliver the stems you create?

Giacchino: I do own Pro Tools, and I take the stems from the HDR 24s and create Pro Tools files for the sound stage using it. My wish list includes Mackie coming up with software that lets me output my files directly from the HDR 24s in a format that Pro Tools can read.

Pelfrey: We record everything into Digital Performer. At the end of a session, we carefully label all of the sound bites created in DP and output them as SDII files. We give the editor a log that tells him the SMPTE start times of all of the cues, and he assembles Pro Tools sessions. The process works flawlessly.

Marvin: I do the same thing, tracking to DP and outputting SDII files. More and more, I see the entire process heading inside the computer. I used to have racks of synths and samplers. Now I'm using Native Instruments plug-ins, and I just got Reason, which is incredible. The whole idea of a modular studio that you sync up to your digital sequencer with ReWire is fantastic.

Everything we're doing on *Six Feet Under* is in stereo, not surround. Once in a while, I'll isolate elements from a cue to give the editor control over them in a mix, but not all the time. ■

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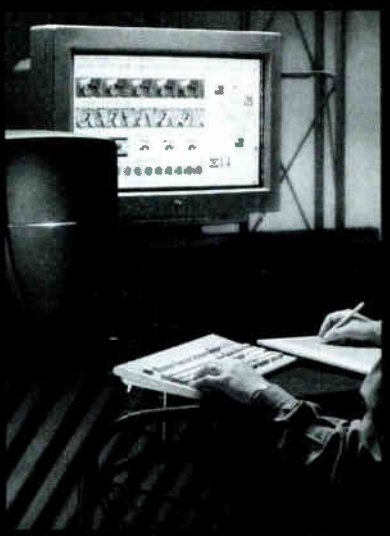

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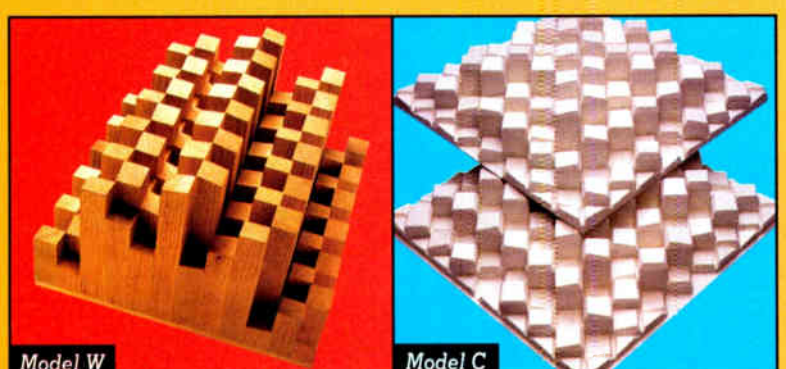

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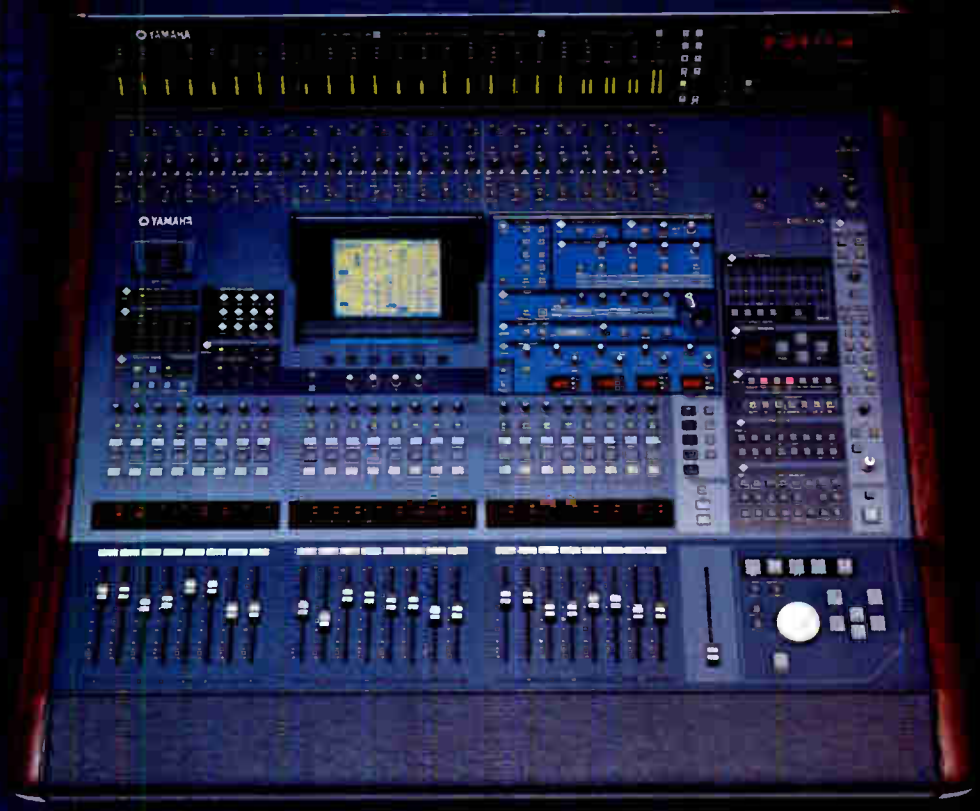

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Interactive Television

You Asked for It, You Got It

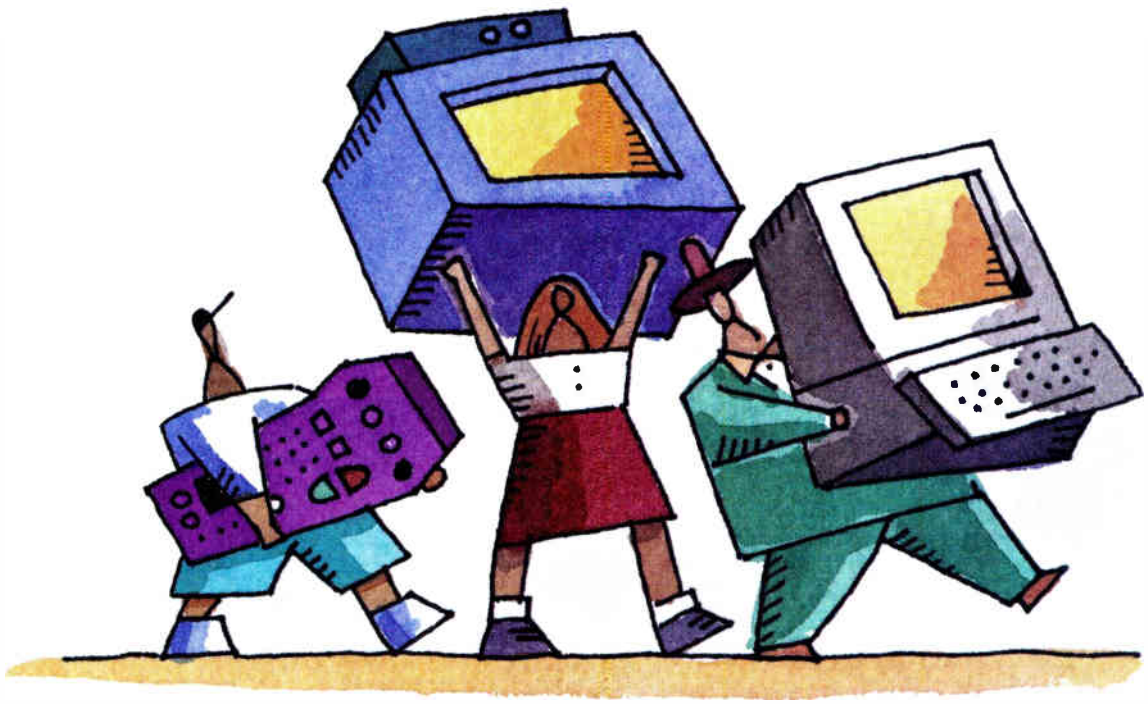

ILLUSTRATION: COURTESY PHOTODISC

If you listen to the hype, interactive television is already here. It is, after all, now possible for viewers to vote on alternate endings, participate vicariously in quiz shows, or link to the Web while watching the tube. What more could anyone want? I'll tell you what: everything.

by Gary S. Hall

What passes for interactive TV today is to the future of the medium as early bulletin boards were to the Internet. Lots of fun at the time, but, in retrospect, a mere intimation of things to come. The same thing is about to happen with interactive television and other advanced TV technologies. And, it's something that audio production people want to be aware of. Big time.

Consider this: Forrester Research says that interactive television will generate more than $20 billion in revenue by 2004, and that iTV will surpass the Internet as an advertising of change that will be sitting on the table.

DOCTOR, WHAT IS IT?

Interactive television is the end form of a continuum of technologies that we can call "enhanced TV." Enhanced TV is any form of programming that allows consumers to interact directly with content. All forms of enhanced TV today are made possible by the merging of TV video with Internet content and data. Already, more than 1,500 hours a week of enhanced TV programming is available in the United States.

One form of enhanced TV now becoming prevalent can be called "Internet TV," with access to the Web in concert with more-or-less conventional television fare. It's a good approach, but present services available from providers such as Microsoft still only hint at things to come.

Another step on the road to true interactive television viewing is Video on Demand (VOD), which we can also call "personal TV." This family of technologies gives consumers the power to watch what they want, when they want. The most effective forms of personal TV today combine an electronic program guide and searchable listings with digital video recorders such as Tivo or Replay TV. This arrangement lets consumers select programs for viewing by title, type of show or cast, and to watch a program with complete random-access control.

True iTV will combine all of these capabilities and extend them to their maximum potential, allowing user interaction with program content, dynamic wideband Internet in parallel, and complete user control of program and time of viewing.

Most of the technologies for full interactive TV are deployed today. What remains is to combine these effectively, with content being the key element. Programming for iTV is something that providers are just starting to come to grips

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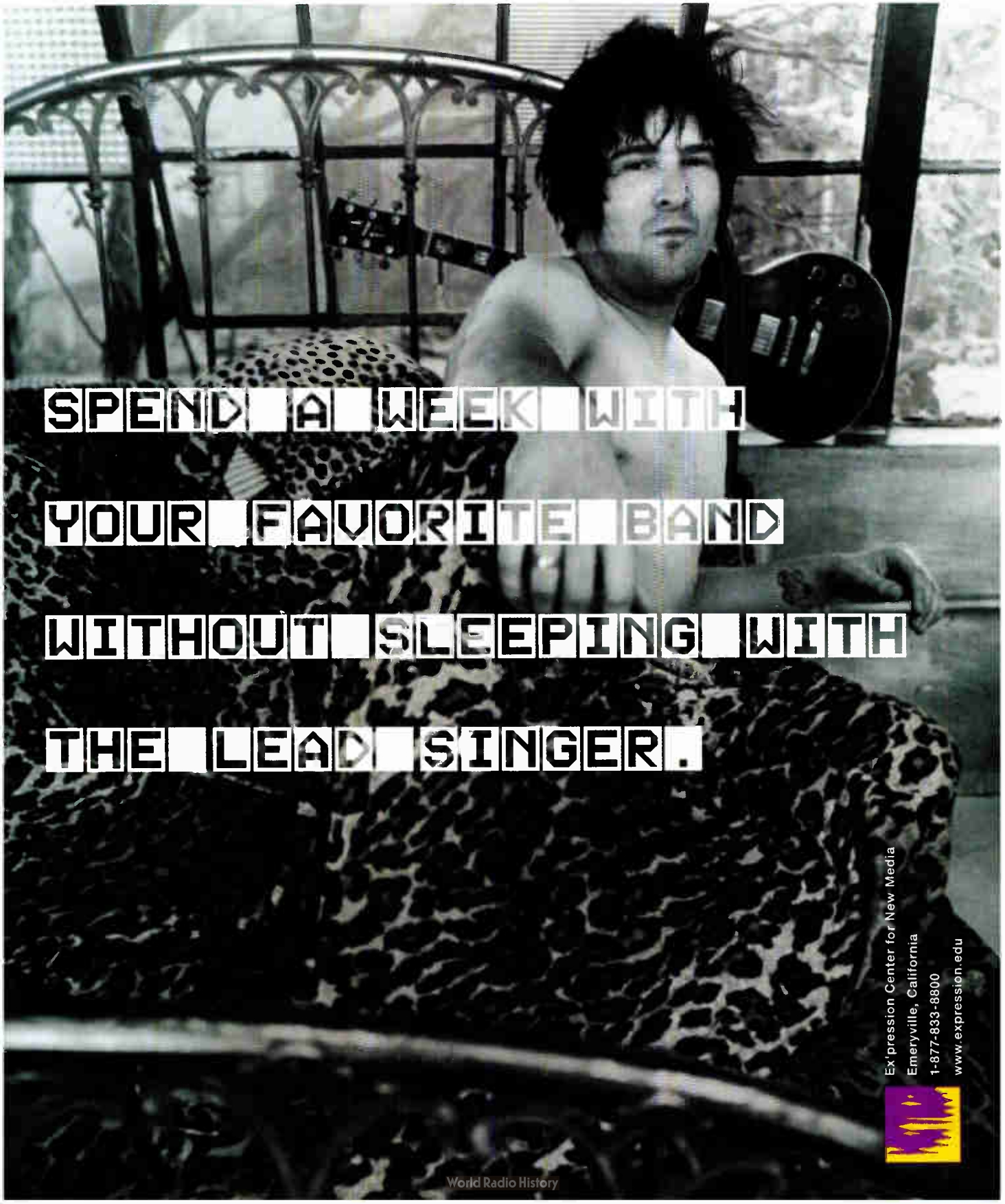

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with, and it's a whole different world from TV production today.

Traditional television programming will have to be amplified, not just with viewer voting and browseable cast biographies, but with extremely dynamic content such as multilanguage subtitles, audio commentary and so forth.

ITV TECHNOLOGIES

Interactive television combines traditional TV signal delivery with an Internet connection. This is not difficult in itself, but the means by which the two communication channels are coordinated is key. This has to be specified and defined in a way that both content developers and hardware designers can use.

In enhanced TV, a standard television signal, whether broadcast, cable or satellite, goes to a receiver that is linked to the Internet by a dial-up or other connection. Trigger signals are embedded or broadcast separately to link the program to a server coordinated with the program, allowing for any sort of value-add the program's producers or repurposers desire. Overlays and picture-in-window can be used to present online info, with input from the viewer by wireless remote or keyboard.

ATVEF

The Advanced Television Enhancement Forum (ATVEF) is an alliance of broadcast TV, cable, satellite, consumer electronics and computer companies set up for the purpose of creating HTML-based television products and services. To date, the work of ATVEF has resulted in an Enhanced Content Specification, with the goal of making it possible for developers to author content once and have it display properly on any compliant receiver over any transport. Information about the ATVEF standard can be found at www.atvef.com.

Content production for interactive TV following ATVEF specification consists of the following steps: produce a broadcast program, or secure an existing program to repurpose; create HTML pages to complement the broadcast and post these to a Web server; create the triggers that link the Web content and the TV broadcast; and broadcast those triggers to a compatible receiver.

MSN TV

In the States today, MSN TV (formerly WebTV) is the leading interactive television service. MSN TV serves both as a computerless Internet access and as an interactive amplification of ordinary TV viewing. MSN TV requires a dedicated set-top box that sells for $100 to $200, with a monthly access fee. Behind the set-top box, MSN TV's infrastructure consists of a Web browser designed to integrate with a television-viewing environment and the MSN TV service that delivers Web-integrated television content. Microsoft actively cultivates development of programming for the system, and full information on development can be found at http://developer.msntv.com/Default.asp.

MSN TV's set-top receiver is an ATVEF-compatible "thin client," meaning that its guts are a computer, but one with minimal resources—just enough to perform basic functions. When viewing MSN TV, most features are performed by the TV service and delivered to the receiver by proxy servers. MSN TV offers a range of both cable and satellite receivers, with connection to the Internet by phone line. An optional Ethernet connection allows for use of DSL and cable modem with interactive TV functionality.

The receiver incorporates a browser that has been adapted to work well on a television display. This enables the TV to display Web content such as standard HTML, JavaScript, MP3 files and other multimedia events.

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The TV browser differs from a PC-based browser in ways that required conscious adaptation of HTML for the environment. For instance, the browser does not run within a system of windows. For developers, this means that viewers cannot simply open a new browser window—there is only one window displayed at a time. Also, the receiver has to use a resolution of 544x372 pixels to match the viewable area on a TV screen. The browser does not scroll horizontally. When the browser encounters content wider than 544 pixels, the receiver has an intricate set of rules that allow it to adjust content. The receivers do not process Java or ActiveX® controls, or any other application that requires a plug-in or external application to function (like Adobe Acrobat .PDF files). The MSN TV service includes e-mail, an electronic program guide, interactive TV and special Internet content.

WEB LINKS OF INTEREST

Advanced Television Enhancement Forum www.atvef.com
MSN TV http://developer.msntv.com/Default.asp
The Interactive Television Dictionary www.itvdictionary.com
Digital Interactive Television Organization www.digitalinteractivetv.org
IBM White Paper www.hursley.ibm.com/misc/xw-itvintro.html
Advanced Television Forum www.atvforum.com
Broken Remote www.brokenremote.tv

AUDIO PRODUCTION FOR ITV

Interactive TV will be a gold mine of opportunities for audio professionals, but it's going to require some very different approaches. We can expect that auxiliary content for an iTV program will include alternate audio streams for alternate languages, commentaries, etc. In addition, parallel Web content will need its audio components. Production budgets may expand to some extent to address these needs, but the pressure will be on to do these things quickly, cheap and well. The standard production environment for sound for TV is likely to start looking like a field hospital in a combat theater.

Even more challenging will be production of live television events such as sports. Even today, the remote trucks that bring us these events operate at a high level of efficiency compared to "sedate" environments such as music recording. When every event involves multiple channels generated in real time, there will be a need for staff and facilities that can respond instantly.

The future looks extremely bright for interactive television, in all its myriad forms. Audio professionals who start to position themselves today can expect to have ample opportunities, along with major challenges, in this dynamic new field. ■

Gary Hall is an icon in the "loop music" movement, having created many of the core technologies of real-time audio sampling. He resides in Alameda, Calif., the densest enclave of loop music creators on the planet.

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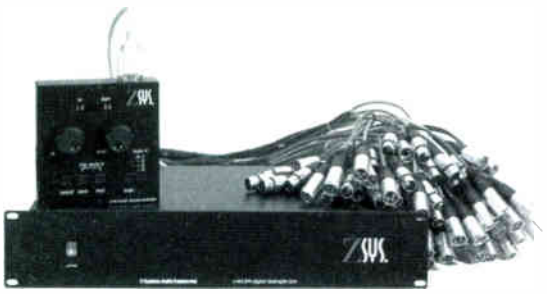

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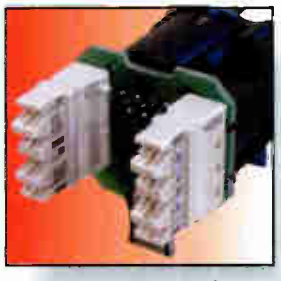

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Composer Glover Gill

It Takes One To Tango in "Waking Life"

By Sarah Benzuly

Glover Gill doesn't use Sonic Foundry's Acid or Coda Music Technology's Finale when he sits down (or stands, as sometimes is the case) to compose; in fact, he doesn't even own a computer. Instead, he sits at one of his two Steinway grand pianos and uses *lots* of paper and pencils, a ruler, a French curve, and compositions strewn about. Gill is strictly a nuts-and-bolts man, a self-proclaimed computer-phobe, but there is a method to this madness.

Gill recently scored Richard Linklater's highly acclaimed *Waking Life*, an arty animated film that attempts to clarify the blurred line between humanity's dreams and reality. Gill met Linklater a few years ago when the director was working on *The Newton Boys*, for which Gill wrote a mere 20-second piece. Intrigued by the tango/salsa style of many of Gill's compositions, Linklater started "lurking around my local gigs [in Austin, Texas]," Gill says. "He introduced himself again and said he thought he'd like to use my music for his upcoming film [*Waking Life*]. So I said, 'Sure, whatever dude.'"

And that's how you got involved with the movie?

Yeah. And then it just started to happen. It was the kind of situation where I couldn't say no, because I liked the idea and I liked all the people. I saw bits of the film before they got to the animated parts. So, when [Linklater] approached me, he was so nice, I liked the idea.

What was it that you liked?

It was intangible at that point. I don't know—I just liked it. He was shooting from the hip. The script of the film only covers about 60 or 70 percent of the dialog, and the rest is improvised. Of course, he coached everybody, but there are many scenes that are completely improvised. Our rehearsal scene was actually a real rehearsal. That was intriguing. The whole concept was impossible to turn down.

So he approached you with a script. Were you writing directly to the script?

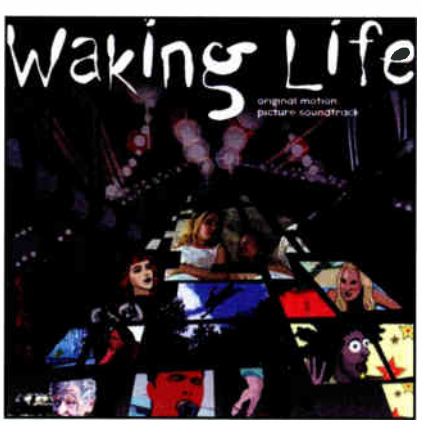
No. That film was filmed so quickly, because it was all done with digital handheld cameras—no lights, virtually no lights. Absolutely no makeup. So, what would normally take a full day to shoot took him 30 minutes. He had that film completely shot probably a year-and-a-half ago. Then, it took a year for the animators to animate it. So I had all the images ready. In a typical film-composer's world, you've got a completed film, and you've got a month, or less, to come up with the music and get it recorded and get it plugged in. Well, I had a year, so it made life a lot easier. There was no stress involved, no giant deadlines. There were some small deadlines, which are nice.

PHOTO: ANDREW YATES

***Glover Gill, composer for Richard Linklater's* Waking Life**

I assume that Richard was involved in deciding what themes you were going to tackle?

He was involved, and Sandra [Adair], the film editor, was also involved. The three of us sat down and watched the film a few times and discussed options. And, fortunately, we were able to plug in some pre-existing music from my CDs, although



they had to be manipulated or edited, or occasionally he re-recorded some things. Then, looking at cue sheets, we just started filling in the holes. There were a few places where we needed some short segments, and I rearranged a couple of pieces. They're mixed way down in the film, and they don't appear on the soundtrack [on the Nonesuch label], because they're just little snippets, but they are themes from some of the recurring songs, but they're reduced for string quartet, and the harmony is bastardized to make it creepier and more dissonant. We recorded those in my brother's [Allan Gill] home studio [also in Austin]. His home is actually a church. It's a beautiful-sounding room, and he's got great gear over there, and we didn't need a piano.

So we used his studio for those sequences, and my string quartet, which is the core of the Tango Tosca orchestra.

You also work out of your own home, correct?

As far as recording in my home studio, Austin has some wonderful recording studios with really good rooms and good equipment, but there's not a good piano anywhere.

You must have really high requirements for a good piano.

Yeah, I just want a piano that sounds good, or that the engineer can make sound good

—CONTINUED ON PAGE 114

World Radio History

Facility Spotlight

Goldcrest Post Expands New York Facility

By Dan Daley

P. Diddy is up on the Avid screen in one of the 11 video-editing suites at Goldcrest Post Production's facility on the far-west fringes of Manhattan's West Village. The video, which made FedEx either very happy or very nervous, is everything you'd expect to be going down at a hip post house in New York these days: Urban music videos, indie film work and the occasional commercial, as the city's advertising business continues to rebound from a lousy economy and September 11.

But Goldcrest isn't your typical New York post house. The principals of Goldcrest Films International, SoHo and London came to town two years ago with a feature-film pedigree that most non-Hollywood post facilities would die for (*Local Hero*, *Chariots of Fire*, *Gandhi*, *The Killing Fields*, *All Dogs Go to Heaven* and *A Room With a View*, among many others). The company's owner, John Quested, led a management buyout in 1987, and is the sort of English film producer long missing from the business: quirky, serious and relevant. His son attended film school in Manhattan and is on the cusp of a career in music video and feature film, as well. So neither Hollywood nor Pinewood, but hardwood Manhattan floors and beams are what Goldcrest's

—CONTINUED ON PAGE 116

Theatre 2, based around Pro Tools 5.1 with Genelec surround system and stereo near-field monitors

Facility Spotlight

Spank! Adds West Coast Design

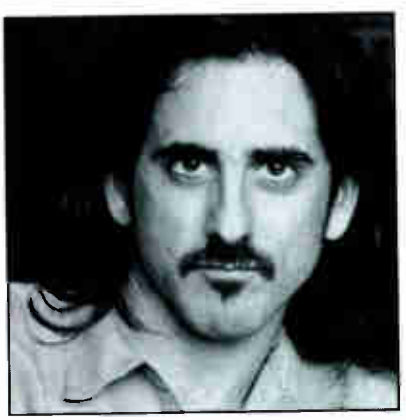
By David John Farinella

Remember the old saw, "Jack-of-all-trades, master of none?" Well, one spin through the reels of sound designer Tim Gedemer and composer Sophia Morizet proves the adage wrong.

Sophia Morizet

Indeed, the twosome—who work out of the Spank! Music and Sound Design studios in Santa Monica—can claim a credit sheet as varied as feature films, commercial spots and music videos, in a bevy of aural genres.

Morizet, who moved to Los Angeles from her native France in 1996, enjoys the diversity. "The purpose is always to prove yourself, trying to see where you can go and what you can do," she says. "It's putting yourself in danger—you can't always write the same thing. You have your own recipes, so you're going to pick up this kind of loop instead of this one. But, when the medium is different, it's fantastic. What I like is that I've been able to push the edge technically and musically and play with both worlds. [For films], you want it to be



Tim Gedemer

cinemagraphic. When you work for commercials, you have to have something that's extremely dynamic."

Both Morizet and Gedemer came to the post world after dipping their hands in the music waters. Gedemer worked

—CONTINUED ON PAGE 118

World Radio History

The Art of Data Management and Archiving

Part 2, When and Where to Back Up

ILLUSTRATION: ELIZABETH HEALEY

By Larry Blake

I was talking with a good friend the other day, catching up with what he's been working on. On two recent films, he had what could be classified as "serious data-archiving problems."

The first film was finished almost a half-year ago, vaulted and shipped. Then the director wanted to come back and make changes just prior to the film's release. It turns out that, after the original mix, the studio did not want to pay for data backups of the hard drives. Instead, they transferred the stems and printmasters to 35mm Dolby SR-encoded mag film, and then the drives were wiped. They had to re-transfer everything back to hard drives so that they could be conformed for the mix.

On the second film, during the mix he not only suffered drive crashes on two reels, but also, in both instances, found out that the backup on the server at the mix stage was no good.

All of the above could have been prevented, of course. In the first instance, the studio should have realized that the mix was on the hard drives, and should have preserved the data at all costs. (Or should I say, at much less cost: this story reaffirms the old adage that nobody has the money to do things properly the first time, but they always find a way to do it again.) In the second example, the mix studio should have had better "drive and backup hygiene."

This column is the second of a three-part series about the trials and tribulations that we're going through in these early days of recording master film mixes on hard drives. Last month, I focused on the importance of a consistent naming scheme for files. This time around, I'm going to talk about the way one can pre-

GLOSSARY

"PLUS TWO"

Two tracks that are needed, in addition to the M&E itself, to create foreign-language mixes. Material on the first track is variously called "optional," "alternate" or "controversy," because it may or may not be needed for a dub. It often includes grunts and lip smacks from actors, background police radio calls, TV programs, etc. Because some of these materials are in stereo in the original mix, it is often desirable to have a 3- (LCR) or even 6-track stereo optional "track."

The second track of the "plus two" is the English dialog guide. This is both used by the actors during voice dubbing and at the mix, as a reference to how the original dialog sounded. In most of Europe, though, mixes are done against a composite film print, and the comparison is done against the print's Dolby Digital track, especially when the mixer is comparing your M&E's room tone and background noise level against your printmaster. They will use the dialog guide for reference, especially when you've provided a stereo dialog stem with the idea that they match specific reverbs and panning.

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dict data and archiving needs from the beginning of post-production, much as a good driver keeps his eyes 50 feet ahead and not just on the brake lights in front.

BACKUP

The first set of data backups that I make covers everything that we cut in post-production. While this is my lifeline in case anything happens while we're editing, the most important backups are those that contain data from the final mix and beyond. These are the materials that will forever represent all of your hard work.

Because each supervising sound editor and lead re-recording mixer has his or her own style of organizing and laying out their shows, it's important that others be able to have an overview of master mix elements. These days, I make a spreadsheet grid that details what is contained on each drive, including the bit depth, sample rate and track layout of each. Finally, the all-important "comments" field describes in clear English what the other cold facts don't indicate. If you're sending drives to various departments over a period of time, then it might help if the chart also indicates to whom they were delivered.

You should e-mail this file to everyone associated with your film: post-production supervisor, re-recording mixers and post sound company (on the production side), with additional copies going to the archive, home video mastering, post-production and sound departments on the studio side.

Once the final mix is locked, in the course of the next week or so all of the "deliverables" are created in a flurry of activity. Undoubtedly, the delivery requirements of the studio will focus on what media you need to copy your drive to—such as 35mm mag film, DTRS or 2-inch—as opposed to how the data itself should be backed up. Which means that you (I'm assuming that I'm talking to supervising sound editors here) are pretty much on your own as to how to go about the backups. If you do nothing and leave it to the studio, you will probably regret it, as my friend recently did.

This story reaffirms the old adage that nobody has the money to do things properly the first time, but they always find a way to do it again.

As I emphasized last month, one of your most important tasks is to name the files. *If you don't do so, then the audio files are completely dependent upon the drive and/or session name to be found.* You would not be able to grab, say, all of the stem files and copy them to another drive. Furthermore, if someone wants to play the session back "in the dark," as on a digital dubber that doesn't display waveforms, they can never be really sure of how the tracks are being outputted if they can't scroll through the track names. (On a workstation, you can see modulations.)

So, as soon as the files for any given element come off the hard disk recorder, they should go to the assistant editor, who will open everything up in a workstation and name the files. In addition, the tracks should be "popped," and any digital noise on the tracks should be removed.

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AND BACKUP...

At this point, you have two choices: You can back them up to your in-house tape backup format, or you can copy everything over to a couple of FireWire drives, which, as of this writing, are by far the best deal for the money here in early 2002. The good news is that these two approaches are not mutually exclusive, and there's nothing stopping you, short of a pinheaded post-production supervisor, from doing both.

The math regarding data storage for the average situation is pretty clear. My calculations include 32 tracks of stems, a standard complement of printmasters (6-track, SR 2-track, non-SR 2-track) and M&Es (6-track and the "plus-two": the dialog guide and the optional material), plus mono and 2-track stereo fold-downs of the stems for ad/publicity purposes.

At a rate of 1 Gigabyte per two-hour, 24-bit/48kHz track, we're talking in the order of 60 gigs for these primary sound elements. In terms of tape backups, whatever flavor of whatever device (AIT and DLT being by far the most popular) you use, you'd be hard pressed to spend more than $150 for a set of tapes. And, as S.R. Hadden said in *Contact*, referring to the space station, why build one when you can have two at the same price?

So, two sets of tapes and two FireWire drives will set the film back no more than $1,000. I recommend that you put the drive and one set of tapes in box 1 of your sound inventory, and keep the other set yourself.

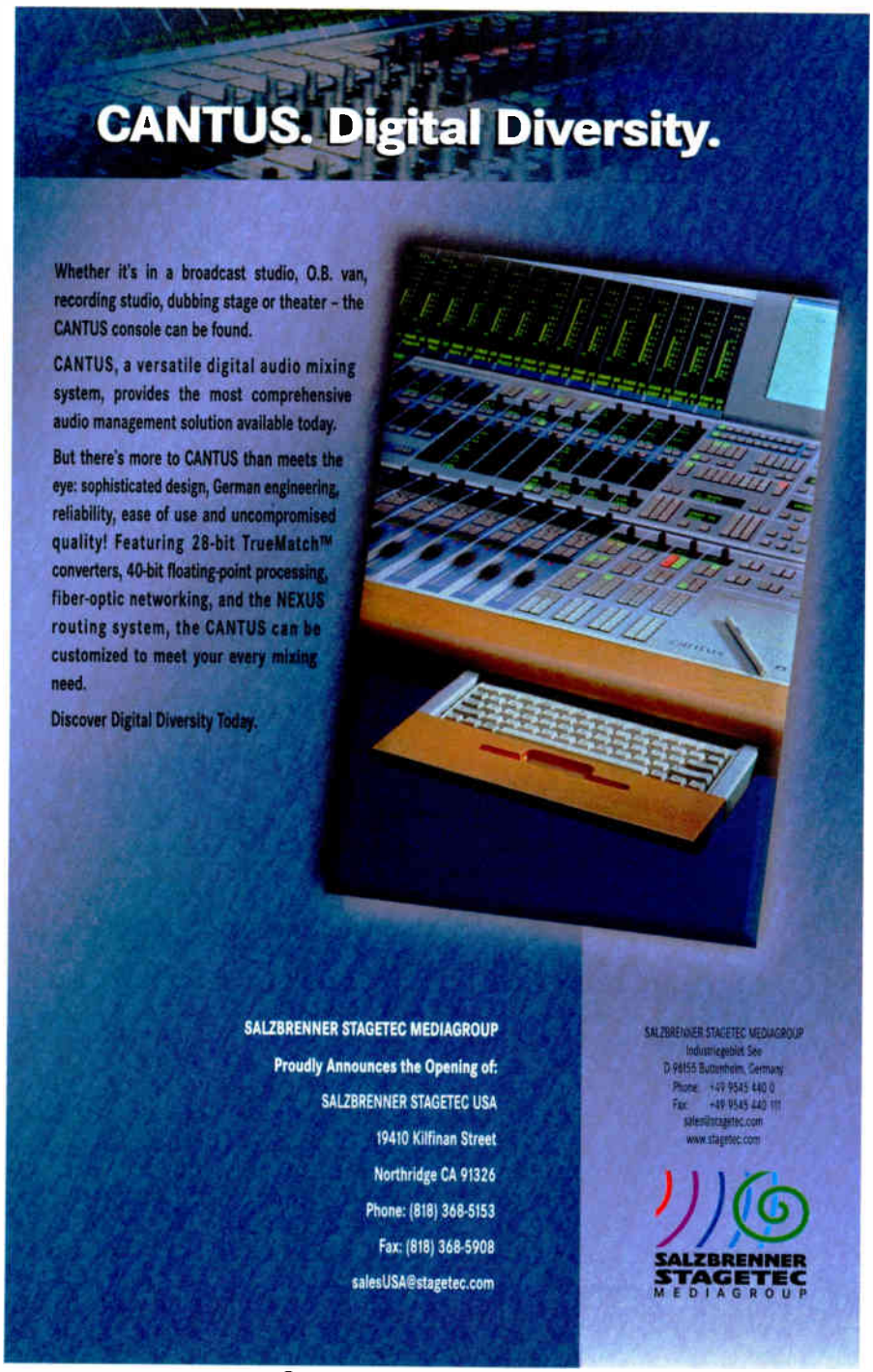
This approach automatically raises the obvious that the drive is no good without a proper driver, and the tape is useless without the proper backup software. For this year's soundtracks to be able to be played many years from now, you need to keep track of all software versions (both of the backup application and the operating system). My advice is to change your backup software as infrequently as possible, without robbing yourself of necessary features. I haven't changed in over four years, and will change both software and hardware at the same time this year, *after* my next big film.

(To those of you who use this very software/hardware issue as argument against regarding digital backups with any degree of seriousness, please tune in next month.)

The 60-gigabyte figure given above is for standard movies, although it's much easier to double this number if you make multiple printmasters. For example, on *Ocean's Eleven* we did all of our editing and final mixing at the 47.952Hz "pulled-down" sample rate, with the master mix in the 7.1 SDDS format, for which we made a 7.1 16-bit/44.056kHz printmaster. On top of this, initially we provided Warner Bros. with digital mixes from the 24/47.952 stems for the 5.1 and 7.1 digital cinema formats. (We were lucky enough to get 19 theaters showing our film digitally, the all-time record as of this writing.) However, we later had to redo them at the 48.000kHz rate, via DA/AD conversion (for shame!) because it was a royal pain to sample rate convert. Just these three printmasters added over 20 gigs to our total. And it didn't stop there.

The 7.1 mix added not only another set of printmasters, but another M&E and an "M&E effects sweetener stem," an element that is standard at Warner Bros. but was new to me. I have always recorded as a separate sweetener stem the material that I have added—primarily comprising the carved-up dialog stem, room tone airs, additional cut effects and Foley cloth—to the music and effects stems during the M&E mix. This technique (not originated by me, it should be noted) allows you to easily make future M&Es, such as when stems are re-conformed for alternate versions.

The Warner Bros. approach (and I'm



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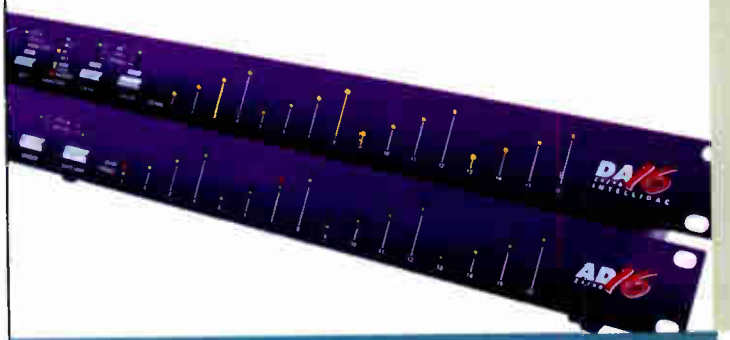

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not claiming that this was *their* invention, either) takes this a step further and records the sweetener elements along with the effects stem. This procedure has benefits during the making of M&Es, when, as frequently happens, one has to raise the level of the backgrounds to compensate for the air that goes away with the original production track. In my previous scenario, I would have to re-create these fader moves on the effects stem years later. Now, with the material recorded into the new Effects Sweetener Stem, you have those moves built in. In the end, I also recorded my sweetener-only stem as normal (just because), in addition to both 7.1 and 5.1 BG sweetener stems. I say "BG Sweetener" because I usually record separate hard effects and BG stems these days. So, let's add another 18 gigs of storage.

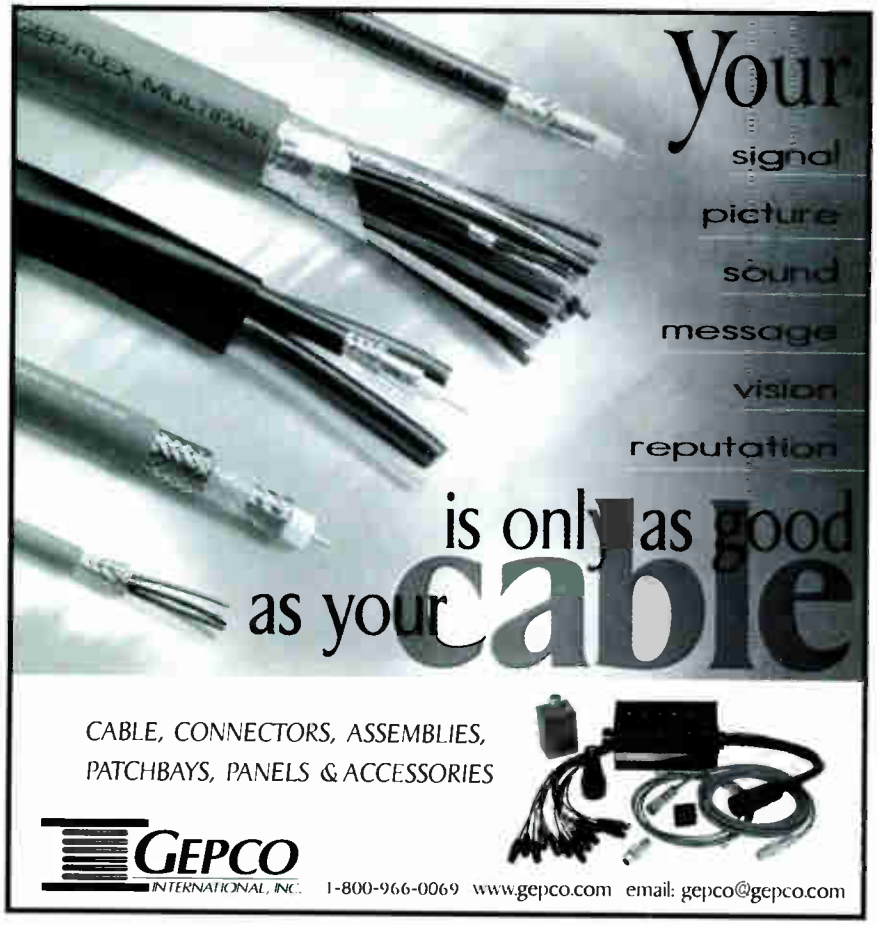
AND BACKUP AGAIN...

In addition to the "units" backup set that covers edit material and all of the final delivery items outlined, there are a few other backups that merit a look. First up is the "temps," which are the recorded stems and printmasters for all temp dubs during the editing period and for screening printmasters during the mix. I separate these tracks out because their need is very contained and ephemeral—the printmasters for the screening tomorrow, and the stems to be conformed for the next preview. But they are *very* crucial during their half-life, and I've actually had need to weed through them, months after a movie is gone, for the resurrection of deleted scenes on DVD.

The second additional backup set that I make is of all music materials. This includes not only the original music recordings, but also the 2-track mix delivered by the composer (nominally for the CD) and the music stem itself. Again, I've often had to go back and repurpose music for CDs and DVDs, and the original tracks and mixes should always be easily accessible.

I've spent two months outlining the data archiving and management issues facing the world of film sound in this transitional era. Next month, I'm going to give my simple solution to this problem. I can be reached at PO Box 24609, New Orleans, LA 70184, or via e-mail: swelltone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them would have to be that he has plenty of room in his big old house for storing extra DLT backups of his mixes.



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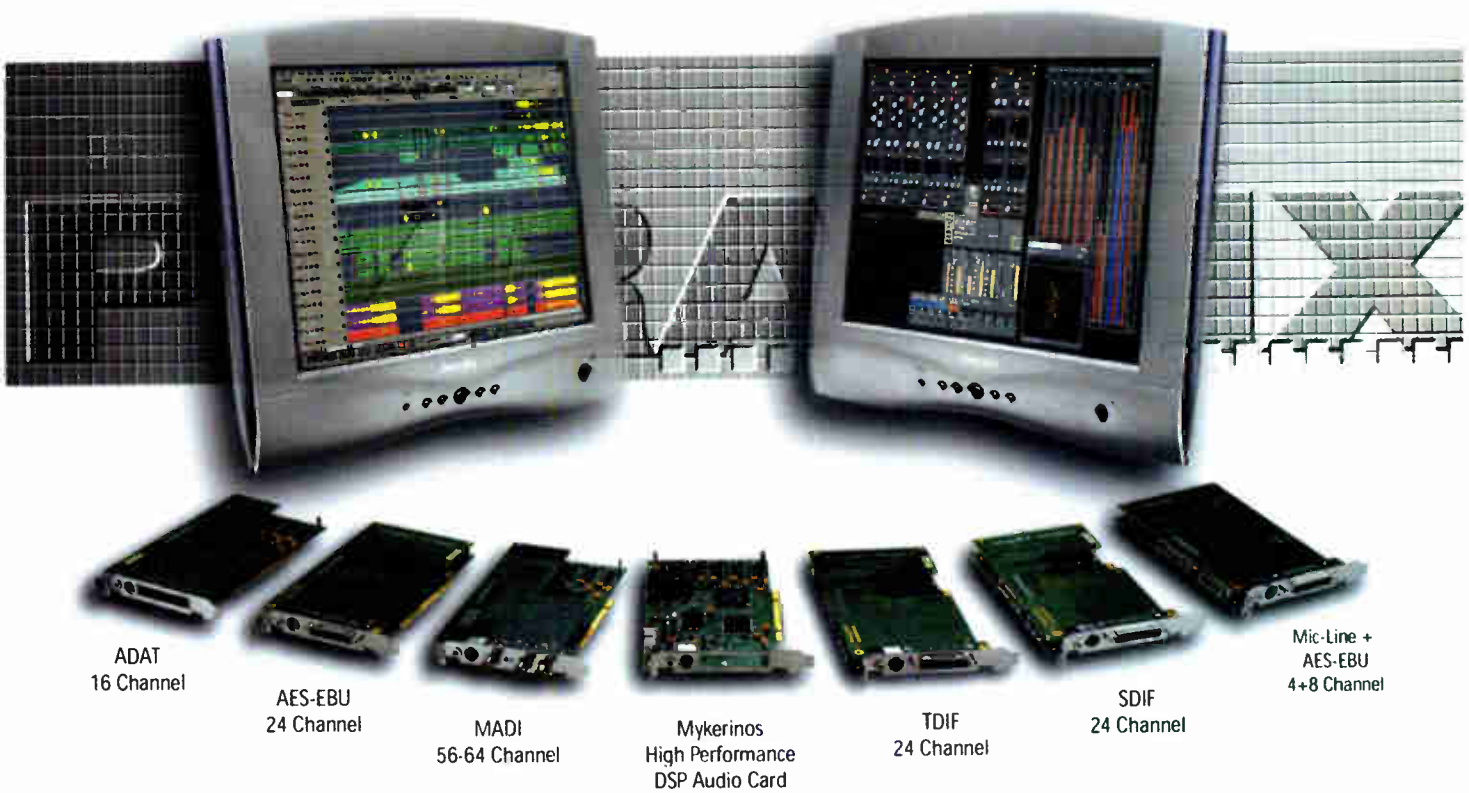

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Glover Gill

FROM PAGE 104

on tape. And they just don't exist here. So, I happen to have two very fine antique Steinway grands in my living room [a 1907 Model O and a 1925 Model M]. One of them has been rebuilt, and it's just a really beautiful piano. But my living room is only about 500 square feet, and we have eight people in the orchestra. So, it's kind of tough recording here. The scene [in *Waking Life*] in which the group is rehearsing—that's my living room. And that night, we had eight musicians, three cameramen, the star of the film, and about five interns and a couple of boom operators, all in my living room. It was a little tight. One of the cameramen was actually outside, filming through my front windows.

My brother has very nice microphones. As far as recording equipment, I just go to a local joint and rent the stuff he tells me to rent. And then he comes in with his assistant and hooks it up. And there's cables everywhere and 15 microphones. It drives my wife crazy. You just can't get around, because there's cables taped to the floor everywhere. We record at night, because if we record by day, there's a lot of car traffic—these microphones are very sensitive. I live about a mile from railroad tracks, so if a train comes and it's a good recording, well then the train's on the recording. And if it's summertime, it gets pretty hot here. We have to turn the air conditioning off while recording, and it gets very hot. In between takes, we turn it back on. It's not a real recording studio, but this is where the nice piano is.

Are you involved in placing the mics on the instruments?

That's more my brother's deal. Although, once we get something started and we listen to playback, I do make suggestions about, "Do you think this microphone might be better off in a different place? Or farther or closer to a certain instrument." And we also use several ambient mics in the other room—in the kitchen—to catch ambient sound from the floor. Of course, we're recording everything live; there's no overdubbing. If one person goofs up, then the whole thing is washed, because we don't have separation. But I like that. I like the old-fashioned way. It's a warmer, more living sound.

What was the relationship like between you and Richard?

Our relationship was very easygoing. But he does have opinions, and he's always right. However, whenever Tom [Hammond, sound designer] and I would get together to talk world domination behind Rick's back, and he came in to check our work, he usually agreed with us. Occasionally he didn't, and there was no problem with that, because I always had other options available.

Were you part of the mixing process?

Yes. My brother and I would do that here, on the rented gear, and then I would take all the stuff over to the mastering studio [Terra Nova], where they do the post-post-production. The engineer's name is Jerry Tubb—I've been working with him for several years. Whatever medium I have recorded onto, whether it's tape, disk or anything, he loads that into his big computer. Then we just take everything apart and clean everything up. Then, Tom also has similar capabilities on his computer. He's got pretty much the same gear, so he would do the same things when we would be plugging it into the film.

Were you involved with the final mix with Richard—seeing how your music, at least the pieces that you had to come up with, flowed together with the picture?

Tom and I worked very long and hard on that kind of thing. Of course, you don't want to step on any of the dialog. I was very careful about that: "Tom, don't you think we should bring that music down there, because there's a lot of dialog and it's getting too busy and we're not going to hear the dialog?"

What's next for you?

I have been toying with the idea of composing an entire requiem mass, consisting of six or seven of these pieces, in Latin. I'm not a big Christian or anything; I just love choral music. So, I hope to do a full requiem and get it recorded, someday. That's in the back of my mind.

I'm doing a little bit of playing with my new tango orchestra, which is this little quartet for piano, bass, clarinet and I'm the accordionist. I'm transcribing and arranging these old, old tangos for this group. And I'm also composing some in that style.

I'm also trying to learn a new instrument, a bandoleon, which is an accordion-like instrument, which is used in old tango. At the age of 43, I must be out of my mind. I'm also practicing piano in preparation for this concert in February, and I'm doing a lot of transcribing, and I'm writing. I don't have any big projects in the future. I don't want to become a full-time film scorer when I grow up, but this was a very good experience, and if the right project came along, I certainly would take it. ■

Sarah Benzuly is associate editor of Mix.

World Radio History

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Goldcrest

FROM PAGE 105

technology infrastructure is built upon.

Goldcrest recently updated that infrastructure by putting the finishing touches on a major audio expansion in Manhattan, including a new film mixing theater equipped with a 48-input Harrison Series 12 console, a pair of new Digidesign Version 5.1 Pro Tools suites and a dedicated Foley room. A single Pro Tools suite had served as its main audio department since the facility opened in 1999.

One of 11 AVID video editing suites

CHANGING ECONOMICS

Goldcrest is expanding at a time when both the U.S. and global post-production industries are undergoing tremendous consolidation, no better illustrated than by the emergence of Liberty Livewire as a post colossus in the wake of a two-year-long facility acquisition spree. In New York, Liberty acquired the Sound One and Todd-AO facilities, as well as the Planet 10 Post editorial house.

"The Sound One/Todd-AO culture is significantly different from that of Goldcrest," observes Jeremy Scott, facility director in New York. "They're a very complex organization, with a large staff, and they're part of an even larger publicly held company, which has shareholders to answer to as well as clients. Goldcrest is a simpler operation, yet we've structured it so that we can service both feature film work and video and broadcast post." Recent Goldcrest projects in New York include 52 episodes of the Disney Channel's *The Book of Pooh*; commercials for Sprite, Prudential and Bell South; and music videos for Destiny's Child, Dido, Sean "Puffy" Combs and Brandy.

Perhaps the biggest difference in business philosophies is that Goldcrest has very few on the regular payroll—primarily operations and maintenance personnel. The rest—the editors and engineers—are freelancers, many of whom bring their own clients to the facility. That, says Scott, has kept the operation leaner and better able to weather the periodic bumps in the post business. It's a model that has also worked well at Goldcrest's London studios, where the Livewire touch has also been felt.

"Liberty had started taking over companies in London, such as TVI and MPC, but we didn't really feel the heat from that," Scott says. "When you get that big, you become cumbersome, and that can lead to the customer getting less attention. You also get higher employee turnover. On the other hand, we, and our clients, like the energy that the freelance situation brings. When you have a large variety of clients in here, and offbeat ones like Steve Buscemi coming in to do ADR, it's nice to have an equally eclectic array of engineers to choose from."

A corollary to Goldcrest's approach to human resources is its emphasis on not carrying facility or equipment lease payments. The company bought its building outright, as well as the Avid editing systems and other gear. The total investment in the physical and technological infrastructure, including a 52-seat, state-of-the-art screening theater, is estimated at around $20 million. Another round of investment is looming, as the studio finishes off the new audio expansions. "The business model has always been to pay cash as we go along," says Scott.

The audio expansion was inevitable, and it was needed to match the initial large investment in video editing. Since opening, Scott estimates, Goldcrest in New York was buying nearly an Avid a month. "All that was generating an increased need for music, dialog, sound effects and mixing," he says. Independent contractors have been coming in with their own equipment, mostly Digidesign Pro Tools systems, and two dedicated Pro Tools 5.1 suites are being added, with more under consideration. They will augment the new mixing theater, which was designed by Jim Mayor.

Until this point, the closest that Goldcrest has come to a regular audio presence on-site is Joe Deihl, a veteran of the New York post community since 1980, with a very eclectic curriculum vitae in film, commercials, corporate audio, music video, broadcast, music engineering and sound design. Deihl is an independent contractor but is ensconced daily in Goldcrest's lower-level audio studio, where he does ADR and music recording

The 52-seat screening room, which accommodates all film and video formats

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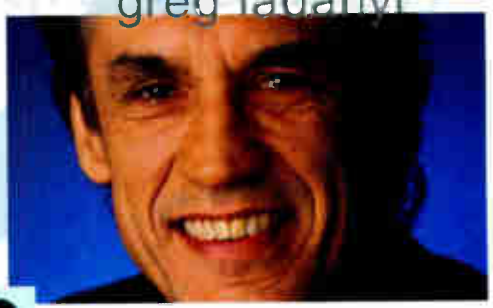

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Deihl is a good match for Goldcrest's approach. He revels in the notion of a jack-of-all-trades. "I read in *Mix* how the Hollywood style is to have four guys on the mix, one for each audio element," he says. "In New York, one guy does it all much of the time." Deihl brings in his own clients to the facility, but says he gets an almost equal amount of work from the studio, particularly ADR projects. Deihl and Scott contend that technology, specifically server-based distribution systems, will allow for this higher level of productivity with fewer people. An Avid Unity server is already in place in the facility's central machine room, and the new audio rooms will be hooked into that, as Deihl's already is.

"I think with a system like that, we can be a hybrid of Hollywood and New York, only faster and more efficient," he says. (Earlier that day, Deihl had created the sound effects of P. Diddy's FedEx plane that was whooshing across the Avid screen upstairs.) "Post-production has been under pressure in New York for a while now, for a variety of reasons. And this lean way of approaching it is a very good response as the economics of the business change."

And that's why Goldcrest is in New York in the first place, says Scott. "The economics are changing, varying every day. One moment, video is down but film is strong, and then that's reversed. New York has been doing more independent film work in recent years, and that's part of Goldcrest's heritage. I further think that New York is going to be seeing significantly more major feature film work. People have been scared off a bit by the economy and recent events. But people still talk about expanding the city's film infrastructure, such as the facilities being planned at the old Brooklyn Navy Yard. Also, there are no real rate standards in New York—a lot of projects are negotiated on an individual basis. That's why being lean and able to keep the overhead low and put the investment into equipment is important. It gives you the ability to react more quickly as things change. And that's been the way we've been working all along." ■

Dan Daley is Mix's East Coast editor.

Spank!

FROM PAGE 105

with a couple of rock bands in Los Angeles after graduating from college; Morizet started programming rhythms and synthesizers for a number of artists in France. "Most of the people that I know who do what I do are coming from music," Gedemer says. "For whatever reason, we weren't successful in the music business to the degree that we could make a decent living at it, so a lot of us turned our attention to doing sound for film. The process is very similar to composing—we look at a picture, we map out an idea or some kind of concept or feeling that we want to impart to the audience, and we bring that vision to life."

Because Gedemer was familiar with the Synclavier, he broke in to the film world on the Roger Corman film *Frankenstein Unbound* in 1990. "I was an assistant editor that was called on to do a lot more than what assistants normally do," he explains. His feature film credit sheet has expanded to include such films as *Menace II Society, The Mask, Dumb & Dumber, Dead Presidents* and the 2001 release *From Hell*. Along the way, he performed sound design work in a handful of specialty venues, which paved the way for his eventual expansion into commercials in 1998.

A still from the Eclipse gum commercial for which Sophio Morizet composed the music.

"Commercials are just very different," Gedemer states. "You have to say what you're going to say a lot faster than in film. Also, the expectations of the ad companies are quite different." Gedemer began taking a more active interest in the commercial field as the spots were getting more sophisticated and required higher levels of creativity. He also expanded into music videos recently and has designed sound on videos for U2 ("Elevation"), Janet Jackson ("Doesn't Really Matter"), Backstreet Boys ("Larger Than Life") and Wu Tang Clan ("Gravel Pit").

The Synclavier has been his main sound design tool, yet for the film *From Hell*, Gedemer had to think in broader terms. "We met with the directors and they said, 'We really want this movie to sound like it was back in that time.' That seems to be obvious: 'Hey, it's set in 1890, we gotta make it sound like that.' But it's not always easy to get that authenticity," he explains. "So, for example, we would take digitally recorded sounds but make them sound uglier. It's a dichotomy—we use such sophisticated digital editing equipment to create the sound for a movie that was set in a time when the sound was crappy."

Sound effects were run through some older tape machines, and in another instance, the crew jumped on the Web and purchased a Gramophone via eBay. "We recorded pieces of dialog from the movie onto the cylinder of the Gramophone and then re-recorded that back into Pro Tools," he explains. "There are devices and software packages that will simulate this process, but we thought let's just do it. That way we don't have any question about whether it's authentic or not. It will be authentic." It wasn't only bits of dialog that got that treatment, Gedemer says—5.1 mixes of the static from the Gramophone's cylinder made it into the track.

The Gramophone sounds were recorded at Abbey Road Studios in London, which is a far cry from the alleys of Burbank where Gedemer and his assistant spent six hours getting original sounds for an Eclipse gum commercial. "It really does make a huge difference to get that authentic sound," he says. "We don't necessarily try to digitally re-create it or fake it with all of our lovely tools. There's the tendency to want to do that, since we have so many tools at our disposal. One of the most powerful tools in the creation of sound design is new recordings. Those new recordings are extremely important, not only to give new commercials or new pieces of work a unique sound, but also to provide me, as a sound designer, source material that no one else has. That makes me valuable in my future projects."

One trend that both Gedemer and Morizet have seen over the years is the move toward blending sound design and music. "Some people, unless they're hip to the business, don't know the difference," Gedemer says. "They hear a melody or rhythm, and that's the line that gets drawn between music and sound design. Sometimes that line is

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blurred, particularly in commercials. It's another layer that could be considered on top of the music. If I'm working with a composer and we're trying to do something together, I have to be aware of the rhythm of what's going on or my percussive elements will seem out of place or will make the music sound jilted."

Morizet reports that she uses sounds liberally while composing music for commercials. "I use sounds and make them music," she explains. "I'm incorporating them into more musical instruments. I like to play with that. It's pretty different from the film world, which is not conventional, but more musical, because you don't have to go that close frame by frame with the picture. The kind of work I do for commercials is more aesthetic-oriented." She points to a Gatorade spot she composed last year where the cuts are extremely fast, which is quite different from her film credits. "I like to use a lot of textures and manipulate sounds, and it's easier for commercials because you can put a lot of information in," she says. "The music has to really pop out."

The challenge of moving between films and commercials is interesting for Morizet. In the film world, she sees a number of challenges—working within dialog, reading cuts and pictures. For a commercial, the mood is different. "For a product, you have to understand the product, something a bit different. People want something very hype, but is the product very hype? The country is really huge and you have to please people in the middle and on the sides. So, how far can you go? [Agencies] want something out there and then people back up and they want something more traditional."

Not only is the musical approach different, Morizet varies her studio depending on the project. For films, she runs three computers, one with a video card, one with Pro Tools and one with Logic Audio. During commercial dates, she runs one computer with the video card, Logic and Pro Tools. "For a film, I can just go and see a scene I've done an hour before in the film and look at it," she explains. "I find it easier. But if I do a commercial, I want the video card in the computer, because it's faster and you move and the picture follows."

It's important, Gedemer adds, to keep your tools close: "I think that's maybe more the key, because the psychological aspect, especially for a composer, of changing styles of music can be daunting. It's a different set of tools to do a different style of music, but if you have those tools readily at hand and close to your chest, it's easier. The same is true for sound design. If you have a lot of stuff that's ready to go, it's not so daunting of a task to make that gear change. You can cut down on your stress level a lot by having all that prepared ahead of time."

Morizet, who's moved from the score for the film *American Friends and Lovers* to an Eclipse gum commercial, agrees. "I've done so many [commercials] that it's easier for me," she concedes. "But the film work is a challenge because it's like 40 minutes of music, it's a lot of different characters and emotions. You have to be able to have a vision of the whole story and your whole score. If you have pieces that are very different in a score, they don't look like a collage. It has to have some consistency in how you use the different themes. I love film because you are working for a story and you must be able to be noticeable and hide and bring some feelings. It's quite difficult and complicated, but that's the fun of it. If it's too easy, it's boring." ■

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USB

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FIRST WE LISTEN

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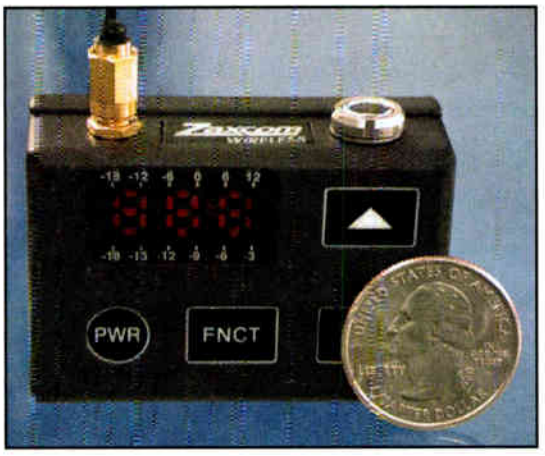
Zaxcom Digital Wireless Mics

First Field Use



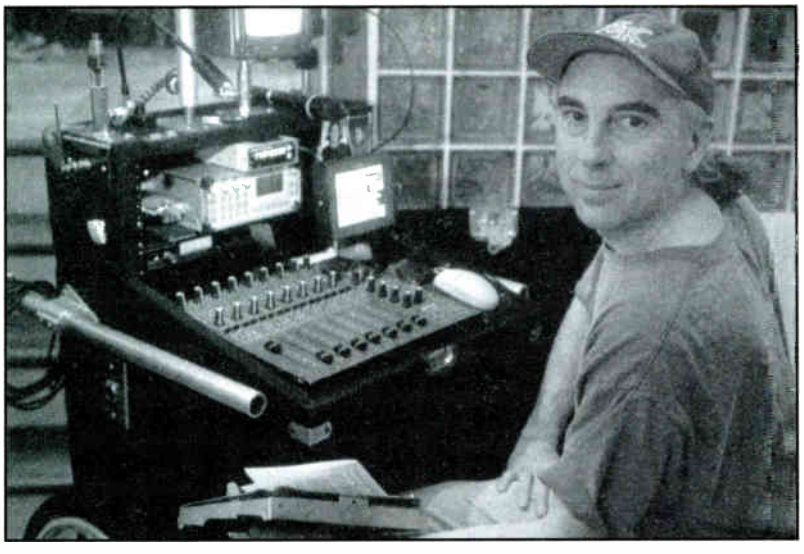
Bear with me on this one. A couple years ago, I was working on location in New York City. While shooting exteriors with Ian Holm and Stanley Tucci, my mixer fried. A little puff of smoke, that nasty smell of burning carcinogens, and I was dead in the water. The board was a Soundcraft, heavily modified with pre-fade outs, to feed my Nagra D. My chances of finding another on short notice and doing the mods was nil. Fortunately, the problem was the DC-DC Converter board, and Soundcraft USA happened to have one in stock. I received the circuit board the next morning and got to the set early enough to do some surgery and get back into action. What does this have to do with digital wireless? Hang in there…

The incident with the mixer made me realize that the board was the weak link in my sound package. It was time to get a new board. Hopefully, one that I wouldn't have to modify and one that would be readily available in the event I needed to rent one in a pinch.

That same day, I saw an ad from a company I'd never heard of (Zaxcom) for a mixer I'd never heard of (the Cameo). The board looked great in the ad, but then again, don't all new products? Skeptical but curious, I drove out to New Jersey to meet with Zaxcom's owner, Glenn Sanders. The Cameo was not ready for sale, but Glenn showed me a prototype and described what it would do. It sounded too good to be true, so I remained skeptical. At the same time, he told me that he was working on digital wireless mics. Yeah, right.

Six months later, Zaxcom released the Cameo and, being the fool that I am, I purchased serial number 0001. It did everything advertised and then some. A few months after that, I purchased Zaxcom's other gizmo, the Deva, a 4-track, hard drive field recorder. Impressed with the imagination and engineering of these machines, I started asking about the digital radios. "They're in the works," I was told. Occasionally, I would stop by Zaxcom for a software upgrade and Glenn Sanders would show me a spindly mass of tiny circuit boards attached to a scope by alligator clips. "It worked across the room!" he said. ("Watson, come here. I need you," I thought.)

Around that time, I saw an article in one of the sound journals that explained why digital radios would not be appearing any time soon—if ever. Apparently, there was not sufficient spectrum to allow for the legal transmission of high-resolution digital audio. Even if there were sufficient spectrum, the transmitter would be huge, would need a car battery for power and would have insufficient range for professional use. The article was convincing. I faxed it to Zaxcom and heard no more about digital radios. For a few weeks at least…



William Sarokin on location

THE TEST: ON LOCATION

Anyway, in mid-November 2001, Sanders came to visit me on location in Brooklyn. I was mixing a film called *Brown Sugar*, a hip hop romance starring Taye Diggs, Sanaa Lathan and Queen Latifah. Sanders had brought along his "digital wireless." We were about to do a walk and talk with two characters. Glenn had wired up a Sanken COS11 for his unit, so I gave my assistant, Schavaria Reeves, the Zaxcom and one of my Audio Ltd. TX2020s (also with a Sanken), and sent him off to wire the two actresses while I hooked up the receiver. You might think I was a bit bold to take an unknown piece of equipment and put it right to work on a character in a film. But at that point, I had been using Zaxcom equipment as the heart of my sound cart for nearly two years. I knew the equipment would do what Sanders said it would. (I also knew that Schavaria was a whiz with radios and could quickly rewire the actress with an Audio Ltd. if I ran into trouble.)

We did two rehearsals. The walk-and-talk scene covered about half a city block. My cart was positioned at the end of the run, for a total range of about 125 feet.

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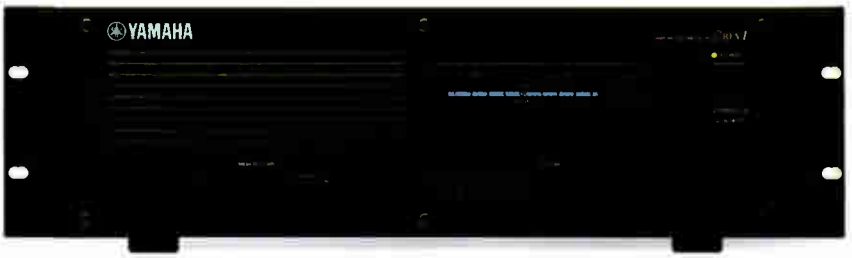
www.yamaha.com/proaudio

SREV1 Remote



SREV1

Σ ENGINE

Time to reflect on reverberation.

In the past, reverbs used IIR (Infinite Impulse Response) algorithms to recreate acoustic environments. They had limited memory and processing power and some did a pretty good job.

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The first thing I noticed was that the Zaxcom sounded very good. Too good. I asked Schavaria to replace the Sanken on the character with the Audio Ltd. I was assuming the problem was either a bad mic or bad mic placement. It was neither. The digital wireless sounded so good that my boom person was able to tell which character had the Zaxcom by listening over his wireless Comtek feed. I own eight Audio Ltd. RF mics. The 2020s are probably the best analog wireless mics made (they should be, they cost over $4,000 a pop), but the audio quality of the Zaxcom blew them out of the water.

Our next scene was on the Brooklyn Heights Promenade, a beautiful park overlooking Manhattan's sadly diminished skyline. I've shot there many times and know that it is not a radio-friendly environment. It is over a major highway (the infamous BQE—Brooklyn/Queens Expressway) and is in direct line of sight of every major transmission tower in Manhattan. The scene we were going to shoot was also a two-person walk-and-talk, though it was a longer scene and would cover more territory (a little more than 200 feet). Again, I was set up at the end of the dolly run.

Before we got too established, I sent Schavaria out on a test. I wired him with an Audio Ltd. and the Zaxcom transmitter and sent him on a walk. He easily passed the length of the shot and went about another 150 feet. At that point, the digital radio was out of range and started to mute. Literally a few steps later, the analog radio also went dead.

Although it seemed that the analog radio had the greater range (if only slightly), things changed when we actually shot. Now we had two characters wired with the transmitters on the small of their backs, facing away from the receivers. We also added a camera and dolly, 20 or so people, a doorway dolly with a huge light rig (which, somehow, the grip and lighting crew rigged for silent running...thanks, guys), and many lights and spectators. The range of both radios dropped almost by half. With the actors at "one," the Audio Ltd. was now "fritzing." The Zaxcom receiver was showing intense digital-error correction, but the signal was clean—none of the error correction was audible. Fortunately, the character with the Zaxcom had the first few lines. By the time the woman with the analog radio spoke, she was back within range. While there are always sound differences between two characters wearing lavalier mics due to clothing, the placement on the body, the tone of their voices, etc., the digital radio immediately sounded better. After we shot the scene, I asked for room tone and recorded it off of the two lavs. Then it became apparent why the digital sounded so much better: Listening back and forth between the two mics while recording the quiet street ambience (it was now after midnight), I realized that there were no artifacts on the Zaxcom. The backgrounds on the analog lav were "pumping," whereas the sound from the digital was absolutely clean.

I've been spoiled by my Cameo mixer. It has superb preamps and A/D converters. The Zaxcom digital radio has the same preamp and converter and, unlike the way it is with the mixer, you cannot overload the transmitter's front end because it has analog limiting before the A/D. Like the mixer, the wireless is a 24-bit, high-resolution digital device, and you can set the transmitter gain very low, because there is no noise. You can set it low, let people whisper, and then when they yell, there is no compression. One note about this test—I was taking an analog output from the receivers. As good as they sounded, I imagine they will sound even better when I take an AES out because I'll be eliminating one of the D/A conversion steps.

The test radio I used was from the production hardware run, but the software wasn't complete. Some software features weren't ready at the test, and other diagnostic features were only included for the test. Like all digital recorders, the digital radios include error-correction algorithms. I

ZAXCOM TEST RESULTS

The Pros and Cons

PROS

Very clean audio. Not only does it sound like a hardwired microphone, but it sounds like a hardwired microphone through a very good preamp.

Transmitter size. The transmitter is much smaller than other existing transmitters (2.1x.53x3.25 inches). An even smaller transmitter is in the works. I believe Zaxcom will also release smaller batteries (because the battery makes up half the size of the transmitter) for shots where space is at a premium.

Range. Comparable to analog, range is likely to improve as the software improves.

Frequency-agile. The units cover a range of 30 MHz. The receivers will scan to select the best open frequency.

Privacy. The digital signal cannot be monitored on a scanner.

Digital-error correction. This is my favorite. What would be audible static and noise on analog radios are digitally corrected and rendered inaudible.

Others. Analog and digital outputs, transmitter remote control.

CONS

Receiver size. The receivers are bigger than I'd like (4.2x1.3x5.8 inches).

Receiver powering. The receivers do not take internal batteries. They need external 12 V @ 350 ma.

Quad box. Zaxcom is designing a "six-pack." This is a pro and a con. It won't be as elegant as the Audio Ltd. Quad box, but then again, it will hold six units, something I've been bugging Audio Ltd. about for years.

Rechargeable transmitter batteries. (Also a pro.) The transmitters use rechargeable Lithium Ion batteries. The battery life seemed equivalent to the 9 volts in the Audio Ltd. But it will take some getting used to, keeping the recharging station going. I see this as more of a pro once I'm used to it.

Delay. With all the processing going on, there is a 3ms delay (equivalent to three feet, or <1/10th of a frame). When mixing analog and digital mics together in a scene, it takes a little getting used to, because the two mics will phase at different points than usual. With the Cameo, I can compensate by dialing in 3ms delay on the analog radios. Without the Cameo, it's just a matter of getting used to it.

—William Sarokin

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could watch the amount of error correction occurring on the receiver display. (I'm hoping that Zaxcom keeps the error-correction diagnostic display feature on the production units.) The receiver was correcting what would have been static and noise on the analog unit. According to Sanders, the software in the radios will be upgradeable, and Zaxcom expects to be able to improve the range significantly as the software develops. Because the range of the test unit was essentially equal to my analog radio, any improvement will be gravy. One feature that will be on the production units but was not on the test unit is channel scanning. The receiver will scan all the frequencies in its range (which I believe is 30 MHz, much greater than the 7 MHz on the Audio Ltd.'s) and assign the best channel.

SUMMING IT UP

The beauty of digital means that many product improvements will be software-driven. The Cameo mixer I have now is already very different from the one I purchased two years ago, and the improvements have been major, but they only involved the replacement of a ROM chip. Zaxcom incorporates user ideas into new software releases, and changes that would require major and expensive hardware modifications on an analog board can be achieved with a simple chip replacement. I believe the same will hold true for these radios. Five years from now, the radio you have will probably be better than the one you purchased. I can't say this about my analog radios. They degrade over time. Components go out of tune, and their effective range has dropped because the frequencies they are locked into have become more crowded. Which leads to another point: The digital radios use very few tunable components. They will require much less service than the analog radios. I've already ordered two Zaxcoms. Hopefully, I'll get numbers one and two to go with my Cameo. I have no qualms about being first; there will be improvements. (I'll probably drive some of them after using the units for a few weeks!) Zaxcom will write new software, and, after an hour in the shop, I'll essentially have a new unit. I guess that is the point of this. Analog radios are as good as they are going to get. This digital radio is already better than the best analog, and it is going to keep getting better over time. ■

William Sarokin is a first-call production sound mixer with credits including Simply Irresistable, Return to Paradise *and* Big Night.

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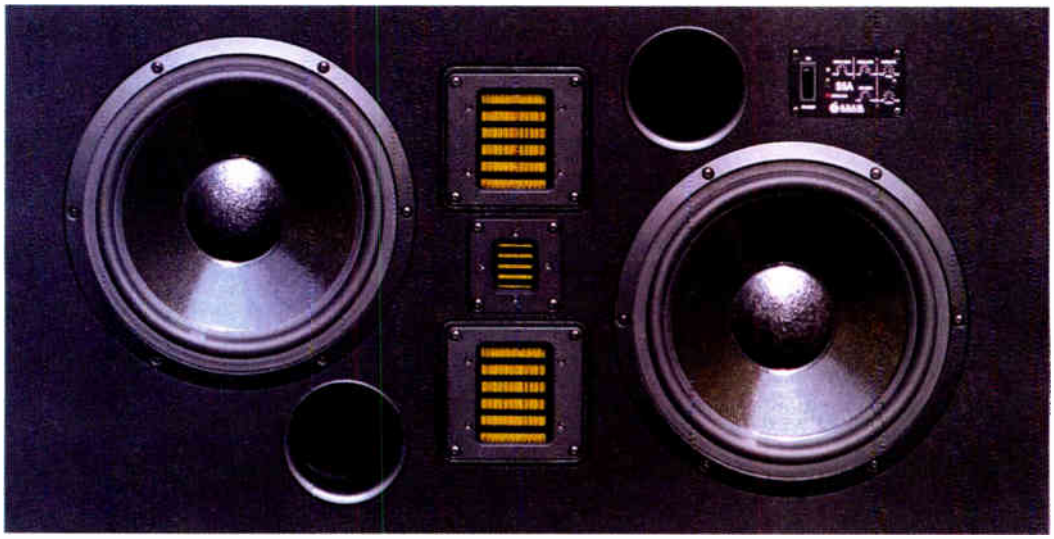

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The results are in, from studios near and far. *Nothing* delivers your music like ADAM Analytical monitors. Owners are reporting that once-hidden details are leaping out of their mixes, and even the smallest tweaks have become fully audible. With ADAMs, they can place things in the sound field perfectly, and all the mics and pre-amps and processors and instruments in their studios have brand new lives. Because they can finally *hear* them.

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Audio Products for Film/Video

SENNHEISER WIRELESS QUAD PACK

The QP 3041 Quad Pack from Sennheiser (www.sennheiser.com) is a portable rack system for mounting and powering up to four Sennheiser EK 3041-U True-Diversity RF receivers. The QP 3041's all-metal frame nests four receivers inside a 2-height, half-rack enclosure, allowing all four receivers to share an antenna. Fitted with wideband input modules, the QP 3041 picks up signals from 0-900 MHz with a 900MHz switching bandwidth. With optional selective RF modules, it receives signals from 470-870 MHz, with a switching bandwidth of 60 MHz. Users can monitor each receiver from a single front panel headphone jack. Almost any DC source can power the QP 3041 via a 4-pin XLR jack. Price: $1,995.

SSL AYSIS AIR PLUS "SC"

Solid State Logic (www.solid-state-logic.com) intros the Aysis Air Plus SC, a specially configured version of the Aysis Air Plus digital broadcast console designed for stereo and 5.1 surround mixing. Offering broadcasters a cost-effective transition to digital broadcast capability, the Plus SC has a traditional 32-fader/channel strip design (expandable to larger formats), comprehensive reset functions and built-in redundancy. SSL also announced MT Version 6, which ships as standard on the MT Production and MT Plus digital mixers, adding automation and processing features, with new channel and main bus dynamics options designed to give the sound and feel of traditional analog processing.

BRYSTON SP-1.7 PREAMP/PROCESSOR

The SP-1.7 from Bryston (www.bryston.ca) is a multiformat analog and digital preamp/processor. In Digital mode, the SP-1.7 decodes Dolby Digital, Dolby Pro Logic, DTS-ES Discrete 6.1, DTS-ES Matrix 6.1, DTS Neo:6, THX Surround EX and THX Ultra-certified, and it provides mono and stereo downmixing and bass management. The system automatically detects and switches among digital modes, and the unit also processes PCM (32/44.1/48/96 kHz) via 24-bit converters. In Bypass mode, the SP-1.7 becomes an audiophile analog preamp. All I/Os are gold-plated, and each analog output (RCA and balanced XLR) is driven by its own line amp. External control can be integrated via a RS-232 port, and two 12-volt trigger outs can control motorized drapes and screens.

DOLBY LM100 LOUDNESS METER

Dolby Laboratories (www.dolby.com) debuts the LM100 Loudness Meter, a new analysis tool that measures the loudness of content, enabling broadcasters to eradicate the subjective loudness differences among television audio sources. The LM100 is capable of accepting PCM, Dolby Digital (AC-3), Dolby E, analog and combined RF cable television signals.

CROWN AUDIO INTRODUCES FIVE SST CINEMA MODULES

Crown Audio (www.crownaudio.com) has launched five SST (System Solution Topologies) cinema crossover modules. Each module provides crossover, equalization and delay functions for a specific JBL ScreenArray loudspeaker, including the two-way 4622, 3632 and 4632 models and the three-way 3632T and 4632T models. The new SST modules simply plug into the back of a Crown Contractor (CH/CL) Series or CE Series amplifiers. Balanced input connections are Neutrik Combo jacks; balanced outputs are removable barrier blocks.

SONICASE PRO

The weather-resistant SoniCase Pro from Sonic Sense (www.sonicsense.com) can accommodate a full-size portable DAT recorder, batteries and accessories. Built to withstand constant field use, the SoniCase Pro features a full-coverage rain fly and a three-shelf design. A transparent plastic window can be unzipped open as required, and easy-access openings allow charging batteries or changing connections without having to unpack. Made of double-layered, 1,000-denier Cordura, the SoniCase Pro is lined with long-lasting ¼-inch padding. Price: $159.

BAG END SUB

The INFRAsub-18 Home™ from Bag End (www.bagend.com) is an 18-inch, self-powered subwoofer for home theater/studio applications. Incorporating a 400-watt power amp, the INFRAsub-18 Home has a flat frequency response from 8-95 Hz (±3 dB) and uses the same ELF dual 8Hz integrator as Bag End's premium ELF-1 system. The subwoofer accepts single mono lowpass or full-range L/C/R signal inputs, and provides three line-level, highpass outputs. Speaker level inputs offer additional flexibility for simple setups. Price: $1,670.

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MIX PRESENTS

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POST SCORES!

High-End Facilities in Sound for Picture

by Dan Daley

The irony of an increasingly desktop media world is that there is now such a premium on large-scale, top-tier post-production and scoring facilities. The irony, however, is easily explained. At a time when the entertainment industry as a whole is feeling tremendous economic pressure from a variety of directions, including a recessionary economy and rampant piracy, the response of leading content producers has been to create ever-more sophisticated, complex productions. When a game is that brilliant, when a film is that spectacular, when a television program is that compelling, it transcends other issues. It makes consumers reach for their wallets. In the words of rocker Robert Palmer, it's simply irresistible.

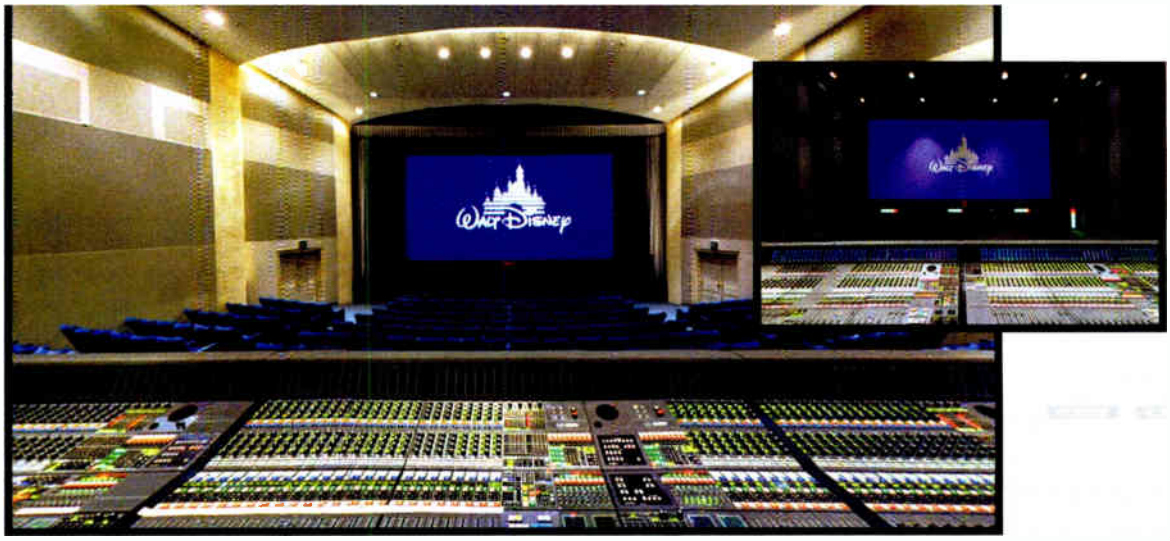
However, productions simply cannot be that brilliant, spectacular, compelling or irresistible without the technical and creative capabilities found only in the kind of post-production and scoring facilities profiled in this special supplement to *Mix*. It's not simply a matter of technology; as anyone of the market leaders interviewed here will tell you, anyone can buy technology. What can't be bought out of a box or off a shelf are talent and scale, two characteristics that these facilities have in great supply.

Talent is at a premium in today's media production market. The knowledge of how and where to place microphones to capture a car door slam or an orchestra crescendo is acquired over time, and the ability to do it well can set a production apart and literally determine the success of a film, a show or a game.

Scale is just as desirable. While many digital audio systems are quite capable today, from synthesizers to samplers, nothing can compare to what can be accomplished in a large, acoustically exceptional recording space, one that transcends the notion of the tracking room, one that is truly an orchestral environment, as nuanced as a European grand opera house. Whether it's used for a Broadway show cast album, an animated film score or a symphonic production, it is sure to produce one thing: genuine awe. Combine that with the technical brilliance needed to capture such recordings, and you realize it can only be accomplished by large-scale professional facilities such as these. And these are the same facilities that pioneered the trend of creating a hub for all the myriad post-production tasks necessary to assemble a contemporary media production, from music to effects to Foley to mixing to DVD authoring.

The entertainment business may be undergoing a significant upheaval as technology and the Internet bring new forces to bear. But there's no doubt that when the smoke clears, the facilities profiled on the following pages are the ones that will remain, the ones that make great entertainment great.

World Radio History



Buena Vista Post Production Services

The Mouse continues to roar well into the digital multimedia age. Buena Vista Post Production Services, located at The Walt Disney Studios in Burbank, Calif., has demonstrated its ability to constantly be on the cutting edge since it first opened over 60 years ago. Today, that tradition continues through industry leadership in the implementation of a variety of new technologies, chief among them Digital Cinema.

Buena Vista Post (BVP) is a full-service digital facility for film and television that features top creative talent such as re-recording mixer Terry Porter, ADR mixer Doc Kane and Academy Award-winning supervising sound editor George Watters II, to name a few. "With this kind of talent, we can create anything you can imagine—and then some," says Gil Gagnon, VP of post-production services. Their creative staff has earned over 75 awards and nominations from the motion picture and television industries.

And that talent can speak for itself. Terry Porter's three Academy Awards and two BAFTA nominations, countless Emmy Awards and over 110 feature film credits truly place him in an elite group within the industry. "The Main Theatre is one of the largest dub stages in town, and with over 5,000 square feet and 400 seats it's a favorite of many directors and producers," says Porter. "It is a true representation of what the audience will experience."

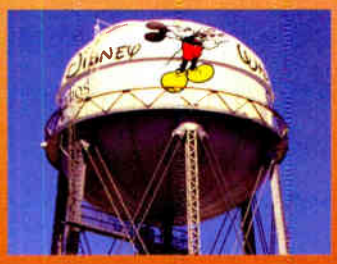
Doc Kane says, "Stage B has integrated video and sound technology that allows the director, the talent and the recording facility to be in three different locations, while maintaining seamless interaction by pushing media through multi-point connectivity. We also have the ability to record to multiple formats simultaneously, including Pro Tools, which saves editorial upload time."

George Watters II has certainly put BVP's new editing facilities to the test on films such as *Pearl Harbor*, *Spy Game* and the upcoming Touchstone Pictures release *Bad Company*. All-digital editing suites feature Pro Tools workstations and allow seamless integration with BVP's dub stages. Just as critical, though, is the technical support team. They are routinely asked to accomplish the impossible, such as designing and building an outdoor theater on an aircraft carrier to host the world premiere of *Pearl Harbor*. They truly are the SeaBees of the entertainment business. On a day-to-day basis, they keep the entire complex of studios running at maximum pitch on a 24/7 basis, maintaining the facility's large array of technology platforms, such as the AMS Neve Digital Film Consoles, and operating a host of communication technologies that link them to the global filmmaking community. The transfer facilities offer a broad range of conversion services, from the newest technologies to legacy formats, as well as rendering services such as soundtrack-negative creation and quality control for all digital-release film formats, including analog optical.

"We're a globally oriented facility for what has become a global entertainment industry," says Gagnon. "The demands on quality and efficiency require that we maintain a vast array of flexible technology solutions that meet the needs of today's filmmakers. We're full-service and all-digital. On any given day, we're dealing with every phase of the process, from pre-production to post-production, ancillary markets to restoration. We've put as much care into cultivating our talent team as we have into building the studio's technical infrastructure. And that balance shows in our work."

SPEC SHEET

Company Name: Buena Vista Post Production Services. **Contact:** Gil Gagnon, VP/post-production services. **Services Offered:** Re-recording, sound editing, ADR. AC-3 audio services, format conversion and transfer facilities. **Main Technology Platforms:** The latest in state-of-the-art digital technology highlighted by AMS Neve Digital Film Consoles (DFC) and Pro Tools digital edit suites. For additional details, visit the Website. **Recent Credit List:** *Pearl Harbor, Spy Game, The Majestic, Rush Hour 2, Snow Dogs, Return to Neverland, Ultimate X-Games, Life or Something Like It, Bad Company,* and *Lilo and Stitch.*



Buena Vista Post Production Services
500 South Buena Vista St
Burbank, CA 91521-2500
Tel.: 818/560-1576
Fax: 818/562-3262
Website: www.buenavistapost.com
E-mail: gil.gagnon@disney.com

World Radio History

Right Track Recording LLC

Right Track Recording has been a pace-setter in music recording and scoring for more than 25 years. Its longtime location in the heart of Manhattan's Music Row, on West 48th Street, continues to house three of North America's most advanced music recording studios: Studio A, with its huge and acoustically brilliant tracking room and 96-input Neve VX analog console; Studio B, the facility's dedicated all-digital audio environment with a 24-bit-capable, 72-fader/256-input Neve Capricorn matched with Pro Tools or a Sony 3348 multitrack; and Studio C, a leading-edge mix environment featuring a 96-input SSL 9000 J Series console with selectable E and G Series EQ in every channel.

But the new jewel in Right Track's crown is its spectacular Studio A509, which single-handedly ups East Coast capability for film scoring and orchestral music projects. Located a few blocks away on West 38th, the new studio offers a massive 4,600-square-foot live room, easily able to accommodate up to 100 musicians, plus accompanying choir. The room has a towering 35-foot ceiling, with an additional five iso booths, totaling 800 additional square feet. Studio A509 also features two dedicated private offices and a large private lounge, all comfortably appointed and with natural light.

The control room is huge, at 1,000 square feet with a 16-foot ceiling. It is equipped with a 96-input Solid State Logic SSL 9000 J Series SuperAnalogue console, fitted with a modified and removable center section, specifically designed for Right Track by SSL, allowing the board to be seamlessly reconfigured for film scoring/mixing as needed.

At a stroke, Right Track's Studio A509 repositions Manhattan as a center for large-scale orchestral scoring and recording. "There really hadn't been a studio in Manhattan that could accommodate truly large orchestral sessions since the great label-owned orchestral rooms—like Columbia's old church, or Decca Studios or the RCA Studios—that closed over a decade ago," explains Right Track owner and founder Simon Andrews. "With the coming rise in film and television work in New York, it seemed logical that New York needed a studio that could do for orchestral music what those grand old rooms did."

Studio A509, opened in late 2001, fulfills that mission admirably, and the 35,000-square-foot building is further designed to accommodate another large tracking room in the near future, solidifying Right Track's position as a premier acoustical music facility.

The new studio also carries on Right Track's quarter-century tradition of client service, based on a unique knowledge of the needs of various markets and clients. "Client service has been a tradition here, one that runs like a consistent thread through all of the technological upgrades and advances the studios constantly go through," explains Barry Bongiovi, Right Track's general manager and one of the deans of New York's studio management corps. Small wonder then that Right Track has long been home to the music industry's finest producers, engineers, and artists including Celine Dion, R. Kelly, Hole, Barbra Streisand, Metallica, David Bowie, Sting, Whitney Houston, Madonna, the Rolling Stones and Michael Beinhorn. Observes Andrews, "Right Track's longstanding success can be credited to a combination of acoustical magic, technical excellence and our reputation for providing five-star client services. And we're proud to have brought back the magic of large-scale acoustical recording to Manhattan with Studio A509."

SPEC SHEET

Company Name: Right Track Recording. **Contact:** Barry Bongiovi, general manager. **Services Offered:** Music recording, mixing and editing; orchestral and scoring capability; format conversion and transfer services; digital audio editing. **Main Technology Platforms:** Neve VX, Neve Capricorn, SSL 9000 J consoles, Sony PCM 3348HR, Studer D 827 (48-track, 16-bit or 24-bit); Studer A800 and A827 24-track analog; Pro Tools and Euphonix R1 hard drive recording/editing systems; 5.1 surround monitoring system with Genelec 1035B three-way/5-driver and 1031A three-way speaker with 1094 subwoofers (4), Yamaha NS-10M.

Right Track RECORDING

Right Track Recording LLC
168 West 48th St.
New York, NY 10036
Tel.: 212/944-5770
Fax: 212/944-7258
Website: www.righttrackrecording.com
E-mail: barry@righttrackrecording.com or donna@righttrackrecording.com

World Radio History

Sony Pictures Studios

The film industry has always been a work in progress, and Sony Pictures Studios Production Facilities has maintained an evolutionary path with it. This highly innovative post facility has been a leader in sound for picture, thanks to a relentless quest to stay ahead of the game. For instance, in 2001, Sony Pictures Post Production Facilities expanded its sound design department, adding two more suites, and taking them further into the digital realm with the addition of 40-channel Digidesign Pro Control consoles with 7.1 multichannel sound, extensive outboard gear and DLP digital projectors. These sound design suites (each measure upward of 650 square feet and are fully networked with the rest of the facility) offer a significantly increased capability for sound for picture for all projects.

In fact, says Michael Kohut, president of Sony Pictures Post Production Facilities, this flexibility is a strategic part of the facility's long-range plans. "These new rooms will give our clients customized facilities to develop the most creative soundtracks possible, for all movies, regardless of budget size." This same approach—bringing the latest technology and experienced technical talent to a fluid entertainment media landscape—extends to all aspects of the facility, including its 10 film and television mixing theaters and historic scoring stage, the nine Sonic-equipped DVD-Audio mastering suites with enhanced audio-restoration capabilities, three ADR and three Foley stages, 190 editing rooms, 55 digital audio workstations, 15 nonlinear picture-editing systems, and complete film and video transfer services. The studios are able to offer a vertically integrated array of comprehensive services to an increasingly broad range of customers, from major film studios to independent filmmakers to the rapidly expanding DVD universe.

Sony Pictures Post Production Facilities continues to build on its legacy of large-scale studio capabilities; the latest addition is the new Anthony Quinn Theatre, a world-class mixing stage designed for all-digital operations. The 2,400-square-foot theater, two years in the making and with a stunning Japanese-themed interior design, has at its core the new Harrison MPC2 digital console, fitted with 288 channels and 616 inputs converging on an 1,120x1,340 digital router and a 64x8 monitor matrix.

The Anthony Quinn Theatre joins the four other Sony large-format film sound mixing theaters: the Cary Grant, William Holden, Kim Novak and Burt Lancaster Theatres. Each of these have their own distinct aesthetic designs but share exceptional acoustical and technology fittings, including the Harrison MPC2 console.

The creative talent at this facility is just as comprehensive as its technical capabilities. The impressive roster of film mixers includes Kevin O'Connell and Greg Russell, Scott Millan and Bob Beemer, Jeff Haboush, Bill Benton, Gary Bourgeois, Greg Orloff, Jon Taylor and Tateum Kohut, as well as television mixers Deborah Adair, Russell Smith and William Freesh, Carlos deLarios, Sherry Klein, Joel Fein, Tim Philben and Alan Decker.

Richard Branca, senior VP of sound, video and projection operations at Sony Pictures Post Production Facilities, points out that the studios' top theatrical sound mixers often apply their large-screen talents to the audio for DVD releases, ensuring the best cinema audio in home and theater environments. Adds Branca, "This facility is customer-driven, and we will continue to listen to our customers and offer the best crews and unique working environments, coupled with cutting-edge service and quick response."

SPEC SHEET

Company Name: Sony Pictures Post Production Facilities. **Contact:** Richard Branca, senior VP of sound/video/projection operations. **Services Offered:** Re-recording, scoring, sound editorial, design and restoration, ADR, Foley, DVD-Audio mastering, and more. **Main Technology Platforms:** Sony, Harrison, Neve, Otari, Digidesign, and more. **Strategic Alliances:** Sony Pictures Post Production Facilities is an operating unit of Sony Pictures Entertainment (SPE). SPE is a division of Sony Corporation of America (SCA), a subsidiary of Tokyo-based Sony Corp. **Partial Client List:** Buena Vista, Jerry Bruckheimer Films, Dreamworks, Paramount, MGM, Miramax.

SONY PICTURES STUDIOS

Sony Pictures Post Production Facilities

10202 W. Washington Blvd.
Culver City, CA 90232
Tel.: 310/244-5722
Fax: 310/244-4152
Website: www.sonypostproduction.com
E-mail: gemma_richardson@spe.sony.com

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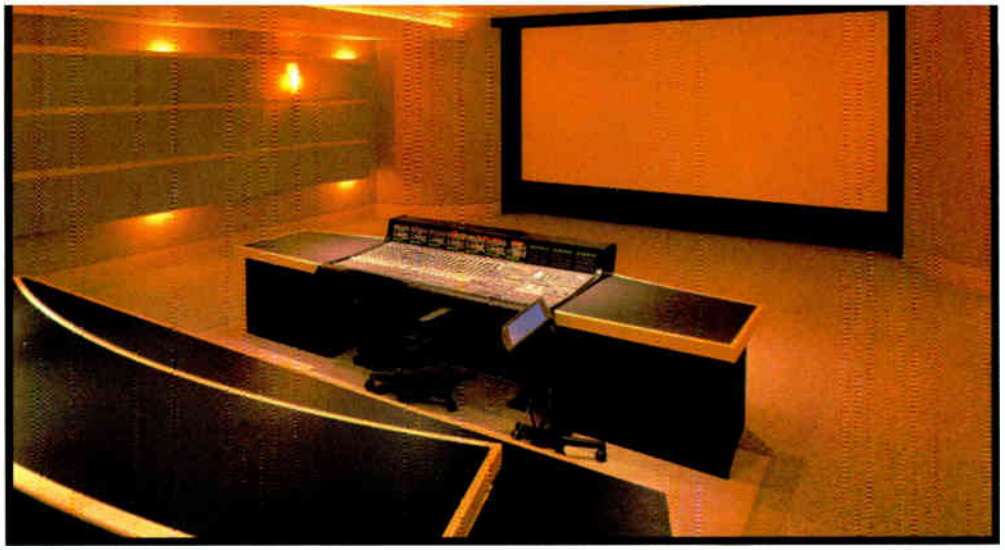

Universal Studios Post Production Sound Services

As large as its technical and creative infrastructure is, Universal Post Production Sound Services has remained surprisingly nimble. For more than a half-century, the company has pursued an evolutionary approach to serving the film, video and broadcast industries. In addition to its already comprehensive set of pro audio services, Universal's sound operations recently opened an 18,000-square-foot facility dedicated to soundtrack digital mastering and restoration.

Blue Wave Audio offers two large mixing studios, four digital mastering suites, three Sonic Solutions-equipped digital editing studios (which will grow to nine), and a core transfer capability that shuttles digital audio via a fiber network throughout its audio system, robotically archiving on RAID hard disk arrays and AIT-format linear tape. Combined with Universal Post Production Sound Services' service capabilities, the facility can address an evolving entertainment media landscape.

"What we've done is make the facility a pivot point for a critical juncture in the entertainment business," explains Chris Jenkins, Universal's senior VP of sound services. "On one hand, it looks forward, anticipating all of the new technologies that are impacting digital sound for film and video. At the same time, we're establishing a world-class restoration resource to help the film industry mine its vaults for the jewels of the past. Simultaneously, we can conform current releases for every audio requirement for theatrical and DVD release."

The array of capabilities is extensive, thanks to a decade-long, $150 million program that has kept the facility on the cutting edge. The facility has six multiformat digital re-recording stages—three designed and equipped specifically for feature film work—all fitted with the largest re-recording consoles in the world: 528-input Harrison MPC digital consoles, with 124 mix buses and full automation on every channel, as well as the brand-new Harrison Digital Series 12 console. All studios and editorial facilities are completely interactive and networked. The facility's two ADR studios are equipped with ISDN and custom consoles with dB Technologies A/D converters and Massenburg preamps.

Further, the sound department has its own FTP site, allowing tapeless transmission of sound files within the facility and between the facility and its clients. And clients can use the facility's Website to register the formats and elements they will use for projects, streamlining the work process and saving significant time and money.

Universal's commitment to technology is complemented by its equally substantial investment in the highest caliber of creative talent. Led by Jenkins—a 20-year industry veteran, a two-time Academy Award-winning mixer and the former head of Todd-AO—Universal's audio staff, including Steve Maslow, Gregg Landakker, Andy Koyama, Frank Montano and Chris Carpenter, have racked up numerous awards and nominations. More recently, supervising sound editor Scott Hecker has joined the team as director of editorial services.

"We recognize the importance of staff talent," Jenkins says. "And we work in an environment in which our management team comes with studio experience. We don't react to changes in technology, techniques or in the business of the industry—we anticipate those changes, and we're ready for them when our clients are. We see the big picture, and we're in it for the long haul."

SPEC SHEET

Company Name: Universal Studios Post Production Sound Services. **Contact:** Karen Sebok, director of sound operations. **Services Offered:** Re-recording, sound editorial, mixing, ADR, Foley, ISDN, DVD mastering, format transfer and conversion, high-density fiber networking, sound design, soundtrack restoration. **Main Technology Platforms:** Harrison MPC and Digital Series 12 consoles, Otari, Tascam, Avid, Pro Tools, Rank, NEC-DLP Video Projection.

UNIVERSAL

BLUE WAVE AUDIO

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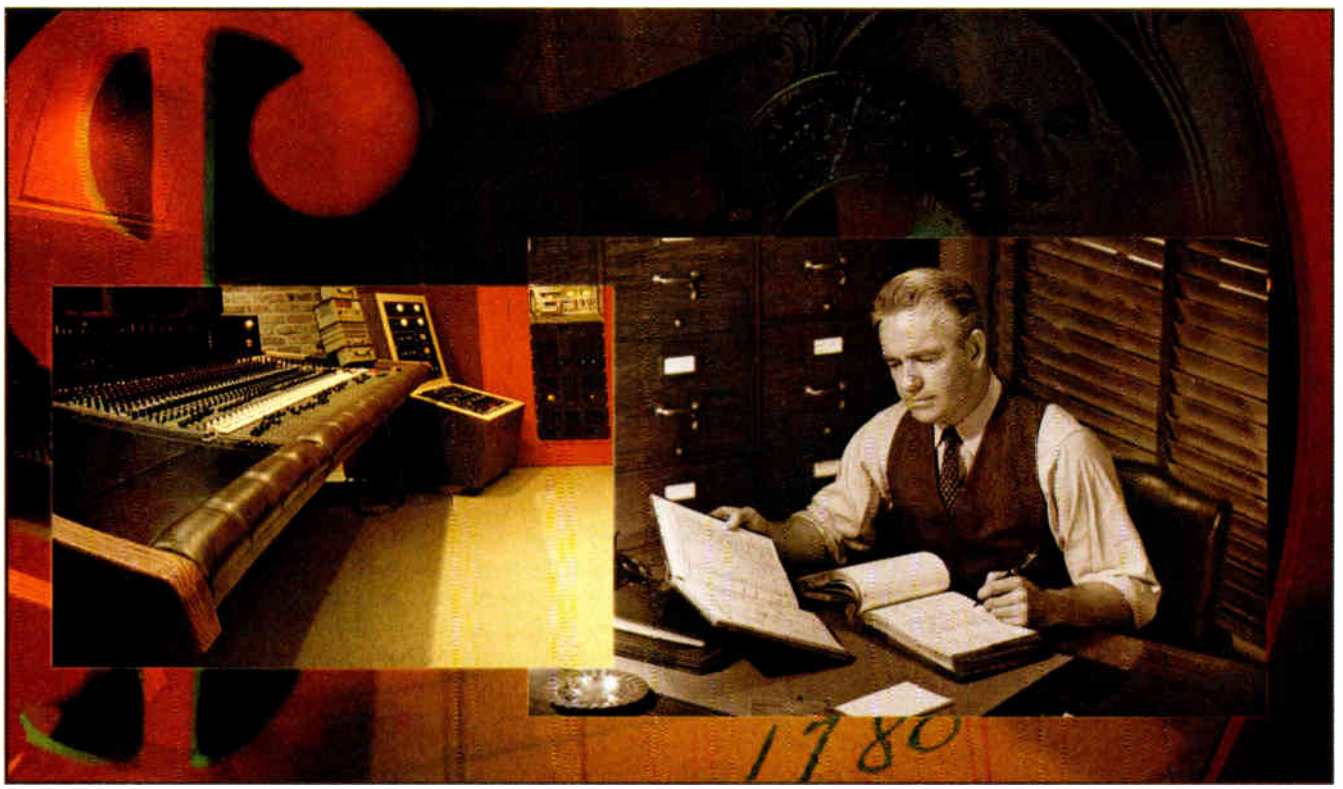

ILLUSTRATION LIZABETH HEAVERN

Music Studios Find New Ways To Cope With the Changing Economy

by Dan Daley

September 11, 2001, has become the reference point for a lot of things, including the declining health of the American economy. But rather than an economic turning point, 9-11 was, in fact, a highly visible milestone on a long and bumpy road, which has seen a downhill trend since the NASDAQ peaked in early 2000 and, a year later, has simply fallen at a steeper rate.

While larger indices are still volatile, the stock markets have rallied well since the disaster, and, on the day this article began, the Dow Jones average rocketed up 220 points and finished over the magical 10,000 mark for the first time since September 5. But, for better or for worse, that's partly because the declining economy has forced many public and private companies (including many in the pro audio sector) to reduce overhead. One result is that over one million jobs were eliminated in the U.S. in 2001. For example, in 1995, when Federal Reserve chairman Alan Greenspan spoke about "irrational exuberance," the entertainment business included nine major record labels. Now there are only five. Almost every aspect of the entertainment industry has been affected, and film, recorded music and live touring industries saw declines last year. Only computer game sales bucked the trend, perhaps because consumers decided to stay home and "cocoon."

Recording studios, which have had their own economic issues to deal with for the last decade, did not escape the pressures to streamline, cut back or downsize. However, tough times have brought about a renewed sense of vigor in the survival game. Many studio owners and managers have been forced to place a renewed emphasis on the business side of their operations, a shift that could bode well for the long-term health of the industry.

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Pro Audio Review chose the SRS6.5 as one of the top 20 products of 2001

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SRS6.5 Rear

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SRS6.5A Rear

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Bottom line: These awesome sounding monitors (powered or passive) are simply one of the best near-field monitors available.

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SRS6.5A-2 $449.99 pair

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SRS6.5-2 $279.99 pair

SRS6.5A ACTIVE POWERED
Active Biamp: Low 70w RMS, High 30w RMS
Amp Response: 20 to 20 k Hz, THD .03%
Enclosure Response: 50 to 20 k Hz, ± 3 dB
Inputs SRS6.5A: Bal. XLR, 12dB attenuation pad, 90-250VAC, 50-60 Hz, LED power indicator
Woofer Enclosure Type: Front Ported Box
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SRS6.5 PASSIVE
Inputs SRS6.5: Gold 5-way binding posts
Enclosure Response: 50 Hz to 20 kHz, ± 3 dB
Sensitivity: 92.5 dB SPL, 1 Watt @ 1 meter
Power Handling: 125w continuous
Recommended Amp: 50 to 150 watts
Nominal Impedance: 8Ω
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MARKET BY MARKET

Each of the four major U.S. music recording markets—New York, Los Angeles, Nashville and Miami—has been affected by its own particular geographic issues. New York City was a direct target of the September 11 attacks, which essentially shut down the city for the following week. Businesses were affected proportional to how close they were to Ground Zero. Interestingly, New York's studios were insulated from a greater immediate impact because the core business of New York high-end studios—rap music—tends to be centered in New York itself, so the shutdown of air traffic caused relatively few previously booked sessions to halt. "Ninety percent of our bookings are locally based," notes Sound on Sound owner David Amlen.

However, travel restrictions caused a drastic reduction in how far in advance studios get booked, a trend that affects all studio markets. And the transportation shutdown meant that recording media didn't move, causing session cancellations and missed deadlines. "No FedEx, no tapes, no session," as Masterdisk president Doug Levine succinctly expresses it. Finally, as America's financial nerve center, New York had already been feeling the effects of a long-term declining economy, one which has stalled several large post-production facility projects, including the renovation of the vast Brooklyn Navy Yard.

Los Angeles has enjoyed the perception as the most robust American recording market, but studios there reported a slowdown in the aftermath of September 11, particularly among Asian artists, who often use West Coast facilities. "Overall, it's been good here in L.A., but in the weeks following the attacks we had a few cancellations," observes Skip Saylor of Skip Saylor Recording. "Two groups from New York that were scheduled to come here stayed in New York instead."

Nashville's economic issues are mostly a direct result of being linked to the fortunes of the country music market, which has lost nearly half of its market share since its high-water mark in 1995. Nashville saw a massive expansion of its studio base mid-decade, and the post-9-11 decline has led to several major studios closing and one major bankruptcy. On the other hand, a prolonged slump has driven many facilities to devise creative responses to the economic problems; Nashville's base of smaller studios has increased to serve the growing number of alternative music artists, and larger studios have pursued a vertical-integration strategy. Nashville is also the center of the contemporary Christian and gospel music genres, both of which have garnered gains in market share in recent years, though they typically operate on a lower budget scale than country music productions.

Miami's biggest problem is that it is a "destination" music location, dependent, to a large degree, on out-of-town artists and producers (though several artists, including Lenny Kravitz and Missy Elliot, have recently made Miami their home). Latino music's influence has increased significantly—the genre now has its own NARAS Grammy Awards event—but it remains a niche market, and Miami's recording scene depends primarily on pop music. While crossover artists like Enrique Iglesias, Gloria Estefan and Ricky Martin are locally based, last summer saw both Michael Jackson and Sean "Puffy" Combs coming to Miami at the same time, setting local studio hearts aflutter. The air traffic shutdown, coming right at the start of the winter season, was a major setback for Miami, and a continuing reluctance to travel,

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AP6020	2000 x 2	1300 x 2	800 x 2	4000 @ 4Ω
AP4040	N/A	1200 x 2	750 x 2	2400 @ 8Ω
AP4020	1200 x 2	750 x 2	475 x 2	2400 @ 4Ω
AP2020*	600 x 2	450 or 600 x 2	250 or 400 x 2	1200 @ 4 or 8Ω
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combined with poor economies in parts of Latin America, is an ongoing problem.

RESPONSES

Despite these regional differences, the studio business is very much a part of the larger U.S. economy, and all four markets have expressed similar responses. Some facilities have put off new capital expenditures; others are tapping into current low interest rates to expand or refinance existing debt. For instance, Avatar Studios in New York, NRG in Los Angeles and Sound Stage in Nashville all plan to restructure their debts and renegotiate equipment leases. In addition, the lagging economy has spurred competition among manufacturers. "Prices on a lot of things are great right now," says Michael Koreiba, manager at Sound Stage. "In an economy like this, you can make good deals."

Nonetheless, the dramatic drop in advance bookings has clouded the financial crystal ball for many studios. "If people aren't booking far in advance, at least eight to 10 weeks, it makes it impossible to forecast the coming quarter," complains Ron Albert, co-owner of AudioVision in Miami, which completed an extensive expansion and renovation project last year. "We're still in a buying mode, but it makes it tough to spend $2,000 to buy a piece of gear if you're not sure you'll need the money toward next month's console payment. The uncertainty out there is making accurate financial projections difficult."

On the other hand, some facility managers believe this is a good time to plan expansions. NRG owner Jay Baumgardner says his facility will double to six studios by adding 20,000 square feet sometime this year. Westlake Audio's studio operations put in a new SSL 9000 J console last July, citing an improved negotiating atmosphere. "Part of our strategy has always been to have the latest and the greatest," says Steve Burdick, Westlake's VP of recording services. "Big items cost more, but they allow you to charge more, and at a better price you can pay them off faster."

Some facilities also see expansion as a good move in down times, but instead are leveraging lower-cost digital technology now instead of purchasing big-ticket items. Kirk Imamura, president of Avatar Recording, says he has plans to add studios to the facility's fourth floor in the next 18 months, but those new studios will likely be equipped with digital audio workstations, such as Pro Tools, rather than the large tracking studios the company is known for. "It's cheaper to put in smaller digital platforms," Imamura says. "And they give us more depth, so that clients can keep more of their project with us, tracking, overdubbing and then editing before mixing. But just as important is the fact that depreciation on a major piece of equipment now is faster. Vintage consoles used to retain value, but today a $500,000 console depreciates very quickly—it makes you think twice."

In many instances, facilities are adding new services rather than replacing equipment. New York's Masterdisk is about to add Avid-based video editing capability, which will join the DVD authoring and graphics services it introduced three years ago. "Every new service is an offshoot of our core business of mastering," explains company president Doug Levine. Interestingly, Levine thought new media would be a logical extension of the services he already rendered to record company clients. Instead, it was catalog film and anime clients who have driven the business. "But the thinking is still sound," he adds. "I want to expand the range of

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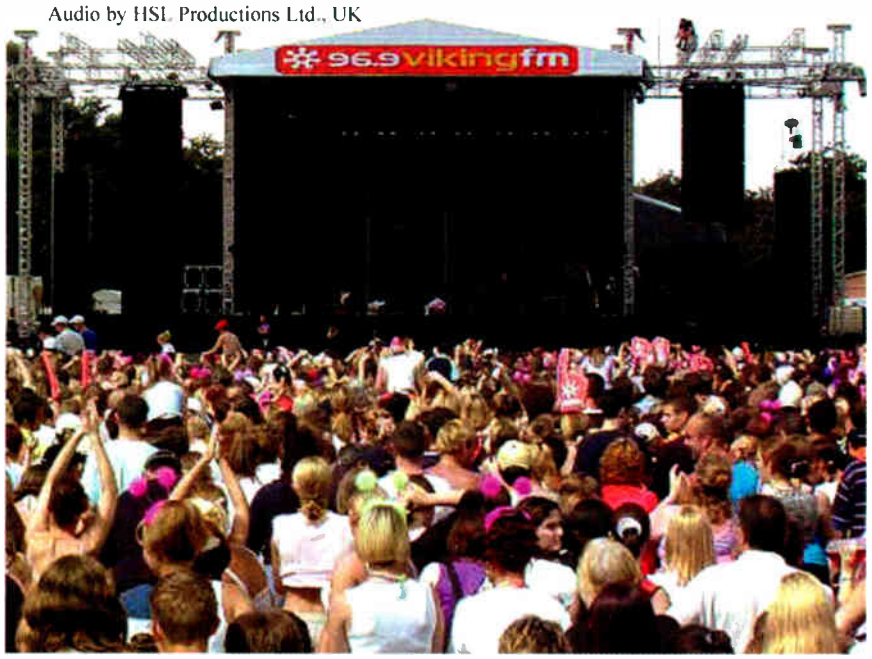

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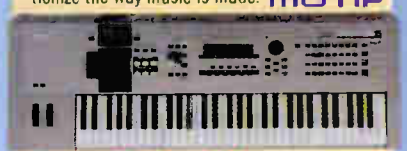

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services I can offer the music industry to cover everything in between actually producing a record and replicating a disc."

Skip Saylor recently formalized Hit Mixers Management, an engineer management sideline that he started a few years ago, and has turned it into a full-blown business, hiring an additional employee and adding a new office, rather than add studio space. "I manage 15 engineers now, and I only have two studios, so that tells you something," says Saylor, who adds that he doesn't cannibalize his studio business by chopping rates for his management company clients' projects. But discounts are becoming a normal feature of the new business landscape. "What you're trying to do is get more revenue coming in from more directions, even if it means that each revenue stream has to be adjusted when necessary," he explains.

With delayed equipment purchases, it might seem reasonable to assume that equipment rental rates would increase, but that apparently doesn't apply across the board, and rental companies have had to adjust. A good example is Dreamhire, a division of UK-based Zomba Entertainment. Despite the fact that UK record sales increased in 2001, while falling in the U.S., Zomba closed its London branch of Dreamhire, as well as its Battery Studios facility there. In the States, the company is adapting its inventory to accommodate a changing market, such as adding DJ systems at its New York location and working with Brooklyn DJ pool Halcyon as an equipment resource. In addition to its locations in New York and Nashville (where the rental operation expanded when Zomba closed the Battery Studios location there in 1999), Dreamhire has dipped its foot into the Miami market, using South Beach Studios as an agent for selected pieces of gear. If the experiment is successful, the company may open a full branch there in the future. The rental company also has a new role as an online reseller for sound effects company Sonomic's audio FX libraries. "To put it simply, there are just fewer studios being built these days at a level where it makes the most economic sense to rent to than, say, five years ago," observes Dreamhire director of marketing Kathryn Dean. "As more record production moves to hard disk recording and plug-ins, there's less of a rental market to go after, so we have to develop new business strategies."

BUSINESS TRENDS TO WATCH

As the prospectus always says, "Past performance is no indication of future earnings." However, there are certain trends that bear monitoring.

• The long player (LP and CD) concept may have peaked. Singles on physical media have been declining at a double-digit rate, while individual song downloads are growing exponentially. Depending upon how quickly and to what extent downloads replace "bricks-and-mortar" distribution, this could affect the extent to which recording artists choose to work on large projects, like full-length CDs, at the rate of one or two a year. Many artists may transition to an ongoing series of singles or shorter compilations aimed at Internet distribution. (The dance music business has essentially already moved to this model.) A trend away from full-length projects has significant implications for studios that depend upon block bookings.

• Smaller, faster, cheaper. When all types of music recording facilities are taken into account, the overarching move is away from costly, large-format analog platforms and toward inexpensive, small-format digital ones. This trend has been the engine that has driven the growth of the personal/project studio over the last decade, while the number of facilities that can access large-ticket items has declined. However, as long as the need to track large assemblies acoustically remains, so will the need for larger facilities with large-format technologies. A varying number of large studio facilities will remain viable in each major music market. Equipment manufacturers that can leverage high-end brands into lower tiered markets will have an advantage.

• The vinyl effect. In a multiformat world, orphaned formats have more leverage. Vinyl records are more costly and have higher profit margins now that they have been nudged out of the mass market by CDs, and the same rule applies to professional formats. For instance, when someone needs to recover material from the PD digital format, that person may have to pay a higher hourly rate, and a Nashville studio is likely to benefit because the PD format remains widely available. Hundreds of terabytes of data reside on an array of formats now, and many may be hard to find in only a few years. Don't toss that DAT deck yet. And analog continues to exude allure: i.e., the Museum of Recording's exhibit at the New York AES. In fact, says Michael Harris of pro audio dealer Harris Audio in Miami, "There's already a Pro Tools backlash brewing, even in Miami. People are getting a bit bored with the idea of a total solution in a single box. Steven Marley's new facility here will be based around a [Studer] A800."

—Dan Daley

BASE-LINE MARKETING

At the most basic level, the recession is compelling facilities to increase their marketing efforts, a time for pro-active promotion. "Staying in touch, going through the Rolodex, letting everyone know you're there for them, that's been a big part of it for us," explains Susan Schilling, studio manager at Transcontinental Studios in Orlando. As Troy Germano, VP of The Hit Factory, puts it, personal relationships remain the cornerstone of the studio business, just as they are in the entertainment business as a whole. "I can't explain it other than that," he says. "You don't just walk out and create relationships instantly; you build and nurture them over years. But they are always the best-selling tool a studio can have, because then you're not really selling at all. You're relating to people." As Jay Baumgardner of NRG puts it, "We market the fact when we have successful records come out of here. We take advantage of the free press that comes with having hits." Dino Elefante, co-owner of Nashville's Sound Kitchen, has hired an assistant to help his studio manager spend more time actively churning the city's client base. "The current economic

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climate has made us work harder for the business," says Elefante. "We're very busy, but we don't get the entire project 'soup to nuts' like we used to. That's why we also put in new services, like a Sonic editing and mastering suite. But it's not just a matter of expanding services—you have to let people know you're doing it."

OTHER STRATEGIES

Other specific approaches that studios are taking include the tried and true, such as the package deals that studios like The Warehouse in Miami offer. Studio co-owner Ruben Parra saw his mostly Latin American clientele begin to wane as South American economies and travel declined. In response, he developed flat rates for complete projects, rather than rates based on incremental studio time and equipment rentals. "They tell us the budget, we put together a price package for them," he says, noting that the resulting discounts can amount to as much as 25%. "It keeps the studio busy, which is important," says Parra. "Though the profit may be smaller, there is still a profit."

Three Manhattan studios have taken another innovative approach. LoHo Studios, Theater99 and Threshold Music have created a joint marketing and booking venture called United Recording of New York. The three studios agreed to combine their marketing and promotional efforts, and will shuffle clients amongst them to make best use of the unique features of each studio, such as Theater99's large ambient tracking space.

But perhaps the most unusual response to difficult economic times is that of Fred Vail, owner of Treasure Isle Studios in Nashville. By putting shares in the facility up for auction on Ebay, he has sold 31% of the facility, 22% to an auto parts dealer in Michigan. The capital raised through the sale has funded new gear acquisitions, including a Trident 80 5.1 console, a new RADAR hard disk recording system, miscellaneous outboard gear and microphones, and a down payment on a Yamaha C-7 grand piano.

Complex times call for innovative responses. As Hunter S. Thompson once wrote, "When the going gets weird, the weird turn pro." ■

Dan Daley is Mix's East Coast editor.

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44th GRAMMY AWARDS

A Salute to the Tech Winners

By Blair Jackson


Richard King


Bone Burnett


Al Schmitt

This year's Grammy® Awards fete, held at the cavernous Staples Center in Los Angeles on February 27, proved to be a highly entertaining, if rather long, affair. The televised part of the program (which followed an hour and a half of awards in "lesser" categories, presented off-camera) offered a whopping 17 performances, from U2's inspirational opening number "Walk On," to scantily clad divas bumping and grinding through "Lady Marmalade," to the down-home singin' and pickin' of the *O Brother, Where Art Thou?* troupe, to violin master Joshua Bell's sparkling take on tunes from *West Side Story*. There was something for almost everyone, plus the usual assortment of beautiful and frightening outfits, snappy and inane stage banter and—a Grammy tradition—a heartfelt harangue from NARAS chief Michael Greene. This year's target for Greene's ire—the criminals among us (yes, you!) who illegally download song files from the Internet.

As expected, U2, Alicia Keys and *O Brother, Where Art Thou?* were the big winners of the night. For a complete list of winners and plenty of photos, go to www.grammy.aol.com/awards/grammy. Here at *Mix*, we like to salute the evening's victorious producers and engineers, so join us as we clink champagne glasses with some of our industry's best!

RECORD OF THE YEAR

"Walk On," U2

Produced by Daniel Lanois and Brian Eno. Engineered and mixed by Steve Lillywhite and Richard Rainey.

After taking home the Record of the Year last year for "Beautiful Day," many (myself included) thought U2's chances for a repeat were remote. The album that includes both of those songs, *All That You Can't Leave Behind*, also won Best Rock Album.

BEST ALBUM

***O Brother, Where Art Thou?*, Various Artists**

Produced by T Bone Burnett. Engineered by Mike Piersante.

A bit of a surprise in this very competitive, star-packed category, but richly deserved nonetheless. *O Brother* is a true music business phenomenon: Who would've guessed two years ago when the Coen Brothers were making their quirky, comic, depression-era retelling of Homer's *Odyssey* that its bluegrass, blues and old-timey soundtrack would become a multi-Platinum sensation?

"This was really a huge passion for T Bone from the very beginning," engineer Mike Piersante tells us. "He knew he wanted to do something special, and when we were doing it, we could tell it *was* special, but, of course, we never could have guessed that it would have that kind of popularity. After we finished it, we were so excited. Then, the film was well-received at Cannes, and the soundtrack came out and that was well-received, too, and T Bone told me, 'You're going to win a Grammy!' I said, 'What are you talking about?!'"

The album was mostly recorded at Sound Emporium in Nashville "using beautiful analog equipment," Piersante says with a laugh. "We wanted to keep everything as pure as we could. In fact, there were several things that we recorded for that album that we cut using an old RCA ribbon mic and a preamp direct to tape—no EQ, no compression, no reverb. Three or four pieces got mixed that way as well, including Ralph Stanley's 'O Death.' That went flat because it was perfect the way it was." The album was mixed at Sunset Sound.

Asked backstage at the Grammy's about the album's wide appeal, T Bone commented, "People have tried to pigeonhole this stuff as bluegrass or traditional. But, really, this is music for people who like music. Not everybody does. Music annoys some people. They just don't care for it. But if you like music, chances are you like this record."

PRODUCER OF THE YEAR, NON-CLASSICAL

T Bone Burnett

T Bone was also honored at the Grammys for his work on *Down From the Mountain*—a live CD featuring songs from *O Brother, Where Art Thou?* and other traditional American tunes—which snagged the Best Traditional Folk Album trophy. Last year, he also produced a fine album by his wife, Sam Phillips, called *Fan Dance*.

T Bone and Mike Piersante recently finished a new Ralph Stanley album, and they've been im-

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mersed in recording songs for the soundtrack of the forthcoming film *Divine Secrets of the Ya-Ya Sisterhood*. "That's been a really interesting project," Piersante says. "It jumps all over the map, from '30s Cajun music to '40s big band, to hip hop, pop songs, Bob Dylan..." Sounds like another winner.

BEST ENGINEERED ALBUM, NON-CLASSICAL

***The Look of Love*, Diana Krall**

Engineered by Al Schmitt. Produced by Tommy LiPuma.

Al Schmitt is certainly no stranger to Grammy trophies—he has a room full of 'em, accumulated during a long and brilliant career. And this is the second straight he's won with the talented jazz singer/pianist Diana Krall. "We recorded the vocals and rhythm section live at Avatar in New York," Schmitt told us a few days after the Grammys. "Then we went to London and recorded the London Symphony in The Beatles' old studio at Abbey Road, Studio Two. After that, we came back to L.A. and did a couple of fixes in Capitol Studio A, and then I mixed it at Capitol Studio C on a Neve. Actually, all four boards in the different studios were Neves."

Schmitt, who has worked with Krall on her past five albums, agrees with Grammy voters that this one was special: "There was a feeling to it, a certain mood, all the way through that was really, really nice. It's the kind of record you want to put on at night, kick off your shoes; it's very relaxing. It was a beautiful record. This is really Diana's time." Next up for Schmitt and Krall is a Christmas album (to be cut in the summer, of course) and then "we'll do another record that will probably be a little more jazz."

Alicia Keys performing her smash hit, "Fallin."

REMIXER OF THE YEAR

Deep Dish

Deep Dish was honored for a remix that was a true worldwide smash, Dido's lovely "Thank You."

BEST MUSICAL SHOW ALBUM

The Producers

Album produced by Hugh Fordin.

The Broadway smash was a shoo-in to win. "This is a thrill," Fordin said backstage, "but don't ask me for *Producers* tickets—I can't get them for you."

PRODUCER OF THE YEAR, CLASSICAL

Manfred Eicher

German producer Manfred Eicher works on both jazz and classical albums for his own label, ECM Records. Eicher earned this year's Best Producer Grammy for five ECM New Series albums released in 2001: *Morimur: The Bach Project*; *Joseph Haydn: The Seven Words*; *Leo Janácek: A Recollection*; the Heinz Holliger opera *Schneewittchen*; and *Verklarte Nacht*—compositions by Sándor Veress, Arnold Schoenberg and Béla Bartók.

BEST CLASSICAL RECORDING AND BEST OPERA RECORDING

Berlioz: Les Troyens

London Symphony Orchestra, Sir Colin Davis, conductor. Produced by James Mallinson. Engineered by Simon Rhodes.

A triumph for the new independent LSO Live label. The French opera was recorded live at London's Barbican Centre using Abbey Road's mobile unit. Producer Mallinson commented backstage at the Grammys that LSO Live "is a label totally created, run and managed by artists. I think that strikes a chord with many people. Classical music is not well-known or promoted these days, so a label like this clearly satisfies a need."

BEST ENGINEERED ALBUM, CLASSICAL

Leonard Bernstein: West Side Story Suite

London Philharmonic Orchestra, Joshua Bell (violin). Engineered by Richard King. Produced by Steven Epstein.

Three-time Best Engineered Album nominee Richard King admits that he was nervous at the Staples Center, "but fortunately, they give out the engineering awards first, so then I could relax and enjoy the show. I'm still in shock that I actually won."

The CD was cut over the course of four three-hour sessions at AIR Lyndhurst in London. "I like that room a lot," King says. "It has a sort of close, direct sound because the floor space isn't very large, but combined with the high ceiling and the balcony, it has great natural reverb. It takes a little work, and it can be a bit quirky, but it sounds really nice." Typical of classical work, the orchestra played each piece several times, then there were various small sections that were re-done, before it was edited and mixed at Sony Studios in New York, King's home base.

King was actually a double-winner on Grammy night: In addition to his victory in this category, he and producer Steven Epstein were given trophies for their work on the Best Soundtrack Album winner, *Crouching Tiger, Hidden Dragon*, which was recorded in Shanghai.

The King-Epstein team is currently working on an exotic project with cellist Yo-Yo Ma, recording music from and inspired by the ancient trade route known as the "Silk Road," which stretched from Japan to Italy hundreds of years ago. ■

Blair Jackson is Mix's senior editor.

World Radio History

MODERN MASTERS OF

PHILIP GLASS

THE MAVERICK

By Bryan Reesman

In the world of classical music and the avant-garde, Philip Glass has long been an artistic force to be reckoned with. Many people probably know, or originally first heard, the prolific and groundbreaking composer through his soundtrack to the 1983 Godfrey Reggio documentary *Koyaanisqatsi*. Glass' hypnotic use of arpeggios beautifully complemented Reggio's slow-motion and time-lapse images of modern life in transition. Like other Glass works, the soundtrack beguiled many listeners, while drawing criticisms from others who felt that the music was redundant.

Glass has been deemed a minimalist by numerous critics, because many of his compositions feature repetitive, slowly evolving passages that tend to transfix listeners and make them lose their sense of time. The fact is, he is strongly influenced by Eastern music, and by bringing those aesthetic sensibilities into Western concert music, he has expanded the Western vocabulary.

With around 40 albums to his name, Glass cannot be conveniently placed into one niche. The proof is in his catalog, including his four-and-a-half-hour opera *Einstein on the Beach*, a landmark collaboration with scenarist Robert Wilson; his score for Bernard Rose's beguiling 1992 horror film *Candyman*; his music for the 1984 Olympics; and his soundtrack to Martin Scorsese's film *Kundun*, which spotlighted performances by the Gyuto Monks. Glass crosses over numerous boundaries in his music without sticking to a formula, even if there is an identifiable sound or style to many of his releases. Perhaps he is an acquired taste, but it is one that many people savor.

The Manhattan-based composer has certainly collaborated with a wide range of people, including musicians David Byrne, Laurie Anderson, Paul Simon, Suzanne Vega, former Doors keyboardist Ray Manzarek and the Kronos Quartet; dancer, director and choreographer Twyla Tharp; poet Allen Ginsberg; and filmmakers Martin Scorsese and Godfrey Reggio, among many others. Glass has written symphonies, operas, ballets, composed for film and theater, and even arranged pop songs. This is a man who wrote a new score for the classic 1931 film *Dracula*, composed a full opera for Edgar Allen Poe's *The Fall of the House of Usher* and collaborated with Indian musical legend Ravi Shankar on the 1990 album *Passages*. He also turned two David Bowie/Brian Eno albums (*Low* and *Heroes*) into symphonies.

The Nonesuch label continues to keep the composer's film music alive with the recent DVD-Audio reissue of *Koyaanisqatsi* and the five-CD box set *Philip on Film: Filmworks by Philip Glass*. And most recently, Orange Mountain Music was founded by Glass associates to exclusively release his works, including *The Music of Candyman*.

Being self-sufficient has undoubtedly aided his career longevity and artistic freedom. Since 1991, he has owned and recorded at Looking Glass Studios in New York (www.glassnyc.com). Many

—CONTINUED ON PAGE 149

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RICHARD DANIELPOUR'S "AN AMERICAN REQUIEM"

WORKING THE REFERENCE RECORDINGS WAY

By Gary Eskow

In the age of MP3, some may despair about the long-range prospects for high-end audiophile recordings, but their numbers do not include Tam Henderson or Keith O. Johnson. Partners in Reference Recordings (along with "marketing maven" Marcia Martin), the producer and engineer celebrated the label's 25th anniversary in 2001 by snaring their ninth Grammy nomination, and they are energetically planning for the future.

Johnson, whose resume includes co-inventing the HDCD process, was a founding partner at Pacific Microsonics, the company now owned by Bill Gates that released this technology. As a rule, he prepares for a recording session by absorbing scores and any interpretations of a work he can get his hands on. But one of his most recent assignments—engineering American composer Richard Danielpour's expansive piece honoring the victims of the September 11th tragedy, *An American Requiem*—required Johnson to make a recording of a work he'd only heard once, a day before the session. What was it like to record, in three sessions, an hour-long work he barely knew that was scored for 250 musicians, including orchestra, chorus and three vocal soloists?

Keith Johnson: "I like to get different slants on how a work is performed, and the sounds that people are going for."

"Total panic!" says Johnson. "I like to get different slants on how a work is performed, and the sounds that people are going for. Then I have an idea of what I want to capture. We simply didn't have that luxury with the Danielpour piece. Fortunately, Richard's orchestration is exceptionally clean, and that makes the engineer's job much easier. Amateur composers tend to pile sounds on top of each other and let the recording engineer sort things out."

Commissioned by the Pacific Symphony Orchestra, *An American Requiem* was the final work composed by Danielpour during a three-year residency with the Orange County, Calif., arts organization. It was premiered and recorded at the Orange County Performing Arts Center, a space that Johnson found quite challenging. "The hall has very little reverb tail. I had to make decisions on-the-fly regarding how much ambience and reverb to add during the recording. We wanted to capture everything live, if possible, in order to eliminate the sonic degradation that comes with the audio post process. Usually, a console doesn't have enough DSP to deal with the small pieces of information you want to preserve for high-end recordings."

—CONTINUED ON PAGE 152

Pacific Symphony Orchestra and Pacific Chorale onstage at Segerstrom Hall, Costa Mesa, Calif.

PHOTO: JIM MEDVITZ

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WENDY CARLOS' "MARCH FROM 'A CLOCKWORK ORANGE'"

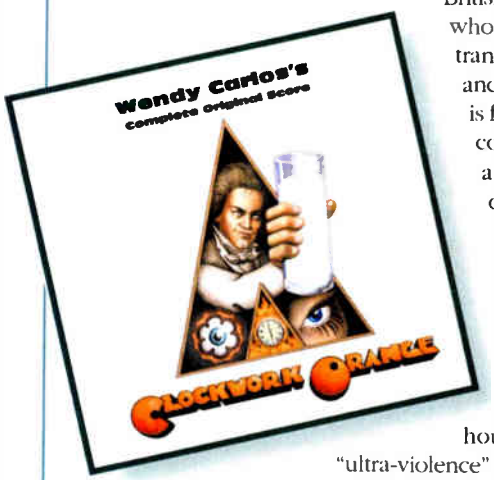
PHOTO: ANNEMARIE FRANKLIN

Wendy Carlos

By Blair Jackson

When director Stanley Kubrick made his landmark film *2001: A Space Odyssey* in 1968, he not only revolutionized the art of space special effects, laying the foundation for the *Star Wars* trilogy in the late '70s, but he also changed the nature of popular film soundtracks by serving up an incredible potpourri that included Johann Strauss waltzes side by side with avant-garde soundings by the Transylvanian composer Gyorgy Ligeti and, of course, the famous main theme by Richard Strauss. The sheer incongruity of the musical choices—the past and future juxtaposed so beautifully; the romantic and the dissonant colliding—added so much to the film-going experience. It was precisely those kind of brilliant contrasts that made *2001* one of the first great "head" films embraced by the '60s counterculture. It was, literally, a trip.

Kubrick's next film, released in 1971, couldn't have been more different in look and tone. Though set in a not-too-distant future, *A Clockwork Orange*, about a young British hooligan named Alex whose wanton hedonism is transformed by a maniacal and fascistic social engineer, is filled with the decay of our contemporary culture—it's a grim future that didn't quite arrive as we'd all hoped and expected. Yes, there's the sleek, curving lines, the gleaming plastic, the bright primary colors, but it can't quite hide the world of depressing, dilapidated housing projects and the "ultra-violence" ingrained in Alex and his "droogs" (cronies). Written originally by novelist Anthony Burgess and realized by Kubrick, *A Clockwork Orange* is a very black comedy; sick and horrific like Alex himself. Naturally, it called for a much different kind of soundtrack than *2001*, but once again, Kubrick turned to a unique fusion of classical music themes and contemporary renderings that fit the film perfectly. And once again, he produced a hit soundtrack in the process.



Dominating the *Clockwork Orange* soundtrack are Moog synthesizer versions of a variety of classical pieces, including works by Henry Purcell (the movie's main theme is from his "Music for the Funeral of Queen Mary"), Gioacchino Rossini's "The Thieving Magpie" and "William Tell Overture," and this month's Classic Track, the "March from *A Clockwork Orange*," which is actually a chunk of the fourth movement of Beethoven's Ninth Symphony (the choral movement that includes the famous "Ode to Joy"). Beethoven's music figures prominently in the story: Alex loves "Ludwig van," as he calls him, particularly the glorious Ninth, and Alex's nemesis in the film, who is trying to reprogram him against his will, away from the path of degradation and ultra-violence, at one point has Alex strapped in a chair, his eyelids held open by steel clamps, and forces him to watch films of Nazi atrocities while his beloved Beethoven blares over humongous loudspeakers. Alex is more offended at this abuse of Beethoven than of the content of the film, so great is his love of the music. The film uses some actual symphonic Beethoven, but it mainly relies on the Moog synthesizer interpretations of the music by Wendy Carlos and her producer/musical partner Rachel Elkind, giving the music a strange, haunting, futuristic quality.

Of course, synth scores are commonplace these days, and any kid who wants a synth can buy one—cheap!—preprogrammed with hundreds of sounds. But in the late '60s and early '70s, there were only a handful of synths in existence; they were huge, cumbersome beasts that were very difficult to operate, and relatively few people had heard—let alone appreciated—their variegated electronic tonalities. Not surprisingly, some classical music purists were outraged

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and offended by Carlos' radical reinterpretation of Beethoven in *A Clockwork Orange*. But then again, this was nothing new for Carlos: The same folks had become apoplectic in 1968 when Carlos produced the million-selling album *Switched-On Bach*, the record that single-handedly brought synth textures to the masses and made them (somewhat) acceptable.

A native of Rhode Island, Wendy (nee Walter) Carlos became interested in electronics at a very young age, even winning a Westinghouse Science Fair scholarship for building a computer at home. She went to Brown University, where she majored in a hybrid of physics and music. She did her Master's work at Columbia in the early '60s, and studied at the Columbia-Princeton Electronic Music Center, which was the first of its kind in the U.S. "I thought what ought to be done was obvious, to use the new technology for appealing music you could really listen to," she said in an interview with the magazine *New Age Voice*. "Why wasn't it being used for anything but the academy-approved 'ugly' [electronic] music? You know, the more-avant-garde-than-thouers, atonal or formally serious 12-tone strait-jacket." In another interview, she noted, "The typical electronic music setup of the '60s was a cluttered lab bench and a technician wearing a lab coat. It was hard to make music—melody, rhythm, orchestration, harmony, counterpoint—with these setups. Many of these technicians were not trained musicians, so we heard funky sound effects...So what was the public to think of electronic music? Ugh!"

But Robert Moog's synthesizer changed that. "Bob Moog combined many of these devices into a cabinet with a touch-sensitive keyboard," Carlos said. "A composer or pianist who knew something about electronics and the properties of sound could create *real* music.

"Synthesizing sound was almost like sculpting—you'd adjust the dials to make it sound better. To polish my craft, I tried to synthesize known instruments like the violin, drum or oboe. My producer, Rachel Elkind, and I noted dial settings for each instrument, then I'd clack away on Bob's keyboard, recording only a measure or two of one 'instrument' before the oscilloscope would drift out of tune. We recorded track upon track in this laborious manner, and I'm pleasantly surprised at how spirited it sounds, considering the tediousness."

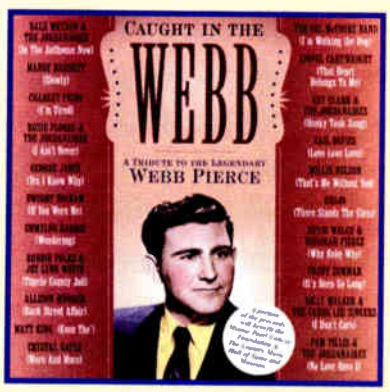
She further explained: "The Moog wasn't all that elaborate. There were a couple of oscillators, and you adjusted them to track the octaves. You would pick a wave shape from the four available—sine, triangle, pulse wave and sawtooth. There was a white noise source and a filter to reduce the high end of the wave, to make it sound more mellow, to add resonance or take out the bottom. Then there were envelopers that came from Ussachvsky's ideas: attack time, delay, sustain and release. Set the thing to ramp up at some rate: slow for an organ or fast for a plucked string. Make it decay immediately for a harpsichord, or sustain for a piano...

"Rachel helped me nail the tempo by putting down a click track. If, when I put the notes down against it, it sounded too fast, too bad—I did it over again! I had to clatter away slower than actual speed; you could never play faster than moderato. Sixteenth notes at a good clip? Forget it! If the tonal quality didn't change much over a phrase, you could get down a measure or two. To create a chord, you'd play the second line, then the third. With counterpoint, you'd play the melodies that wove together [one at a time]."

Cool Spins

The Mix Staff Members Pick Their Current Favorites

Various Artists: *Caught in the Webb, A Tribute to Webb Pierce* (Audium)
My introduction to country singer/songwriter Webb Pierce came from the late, great blues artist Ted Hawkins, who performed a raw, mournful version of "There



Stands the Glass" on his last album. When Pierce recorded the song in 1953, it was a bit more uptempo, but his MO was the same: simple, powerful songs sung with much more passion than polish. Ten years after Webb died of cancer, producer/performer Gail Davies (who charted with Pierce's "No Love Have I" in 1978) has assembled a marvelous collection of like-minded atists—including Dwight Yoakam, Emmylou Harris, George Jones, BR549, Willie Nelson and more—to bring their own voices to Pierce's music. Unlike many tributes, this album was recorded and mixed in one studio, overdubbed in a couple of others, with the same bandmembers and the same engineers; all of this makes for an album of distinctive recordings with consistent sonics. Though there are a few instances when the incomparable backing vocals by The Jordanaires inappropriately overshadow the lead vocals, these are superb performances of great songs, and part of the proceeds benefit the Minnie Pearl Cancer Foundation and the Country Music Hall of Fame and Museum.

Producer: Gail Davies. Recording/mixing engineer: Craig White. Overdub engineer: Rob Price. Recording/mixing studio: Curb Studios (Nashville). Overdub studios: Crystal Sound and Little Chickadee Productions Studio (both in Nashville). Mastering: Glenn Meadows/Masterfonics. —*Barbara Schultz*

Orchestra Baobab: *Pirates Choice* (World Circuit/Nonesuch)
This two-CD set reissues semi-legendary 1982 recordings by Orchestra Baobab, one of Senegal's most successful dance bands during the '70s. Originally released only on cassette, these 12 tracks, none under six minutes, present a beguiling mix of Cuban-influenced dance music and more obviously African material. The first CD consists largely of smooth rhythmic grooves punctuated by Issa Cissoko's sax and the chiming guitar of Barthelemy Attisso, while a barely audible mix of bass,

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Beginning in 1966, Carlos built her own recording studio in her apartment on West End Avenue and 79th Street in Manhattan; one of the first true project studios. It was centered around a giant custom Moog—which looked a little like an old telephone switchboard—and Ampex tape machines: She started with a 350 stereo recorder, replaced it with the "much better Ampex 440B," and then constructed an Ampex 8-track herself. She also built a large power amp, a custom 10-in, 2-out mixer, a pair of 8-inch ducted-port speakers, a patchbay and VFO (varispeed) unit. Despite the technological limitations, Carlos and Elkind managed the miraculous when they made *Switched-On Bach* in 1968. It was a huge success, becoming the first classical album to go Platinum, and even earned a Grammy for Classical Album of the Year—a controversial decision, to say the least.

Wendy Carlos' Manhattan studio, with Moog synthesizer, early '70s

Over the next couple of years, Carlos and Elkind continued their pioneering work with synths, composing original pieces for the instrument (some of which became the 1972 album *Sonic Seasonings*) as well as interpreting existing ones—*The Well-Tempered Synthesizer* was a popular follow-up to *Switched-On Bach*. They also developed a new piece of gear themselves: a "spectrum follower," which converted the human voice into electronic signals. They used this "vocoder," as it became known, to create an electronic translation of the choral movement of Beethoven's Ninth Symphony, though they did not release it commercially at that time. The piece combined layers of spirited synth lines, a la the *Switched-On* album, with stirring electronic vocalizations, most by Elkind. "As a singer, [Elkind] has much better control and vocal quality than do I," Carlos noted. "Also, her formants are of a lower pitch than mine, thus easier to pitch and process. A few shorter chorus parts in the last movement of the Beethoven Ninth Symphony performance were with my articulations, so they wouldn't merge with Rachel's important articulation of the tenor solo."

Meanwhile, Stanley Kubrick was working on *A Clockwork Orange* in England. Carlos had loved the Burgess book and was a fan of Kubrick's work, and fantasized aloud that she'd love to get some of her music into the film; she thought it would fit well. When word filtered back to New York that principal filming had been completed, Elkind managed to get a tape of their version of the choral movement, as well as a stunning original composition by Carlos called "Timesteps," into the hands of the director. Kubrick was bowled over by what he heard and summoned Carlos and Elkind to England. He agreed to use both pieces in the film and also arranged to have the team synthesize some other classical themes he was planning to use in the film and to create some background cues from scratch.

"Since this was in the days before SMPTE was popular," Carlos wrote on her tremendously informative and educational Website (www.wendycarlos.com), "we used a 60Hz tone, put on one track of eight, so Kubrick's engineers could maintain synchronization, once the start 'beep' had been located properly. It worked pretty well for a simple system. That 60 Hz, by the way, was gotten most expediently: a couple of alligator clips on the VU meter lights, to a patch chord, and right into the Ampex.

"[A] 16-track 3M tape recorder captured most of the master elements, again with a 60Hz sync track...We borrowed a 35mm mono audio dubber from our friend, the composer Eric Siday, to play back the dialog track in sync and help us locate each sync point. Wherever there was a cue to hit, we glued a teeny snip of loud sine tone onto the tape onto that spot on the film's audio mag track, so the audio output provided a 'blip' at these spots. We bought a small, used Moviola to watch scenes we were about to score."

A Clockwork Orange was an artistic and commercial triumph for both Kubrick and Carlos. The album made it up to

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Number 34 on the *Billboard* charts, and a few months later, Carlos' *Sonic Seasonings* became her first album of original music to come out; it too, was well-received. Since then, Carlos has made numerous albums of her synth compositions and interpretations of others' music. A few years ago, her four major Bach works were compiled into the fabulous *Switched-On Box Set*. Other major releases include *Digital Moonscapes* (1983), *Beauty in the Beast* (1987) and *Tales of Heaven and Hell* (1998). On the film front, she scored *Tron*, the groundbreaking mixture of computer animation and live action, and contributed music to Kubrick's horror masterpiece, *The Shining*. In 1998, the East Side Digital label put out a newly remastered version of her music for *A Clockwork Orange*, including the full version of "Timesteps" and a couple of cues that were either shortened or eliminated from the original film. It's a wonderful CD from beginning to end.

Naturally, Carlos' studio setup has evolved through the years (and moved around Manhattan a few times), and she still faithfully checks out advances in recording and instrument technology. She is, and has always been, open to The New. "The musicians working in the medium now have these advanced tools," she said, "but they should not be stuck using only MIDI and prerecorded sounds. If they want to learn how the medium ticks, they should open the hood, get inside and get dirty. And they'll be grateful for everything they learn, for every discovery. It's wonderful, but damn, you have to have the motivation! And the curiosity." ■

PHILIP GLASS

FROM PAGE 142

prominent pop artists have recently recorded albums there, including Suzanne Vega, Duncan Sheik, David Bowie, Bowie's guitarist Earl Slick and Grace Jones. The studio is well-equipped: It has a 48-track G Series SSL console; Otari 2-inch, Pro Tools and Logic/G4 recording systems; and plenty of outboard boxes.

Still, though, Glass composes his music the old-fashioned way: with paper, pencil and brain power. In this revealing interview, he discusses his methods and motives, and his life as a progressive composer forever going against the grain.

You strike me as someone who sits at the piano for a very long time to work everything out before going into the studio.

I do a lot of working out, that's very true. And by the time I have it down on paper—paper and pencil, I'm still working that way—then I turn it over to the people I work with, who work directly to hard drive. Basically, we go into recording mode right away.

Do you have a separate studio at home?

At home, I just have a piano and a table. And three blocks away is all the gear. Many days I don't walk over there at all. I will go over there today, but many days I don't go over there.

That's interesting, because so much music today is studio- and technology-based. Many people are creating music but not composing it. They're sculpting it within their computers now.

That's not so true of what we call concert music. In the world of concert music, I am the maverick who has adopted the technology of the rest of the music world and used it in the creation of operas, ballets and symphonies. To the degree that I have my own facility that I work with, very few composers have a setup like this in the world of experimental concert music. In the world of film music or the different kinds of commercial music—and there are lots of different kinds of it—people are working directly in the studio.

You've been inspired by many different genres, which is great because ultimately I've found that so many of them are tied together.

That's what we're finding. Even the separations are becoming less meaningful. The big record stores still try to categorize things into pop and jazz and opera and all that stuff, but the audiences aren't categorized that way. So in a way, I think the barriers between the genres are just dissolving.

I imagine that when you started composing 30 or 40 years ago, you probably found it to be very different.

Oh, it was *very* different. The idea of working in the studio was very remote. Composers didn't work in studios except *maybe* if they got a piece recorded, which was not often. I've got about 40 CDs now.

I find it interesting that you can go from writing epic pieces like* Einstein on the Beach *or* Music in Twelve Parts *to working in films, because obviously you have to condense those musical concepts.

It's a different way of working. It's all stimulating. It keeps you fresh to keep changing that way.

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Do you find it challenging to condense your musical ideas into a smaller time frame for these films?

And then the other way around, going back to an extended time frame. Like writing a little transition for a movie and then thinking about a scene of an opera that may be 10 or 15 minutes long. Or a slow movement of a concerto that could be 15 minutes long, and then turning around and doing an arrangement for David Byrne that's got to be over in three minutes!

I think we develop facility and a kind of distance and objectivity, in a way, about the work when we develop that kind of flexibility. I think it's extremely positive to work that way.

Do you use click tracks when recording your music?

It depends. Sometimes we do, sometimes we don't. Some things are done best that way. When we're doing music live to a film, we don't use a click track. That is synchronized visually to the film. For live performances, I never use a click track.

In the studio, it can be very useful, but we don't use a steady click track. We sometimes construct a click track that speeds up and slows down, so that when you're playing with it, it gives room for a different kind of expressivity.

You have been very comfortable working with conductor Michael Riesman over the years. How much influence has he exerted on your work?

The main influence is that he has given me tremendous flexibility in what I can do. He brings a tremendous expertise to mixing and recording. Very often, I'm writing a piece that's both a recording and a live performance. I know that we're going to record, and then I know that we're going to play it live like a film score. And I'll say to Michael, "How many instruments can we use for the live performance?" And he'll say, "Don't worry about that. Write whatever you want to write and let me figure it out." So I do. Then we'll look at the score together and figure out how to make it work best, whether we're going from recording to live or live to recording. It could be either way. So he gives me a tremendous amount of flexibility in what I do. It's really terrific.

You have a five-CD box set out on Nonesuch called* Philip on Film *that collects many of your film scores. Is there any one of these soundtracks in the box set that is your favorite?

Always the new ones. Because they're new. The new ones are the pieces that we call *shorts*. They're short films made by Atom Egoyan, Shirin Neshat and Godfrey Reggio [and others]. So these are all movies that I'm very, very interested in. I enjoyed very much working with them. I worked collaboratively with all the filmmakers.

When you're doing these soundtracks, how much influence do these directors have upon you?

It depends upon the filmmaker. With Godfrey, I'm given a lot of freedom. And I was with Marty Scorsese, too, with *Kundun*, which is not in that box [completely], but it was an important score for me. I try to get the filmmakers into a collaborative frame of mind where I can make real contributions and they give me the room to do that. That's the best thing for me.

Have you found yourself influencing the way* they *make films?

In Godfrey's case, I've written music and then he's created the images afterward.

For which film?

The one we're working on right now! We're doing *Naqoyqatsi*, which is the third of the *qatsi* movies. There's a little connecting piece that's about three minutes long, and he hasn't even made the images yet. He told me what it would be like and how it was going to function. I wrote some pieces, and we recorded them. After I talk to you, I'm going to go down to the studio and look at the first images that he's put to it.

How will this film be different from* Koyaanisqatsi *and* Powaqqatsi*?

It's extremely different in the way that the images were created. The images are mostly created from digital technology. If not, some were filmed and then they were revisited technologically, so that they ended up looking differently, processed in different ways. There is almost no image in the film that would appear the way it would have in a normal film. So he's created a very different film language in terms of the visual language.

The story is the ongoing story that Godfrey has, which is the impact of modernity and technology on the way we live. It's not always a critique of it. People think he's very much against the modern, but he's not actually. He's just trying to present what he sees as the process that's going on around us.

Tell me about Looking Glass studio.

We have two rooms. The A room is where we can do sessions with string sections and brass sections, and the B room is really an overdub room. We've had 2-inch analog [tape machines] for a long time, but everything is Pro Tools now. The

World Radio History

rooms are also very good for mixing. The control rooms are fairly spacious so that you can be comfortable.

Do you own Looking Glass?

I own it, unfortunately. [chuckles] I had a partner a few years ago who left me, and I got stuck with it. That's when I began renting it out commercially. And then I had to continually upgrade it to keep up with the level of technology in the business. We have very good engineers and people that are quite expert at digital stuff.

Do you do any pre-production in the studio or do you write everything at home?

The writing is all done at home. All I take over to the studio is pencil and paper, and then what we do often is, we'll play all the music into a computer so that we can print out the parts for all the players. And at the same time, we can make the click tracks and everything we need to sequence. If it's a film, we have to be prepared to use a SMPTE code of some kind.

Glass has written music for three of Godfrey Reggio's films, including Powaqqatsi.

As far as synthesizers, samplers, effects units and sequencers go, how much, if any of those, have you used in your music?

We use them all, actually! In the production, we can use everything. We may record an orchestra and then go back and sample strings and fill out the sound with that.

Your music is so organic, you probably don't have lots of samples or restructured sounds.

Actually, there's more than you might think. In fact, one of the things that Michael and [producer] Kurt Munkacsi are skillful at is making things sound very organic. Sometimes it's painstaking work to get things exactly right, recording things over and over again. When you hear it, it sounds like it just happened in a second. That's part of the art of what they do, to make it sound organic and natural, but, in fact, a lot of the work can be very technical.

Does that include editing different passages together?

Even that, you may have seven or eight alternate tracks of the same measure. If you're doing a singer, you may record the same phrase a number of times, and then you'll put together the best performance. It sounds funny if you explain it to people who aren't involved in the business. It sounds very technical, but the result can be an extremely beautiful vocal line that would never actually

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have happened in the real world.

The devious aspect to Pro Tools is that some people can get addicted to the technical side and not pull away to let the music breathe, because they want to make things sound perfect.

I think we a have good balance because we're also very involved in performance. Michael and I are often on the road. I do 60 to 80 concerts a year, so I'm constantly involved with the organic reality of live performance. So that becomes a balance. It helps, I think, to have that experientially in your mind when you're in the studio.

You obviously have a signature style that some people love and others dislike. Are you ever aware, especially considering your large body of work, that you're writing a "Philip Glass piece"?

The language has changed slowly over 30 years. If you listen to *Music in Twelve Parts* and *Kundun*, they sound like they were written by different people, but I can hear myself in it. I'm always struggling with that. I think any artist is struggling to renew their style, and it's not easy to do. Some things you'll never break free of. To reinvent yourself, like the way you talk or the way you walk, is very hard to do. But I think if you work at it, you can maybe do it, if you keep enough doors and enough windows open so that the language can refresh itself from time to time and take on a different meaning.

Many of your pieces have cyclical arpeggios in them. What do you find so mesmerizing about them?

When I began it, it was a way of combining harmonic and rhythmic language in the same structure. That's what that was. I just wrote a symphony where there are no arpeggios at all. It's gone. And there are very little in *Kundun*.

Do you find any irony, even some pleasure, in the fact that when you started out, you were ruffling the feathers of some of the conservative classical establishment, and now you could be considered a pop culture icon?

Well, that may be, but I still can't play in every opera house that I'd like to. The classical world is a very slow world to change. I simply worked around it and found ways of playing in different places. I think the work is recognized in a general way. There are still places where it's not recognized at all. I have to put up with that. I probably always will.

Do you still feel like an outsider?

In some ways, yes. In some ways, no.

You've managed to make a lot of different music and work with a wide range of people.

The thing in America is that we recognize people with prizes and grants and academies, and I don't belong to any of them. I never got any prizes or grants, and I don't belong to any of the academies. Except the Academy [of Motion Picture Arts & Sciences]; that's the only one I belong to. When I got nominated for *Kundun*, I automatically became a member. But I never got a Guggenheim, I never got a MacArthur.

***Glass wrote a new score for Tod Browning's classic film* Dracula.**

Does it matter to you personally?

No. But what I'm saying is that kind of affirmation, which is important for a lot of people, I gave it up a long time ago, because I realized it was never coming my way. It wasn't important to me.

On your Website, there is a quote attributed to you: "Most music begins with an introduction, then it develops and has all sorts of adventures, some happy, some sad, and then it finally comes out at the end." How would you describe your own music?

It's theater music. It's really driven by subject. And the subject is not necessarily a narrative subject. It can be a portrait, an image. It may not be a story. It could be a story that's told in a fragmented way. I describe my music as theater music because it involves image, text, movement and music, and the combination of these together is what interests me. I would say 70 percent of the work I do is theater music in that sense. ■

Visit www.philipglass.com for more on this composer.

DANIEL POUR

FROM PAGE 143

Tracking to Tascam DA-98 HR, DA-88 and DA-38 recorders, Johnson utilized the bit-splitting capability of the DA-98 to record the stereo tracks at a resolution of 24 bits/176.4 kHz. A surround mix, captured simultaneously, was recorded at 24 bits/88.2 kHz. "We did end up running out of space on the DA-88 that was tracking the surround mix, and ended up capturing the surround field itself at 20 bits," he says. "That's still a lot of information, and the idea is to get it all at once, if possible, and avoid having to go into post, where you're placing a burden on a console to handle all of the data that's on tape.

"I brought a pair of Lexicon reverb units—a PCM90 and 224XL—to provide delays and part of the signal mix to drive self-amplified speakers placed in the hall. Reverberation devices—with the possible exception of the latest Sony unit [the 888]—yield less resolution and more noise side bands than the other equipment we are dealing with. You can hear these artifacts when their electrical signals or reverberation feeds are mixed, so, instead, directional speakers were positioned to drive the most reverberant parts of the hall I could find. Then I placed microphones in these active areas to supply the reverberation feed. A little microphone feedback was mixed back to the reverberation units to help sustain and brighten the effect, and help balance the hall ambience."

Johnson drove the hall with speakers to wet the sound, using a technique that traces back to the early London recordings on Decca. "We mix signals from ambience microphones that pick up both the sounds that naturally occur from that resonant space and the reflected sounds produced by the reverb speaker," he explains. "In other words, the speaker, which I have constructed for this purpose, gets a mixture of reverb picked up by hall microphones, delayed feeds from instruments that do not couple or drive the space very well, solo singers and outputs from the reverberation units.

"The ear expects to hear more hall sound as amplitude rises. Consequently, if you raise the gain on a singer's microphone to bring him forward, the listener expects more response from the hall, but that doesn't happen here. To compensate, I took some of the singer's signal, delayed it so that it lines up with the time frame of what the hall should sound like,

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and then mixed in some electronic reverb. We also blend in several reverberation mics from that area that are simply picking up some of the most reverberant sound in the hall. The result of this blend is an acceptable, though not world-class, reverberation effect."

Many engineers recording large classical ensembles use spot mics to capture individual instruments during the tracking process, and then handle balances in the mix. But because the Reference label's goal is to capture a performance as it happens, Johnson uses accent pairs instead of panned monaural spots. "We usually use cardioids or hyper-cardioids, but in stereo pairs. These mics have their own power suppliers and line amplifiers, which have equalization built in. They have different response curves than the more distant microphones. By properly adjusting these accent pairs, the listener hears the balance of an instrument as if it's further away than it really is from the mic, which gives a more natural sound. The pairs are arranged in time phase. That way, if an instrument is on the left of the sound field, we can arrange them so that they impart this effect.

"Generally, we use old Sennheiser MKHs from the 1950s for both the main and accent pairs," Johnson continues. "It's a classic mic, but it's extremely tricky to keep running. About half of my mics have diaphragms that are much thinner than the original issue; all have had the analog parts of the electronics replaced with direct-couple servo electronics. The original solid-state design is awkward and clumsy by today's standards.

"We used Coles ribbons mics on all of the soloists. They're very similar to the RCA 44BXs in their ability to produce a very natural voice sound. The 44s are actually superior in this regard, but they're too fragile. Incidentally, the Coles are also probably the best mic for horns on the market.

"We placed a pair of omni mics across the front of the orchestra, a center pair of cardioids on the winds, and another pair of cardioids quite high over the percussion. To capture the chorus, we used a pair of high-placed omnis plus a pair of cardioids in the center. For the 5-channel feed, we blended in a center mic, which was placed in front of the orchestra."

Johnson also designed and built the consoles used on this recording. "Three consoles were used on this project," Johnson says. "One board creates the 2-channel CD mix. Another deals with the 5-channel mix, and a third handled the accent microphones; that board fed the other two. The only piece of electronics in the consoles is an active line drive, which takes the signals from these passive boards and boosts them so that they can be sent down a cable to the digital converters. We also used a little Mackie board for the reverberation signal. This board received signals from the other three consoles, mixed them and sent the signals to the speakers in the hall."

Dealing with the large forces that Danielpour wrote for did not present unusual problems for Johnson. "The microphones and line-drive amplifiers had been set up for this kind of work. The master gain is pretty much plus or minus 3 dB to achieve the right level. I've done enough recordings to know approximately where that level is going to be. I carefully listen in on the orchestra as it's tuning up. The most critical part for me was when the musicians were coming onstage and warming up. The only other time I had to get sound balances was when the orchestra and chorus were working some things out—maybe a five-minute period during which I made some trial fader moves and marked settings. The setup and recording times were very limited."

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Despite the pressures that came with tracking this Danielpour work, Johnson is pleased with the results. So is conductor Carl St. Clair. "The sound balances and ambience that Reference Recordings created in our center is amazing," he says. "There is a wide spectrum of color and detail, and a great breadth of sound. I was extremely impressed with the division of the instrumental groups, which seemed miraculous to me. In a concert situation, you're not making evaluations on these matters. You're simply passing through time with a piece. But making a record is different. You want a note-perfect performance, if possible, with emotion, and you want it captured with the most detail possible. All of us associated with the Pacific Symphony believe that *An American Requiem* will join the canon of the great masses, and this recording will help establish it in the public's mind."

For Danielpour, whose works have largely been recorded on the Sony label, *An American Requiem* represented his first foray into production. "Most of my records had Steve Epstein as producer," he notes. "Fortunately, Tam Henderson is a first-class producer and gentleman. Tam gave me a great deal of latitude regarding re-recording sections if I heard something that wasn't quite right. I didn't think it would be possible to record this work in three, three-hour sessions, but we did. A great deal of the credit goes to Carl and Reference Recordings. Sonically, I was amazed at the results."

The Danielpour *Requiem*, which was rush-released in January, is quickly making fans, including producer Tam Henderson. "This is an extremely effective piece of choral music. It's melodic, dramatic and very effective. I think it will become a repertoire item." ■

For more, go to www.referencerecordings.com.

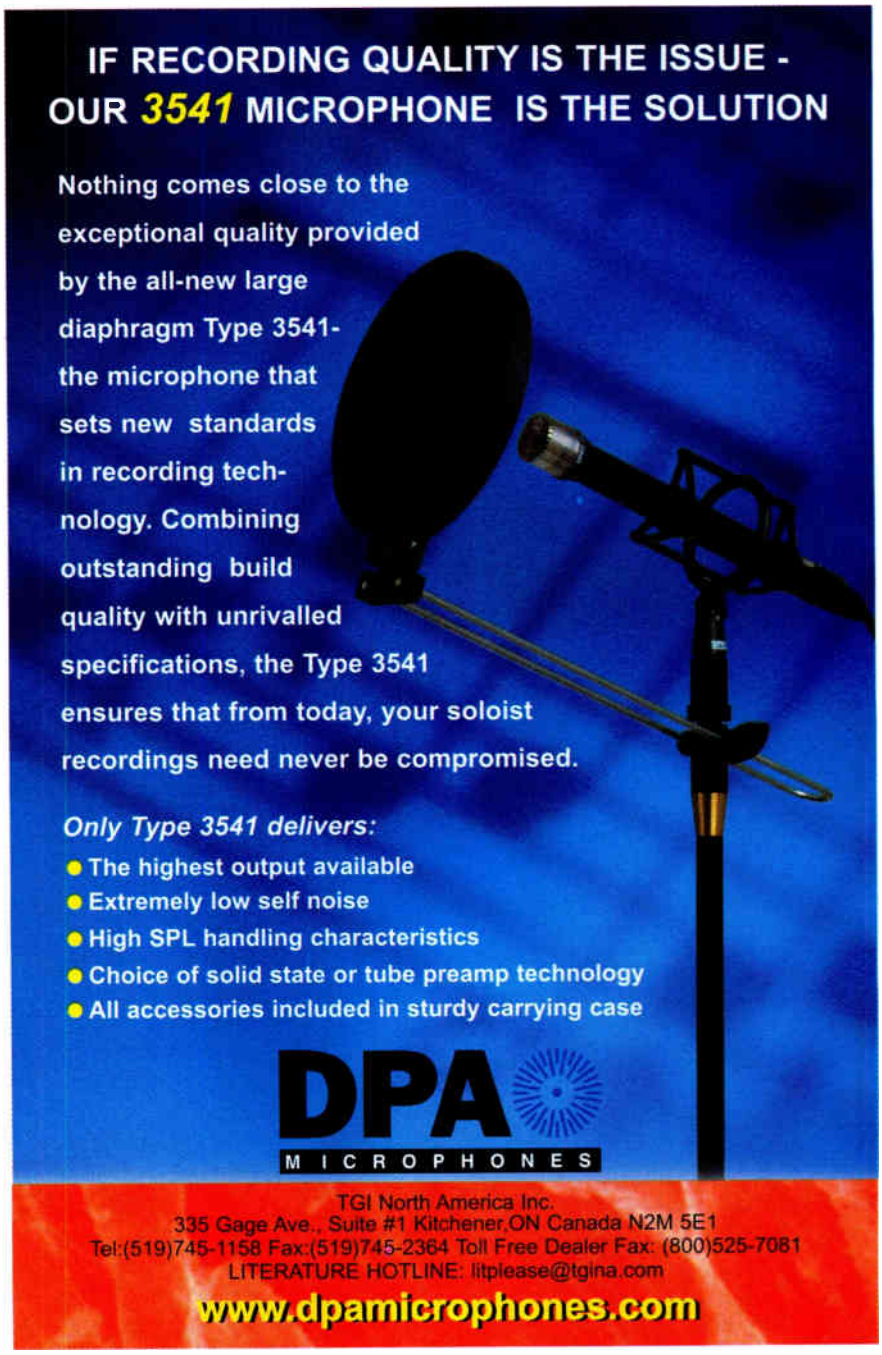
Cool Spins, FROM PAGE 146

drums, percussion and guitars percolates in the background. As many as five vocalists sing or chant the relaxed melodies, though few non-Senegalese listeners will have the language chops to understand the lyrics. The second volume continues the languid sway and upbeat mood of the Afro-Cuban material, but features more impassioned vocal performances and a less international sound, reflecting the various musical influences of the band's 11 members. Obviously made under primitive conditions, the barely produced but clean recordings are consistently engaging and musical, conjuring up a startlingly clear image of experienced musicians playing for themselves in a club or rehearsal room. Anyone who warmed to the no-frills intimacy of The Band's one-room recordings or the courteous musicianship of the Buena Vista Social Club will find this 94-minute collection a constant delight, and even jaded sophisticates will find the "bar-at-the-end-of-the-beach" ambience irresistible.

Produced by Moussa Diallo in Senegal. Remastered by John Hadden, Tom Leader and Adam Skeaping. —*Chris Michie*

Ten Years After: *Live at the Fillmore East* (Chrysalis)

Excess, anyone? This release intrigued me because I was a huge fan of Ten Years After in '69-'70, particularly their *Shhh* and *Cricklewood Green* albums. This two-CD live set comes from early '70, between those two albums, so it contains most of the best songs from both. I also saw them play at the Fillmore East a few months after this was recorded, so hearing this was a real trip back in time for me. Beautifully recorded by Eddie Kramer, the discs definitely capture TYA at their peak, jamming furiously on just about every song. There's a sameness to guitarist Alvin Lee's



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fleet-fingered solos that is wearing after a while, and they really only have two tempos—slow and *really* fast (a couple of songs start out slow, speed up, and then slow down again)—but I still like the songs, simple though they might be, and what a fine, gung-ho rhythm section: bassist Leo Lyons, drummer Rick Lee and keyboardist Chick Churchill. The CDs offer a mix of familiar blues and early rock 'n' roll classics along with TYA originals such as "Love Like a Man," "50,000 Miles Beneath My Brain" and, of course, the tune that made them famous in the *Woodstock* film, "I'm Going Home." A nice bit of nostalgia from that long-gone era When Guitarists Ruled The Earth.

Produced by Ten Years After. Original engineering: Eddie Kramer. Mixing and remastering: Peter Mew at Abbey Road (London). Recorded live at the Fillmore East February 27-28, 1970.

—Blair Jackson

Lo Faber: *Henry's House* (6 Feet of Snow)

Lo Faber was the leader of the eclectic New York jam band God Street Wine, who put out a series of solid, underappreciated albums in the mid- to late '90s. His solo debut is quite an ambitious undertaking—a double-CD "rock opera"; 22 songs that form the basis of a rather convoluted children's story. I dunno—I read the synopsis, I followed along...I would've liked it a whole lot better if he'd ditched the concept and written more adult themes. But I have to give Faber high marks for the sheer *craft* that went into making this album. It *sounds* fantastic, and there's so much variety to the tracks—wonderful vocal pieces, instrumental turns that recall the best of progressive rockers like Genesis and Yes, some unmistakably Pink Floydian spaces and, not surprisingly, a few grooves that have that God Street Wine

sound. Not as sinister as *Tommy*, and a thousand times hipper than Raffi, *Henry's House* might very well appeal to younger listeners weaned on rock 'n' roll. Adults will have to pick and choose their favorites from this smorgasbord and ignore the sillier tunes. Still, it shows that Faber's songwriting and arranging chops are still first-rate.

Produced, recorded and mastered by Lo Faber. Mixing by Faber and Ted Marotta. Studios: Great Northern (Argyle, N.Y.), with some overdubs cut at Cove City (Glen Cove, N.Y.) and Complete Music Services (NYC).

—Blair Jackson ■

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—FROM PAGE 92, "PANIC ROOM"

plan of the house and printed out the names of the sound files for each of the rooms, so when our effects editor, David Hughes, would be in a particular room, he'd know which sounds went in there."

Like the sound, music also played an important role in the film. "Howard Shore, our composer, did an amazing job," Klyce says. "We actually spotted the film twice; once in the early stages of the film, while Fincher was still shooting, and once toward the end. During the spotting sessions, Howard and I realized that it was imperative that we collaborate as much as possible. So much of filmmaking is departmentalized, where the sound crew and the music crew don't hear each other's work until the final mix, often when it is too late. Howard and I decided not to take that route and instead communicate with each other as much as possible. We sent each other works in progress. We would talk on the phone and decide where the sound would stop and the music would begin. We would speak of frequency ranges and of pacing. We even ended up collaborating quite closely on the slow-motion sequence in reel 4."

The score was recorded on the Sony MGM stage in Culver City by John Kurlander, with David Gleeson producing. The music was mixed at Capitol Studios and then shipped up to Skywalker for finaling. "The music department had it rough," Klyce notes. "The schedule was accelerated, leaving no time. Everyone was working flat out and around the clock. Fincher fell in love with the opening theme and demanded to have it recapitulate several times in the film, forcing Howard and his team to re-score three cues in the eleventh hour of the mix. It was stressful, but in the end, Fincher got what he wanted."

Restraint is hardly the word that usually comes to mind when discussing Fincher's approach, but Klyce insists that the director actually has a very deft touch and is quite sensitive to dynamics. "This whole film is about sound, to an extent," he says. "There's a scene early on, where the bad guys break into the house, and you hear them creeping up the stairs. Jodie wakes up—she's hung over—goes into the bathroom. She pees, she flushes the toilet. The men hear it. She walks across the floor and the men hear that. They walk up the stairs. We see them accidentally kick a basketball, which then flies down the staircase. Jody hears the same sound, but from a distance...There is a lot of these types of subtle noises that actually help tell the story.

"Also, Fincher's not afraid to use silence," he adds. "He's very mature in his taste, and it's kind of wonderful to not have a lot of loud whooshes and not have noise for every single thing you see. It makes the audience lean a little more closely to the screen and that heightens the tension. And that's what it's all about." ■

MEANWHILE, ON THE SCORING STAGE...

—FROM PAGE 92

map—the number of edits we wanted—and they could be done immediately while we were recording other cues. Then, at lunch break, Howard could review the edits of what we'd recorded in the previous hours. Having the knowledge that all those edits were going to work while the musicians were still present was quite comforting."

The *Panic Room* SAN, which was designed at the suggestion of technical director David Gleason, was built around 1.3 terabytes of shared storage, including a Qualstar 4212 AIT tape library system capable of backing up 2.6 TB of data. To avoid fan and drive noise, the storage components, which all fit on one rack, were housed in a separate machine room. Standard multimode fiber cabling linked all of the systems to the storage tower, which comprised 24 Fibre Channel 10k Seagate Cheetah drives and a 16-port Vixel fabric switch used to convert the fiber light into gigabit Ethernet.

"The Vixel is a very high-speed version of an Ethernet hub," Levy explains. "It hooks up all the workstations through fiber optics and interfaces them to the rack of drives."

The two editorial Pro Tools systems, one 8-channel and one 16-channel, provided monitoring through Martinsound Multimax matrixes that allowed the editors to select from mono, stereo or surround sound monitoring. Speakers were Genelec 1029s with M&K subwoofers.

As the scoring dates happened, mixing sessions for the project were already under way at Capitol Recording Studios in Hollywood. The Pro Tools systems used for mixing were running from SCSI hard drives, so four SCSI bays on the SAN tower were made available for Fibre Channel to SCSI transfers of the program material, and removable drives were couriered between the studios. "The only way currently available to transfer data is via removable SCSI drives," Levy notes. "The expense and complexity of trying to pipe fiber directly from point to point is still prohibitive, although I'm convinced that we'll be able to do it soon."

Advanced Audio provided onsite technicians Erik Swanson and TJ Lindgren for the dates, which, according to Kurlander, went smoothly. "It was pretty transparent," he contends. "Paul Levy gave us a lot of support and put a lot of man-hours into the preparation. As with any of these groundbreaking things, we took a little extra time in setting up. But once it was up and running, it really paid off while the orchestra was there." ■

Paul Levy, left, and John Kurlander in front of the Fibre Channel SAN.

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BY OLIVER MASCIAROTTE

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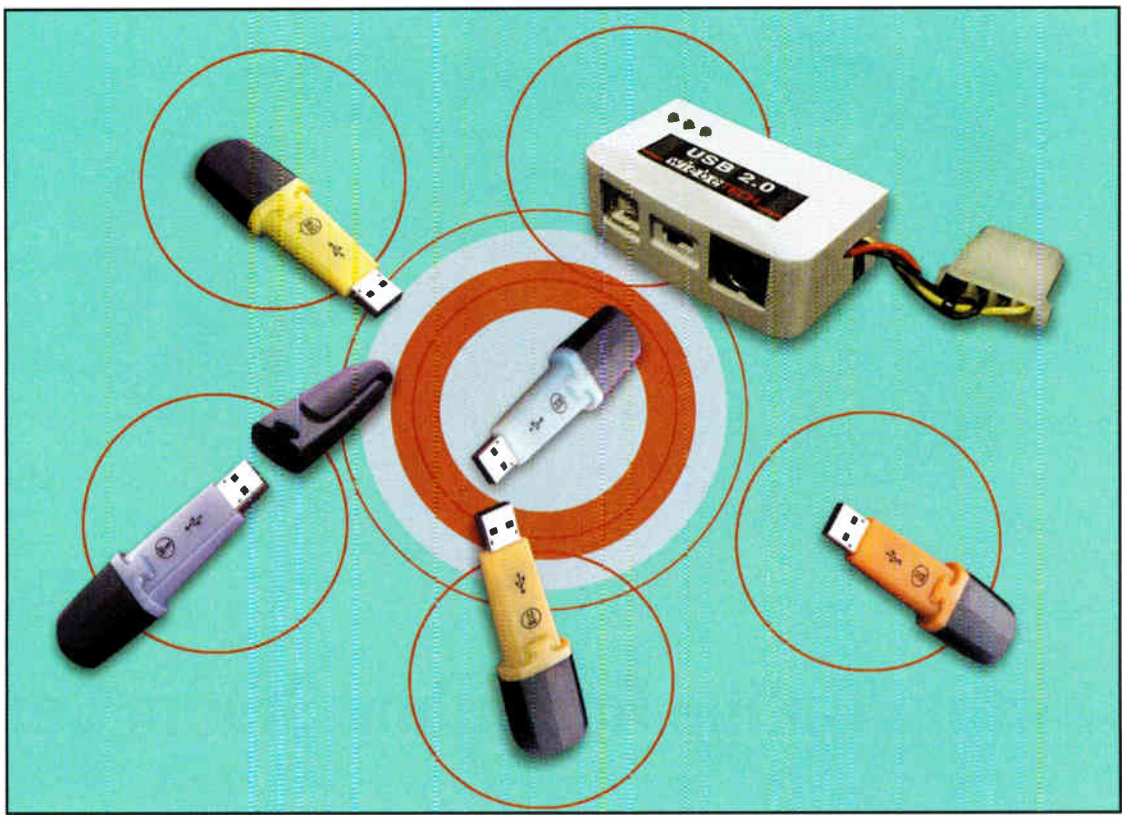

PHOTO COLLAGE, MAE LARCHIS

Back in the days when children walked to the school bus and phone calls were "dialed" by making and breaking switch contacts, there existed a serial protocol or two. Geeky folk used them for simple communication tasks, like connecting a primitive peripheral to a computer or controlling some industrial process. That serial port has grown up, and, at least in the consumer arena, the role is now being filled by USB, the Universal Serial Bus.

The five-year-old USB standard, middle-aged by computer standards, has gotten some recent injections of the same technology that keeps Keith Richards running like a well-oiled clock. Though Version 2.0 of the standard has a design data rate of 480 Mbits/second, don't think that you'll always see that performance level. More on that point in a bit, but, for now, let's marvel at the kaleidoscope of USB stuff that's appeared in the marketplace since "Bitstream" last visited it back in August of 2000.

Generally, USB devices fall into either the storage, utility or I/O category. Let's start with what I call the utility category of products, including those that convert your legacy, serial, parallel, PS/2, ADB or CardBus ports to/from USB, power-management products such as those that restart your computer when it goes catatonic, or USB-equipped UPSs (uninterruptable power supplies) that put your computer gently to bed when the power utility does an Enron.

There's been a lot of buzz about Bluetooth lately, and, though it's mostly hype, you too can participate in your own nano-network with 3Com's USB-to-Bluetooth converter. More mundane but definitely more useful are those products that back up your machine before the inevitable crash and burn. Toward that end, wouldn't a no fuss, no muss backup solution be nice? How 'bout CMS Peripherals' ABS line: Stand-alone, USB 2.0 hardware and embedded software combos that, once connected to either Mac or Win, automatically initiate a full or incremental backup.

From the I/O arena, we have audio and video as well as USB's traditional turf, human-interface products like keyboards and mice to choose from. Need to get analog audio or video into or out of your computer? No problem! Need a haptic joystick to fully appreciate your new flight simulator? No problem! Need a better stock tip than shares of @Home? Sorry, wrong magazine!

On to digital audio I/O gear...There are several MI (Musical Instrument, aka semipro) products out there

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StorCase InfoStation
Behind the Scenes

Glacier Bay
Alaska

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

Diving into High-Definition

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

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

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

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

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

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

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

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that address the budget end of the market or simply don't require a whole lot of bandwidth to do their job. An example of the former is MOTU's cross-platform 824. With ADAT sync in, phantom power and the ability to chain up to four units for 72 channels of sample-accurate 48/24, the price and performance meet most of bubba's needs. Not to be outdone, Ego Systems also has most I/O bases covered with a complete line of ADAT and analog-conversion products to choose from. Swissonic's AD96 is yet another example of USB audio I/O. It joins Emagic's EMI 216 in the increasingly crowded USB-for-MI market. Performing journeyman's duty on the field recording front is the rugged, bus-powered USBPre from Sound Devices. For those who can't seem to scrape up enough dough to splurge even on those cost-effective entries, Griffin Technology provides two choices for analog audio I/O, their straight-up iMic and the fancier but still inexpensive PowerWave.

Along with its 824, MOTU has a USB-attached synchronizer, the MOTU MIDI Timepiece A/V. Because MIDI is a low-speed protocol, many vendors have MIDI interfaces with USB. Edirol has several nice USB-equipped solutions for the electronic musician that combine digital audio/sound card I/O functions with MIDI. Enthusiasts just getting into production may like Korg/ToneWorks' new PXR4 with a USB spigot for song transfers. Another appropriate match is USB and control surfaces. Event's EZbus and Tascam's US-428, and baby brother US-224s, wrap control and I/O into neat blue packages. Steinberg provides the Houston controller for their VST engine, while Contour Design's ShuttlePRO and Midiman's Surface One fit the bill for pure control surface satisfaction. Surveying incroachment into their domain, JLCooper continues the lead role as Control Surface King. They have, along with MIDI-to-USB mapping software, a wide range of modular hardware solutions from basic to elaborate.

Even consumer audio isn't immune to the lure of USB's low cost. Onkyo's DW-S500 all-in-one stereo system ships with USB audio I/O. They also sell USB alternatives to the traditional sound card, which includes, along with the traditional AD/DA for computer I/O, a microphone input, stereo RCA analog input, and one AES Type II I/O with optical and unbalanced connectors alone with a headphone output. Note that all of the audio-related gear I've mentioned has USB 1.1 ports. As USB 2.0 silicon drops in price, audio vendors will have the incentive to justify adding that increased performance to their bragging rights.

For storage, where the large capacity of modern IDE drives really benefit from the throughput of USB 2.0, you can take your pick of gazillions of rotating media offerings. Affordable pricing on IDE-to-USB 2.0 bridge hardware makes it a snap to grab a sexy case and integrate a product. WiebeTech has taken the minimalist approach with their USB (and 1394) DriveDock line, a must-have for any techie's tool kit. Some, like Minds@ work's Digital Wallet, even include autonomous operation.

Consumer USB: Onkyo's DW-S500 all-in-one stereo system with USB audio I/O.

Though there are lots of *slow* storage products based on USB 1.x, CompuCable, along with DAT Optic, LaCie, New Motion Technology, QPS and others, have taken the bull by the horns and introduced USB 2.0 hard drives. A bonus feature to these products is that they also carry 1394 ports.

At the time of writing, not even Intel, champion of USB 2.0, is shipping a motherboard with USB 2 built-in. You'd have to be content with the 12-Mbits-per-second speed of classic USB rather than the 480 Mbps that USB 2.0 holds forth. California Drives, in addition to CMS Peripherals, Keyspan, Maxtor, Orange Micro and others, offers low-cost, add-in USB 2.0 HBAs, which quench any thirst for Version 2 speed.

A relatively new storage alternative, a variant of flash memory readers, are stand-alone, solid-state memory products, exemplified by DiskOnKey's flash memory fob. It's small enough to hang on your key chain and performs flawlessly across all common platforms without driver installation. With an embedded OS, the DiskOnKey product probably qualifies as the world's smallest NAS, or network-attached storage.

With present capacity around 128 MB, flash fobs aren't capacious enough for big storage demands, just yet anyway. Though you can't expect to carry your entire mix date or MP3 library around on one, look for capacity in this category to double and then double again in the near future. Here, as in other product classes, USB 2.0 support is not assured. M-Systems, the parent company of DiskOnKey, is typical of the cautious approach of many CE vendors. Blaine Phelps, worldwide marketing director at M-Systems, says, "The company plans on implementing USB 2.0 by Q3 of 2002. At this time, it's really a debate of whether or not USB 2.0 will be implemented by our partners, at which time we will deliver products."

Now is the time when I inject that caveat brought up earlier: Don't expect anywhere near the advertised throughput. USB, aka Unquestionably Slow and Braindead, is not a peer-to-peer protocol. It requires hand holding from the host for most everything. In addition, V. 2 devices cannot maintain their speed advantage on a bus shared with V. 1 devices. The always useful hub, a necessity for any complex installation, provides some relief. Julie Moeller, VP of BizDev at Orange Micro, confirmed an interesting feature of their USB 2.0 hub: Each port runs at the maximum speed of the device on that port. Because the slowest device in the chain dictates the speed for all devices on that chain, think carefully before daisy-chaining USB devices.

Despite my kvetching, USB has one advantage that I can think of: self-discovery of newly attached devices. While the 1394 protocol also supports self-discovery, both Win and Mac OS fail to take advantage of it at present. Which brings us to operating systems. As mentioned in February, Microsoft has shifted its emphasis away from USB to focus on 1394 as the high-speed bus of choice. Still, XP provides basic support for USB 2.0 right out-of-the-box. As for Apple, OS 10.1 also has solid USB 1.x support, but USB 2.0 is still lacking.

One last thing: Though I'm not sure how to categorize it, Lego's MindStorms ROBOLAB infrared transmitter cuts the leash that prevents your robotic tape operator from getting serious work done. Now *that's* what I call progress! ■

OMas (bitstream@seneschal.net), having made substantial progress of late on a client's DAM project, has been decompressing via the mesmerizing Groboto. For pertinent links and back issues on USB, go to www.seneschal.net.

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OHM-MAZING" DISCOVERIES

SECRETS OF THE GROOVE TUBES VIPRE PREAMP

EARLY IN THE ANNALS OF PRO AUDIO, mics and mic preamps were often made by the same company, and the output and input impedance between the mic and preamp were matched to provide the best possible audio quality.

Those days are long gone now, and most condenser mics send a 200-250 ohm load into an input about 10 times the impedance – roughly 2000-3000 ohms.

Altering the load against which the mic has to push fundamentally alters the tone and character of the output signal.

At the core of the Groove Tubes Vipre is a multi-tap high-performance input transformer, with four distinct positions: 300, 600, 1200 and 2400 ohms. This changes the working impedance or loading of a given microphone and can strongly influence the sound qualities by the cumulative effects of small differences.

These differences vary from microphone to microphone, but all mics respond quite audibly when the preamp input impedance is altered. This control feature opens a much larger sonic window to each mic, and provides the ability to magnify certain attractive tonal shifts in the way it responds to impedance changes.

Vintage microphones are especially sensitive to load terminations, as impedance matching was the norm in early broadcast and recording facilities.

Ribbon mics, for example, are sought after for their smooth tonal properties. When properly terminated or loaded with 300 ohms, the tonal characteristics change, and the sound seems to "bloom" in a way most people have never heard.

The equalization changes slightly as well, with the entire spectrum from about 100Hz to 15kHz taking on a very slight tilt, typically around -1dB at the low end, and around +1dB at the upper registers. Very slight when looking at individual frequencies, but the cumulative effect over the whole spectrum is unmistakable.

This kind of variation would be almost impossible to recreate with any kind of EQ, unless the principle of a simple, uncluttered signal path is abandoned altogether.

Moreover, a balanced-bridged or transformerless input is provided, bypassing the variable-impedance input transformer altogether for a completely different sonic character.

An instrument input is also provided on the front panel of the Vipre for easy access, and can be padded by -20dB to accommodate the stronger output signals from active instrument electronics.

VARIABLE IMPEDANCE INPUTS

Altering the input impedance changes the load against which the mic has to push. This dramatically alters the performance of any mic – from classic ribbons to vintage and modern condensers – even dynamics. All mics will respond similarly in that the apparent proximity gets 'closer' when the impedance is lowered, but since you're changing the load on the mic, you're altering the performance of the mic – not the preamp.

The Groove Tubes Vipre is a mono-block, fully-differential Class A all-tube preamp with variable input impedance and adjustable rise time. It can be set for over 20 different tonal variations – all without ever requiring EQ or other signal-degrading devices to achieve them.

Some vintage mic preamps (like Neve modules) can be internally hard-wired to one of two different impedances. Avalon's 2022 and Joe Meek's VC-1 both have an "impedance matching circuit" – consisting of a resistor network placed AFTER the load is already terminated. But, this isn't the same as what the Groove Tubes Vipre offers.

This is the only preamp we know of with a front-panel-selectable, truly variable impedance transformer.

In short: You haven't heard your mics until you've heard them loaded at different impedances. With all the control functions available on this unit, anyone with even a modest selection of mics can dramatically increase their tonal options by using a Vipre.

VARIABLE RISE TIMES

Rise-time is very much the same as "slew-rate" – the rate of speed at which the amplification circuit can amplify the signal.

You can't go from zero to five volts in no time – and how fast a circuit can amplify is part of what imparts its sound. Vintage circuits were much slower than are today's, and – in theory – faster is better.

Faster amplification circuits retain the leading edge of the transient signal, especially apparent on the higher frequencies. But slowing the rise time down can mellow or smooth out the signal, often rounding-out harsh sibilants from vocals or edgy tones of instruments.

In a way, you can think of rise-times as a "time machine" for preamps – the slower the rate, the more vintage the sound. No other preamp but the Vipre has this special feature.

GROOVE TUBES LLC
www.groovetubes.com
sales@groovetubes.com
1-800-459-5687

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ALL-TUBE, FULLY-DIFFERENTIAL CLASS A DESIGN

Class A means that the same amplification device (in this case, tubes) are doing the entire waveform, both the maxima and minima of the wave.

Class AB and Class B use separate amp devices to do the maxima (or top side) and minima (low side) of the wave. Those are more efficient, but not nearly as accurate or true.

Fully-differential means that the signal remains balanced throughout, never becoming unbalanced or single-ended.

Almost all amp circuits break the balance. (In a console, the signal is single ended from the time it comes into the preamp, until bridged at the output.) This is accomplished by using identical, mirror-image signal paths throughout – and why we use ceramic deck attenuators instead of potentiometers for gain adjustments.

Common mode-rejection ratios are significantly improved, as are signal-to-noise ratios.

PRECISION GAIN AND GENUINE VU

In order to maintain a fully floated and balanced signal path throughout the entire circuit, there are no potentiometers on the front panel. Instead, gain controls consist of ceramic deck rotary switch assemblies arranged for discrete step attenuation, providing repeatability, ultra-wide control range and superior accuracy.

To watch over all this signal manipulation capability, the Vipre is fitted with a genuine VU meter for signal observation – complete with five separate types of VU response through an amplified VU meter driver circuit that allows for an "expanded view" of -20dB to +4dB – up to a -60dB to +9dB response.

BOTTOM LINE: ONLY VIPRE DOES WHAT NO OTHER PREAMP CAN

Hear the Vipre – along with our full line of mics at your Groove Tubes audio dealer – or visit us at the New York City AES, booth 1087.

New Hardware/Software for Audio Production

TC WORKS POWERCORE 01

TC Works PowerCore 01 is a monophonic synthesizer plug-in for the TC Works PowerCore card. Modeled after classic analog monosynths, with more than 100 presets, this Mac/PC plug-in requires PowerCore, PowerCore Software 1.5, and a VST Instrument-compatible sequencer application such as Logic, Cubase or Nuendo. Registered PowerCore users can download it for free at www.tcworks.de.

NUENDO AUDIOLINK 96 I/OS

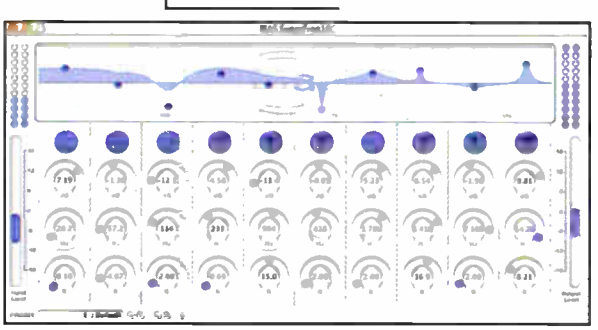
Steinberg's (www.steinberg.net) Audiolink Series of I/Os for ASIO-compatible systems offers many features from the Nuendo PCI 96/52 card and the Nuendo 8 I/O 96k. These include 24-bit/96kHz resolution, an integrated mixer with several submixes, pro peak and RMS-level metering, and TotalMix technology for complete ASIO 2.0 direct monitoring. The Nuendo Audiolink 96 System has either an AudioLink 96 PCI or a CardBus (PCMCIA Type II) card, the AudioLink 96 Mobile, and a choice of the Audiolink 96 Digiset or Audiolink 96 Multiset I/Os: Audiolink 96 Digiset is an extended version of the Nuendo PCI card 95/52, with three ADAT I/Os, ADAT Sync In, S/PDIF I/O and wordclock I/O, two MIDI I/Os and analog line out. The multichannel Audiolink 96 Multiset has ADAT I/O, ADAT Sync In, S/PDIF I/O, MIDI I/O, Wordclock I/O and analog line output. Audiolink 96 Multiset also provides eight balanced 24/96 analog I/Os. Drivers include Windows 98/ME (MME with multiclient operation, ASIO 2.0, GSIF), Windows 2000, Windows XP (MME with multiclient operation, ASIO 2.0) and MacOS (ASIO 2.0). Latency is stated to be as low as 1 ms.

CYCLING '74 CYCLOPS

Cycling '74 (www.cycling74.com) now distributes Code Artistry's Cyclops—$99 video-input analysis system—a Max/MSP object for multimedia development. This second-generation version of the VideoIn object adds color support, a graphical editing interface and improved zone identification, and it can save user settings. Cyclops supports most QuickTime-compatible video input hardware, and from a video-capture card, USB or FireWire source, the Cyclops object analyzes the video frames and outputs Max/MSP control messages based on the images. Users can specify areas of an input image to analyze and the type of analysis to perform. The Cyclops object supports grayscale, threshold, difference (motion) or color analysis of the incoming video image, and its control output format allows integration of motion control and object tracking into the interactive Max4/MSP2 multimedia programming environment.

BIAS SUPERFREQ

New from BIAS (www.bias-inc.com), SuperFreq is a real-time, Mac OS X-native, 10-band paragraphic EQ VST plug-in. SuperFreq features -18 to +18dB gain values, variable 0.1-30 bandwidth (Q), sweepable 20-20k Hz frequencies, individual band Bypass buttons, and 24dB stereo input/output meters. Filter types include peak, notch, high-shelf, low-shelf, high-cut and low-cut. SuperFreq can optionally be launched as an 8-band paragraphic EQ, rather than the standard 10-band. SuperFreq features OS X's "Aqua" interface (a high-tech brushed-metal interface is used under OS 9), and works within any Carbonized VST host application, such as BIAS Peak 3 or Peak LE 3; it also runs under Mac OS 8.5 through 9.2.x.



MACKIE PLUG-INS FOR UAD-1

Mackie Designs (www.mackie.com) offers two new plug-ins for the UAD-1 Powered Plug-Ins Pro product. Developed in conjunction with Universal Audio, the Pultec EQP-1A Program Equalizer and the Nigel Guitar Processor are free to registered UAD-1 users and are initially available for Windows users; both plug-ins will also be available for the Mac platform later in 2002. All features of the original Pultec Program EQ are provided in the EQP-1A, including separate boost and attenuation controls and the ability to dial-in seemingly dangerous amounts of boost. All front panel controls are included, with accurate modeling of all knob tapers. The "Nigel" Guitar Processor provides a complete plug-in multi-effects solution, with a wide palette of guitar tones and effects, such as gate/compressor, phaser, wah-wah, tremolo, echo delay up to 1,200 ms, and chorus, flange and vibrato effects.

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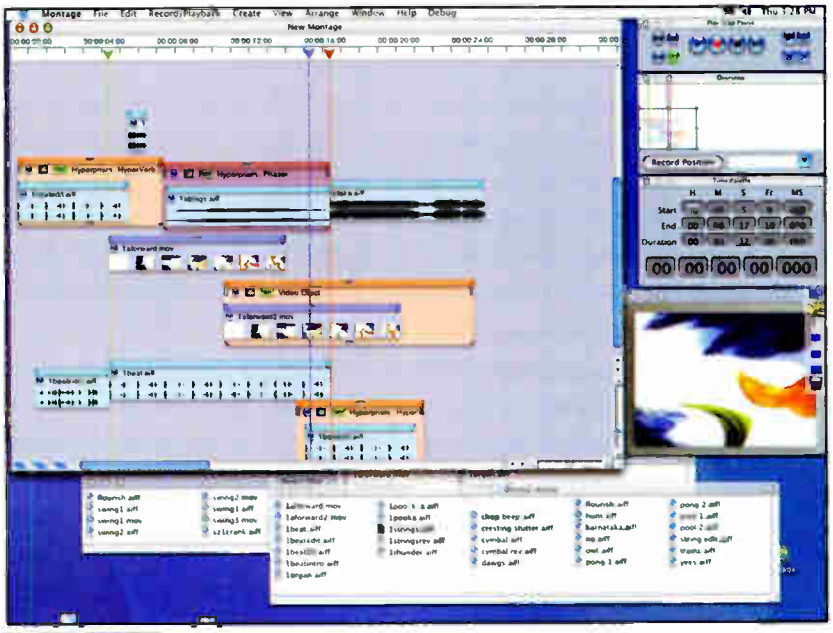
EGO SYS 192K INTERFACES

Priced from $199, the Ego Sys (www.esi-pro.com) 192 Series of PCI multichannel audio interfaces offer up to 24-bit/192kHz performance with simultaneous record/playback capability. New products include the Waveterminal 192L and Waveterminal 192X—both are 2-in/6-out PCI cards—and the 4-in/8-out WaMi Rack 192X. The half-length PCI card Waveterminal 192L ($199) has 20-bit/96kHz ADCs and 24/192 DACs, along with stereo analog line ins, a mic preamp with 12VDC phantom power, headphone out and 24-bit/192kHz S/PDIF optical digital out. The $299 Waveterminal 192X has a 24/192 S/PDIF optical digital out, and supports Dolby Digital 5.1 and DTS 5.1 surround formats. Waveterminal options include S/PDIF optical digital ins, 192kHz S/PDIF co-ax I/O and a 1-in/1-out MIDI interface. The single-rackspace WaMi Rack 192X ($799) connects to a PC via a half-length PCI card, and features four discrete XLR (line/mic switchable) inputs with 48VDC phantom power, headphone out with independent level control, built-in MIDI interface, optical and coaxial S/PDIF ports, and support for Dolby Digital 5.1, DTS ES 6.1 and 7.1 surround sound formats. All 192 Series systems support the Ego Sys E-WDM driver for compatibility with Windows XP, 2000, ME and 98SE.



ARBORETUM MONTAGE

Arboretum Systems (www.arboretum.com) debuts Montage, a Mac OS X-native application allowing creators of multimedia content to organize, edit and process their media in a single environment, combining video, pictures, audio, MIDI and text in the same project window. In Montage, the notion of track assignment is eliminated; rather, editing is done in place, via direct data access at all zoom levels through the Overview window and its View Selection frame. (The Overview permanently displays the entire project, and a View Selector navigates through locations.) Montage allows processing components either individually or in groups, whether or not they belong to the same media family; processor parameter changes can be controlled via MIDI, and automation data is recorded and can be edited. Arboretum processors—such as Hyperprism and Ray Gun—are available for use directly in Montage, and new video-processing algorithms are in development.

UPGRADES AND UPDATES

Edirol (www.edirol.com) now offers **Mac OS X drivers** for its products, including the UM-1, UM-1S, UM-2 and UM-4 USB MIDI interfaces; UM-880 8x8 USB MIDI interface/patcher; SC-8820 and SC-8850 USB MIDI sound modules; the SK-500 USB MIDI synthesizer keyboard; and the PC-300 USB MIDI keyboard controller...**The Lynx LS-ADAT 16-channel ADAT LStream Module and LS-AES 8-channel AES LStream Module** feature up to 192k resolution; visit www.lynxstudio.com for specs. Also new from Lynx, an ASIO 2.0 driver for Windows 2000/XP...**New loop libraries from Bitheadz** (www.bitheadz.com): Pop Drums Volume One has 270 MB of drum loops and bass parts, Phrazer Discrete is based on Discrete Drums' 12-CD library and Bitheadz AfroCuban Percussion is a 130MB compilation of rythmic loops...**Propellerhead Software's *Quick Start Reason Guide***, written by Craig Anderton, is available at www.musicsales.com, or from Propellerhead's Website: www.propellerheads.se...**Glyph's MProject Plus** is a FireWire hard drive with a 4-port hub to connect up to three MOTU 828s. A 40GB configuration lists for $899. Check out www.glyphtech.com...**Synchro Arts** (www.synchroarts.com) released **VocALign Project**, an entry-level version of its VocALign audio-alignment software, for Pro Tools. List is $299...**FruityLoops 3** is the newest music creation tool from **Cakewalk** (www.cakewalk.com). It will let you create, edit and mix loops, supports DXi soft synths, and includes automation, effects and a variety of sound generators...**Jems Data Unlimited's FireCOR** rackmount FireWire storage systems for audio and video are two-rackspace units in four standard configurations, optimized for studio production, post, touring and field recording, and integrate hot-swappable drives, tape back-up, CD-RW and DVD burners. Visit www.jemsdata.com. ■

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Preview

HHB CDR830 CD RECORDER

HHB (www.hhbusa.com) offers the CDR830 BurnIT, an affordable new pro CD recorder featuring 24-bit converters, balanced XLR analog I/Os, an SCMS-free digital input, balanced digital output and wordclock out. The CDR830 records on any CD-R media, and a built-in SRC accepts sampling rates from 32-48 kHz, with each digital input (co-ax and optical S/PDIF) having its own level control. LCD meters monitor levels during recording or playback, and a CD Text feature lets users store disc, track and artist names (up to 120 characters in length) with every recording. The two-rackspace unit includes a wireless remote.

TONEWORKS PXR4

Designed for location sound collecting or as a compact audio sketchpad, the ToneWorks PXR4 Pocket Studio (dist. by Korg, www.korg.com) offers four tracks—plus eight virtual tracks per channel—of 32kHz MPEG-format recording. Max recording time is 270 track-minutes onto (up to 128MB) SmartMedia cards. The 4x4-inch battery powered unit includes 77 modeling effects, 55 PCM rhythm patterns, full editing capability, three selectable audio inputs (guitar, line or built-in condenser mic), stereo analog outs, and a USB port for transferring mixes to a PC or workstation. Retail is $500, with 16MB SmartMedia card and AC adapter.

PRIMACOUSTIC QUADRATIC DIFFUSER

Primacoustic (www.primacoustic.com), the acoustical division of CableTek Electronics Ltd., intros the RazorBlade broadband quadratic diffuser. Effective from 350-10k Hz, RazorBlade features 16 wells of solid MDF construction for maximum density and deflection at all frequencies. All slats feature "dado, dowel and glue" construction to eliminate rattle and self-noise. RazorBlade is 24x48x8 inches (WxHxD) and is available in black or primer coat for painting.

PRESONUS 8-CHANNEL PREAMP

PreSonus Audio Electronics (www.presonus.com) has upgraded its DigiMax 8-channel mic/line, dual-servo gain stage preamp, featuring multirate A/D conversion, ADAT Lightpipe output and stable wordclock. Other enhancements include 48V phantom power and 20dB pad buttons, insert points on every channel and an internal power supply. Each mic pre channel features a Neutrik Combo input handling line- or mic levels and signal presence/clipping LEDs. Supported sampling rates are 48, 44.1 and 3 kHz. Bandwidth is 20-50k Hz; analog dynamic range is greater than 120 dB. Price: $999.95.

PRISM ADA-8 UPDATE

Prism Sound (www.prismsound.com) has upgraded its ADA-8 modular digital converter, which can be configured for up to eight channels of simultaneous AD/DA conversion (or 16 channels of either A/D or D/A conversion) with up to 24/96 resolution. New features allow direct control of analog/digital input selection within Pro Tools, along with parallel analog and digital output capability and a wider (±6%) lock range to external clocks. Other features include flexible interfacing options (AES3, TDIF, ADAT, SDIF and others), dedicated interface modules for popular workstations, built-in SNS noise-shapers for 16-bit reduction, and Prism Sound's MR-X word mapping for lossless 24/96 recording on standard 16/20-bit media. Prices begin at under $10,000.

SE ELECTRONICS MICS

SE Electronics (dist. by Network Pro Marketing, www.networkpromktg.com) offers the Z5600 Tube Condenser Mic, which features a 12AT7 tube, a 1.07-inch diaphragm and a 9-point polar-pattern selector on the power supply. Designed to emulate the sound of a vintage tube mic, the Z5600 retails at $899. Other mics in the Z Series line include the Z1100, Z2200, Z3300 Class-A FET and the Z3600, priced from $299. SE Electronics also offers the SE Series of affordable large-diaphragm condenser mics, including the SE 5000 tube condenser mic, which is $579, including power supply, case and shockmount.

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ART TUBE MP STUDIO V3

Applied Research and Technology (www.artproaudio.com) offers the Tube MP Studio V3™ mic preamp, featuring ART's new Variable Valve Voicing (V3) technology, a system of optimized presets created by top studio and live sound engineers. Preamp settings are

provided for guitars (electric and acoustic), keyboards, bass guitars, drums and vocals. The Tube MP Studio V3 also features ART's OPL™ Output Protection Limiter, which accurately maintains the output peak signal. Additional features include an analog VU meter, polarity reverse, 48V phantom power, clip LED and a +20dB switch. Price: $149.

LEXICON MPX-110

Lexicon's (www.lexicon.com) MPX 110 dual-channel processor is a one-rack-space unit with 240 factory presets, 16 user-definable presets, and a range of stereo reverb programs and effects programs. A front panel knob allows fast manual manipulation of effects parameters, and dual-channel processing offers independent control of left and right effects channels. Effects level, adjust, bypass, tap and mix controls may be controlled via MIDI. Tempo-controlled delays can lock to tap or MIDI clock, and tap tempos can be controlled by audio input, a Tap button, footswitch, external MIDI controller or MIDI program change. Other features include 24-bit internal processing, dual headroom indicators, headphone jack and S/PDIF digital output.

STAGETEC TRUEMATCH

Salzbrenner Stagetec (www.stagetec.com) offers the TrueMatch® Reference Microphone Converter (RMC), a combined mic preamp and A/D converter with a dynamic range of 153 dBA, 28-bit resolution and sample rates of up to 96 kHz. The unit can process analog input signals between -128 and +22 dBu without a pad, virtually eliminating input clipping for either mic or line inputs. The unit is available in mastering, live sound and music recording versions, and digital output formats include AES/EBU (S/PDIF), ADAT, TDIF, Y2, SDIF and MADI.

RADIAL ACTIVE DI

The J48™ active direct box from Radial Engineering (www.radialeng.com) is specifically designed to reproduce the dynamics of modern, high-output active instruments, handling guitars that output

as much as 7 or 8 volts (not unusual when volume and tone controls are turned up). The J48 features a 15dB input pad and a Merge function that sums a stereo source to mono at the XLR output, and ground lift/polarity reverse switches. An 80Hz highpass filter switch doubles as a phantom power tester, temporarily lighting an LED.

GENELEC POWERED SUBS

Genelec's (www.genelec.com) 7000 Series of active subwoofers includes four models incorporating proprietary Laminar Spiral Enclosure™ technology. LSE eliminates non-linearities from port turbulence for a smooth flow of LF energy from a rigid, tuned enclosure. The dual 12-inch 7071A complements Genelec's 1032A, S30D or 1037B monitors, with a 19-85Hz response and a 500W amp, for a max SPL of 118 dB. Other models in the 7000 range include the single-12 7070A, designed to work with the company's 1030A/1031A monitors; the single-10 7060A, which matches the 1029A; and the single-8

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7050A, for use with 1029A and 2029A/B monitors in stereo applications. The 7071A, 7070A and 7060A include bass management for 5.1/6.1 surround applications.

DENON 24/192 DVD PLAYER

Denon's (www.denon.com) DVD-1600P rackmount DVD player features 24-bit/192kHz D/A converters, a 144dB dynamic range and a 2-100k Hz bandwidth. The unit has onboard Dolby Digital, DTS and DVD-Audio Decoders, is CD-R/RW-compatible, provides MP3 playback, and outputs in PCM, Dolby Digital and DTS formats, plus 24/96 PCM, as well as stereo and 5.1 analog RCA, S/PDIF optical, and composite and component video outs. Price: $550, with remote.

TIMELINE TL-SYNC

TimeLine's (www.timelinevista.com) TL-Sync is a machine synchronizer/clock generator providing Tascam DTRS sync, Sony 9-pin ports and MX-2424 TL-Bus, and locks to various clock/positional references while generating MIDI and SMPTE, Digidesign Super Clock, Word and AES Clock. Features include four clock outs with independent rate settings, two LTC/MTC generators, and "virtual" modes for control and track arming from a 9-pin or MMC-compatible mixer. The Post option controls up to four Sony 9-pin devices, and supports GPIs, ADR beeps, bi-phase and a fourth 9-pin device (or Lynx Bus). Several TL-Syncs can form a large sync/clock-distribution system, and the unit can be controlled via the dedicated remote, from an MMC or 9-pin device, or from a DAW, such as Digidesign's MachineControl option. Price: $3,499.

HOT OFF THE SHELF

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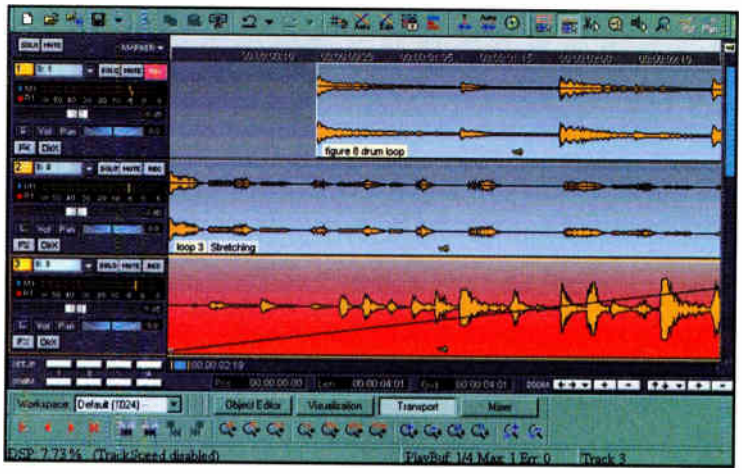
BY DAVE HILL JR.

Magix Samplitude Producer 2496 6.0

A Classic Shareware DAW Receives a Professional Overhaul

It is no secret that German manufacturers produce some of the most innovative and exciting audio software on the market. Companies like Emagic, Native Instruments and Steinberg have developed new industry standards and regularly push the envelope of both PC and Mac technology. And, while the abovementioned companies are well-marketed and widely used, a recently upgraded and lesser known German-made application called Samplitude has been making a few waves of its own. After originally being developed by SEK'D, Samplitude's marketing and future development has been taken over by Magix, which has built a host of subproducts around the Samplitude engine and design, demonstrating its commitment to further Samplitude development and the true power of this application.



This is home base for recording, editing and otherwise music-making in Samplitude. From this screen, you can add tracks, call up the object and wave editor, or revert to the master mixer.

SAMPLITUDE ATTITUDE

Whether you are new to Samplitude or a loyal SEK'D customer, the juicy new features dripping off the 6.0 spec sheet should make you stand up and take notice.

The subject of this review, Samplitude Producer 2496, has all of the features of Samplitude Studio along with support for 5.1 surround mixing, up to 64 submix buses/64 aux sends, analog video capturing and editing studio software, and mastering and Red Book CD burning; MSRP is $749. All testing was done on a P4 1.5GHz PC with 256 MB of RAM, a 7,200 rpm 40GB hard drive, and a Midiman Audiophile 24/96 soundcard. Minimum system requirements include Pentium III 800MHz processor, hard drive with at least 256 MB of storage, 100 MB RAM, 800x600 resolution, 16-bit soundcard, CD-ROM drive, DirectX Version 6.1 or higher, and Windows 95/98/2000/ME/NT/XP. Installation took about one minute, and was straightforward because the copy protection is encrypted on the CD-ROM. Also, should you decide to make Samplitude your weapon of choice, the upgrade to Version 6.02 fixes all known bugs and is available from the Magix Website (www.magix.com).

Topping the list are true 32-bit, floating-point resolution, WDM driver support, improved wave editing and, most importantly, ease of use. Because more and more home studio owners are finally taking advantage of faster computers, cheaper hard drives and increasingly robust DAW software packages, it is important that applications like Samplitude cater, if only slightly, to the novice. Samplitude's manual, tutorials and online help files offer in-depth and useful explanations about such common recording techniques as routing, compression, recording and general file-management tidbits.

Cubase, Logic, Pro Tools and Sonar users should feel right at home multitracking in Samplitude, which is as simple as selecting the track you want to record on, choosing whether the track is to be audio or MIDI, and pressing Record on the Transport bar. For MIDI files, you simply select MIDI from the track info screen and go to work. I like having both MIDI and audio tracks intermixed for arrangement purposes. However, many users will want to rearrange this order, as well as take advantage of Samplitude's customizable views, where you can choose the colors, define the monitor screen area, and set Zoom and Location markers.

Another key improvement in Samplitude 6.0 is the mixer, which bears a striking resemblance to its hardware counterpart. Recent upgrades include augmented bus and routing assignment options, improved access to built-in Samplitude effects, a 4-band parametric EQ and more than a few ways to tap your favorite DirectX plug-ins. By the way, Samplitude/Magix literature claims that VST effects can be used in Samplitude, which they can, with one important distinction—all VST effects must first be converted to DirectX by using the included VST-to-DirectX conversion software. Unfortunately, this forgoes all advantages gained by using the efficient and popular VST platform. Still, Samplitude's mixer holds the distinction of being quite manageable as compared with similar products. The master section remains to the right, no matter how many channels are in view. Individual mixer channels will remind you of a standard studio mixer with four aux sends, 4-band EQ, volume fader, additional DirectX effects insert, panning and even graphical surround sound settings.

DirectX effects can be inserted pre- or post-fader by merely right-clicking on the plug-in tab. This calls up a drab but effective window for selecting, tweaking and sequentially arranging effects. In addition, Samplitude's mixer permanently displays four mastering effects including de-hisser, FFT Filter, multiband dynamic compressor/expander, and an "advanced

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dynamics tool," which is primarily a combined master compressor and gate. Each of these may be applied to the entire mix or easily bypassed.

Samplitude's effects may lack the visual flair of Emagic's or Wave's audio processing plug-ins, but they are effective and, for the most part, pragmatic. Each of Samplitude's effects and any DirectX effects you own can be auditioned in real time by clicking on the Play/Stop button located in the lower-left-hand corner of the pop-up effect window. I especially liked the 3-band stereo enhancer, which allows for select frequencies to be disbursed on either the right or left channel. Also, the room simulator is an interesting reverb tool that can add a little character to audio. You can adjust early reflection, late reverb and spectral parameters to color your sound. Each effect's settings can be saved as your own individual presets, but some with excellent factory settings are included as well.

The mixer in Samplitude is extremely versatile with multiple effects and mix routing options. Also, mix snapshots can be saved for instant recall or as a mix template for use when working with other songs that require similar routing/settings.

WAVEY GRAVY

Good file management is essential for both saving time and preserving data. Samplitude's file-management system takes charge of filing audio, ensuring that all files (even files longer than the Windows limit of 2 GB) remain intact and are not lost in random file folders by asking where you would like the recorded file to reside when you hit the Record button in the track info screen. Each VIP (Samplitude project) or song is given a separate folder with copies of all the necessary files (all audio, MIDI and time-intensive graphical wave files). Samplitude calls this the VIP (Virtual Project), but it also gives you several other options when you choose Save As from the File menu. For instance, a RAP project is a RAM-based project where wave and MIDI files sit in your PC's RAM as opposed to the hard disk.

When it is time to finish a project, Samplitude can export to .WAV, MPEG, Real Audio, Windows Media file, 16/24-bit .AIFF and MP3 (with or without an external encoder). Also, Samplitude can save audio in one of several grades of 32-bit .AIFF files. This is a key point because most studio applications currently on the market support both 16-bit (CD-quality) and 24-bit (higher sound quality) audio. Samplitude 2496 also supports 32-bit float, which means that even 16-bit files can be converted to 32-bit-ready or "float" format. Now, this does not mean that the 16-bit file sounds any different, but file playback will be speedier as a result of a decreased need to convert audio on-the-fly. Samplitude is also capable of recording at 192 kHz.

Samplitude can import all of the previously mentioned file types as well as MIDI files (with the MID extension). One well-thought-out feature is that Samplitude always asks for your preferred location of every file each time a file is imported, even if you want it to reside in RAM.

Sometimes a waveform needs a little extra attention. Samplitude's wave editor can be used for destructive editing with effects, trimming start/endpoints, drawing a wave's volume and a good deal more detail-oriented work.

OBJECT LOGIC

As with most digital audio applications of this complexity, there are some key terms that must be learned in order to take full advantage of the manual and help menus. For instance, Samplitude calls all MIDI, or recorded and imported .WAV files, Objects, which can be edited in Samplitude's Object editor. This Object editor can be left open while you work on any aspect of your project, and essentially feels like a more defined track view, with some wave editor-style attachments. Within it, you may apply nondestructive edits with effects, panning, volume and dynamic settings, as well as independent time stretching and pitch-shifting.

To tempo-match audio or MIDI in Samplitude, each object can be made into a loop by selecting "build loop object" in the Object menu. Once an object is looped, it can be repeated at will by dragging its handles (see "Handle This"), rather than continually copying and pasting. When attempting to synchronize two loops of different tempos, you can do so by playing the tune and then taking advantage of the Object editors' pitch-shifting/time-stretching ability. And, while it takes a little practice, I found this to be surprisingly easy if I was using my ear or the clearly displayed loop markers as a guide. Also, because the audio editor is so powerful, I found myself only going to the mixer when all of the tracks are up and ready, thus alleviating the back-and-forth mixer vs. track view habit I get into with other programs.

In contrast to the Object editor, Samplitude also sports a good old-fashioned wave editor with permanent (aka destructive) editing capability. I found Samplitude's wave editor quite good for editing audio start and stop points, volume issues or deleting unnecessary material.

HANDLE THIS

One of the keys to maneuvering in Samplitude is getting used to the object handles. And while it takes a bit of extra mouse dexterity, particularly at high display resolution, it is a practical way of defining object playback parameters. Here is how it works: Each audio object contains five small handles, showing up as small colored blocks located in the upper left, right, middle, and the lower right and left of the file graphic. The two upper left and right handles control the fade in and fade out (respectively), while the upper middle handle controls volume. The two lower handles control the object's start and stop points. While this may sound confusing, it is actually fairly intuitive, though it did take me several hours to get comfortable looking for and then grabbing these little icons.

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CD MASTERING

Samplitude also contains some powerful mastering and CD layout tools usable for mastering a single track or an individual loop. I had excellent results ripping a CD's contents, creating new crossfades and track sequences, and applying Samplitude's mastering effects (which are the same as the wave editor's effects). Samplitude would be perfect for working with loop CDs or importing projects from other studios. The mastering compressor/expander is straightforward and effective, as is the 4-band parametric EQ. Each comes complete with peak meters and customizable factory presets. Also, by seeing the entire CD's contents as a waveform, it is easy to notice any discrepancy in track volume and spacing. Each effect can be previewed in real time, but it then must be applied, which takes approximately 35 seconds for a three-minute tune (depending upon the speed of your computer). Once a CD layout is to your liking, you can save the project to your hard drive or burn the project to CD.

THE LAST WORD

Samplitude Producer could be compared to Logic Audio, Cubase or even Pro Tools, with the exception of limited MIDI functionality and the lack of the ability to use VST instruments. But don't be fooled, Samplitude is as adept at multitracking audio, mastering and in-depth wave editing as anything else currently on the market. The manual states, "Samplitude does not campaign for a spot on the Top 10 list of sequencing programs," yet the audio recorded into Samplitude sounds great. The program is fun and intuitive, a rare software combo these days. And the manual and integrated help files are well-written, often including the shortcut key right along with the menu instructions.

Like most large software packages, there are at least two lighter versions of the software to buy. Samplitude Master lists for $299, and is primarily a .WAV editing and CD mastering application capable of four stereo tracks. Samplitude Studio sells for $399, and adds multitrack recording (up to 999 tracks) and editing with MIDI functionality, four submix buses and four aux sends.

Magix, 11400 W. Olympic Blvd., #450, Los Angeles, CA 90064; 310/477-0241; fax 310/473-2394. ■

Dave Hill Jr. is a former Seattle multitasker who has worked extensively with drummer Michael Shrieve (Santana) and is currently drumming, programming and composing in New York City. Visit www.bannervision.com/davehill.

World Radio History

BY BARRY RUDOLPH

AKG C-451 B

Reworking a Classic Cardioid

Although the mic was designed as an homage to its famed ancestry, I'm glad AKG chose *not* to call the new C-451 B a reissue microphone. The C-451 B is an entire rethinking of the classic C-451 E/CK-1 capsule design, and it sounds better than the original—the result of improved specs, modern componentry and updated construction techniques.

A LITTLE HISTORY

Made from the late '60s through the mid-'80s, the original AKG C-451 C Condenser Modular System (CMS Series) was a best-selling "chameleon" of a mic. It was designed to be adaptable to nearly any purpose; it could be outfitted with any of a whole system of modular components—such as screw-on capsule attenuator pads, extension tubes and swivels—that greatly increased its versatility. The original mic used the N-46E dual-AC power supply that supplied 12-volt phantom power and had a two-position, bass roll-off filter switch. As I found out by accident in my distant past as a second engineer, the mic would accept up to 52-volt phantom powering without smoking. The original, externally biased CK-1 capsule had an extremely low mass, making the mic insensitive to handling noise and a favorite for handheld radio and TV use.

For AKG, the C-451 C (the "C" suffix indicates a DIN connector; the "E" designates a standard XLR output) was the first solid-state condenser mic using the then-new Field Effect Transistor (FET) instead of a tube. It replaced both the great-sounding AKG/Norelco C 60 pencil condenser, which used an AC701K tube, and the C-61 with its miniature RCA 7586 Nuvistor tube. With the C-451 EB came a switchable -12dB/octave highpass filter with flat/75/150Hz positions. Much later, the C-452 EB arrived, which is the same but runs on 48-volt phantom only. Sadly, for economic reasons, AKG discontinued the CMS Series and the CK-1 capsule in 1994.

WHAT'S NEW?

AKG's R&D department gathered 12 of what was considered the *creme de la creme* of vintage CK-1 capsules from around the world to measure and determine their original acoustic properties. The new C-451 B capsule uses a backplate electret, self-polarized design with a three-micron, gold-sputtered Mylar diaphragm suspended just 35 microns from the printed-circuit backplane. The new capsule has the same cardioid polar pattern that the CK-1 has.

Once the CK-1 was reinvented, AKG completely updated the mic's body with Surface Mount Technology (SMT) components on a miniature printed-circuit board and gold-plated XLR and capsule connectors. The old mics were laboriously hand-soldered and prone to intermittents—a well-known fact among live sound engineers who shun their use on the road. One new design criteria for the new C-451 E is passing AKG's dreaded drop test, which simulates a 6-foot fall from drum overhead mic stands. This test is repeated six times on each of a group of mics that are randomly selected from the production line.

To make the mic even more rugged, the new capsule is permanently attached to the C-451 B preamp body. A one-piece mic is a welcome feature of the C-451 B, especially to any engineer who, in the middle of a session in a dimly lit studio, has struggled to attach the CK-1 onto the old C-451/452 bodies properly, without cross-threading those very fine, Swiss watch-like threads! However, I do miss the C-451/452's capsule swivel adapters, which were great for sneaking around drum kits...

One thing I don't miss is the need to insert screw-on capsule mic attenuator pads like the ones the old C-451/452 EB mics had. Right on the C-451 B body, near the bass roll-off switch, are -10 and -20dB capsule attenuation switches. Also, both the pad and HP filter switches are improved over the original switches. The new switches are easy-to-see red, and they seem to be better made and easier to change with the tip of a ball-point pen. The old EB's roll-off switches often broke, stuck or disappeared inside the mic body, making it impossible to know (by looking at them) how they were set. Cosmetically, the C-451 B looks similar to the old mics, with sandblasted, all-metal, nickel-plated housing, and engraved wording and symbols. Often, on late '80s-vintage C-451 E mics, the decals (without engraving) wore off.

THE SOUND!

In my A/B tests, I found the C-451 B's new transformerless output improved LF reproduction, especially at higher SPLs. I also noticed more output level than the C-451 E, C-451 EB, C-452 E and C-452 EB. Without going into explicit detail, all the mics sounded great, but overall, the C-451 B is simply more pleasant-sounding than the others. It's warmer than the C-452s, with a better bass roll-off sound, and the bottom end is cleaner than the original. I like the LF sound of the original C-451s, too—just as I like using vintage Neve modules for the sonics of those transformers. The C-451 B still uses the FET design, so everything you'd use the old mics on sounds the same—only better.

You can buy the C-451 B in two ways. As a single mic, it comes with a clip/stand adapter and windscreen in a zippered bag.

For this review, I received a stereo pair of two computer-matched microphones. They come with two clips, two windscreens and the H 50 stereo-mounting bar—all in a foam-lined carrying case. "Matched" is an understatement! All new C-451 Bs come with individually measured frequency response (20 to 20k Hz, ±1.5 dB) curve plots. My two mics' curves are identical; in fact, I can place the two tissue-paper charts (shown in the figure) on top of each other and see no differences. AKG uses a computer database comprising all of the frequency response

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results from a production run of mics. The computer comes up with the best matching pair: Both frequency response and sensitivity measurements must be within ±0.5 dB of each other.

IN THE STUDIO

The most popular studio applications for the C-451/452 have always been drum kits, overheads and acoustic guitar. Small-diaphragm mics excel at accurately reproducing the percussive transients of these instruments. For drums, I always liked the C-451 E on hi-hat and/or snares. Both jobs usually require the attenuator pad, and it is so nice *not* to have to take the mic down to screw in the -20dB pad when the -10dB pad wasn't enough! The C-451 B, with an increased SPL rating of 135 dB (no pad), would have been fine without a pad on the quieter songs. Even without EQ, both snare drums and hi-hats sound crisp, sharp and "open." The cardioid pickup pattern is not too tight, which provides plenty of ambience for a close-miked instrument, while I can hear more drummer subtleties such as grace notes and stick drags.

The H 50 stereo bar is just the ticket for X/Y or close-spaced cardioid miking of percussion instruments like congas or marimba. In live sound use, I like eliminating one mic stand in a usually crowded percussion-miking setup.

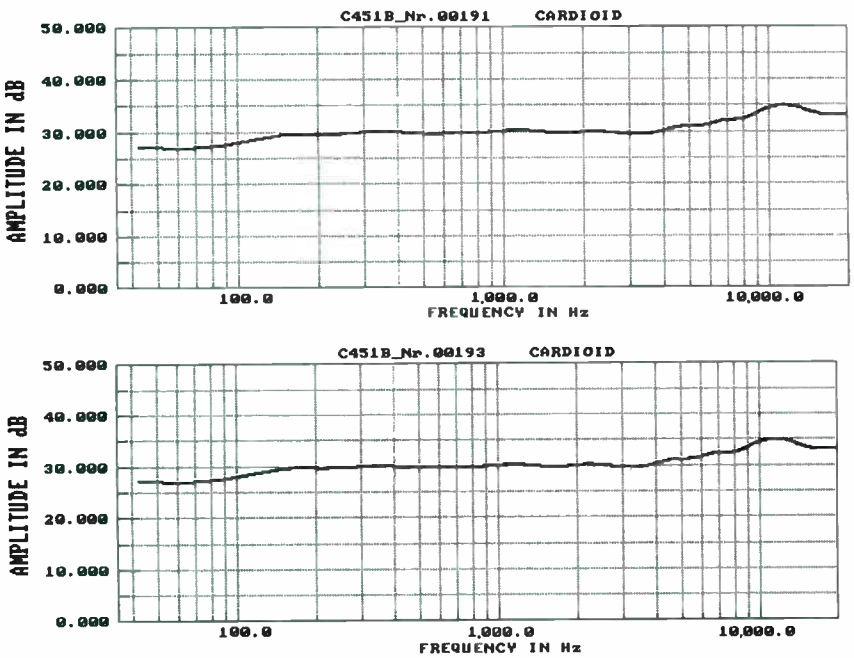
Acoustic guitar recording is exactly the same as with the old mics, except the C-451 B produces tighter, cleaner lows. I also had fewer problems when my guitar player unexpectedly went from quiet fingerpicking to full strumming—the mic and recording chain didn't instantly distort. I like the presence of miking close on guitars, but proximity can be a problem. On a Gibson jumbo-body guitar, I put the mic about six inches over the soundhole, aimed toward the bridge, and I used the 150Hz roll-off. Sometimes I used the 75Hz position and rolled off with an equalizer when I needed a song/production/arrangement-specific LF contour. The C-451 B's high-frequency lift is pleasing for acoustic guitar recording—much better than winding on a lot of EQ.

The AKG C-451 B reinforces my fond memories of using the venerable C-451 E with the same but improved sound, and without the old, impractical quirks. The C-451 B retails at $549, or $1,250 for a matched stereo pair.

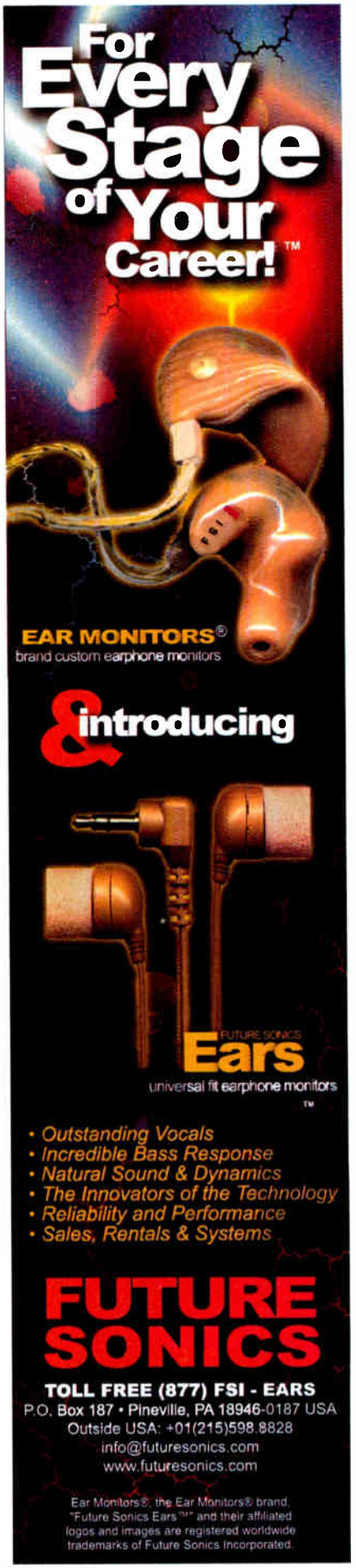
Thanks to Tom and Nate Murphy for letting me raid their fine microphone cabinet and use their new SSL 9000 J console at Track Record, their North Hollywood studio. Also, thanks to Dan and Eric at LAFX Studios here in NoHo and to engineer/producer Alan Parsons for all their help.

AKG Acoustics, 914 Airport Center Drive, Nashville, TN 37217; 615/620-3800; fax 615/620-3875; www.akgusa.com. ■

Barry Rudolph is an L.A.-based recording engineer. Visit his Web site at www.barry rudolph.com.



Matched poir: The top curve shows the response of mic #191; lower curve is mic #193.



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BY TY FORD

Neumann M150 in a Decca Tree Configuration

Omnidirectional Tube Condenser Microphone

At $5,300 (including suspension-mount, vintage-style power supply, multiconductor cable and aluminum flight case), the Neumann M150 small-diaphragm, transformerless, tube condenser microphone will probably not be found in many basement studios. Perhaps more relevant than its cost, the M150's fixed-omni pattern makes it a less than desirable choice for recording in small spaces with challenging acoustics—the mic is quite capable of "hearing" exactly how good or how bad a room sounds.

However, Neumann's operating instructions for the M150 note that the mic is especially suited for Decca Tree recording (see sidebar). Because that configuration requires three M150s, anyone whose microphone budget is less than $15,900 can stop reading here. But, if you're looking for a reliable method for producing a stable stereo image that will hold up throughout the application of Dolby and other surround sound matrix systems, the Decca Tree technique is worth examining.

I had heard about an upcoming orchestral session at Phase Recording, a new facility in College Park, Md., a suburb of Washington, D.C. Composer Charlie Barnett booked a 21-piece orchestra for a session intended to produce the stereo music track to accompany a 100x15-foot video wall at the Newseum in Arlington, Va. Jim Ebert had been called in to oversee recording and mix the session. I talked with studio owner Bruce Falkinburg and chief engineer Tony Eichler, and contacted Karl Winkler at Neumann; shortly afterward, three Neumann M150s arrived at my door. A Decca Tree T-Bar from Wes Dooley at Audio Engineering Associates was purchased for the session ($795 for the 2x1-meter T-bar; a 2.5x1.25-meter Super Tree version is available for $945).

Phase Recording is a new studio complex, built into an existing warehouse, just north of the University of Maryland, and offers a large, tunable studio that's comfortable and flexible. The main studio space is fairly large by today's standards, 35x45 feet with 18-foot ceilings, and features a splayed portion of one of its longest walls that produces a live, but smooth sound.

AIR TO SPARE

The night before the session, engineer Tony Eichler and I suspended the AEA T-Bar from a very large and heavy-duty rolling mic stand, attached the Neumann EA 170 suspension mounts and hung the mics. I had some difficulty working with the EA 170 suspensions and the T-Bar, because the upper extremities of the suspension mounts got in the way, keeping me from angling the mics easily—it would have been nice to have a set of 4-inch extension stubs to drop the suspension mounts out of the T-Bar's range.

The size, liveliness of the room, height of the rig above the musicians, distance from the musicians, distance between the mics themselves, and rotational and vertical angles are all important considerations to get the correct stereo image and one that is mono-compatible. The challenge would be placing the mics to get just enough air to create the big image that composer Barnett wanted without getting sloppy. We started with the mic mounts pushed almost all the way out to the ends of each rail and set the height for 10.5 feet.

We used three channels of GML mic pre's for the M150s, and ran line-level back to the control room, where the main console was a Trident 80B supplemented with a 16-channel API sidecar. UREI monitors were mounted in the control room walls, but for this date, we monitored on powered Mackies.

With 21 musicians to cover, and because this was the first time a Decca Tree array had been used in this space, 20 spot and section mics were also used as backup. All mics were routed to the main recorder (a 2-inch, 24-track Studer running BASF 900), and the three M150s were also mulled to one of the new RADAR24 HD recorders from iZ, recording at 24/96.

THE DECCA TREE

The stereo microphone array commonly referred to as the Decca Tree was originally conceived by recording engineers at Decca Records in London. The array consists of three omnidirectional microphones situated at the ends of a large T-shaped fixture, with spacing between left and right microphones approximately two meters, and the central microphone placed in front of these by about 1.5 meters. The complete array is typically positioned a few feet behind and about eight to 10 feet above the conductor's head. Traditionally, the microphones used were "classic" Neumann M 50 large-diaphragm tube condenser mics, which provided a characteristically warm and enveloping sound. The three microphones are usually panned left, center and right, respectively, across a pair of recording tracks.

—Text courtesy AEA

World Radio History

TREE TRIMMING

The morning of the session, Charlie Barnett gave us about 10 minutes to play with the Decca Tree placement while the orchestra rehearsed. With our original position, the sound was too diffuse and the stereo image was too exaggerated. Based on cues from Ebert and Eichler in the control room, I lowered the Decca Tree to about seven feet off the floor and pushed it slightly farther out toward the musicians. That was too close and the sound was too direct, especially from the front mic. Pulling the mic back a foot helped.

The stereo image was still very exaggerated. I moved each side mic in about six to eight inches, re-angled them to cover the left and right edges of the sound stage, and aimed them down at about the middle of each section. Ebert and Eichler said that brought the stereo image together and helped mono-compatibility. I re-angled the front mic slightly to hit the middle of the sections in front of it and we began.

After all of the cues were recorded, Ebert set up a stereo mix to DA-88. Because of the lack of percussion, which we had set up in a different room, the Decca Tree mix without the additional mics sounded extremely nice—spacious and clear. Ebert commented that the audio from the three M150s in the Decca Tree, with percussion added, could have been used by itself for TV work.

The added spot and section mics brought in more intimacy and thickened the mix with minimal phasing problems. For his final mix, Ebert used 50% of the Decca Tree and added spot and section mics. Most of the spot mics (first cello, clarinet, French horn, bass and harp) were positioned in the center to reinforce mono-compatibility. String section mics were placed within the same perspectives as the Decca Tree image.

Ebert used very little EQ while recording, mainly on the percussion instruments. Although the studio has a fairly live sound, Ebert added some plate to sweeten the mix. The final mix sounded large, rich, detailed and full.

IN CONCLUSION

The Neumann M150s did an excellent job of capturing the performance. The tube mics were extremely clear and "untube-y" in the traditional sense. The gentle rising frequency response above 1 kHz brought sounds forward, without being too in-your-face. I had a quick chance to put one up in my studio and confirm that, while the M150 doesn't have the proximity effect of a pressure-gradient cardioid, it could very easily be used for V/O or vocals, acoustic guitar or just about anything, given the right acoustical environment.

Perhaps the most interesting discovery was that during comparisons between the Decca Tree tracks of the Studer and the new iZ RADAR24, no one was able to consistently tell which was which. The analog head bump gave the Studer away, but all of the "analog heads," including Barnett, were very surprised by how smooth the RADAR24 sounded.

Neumann USA, 1 Enterprise Dr., Old Lyme, CT 06371; 860/434-5220; fax 860/434-3148; www.neumannusa.com.

Audio Engineering Associates, 1029 North Allen Ave., Pasadena, CA 91104; 626/798-9128; fax 626/798-2378; www.wesdooley.com. ■

Ty Ford's audio demos and equipment reviews are available at www.jagunet.com/~tford. Ford is also a member of the Maryland Production Alliance, www.MDproductionalliance.org.

M150 TECHNICAL SPECIFICATIONS

The M150 capsule is an omni at most mid- and lower frequencies, but, according to the polar plot, between 8 and 16 kHz, it changes from an omni to a hypercardioid pattern. Get more than 45° off-axis and the HF fades, a characteristic I confirmed with a simple "test, test, test" while rotating the mic. The polar diagram accurately shows the 16kHz response line down 3 dB at just over 45° off the front axis and down 9 dB at 90° off-axis. The polar diagram shows a return of 16kHz response (-5 dB) in a fairly narrow lobe at 180°, indicating that the M150's pattern is not a pure omni.

The capsule is a pressure, not a pressure-gradient ,transducer, and has a very flat low end, down well below 20 Hz. A low-frequency roll-off switch on the body of the mic engages a 6dB/octave slope that starts at about 75 Hz and is down 10 dB by 25 Hz. The manual also points out that, in the "LIN" (flat) position, a limit frequency circuit rolls off at 16 Hz to protect the console inputs from the effects of sub-audio noise. A 10dB pad is also available.

On the high end, the frequency response begins a gentle upward slope at 1 kHz to a +4dB peak at 3 kHz. The curve drops 2 dB at 5 kHz and rises again to +4 dB at 8 kHz. From there, the top end gently rolls off, crossing 0 dB at 15 kHz and down 4 dB by 20 kHz.

Sensitivity is 20 mV/Pa at 1 kHz and 1 kohm (1 Pa = 94dB SPL). Nominal impedance is 50 ohms. Nominal load impedance is 1 kohm. Self-noise is 15 dBA. Maximum SPL for .5% THD is 99 dB, and for 5%, 134 dB. Peak output voltage is ±10 volts at 20 mA.

The head grille is similar in shape and size to that of the M 149, with coarse outer and finer inner metal meshes as was used in the original M50. The diaphragm is slightly over ½-inch in diameter, and is mounted on the surface of a round plastic globe, 1.5 inches in diameter. The diaphragm is oriented so that it faces forward, sort of like an eyeball on a stick. The eyeball, stick and base are directly connected, with no shock-mounting. Two small wires exit the back of the globe and carry the signal through two thin contact pins in the flat plastic base to the JAN6111 vacuum tube and circuitry in the microphone's base.

The KT 8, a 30-foot multiconductor cable, connects the mic to the N 149 V (vintage) power supply, which is available to U.S. customers only.

The N 149 V power supply looks like a vintage Neumann power supply, a rugged metal case with a padded carrying handle, simple on/off toggle switch, light, XLR audio output connector and multipin connector. The on/off toggle only controls the secondary voltage, so power remains to the input of the power supply as long as it is plugged into the wall. An EA 170 suspension-mount, typical of most Neumann mounts, is also included, as is an aluminum flight case that houses, mic, mount, cables and power supply.

Neumann suggests that the multipin cable can be extended to 100 meters without noticeable losses. Cable losses of up to 4 VDC (those approximated at 100-meter length) are detected and compensated for by an integrated sensor line. The audio cable from the power supply output to a microphone preamp input can be extended to 300 meters without signal degradation.

—Ty Ford

World Radio History

BY GEORGE PETERSEN

TC-Helicon VoicePrism Plus

Human Voice-Modeling Formant Processor

Two years ago, TC Electronic and IVL Technologies formed TC-Helicon with the goal of creating solutions for live and studio vocal processing. The new company's first product was the acclaimed VoicePrism, a single-box voice formant and pitch processor.

A mono-in/stereo-out processor, VoicePrism features line- and mic-level inputs (a built-in preamp with phantom power is standard), compression, gating, dual parametric EQ, 4-voice harmony, fifth-lead doubling voice for automatic double-tracking, and two separate post-effects blocks with chorus/flange, delay and reverb, and harmony libraries. Harmony effects can be created by "reading" the input signal or can be driven by a MIDI input from a keyboard or sequencer. The VoicePrism can not only create super-accurate harmonic doubling, but can also be used to create multivoice chords and textures that simply can't be sung.

Now, TC-Helicon takes its vocal processing approach way over the top with the VoiceCraft Voice Modeling™ card, an optional daughterboard for VoicePrism. The upgrade is available either as a $599 card (for existing VoicePrism owners) or as the $1,898 VoicePrism Plus, with the card preinstalled in a VoicePrism unit. As an added bonus, the VoiceCraft card adds 24-bit, 44.1/48kHz S/PDIF coaxial and AES/EBU digital I/O, two extra parametric EQs, and enhanced delay/reverb algorithms, as well as Voice Modeling technology.

Ease of operation/parameter navigation was a major factor in developing both VoicePrism/VoicePrism Plus. Controls on the slanted front panel are easy to see, and there are four soft knobs below the LCD screen, dedicated edit buttons that link directly to page menus, a large data wheel, and individual pots for adjusting lead/harmony/effects/input levels.

The front panel features an XLR mic input and headphone-out jack, while the rear panel connections include MIDI, balanced TRS input and outputs (-10/+4 dB switchable), the S/PDIF and AES/EBU digital I/Os, and ¼-inch footswitch jack. An additional aux input bypasses the Harmony section, allowing the VoicePrism Plus to be used as a conventional reverb/effects box, either alone or with the Voice Modeling and harmony functions.

VoicePrism Plus splits the vocal input into separate lead voice and harmony effect channels, each with its own dedicated compressor and two parametric EQs. The Harmony channel is the same as the original VoicePrism and features four independent, formant-corrected pitch shifters that derive natural harmony voices from the vocal input. Independently adjustable parameters for each voice include gender, vibrato, timing, randomizing and scooping. The lead channel is substantially expanded with Voice Modeling and additional mixing and panning controls.

The Vocals button gives the user full control over the amount of dry lead voice and the Voice-Modeled (VM) lead voice, along with independent stereo panning for either and a ±50-cents detune to build a fuller VM lead or to create doubling effects. From this point, the VM algorithms really get fun, with versatile processing in five main effects menus. The first, VM Spectral, is a set of vocal "equalization" curves based on the natural tone controls that vocalists can impart, such as emphasizing lower registers. It intelligently applies itself only to voiced sounds—sibilants and consonants are unaffected.

VM Warp brings control over moving vocal formants, allowing subtle to extreme control of resonances and tone, such as adding chest tone for richness or reducing nasal whine. These also allow convincing transformations, including male-to-female and female-to-male gender shifting. VM Glottal offers breathiness, rasp and growl, with independent tweaking of each. The palette is rounded out with VM Inflect (scooping parameters) and VM Pitch (vibrato effects).

I began using VoicePrism Plus by scrolling through its presets, most of which are useful as is and can easily be tweaked. Many of the effects are dynamically controlled, meaning that the degree of processing is based on how hard you "hit" the input or sustain a note. For example, you can keep levels just below the effects "threshold" during the verse and automatically add the growl during the louder chorus. Speaking of grunge, the VM processing really saved the day when I was tracking a speed metal project. We were able to lay dozens of takes for lead and background parts in a single day with plenty of raspy growling, without completely frying the singer's voice.

Alternatively, when mixing, if a track sounds too "nice," you're only a couple keystrokes away from punching up a little (or a lot of) "attitude." Similarly, you can add a touch of vibrato to your regular vocal arsenal of delay/reverb/EQ/compression/etc. The octave shift is especially useful for layered background parts. The unit won't magically transform a Whitney track into a perfect Barry White—or Springsteen into Madonna—but the gender shift effect can be remarkably effective for changing aspects of the performance.

Perhaps one of VoicePrism's main drawbacks is that it offers too much; with many of the parameters, a little goes a very *long* way, requiring a subtle touch. But at $1,898 (or $599 for the upgrade), here's a box that does what no other device on the market even comes close to (at any price), while adding superb single- and multipart harmony processing, great reverb/delay/doubling/pitch-based effects, versatile analog and digital I/Os, and more. Yeah!

Dist. by TC Electronic Inc., 742-A Hampshire Rd., Westlake Village, CA 91361; 805/373-1828; fax 805/379-2648; www.tc-helicon.com. ■

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BY TY FORD

Audix SCX-25

Large-Diaphragm Cardioid Condenser Microphone

In a market awash with lowball Neumann wannabe lookalikes, the Audix SCX-25 is a refreshing sight and looks like no mic I've ever seen. With its two identical head grilles attached to either side of a central, threaded brass ring, it has a distinctive, stylish look.

The Audix SCX-25 is a large-diaphragm, cardioid condenser mic, priced at $799, with standard mic clip in a padded wooden box. The mic does not have a pad or roll-off. As with all Audix dynamic mics, the SCX-25 is now manufactured and built in the USA.

The smaller size of the SCX-25 allows it to be snugged into tight spaces. I'd suggest using it around drum kits, but away from flailing drumsticks. The SCX-25 head grille is single-ply metal mesh, thin enough to be easily moved with the tip of a finger. A solid whack with a drumstick could permanently dent the grille and possibly contact the diaphragm. Should the head grille become dented, it can easily be removed for repair or replacement.

These minimalist head grilles result in the SCX-25 having a very open sound, because the capsule is more accessible to fragile transients. Also, because sound doesn't get trapped inside the housing as much as with more formidable head grilles, the off-axis response is nowhere near as phase-y as many other large-diameter condensers. The head grilles are so light that they ping slightly when the mic body is tapped, but having used the mic for a while, I doubt this amount of resonance would cause a problem.

The 1-inch, gold-sputtered, center-tapped diaphragm is suspended by elastic from four points around the inside of the central brass ring. It's a fairly effective suspension mount, but you might need additional isolation if you presently have problems with mic boom resonance.

THE SPECS

The SCX-25 has an output impedance of 200 ohms, shows a sensitivity of 29 mV (ref. 1 kHz @ 1 Pa), and has a 14dBA self-noise and an 80dB S/N ratio. The mic requires a 48VDC phantom supply and handles 138dB max SPL. It's pin #3 hot.

To get a sense of the 14dBA self-noise and sensitivity, I compared the SCX-25 with a Neumann U89i (17 dBA). The SCX-25 is about 8 dB more sensitive than the U89i. After I adjusted a pair of GML preamp levels to achieve equal output, the self-noise levels were almost identical, although slightly different in spectra. The U89i was flatter, and the SCX-25 had a rise in the 5 to 7kHz range (by ear), giving it a brighter sound. For another perspective on self-noise and sensitivity, I swapped the U89i for a Neumann TLM103, which has a 7dBA self-noise. The SCX-25 was about 3 dB hotter than the TLM103. If you've had a TLM103 overdrive your preamp, then you could expect the same with the SCX-25.

The SCX-25 had noticeably more self-noise when adjusted for equal gain. At close range, the frequency responses of the SCX-25 and TLM103 were very similar, with the TLM103 having a bit more upper bass or low mids. I could hear a bit more room with the SCX-25, although there were times when I could only tell the two apart by the increased self-noise of the SCX-25.

I plugged both mics into two channels of an Aphex 1100 preamp and fed both via the AES/EBU digital output, through a Graham-Patten 110-to-75-ohm converter to the S/PDIF input of a Pro Tools Digi 001. Carefully positioning the mics equidistantly about four inches from my mouth, trimmed for equal level, I recorded narration with each mic on a separate track. The TLM103 was smoother. Again, the SCX-25 seemed brighter with less upper bass/low mids.

I moved the SCX-25 and TLM103 to a Mackie 1604 VLZ/XDR and found that they, again, sounded similar at close range. Moving the mics back about two feet, where the low-frequency increase from proximity effect was less of a factor, the SCX-25 was somewhat scooped in the upper bass/low mids and sounded a bit edgy. Next, I used the Dreaded Key Jangle Test. Both mics "splatted" about equally, and their frequency responses remained consistent with my findings.

Audix also plans to build a double-mic mount, allowing a pair of SCX-25s to be attached to the internal crossbars of a piano. The mount will permit the piano lid to be open or closed. *[Note: Although the mic mount is not shipping yet, I tried the SCX-25s on a studio grand with conventional stands. The mic's slim side-profile simplified placement even at half-stick, and their smooth pickup with a rising top end and lack of off-axis coloration added a nice sparkle for a natural piano sound that worked well in solo or ensemble tracks.—George Petersen]*

ACOUSTIC GUITAR

My next session was back at my studio with a D28S Martin, which has old but not dead strings, and a Millennia Media STT-1 preamp. With the SCX-25 at my usual spot—about six inches out from where the neck meets the body—the fifth and sixth strings were too boomy. I was surprised to find that aiming the mic at the lower bout, from slightly below the center and up at the bridge about 10 to 14 inches away, sounded much better. I've never put a mic there with good results, but that's where I liked the SCX-25.

I tried stereo-miking with a pair of SCX-25s, close-spacing the capsules,

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with the lower mic angled slightly up and the upper angled slightly down, both pointed at the rear bout. That worked! I found that I could get the mics aimed at my original "off-the-neck" position if I positioned the mics 16 to 18 inches from the body, with capsules cross-aimed at the upper bout.

SECRET SOUND OVERHEADS

I took the pair of SCX-25s to Secret Sound near Baltimore for a drum tracking session. Studio owner John Grant used the mic pre's in a Mackie D8B. His usual drum setup has an AKG D12 on kick, Beta 57 on snare, two 421s on toms, Sony ECM10 for hi-hat, AKG 451s on overheads and CAD E100 for room.

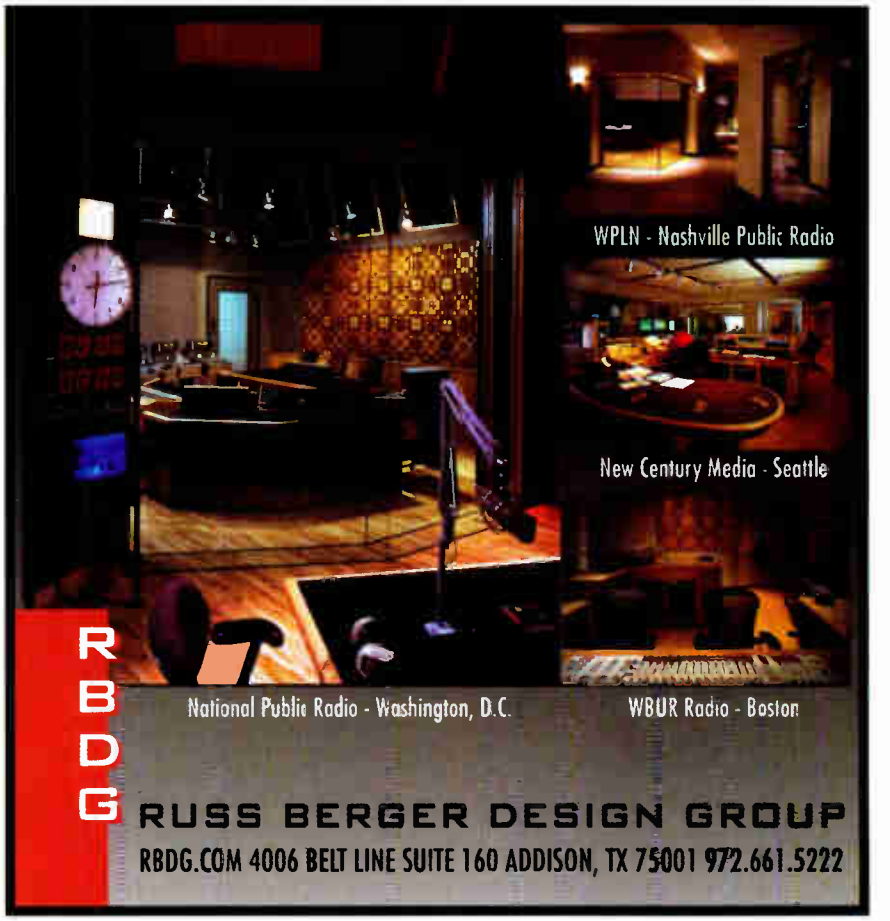
The studio has a fairly low hard ceiling, and the room is moderately damped. We positioned an SCX-25 overhead next to each AKG 451, about seven feet above the floor, and splayed them out slightly. Drummer Jamie Wilson (drummer for Baltimore Mayor Martin O'Malley's band) played while we set levels.

The SCX-25s were 4 to 5 dB more sensitive than the 451s. The 451s were very smooth with a more conservative bottom, to the degree that the kick and snare sounded as though they were further away. The SCX-25s were brighter on top, less midrange-y, with a more present kick and snare. Grant felt that the SCX-25s also had a tighter pattern than the AKG 451s. Moving the SCX-25s a little more than a foot higher to just below the ceiling made their stereo spread similar to that of the lower 451s. I felt that the 451s sounded drier, flatter and more isolated, while the SCX-25s sounded brighter, without being harsh, and with a wider stereo spectrum.

IN CONCLUSION

On harsh sources like banjo, fiddle or sax, the SCX-25 may be too bright, but the pair of SCX-25s worked nicely as drum overheads. While the Audix SCX-25 is not as quiet as a Neumann TLM 103, the proximity effect makes the two mics more similar in sound when used close-in. The SCX-25 would also be a good choice on louder vocals with darker voices or other darker sources, especially in the din of a small practice space or club where everyone is playing, and where there's frequently too much upper bass/low-mid energy. Try 'em there as well.

Audix, Box 4010, Wilsonville, OR 97070; 503/682-6933; fax 503/682-7114; www.audixusa.com. ■



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BY EDDIE CILETTI

Mic Preamp Insider

The ABCs of Finding the Right One

Despite the kicking and screaming that ensued during the Digital Revolution, the end result is the tasty Analog Renaissance we are currently enjoying. Analog tape still provides the ultimate in sonic airbag protection—digital is far less forgiving—forcing recording engineers to pay more attention to every phase, especially tracking. Design engineers, many of whom create gear for their own use, also re-educated themselves, hence the overwhelming number of new microphones and preamps, including those profiled in our report on tube preamps on page 30.

This month, we'll examine some of the parameters for evaluating mic preamps, including listening tests, specification translation and a topology overview. While putting the finishing touches on this piece, I received an e-mail requesting my opinion on two preamps in the $850 range. The interactive investigation began with the customer lured by promises of "warm lows" and "silky highs." These and other words like "transparent," "clean" and "punchy" have made their entrance and exit early in this piece.

No review can tell you what to buy without first getting to the heart of your needs and desires. E-mail discussions tend to be brief and hot—I felt the mailer was going in the wrong direction, but who wants to hear that? It is my hope that this article lays the groundwork for readers to conduct their own investigations.

It's almost impossible to talk about preamps without mentioning microphones. The relationship is symbiotic—microphone-output levels determine how hard a preamp works, hence the brief detour. Examples of microphone sensitivity and preamp Equivalent Input Noise (EIN) were collected into two tables (no "weighting"), showing these and other specs at a glance.

Let the games begin...

Comparing preamps is no simple task, and Challenge Number 1 is simply assembling a number of units into the same time-space continuum. Challenge Number 2: Our ears are easily misled by level discrepancies. The ear perceives louder as better, so comparisons—without first attempting to match levels—are unfair if not outright invalid. By leveling the playing field (no pun intended), the results become more realistic. Embrace the scientific approach; calibrate levels to minimize the variables. That's easier said than done, because of Challenge Number 3: The output of one mic cannot be "multed" to several preamps due to impedance considerations.

Nashville engineer Lynn Fuston tackled all of the challenges during the process of creating a multi-CD series of preamp and microphone tests—available at www.3daudioinc.com. Fuston's project also included consultations with several preamp designers until all were reasonably satisfied with the test procedure.

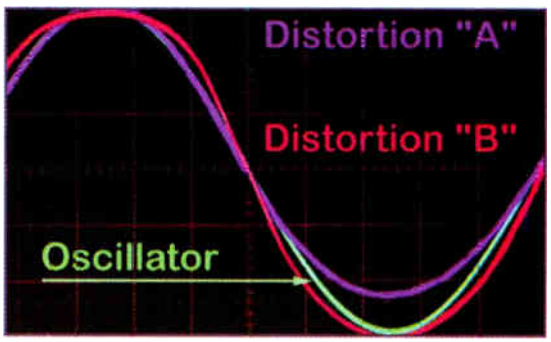

Figure 1: Typical overload characteristic of a vacuum-tube mic preamp with cathode-follower output (Altec 1566). In green, mostly hidden, is a pure sine wave, while in red and violet are two distortion variations. Notice the "curves" and complete lack of hard clipping.

D.I.Y. LISTENING TEST

Each microphone type (particularly ribbon designs) has a fairly obvious sonic signature, so preamp surfing will require your undivided attention.

Let's assume that you have a known reference preamp and a "typical" gain setting, a starting point that has the unit operating in its most linear region—good signal-to-noise ratio and ample headroom. Choose a microphone, connect to the reference preamp and feed pink noise through a speaker—placement between the two must be fixed *and* repeatable—and then measure the preamp with a digital meter such as the NTI Minilyzer using the Type-C response setting. The mic can then be connected to each of the other preamps one at a time, matching the gain to the reference. (You can return the preamps to separate faders on a console, but this adds many more amplifiers and variables to the chain. Measure all the way through the chain.)

Before recording the results, check each preamp with your own voice while monitoring via headphones, flipping the Polarity switch to yield the "warmest" setting. This is the easiest nontechnical way to test and set polarity, while perhaps revealing one of those "mysteries" behind vocalists who can't hear themselves. (If the headphone signal arrives out-of-phase with the bone-to-eardrum conduction, then the sound will be thin and distant.) Start with "softer" acoustic sources—like guitar, voice or piano—repeating the same phrase over and over. Choose a comfortable monitoring and recording level with at least

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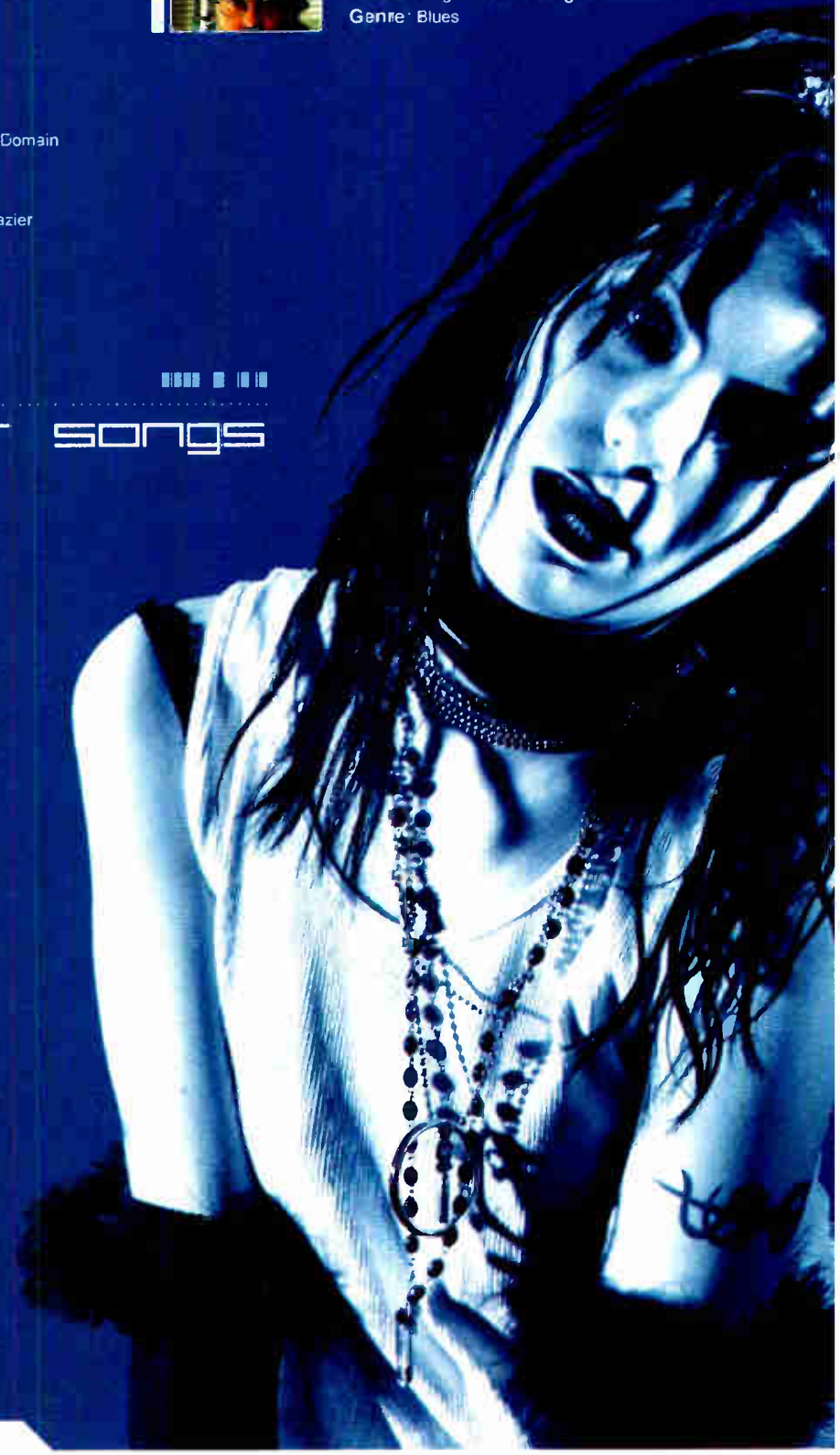

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DON'T FORGET TO BREATHE

Assuming consistent performance, listen back to each preamp. I believe the more matched the levels are, the more difficult it will be to hear the difference. This assumes that the preamp is being operated in its most linear (clean) range. Less complex sound sources—like a nylon-stringed guitar as compared to wound strings—may make it easier to differentiate between preamp-to-preamp nuances.

For the "airbag" test, start at a distance, banging a snare drum to achieve a similar level, and then move toward the mic until *preamp headroom* begins to run out. Optimize the level of the recording device *one time*, taking care not to overload the inputs, because some preamps can generate far more level than the average DAT or CD-R can handle. If you get this far, congratulations (and let me know)! For more excitement, try very high- and low-gain settings to see how preamps behave at those extremes. If it gets too complicated and you're exhausted, it's okay. (That's why Fuston made those evaluation CDs.)

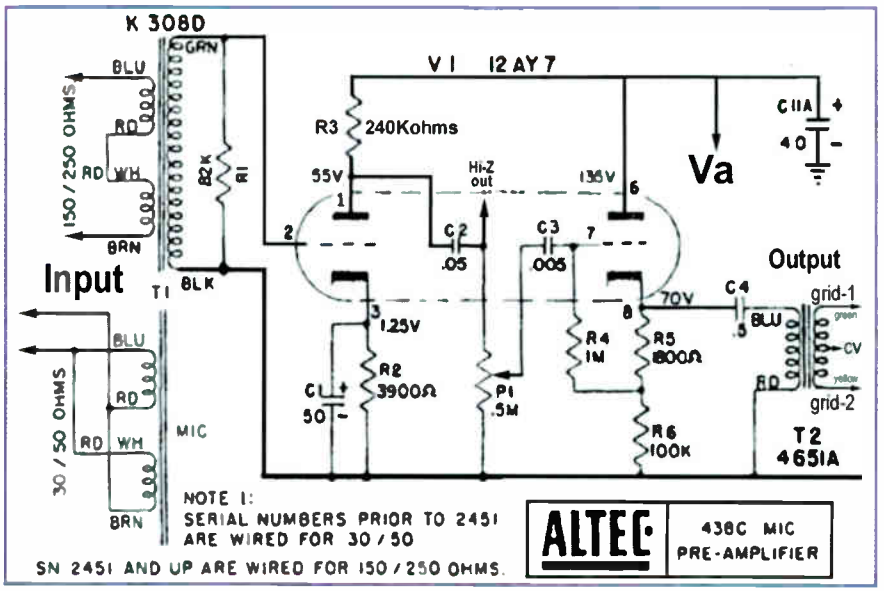

Figure 2: The mic preamp schematic from the Altec 438. This circuit is similar to the Altec 1566A.

SPECIFICATION TRANSLATION

Have you cruised the Net lately? There are prices and pictures galore, but just try to correlate the wealth of information. There is no Berlitz course for translating product specs (I looked), but

MANUFACTURER	MODEL	SENSITIVITY	SIGNAL-TO-NOISE	SELF-NOISE EQUIVALENT
AKG	C2000B FET	20 mV/Pa	74 dB	20 dB, A-weighted
AKG	C-12VR FET	10 mV/Pa		22 dB DIN 45412
Audio-Technica	AT-3035 FET	25.1 mV/Pa (open circuit) -32 dB (ref. 1 V @ 1 Pa)	82 dB, 1 kHz at 1 Pa	12dB SPL, A-weighted
Audio-Technica	AT-4060 tube	19.9 mV/Pa -34 dB (ref. 1 V @ 1 Pa)	75 dB	19dB SPL, A-weighted
Marshall	MXL-2003 FET	16 mV/Pa	77 dB (ref. 1 Pa)	18 dB IEC 268-4
Neumann	TLM-103 FET	21 mV/Pa	CCIR-468-3: 76.5 dB DIN/IEC 651: 87 dB	CCIR-468-3: 17.5 dB DIN/IEC 651: 7 dB
RØDE	NT-1	18 mV/Pa FET		17 dB (unspecified)
Soundelux	ELUX 251 tube	15 mV/Pa -36 dBv/Pa		27 dB, un-weighted; 17 dB, A-weighted
Soundelux	U i95 FET	14 mV/Pa		71 dB, un-weighted; 82 dB, A-weighted

Table 1: Microphone sensitivity is measured using 1 kHz at a Sound Pressure Level (SPL) of 94 dB, equal to 1 Pascal (Pa).

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Neumann does a great job, providing a stand-alone reference area.

Because online product literature can be easily updated, it should be. I found mistakes, discrepancies and vagaries. Manufacturers need to publish specs based on current measuring standards as well as provide background information about the test procedures. Otherwise, how could anyone compare? Assembling information was difficult enough; I can't imagine the challenge if I didn't speak the language.

MICRO (NOT SO JOYFUL) NOISE

If noise is an issue, look at microphone sensitivity first. Table 1 compares *sensitivity* for an assortment of large-diaphragm vocal mics. Sensitivity is specified in millivolts per Pascal (mV/Pa), typically with a 1-kohm load—the only discrepancy is in the third entry, the AT-3035. At 25.1 mV/Pa, it has the highest output, *open circuit*, hence the bigger number.

PREAMP NOISE

A preamp in mathematical terms is a Voltage Multiplier. As such, it multiplies noise and the intended signal. Resistors generate noise, so do microphone capsules. EIN refers to the preamp's input circuit noise—normally, the mic itself becomes part of the equation, but during the test, a 150-ohm resistor is typically substituted; its value must be published for this spec to be meaningful.

EIN = Gain + Noise

You can easily subtract gain from the published EIN spec to find the noise relative to 0 dBx, where "x" is the reference. A theoretically "perfect" amplifier (one that contributes a minimum of noise) will have an EIN of -129 dBu. This means that with a gain of 60 dB, the best possible noise floor will be -69 dBu. Most EIN specs are measured at or near maximum gain. Be suspicious if EIN is listed only as "A-weighted"—okay if included, but not solo. Look at the fine print if EIN is over "-129 dB."

Note: 0 dBv is equivalent to +2.2 dBu, where "v" is referenced to 1-volt RMS; "u" is ref'd to 0.775 Vrms, and, when applied to a 600-ohm load, yields 1 milliwatt,

—CONTINUED ON PAGE 221

MANUFACTURER	MODEL	EIN UN-WEIGHTED (A-weighted)	MAX GAIN	MAX OUT
Langevin www.manleylabs.com	Dual-mono ss	-124 dBu @ 45dB gain	53 dB	+31 dBv
Manley Labs www.manleylabs.com	Dual-mono tube	-125 dBu @ 45dB gain	60 dB	+32 dBu +15 dBm
Great River www.greatriverelectronics.com	MP-2NV ss + xfrmr	-125dBm, 150-ohm source @ 40dB gain	70 dB	+24 dBm
Avalon www.avalondesign.com	M-5 ss + xfrmr	-126dB, 150-ohm source	64 dB	+30 dBm
D.W. Fearn www.dwfearn.com	VT-2 tube	-127 dBm (tube-dependent); -124 dBm guaranteed	53 dB	+22 dBu +16 dBm
Crane Song www.cranesong.com	Flamingo ss	-128.5 dB typical; -129 dB	66 dB	+25 dBm
John W. Hardy www.imjohn.com/JohnHardy/	M-1 ss + xfrmr	-129dBu, 150-ohm source	60 dB 75-ohm load	+24 dBu
Great River www.greatriverelectronics.com	MP-2 ss + xfrmr	-129dBv, 150-ohm source (-132 dBv-A)	64 dB	+24 dBm
API www.apiaudio.com	512c 212, 3124 ss	-129 dBu	65 dB	+30 dBu
Grace Design www.gracedesign.com	201/801 xfrmr-less ss	-130dB, 50-ohm source @ 60dB gain	64 dB (70 dB optional)	+29 +26

Table 2: Mic preamp specs. From top to bottom, in order of improved Equivalent Input Noise (EIN) performance. Note the two highlighted items are vacuum-tube devices with cathode follower outputs, and as such, their behavior under no load and 600-ohm load are noted. Also, a general product code is noted under the model number: "ss" is solid-state, "xfrmr" refers to the use of transformers, while "xfrmer-less" and "tube" should be self-explanatory.

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WINTER 2002
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Third Eye Blind
Sets Sights on S777

Third Eye Blind producer/partner/engineer Jason Carmer first encountered Sony's DRE-S777 digital reverb at a mix session for 'Eye Conqueror,' a song the group penned for "A Knights Tale." "I was impressed by the sound Micheal Brauer was producing with it," Carmer says. "When vocalist/songwriter/producer Steven Jenkins, Bass player Arion Salazar, Drummer Brad Hardgraeves and I decided to build a studio, the S777 was one of the first pieces of gear we wanted in our house rack."

Carmer, whose credits include producing Run-DMC, Merle Haggard, Paleface and Mark Eitzel reports that, since being located in SF's cool downtown South Park district, the studio, which they've named Morning Wood, is somewhat 'space challenged.' "Our live room is on the cozy side and rather neutral," he says. "I've been using two room mics to create a 'distance' sound, running it through the S777 then taking the output and mixing it into every mic on the drum kit to simulate a live room. I've experimented with a number of the reverb spaces in the software series, but lean towards Ocean Way Studio B. Bill Putnam built some terrific rooms, and that's one of his best."

Currently working on the new Third Eye Blind (pictured right) CD, Carmer plans to use S777 sampling software to create new aural spaces for the group. "I know the unit can be used in live performances, and I may talk with our FOH mixer Joel Lonky to see if he'd like to buy his own to take it on the road with the band. I've worked with lots of digital reverbs, and they've all got plusses and minuses," Carmer concludes, "but the S777 is the first to truly sound like a natural space."

Sony DMX-R100 Wins
TEC Award for Small Format Console

Winners: From left to right, Sony Professional Audio is represented on stage by Clayton Blick, Paul Foschino, Karl Kussmaul and Bob Tamburri, who accepted the 2001 TEC Award for Small Format Console, awarded to the Sony DMX-R100 digital console at the 17th Annual Technology Excellence & Creativity (TEC) Awards. The 2001 ceremony was held at New York City's Marriot Marquis on Saturday, December 1, during the Audio Engineering Society (AES) tradeshow.

Filipetti Records Korn
With DMX-R100 Console

Award-winning engineer Frank Filipetti (seated) chose a Sony DMX-R100 digital console to record vocals for the upcoming Korn album.

"I do a lot of digital work, and I wanted the best quality and flexibility I could find in a small-format console capable of recording in 24-bit/96kHz," comments Filipetti, who rented the R100 from New York-based rental company Dreamhire. "The R100 fit the bill. The sound quality is exceptional, the work surface is intuitive and easy-to-use, and the board is stable and reliable – we haven't experienced any crashes or lost data. Korn's producer Michael Beinhorn (standing) and I are very pleased with the console's performance."

Editorial Director: Anthony P. Montesano; **Managing Editor:** Anthony Savona; **Art Director:** Marshall Moseley; **Associate Art Director:** Greg Gennaro; **Design Associate:** Brian Jackson. **Staff Artist:** Lauren Berkery. **Cover Photo:** Alberto Polot. Courtesy of Sony Music Entertainment. Used with permission; **Photo Credits:** pg 3 (top), Sean Beresford; (bottom left) George Kanatous; pg 4, Courtesy of *The Producers*. Used with permission. pg 5 (bottom), Joan Marcus. Courtesy of Radio City Entertainment. Used with permission; pg 6 (bottom), Dave King; pg 7 (right), Alberto Polot. Courtesy of Sony Music Entertainment. Used with permission; pg 8, Robert Wolsch; pg 9 (top), David DeJong. Entire contents ©2002 Sony Electronics Inc. unless otherwise noted. All rights reserved. The opinions expressed in bylined articles herein represent those of the author alone and not of Sony. No part of this publication may be reproduced without the written permission of Sony Electronics Inc. Sony is a trademark of Sony. For more information on any of the Sony products mentioned in this magazine, please contact: Sony Pro Audio at 1-800-686-SONY. Product features and specifications subject to change without notice.

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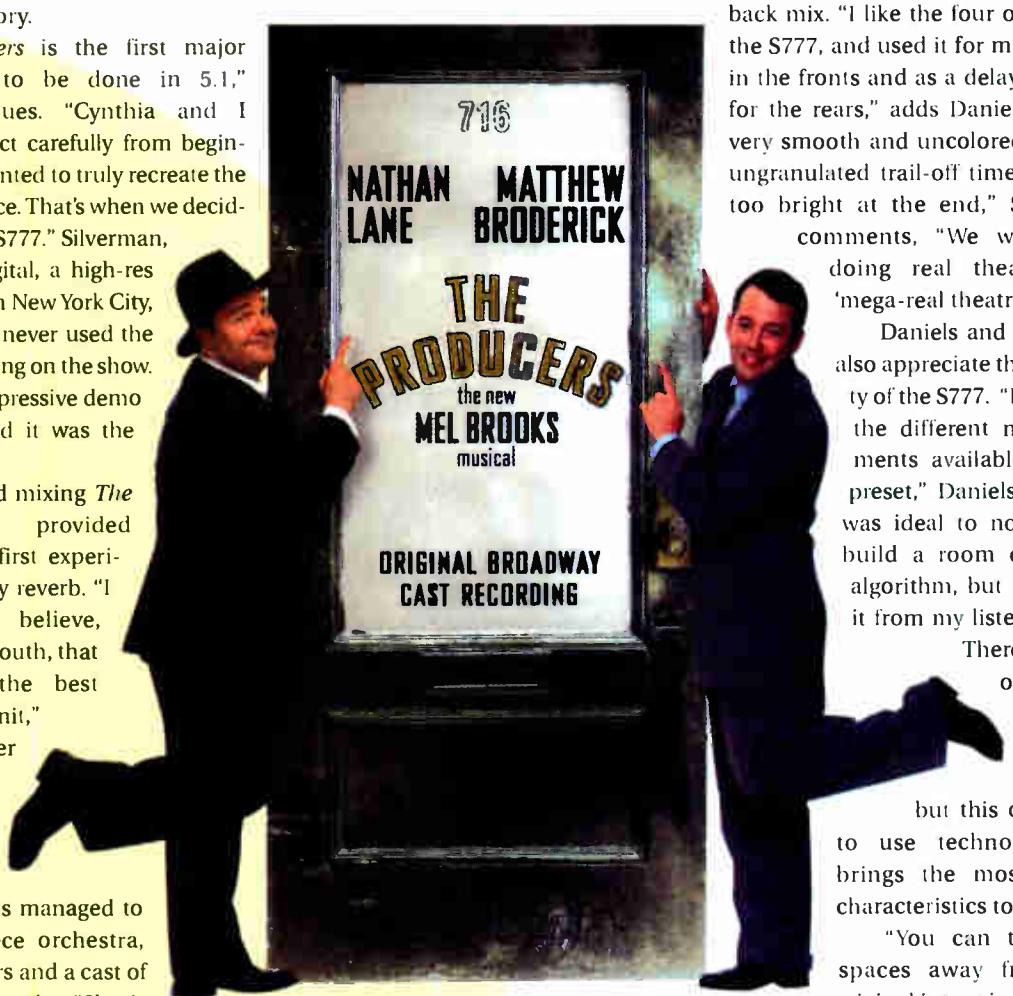
DRE-S777 & The Producers
Make Broadway Multichannel History

"I've never heard a reverb that was quite as exciting as this one," states Alan Silverman, mastering engineer of the cast recordings for the smash Tony Award-winning Broadway hit *The Producers*. Working closely with engineer/mixer Cynthia Daniels, the Grammy-nominated pair recently turned to the cutting edge sound of the Sony DRE-S777 to make a bit of multichannel history.

"*The Producers* is the first major Broadway show to be done in 5.1," Silverman continues. "Cynthia and I planned this project carefully from beginning to end and wanted to truly recreate the theatrical experience. That's when we decided to use the Sony S777." Silverman, who owns Art Digital, a high-res mastering facility in New York City, noted that he he'd never used the reverb before working on the show. "I had heard an impressive demo and was convinced it was the way to go," he says.



Recording and mixing *The Producers* also provided Daniels with her first experience with the Sony reverb. "I had come to believe, through word of mouth, that the S777 was the best sounding reverb unit," she stated. "After using it, I found all the rumors to be true." Working at an incredibly rapid pace, Daniels managed to capture a 40 piece orchestra, eight principal stars and a cast of 20; all live to 48-tracks. "She is about the fastest engineer I've ever seen," Silverman said. With Grammy-nominated cast recordings such as *Kiss Me Kate* and *The Music Man* on their credit list, the two make a powerful team.

Tracking at The Edison studio in New York, Daniels utilized the room's natural sound, but felt she needed something extra to bring it into the Broadway realm. "We have a way of working with stems, and we decided that process worked so well for us in our stereo recording that we would carry it over into the surround mixes," explains Silverman. "When we took the project into the mastering room, we were so happy with the way the ambiance and the S777 were working, we got the idea to bring in a second S777."

Then, according to Silverman, they began experimenting by assigning one reverb unit to the front, and another to the rear. They would load in the orchestral and vocal stems, and apply slightly different reverbs to each, altering the front to back mix. "I like the four outputs on the S777, and used it for mixing both in the fronts and as a delayed reverb for the rears," adds Daniels. "It was very smooth and uncolored, with an ungranulated trail-off time that isn't too bright at the end," Silverman comments, "We went from doing real theatrical to 'mega-real theatrical'."

Daniels and Silverman also appreciate the flexibility of the S777. "I really like the different mic placements available in each preset," Daniels says. "It was ideal to not have to build a room out of an algorithm, but just tweak it from my listening spot. There are a lot of great reverb units out there, but this one seems to use technology that brings the most natural characteristics to the mix."

"You can tweak the spaces away from their original intent in a very creative way," Silverman adds. "The purity of this reverb allows it to interact very well with other state-of- the-art mastering gear. It paired especially well with the fantastic new Z-Systems surround EQ and compressor that were also employed in the mastering of this project.

"The S777 was able to create a beautiful Broadway ambiance, just like being in a wonderful theater with fantastic acoustics," concludes Silverman. "Everyone who has heard it in my room has been emotionally moved by what can be done with it. That fact that you can very convincingly put your project into these wonderful spaces is amazing. It's quite a reverb."

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David Was Picks CDR-W66
for CBS Hit The Education of Max Bickford

Noted composer/engineer David Was used Sony's recently introduced CDR-W66 CD recorder to record and master the score for the initial episodes of *The Education of Max Bickford*, CBS's new hour-long drama starring Richard Dreyfuss and Marcia Gay Harden.

"I generated a lot of cues within a pair of synthesizers then added live music (piano, strings, woodwinds, etc.) to give the score a human quality," Was states. "I kept the W66 on full time."

Working out of his own Hollywood-based recording studio, Was used the W66 to go from picture to master with the help of Digidesign's Digi 001 hardware interface. "As soon as I finished a cue, I could go back to it, unpause it, and record another. Within a few days, I had 15 to 18 cues to deliver to the music editor," he explains. "He loved the sound of it. The W66 worked flawlessly. It was the most important link in the chain."

Was reports that before he acquired the W66, he was able to burn CDs on his computer, but the demands of the *Max Bickford* series made it totally impractical for him to deal with the vagaries of digital glitches and poor sound quality. "I wanted to get out of that 'inside computer world' and actually have a signal sent (via the Digi 001) to a high quality recorder," he states. "The sonic clarity of the W66 is amazing."

To illustrate the capabilities of the unit Was points to a recent Max Bickford episode which included scenes from a WWII documentary about 1000 Jews escaping from Germany on a ship. "The United States refused to accept them, and it took a very delicate cue to accent the despair on the faces of the refugees on the boat," he recalls. "I used a piano, drenched with reverb, and layered strings beneath. My main objective was to truly capture the mood of the music. I hoped that such a soft cue would come across without losing any of its subtleties. It did. The W66 really brought the delicate presence of the piece to life."

Two Sony DMX-R100s
for the Radio City Christmas Spectacular

Radio City Entertainment pu chased two Sony DMX-R100 digital consoles for its beloved holiday theatrical, *The Radio City Christmas Spectacular*, starring the world-famous Radio City Rockettes (pictured). The new consoles performed both production and live sound duties for shows in Atlanta and Cleveland. *The Radio City Christmas Spectacular* is presented in seven markets across the country in addition to New York's 2001 edition of the show.

Sound designer Dan Gerhard reports that FOH engineer John Montgomary ran the entire show through an R100: "He used the console for everything, and he didn't need any outboard gear at all. It works wonderfully on-site. The R100 is very reliable, and it sounds great."

Prior to going out on the road, both R100s are used to mix the orchestra. "The vocals are live, but for out-of-town shows, the 56-piece orchestra is pre-recorded," Gerhard says. "The R100s work seamlessly with our high-resolution digital recorders. I did quite a bit of research on small-format digital mixers before choosing the R100. Other consoles were kind of clunky and cumbersome, and more importantly, could not handle high resolution. The R100 is a truly versatile unit, and I love the fact that it operates without fan noise. We'll definitely use it on other Radio City Entertainment events throughout the year."

World Radio History

The *Irresistible* Sound of Jessica Si

Jessica Simpson, one of the most widely-recognized and respected new artists in modern pop music, has recorded *Irresistible*, the eagerly awaited follow-up to her multi-platinum debut album *Sweet Kisses*, with a bevy of top behind-the-scenes talent and equipment, including the Sony C800G studio microphone for vocals and the Sony Oxford digital console for final mixing.

Oxford OXF-R3 console

Working with a group of world-class engineers and producers for her second album – including Mick Guzauski and Walter Afanasieff (Walter A) – Simpson created an electrifying collection of songs which serves as a showcase for her ever-growing vocal talent.

Released in November 1999, Simpson's debut album *Sweet Kisses* established her as an international pop star, featuring two Top 40 hits: "I Wanna Love You Forever" and "I Think I'm In Love With You" and sold more than three million copies around the world.

Mick Guzauski used the Oxford console to mix the Simpson album at his Barking Doctor Studio

Among the new album's many highlights are the songs "There You Were," a duet with Marc Anthony, and "A Little Bit," a hook-filled follow-up to the album's first single, "Irresistible." Simpson takes a decidedly R&B turn on *Irresistible*, evidenced by the new album's up-tempo jams; while the ballads on the album find a grace, poise, power and maturity in her already impressive vocal range.

Multi-platinum producer Walter A worked extensively with Simpson on three cuts on the *Irresistible* album. Some initial work, including background vocals and overdubs, was accomplished on the Oxford console in his San Rafael, CA. Wally World Studio B, but Walter credits Mick Guzauski's Oxford mixing as one of the most significant technical contributions to the album.

"Beyond Jessica's performance, it's the mix that makes this record special," says Walter A.

Miking the Vocals

Excellent for vocal recording in studios and film post production houses, Sony's C-800G Studio Tube Condenser Microphone is designed for the highest possible sound reproduction quality. The C-800G features a high-quality dual large diaphragm for true reproduction of vocal qualities, vacuum tube warm sound quality through a 6AU6 vacuum tube, a unique Peltier-based cooling system to achieve optimum tube operating temperature, and an electronically selectable pick-up pattern (Omni/Uni) for various recording applications.

"In the studio, it comes down to what you hear," says Sony Music Studio's Robert Williams, the in-studio engineer who miked the vocals on the new album. "Jessica's voice is simply amazing. She has such a big range, from a whisper to really belting it out, and you need a microphone that can handle the range without distortion. The 800G mic has a good head run from the softest to the loudest sounds. With every project, I'm always testing two or three mics at the front of a session. I used the 800 with Jessica on her first album, and I felt it suited her well."

Williams points out that if an artist likes what he or she hears up front, a level of trust is quickly built giving the sessions additional creative flavor. "You have to give an artist what they need to hear from the start," says Williams. "Microphone selec-

Miking and Mixing a Dynamic Vocal Range with the Sony C800G Microphone and the Oxford Digital Console

World Radio History

npson

tion plays an important role in that. On ballads, for example, the S's and the wet sound of lips are important to the overall texture of a song. In Jessica's case, her vocals tend to be quite bright and I would add just a little to the low end to round out the body. The 800 mic gave me the flexibility to do this."


Robert Williams, Sony Music Studio engineer on the Simpson album.

But the bottom line for Williams is the quality of the singer's voice. "Jessica has a gift," he says. "Not everyone has it. She's been blessed in that sense. She has all the tools it takes to get her where she wants to go."

Mixing the Vocals

Top audio engineer Mick Guzauski, whose credits list more than 25 #1 singles and more than 25 gold and platinum albums for superstars throughout the pop music universe, agrees with Williams' assessment. He mixed two cuts on the *Irresistible* album, the ballad duet "Forever in Your Eyes" and choir-backed "His Eye is on the Sparrow."

"Because of the incredible dynamic range of Jessica's voice, the automated EQ feature in the Oxford console was very beneficial because I could tailor the frequency responses and dynamics within each song with optimum EQ at every pitch and level," says Guzauski, who has been described by top audio industry professionals as having "golden ears."

Guzauski's awareness of the Sony Oxford console goes back to the R&D stages, when the console was still a prototype. "When I first became aware of the Oxford," says Guzauski, "it wasn't entirely complete, yet even then it had the best A/D and D/A converters I'd ever heard. I've never heard a better sounding console, either analog or digital."

C800G Microphone

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DMX-R100 Spotlight

The Versatile Sony Digital Console Has Developed a Strong Following and is Showing Up Everywhere – From Specialty Radio Production Houses and DVD Audio Studios to Churches

By Kathleen Murphy

A Joyful Noise at Crossroads Tabernacle

Crossroads Tabernacle and Boden Center for The Performing Arts, a prominent inner-city church located in the Bronx has, with the Walters-Storyk Design Group (WSDG), created a state-of-the-art audio & video production studio, and is completely refurbishing an 800+ seat theater for worship, concerts, dramas, and outreach events. The restoration, which also includes new administrative facilities and a children's educational wing, is scheduled for completion in 2002. The 1000+ sq. ft. studio houses three isolation booths, and a control room equipped with a Sony DMX-R100 digital console.

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Radio Productions at GAP Digital

Walters-Storyk Design Group has also developed a three-studio complex for GAP Digital, one of the only U.S. recording studios specializing in the production of long-form radio drama. The 3000 square-foot facility is located in the Chicago suburb of Wheaton, adjacent to Wheaton College. Studios A and B at the facility each house a Sony DMX-R100 digital console.

In business since 1980, GAP Digital has created scores of radio dramas, including programs based on such classic stories as Victor Hugo's Les Miserables, C. S. Lewis' Chronicles of Narnia, and George Eliot's Silas Marner. The facility is currently producing 144 half-hour episodes of a drama series titled Left Behind, based on the best-selling book series of the same name. Left Behind is being broadcast on over 700 radio stations.

"Our goal is to provide clients with a multipurpose, 5.1-capable facility, that supports both radio and audio-for-video projects, in a visually stimulating environment," comments owner Todd Busteed.

DVD Production at Mi Casa

Grammy Award-winner Robert Margouleff and his partner/chief engineer Brant Biles are enjoying an extended period of high-profile DVD mixing and mastering work at L.A.-based Mi Casa Multimedia, Inc. Currently celebrating their first anniversary in their new digs, Mi Casa's home-theater-style, two-room audio production facility, design by WSDG, has developed a strong following for their video, music, and DVD multichannel mixing/mastering.

Located in a 1928 Spanish Revival house formerly owned by Bela Lugosi, Mi Casa (www.micasastudio.com) features two 5.1 high-end home-theater environments.

"We didn't want to build a commercial facility," reports Biles. "Because our projects are screened in actual 5.1 and 6.1 home theaters, we wanted our work space to emulate that environment complete with tables, lamps and furniture. Our studio is literally a house in the best sense of the word."

Each room is identically equipped with a Sony DMX-R100 digital mixing console.

"Our thing is high-quality audio, and that's what DVDs are all about," states Biles. "The Sony DMX-R100s sound great and are extremely flexible. We especially love the fact that the board has separate surround output busses. With the flick of a button, I can switch from stereo to surround."

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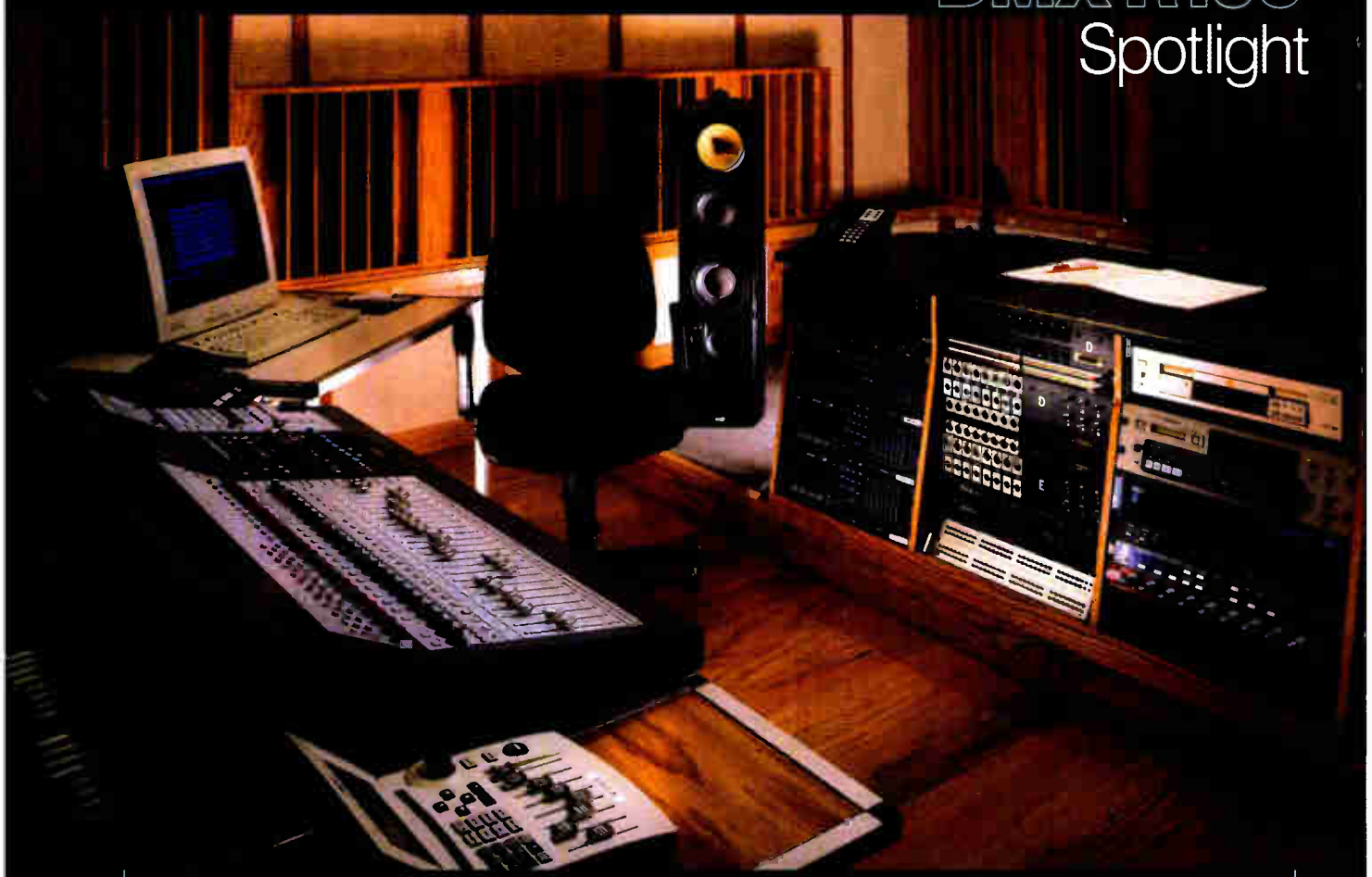
DMX-R100 Spotlight



Soundmirror R100 Suite's Sweet Sound ▲

A beta test site for the DMX-R100 console and its new version 2.0 software, Soundmirror, of Boston, Mass, recently completed several classical music projects. "We just remixed an opera, Thérèse Raquin, that we recorded last month in Dallas. It's a world premiere by composer Tobias Picker," says Soundmirror president John Newton. "We're also working on a series of multitrack surround recordings for the Pittsburgh Symphony and the Boston Modern Orchestra Project."

WireWorld Raises Its Twin R100s Consoles ►

Nashville-based WireWorld Studios recently upgraded its twin DMX-R100 consoles with version 2.0 software. Current projects at the studio include: recording and surround mixing for Brazilian act Badi Assad, mixing for an upcoming Dokken album, and mixing for the California-based band The Tories.

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"Awesome. You totally forget you're using a digital unit."
– FRANK FILIPETTI, Grammy Award Winning Engineer/Producer

"The cleanest reverb I've ever heard."
– BOB LUDWIG, President of Gateway Mastering and DVD, Les Paul Award Recipient, and 9-time TEC Award Winner

"The sonic quality was astounding."
– DAVID HALL, Independent Recording Engineer, as quoted in the December 2000 issue of Pro Sound News

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"What a great machine!"
– ROGER NICHOLS, Grammy Award Winning Engineer/Producer, www.eqmag.com

"The R100 packs more creative power per sample than most full size digital consoles." – BRUCE BOTNICK

HOW DO YOU EVALUATE A DIGITAL MIXER?

LISTEN.

"Sony clearly broke the mold with the DMX-R100. A dramatic improvement over other small digital consoles."
– JOHN NEWTON, Grammy-nominated engineer and owner of Soundmirror, Inc.

"We loved it... sonically beautiful and clean...the best small-format console ever... outstanding performance, execution and design."
– ROBERT MARGOULEFF and BRANT S. BILES, Proprietors of Mi Casa Multimedia Inc.

"This is the first digital console of this size that sounds this good. What goes in comes out. The R100 is right on the money."
– TOM LAZARUS, Engineer and owner of Classic Sound, NYC

"...pretty fantastic...rave reviews...incredible sonic integrity...and incredibly easy to learn and operate...a new generation of digital console."
– DENNY PURCELL, Award-winning mastering engineer, President – Georgetown Masters

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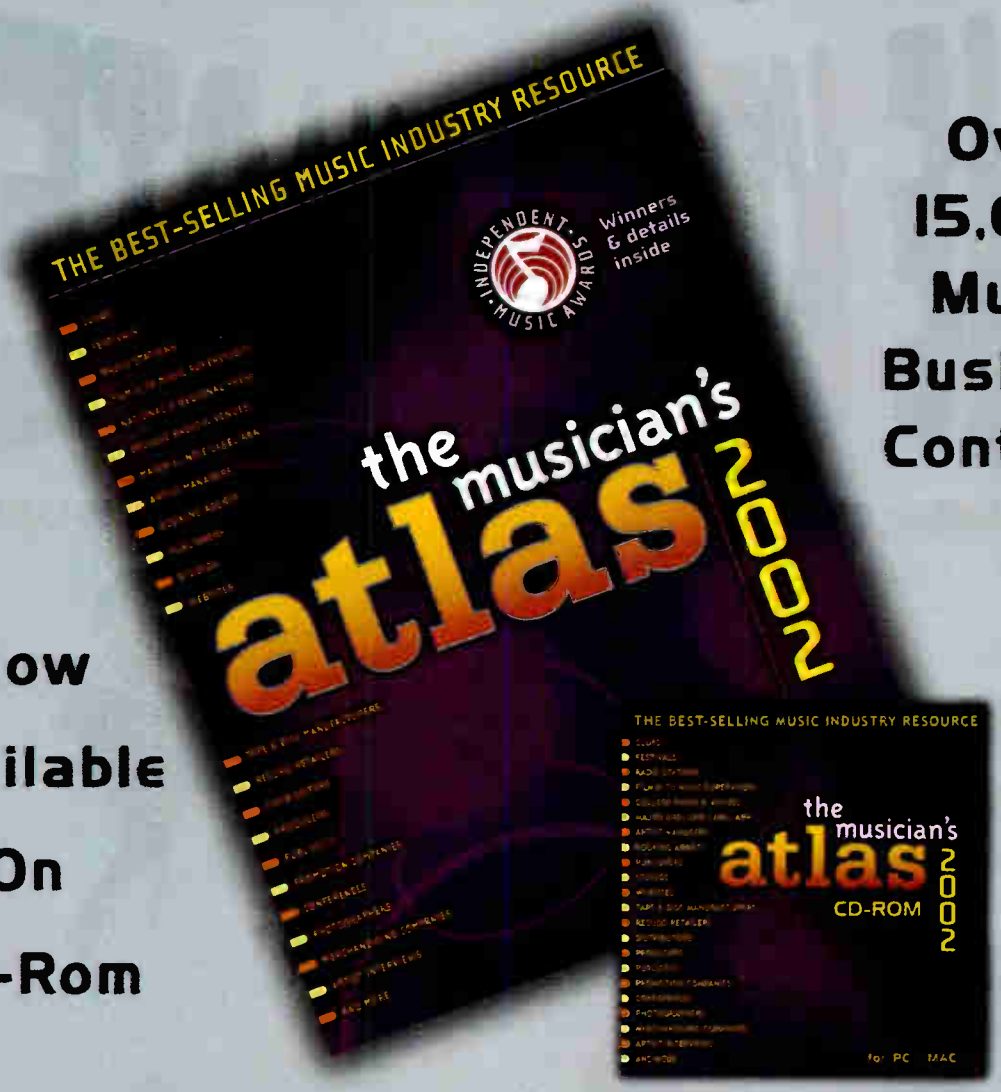

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THE KRONOS QUARTET

AVANT-GARDE CLASSICAL, ALL AROUND THE WORLD

by Sarah Benzuly

The Kronos Quartet are best known for their unique artistic vision and fearless dedication to experimentation. Since the group's inception in 1973, the quartet (David Harrington, violin; John Sherba, violin; Hank Dutt, viola; and Jennifer Culp, cello) have captured attention with their avant-garde classical style. More than 450 pieces have been written or arranged for the group, and the quartet's 30-plus recordings on the Nonesuch label have won numerous awards, including the German Deutscheschallplatten Award, three Edison Awards (Netherlands), six Grammy nominations and eight ASCAP/Chamber Music America Awards for Adventurous Programming.

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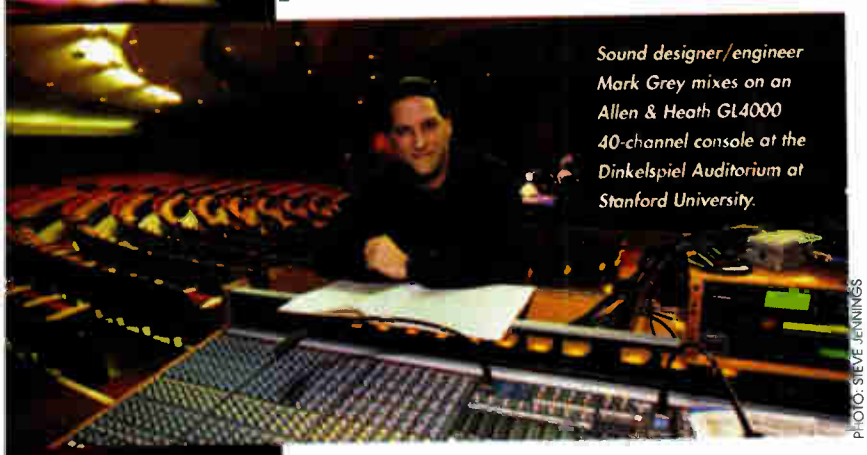
PHOTO: STEVE JENNINGS

The quartet have also charted new territory in the live performance arena. Unlike most of their peers in the world of classical music, the Kronos Quartet have not only embraced modern sound reinforcement technology, but have come to rely on it. Playing in such widely disparate venues as the Cinema Lietuva in Lithuania, Wolf Trap in Vienna, Va., and the Kwai Tsing Theatre in Hong Kong, the quartet face a dizzying variety of acoustic environments. In order to present their programs of modern and traditional works in such a wide range of venues, the quartet rarely perform without a comprehensive and sophisticated sound system that includes onstage monitors, audience frontfills and a full-scale P.A. *Mix* caught up with the quartet in early February, just as they were beginning their 2002 tour.

Sound designer and FOH engineer Mark Grey first met the Kronos Quartet in 1993 when he was working with composer John Adams, who wrote "John's Book of Alleged Dances" for the quartet. Later on, when Grey and the quartet crossed paths again, "[They] said that one of their sound engineers was thinking that maybe he wants to move on, and, if you're interested, we would like to call you at some point," Grey recalls. "Four months after that, I got a phone call saying, 'Can you fly to Norway in two days?'" Since then, Grey has been so busy touring the world with the quartet that he hasn't had time to add blank pages to his passport. And because of this busy schedule, the quartet also employ engineer Scott Fraser, who switches off gigs with Grey.

Some aspects of touring with the Kronos Quartet are surprisingly similar to rock 'n' roll touring. Grey sends promoters a sound rider, typically requesting a Meyer, Apogee, d&b or EAW P.A. system and a large-scale console. By specifying a mixing console with a minimum of 24 inputs, 4-band sweepable EQ on every input channel, and eight auxiliary sends minimum, Grey ensures that the promoter rents a top-quality mix console, and he has often found himself working behind a Midas XL3, XL4 or Heritage, a Yamaha PM3000 or PM4000, a Crest Century or a Soundcraft. Also specified on the rider are Crown or Yamaha amplifiers. "It looks like a rock 'n' roll-sized sound system," says Grey, noting that there are parts of the show that require high SPLs. "There are pieces that are very loud that are for effect," he explains.



Sound designer/engineer Mark Grey mixes on an Allen & Heath GL4000 40-channel console at the Dinkelspiel Auditorium at Stanford University.

PHOTO: STEVE JENNINGS

"FLYING" THE SOUND SYSTEM

Unlike most touring acts, the members of the Kronos Quartet carry all of their instruments personally and, because there is no equipment truck, Grey packs all of his sound gear in tagged and carry-on baggage. The touring party (which includes the quartet, the lighting designer and Grey) qualify for two bags each, plus there is always another airline ticket for the cello. "You're certainly not going to put the cello in baggage," notes Grey, who uses both of the cello's bags for FOH and other sound equipment.

Grey has two suitcases allotted for FOH equipment. "One suitcase is the effects suitcase, which contains a small rack, which has the newest Sony MiniDisc one-rackspace professional model," he explains. Also in that suitcase are a Yamaha SPX-990 and a TC Electronic FireWorx multi-effects unit, the latter a recent replacement for a PCM80. "And then we have 220-volt transformers, because, in Europe, you don't know what kind of power you're getting, but you know you're getting 220." The other FOH tech bag contains a portable MiniDisc, which serves as a backup to the primary MiniDisc, but it is also used for recording. Grey also packs a comprehensive set of adapters to convert among XLR, ¼-inch and RCA connectors, as well as a non-racked BOSS SE-70 multi-effects unit.

Grey's mics are packed in a third tech suitcase. Mics include four Neumann KM150s as floor and area mics, with KM100 preamplifiers and AK50 hyper-cardioid capsules, four Countryman Isomax II omni mics and a Shure SM78 announce mic, plus AKG 6-inch mic stands for the Neumanns. Also in this case are a Symetrix 304 headphone amplifier, a set of over-the-ear Sony headphones with one side chopped off—"so that the over-the-ear portion is not to the audience," Grey explains—and hair clips to keep those on, extra backup XLR cables, backup headphones and backup headphone extensions.

THE DOUBLE-MIC SOLUTION

Grey assigns two mics to each player. "I'll take the Countryman omni Isomaxes, which are very good for the higher-stringed instruments, violin number 1 and number 2 and viola, and tape them on the bridge of the instrument so that the mic is facing the fingerboard. It is a very abrasive sound, and it is typically not a pleasant sound. The cello Isomax attaches the same way, but because she's looking down at her fingerboard, the element is actually facing her face. So, you're getting the bow and the F-hole. It's a very rich sound, and it's a very full-frequency sound."

Grey places the KM150s on the floor, on the AKG mic stands, to the left of the violins on the floor, so that they're actually behind the instrument, angling up at the back of the instrument. "And because it's a hypercardioid, it's encompassing the

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whole area around them," he notes. "You don't get any of the real clarity of the sound like you get with the Isomaxes, but you get the body and the warmth of the sound.

"The way I get that acoustic quartet sound, to get that sweet natural sound, I use the KM150s for the body of the quartet and then I use the Isomaxes to function in a lot of different ways. The first way is that they get the initial attack of the instrument, so I blend that with the KM150s and you get a very bright attack with a warm body. The second is to feed the processors, because it's a very direct signal. So I can push the processors; I can get maximum headroom on the processors and get maximum usage out of the processors. If I used the KM150s through the processing, you're more susceptible to feedback, and this [way], you can really push it, especially when we're going through distortion boxes, flangers, phase shifters, echoes—because they are a contemporary string quartet, there are certain pieces that we do live effects on. We've been carrying a BOSS SE-70 effects unit, to which we apply octave transposition and flanging that blend into the quartet sound for certain pieces. Recently, we've been traveling with an Ibanez TS7 tube-screamer; there is one piece we've been doing where we put the quartet through a distortion box."

To hear themselves and the effects onstage, the quartet listens to three full-range loudspeaker wedges, each with its own individual mix. One monitor is placed between violin 1 and violin 2, while the violist and cellist each get their own. In addition to the promoter-supplied P.A., Grey also uses a pair of Meyer UPM-1Ps, placed horizontally on the lip of the stage, as frontfills. "Because most theater seating is raked, I angle them up the rake so the front row is not getting the direct horn in their face," he explains.

The UPMs can also serve as a primary acoustic source in certain circumstances. "We were in Switzerland for the Lucerne International Music Festival, and we performed in the new grand orchestra hall, Kongresszentrum Hall, and it seats 1,840 people," recalls Grey. "And the quartet is this tiny little object onstage. So, the job to make an intimate environment becomes challenging because you usually have 50 first violins [in an orchestra], when now you have only one." In such situations, Grey typically pushes the UPM frontfills a little farther upstage and sends them more of the Isomax signal. "And then I use the main P.A. system to catch up—I can push the sound to catch up with those UPMs. Because, if you push the UPMs too much, they're gonna distort, of course. It's very surprising how frontfills can solve a lot of those issues."

MIXING ANCIENT AND MODERN

During soundcheck, Grey gets fairly precise level settings on the supplied console, making use of the board's automation when available. However, he must often make major changes to the monitor mix, especially if the program includes, for example, a piece written in Haydn's day that was originally intended to be heard in a courtyard or a parlor. "If you play in a huge, 15-second-reverb church, I'm gonna give [the quartet] a much more direct signal from the Isomaxes," says Grey. "If it's a very dry space, I add reverberation from FOH effects back into their wedges, so it feels like they're getting something back from the hall."

Some venues have an almost entirely unsuitable acoustic characteristic; Grey remembers one 12th-century church in particular. "Some of [the venues] are huge, and if you play a piece with a lot of percussive sounds, the definition is totally blistering—you can't hear anything, and they [the quartet] certainly can't hear anything, because they're placed on the altar in the middle of the cross, which is the worst place for you to hear anything." In that kind of situation, Grey typically gives the quartet more signal in their wedges at the beginning of a piece and then reduces it when they get into the swing of things. "If there is too much coming from the wedges, it kills any kind of intimacy that we might be making for the audience," he explains.

ENTER THE TÖNMEISTER

In addition to acting as sound designer and FOH mixer, Grey often finds himself inside a remote truck for American and European radio spots, though not always as the engineer. "The first thing I ask is, 'Will I be able to mix the quartet?'" he explains. "And 99 percent of the time, they've said that I cannot touch the console, which is fine and I have no problem with that. The next thing I ask is, 'Would you mind if I called out cues to mix the quartet?' And, typically, the engineer is very open to that. And then I ask, 'Alright, are you okay with that?' because the way I mix, I'm very fidgety with my faders; I mean, they're always moving, and I'm constantly mixing. So

PHOTO: JEAN-ERIC ELY

Mark Grey with Pierre Jacques, director of Orchestra Des Jeunes De La Méditerranée, in Château Malijay, France.

when we record for radio, they'll start the tape rolling and I'll call out, 'violin 2 up 3 dB. Viola down 2 dB. In five seconds, cello up 6 dB and then violin 1 and violin 2 down 4 dB.' Because I know the pieces; it's what I do.

"But then there's this other thing about radio, especially in Europe. In Europe, they are very big on live broadcasts from the radio truck. The truck pulls up, and you have a whole crew of other sound people that are trying to interface to you. So you have the crew of audio engineers, but you also have, in Germany, a person called the tönmeister, who is basically the audio director of the broadcast. And he typically has a preconceived idea of what the quartet should sound like. Typically in Europe, violin 1 is mixed 6 dB hotter than the rest of the group. So one of my jobs is, when I'm setting up the sound system, I make sure that they [the engineers in the truck] have the proper splits. Usually I'm pretty cool about what I want to have from them as a mix, because I can't be in the truck and mixing simultaneously. But, if I have a console that allows me to output, what I can do is submix at FOH and put the headphones at my ears to hear what is being sent to the truck."

As Grey points out, his touring experience brings him into contact with a wide range of cultures. "And I'm very sensitive about the culture and the people," he says. "I'm not walking in and stomping all over them. Because you don't get a proper job done that way. Engineering skills are a lot of the job, but a good portion of the job is as a touring partner. And we all get along like family, and it is important to us that we can live like that. Otherwise, we can't do it." ■

Sarah Benzuly is Mix*'s associate editor.*

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PHOTOS AND TEXT BY STEVE JENNINGS

SUM 41

Singer/guitarist Deryck Whibley

SUM 41 has rocketed to the top in record time. Exploding out of Ajax, Ontario, the band was signed to Island Records in 1999, delivered their first EP, *Half Hour of Power*, in 2000, and followed it with their 2001 album, *All Killer, No Filler*, produced by Green Day and Blink 182 producer Jerry Finn. Readers of *Rolling Stone* recently voted the band RS 2001 Music Awards for Best Single and Best Video (both for "Fat Lip"), and the band was listed among the top three in 13 other categories, including Artist of the Year, Best Dressed, Best Album Cover and Best Hard Rock/Metal Band. On tour since last November, the band has dates scheduled in Europe, Japan and Australia through spring 2002, and the band's songs have been included in the movie *Out Cold* and PlayStation 2's "NHL 2002" video game. *Mix* caught SUM 41's mighty guitar section and punk-pop style at San Francisco's Warfield Theater in January.

FOH engineer Kevin Lemoine (left) mixes both for the audience and the band, who all use Shure PSM 700 Series in-ear monitors (the band endorses Shure microphones and wireless systems). Earlier in the tour, the band had been using a Mackie console onstage to manage their own IEM mixes, but it "got trashed" so Lemoine reconfigured his Midas XL4 for double-duty by splitting inputs and setting up both FOH and monitor "sections" of the board. "I'm doing five in-ear mixes and the FOH mix at the same time," he explains. "The band guys have been loving it—it sounds a lot better, the clarity's there, it's full, so it works."

Lemoine's mixing chores are eased by the fact that guitars and bass onstage are run through Line 6 Pods, "which keep the stage volume down," he notes. For effects, Lemoine makes use of a TC Electronic 2290, two Eventide 3000s, a Lexicon PCM 90 and a PCM 80. For dynamic control, Lemoine has patched in Summit TLA-100 compressors on vocals and bass, with Drawmer gates on the drums and dbx compressors as needed. Lemoine also runs singer/guitarist Deryck Whibley's vocals through a BSS DPR-901 multiband compressor/EQ before routing it to a TLA-100. "It really smoothes out Deryck's vocals," says Lemoine. "I have a lot of control there." In the U.S., SUM 41 is touring with FOH control systems provided by Showco, renting racks and stacks locally.

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Drummer Steve Jocz (top) is assisted by drum tech Dan Moyse (above), who used to run monitors for the band until the 24-channel Mackie died. "But once they decided to go through the FOH console, with Kevin using those Midas preamps, they really liked it a lot better," he notes.

Singer/guitarist Deryck Whibley plays his '68 re-issue Gibson SG, '59 re-issue Gibson Les Paul and '99 Gibson Goldtop Les Paul through a Marshall TSL 100 amp and a Mesa Boogie vintage 30 cabinet, and he uses a Line 6 Pod Pro. The vocal mic is a Shure SM58.

Guitarist Dave "Brownsound" Baksh plays his PRS Santana SE through a Signature Slash Marshall head, and uses a Mesa Boogie Rectifier through a Mesa Boogie vintage 30 cabinet. A direct signal is routed via a Line 6 Pod Pro.

Guitar/bass tech Brian Gibney (left) takes care of bassist Cone McCaslin's (above) Ampeg SVT Classic amp and 8x10 cabinet. McCaslin also runs his Fender Precision—"a custom shop relic"—through a Line 6 Pod Pro bass.

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New Sound Reinforcement Products

MEYER MM-4

Meyer Sound's (www.meyersound.com) MM-4 Ultra-Compact Wide-Range Loudspeaker is a compact loudspeaker for 70-volt distributed applications. The first product in Meyer's new Industrial Series of loudspeakers, the MM-4 mounts a single 4-inch, 16-ohm cone driver in a sealed enclosure. Unlike conventional 70-volt systems, the MM-4 does not require a transformer. In distributed applications, the MM-4 connects directly to the 70-volt line through an optional L-pad that controls the loudspeaker's output level. Drawing 300 watts peak from the line, the MM-4 produces 110dB peak SPLs. Used with the companion MM-4CEU Control Electronics Unit (a 2-channel, single-rackspace unit providing frequency- and phase-response correction circuitry), the MM-4's usable frequency response is 125-15k Hz. Enclosures are paintable, black-anodized extruded aluminum, with custom paint available. The 4-pound MM-4 has an optional U-bracket drilled to fit a Unimount bracket, and an accessory flush-mount kit handles ceiling or in-wall installs. The MM-4 is $350; the MM-4CEU controller is $1,800.

SOUNDCRAFT MH4 LIVE CONSOLE

Soundcraft (www.soundcraft.com) offers the MH4 multipurpose live performance console, a new modular design offered in 24/32/40/48 mono input frames (a 56-input version is promised), all with four additional stereo inputs. Mono modules anywhere in the input section may be replaced with additional stereo modules. Easily configured for FOH, monitor or mixed FOH/monitor duties, the MH4 features new mic preamp and EQ designs, 20 aux buses, true LCR panning and outputs, and an integral 20x8 matrix. The eight VCA and eight mute groups feature snapshot automation and MIDI control capability, and the 4-band stereo EQ on the aux outputs can be switched into the group inject paths. The MH4 also includes a passive mic split for each input and intercom capabilities with integral Clearcom interface. Pricing, dependent on frame size, ranges from $23,995 (24 mono, 4 stereo channels) to $37,295 (48/4).

ART POWER CONDITIONER

Applied Research and Technology (www.artproaudio.com) offers the Power Station 4x4 Metered Power Conditioner and Light Module, a rackmount AC strip with a backlit meter-monitoring input voltage. Housed in a rugged, all-steel chassis, the PS 4x4 also includes a backlit Ammeter showing load current in amperes. While the voltmeter stays relatively stable, varying slightly with line voltage and house wiring, the ammeter indicates actual power consumed. With a total power capacity of 1,800 watts, the PS 4x4 includes surge/spike protection, RFI/EMI filtering and a 15-amp breaker. An illuminated on/off power switch and a circuit breaker reset switch appear on the front panel. The rear of the unit features eight AC outputs, four of them widely spaced to accommodate "wall warts." Retail is $149.

SOUNDPLUG CABLE CHECKER

The SoundPlug from the Visionary Sound Company (www.vizear.com) is a cable checker built into the end of an XLR connector; to test a cable, simply connect the SoundPlug to the end of a cable and hold it up to your ear. The single-ended test device simplifies troubleshooting when it is difficult or impossible to get to both ends of a cable, and provides a convenient way to determine where an audio signal chain is broken or diverted. A passive device, SoundPlug does not require a battery and reproduces all line-level audio signals—volume depends on how close it is held to the ear. Small enough to fit in a pocket, the SoundPlug may be clipped to a key ring with the optional KeyClip accessory, and is available in six different colors. A 5-pin DMX version of the SoundPlug is available for lighting professionals. Price is $39.95.

EAW SUBWOOFER

EAW (www.eaw.com) debuts the BH760 subwoofer, a bent-horn subwoofer designed to complement the KF760 Line Array. Designed to be easily transportable with integral handles and an optional caster pallet, the BH760 is also suitable for other applications requiring high output at low frequencies in a small package. Built-in skids on the top and bottom of the cabinet drop into recesses on vertically adjacent enclosures to prevent stacked enclosures from sliding. The cabinet's 45-inch depth allows for an efficient, two-wide truck pack.

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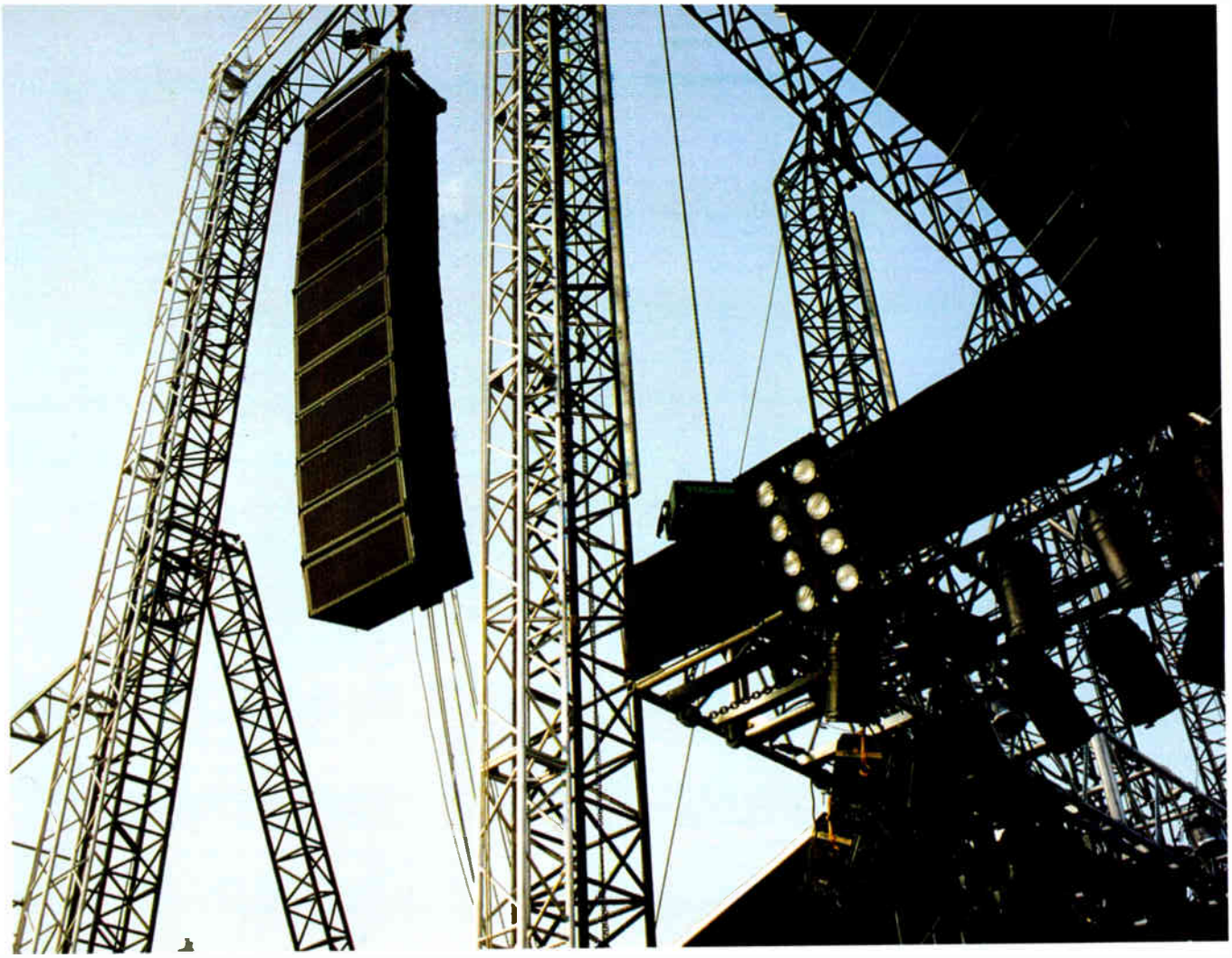

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TRIPLE EAW CLUSTER FOR ROYAL ALBERT HALL

PHOTOS: MIKE MANN

Paul Weller (former Jam and Style Council frontman) recently completed a series of sell-out dates at London's Royal Albert Hall. Renowned for its difficult acoustics, the 5,200-capacity venue was fitted out with an EAW KF 760 line array system by London-based supplier Canegreen. An unusual triple-hang design was used to provide even coverage for the unique oval-shaped auditorium, and the KF 760s were augmented with KF 761 near-field enclosures to cover the audience front rows. "With the [KF 761s] hung under the main system, we can do away with ground-stacked frontfills," explained Weller's FOH engineer Ange Jones. "The Albert Hall is a particularly tall venue, but there is a great danger in letting the system spill upward into the dome. With the line array rig, we can cover 280 degrees with three clusters, and be sure that the system has a sharp vertical cut-off."

The entire P.A. was powered by Swedish-built Lab Gruppen amps, except for a Meyer-only stage setup that included self-powered PSM-2s. Conventionally driven Meyer MSL-4 and MSL-2 cabinets were deployed as sidefill and drum monitors, respectively, and USMs provided local monitoring. Both Jones at FOH and Seamus Fenton at the monitor mix position mixed on Midas Heritage 3000 boards. —*Mike Mann*

INSTALLATION NEWS

Opened in December 2001, Detroit dance club Panacea features a sound system made up of EAW Avalon Series loudspeakers powered by 14 amplifiers from QSC's PowerLight 2 Series, including PL236, PL230 and PL224 units. The system for the 5,500-square-foot venue was designed for club owners Glen Hernandez and Eric Calado by Mike Fotias of Burst LLC, a local firm with a reputation of catering to the unique needs of nightclub sound...**Snow Sound Inc. installed an L-Acoustics sound system at the newly constructed 10,000-seat Mohegan Sun Arena,** part of the Casino complex in Uncasville, CT. Including 24 V-DOSC, eight dV-DOSC and 12 SB 218 Sub units installed by North American Theatrix, the system array design was developed by Snow Sound senior staff engineer Bill Dest using L-Acoustics Array 2000 software.

NOTES FROM THE ROAD

Top-selling country artist Kenny Chesney is touring with an EAW system made up of 60 KF750 three-way, full-range loudspeakers, 60 KF755 mid/high specialized downfill/upfill modules, plus 16 EAW SB1000e subwoofers. Four EAW EP3 powered three-way, full-range loudspeakers provided front and side coverage as needed; amplifiers are all Crown Macro-Tech Series models. Provided by Dale Morris Leasing, a division of Chesney's Nashville management company, the system was assembled by Phil Scobee. FOH engineer for the tour is Brian Vasquez, with Phil Robinson taking care of monitors...**Point of Grace, "the hottest group in Christian music," has been using Audio-Technica ATW-7373 wireless condenser mics** on the recommendation of monitor engineer Chris Schutz, who cites the A-T mics' ability to accurately capture the group's unique vocal blend. Consisting of four female singers, Point of Grace has consistently topped the Christian music charts...**Audio Analysts provided a JBL VerTec™ line array for Bruce Springsteen** and the E Street Band's five sold-out shows at the Asbury Park Convention Center. The Boss' Christmas series of shows in Asbury Park is an annual event, and Springsteen has been an Audio Analysts client for 10 years. ■

SYDNEY OPERA HOUSE GOES DIGITAL

Australia's Sydney Opera House has ordered a Euphonix System 5 digital console for the facility's Opera Theater, where it will be used for live opera and ballet performances. Supplied by Euphonix's local distributor Technical Audio Group (TAG), the System 5 offers total recall of all console parameters and patching, plus full support for 24-bit 96kHz I/O.

BRIAN MCKNIGHT TOURS WITH PARAGON II

Independent monitoring engineer Ken Nash, out with Brian McKnight, recently switched to an ATI Paragon II, which he uses to create in-ear mixes for everyone in McKnight's band. A single sidefill wedge for the benefit of McKnight's dancers represents the only onstage speaker, though Nash also uses the Paragon to provide talkback and monitoring feeds for the video crew. Sound company for the Brian McKnight tour is Eighth Day Sound.

BERKELEY SYMPHONY ADDS VRAS FOR ACOUSTIC ENHANCEMENT

In order to provide more suitable acoustics for January performances by the Berkeley Symphony Orchestra, Level Control Systems provided a temporary electronic fix at Berkeley's new Roda Theatre. By interfacing a Variable Room Acoustics System (VRAS) with the existing multichannel Meyer Sound self-powered house system at the Roda, LCS was able to increase the auditorium's mid-band RT from 1.2 seconds (ideal for the resident Berkeley Repertory Company's dramatic program) to over two seconds, more suitable for the classical and modern music program that BSO music director and conductor Kent Nagano had scheduled. Initial setup and fine-tuning of the VRAS was a collaborative process involving Dr. David Wessel, director of UC Berkeley's Center for New Music and Technology (CNMAT), LCS's John McMahon and Steve Ellison, and VRAS inventor Dr. Mark Poletti of New Zealand's Industrial Research Ltd.

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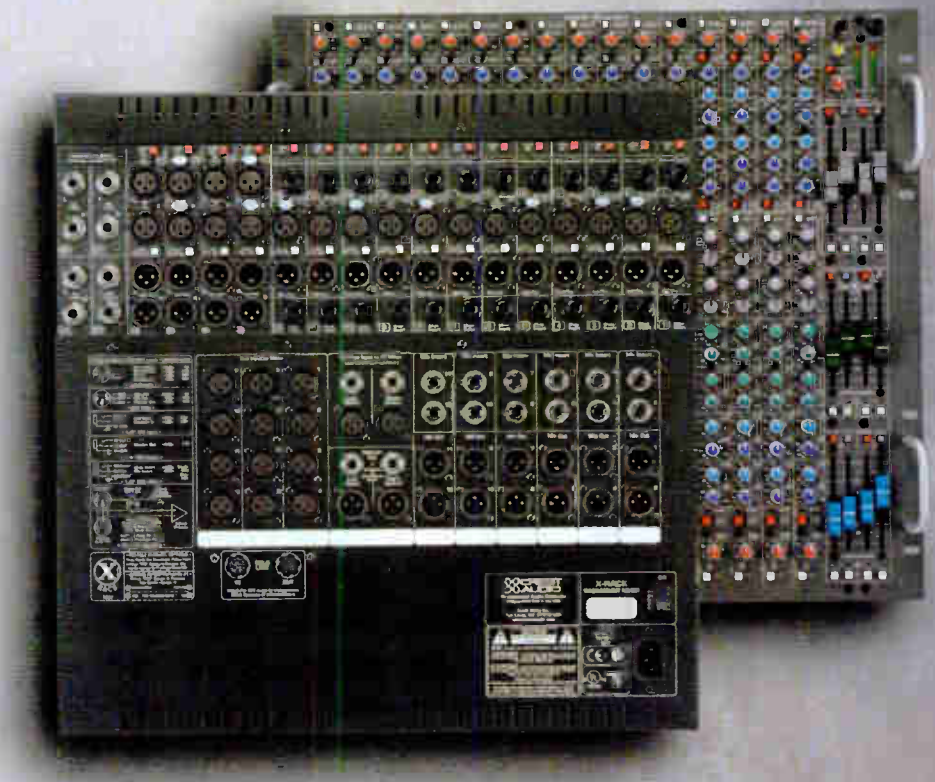

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L.A. GRAPEVINE

by Maureen Droney

Walking into arranger John Philip Shenale's Studio City workplace is like entering some Harry Potter-ish magic shop, except instead of cauldrons and wands, the place is packed with keyboards. Shenale, who is acclaimed for his work on many rock records, and whose string arrangements have been called "magnificent" by *Rolling Stone*, is a serious collector; to get to the digital workstation where he writes and records, you first have to negotiate a thick forest of vintage Hammond organs, way cool analog synths and intriguing old one-offs.

It's in this lair that Shenale has created hybrid soundscapes for artists such as Bette Midler, Tracy Chapman, John Hiatt, Jane's Addiction, and for Tori Amos—with whom he is a longtime collaborator, having worked on five of her albums including the 2002 Grammy-nominated *Strange Little Girls*.

Although he usually works with sequencing and notation software instead of paper and pencil, and uses samplers as well as live orchestra, Shenale remains an arranger in the classic sense. He has a fine-tuned sense of the capabilities of individual instruments, and his recording setup is fine-tuned also: based around Digital Performer DP3 with its QuickScribe scoring program and an original manufacturer Kurzweil K250, it also features a highly modified Soundcraft 6000 console, with new op amps and upgraded capacitors that give it, he asserts, a much better frequency response than a standard issue.

PHOTO: MAUREEN DRONEY

John Philip Shenale inside his Studio City facility.

"I did start out composing on piano," he explains, "but I've been into electronics since I was a kid. In college, I was a physics major, but I also played in a rock band. Eventually, going on the road with the band won out over college. I'm actually a performance rock 'n' roll musician based in classical music, but there's a technology aspect that runs through everything I do."

—CONTINUED ON PAGE 214

NASHVILLE SKYLINE

by Dan Daley

Robert Altman could not have created a more complicated plot than contemporary "Nashville." In late February, Emerald Entertainment Group, the holding company for Emerald Recording Studios and Masterfonics, announced that noted mastering engineer Glenn Meadows had been "terminated" as vice president of mastering services at Masterfonics. Within a week, Meadows was named as an employee of 301 Studios Group, owned by SAE founder and owner Tom Misner, who owns facilities in Sydney, Cologne and Stockholm. Meadows' role is still evolving, but in addition to guest lecturing at SAE schools, he will be involved in Misner's plan to start (or acquire) a mastering service in Nashville. The announcement was made at the March 1 opening of SAE's Miami school.

At that same gathering, Misner, who has made no secret of his desire to acquire a Nashville recording facility, hinted that Emerald-currently in Chapter 11 bankruptcy-was high on his list. Emerald's reorganization plan was to have been submitted to the court and its creditors in March. The ironic backstory, of course, is that Emerald Entertainment CEO Dale Moore had acquired Masterfonics—at the time owned by Meadows—out of bankruptcy in 1999.

In regards the dismissal of Meadows by Emerald, Moore indicated that the parting was not amicable. "...[Our] differences, in my opinion, had become insurmountable," he said in a prepared release. Moore was reluctant to elabo-

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rate further, other than stating that, "There were differences we couldn't overcome. He left me no choice."

Meadows confirmed the antagonistic nature of the split. He would not elaborate on the reasons behind the termination, citing the possibility of future litigation. However, he did confirm what he called a "highly restrictive" five-year, industrywide non-compete term of his employment with Emerald, a clause he further asserted was negated when Emerald filed for bankruptcy, a move which voids personal services contracts under law.

Masterfonics was founded in 1973; Meadows, a two-time Grammy winner

Glenn Meadows, center, shakes on a deal with SAE owner Tom Misner, whereby Meadows will head up the Studio 301/SAE mastering department. Mark Martin, head of SAE Nashville and Miami, is pictured at right.

and three-time TEC Award nominee, had co-owned the facility since 1977 before becoming sole proprietor in 1989. The studio's two original mastering suites were designed by Tom Hidley. Michael Cronin designed a third mastering suite added in 1998.

Moore says he is confident that Emerald will bounce back from its current financial difficulties, adding that he expects the company to emerge from Chapter 11 well before the end of the year. He affirmed that mastering remains a linchpin in the company's overall business strategy.

"That division is extremely important

—CONTINUED ON PAGE 217

NEW YORK METRO

by Paul Verna

Sorcerer Sound: Alive and Well!

Our March issue erroneously reported that New York City's Sorcerer Sound was out of business. They are in fact, alive and well. *Mix* regrets this error. Check out the studio at www.sorcerersound.com or better still, call 212/226-0480 and book some time.

Up in the *new* stratosphere: Andy Chase, Adam Schlesinger and James Iha had a lot going for them when they opened Stratosphere Sound Studios in 1999. As musicians, they were members of some of the industry's most commercially and critically acclaimed groups: Smashing Pumpkins (Iha), Fountains of Wayne (Schlesinger) and Ivy (Schlesinger, Chase). As producers, they were on the rise, with a hip clientele that included Tahiti 80 and Meg Hentges. As studio entrepreneurs, they were armed with tons of nifty gear—including a Neve 8068 and Studer A827—and enough smarts to build a business around their own, label-funded projects. That meant that they didn't have to rely exclusively on outside work, as many studios do.

Yes, it was as perfect a picture as you could paint for a group of young, enterprising artists with a love of the studio, proven track records as hit makers and a collection of killer gear. However, before Stratosphere could fulfill its owners' vision, it went up in smoke—literally.

An overnight fire in a bagel shop downstairs from Stratosphere damaged the studio's gear and forced the closing of the building. Fortunately, no one was injured, the equipment was reparable, and all master tapes were safely recovered. However, Stratosphere's momentum was broken at a time when it was on the verge of establishing itself as a choice New York recording venue.

"We would have liked to have another year," says Schlesinger, noting that he and Chase were in the midst of an Ivy project when the fire broke out, and that PJ Harvey had committed to locking out the room after Ivy was scheduled to finish. Shaken but not deterred, the Stratosphere principals had their equipment cleaned looked for a new site. They found it at 239 11th Ave., not far from their old premises on West 14th Street.

The new Stratosphere is bigger, better and closer to its owners' intent than its predecessor. A two-room facility featuring the vintage Neve from the earlier studio, plus a Trident B Series board in Studio B (both purchased through Rockland, Mass.-based Professional Audio Design), Stratosphere is equal parts funky and state-of-the-art.

"It doesn't feel like other big studios I've been to, where you have secretaries with headsets and all sorts of people walking around in collared shirts," says Iha. "It just feels like a very homey, cool, grown-up version of the old place."

Chase adds, "How do you make a studio that's funky and cool and seems off the beaten track, but will impress people used to working in high-end studios? So we came up with something that's not too overdesigned and overdetailed, but is definitely designed and detailed."

This mixture of collegiate casual and Chelsea chic may suit Stratosphere's owners, but they know as well as anyone else that no amount of vibe or vintage gear guarantees a studio's success, particularly in this uncertain economic climate. "A lot of people thought we were crazy for doing this now, when so many studios are having a rough time,"

—CONTINUED ON PAGE 218

Stratosphere's Studio A, featuring a Neve 8068 console and studio design by Francis Manzella.

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SESSIONS & STUDIO NEWS

SOUTHWEST

Sparta (which features members of the now defunt At the Drive In) worked on a new release for Dreamworks. The new four-song EP, entitled *Austere*, was produced and engineered by **Mike Major** at Rosewood Studio (El Paso, TX). The final product was mastered at Sonorous Mastering (Tempe, AZ) by engineer **David Shirk**.

NORTHCENTRAL

Following a long year of touring, **Slipknot** regrouped at **SR Audio** (Des Moines, IA) with producer/engineer **Matt Sepanic**. The band was recutting the song "My Plague," from the band's current album, *Iowa*, which is slated to appear on the *Resident Evil* soundtrack. The new version was mixed by engineer **Terry Date**. Slipknot frontman **Corey Taylor** (#8) also spent some time working with the Chicago group Slitheryn. Sepanic and Taylor co-produced a four-song EP for the band. Also at SR Audio, Slipknot drummer **Joey Jordison** cut new tracks for **The Rejects**, and **Static-X** guitarist **Tripp Rex Eisen** worked on his new solo project.

SOUTHEAST

Producer **Lil Jon** and engineer **Jan Nerud** recently spent some time at **Patchwerk Studios** (Atlanta) cutting tracks with **Naughty By Nature** and newcomer **Chyna White**. Out at **Seventeen Grand** (Nashville), engineer and co-owner **Jake Niceley** kept busy working on a project for legendary blues man **Deacon John**. Niceley was in crafting a 5.1 and stereo mix for a live concert. Jones performed at the Orpheum Theater in New Orleans.

NORTHWEST

Joe Satriani and producer **John Cuniberti** (*Surfing With an Alien*) locked out two rooms at **The Plant** (Sausalito, CA) to both track and mix a new instrumental album. **Dave Matthews Band** was back in Studio A to work on a new project for RCA Records. The band is co-producing the effort with **Steve Harris**; **John Nelson** was in to engineer...On the other side of the bay, **Mark Needham** has been busy mixing the music for Showtime's *Chris Isaak Show* at **Studio 880** (Oakland, CA). Guest artists have included **Green Day** and **Stephen Jenkins** (Third Eye Blind). **The Flipsides** were also in laying down drum tracks for their upcoming full-length album with engineer **Reto Peter** and assistant **Brad Kobylczak**. **Brodie Stewart** and his band were in to record drum tracks with engineer/producer **Andy Ellis**; **Marco Martin** assisted...Engineer **Barry Corliss** worked on a number of new mastering projects at **Master Works** (Seattle): **Doug Martsch** (Built To Spill), **Jana McCall**, **the MJ Bishop Band**, **the Brothers of Max Catharsis**, **Latigo Lace**, **Crushcoat**, **Josh White**, **Ota Prota**, **Omni** and **Thomasa Eckert**.

PHOTO: DAVID GOGGIN

***The Strokes Take Over MTV2:** Last January, DesignFX was tapped to record a performance by The Strokes at Hollywood Center Studios. The show aired as a special on MTV2. Pictured L-R: (front) Scott Peets (DFX engineer/manager), Cameron McCauley (engineer), James Gebhard (FOH), Matt Romano (drum tech), (standing) Nikolai Fraiture (bass), and Nick Valensi (guitar).*

NORTHEAST

Inside Studio A at Avatar Studios (NYC), engineer/producer **Neil Dorfsman** and Sting cut the song "Fragile" that was used in the opening ceremonies of the 2002 Olympics. Cellist **Yo-Yo Ma** did overdubs in Studio C where the track was the mixed by **David Greene**. Engineer **Jay Newland** recently mixed a live recording featuring **Herbie Hancock**, **Michael Brecker** and **Roy Hargrove** for Verve Music Group. **Anthrax** also continued working on overdubs for their forthcoming record produced by **Scrap 60** (Dry Kill Logic, ill Nino), which was engineered by **Steve Regina**...Tenor saxman **Chico Freeman** and engineer **Rich Tozzoli** mixed his forthcoming release at **Clubhouse** (Rhinebeck, NY). Producer **John Boylan** also began tracking an upcoming release by artist **Michael Flynn**.

Dann Huff (producer), Jeff Balding (engineer) and Jed Hackett (asst. engineer) at The Sound Kitchen (Nashville) mixing the new release from Lyric Street Recording artists SHeDaisy.

STUDIO NEWS

Pressure Point Recorders (Chicago) recently purchased an SSL SL 9000 J. The console will be installed in the newly designed Studio A, which was scheduled to be completed in the spring of 2002...Last March, **Aura Sonic Ltd.** (Flushing, NY) celebrated its 25th anniversary. Aura Sonic specializes in location audio recording and broadcast production. The company was founded in 1977 by owner **Steve Remote**. ■

Please submit your Sessions and Studio News for "Coast to Coast" and "Current" to Robert Hanson. Submissions can be sent via e-mail to RHanson@primediabusiness.com; fax 510/653-5142 or snail mail: 6400 Hollis St., Suite 12, Emeryville, CA 94608.

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writer of a single (with singer Kristyn Osborn) for country faves SHeDaisy.

A singer and multi-instrumentalist with a degree in music and a major in voice, Neigher started out as a performer, fronting a band that recorded for Capitol. Later, a stint at Rondor Music Publishing brought his songwriting skills to the fore. He garnered covers by artists including Joe Cocker, Wilson Pickett and Tuck & Patti, and became a staff writer for, first, Rondor, and then Warner Chappell, placing songs with numerous artists as well as in films and on television. During all that time, he maintained a small studio at Sunset Sound where he worked with up-and-coming artists. Since his move to the Sound City complex, Neigher has hooked up with manager Frank McDonough with whom he's been developing several different genre-crossing artists, including budding alt-soul-pop diva Rhiann, Australian rocker Michelle Joan Smith and Indian soul singer Shaheen Sheik.

"I see myself as a developer kind of producer, the one who helps to focus artists early in their career," he comments. "I have a good environment here to be very creative at that seminal point where you begin to make music and write songs.

Stephen Marsh, Peter Barker and Marc Schrobilgen inside the temporary mastering studio at Threshold Sound.

Neigher's studio setup is built around what seems to be standard these days for muso-type producers: Digital Performer's DP3. "I started on it when it was just a MIDI program," he says. "So when it became audio as well it was a logical thing to use. The latest 3.0 version is great; they just make it easier and easier, and the plug-ins are fantastic. Now there are starting to be programs I like that don't work with Pro Tools, that only work with Logic and Digital Performer. Like Propellorhead's Reason. It's awesome. I've also been messing with Battery, a drum sample player by Native Instruments, who also make Absynth. And I use things like Unity and Retro, all from within DP."

A Mackie 2408 console handles any outboard processing such as his Berenger Ultra Q Pro equalizer and Focusrite Voicemaster. Mixing is to DAT; TC Electronic's Spark mastering software and T-Racks' multiband compressor/EQ/stereo spreader are employed on final mixes, which often get sent out by MP3 over DSL. "In five minutes it's over to anybody who needs to hear it," he says.

Neigher is optimistic that the music business cycle is coming around to a new emphasis on singer/songwriters. "For quite a while now, there hasn't been much courage in A&R," he contends. "But, like in film, where there are those few movies that are made from love and have important, rich stories to tell, there are exceptions in the record business, too. I love getting my hands dirty, and really being inside the music-making. I want to be the person who connects the artist with what they need to make the greatest possible record."

It's always sad when a recording studio closes its doors. Sony Music's Santa Monica facility shut down in December, and it was good to hear from former chief technical engineer Peter Barker, who has embarked on a new endeavor.

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"It's been a long, strange couple of months," he says. "Shutting down a studio that you built and improved over 10 years is not a pleasant experience. That's especially true when you know it was a very good studio, one that hosted Elton John, Pink, Diana Ross and Tim McGraw in just the past year."

There was plenty of interest in the studio's equipment, particularly the highly modified Neve 80 Series console. As it turns out, Marc Schrobilgen, an AVID editor and video producer and a former Sony employee, has purchased all of the facility's equipment. Schrobilgen, who has worked with Michael Jackson, Incubus, Britney Spears, Ozzy Osbourne and the Backstreet Boys, tried to obtain a lease with Sony for the facility, but negotiations failed when Sony decided that they didn't want an independent studio in the space.

Schrobilgen has assembled a team that includes Barker and Sony's former chief mastering engineer, Stephen Marsh, and has formed Threshold Sound and Vision, a company that's already doing mastering, CD duplication, audio duplication/transfer/restoration, and AVID video editing out of a temporary location in Santa Monica while they finalize arrangements for a large, permanent facility in the same area. Threshold plans to add more recording and mastering spaces, and to offer a broad range of video post-production and creative services.

"As you might imagine, we're very excited about this new endeavor," says Barker. "We look forward to serving the clientele we had at Sony as well as expanding our service. If anyone would like to contact us please give us a call at 310/451-4550 or e-mail us at Thresh oldmediacorp@hotmail.com." ■

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

Not So New Kids in Town: RCA recording artist Martina McBride and her husband, John, president of live sound company MDSystems/Clair Brothers Audio, have purchased and renovated the former Creative Recording Studios in Berry Hill. As the leading candidate for Nashville's most successful pro audio couple, they expect to open a completely remodeled and vastly upgraded two-studio facility by early spring.

Creative Sound was originally owned by producer Brent Maher and was where he recorded many of The Judds' albums. More recently, it had been owned by a trio of commercial jingle producers. The McBrides acquired it late last year and brought in George Augspurger to update his original 1970s-era acoustical and monitoring design. McBride bought Donald Fagen's Neve 8078 console (formerly at the now-closed River Sound in New York), which was upgraded by Geoff Tanner. Tanner had helped build the console years ago as a Neve technician, and he worked with McBride's chief tech and former Frank Zappa tech Arthur "Midget" Slopeman on the rebuild. It is installed in the main control room, adjacent to the studio's large tracking room. The equally vintage Sphere console that came with the studio will be moved to the facility's

NASHVILLE SKYLINE FROM PAGE 211

to us, providing the ability of our clients to seamlessly move through the [entire] recording process," he says. He also stressed the need to maintain a high-end mastering operation to compete with a broadening base of what he called "Pro Tools mastering" facilities.

Moore said that Meadows' departure will not affect that strategy, noting that Masterfonics' other mastering engineers—Benny Quinn, Jonathan Russell and Tommy Dorsey—had developed significant client bases of their own. Stay tuned...

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second, smaller control room. Both rooms have extensive, server-networked Digidesign Pro Tools systems. Studio A also has a pair of sequentially numbered Studer A827 multitrack decks.

The still-unnamed studio will be offered as a combination of commercial and private: John McBride said that Martina and her longtime co-producer Paul Worley will do her next record there, but that she will book time like any other client. Despite a difficult studio economic climate, John McBride strongly believes that this facility will be at least marginally profitable while giving the McBrides a creative locus for Martina's records.

"I don't believe this studio is a great business opportunity, but I do believe it can be profitable," McBride stated, explaining that much of the equipment was acquired over the last two decades and that they capitalized the estimated $2 million project themselves. "We don't have bank loans and equipment leases, so we're already ahead of the game there," he said. "If it breaks even, I'm a happy guy." He also believes the main room can support a rate structure ranging between $1,200 and $2,000 per day.

It's also worth noting that Martina McBride and Worley had previously made her records at The Money Pit, a small facility in which Worley is a part owner. So moving her productions doesn't take work away from other commercial Nashville facilities.

But more than anything else, the studio quenches a passion that predates John McBride's success in the live sound business. "My original proposition to the bank in Wichita 23 years ago when I started out was for a recording studio," he recalls. "That didn't fly, but my proposal for a live sound company did. So I'm finally getting around to doing what I wanted all along." ■

Send your Nashville news to Dan Writer@aol.com.

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says Schlesinger. "But I think that, in a weird way, it could work to our advantage. There's always going to be some demand for people who want to record in Manhattan. We're really aiming for this mid-level range of people who don't want to work in some demo studio but don't want to pay $2,500 a day either."

It helps that the three principals and their circle of friends bring in a steady stream of projects, but Stratosphere does not subsist on "inside" projects alone. Like any commercial studio, it sees plenty of "outside" work and depends on word-of-mouth to keep such projects coming through the door. For instance, Arto Lindsay recently worked at Stratosphere and ended up referring Me'Shell Ndegéocello.

When clients enter Stratosphere, they walk into a lounge area that leads to the control room for Studio B, a cozy but fully professional room that houses the Trident, an Otari MTR-90 and a Pro Tools rig. Further into the space, Studio A greets visitors with its ample dimensions and inviting decor (by Francis Manzella of FM Design).

The tracking space adjacent to Studio A is another of Stratosphere's highlights. Featuring complex angles, high ceilings and ambient light courtesy of a second-floor window that looks down into the room, the studio is a musician's dream, stocked with vintage keyboards (including two Farfisas, a Fender Rhodes and a Chamberlain that was under repair during a recent visit), and amps ranging from a Sears Silvertone to an Ampeg SVT II bass head to the obligatory Marshalls, Fenders and Voxes.

As they juggle their various recording projects, productions and such other ventures as film scores (Ivy wrote and record-

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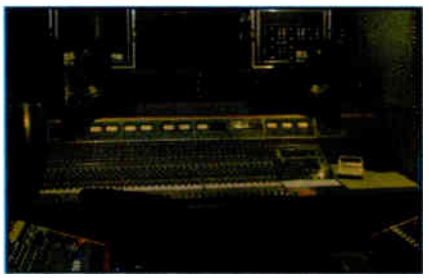
ed the score to the Farrelly Brothers' *Shallow Hal*), the members of the Stratosphere team are ready to do business at a time when the New York studio scene is still reeling from the soft economy and the impact of the September 11 terrorist attacks.

"We say unto thee, come record," says Iha. "We welcome any artist."

Let's get small: Effanel Music, New York's leading mobile studio operation, is complementing its giant L7 truck with a smaller vehicle aimed at budget-oriented clients and modest-sized venues. Designed to go, literally, where the L7 can't, the new unit—dubbed OB/U for "outside broadcast unit"—is a 15-foot Ford cube van outfitted with a Neve analog broadcast console, Otari Radar II digital recorders, and Aphex and John Hardy preamps. Its power-consumption and staffing needs are minimal, allowing it to capture a segment of the market currently underserved by the big rigs.

"We were getting lots of calls for nice projects that didn't justify L7, so I'd send out our portable system," says Effanel owner and founder Randy Ezratty, noting that such projects as Our Lady Peace (six college dates and small club gigs), Nine Inch Nails' latest live project *And All That Could Have Been*, Jay Z's *MTV Unplugged*, and Brad Mehldau's *Live at the Vanguard* were all "non-L7 gigs."



Effanel's OB/U truck, a smaller alternative to its flagship L7 expanding trailer.

But a portable system has its drawbacks, according to Ezratty. For instance, the crew is dependent on the host venue for a monitoring environment, which opens the door to a level of uncertainty that can sometimes throw off a production. By contrast, a small truck offers a higher degree of comfort and control without the trappings (and expenses) of an outsized trailer.

To that end, Ezratty kept OB/U lean but ultra-professional. The unit is equipped with a 36-channel Neve 5336 broadcast console plus two Neve 5452 12-channel sidecars. Recording media include 48 tracks of Radar II hard disk recording, 48 tracks of Tascam DA-98, and transfers to Pro Tools, all at 24 bits. On the front end of the rig, OB/U provides a choice of three mic preamp systems: John Hardy, Millennia (discrete) and Aphex (remote-controlled).

Launched in February 2002, OB/U's maiden voyage was a live recording of acclaimed classical percussion troupe Bang on a Can All Stars at Montclair State University in New Jersey. According to Ezratty, it was exactly the kind of gig the OB/U was built for—a project that could never had afforded the L7, but that needed a good, solid setup and an expert crew.

Although OB/U is clearly an alternative to Effanel's flagship L7, the small truck embodies the spirit in which the company was founded two decades ago. "Some of Effanel's fondest moments and best projects have been on the modest side," says Ezratty. "U2, Effanel's biggest client of 2002—with numerous projects, including the *Elevation 2001* DVD and the Super Bowl appearance—started its relationship with us in 1982 when they could never have afforded the bigger units at the time. They would have been an ideal OB/U client." ■

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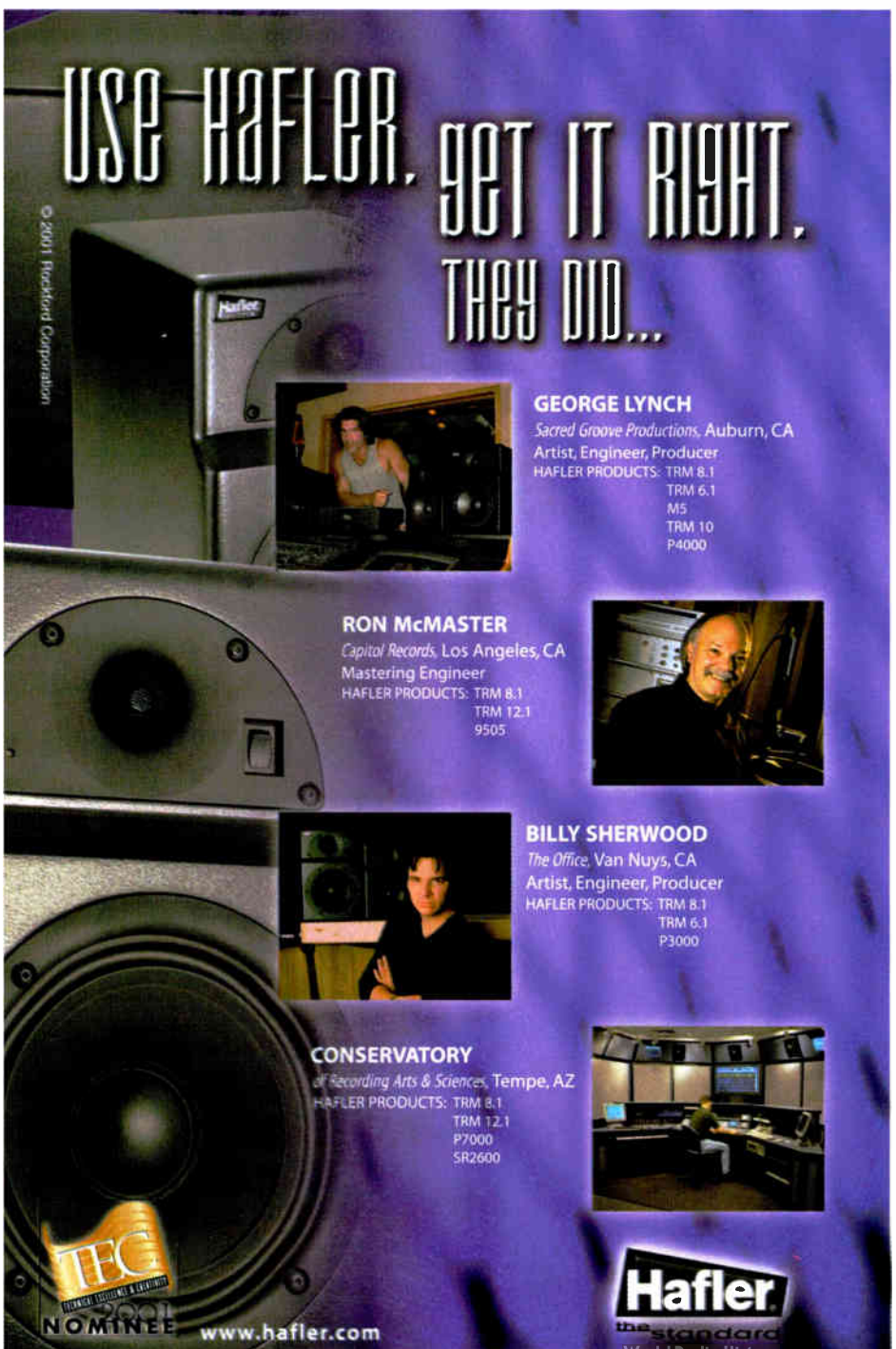

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—FROM PAGE 186, MIC PREAMP INSIDER

hence the "m" ref, which is based on the ye olde telephone standard.

Table 2 compares a few preamp specs. EIN is fairly consistently reported. Only Grace Design uses a 50-ohm source impedance (ribbon mic) rather than the more typical 150 ohms for condenser and dynamic mics. The options are unweighted (broadband response, typically 20 to 22k Hz) or A-weighted (filtered to replicate the ear's desensitized low- and high-frequency response). The old-fashioned method was to simply max *signal-to-noise* floor. The variables are source impedance (lower yields better numbers), max gain and max output.

TOPOLOGIES: LOOKING INSIDE

The contents behind the front panel can be one or more of the following: tubes, transistors, transformers, discrete or IC op amps—the choice and configuration pretty much sets the "tone" of the product. Any of the aforementioned *topologies* can be nearly indistinguishable when designed to achieve a specific goal *and used conservatively*, but in many cases, "vintage disciplines" are factored in for their character. Even the best designs can be compromised by poor production. Issues such as component quality, wiring, PCB layout and grounding are paramount to longevity, low noise, immunity from radio and television interference, and ultimately, compatibility with other gear.

GLASS CEILING: HOME ON THE RANGE

Stepping up from the noise floor, the other end of dynamic range is the overload characteristic, of which there are three basic types—sonic airbag, "soft" clip or "windshield" headroom. The transition between linear-clean and hard/nasty clipping can be wide or narrow. Remember, analog tape exhibits a gentle softening of transients that's very forgiving. Digital isn't, which is what your ear objects to (when it does). *Single-ended* Class-A tube and transistors circuits soft clip; however, the tube example that follows has a wider window when the output circuit is loaded by 600 ohms. Ultra-clean, transformerless designs are going to hard clip when driven hard. That's windshield headroom, just like discrete or IC op amps and digital (without "help" or DSP).

The sonic airbag is dramatically demonstrated in Fig. 1 by the single-ended Class-A vacuum-tube circuit in Fig. 2. Using a cathode-follower output stage, it will deliver the maximum sonic airbag effect. Note that in the two examples, the distortion is always round, not edgy. Two preamps in Table 2 are likely to be contenders. Can you find them?

BALANCING ACT

Not all vacuum-tube designs have such a broad, nonlinear region. Pultec EQs and Universal Audio's 175 compressor have internally balanced amplifier designs that are very linear (as are Marantz and McIntosh power amps). Extending the linear region increases headroom but shrinks the sonic airbag. Remember, it wasn't the intention of vintage circuit designers to have their equipment red-lined.

HEAD OF THE CLASS

Transformers are very much a part of the vintage/retro mystique, API and Neve being perfect examples, each known for a completely unique sound. Class-A Neve circuits don't have a wide nonlinear range like tubes. Depending on the load (600 ohms or not) or the Bias Adjustment—the two are interactive—the output amp can clip asymmetrically by generating the more musical, second-harmonic distortion before completely crashing into the power rail. API's 2520 discrete op amp uses a bipolar, Class-AB output stage that is linear to the rails. (Symmetrical clipping is great for maximizing headroom or for fuzz boxes, but for little in-between.) API's magic comes from the symbioses between the 2520 discrete op amp and its companion output transformer.

Note: An *operational amplifier* is basically a "black box" treated as a functional amplifier building block (no user-serviceable parts inside) with input, output and power connections. Op amps are essentially linear to the power rails, clipping symmetrically when they run out of juice, not a pretty sound, but then users are expected to know how to set levels!

Transformers are the "static" variation of the analog recording process—head + tape = transformer. Tape's record and playback EQ curves further "enhance" the saturation characteristics, but that aside, as good as transformers can be, their distortion specs change with frequency. Table 2 includes links to both the Great River and John Hardy sites, where details are provided about how their high-quality Jensen Transformers perform at various frequencies.

A newer and nearly as famous discrete op amp is the Jensen 990 (used in John Hardy preamps). A natural progression from early transistor technology, the 990 coupled with a Jensen transformer has less "color" than the Neve or API combo. Audio started all over again when early IC op amps were introduced. They were no great shakes, but ICs reduced manufacturing costs and increased component density, making the early project studios possible as well as a vision into the future. Modern op amps are quite respectable compared to their '70s-era ancestors.

For more information about Jensen Transformers and the 990 op amp, visit www.jensentransformers.com and go to "/apps_sc.html."

THE WRAP

Audio engineering is like cooking: To achieve superb results, ingredients are carefully selected, added at precise times, cooked or raw—every detail is important. And then there is fast fude. All geek matters aside, the emphasis should always be on the production. While it is now more possible to achieve extremely clear and transparent recordings, it seems that our ears like a little distortion just like our tongue craves a little fat—it truly is a matter of "seasoning to taste." ■

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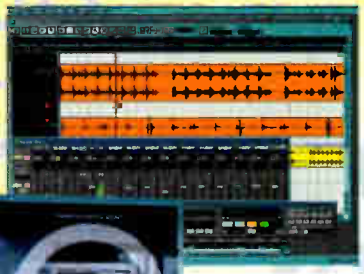

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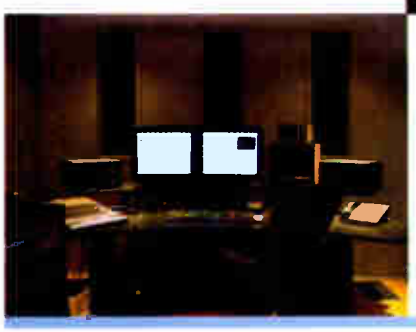

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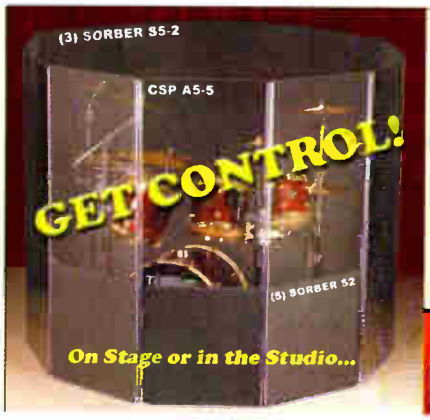

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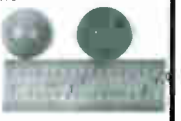

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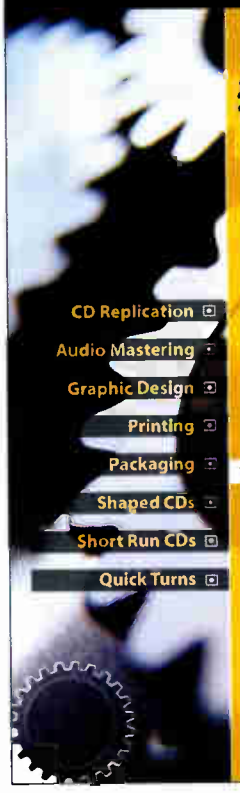

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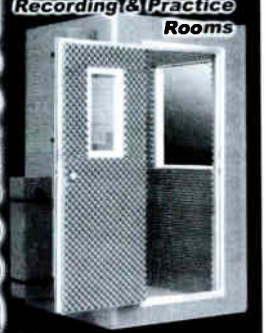
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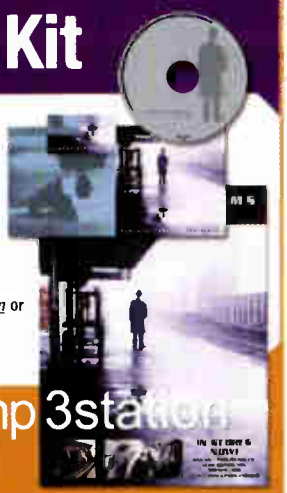

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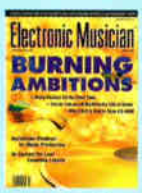

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—FROM PAGE 22, WHATEVER YOU DO...

Sharp exhibits obvious color banding (which the video industry calls "false contouring," for some reason), and it has some pretty nasty animated dithering going on in darker image areas. The Marantz has minimal banding; in fact, you may or may not notice any in a full day's viewing. Dark shadow dithering is almost nonexistent, as well, as they use a *much* better approach to the post-digitized CRT gamma-removal challenge *that* all DLP systems face.

The only non-ideal characteristics on the Marantz are the brightness, the green tinge when you try to force more brightness, and the total lack of access to individual RBG gammas, or any other tweeze setup parameters, for that matter. Well, there is this one other thing...

IS IT WORTH A FIGHT TO TAKE A BITE OUT OF THE WHITE?

Feeding these projectors pure white produced shocking results. With the Sharp and the Marantz set up to match color and density, the Sharp produces a beautiful, blinding *white*. The Marantz, on the other hand, with High Bright on, produces a very dark, muddy rose-beige, delivering significantly less light than the Sharp.

And, if you turn off the Marantz's High Bright, you get even less light, and the color changes to champagne. Pretty dismal.

And this is visible in images with portions approaching an IRE of 100. While the Sharp makes a beautiful white, the Marantz seems to invert the brightest portions and replace them with a sort of posterized pinkish-brown, almost as if one had selected the white with the magic wand in PhotoShop and poured the new darker color into the selection.

It is important to note that in order to get the Marantz to match the Sharp, I had to turn the Marantz's contrast all the way up to 100. Marantz has since informed me that this is basically illegal, and that if you use a contrast setting of 86 or above, pure white can "invert." This is exactly what the old LCD projectors do. And, sure enough, this seems to be the case, making this problem avoidable.

I would like to see a slider or multiposition selector on the Marantz instead of the High Bright on/off switch, and another control to suppress the green, even though I am sure it would sacrifice some brightness.

BUT WAIT! INSIGHT WAS GAINED BY LOOKING AGAIN

At the very last minute (well, three weeks *after* the very last minute), I took all this gear to a video tweeze shop to try different projection screens. We tried a new specialty technology screen with a gain of 2.5—normally considered insane for LCD or DLP—and here's what happened:

The Sharp went very flat; it lost life and depth, and its limited ability to make black became a real problem.

But the Marantz went crazy! *Good* crazy. With this screen, I was able to turn off the High Bright and still get the brightness I wanted. And this produced a very good, color-correct image. It was, to use an overused term, stunning. This setup is, without a doubt, the nicest, most impressive, most thrilling personal projection system I have ever seen, at any price. And I learned that the screen is as important as the projector.

My conclusion and advice concerning the Marantz DLP projector? Buy this machine. I did.

THE FREAK SHOW OF VIDEO DISPLAYS: PLASMA

And now, boys and girls, in keeping with the theme this issue, I offer the results of over one full month of evaluating and comparing plasma display panels. It was a dirty job, but somebody had to do it.

I played with just about every 50-inch plasma made. I chose to look only at 50-inch panels, because the 42-inchers are just too small to impress the locals, and at 1,280x768, some of the 50s can actually directly display 720p (in theory).

It didn't take long to determine that only *one* panel was advanced enough to be worth bringing in for further testing. It should be noted that there are several models of 50-inch plasmas from both Pioneer and Sharp, and they are functionally identical. Pioneer provides the actual plasma panels, and Sharp provides the electronics. They are painted different colors and framed a bit differently, but they are the same.

I chose to review a Pioneer, as they have a knowledgeable and infinitely helpful tech support division that happily tolerated weeks of total geeky interrogation.

The Pioneer PDP-503CMX industrial plasma display showed up at my studio a month ago. When it arrived, I realized that it is friggin' huge! In the store, it looked kind of big, but in the control

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room, it is *seriously* big.

So here are my first impressions. First, it's huge. Next, it is so bright that it hurts. And it makes *white*. I had no idea that my reference Sony TV made a sort of dim gray-green for white until this thing showed up.

I should note here that no current plasma can make black. But the Pioneer makes a far better black than any other plasma that I have seen, with the exception of the Panasonic PT-50PD3.

The Panasonic apparently uses the magical Plasmaco display, known for its ability to produce unbelievable blacks. But...the Panasonic doesn't have the punch of the Pioneer, and, more importantly, it has *an 8-bit display*.

Do not buy any 8-bit processed/display device. The banding and dancing dither will make you very unhappy, very fast. In fact, these two performance limitations, being only 8-bit and not making black, are what have made me pass on all plasmas since they were invented.

So, the Pioneer is just a bit milky next to the Sony reference TV, but other than that, it is impressive. I repeat: It *is* impressive. And it is, are you ready? Ten bits. And it shows!

JUST THE FAX, MA'AM, JUST THE FAX

So how is this Pioneer? People who wandered in while I was testing invariably stayed, with jaws dropped, for as long as I let them. Everybody was impressed. Of course, there is a considerable *Jetsons* factor involved. It's just plain cool to see a picture of this quality and brightness happily moving around on a huge, totally flat, 4-inch-thick slab. This ain't your father's LCD.

And the details? Well, I'll just point out the hardcore highlights that should matter to any of our readers who may be considering such a device.

Geometry is, of course, perfect. And convergence? There is no convergence. And plasmas are immune to magnetic fields. It did require a good bit of setup, mostly to get gamma, color tracking, white balance and black thresholds right.

The display overscans S-video feeds too much for my taste, and there are no adjustments for this.

Gray-scale linearity is fair. Mid to mid-light grays have a mild mint-green tint. And, surprisingly, color purity is not great. When displaying a white screen, the Pioneer exhibited a noticeable pink tinge along the top and bottom edges, with a green cast in the center. This also appears with a mid-gray test signal. But the truth is, you don't really see these things until you run tests for them. The gray-scale tint is completely invisible to me with real program material, even though I know it's there.

You will *not* like this panel on typical cable feed. It shows every bit of noise, every herringbone line of RF interference, and best of all, it clearly displays, for your viewing pleasure, every single MPEG compression artifact. On Comcast (my local cable provider), *The Simpsons*, which I never watch but use only as a dynamic chroma saturation and color crawl test about once a week, is so riddled with giant, glaring MPEG artifacts that it is unwatchable, while the same feed on the reference 36-inch Sony is just fine.

In other words, bad signals will look worse (a lot worse) than you are used to, while good signals will look considerably better. In fact, they look amazing.

There are three reasons for this. First, the Pioneer's unique closed-cell plasma technology has enough resolution to show how freaking lame NTSC is, especially considering how much they digitally compress video these days. But this same resolution shows just how much clean data there is in a good HDTV or even DVD feed.

Did you know that there are only two true digital display technologies available on Earth? DLP and plasma. And though LCDs have fixed pixels and are digitally driven, the slow crystals actually integrate the data clock, creating a continuous analog light valve. LCDs actually have analog pixels.

So, the second reason is that, being truly digital, each pixel must be driven to some finite word length. And all panels apply at least *some* dither. Reason three? All panels scale to their native resolution. Any noise or dancing MPEG blocks present in the feed will look *much* worse after they have been resampled, dithered and finally scaled. Believe me.

Without a doubt, the worst thing about *any* plasma is its scaler. For some unknown reason, they don't seem to put $10,000 scalers in $15,000 plasmas. Go figure.

The Pioneer allows several 480p image sizes and a special, direct-mapped Dot-By-Dot mode. Everything but this Dot-By-Dot mode uses the internal scaler and is soft. Too soft. And to make things worse, these low-cost integrated scalers add a slight milky overcast.

But the Dot-By-Dot mode maps the

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pixels directly onto a 1:1, 640x480 area in the middle of the screen. *This* mode is so sharp and clear that it hurts. Detail far exceeds...well, *anything*, and it is shocking. This reveals what the panel itself is capable of when it is not hampered by the internal Sharp scaler.

THE MANY MYSTERIES OF LIFE—AND A COUPLE OF ANSWERS

There *are* a few mysteries about the Pioneer PDP-503CMX.

The weirdest of the unanswered questions is that, although last year's 502 locked to input frequency, the new 503 is *always* running a vertical frequency of 70 Hz. This is a terrible decision. It produces a nauseating ripple on pans and zooms when the panel is being fed a solid (and correct) 60 Hz, as from a Faroudja. I have written Pioneer a strong letter pleading for an update to fix this, and have been told that it may be technically possible. We shall see.

Also with the Faroudja, there are thin, horizontal black stripes in moving white areas such as headlights or Olympic snow. I have no clue what the panel is doing to cause this, but it does.

And why isn't the plasma's native resolution 1,280x720, as one would expect for HDTV application? Well, this mystery has a resolution (pun intended, sorry). It turns out that Pioneer thinks that more people will be using it with a PC than for HDTV. Mmmm.

I want my direct-mapped HDTV. I want a user mode where the panel simply bypasses everything, like in its PC Dot-For-Dot mode, but for *any* input. That way, I could feed it 720p, and the pixels would cleanly map with no scaling. Yes, there would be 24 tiny lines of black above and below the image, but the image itself would be as impressive as it gets. And besides, there is usually some mask above and below most wide-format films on a 16:9 screen anyway. The mystery here is why they would pass on something so simple (and free) that would make everyone hock their cars to buy this thing.

So, with all this bitching and moaning sprinkled with random accolades, what's the overall verdict? Is the best plasma display available ready for prime time, ready for me to part with my hard-earned cash? Well, I bought one of these today too.

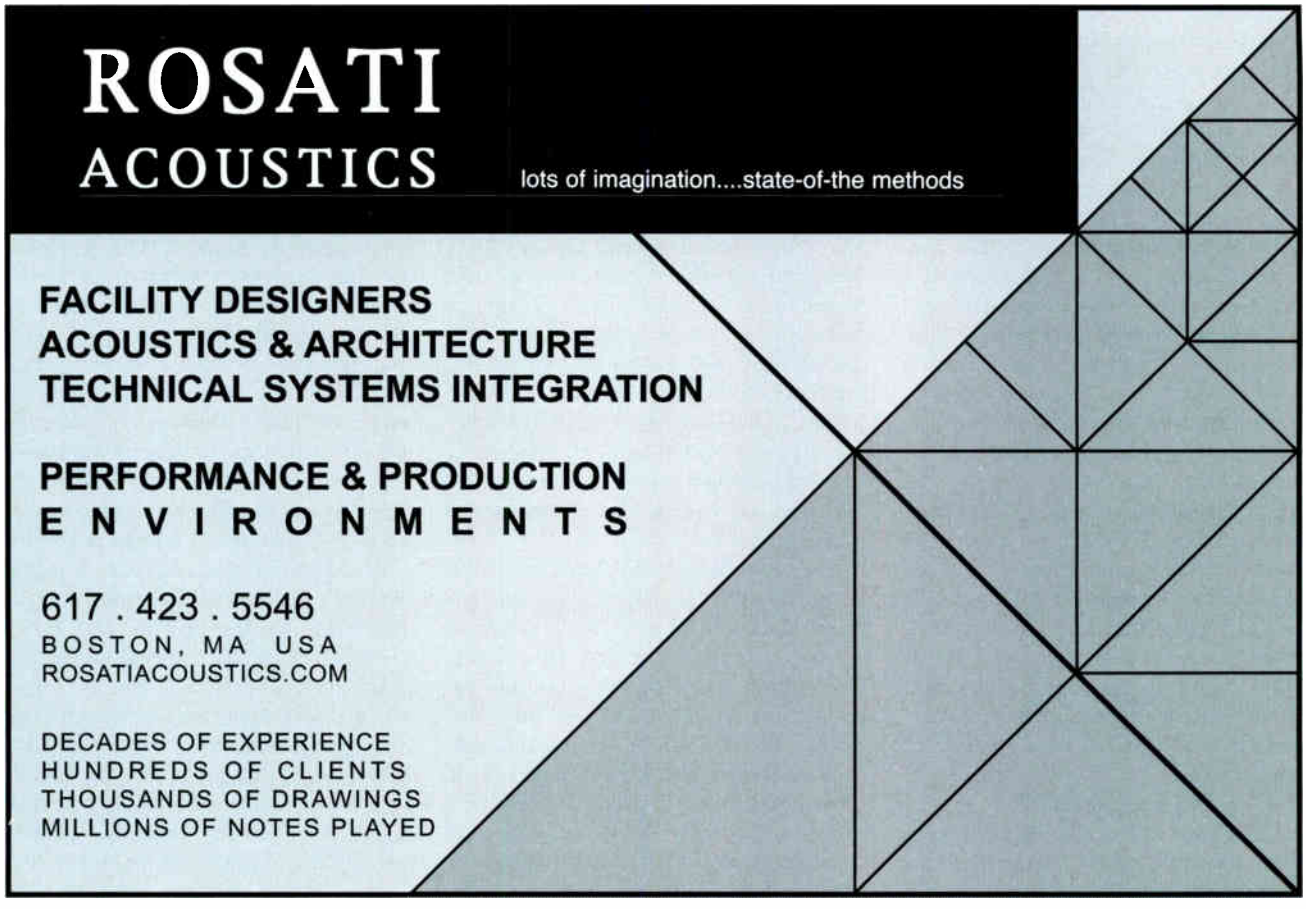
AND SO WE BRING THIS TO AN END

Not really. Next month, in part three of this two-part column, I will wrap it up by examining the other two critical components in a video display chain: screens and line doubler/scalers. Each of these is as critical as the actual display device, so my report on the state of private theater technology (for your *studio*, of course, *not* your home) would be incomplete if I ignored them.

Now, I know that I've been talking about video for two months in an audio mag, but pro audio and video have converged. You know that. And I don't want those of you who might need this data to be forced to wade through all the consumer home video mags and try to sort out the real meaning of pleasant, politically correct reviews that praise the strengths and hide the weaknesses of the gear that their own advertisers make.

So, let me do my not-so-politically-correct, hard-ass video gear review one more month, and you will be armed with what it took me three months to learn. ■

SSC's eyes are tired. He threatens that next month's column will be in 72-point text, allowing only 37 words to fit.



World Radio History

—FROM PAGE 26, SON OF GRUMPMEIER

garages full of old electronic junk, but my dad says it'll all come back some day as "vintage" shit and we can sell it for big bucks on Digibid. But me and my friends used to play in it, climbing all around gettin' wires in our ears and stuff. And I remembered there was this Howdy Doody & Clarabelle record player in there, down on the bottom, and I dug it out, and it still worked, sort of. I mean, it sent off a few sparks, but the turntable moved. Anyway, it turns out that record we were flipping was a symphony by this guy Beethoven, conducted by this wild dude named Toscavetskakowski. Or something like that. And I just really dug it.

So, of course, you sampled it. Were there any legal issues involved?

Nah, Johnnie says that all of the people on it are dead, and the composer's dead, and the producer's dead, and if there are any companies left that still owned any of the rights, they've been bought up by AOL, so no problem.

What else did you use for sources?

My dad also had these old Morse Code records, you know, lots of beeps? And I thought that was cool, 'cause I could use them to set up a kind of rhythm I could rap off of. 'Course, I had to chop them up into four-bar loops. The amazing thing about those records is that you can play them backward and forward, and they sound exactly the same!

Besides your own voice, there's a weird voice in the background that's just numbers, over and over again, but you can barely make it out. What's that voice doing?

My engineer hooked up an old harmonica contact mic to a telephone, and I punched in numbers on the phone at random, and we'd record the voice that says, "This number is not in service" and the number we'd dialed. I figured out how to get non-working numbers all over the world, so we got samples in a bunch of different languages.

But the samples we got just weren't enough in-your-face. So we called the phone company, and found the dude who could tell us who was the model for that voice. Turns out it was this housewife somewhere in Nebraska, so we flew her to Minneapolis to Prince's studio, stuck a pair of U47s in front of her, and got a 192kHz stereo digital satellite line hooked up to here.

Then how did you process it?

Well, we wanted it to be really grungy, like it was coming through a cheap phone in a thunderstorm. So, we needed an old analog filter. I read somewhere that to get the true sound of an analog filter cutting off at 3 kHz, you have to use a sampling frequency of 3 MegaHertz. So I hired this guy who had been laid off from Intel, and he hot-clocked my SoundSmasher card to run at 3 megs, and then he wrote some software to do the filtering, and added all sorts of other crap. It took him a month, but when he was finished, it sounded just like the real thing.

Why didn't you just buy a capacitor and a choke at an electronics store and do it analog?

Are you nuts, man? That would mean going through at least two A-to-D converters. Do you know what those things do to the sound? They'd ruin it! No way, José.

> But what I really want to do is more classical. You know, what Billy Joel did, but instead of writing like some dead guy, I'll just sample the stuff.

I don't compromise my integrity like that. But I gotta tell ya, it was the most expensive part of producing the record.

Because you needed so much storage space, or because the guy you hired was so expensive?

Oh, no—it turned out that the lady from Nebraska was union, and she was supposed to get a residual on every copy of the record we made. Well, Johnnie made her an offer she couldn't refuse, and she was cool, but it was a shitload of money just for a few samples. It really sucks that some people would take advantage of a creative artist like that.

Speaking of vocal sound, what do you use to get yours?

There was one of those Wollensak tape recorders in the garage with the mic that looks like a big silver bullet, you know? I'd been playing with that since I was about three, and I love the way the mic makes my voice sound, all thin and crackly. So, I had my tech build a balancing transformer for it, and I bought one of those really expensive Camelot tube preamps. I turned the input on the preamp way down, and cranked the output, so I could pick up all that hum and tube noise. I'm down with how it sounds now, but I think it will be even better once the tube burns in for a while, or especially if it cracks.

I understand your studio was designed by Bau:wau:haus, and it's also pretty unusual.

Yeah, it was actually my folks' bomb shelter, which they dug back in the '60s. My dad was thinking of using it as a family mausoleum, but I got my lawyers on it and they found out that the county health department wouldn't let him. So, he gave it to me. It was already soundproofed, 'cause the ceiling is 12 feet underground, and it was air-conditioned too, although most of the Freon leaked out a long time ago, and you can't get that stuff any more, so it doesn't work all that good. It can get pretty warm.

What's your main gear?

There's a customized DAW—I forget what it's called, I think it was named after a city. Everything's 32-bit, 192kHz. I mean, the more data, the more accurate and pristine the sound, right? And I think what I'm doing is really, like, bleeding-edge, so I want to make sure my system captures everything. I want 20 years from now, people to listen to my stuff and they say, "Yeah, he knew what he was doing."

On the analog side, I have a Knave board, which was rebuilt by Humbert Knave himself, on account of he owed my dad a favor, and it sounds just incredible. I got a Strudel 2-inch 8-track, which I run at 60 ips with Dolby SR. And my Dad's Wollensak, which I use a lot 'cause the studio's only wired for 10 amps, and when I turn the Knave and the Strudel on, the lights go out. Which is a bummer when you're 12 feet underground.

How do you monitor?

Hamanahaha SN-100s, of course. I own 40 pairs, 'cause they're not making them any more, and I blow them up a lot. Most people put tissue paper in front of the tweeter, but I found out they sound better with Saran Wrap. 'Course, it changes the balance, so I also tape a couple of layers of bubble-pak over the woofer. They rule.

What do you use to make your beats and loops? Are you Mac or Windows?

Neither. I don't like composing with software. I think using a mouse is very restrictive and dehumanizing, and it keeps you from getting those expressive things that make a song musically meaningful.

I have a Valiant drum machine from 1974, and that's my main rig. It's got a great vibe, and the sounds are awesome—analog, of course. I also get all the

World Radio History

new groove machines that Kong and Bemuse and those other companies put out 'cause I'm a beta-tester and endorser for them. So whatever I've got lying around when I'm working, that's what I use.

Did you build a MIDI interface for that drum machine, so you could sync everything to that?

Oh, no, man! MIDI sucks! Everybody knows that. You get timing problems and all kinds of slop, and it just destroys the groove. I do *really* tight beats, and the rhythms and the tempos have to be *right on*. So I just make sure I push all the start buttons at the same time, and that works great.

How about mastering? Do you use SACD or HDCD?

No, I just take the output from the DAW and run it through a couple of those real heavy FuzzyFaces from the '60s, and then into a MiniDisc recorder. If you turn the distortion knob on the FuzzyFace up to about 5 o'clock, it sounds really awesome. But finding two that matched for stereo was a pain.

You mean in terms of signal quality and distortion characteristics?

No, I mean the color. 'Cause people would paint them all psychedelic, and I never liked that. I wanted to make sure the two I had were absolutely identical, that original dark brown, or I just wouldn't feel right mastering with them. I was thinking of sending my tech off to Russia to get them custom-manufactured, but then a guy in New York called me, and said he was cleaning out a back room at that famous studio in Greenwich Village, the one with the river in the basement? And he found all these FuzzyFaces that had been used to hold down the sandbags when it floods. So, I bought all of 'em. They even had the original batteries.

How do you like your new distributor, AOL?

I'm down with them. They're putting one of my cuts on those CDs that they send out in the mail to get people to sign up, ya know? That's 14 million units right there, and the RIAA says they all count. So I'm getting the first Uranium record that's ever been awarded. That should go pretty good with the decor in my studio. They're also taking off that little "N" with the comets flying around on the Netscape Navigator 7 and putting my picture there instead.

How do you feel about Napster and downloading services like that?

Oh, man, that shit's going to kill the music industry. If everyone gets their music for free, how are artists going to be motivated to create? There's going to be no one doing anything original any more. Everything's just going to be a ripoff. And that's going to be really sad.

What's next for Grump?

Well, I've got a new record I'm doing of duets with Elvis. My lawyers are working with Col. Sanders to get all the permissions.

You mean Col. Parker. But he's dead.

Whatever, dude! That's why I got lawyers, to take care of those kind of shit details! But what I really want to do is more classical. You know, what Billy Joel did, but instead of writing like some dead guy, I'll just sample the stuff, like I did with *Beethoven Bytes*. That way, instead of imitating the dude, I'm actually using his actual *music*. You know, I studied piano, too, when I was a kid, and my mom has been bugging me to start taking lessons again.

Do you think you will?

Naah, I'm much too busy making records to spend any time learning anything about music. ■

Paul Lehrman is not feeling well.

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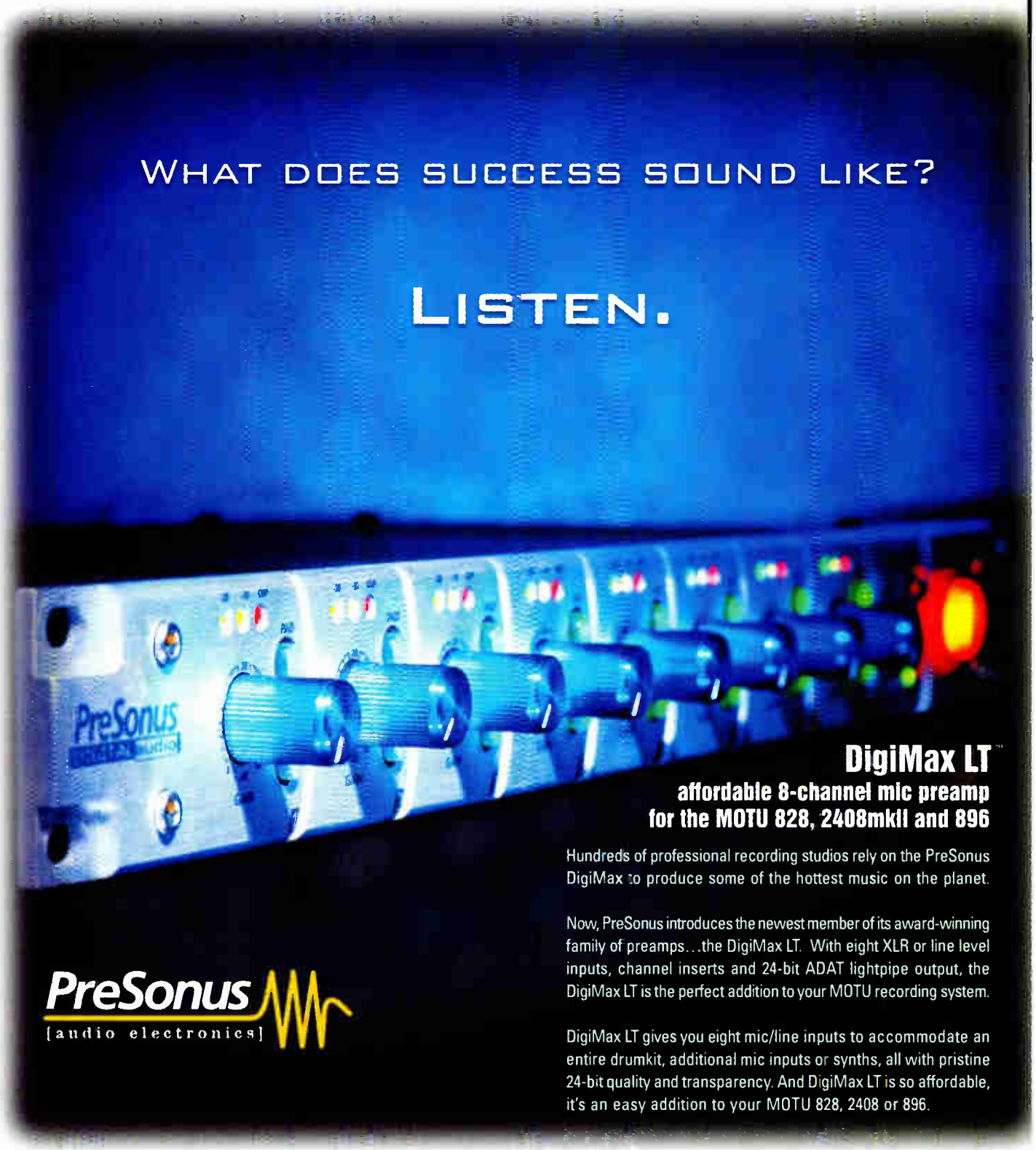

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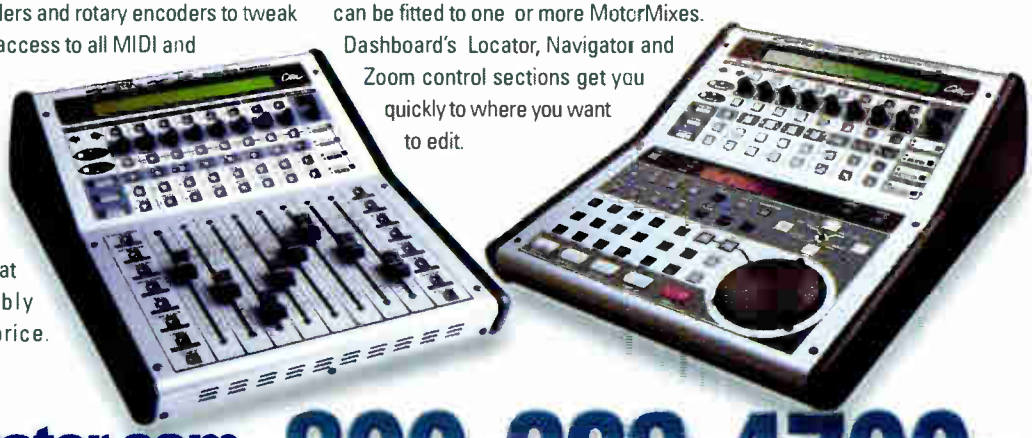

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BY ATOM TROY

Steinberg WaveLab

Editing and Mastering Tips

WaveLab has been with us for quite some time and has evolved into quite a powerful and popular digital editing and mastering software package. Having used it since its introduction, and having taken it through hundreds of mastering, re-mastering, restoration projects, editing sessions, tossed CD-Rs and consultations with the programmers, I've come up with some tips and techniques for mastering and editing in WaveLab.

MASTERING

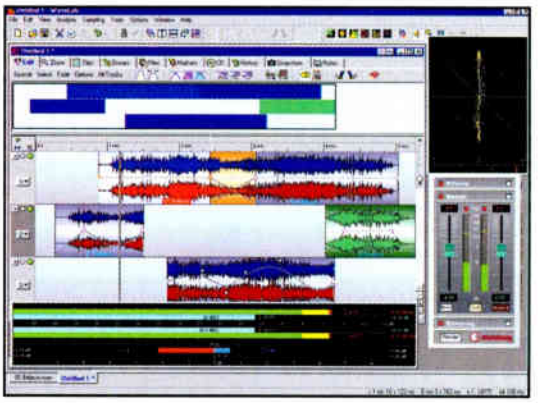
To get the best results, follow these simple rules: In Preferences (Ctrl P), under the File tab, set your temporary files to 24-bit. Processing is slightly slower and uses more disk space, but it will result in better sound quality when you apply additional processing to the audio material. Set your temporary files folder to a location on a different hard drive than the one where you store your main files; by using two different drives, you can double the processing speed.

PREPARING AUDIO FOR EDITING

First, eliminate DC offset. Apply this function first to the entire file before any processing. A DC offset is problematic for two reasons: It affects where the zero crossings appear and, hence, the smoothness of your edits; and your plug-ins will not work optimally when performed on files with a DC offset. Next, normalize. Set to 0 or -1 dB, but keep it consistent for all the files that you are mastering. Then trim ends to zero crossing points. WaveLab can automatically search for zero crossings so that the selection begins and ends at a zero crossing. To set this default, activate Snap to Zero Crossing: Select Preferences from the Options menu, click on the Editing tab and fill out the Snap to Zero crossing options.

THE MASTER SECTION

Place the Loudness Maximizer or any other mastering limiter maximizing plug-in last in the chain; this keeps everything from going past 0 db while setting up. Now, what comes before is primarily up to you, but I recommend this: You want your Maximizer to work as efficiently as possible. So, obviously, your EQs and multiband compressors must come before it. Eliminate unwanted sub-sonic frequencies in particular, and you will notice that you will get more amplitude and a cleaner sound. If you use a curve-analyzing software, like Freefilter, then place it first and multibands next. Also, I don't recommend morphing your curves much more than 50%.



WaveLab 4.0: The main screen

MONITORING GAIN

Gain structure is vital for a clean, lots-of-headroom sound. An important and overlooked tool is the Mon button in the Master Section window. It is crucial in digital mastering that you avoid clipping. When Mon is activated for an effect slot, the outputs of that effect are assigned to the Clip indicators and meters. Note: To reset the Master Section's faders to 0 dB, simply hold down Shift and click on the faders. You can use the same technique to reset certain parameters in some plug-ins.

REAL-TIME SIGNAL ANALYSIS

Create a new montage and open the file you want to analyze. Hit Ctrl-A to select the whole file, then click and drag the file into the Montage window. Click Meters on the Montage window, then Spectrum instead of Level. Any changes to the audio signal in the Master Section will reflect, in real time, in this monitor spectrum.

BATCH-PROCESSING

Use this after you have mastered all of your files, and make sure you send your meta-normalized files to a new folder. Never overwrite; the purpose of the plug-in is to apply the same and maximum possible level/loudness in all files without ever clipping. This is extremely useful for matching levels between tracks. Depending on how much the levels differ between files and the desired result, there are a number of options available to ensure that the applied processing optimizes the levels without clipping. I have always had great results by using these settings: Maximize if possible, activate this option, and if the loudest file can still be amplified, this file will be maximized as much as possible (without clipping) and then used as reference for the rest. Equalize loudness (RMS): RMS produces a more "natural" result than peak levels; this method is better at detecting the "loudness" of a sound. Global: The overall loudness of the entire file will be used as a basis for calculating the loudness. This helps keep dynamics alive.

NORMALIZER AS LIMITER

If you are batch-processing, various processors in the signal chain may increase the signal level. If the signal is converted to an audio file with lower resolution (such as 16 bits), then clipping may occur. To avoid this, insert the Normalizer at the end of the signal chain in the Batch Processor and activate "Only if Clipping." The Normalizer will lower the signal level so that it peaks exactly at the specified value, but only if clipping should otherwise occur. This allows you to use the Normalizer as a completely distortion-free limiter. ■

Atom Troy is director of computer audio production at The Center for Electronic Communication at Florida Atlantic University, and is an artist/producer on Nebulous/Atlantic Records.

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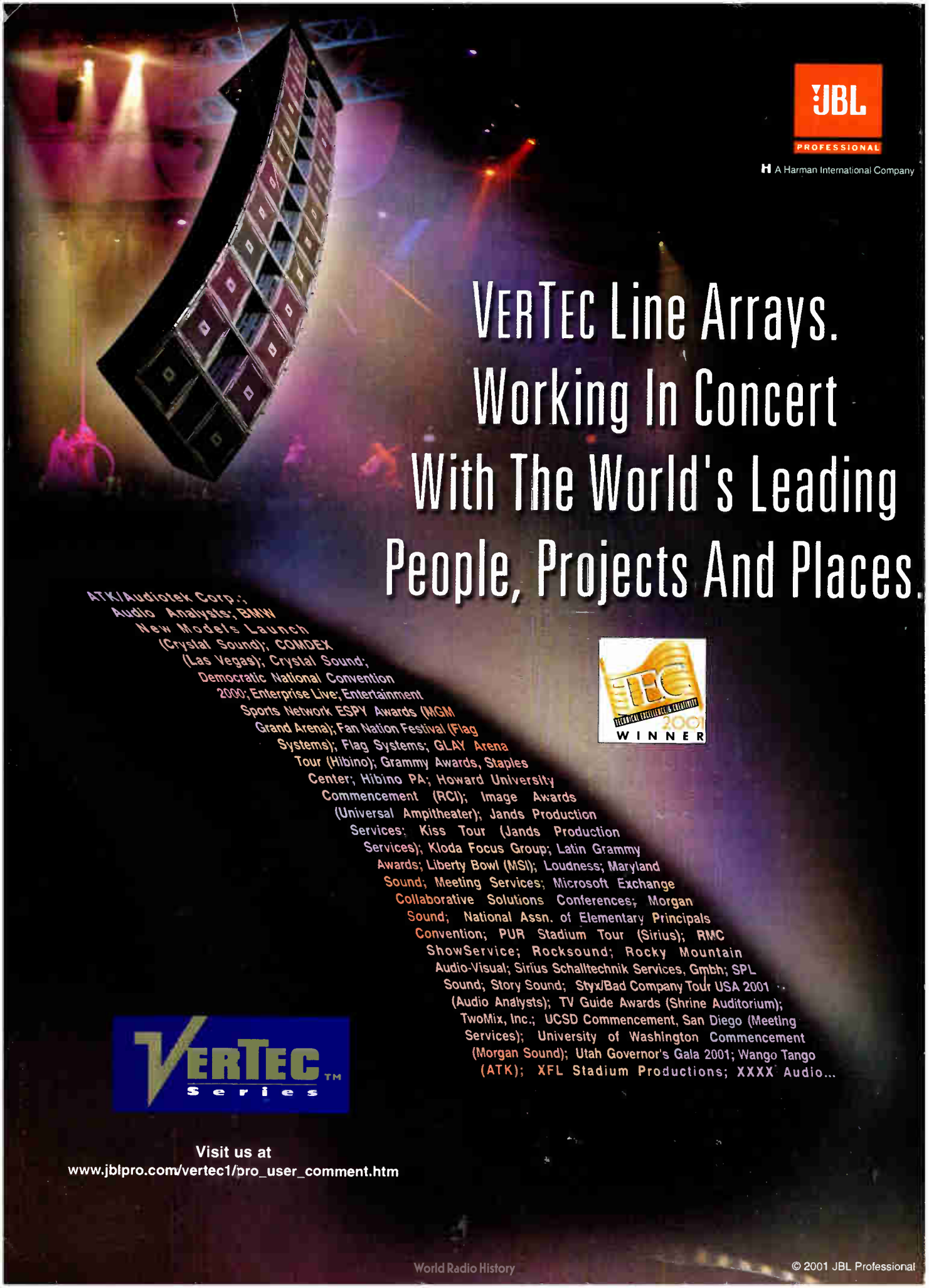
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