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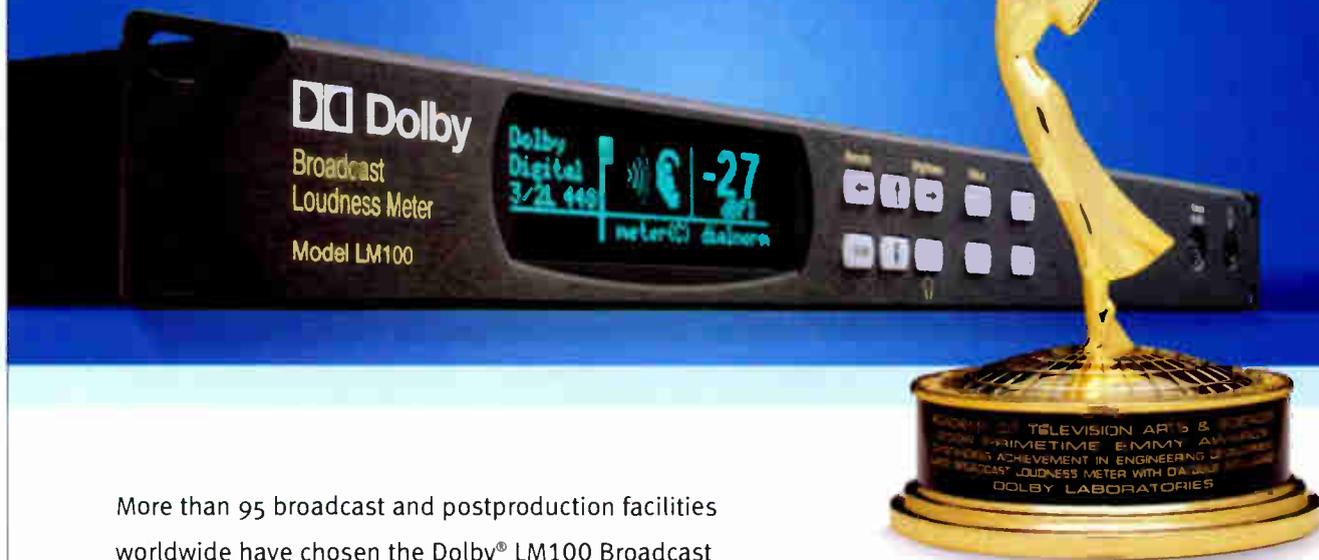
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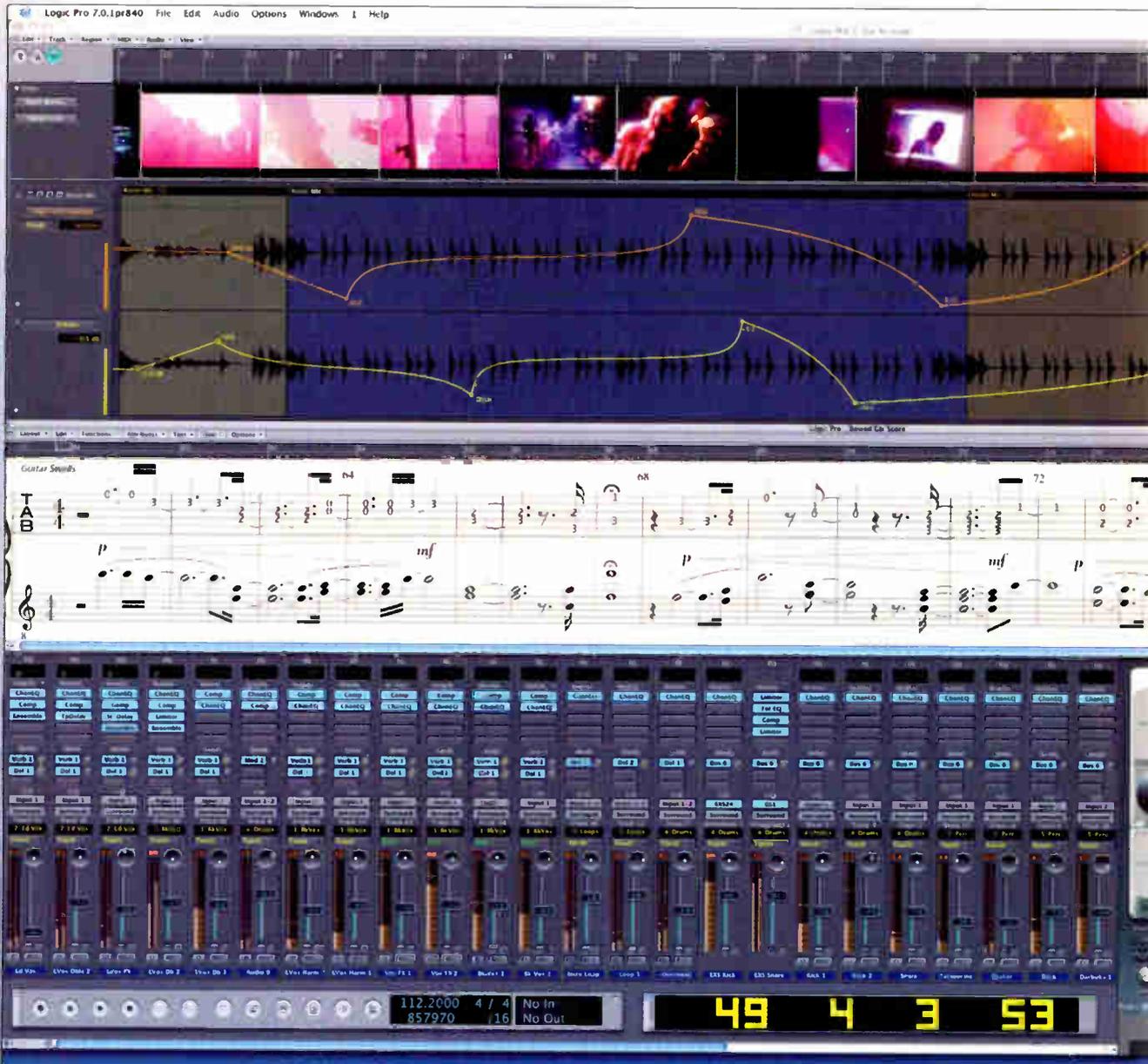


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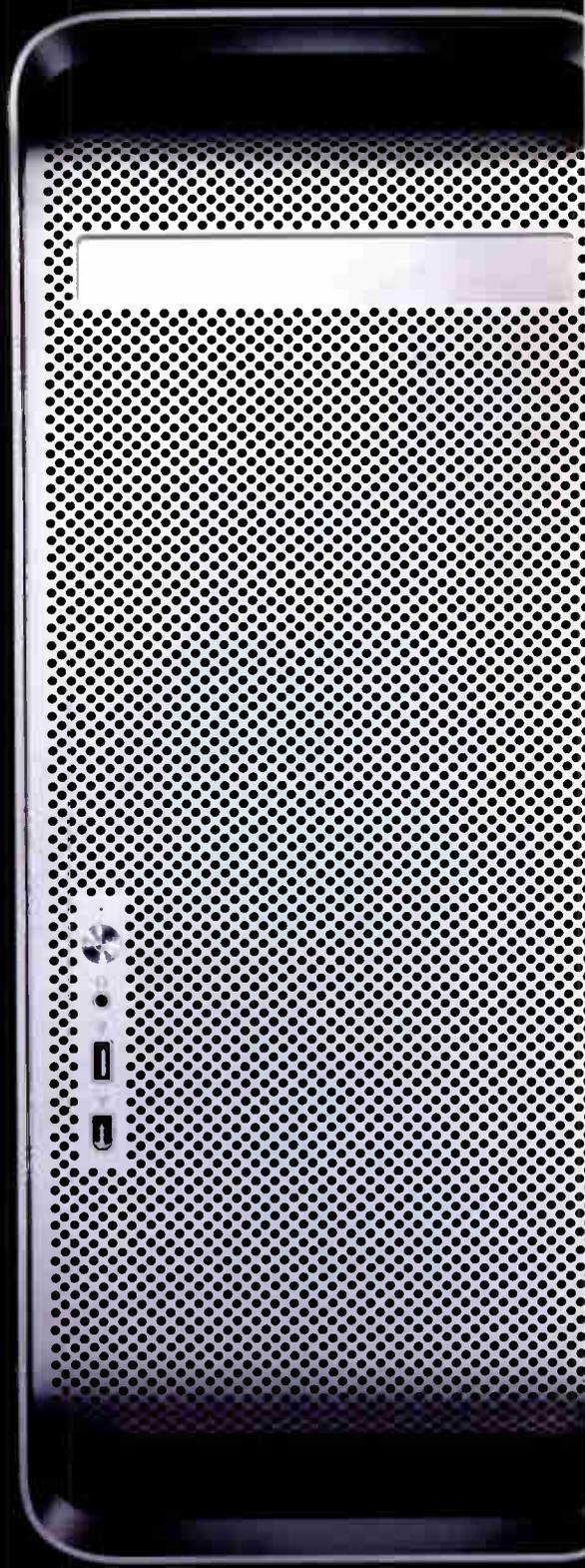
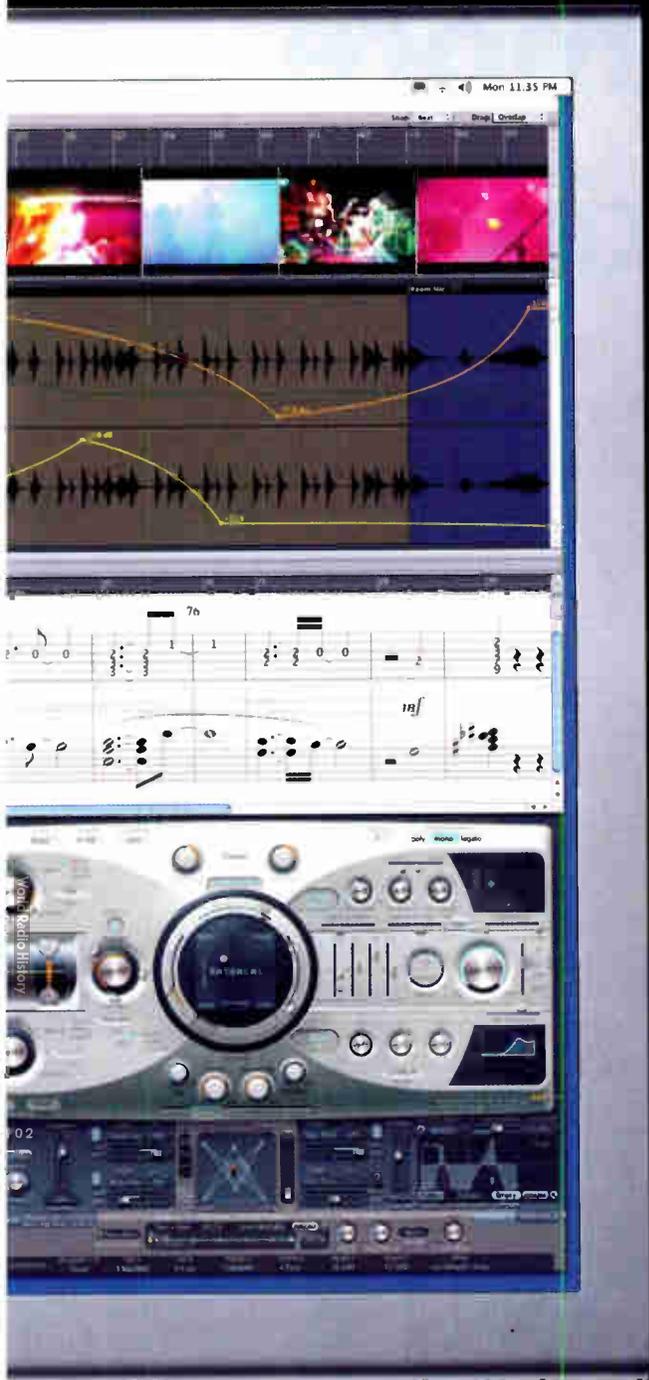


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June 2005, VOLUME 29, NUMBER 7



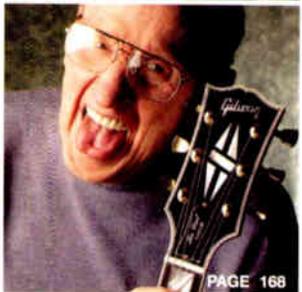
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**On the Cover:** Barber-shop Studios, located on beautiful Lake Hopatacong in northern N.J., was designed by Francis Manzella and is owned by Mark Salamone and Scott Barber. **Photo:** George Roos. **Inset Photo:** Steve Jennings.



## features

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#### Capturing the Beautiful Beast

In the third installment of our "Recording the Band" series, technical editor Kevin Becka addresses pianos. A bi-polar instrument, the piano can either scream like mad or evoke a more passive mood. From tuning and mic selection up through final mixing, Becka offers tips and techniques to tame this beast both in the studio and on the stage.

### 36 Studio Monitors

One of the key decisions in designing a new room or upgrading an old one is what type of gear to put in—especially monitors. *Mix* digs into the studio monitor market to find out what systems have been introduced in the past year.

### 52 Class of 2005

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

### 58 Networking the Facility

When most of us think about studio architecture, we ponder trends in acoustic treatment and facility design. But what about that connective backbone underneath it all? The good news is, whether you're running a multi-room commercial facility or a couple of DAWs in your home studio, there's a networking solution that meets your needs—and budget.

### 74 NAB Report

From aisle to aisle, everyone was talking about HD—radio, television and audio—at the recent NAB show. *Mix* editors bring back the show's product hits. If you couldn't make it to Sin City, visit [mixonline.com/nab2005](http://mixonline.com/nab2005) to read the editors' daily blog and e-mail newsletters from the show floor.

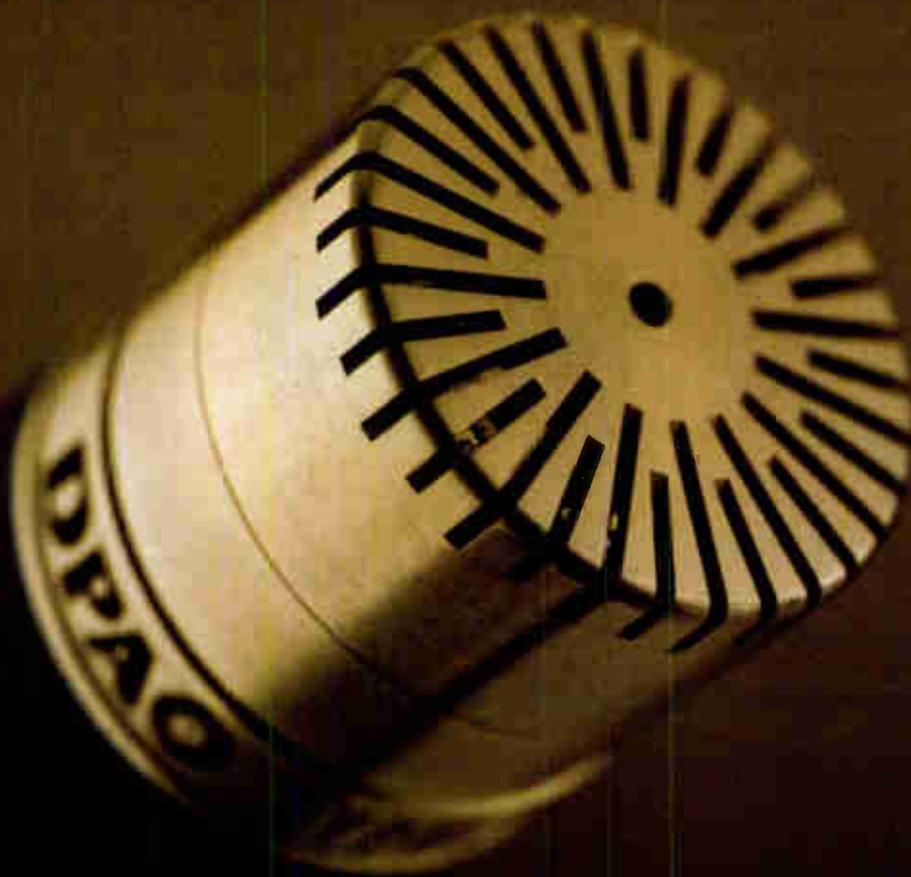
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*Mix* honors recording/guitar icon Les Paul with a birthday tribute, including memorable quotes from a who's who of guitar heavyweights.

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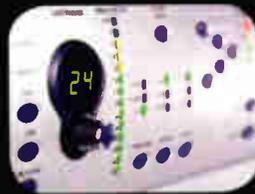
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## The Imperfect Space

**W**hether working in clubs, bars, studios, stadiums, boardrooms or bedrooms, we deal with a lot of imperfect acoustical spaces, and making it right is no picnic. Sometimes, either through mere luck or clever application of tools or theory, everything works. Unfortunately, in-home production brings perhaps the most difficult acoustical environment of all. In such cases, the typically small rooms and parallel walls are a recipe for acoustic disaster, especially when tracking or mixing.

While difficult, a successful production is possible even in the most problematic spaces. Virtual instruments, samplers, synths and loops can provide nearly everything you need, and direct boxes, guitar/bass preamps, Pods, SansAmps and ReAmps can put you 90 percent of the way there—all from the convenience of the mix position. The time-proven techniques of near-field monitoring and close-miking are definite assets in dealing with bad spaces, but like the concept of "parlez" in *Pirates of the Caribbean*, these are really more like guidelines rather than absolutes.

Monitoring at close distances does reduce the room's effect on the listener. But all bets are off once the playback levels become excessive and the monitors' output begins to physically excite the room. The situation is even worse with a loud subwoofer. It's true that low frequencies tend to be nondirectional, but LF signals tend to couple with corners, adjacent walls and floor surfaces. Sub placement is an entire art unto itself, and finding the optimum position requires some trial and error.

Close-miking will attenuate room anomalies to a great degree. However, attempts at stereo miking—particularly with spaced-pair drum overheads in a low-ceiling room—can invite nasty phase problems that can result in odd dropouts and cancellations at seemingly random frequencies. But in any acoustic miking endeavor, the key to success is knowing your space. Every room, no matter how funky, will have at least one optimum location, and some experimentation in finding that magic spot is time well-invested. Sometimes, the mere act of opening the door can change a room's sonic signature, while leaving a closet door ajar can break up room reflections.

Not all of us have the luxury of recording in the stellar facilities that grace *Mix* covers or are spotlighted in our annual "Class of" feature. But if you're working in an imprecise space, think about the room and ways of working any irregularities into your favor. A carpeted, heavily furnished living room will tend to be fairly dry; hallways are usually reverberant and may provide just the right natural slap for miking guitar amps; staircases are natural diffusors that could be used in front or behind the source; and, often overlooked today, bathroom reverb was a mainstay of many past pop and rock records.

From the mix perspective, the worse your room/monitor system, the greater the importance of checking your mixes for translation against other systems, ranging from audiophile to automobile, and head-blaster to headphones. A little ear education doesn't hurt, either—it's hard to know what's missing in a playback unless you know what proper reproduction sounds like.

A poor acoustic space doesn't mean you will get a poor product, but here, as with any endeavor, some smart thinking, a pinch of creativity and a willingness to try something different can make a huge difference in your productions.

George Petersen  
Editorial Director

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We proudly present the new member of the mc<sup>2</sup> family: the mc<sup>2</sup>66. It has been developed with over 30 years of experience and is equipped with the finest technology you can purchase today.

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Further features of the mc<sup>2</sup>66 are the straightforward matrix and console configuration, advanced audio-follows-video as well as parallel clean-effects summing.

All these new features, together with the proven architecture of the mc<sup>2</sup> series, come at a surprisingly modest price, making the mc<sup>2</sup>66 the ideal choice for all future requirements.

## BROADCAST

PRODUCTION

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ROUTING

OB VAN

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# mc<sup>2</sup> 66

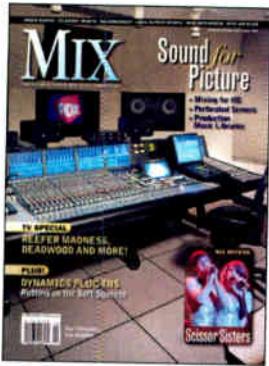


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World Radio History

# Letters to Mix



## LOS SUPER MEMORIES

Because pop music is so heavily tied into our memories, your April article on Los Super Seven ["Recording Notes"] sent me to the reference books, as something didn't seem correct.

"Talk to Me" charted in late 1963, not the late '50s, as implied in the review. Also, the label credited the hit to Sunny & The Sunglows, although Sunny did have later releases as Sunny & The Sunliners.

Frank Kessler  
Sylmar, Calif.

*You're right, Frank. I should have clarified that it was the Little Willie John version of the song that hit Number 5 on the Billboard R&B charts in 1958.—Blair Jackson*

## CAKE INSPIRES MUSICIANS ON MODEST BUDGETS

Bravo on the recent Cake profile ["Tour Profile," January 2005]! In the 18 months that I've been a *Mix* reader, I think this is the first time you've featured an artist or group who didn't use \$100,000 or more on equipment. Though I understand the need to cover as diverse a selection of artists as possible to satisfy the greatest number of subscribers, it seems like you could achieve that goal and avoid stepping on the spirits of economically challenged readers such as myself by including more features on "affordable" product on.

Who are your subscribers? To have the information about equipment and other expenses be of use to anyone, they would have to be either a successful professional or financially well-endowed. In the case of the former, mentioning Avalon preamps and Access Virus synths would be of little use, as a highly successful professional would no doubt be collaborating with others who would supply info about all of the latest gear. In the case of the latter, well, I guess it must be nice to have what essentially amounts

to a monthly guide to spending money, but for the other 95 percent of us, working at shitty jobs and saving money for nine months to buy Ableton Live, how about integrating equipment reviews, artist profiles and articles that show what a motivated starving artist can do with a minimum amount of gear?

To end on a positive note, I'd like to say thanks for representing the electronic music community as extensively as you do. Minor quirks aside, your magazine is still more useful and interesting than other music periodicals.

giantfleshleatinglant  
Athens, Ga.

## JIGGLER TRUMPS CAFFEINE, KEEPS PRO TOOLS AWAKE

I just finished reading the April issue of *Mix*, and I'd like to make a comment regarding Paul Lehrman's "Insider Audio" column. "No Sleep for the Weary" details problems with audio interfaces if the Macintosh goes to sleep. While I cannot find anything in Digidesign's compatibility documents for Pro Tools LE Version 6.7 stating this explicitly, I've always been told by Digidesign to disable Sleep mode on any Mac using Pro Tools (although the software being used with M-Audio's FireWire Solo is not mentioned).

However, if Sleep [mode] is desired when Pro Tools is not running, then Jiggler V. 1.2 ([www.sticksoftware.com/software/Jiggler.html](http://www.sticksoftware.com/software/Jiggler.html)) is in order. This freeware application from Stick Software can be configured so that the mouse is automatically jiggled at a user-specified interval when Pro Tools is running, but there is no user input from a keyboard or mouse, thus preventing the Mac from ever falling asleep while Pro Tools LE is running. It should be noted that I have no ties to Stick Software.

Jonathan S. Abrams  
Chief engineer, Nutmeg Audio Post  
New York City

## OF VIDEO SCALERS AND AC POWER UNITS

I'd like to address two small technical issues from the April 2005 *Mix*. The first is a statement in Stephen St.Croix's ["Fast Lane"] column on digital video scalers ["With Snake Oil Comes Scales"]. He is absolutely correct that scaling (or interpolation) between a given signal and a display's native pixel layout is a big cause of image ugliness. (This goes for those nifty LCD screens on everyone's desks, as well.) It is also quite possible that the product he mentioned looks great.

Unfortunately, St.Croix was overly enthusiastic when he stated that the SDI video connection

is "raw data direct from the reading laser." SDI is a video interconnection common in digital broadcast equipment, such as VTRs. In its standard-definition form, it is a data stream that represents analog component video (Y, R-Y, B-Y) at a particular sample rate and bit depth. Raw data from the DVD must be converted to the SDI standard as DVDs are MPEG-compressed. Fortunately, SDI is a much higher data rate, typically 270 Mb/sec, so the effect is essentially transparent. This also explains why there are no inexpensive hacks to put an SDI output on any DVD player. This requires actual circuitry, not just software changes.

My other comment is in regards to the review of the Monster Cable [AVS 2000 Pro and Pro 7000 Studio AC Power Units in "Auditions," April 2005 issue]. First is the mention that the stabilization effects of the AVS 2000 can also be achieved with a true on-line UPS (one that continuously makes AC power from the battery side of the system, giving complete isolation from the power line) with the added benefit of power failure backup. Second, claims about the audible end result of any power conditioning product should be taken quite skeptically, unless careful blind testing has been done. Balanced power systems have proven their ability to improve certain audio problems under certain conditions. Beyond that, beware of transformers, isolators, cables, plugs and anything else that claims to improve performance by improving the supplied power.

Eric Wenocur  
Lab Tech Systems

## INDIE COMPOSERS IMPACT MUSIC LIBRARIES

Sarah Benzuly's article ["Production Music Libraries," April 2005] was an interesting insight into new delivery methods that production music libraries are often reluctant to discuss directly with their end-users. The trend toward online searches and downloads are often a hassle for end-users due to multiple accounts and passwords.

Interesting that the article did not address online music distribution services that offer music from true indie composers. Composers can upload directly and pay a small fee each time a track is sold—mostly via credit card. Anyone can log on, anyone can search and listen and anyone can buy, usually at a fraction of the cost charged by traditional music libraries.

Karl Kalbaugh

Send Feedback to *Mix*  
[mixeditorial@primediabusiness.com](mailto:mixeditorial@primediabusiness.com)

Introducing something  
new and...

## STIMULATING

Introducing the Genelec 8020A - the newest model in the Genelec 8000 MDE™ Series. This 4" bi-amplified monitor offers all the genuine Genelec quality you've come to expect in packages that fit into the smallest space and budget.

The new 8020A monitor draws upon 27 years of Genelec engineering excellence to introduce a brand new category of playback monitor. Genelec's revolutionary all aluminum Minimum Diffraction Enclosure™ technology provides pinpoint imaging and the lowest distortion levels, with a frequency response extending to a remarkable 65 Hz.

Genelec also proudly introduces the new 7050B 8" Active LSE™ 5.1 channel subwoofer. Combined with the 8020A this system offers an astonishing 25Hz - 21kHz experience with packages to accurately stimulate your stereo and multi-channel workflow.

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8000 Series



8020A.LSE SurroundPak

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## RUPERT NEVE RETURNS TO MANUFACTURING

After 15 years of design consultation for Taylor Guitars, Legendary Audio, Amek and Focusrite, among others, Rupert Neve has returned to manufacturing with a series of all-analog

gear, set to be released this year under his own brand, Rupert Neve Designs.

Custom-designed transformers, very short signal paths, minimal negative feedback and single-sided transformer-coupled amplifier designs form the essential building blocks for the new Rupert Neve Designs Portico™ range. The first product to be released is the 5012 Duo Mic Pre, a dual-channel mic pre that offers a front panel Silk switch and a To Buss switch, which allows the 5012 to access bussing in a custom-configured, multi-module setup or to assign a signal to a solo or cue bus in other Portico modules.

For more info on the 5012 and other Portico products, visit [www.rupertneve.com](http://www.rupertneve.com).



## CHRIS ROWE JOINS MASTERFONICS

Mastering engineer Chris Rowe has joined Masterfonics Mastering (Nashville), working alongside engineer Benny Quinn. Rowe began his career at Masterfonics a decade ago as an intern under Glenn Meadows. During the past 10 years, Rowe has worked on projects for the Dixie Chicks, Keith Urban, Kenny Chesney and Faith Hill, as well as engineered for producers such as Dann Huff, Mark Bright and Marty Williams.

According to Huff, "Chris is an important tool that I use in my recording process. Masterfonics is lucky to have him. He always does a great job."

According to Rowe, "As we continue with developing [Masterfonics'] cutting-edge reputation, I know that it is essential that we integrate Pro Tools|HD into the operation of the facility. I am implementing that along with several other things that will improve the flow of the company and client communication."



## INTELLIGENT ACOUSTICS DELIVERS PRODUCTS, CONSULTING SERVICES



From left: John Storyk, Courtney Spencer, Dave Malekpour and senior acoustical consultant Dirk Noy

Created by Courtney Spencer, Dave Malekpour (PAD), Ken Harrison, and Beth Walters and John Storyk (principals of Walters-Storyk Design Group), Intelligent Acoustics (Montville, N.J.; [www.iacoustics.com](http://www.iacoustics.com)) is a new supplier of acoustical materials and products for audio and video studios, broadcast facilities, audiophile/home theaters, performance venues, houses of worship, schools and corporate clients. Acoustical consulting services will be provided by a team headed by studio designers and acousticians Dirk Noy and Storyk. Intelligent Acoustics will also provide contractors and builders with assistance in applying or installing specialized acoustical materials and products.

"Intelligent Acoustics has developed a range of its own acoustical products and will continue to expand this line," said company president/CEO Spencer. "The new company also offers third-party acoustical products and materials from leading providers, including RPG, Kinetics and many others."

## MIX L.A. OPEN GARNERS INDUSTRY SUPPORT

The 10th Annual Mix L.A. Open—Monday, June 13, 2005, at the Malibu Country Club—is being strongly supported by the audio industry. Confirmed sponsors at press time include Absolute Music, Audio-Technica, CE Pickup/IAC, Design FX, Harman Pro/JBL Professional, Panasonic, the Record Plant, Shure, Warner Bros. Studios and Yamaha Corporation of America. A limited number of playing spots are still available. Call Karen Dunn at 925/939-6149 or visit [www.mixfoundation.org](http://www.mixfoundation.org) for information. Proceeds from the tournament go to the Sound Partners program at the House Ear Institute ([www.hei.org](http://www.hei.org)), Mix Foundation scholarship programs and Sound Art ([www.soundartla.org](http://www.soundartla.org)), a music program for underprivileged youth in the L.A. area.

# BREAKING THE MOLD

Bruce Maddocks, chief engineer/owner of Cups 'N Strings (Santa Monica, Calif.), met with The Mountain Apple Company (Waikiki), which contracted Maddocks to restore and transfer analog multitrack and stereo master recordings (dating back to 1963) to digital for future replication. In addition to the usual sticky-shed and other complications of older tapes, the masters had suffered from mold deterioration due to the high humidity of the Hawaiian islands.

To remove the mold, Maddocks used an archival-level HEPA vacuum system. Due to the toxic nature of the mold spores, the cleaning process was done outdoors, with Maddocks wearing protective clothing, gloves and a filtration respirator. The tapes then went through a chemical wipe stage and ran on a custom-fabricated tape machine transport fitted with cleaning and drying wipers.

"The resulting audio from Bruce's 96k, 24-bit sound files is spectacular," said Mountain Apple engineer Dean Hoofnagle. "The producer of those '63 reels, Jack de Mello, was moved to tears when he heard the restored sound."

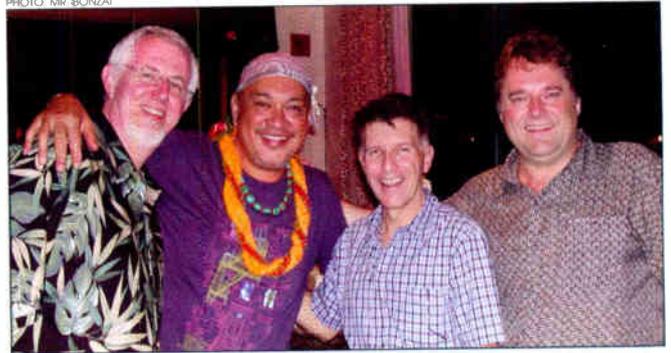
# NEW POPE, NEW STUDIO



Rome recently had its fair share of news, what with the appointment of a new Pope and the launch of a new recording studio. Synchronia Studio ([www.synchronia.it](http://www.synchronia.it)), which opened in March 2005, used the SAE (Stealth Acoustic Environment) technique to obtain the lowest energetic acoustic return from the structural perimeter of the control room. Thus, the work space is free from sonorous reflections, rendering it precise in the balance of frequencies around the sound engineer's listening point while being hunkered down at the MCI JH636 console.

Monitoring is via Quedest VH3208 (mains), Yamaha NS10M (near-fields) and Auratone 5C (near-fields); Quedest AP500 and Hafler P3000 provide amplification. The room also sports a Mac G4 running Pro Tools, Peak, Logic and plugs from Waves, Bomb Factory and others. Recording can be done to an Alesis HD 24-track or Panasonic SV-3800.

PHOTO: MR. BONZAI



*Pictured in Waikiki, from left: Bruce Maddocks, Robert Cazimero of the Brothers Cazimero (one of the groups on the older tapes) and Dean Hoofnagle and Milan Bertossa, Mountain Apple Company engineers*

# TAPE IS NOT DEAD

Michael Spitz of ATR Services has launched a new high-end analog tape manufacturing company, ATR Magnetics. Worldwide distribution of its flagship high-output formulation will begin in early September in all widths. Work on the new manufacturing company began more than a year ago in response to requests from the recording industry for a new high-end formulation that would provide increased sound quality, consistent performance and longevity.

According to Spitz, "We are doing this because we love analog recording. We can dedicate all of our time and attention to the details of producing high-end professional audio tape because that is what we exist to do."

ATR Magnetic tape will be available from pro audio dealers worldwide and direct via the Web at <http://atrmagnetics.com>.

## ON THE MOVE



**Who:** Mark Engebretson, QSC VP of R&D and chief systems architect

**Main responsibilities:** managing QSC's three core technologies (power amplifiers, loudspeakers and digital systems) and, as chief systems architect, leading the overall technical management and integration of the three technologies into system solutions.

**Previous Lives**

- 1999-2005, director of systems development (acting VP of R&D) at JBL Pro
- 1987-1997, partner of Summit Laboratories
- 1983-1999, owner of Electroacoustic Technology
- 1979-1983, president of ATD Corp.
- 1976-1979, VP of R&D at Paramount Pictures Corp.
- 1970-1976, VP of product development at Altec Lansing Corp.

**What I wish I said upon receiving the Scientific and Engineering Award at the 74th Academy Awards:** "Could someone please get this Charlize Theron woman from around my neck?"

**The last great concert I saw was...**The Chieftains.

**Currently in my CD changer:** Ottmar Liebert.

**When I'm not in the office, you can find me...**shredding sand in my sand buggy at Glamis or Dumont Dunes in the California desert.

## NOTES FROM THE NET

### NAPSTER-TO-GO-GO

Napster users are no longer bound to their computers or other portable devices. In addition to announcing Napster Version 3 (pictured), the site is now offering Napster to Go technology, a portable subscription service that lets consumers move an unlimited amount of songs from the Napster catalog to compatible MP3 players (such as Creative Zen Micro, Dell Focket DJ and iRiver's H10 players) for a monthly fee of \$14.95.



### PLUG IT IN, TUNE IT UP

Online record label Magnatune ([www.magnatune.com](http://www.magnatune.com)) and Samsung spin-off Hana Micron launched TunePlug, a reusable USB Flash drive that features 10 albums from 10 Magnatune artists as MP3 files. Music can be played anywhere on any computer or portable device. "With consumers always on the go these days, they need to be able to carry their data files and music in devices that can become part of their daily lives," said Jon Jarker of Hana Micron. "We wanted to combine both needs with the TunePlug product." Prices for TunePlug are \$19.99, 64 MB; \$29.99, 128 MB; \$49.99, 256 MB; and \$69.99, 512 MB. The first TunePlug will be launched with Magnatune's *Rock Music Collection, Volume One*, with new releases expected every six months.



## INDUSTRY NEWS



Tamara Hoffman

Audio-Technica (Stow, OH) has brought in Tamara Hoffman, CFO/VP of finance...Based in San Francisco is Kurt Knierim, Virtual Katy's director of North American operations...D&M Professional (Itasca, IL) new appointments: Paul Mathis, VP of D&M; Joe Caldron, director of operations for D&M; Brian Gorman, brand manager for Marantz Professional; and Silvio Zeppieri, brand manager for Denon Professional...Sound designer Corey Bauman joins 38 Greene Studios (NY)...ServoDrive/SPL (Glenview, IL) appointed Tom Melzer as director of sales and marketing; Thomas Danley is no longer with the company...President and co-owner of PRAM Technologies, Tom Benson is Lake Technology's (San Francisco)

mid-Atlantic and Northeast regional representative...Sennheiser's (Old Lyme, CT) new Western regional sales manager communications division, John Meteer, is responsible for all states west of the Mississippi, excluding Texas...New distribution deals: AiRR Support (Corona, CA) appointed Audio Agency Europe for the UK, France, Germany, Switzerland, Spain, Portugal, Belgium, the Netherlands, Italy and Poland; Radio Systems (Logan Township, NJ) is now distributed in the U.S. by Network Pro Marketing (Corona, CA); Aviom (Victoria, Australia) hired Production Audio Services (Australia), Truesound Trading (Taiwan), Moto Audio Sales (Denmark), AudioPro LDA (Portugal), Costas G. Georgallis Music House (Cyprus) and Northwind Recording (South Africa); beyerdynamic (Farmingdale, NY) will be distributed in Indiana, Kentucky, Ohio, West Virginia and Western Pennsylvania by R. Joseph Group (Columbus, Ohio); Telex (Burnsville, MN) is distributing BLUE

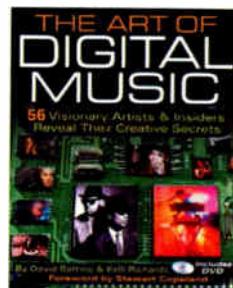


Corey Bauman

Microphones (Westlake Village, CA) in Europe, Canada, South America, Africa, Middle East and most of Asia; and distributing SCARBEE (Denmark) audio tools in the U.S., Mexico and Canada is Sonic Implants (Boston).

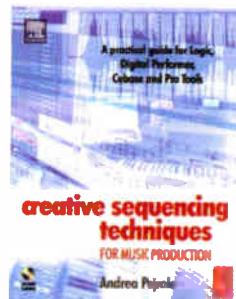
## BOOKSHELF

In addition to interviews with Alan Parsons, Herbie Hancock, BT, Todd Rundgren, Steve Reich and Phil Ramone, among many more, *The Art of Digital Music* relates how digital technology has shaped how music is created and heard today. From producing "in the box" to software-based productions to using MIDI, remixes and relying on plug-ins rather than real instruments, co-authors Kelli Richards and David Battino also interview representatives from industry-leading manufacturers such as Ableton Software, Digidesign, Propellerhead Software, EastWest, Gracenote and many others. The foreword is by Stewart Copeland, who describes through personal anecdotes how technology has blurred the lines between artists, hobbyists and fans. Backbeat Books ([www.backbeatbooks.com](http://www.backbeatbooks.com)), \$27.95.



Andrea Pejrolo, music technology professor, MIDI programmer, sound designer, composer/arranger and jazz acoustic and electric bassist who is currently teaching at Berklee College of Music and The New England Institute of Art, has released her illustrated guide to audio sequencing, *Creative Sequencing Techniques for Music Production*. The book focuses on leading audio sequencers, including Pro Tools, Digital Performer, Cubase SX and Logic. Techniques are divided into basic, intermediate and advanced sections, with tips on groove quantizing, sound layering, tap tempo, creative meter and tempo changes, advanced use of plug-ins automation and advanced mixing. The accompanying CD includes examples of arrangements and techniques. Elsevier ([www.elsevier.com](http://www.elsevier.com)), \$39.95.

*Creative Sequencing Techniques for Music Production* is a practical guide for Logic, Digital Performer, Cubase and Pro Tools. The book focuses on leading audio sequencers, including Pro Tools, Digital Performer, Cubase SX and Logic. Techniques are divided into basic, intermediate and advanced sections, with tips on groove quantizing, sound layering, tap tempo, creative meter and tempo changes, advanced use of plug-ins automation and advanced mixing. The accompanying CD includes examples of arrangements and techniques. Elsevier ([www.elsevier.com](http://www.elsevier.com)), \$39.95.



**MACKIE**  
**ONYX 800R** ANALOG MIC PREAMP WITH 192kHz DIGITAL OUTPUT



**We didn't mean for it to outperform tweaky mic preamps costing three times as much.**



**( Okay. That's a lie. We totally did. )**

When you pay thousands of dollars for a "boutique" studio microphone preamp, you should expect tight, focused high-end, superior ambience retrieval, detailed lower bass octaves, and a highly articulated midrange. In short, it should give you the most from any mic you plug into it.

Not coincidentally, that's also what you get with Mackie's new Onyx 800R 8-Channel Premium Microphone Preamp — at a decidedly less than boutique price. The no-compromise Onyx 800R features new high-performance analog circuitry developed specifically for 192kHz audio, coupled with the finest A/D converters on the market, giving you

impressive specs like 123dB dynamic range and an amazing 0.0007% THD. The 800R also gives you tweaky features like a Mid-Side Decoder and Variable Mic Impedance control, which lets you "tune" the preamp to any connected microphone.

So how does it sound? In the words of one our big-name studio beta testers, "The Onyx 800R brings a whole new dimension to classic mics we've used on countless records. This is by far the best mic preamp we've come across in years."

We couldn't have said it any better. Visit your Mackie dealer to learn more.



Sam Luna proudly served on the engineering team for the Onyx 800R.

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# That Special Loving Feeling...

## Is This Some Kind of Joke?

There is a special feeling I get when I watch someone embarrass themselves onstage. It doesn't matter if it's live or on TV. It doesn't even matter if they *know*.

A bad guitarist, a flat singer, a poor misguided talentless slob or a pro that's so drunk or stoned that they can't remember how many notes are in an octave. A keyboardist with hands of wood or a drummer who suffers the effects of time dilation from the event horizon of the nearest black hole. They all produce an immediate rush of claustrophobic anxiety.

This is probably why I have never seen *American Idol* or any of the other pathetic, self-degrading displays of ego and psychotic breaks from reality TV.

A lightheaded sickness, a flush in my face, a sort of cosmic horror at knowing that I share over 99.9 percent of my DNA with these people keeps me as far away as possible from potential exposure. While not comparable to watching a murder take place four feet from you, it is not unlike having your drunk-ass stepfather come to pick you up at school and crash into all your classmates' bicycles as you collectively stand by and watch. Oh, yeah, and falling on his face as he attempts to walk over to get you. Kill all alkies! Oh, wait...did a personal note slip in? Sorry.

Anyway, I have never actually embarrassed myself onstage (as far as I know), but I had this dream about five years ago in which Mick Jagger comes to me backstage 10 minutes before the Stones go on and asks me to fill in for Ronnie for the night. He says of course I know all the songs, right? And I say, "Of course I do."

I don't. Bad dream.

My preoccupation with the responsibilities of a live performance, the concept of mastering certain skills before you claim you are capable and charge people actual money to come see you...Is it being bred out of Homo sapiens?

I must represent some sick, twisted throwback minority, as the overwhelming American majority clearly *loves* this voyeuristic falling feeling. Is not watching people make pathetic fools of themselves *The American Pastime*?

Even as I was calling for more soul and content in popular music just last month, *South Park* immortalized Wing, literally the antithesis of music.

And, alas, I was sucked in—for a moment. I went to her Website as listed in the credits at the end of the show and was amazed to discover that it actually did exist. Nice touch: register a domain and set up a fake Website where this cutout paper puppet prodigiously propagates her precociously painful parodies of popular professional properties.

I even clicked on a couple of her "songs" and that "special feeling" instantly came over me. That wave of nausea, the rush of blood in my ears, the acute narrowing of peripheral vision and, yes, that faint feeling of amusement that such a thing could even exist, followed by an involuntary narrowing of the eyes and finally (much to my dismay) a slight smirk.

That wave of nausea,  
the rush of blood in my ears,  
the acute narrowing of  
peripheral vision and, yes,  
that faint feeling of amusement  
that such a thing could even exist,  
followed by an involuntary  
narrowing of the eyes and  
finally a slight smirk.

I, while preaching the virtues of musical responsibility and content, had stopped along the road to watch an accident—to hear the horrible, mangled cries of the victim and the angst of the guilty, even though they were the same person: Wing.

And to make it worse, my own brother sent me a couple more Wing atrocities last week; specifically, "I Want to Hold Your Hand" and "Dancing Queen," along with a few choice selections from the infamous Shatner collection, the early years. And as (according to scientific principles) things always happen in threes, he added a couple of gems from Pat Boone's *In a Metal Mood*. Whoa!

Now don't get me wrong. I'm all for metal. It keeps one's fingers moving so they don't seize up while they're waiting to learn to play music.

So are these albums just 24-car pile-ups on the Los Angeles freeway? Curiosities that somehow force us to slow and turn to look as we pass by going the other way? Can that be it? Please?

Well, Shatner's album *Has Been* got on *Rolling Stone*'s top 10 picks of the year! No, *really*.

—CONTINUED ON PAGE 147

# ENERGIZE YOUR PERFORMANCE

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# Do You Hear What I Hear?

## Learning to Listen in a Mediated World



ILLUSTRATION: EARL KELEMY

There's a priceless moment on the Firesign Theatre's third album when an authority figure (a prosecutor who is somehow also an auctioneer) bellows, "What do I hear?" and a stoned voice from the back of the room responds, "That's metaphysically absurd, man. How can I know what you hear?"

This brings to mind two questions. First of all, as we're professionals who depend on our hearing to produce sounds that will appeal to other people's ears, how do we know what our audience is actually hearing? And second, for that matter, how do we know what *we're* hearing? These two questions are becoming even more prevalent today, as most music listeners are "enjoying" sounds on low-fi playback systems or headphones—far from the quality of studio monitors.

When it comes to our audience, you might as well ask, "What do you mean by 'green'?" Physicists can agree on a range of wavelengths for "green," while everyone else can point to different objects and get a general consensus from those around them that said objects are or are not the color in question. But no one can possibly put themselves into someone else's mind to

see exactly how they experience "green." As conscious beings, our perceptions are ours alone. Lily Tomlin's character Trudy the Bag Lady, in *The Search for Signs of Intelligent Life in the Universe*, put it perfectly when she said, "Reality is nothing but a collective hunch."

Similarly with sound, we can measure its volume, look at its spectrum, see how it changes over time and analyze the impulse response of the space in which it's produced. But there's that subjective response to the sound that's within our heads that can't be measured—at least not without a sensor on every brain cell and synapse involved.

Because we're in the business of shaping the reality of sounds, it's fairly important that our "hunches" be correct. And it's our ears that we trust. No amount of visual or data analysis will allow us to decide that a sound is "right" without hearing it.

How do we make that decision? A crucial part of the act of hearing is making comparisons between what our ears are telling us at the moment and the models that live in our memory of what we've heard before. From the moment our auditory faculties first kick in, those

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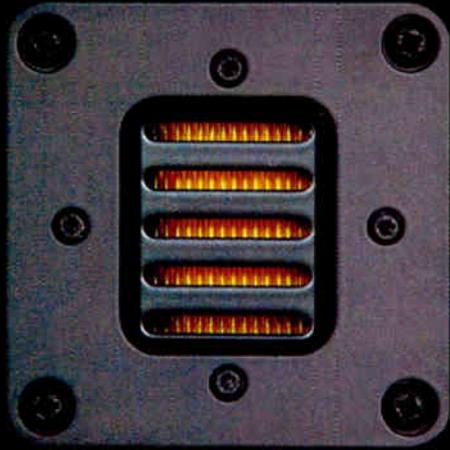
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memories are established and baselines are formed. The first sounds all humans hear are their mothers, and then they hear other family members, then domestic sounds and gradually they take in the larger world outside. I imagine it's a safe bet to say that for most of us in this business, among those earliest aural experiences were the sounds of singing and musical instruments. Not only did these sounds intrigue and inspire us, but they provided us with the context in which we would listen and judge the

This weird thing has happened in the past hundred or so years, and the trend is accelerating: The proportion of musical sounds that people are exposed to that are produced by "organic" means has been decreasing and is quickly approaching zero.

sounds we would work with in our professional lives.

So we know what things are supposed to sound like. As professionals, we learn something else: What we're hearing through the studio monitors isn't the same as what we hear when there's a direct acoustic path from the sound source to our ears. Ideally, speakers would be totally flat with no distortion or phase error and with perfect dispersion, but even the best monitors are still far from being totally "transparent." In addition, every indoor space that's not an anechoic chamber has its peculiar colorations, which are different from any other space. We need to be able to compensate for these distortions, consciously or unconsciously, and block out the sound of the speakers and the room as we listen. Our experience and training as professionals teach us how to eliminate the medium and concentrate on the source.

But this weird thing has happened in the past hundred or so years, and the trend is accelerating: The proportion of

—CONTINUED ON PAGE 148

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# Killer KEYS

## Capturing Piano, The Beautiful Beast

Guitarist Andrés Segovia said, "The piano is a monster that screams when you touch its teeth." At the extreme, this is true, as anyone listening to pianist McCoy Tyner would agree. Though at the same time, the piano can display the most delicate of musical emotions, as evidenced in Beethoven's piano concertos. Spanning just over seven octaves, from 275 Hz to 4,186 Hz, the piano offers an array of dynamics and frequencies virtually unparalleled in any other instrument. Accurately capturing the ferocity and nuance of this beautiful beast for others to hear is left to the recording engineer, who has the mission of choosing the correct tools for the job. This feature will deal mostly with effective techniques for recording the grand piano.

### IT ALL STARTS WITH THE INSTRUMENT

It goes without saying that a tuned instrument makes for a better recording, and this is especially true with pianos. An out-of-tune piano will affect all of the other players in the ensemble. They all tune to the instrument and, more importantly, they "vibe" off of its power and range. This vibe filters down to the visceral level, and if the instrument is out of tune, then it can sour and color the performance of even the most seasoned players.

Unlike tuning a guitar, bass and drums, piano tuning *is* rocket science and should be left to professionals. If you're interested in the mechanics of tuning and piano maintenance, which is certainly a deep subject, check out *The Musician's Guide to Acoustics* (Campbell and Greated), which gives a nice guide to tuning techniques. Be aware that moving the instrument and changing the room temperature will affect a piano's tuning. Be sure to move the instrument to its proper position before the tuner shows up. In addition, the night before the session, set the air conditioning to a comfortable level and leave it there. Maintaining a consistent environment will help keep the instrument stable.

It's a good idea to get into the room before recording (and tuning) to check out the instrument. Work the pedals and listen for squeaks; if you don't play, find someone to play the instrument while you assess it for action problems, inconsistencies or other random non-musical noises. If nothing else, this will give you something to address when the tuner shows up so these issues can be fixed before the downbeat.

### MANY PATHS TO PIANO PERFECTION

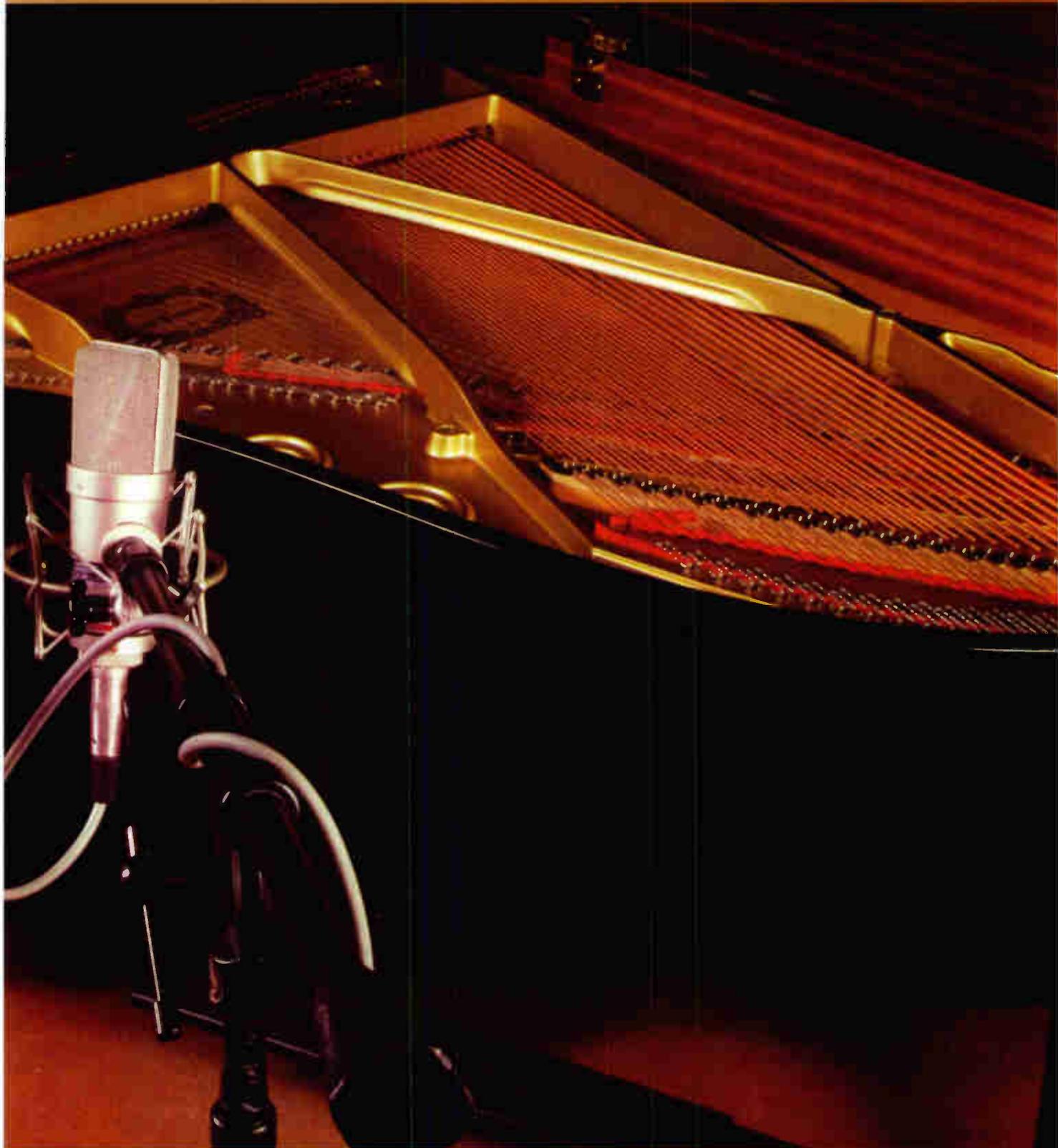
Once the basics of tuning and maintenance have been addressed, the recording process can start, and that means choosing and placing your "weapons." But first, it's a good idea to hear what the instrument sounds like live from the listener's perspective, especially when recording a piano you're not familiar with. Engineer Hank Cicale, who's recorded the pianos of Michael Feinstein and Roger Williams, among others, likes to find out how the piano sounds in the studio and then translate that sound to the control room. "If I go to a strange studio where I don't know the piano, I like to get there early when the tuner is there so I can hear the piano physically in the room," he says.

When choosing mics for the job, it's best to use matched pairs, but as you'll read below, rules were made to be broken. The rules of placement are ones you may already be familiar with: X/Y, ORTF, spaced pair and Blumlein techniques all work great when recording piano.



PHOTO. CHRIS BAILEY

BY KEVIN BECKA



The variations come with the placement of these arrays in relation to the soundboard and piano. This is where it's important to keep in mind what kind of timbre the music asks for. For instance, on a Bruce Hornsby record, the piano would sound bright and in your face, whereas a piano from the Beethoven biopic *Immortal Beloved's* soundtrack would be more distant and dark. Certainly, close-miking the piano where the hammers hit the strings would not let the instrument "breathe" enough for a classical recording, but it just might be the ticket for a pop recording. Other questions to ask: Is the instrument being performed solo? With a vocalist? In a band setting? Surrounded by other non-acoustic keyboards? All of these factors can determine how best to mike the piano.

For starters, an X/Y array or spaced-pair mics placed using the 3-to-1 rule work nicely when situated above where the hammers strike the strings. These close-miking techniques give you a good left/right picture of the instrument and capture a great amount of detail. Think of it more as a bright and in-your-face pop sound rather

than a traditionally full jazz or classical tone. The balance of the instrument depends on where the mics are placed. To be sure his mics are balanced across the full breadth of the piano's range, Cicalo places the mics, then has the pianist play an arpeggio from middle C up the keyboard, then from middle C down (see "The Story Behind the Sound" sidebar below for more on Cicalo's tried-and-true techniques.) This way, from the control room, he can hear if the mic arrangement is providing a balanced picture of the piano and if any further adjustments are necessary.

If the piano's low end is not being represented by the stereo mic pair, a third mic can be placed at the bottom of the keyboard range, close to the strings. This can be panned center to fill out the middle and bottom end of the instrument (Fig. 1).

Another technique that will render a phase-accurate stereo picture is ORTF. This



**Figure 1:** Adding a third mic to a stereo pair can help capture the piano's low range.

configuration involves two mics placed approximately 17 cm apart (meant to simulate the space between your ears) at an angle of 110 degrees. Erik Zabler, George Duke's engineer, uses this technique but adds a twist when recording Duke's Bösendorfer concert grand piano. He uses a standard ORTF pair right at the open side of the piano and about 30 percent of the way up from the edge. He tries to use two of the same mics if possible, but in a lot of cases, he uses Duke's stock AKG C12 and another C12 that has been modified with a Stephen Paul capsule. He's found that the two mics sound quite different from each other, but he uses the personality of the mics to favorably accentuate the sound of the Bösendorfer. "The Stephen Paul mic is brighter, so I put that on the low side of the piano, and the stock C12, which is more mellow, I put on the high side of the piano," he says.

The ORTF array can be moved back a few feet from the edge of the piano if you want to get more of the room tone in the recording. Of course, this means you have to have a room worth recording in. Keep in mind that when you add the room into the same mics that are providing the main piano sound, the combination is permanent, whereas you can always simulate a room nicely with a good quality reverb if you go the safe route and keep the mics close to the instrument. Another option is to use two pairs of mics: a close pair for presence and another pair in the room. The pair that's backed away can then be added to taste during the mix and also

## The Story Behind the Sound

### HANK CICALO'S RECORDING OF CAROLE KING'S TAPESTRY

Engineer/producer Hank

Cicalo's discography reads like a who's who of the music industry. He's recorded such diverse artists as The Monkees, Kenny Rankin, Jaco Pastorius and Captain Beefheart. Carole King's signature album, *Tapestry*, is one of five records Cicalo engineered for the performer. *Tapestry* was recorded at Studio B at A&M (currently Henson Studios). The producer was Lou Adler; featured players include Ralph Schuckett (electric piano), James Taylor (acoustic guitar), Danny Kortchmar (electric guitar), Charles Larkey (bass), Joel O'Brien (drums), Russ Kunkel (drums) and Curtis Amy (sax).

At the time of the recording, the studio had two pianos: a Steinway and a Yamaha. Cicalo preferred the Steinway—a red Hamburg model—and used it on *Tapestry*. The setup for the session had a few challenges: "The difficulty of this recording was the fact that Carole liked to do vocals live," Cicalo explains, "so we recorded the live vocal and piano, along with a full rhythm section." He created isolation for the piano with a unique cover

that he designed at another studio and had A&M replicate it for their studio. The custom cover allowed Cicalo to prop the piano open on full stick, giving him some space between the microphone and the top of the lid, while providing isolation from the rest of the band. Cicalo used AKG 414s through the preamps on A&M's API console directly to a 2-inch 16-track machine. His approach was to use a minimal amount of EQ when tracking, waiting instead to make adjustments during the mix.

"You can't work with anyone better as a producer than a guy like Lou Adler," says Cicalo about his experience recording *Tapestry*. "Lou was always very quiet in the studio, but demanding about what he wanted to hear and how he wanted it done. He never wanted anything to detract from what he was hearing in the room. The artist and the mood he wanted to set was the principal thing going on and that's why people loved working with him."

The piano intro on the single "I Feel the Earth Move," made an indelible impression on anyone who listened to the record. You could "Name That Tune" in one chord after only hearing it a few times. It's certainly a testament to a great song and a great recording.

—Kevin Becka

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As with miking any instrument, placing the preamps closer to the source can keep you from losing quality due to line loss. Making a long cable run at line-level is always preferable than making one at mic level. So putting the preamps in the room with the piano is good practice. Zobler uses preamps from Mastering Labs, DeMedio or Boulder and runs them to the control room with high-quality cable.

A Blumlein pair—two figure-8 mics in an X/Y array—makes for an effective stereo pair that allows some of the room sound into the recording. Ribbon mics are an especially good choice for recording in Blumlein, especially if the part is percussive. Not only do you get a great stereo picture,

but the natural tendency of the ribbon is to round out any sharp transients, making for a naturally compressed sound. An easy Blumlein configuration can be achieved with a stereo ribbon such as the AEA R88 or Royer SF-24.

### LIVE RECORDING TECHNIQUES

Often, when recording piano in a live or broadcast setting, the lid must be closed for aesthetic or line-of-sight reasons, making it difficult to get an “open” sound. This situation calls for a special set of tools, namely miniature mics and those designed for low-profile use. The DPA 3521 compact cardioid stereo kit is designed for this task. It comes with either omni or cardioid capsules (4021 or 4022) and includes two types of mounts, either individual mini goosenecks or a slick stereo bar that allows either ORTF or X/Y

placement. The set also includes two very strong magnets that the mounts screw onto, making it easy to precisely place the mics and not worry about them moving around. Each capsule slides into a rubber shock-mount, providing isolation. DPA even has a budget solution in its 4061 miniature microphone. These little guys come with a sticky mount and a magnetic mount that can be used to mount the mic on the lid of the piano or magnetically to the harp. I’ve used them on piano, guitar and bass, and the sound is remarkable for such a small mic.

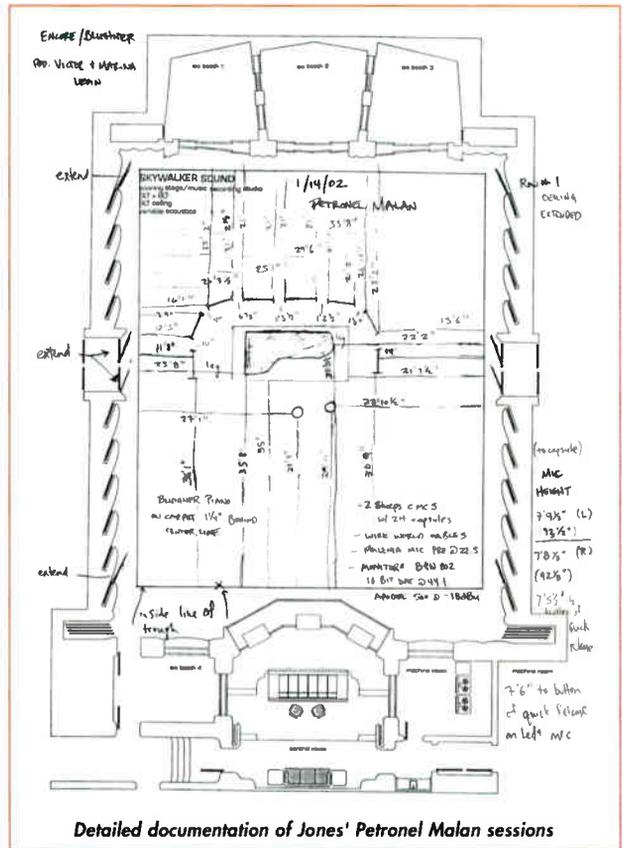
Another example of recording with the lid closed is Leslie Ann Jones’ technique for miking Feinstein’s live piano. She uses a pair of Neumann KM100 bodies with cardioid capsules. (See the sidebar featuring her work with Petronel Malan below.) She

## Case Study: Cloning Petronel Malan Sessions

Leslie Ann Jones, director of music recording and scoring at Skywalker Sound, has the luxury of working with two excellent pianos (a Yamaha C3F 9-foot concert grand and a Blüthner 9-foot-by-2-inch concert grand) in one of the best recording spaces on the planet. Skywalker Sound’s scoring stage measures 60x80 feet long with a 30-foot ceiling and features variable acoustics, letting the engineer vary the reverb time from 0.6 to three seconds. The control room features a 72-input Neve 88R console and is outfitted with B&W 802 monitors with Chord amps and MIT cables.

In 2002, Jones recorded Petronel Malan’s *Transfigured Bach: The Complete Bach Transcriptions of Bartok, Lipatti and Friedman*. The recording was nominated for three Grammy Awards in 2004, including Best Instrumental Solo Album. The album was done in Skywalker’s scoring stage on the Blüthner piano. Jones used a pair of Schoeps CMC5 bodies with Schoeps 2H omni capsules sent through Wire World cables to a pair of Millennia Media HV-3 preamps in the control room, a combination she often uses when recording classical piano. After the preamps, the signal was sent through Apogee converters to a 16-bit DAT at 44.1 kHz. The microphones were set about eight feet away from the edge of the full-sticked lid of the piano, at about 92 inches from the floor. The piano was set up in roughly the middle of the room and surrounded in the back by a rough semi-circle of eight gobos. After placing the mics, Jones then balanced the piano’s sound by fine-tuning the piano’s position. “Particularly with the Blüthner, depending on who the player is, sometimes the low end of the piano isn’t as loud as it should be,” she says. “So I’ll just take the low end and move it closer to the microphones.” In addition, Jones will manipulate the sound of the piano in the room by moving a portion of a rug under the piano or having the entire piano sit on top of a rug.

Sometimes, clients can’t finish tracking the whole record in one visit, so the Skywalker team has to precisely match the sound when they come back. This is where detailed documentation, down to the inch, comes into play. (See diagram at right.) The position of each gobo, mic stand and the height of the mics on the stand are carefully measured and then drawn into an overhead template of the room. The configuration of all of the items—down to the cables used where the converter’s zero point is set and whether any of the room’s variable acoustics are brought into play—are



measured and documented. As you can see, the edge of each of the gobos and the position of the piano legs were measured from two walls so they could be positioned exactly if the setup was broken down. The same sheet contains info on the height of the mics from the floor, in this case to the capsule (93 1/2 inches on the left and 92 1/8 inches on the right) and another measurement to the quick release.

—Kevin Becka

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favors the stereo set that lets the user disconnect the capsule from the body, leaving just a wire in-between, allowing her to place the capsules in a tight space. In addition, the system comes with a stereo bar that she uses to set up the mics in an X/Y pair. Jones places the bar with the capsules on some foam inside the piano, puts the mic bodies on the floor and closes the lid, and then runs the signal through Grace 201 preamps and a Summit EQP 100 tube EQ. Although recording with the lid closed is not acoustically ideal because of unwanted resonance, this particular method works in certain situations. "You may be able to tell the lid was closed if you soloed the piano, but in the context of a band or an orchestra, if you add some reverb, you'd never know the lid was down and the piano was close-miked," Jones explains.

In a live sound stage setting where specialized tools aren't available, you can use gaffer's tape to mount mics directly to the piano's struts, hopefully with some foam or other material to help isolate the mics from vibrations traveling up from the floor. Keep in mind that the piano's soundboard is meant to resonate, and that means it can resonate from external sources and from the piano. The live mixer must then walk the line between EQ'ing the piano thin enough to eliminate low-end leakage from the stage while not sounding *too* thin.

In a studio setting, recording a perform-

er's pianos and vocals at the same time can be problematic, especially if you keep the lid closed for vocal isolation. In this situation, Jones and engineer Dann Thompson at Skywalker Sound created a drape by spreading a piano blanket between two mic stands and letting it hang just behind the music stand on the piano. This setup allowed them to keep the lid open for the best piano sound while providing vocal isolation.

Another live-in-studio approach that could present leakage problems is when recording a piano trio (piano, drums and upright bass) with a vocalist in the same room. While acoustically challenging, this technique can let the band play more dynamically without using headphones, and performances end up sounding much more "live" than with a traditional isolated studio recording. As for leakage, some placement tricks and mic choices can make it work for you instead of against you. For instance, place the drums behind the piano on the backside of the open lid as far away as possible. Next, place some gobos in front of the bass to provide some isolation from the drums and piano, and then place the singer close to the piano's open lid for easy pitch reference. Surprisingly, using high-quality omni mics with very accurate off-axis response can help keep the leakage sounding good and usable. Having all the players within ear and eyeshot of each other, just as they would be in a club, makes for the best possible situation for your recording and keeps the players comfortable.

### SAMPLING RATES AND FORMATS

Your choice of converters, sampling and bit rates and recording format can greatly affect the outcome of your recording. You can capture the best recording possible but later become victim to a bad sample rate conversion or have jitter introduced through some bad clocking down the line. To help prevent this, stick to what you know will sound good later on—so much depends on what happens later. For instance, if the project will be edited or mixed elsewhere, you have to be sure those facilities can handle the format you give them. If you don't know, it's often better to provide a great-sounding recording at 16-bit/44.1 kHz.

To further hedge your bets, especially if you're recording the piano as a solo instrument, you could record the same performance at different formats and sampling rates—even analog and digital. This gives you an "insurance" copy of the recording or just something extra for archival purposes.

You could record your safety to DSD format or at 192 kHz. Tascam's DV-RA1000

DSD/high-definition CD recorder is an interesting and inexpensive option to record at higher rates. When talking about sampling rates, ultimately, the goal is to maintain your original rate as long as possible throughout recording, editing and mastering, waiting to downsample if necessary at mastering when sample rate converters and converters in general tend to be more high end.

### IN THE MIX

How you pan the piano can enhance or detract from how the listener perceives the instrument in the final product. Just because you can pan the stereo image fully to the left and right doesn't mean you should. In fact, panning a stereo piano hard-left and right can make for an unnaturally huge stereo picture and, ultimately, a disjointed listening experience. Tucking the piano in tighter to the center or even to one side can give it the space it needs to be heard in the track. As for panning the keyboard, when using an X/Y or spaced pair above the hammers, the left-to-right orientation is to taste, with the player's perspective being a popular choice. If the mics are pulled back from the instrument, then audience perspective is a good way to go.

One interesting and unconventional use of panning can be found on the CD *Give* by the Bad Plus. Engineer Tchad Blake panned the piano widely across the left, the drums across the center and the bass to the right, giving the listener the ability to fully hear what each player was doing without the instruments masked by the other. It is a startlingly simple solution to an age-old problem: How do you give each instrument enough space in the stereo image so it can be heard?

Keep in mind that the piano is not only a tonal instrument, but one that can exhibit a wide range of dynamics. A bit of smooth compression can help you keep the piano from jumping out of its surroundings. As for EQ, adding a bit of air at the top of the piano can make for a nice tone that nicely hits the reverb. Add sparingly, however, as this technique also accentuates the sound of the hammer felt coming off the string, especially if the instrument is played lightly.

No matter what the methods, the music will be the final arbiter of the tools you use for the initial recording right down to the mix. Although it's difficult to cover every possible situation, the methods above should give you the tools you need to either capture Segovia's screaming beast or the nuance of Mozart.

Kevin Becka is Mix's technical editor.



PHOTO: CHRIS BAILEY

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This exacting development process was employed throughout the entire Onyx 80 Series Console. We started with the highest quality analog components available — from premium op-amps to custom chip sets costing exponentially more than previous designs. Most notably we developed all-new Onyx mic preamps and Perkins EQ circuitry from the ground up specifically for optimum performance within the total Onyx system.

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Of course, all these features are for naught if a live console is not built to last. So we designed the Onyx 80 Series console upon a tough-as-nails modular monocoque design, reinforced with beefy aluminum extrusions and strategically placed steel bulkheads. The design was torture-tested continuously for impact, shock, heat vibration, humidity, and even dropped repeatedly from a height of three feet. In other words, it's ready for the real world.

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# What's Driving Your Mix?

BY ROGER MAYCOCK

It's happened to all of us. You labor over a mix—tweaking every last detail to the nth degree—only to play it back somewhere else and find that things don't quite sound the way you expected. Perhaps there's harshness in the high end or the low end is too boomy. So you wonder what happened.

Yup, been there, done that. Maybe it's time for a new monitor system—a trusted reference that lets you mix with confidence and translates well to a variety of playback environments. In the end, it's not about the mixing console or all the cool software used to assemble your content. What matters is playback consistency, which leads to the very reason for this article.

The products that follow—small and large systems, active and passive, and priced from around \$300 to \$50,000—were introduced during the past 15 months and are shipping now (or soon). Unlike software and computers, speakers have a relatively long model life, so if you notice that a particular manufacturer isn't listed—such as Mackie, Meyer or Yamaha—it's because the company didn't introduce a new monitor product during the specified period. We found plenty of new stuff to check out, so let's get started.

The ADAM Audio ([www.adam-audio.com](http://www.adam-audio.com)) P33-A (\$3,200/pair street) is a three-way active design offering the advantages of the company's mirrored S3-A design at a lower price point. Like the S3-A, one woofer acts as a full-range driver; the second joins it below 150 Hz, providing solid low-end response. Usable horizontally or vertically, the P33-A is shielded and has three 100-watt amps. The \$750/pair ANF-10 is a two-way, shielded passive monitor combining a re-designed A.R.T. folded-ribbon tweeter and a 7-inch woofer in a relatively small cabinet.

Alesis' ([www.alesis.com](http://www.alesis.com)) Pro-Linear Series is available in two configurations: the 720DSP (\$449 each) and 820DSP (\$549 each). Both incorporate 24-bit/48kHz, 28-bit I/O DSP processing and include 4-band parametric EQ with eight presets and eight user

programs, and a PC serial port for use with the included Windows DSP/control software. Audio inputs are XLR/¼-inch Combo jacks. All are 120W bi-amplified designs (80W LF/40W HF), and the frequency response for both models is 50 to 20k Hz ( $\pm 1.5$  dB). The 720DSP has a 7-inch Kevlar woofer (8-inch on the 820DSP); both have a 1-inch silk-dome tweeter and are mag-shielded.

The Alesis M1 Active MK2 (\$299/pair) is a two-way, bi-amplified design using a 6.5-inch carbon-fiber woofer and a 1-inch silk-dome tweeter with ferrofluid coolant; both are shielded. The dual-ported enclosure has a Combo XLR/¼-inch jack with an input level control. Frequency response is rated at 38 to 23.5k Hz, -10 dB.

Distributed in the U.S. by A.R.T., Alto's ([www.altoproaudio.com](http://www.altoproaudio.com)) M5A is an active studio monitor with a compact footprint. The M5A employs two 4-inch woofers for the LF and a 1-inch silk-dome HF driver. The tweeter amp is 30W; 60W drive the woofers. A near/far-field switch tailors speaker response for the room. The M5A is \$289 each, and internal mag-shielding is standard.

Priced at \$290/pair, Applied Research and Technology's ([www.artproaudio.com](http://www.artproaudio.com)) SLM-1 is a passive, two-way near-field with a 6.5-inch foam surround woofer and 1-inch silk-dome, medium-viscosity, ferrofluid-cooled tweeter. The cabinet employs a 2-inch tuned port on the lower front. Frequency response is rated at 40 to 20k Hz ( $\pm 3$  dB). The SLM-1 is a shielded enclosure and uses a gold-plated binding post for its input connector.

Distributed by LasVegasProAudio.com, ATC's SCM20ASL (\$7,750/pair) is a two-way, active near-field. The monitor employs a 6.5-inch driver for the LF and a 1-inch wave-guide-loaded dome tweeter for the HF. All drivers are manufactured by ATC, as are the crossovers and amps. The SCM20ASL has two separate amplifier blocks in each cabinet: 250W for bass/mid and 50W for high frequencies. A rear panel selector provides a flat setting and five LF boost settings for tailoring low-end response to different environments.

The larger ATC SCM50ASL Pro (\$14,750/pair) is an active, three-way system for medium-sized rooms. The monitor uses a 9.2-inch ATC driver for the LF, a 3-inch midrange



ADAM P33-A



Genelec 8020A



## NEW STUDIO MONITORS FOR EVERY BUDGET AND APPLICATION

soft-dome driver and a 1-inch waveguide-loaded dome tweeter for the HF. Onboard amps provide 200W LF, 100W for the mids and 50W HF. An LF contour control provides five bass-boost settings.

Bag End's ([www.bagend.com](http://www.bagend.com)) M6 is a two-way passive system employing a 6-inch woofer and a 1-inch coaxially mounted neodymium tweeter. Designed for critical near-field monitoring, the M6 uses Bag End's Time Align™ technology. Priced at \$630/each, the M6 provides five-way binding post input connectors, and frequency response is 60 to 20k Hz ( $\pm 3$  dB).

MediaDesk, Blue Sky's ([www.abluesky.com](http://www.abluesky.com)) \$599 entry-level 2.1 system, offers full-range monitoring on the desktop and is optimized for DAW-based audio recording/production. MediaDesk 2.1 incorporates two ultra-compact two-way satellite speakers, each featuring a quality 4-inch driver and 1-inch soft-dome tweeter, along with an 8-inch powered subwoofer with onboard bass-management system. MediaDesk can easily become a space-efficient 5.1 system with the company's 5.1 upgrade, which includes three more satellites, the amplifier control module and a 5.1 remote.

Distributed by TC Electronic, Dynaudio Acoustics' ([www.dynaudioacoustics.com](http://www.dynaudioacoustics.com)) BM 5A (\$1,250/pair) active, compact studio monitor is powered by two 50W amps and offers a response of 50 to 21k Hz. This two-way design includes a 6.7-inch LF driver and 1-inch soft-dome tweeter. A \$1,245



Alto M5A

option, the BM 9S 200W subwoofer, has a 10-inch woofer, response down to 29 Hz and integrated bass management for stereo or surround. Dynaudio is also now shipping the BM 5P, a two-way passive near-field with a 50 to 21k Hz response, a 6.9-inch woofer and 1-inch soft-dome tweeter. Both the BM 5A and BM 5P have small footprints, making them suitable for project studios, edit suites and broadcast vans.

Earthworks' ([www.earthworksaudio.com](http://www.earthworksaudio.com)) Sigma 6.2 is a two-way passive system with a unique port design that enhances bass response and ensures that LF energy is radiated into the room in the correct relationship to the rest of the signal. The Sigma 6.2 has a die-cast 6.5-inch woofer and a 40 to 40k Hz ( $\pm 2$ dB) response. Power handling is rated at 150W continuous. Inputs are gold-plated binding posts and Speakons with gold contacts. It's available in cherry and black finishes, and is sold as a \$3,500 matched pair.

Distributed by Synthax ([www.synthax.com](http://www.synthax.com)), the EMES Violet HR Active (\$2,999/pair) is a two-way system with a 1.1-inch silk-dome tweeter and 8-inch carbon-paper woofer, each driven by 100W amps. Response is 48 to 20k Hz ( $\pm 2$  dB). The monitor employs dual 100W amplifiers. EMES' \$699/pair Kobalt is a two-way, bi-amplified near-field monitor using a 1-inch ferrofluid textile dome tweeter and a 5.5-inch polypropylene LF driver, driven by dual 70W amps for a rated response of 64 to 20k Hz ( $\pm 3$  dB).

Unveiled at Musikmesse 2005, the Active Linear Phase (ALP) 5 bi-amplified monitor from Event Electronics ([www.event1.com](http://www.event1.com)) features a 1-inch dome HF mounted in an elliptical waveguide for a wide sweet spot and is paired with a 5.25-inch, rubber surround/polypropylene-cone



ATC SCM50ASL Pro



Alesis M1 Active MK2



SLS PS8



Dynaudio BM 5A

woofer. Response is stated as 53 to 20k Hz, and onboard amps provide max SPLs of 105 dB. Inputs are balanced XLR and TRS and unbalanced RCA, and the speaker is mag-shielded.

Focal (dist. in the U.S. by Wave Distribution, [www.wavedistribution.com](http://www.wavedistribution.com)) debuts the Twin 6 Be, which comprises two 6.5-inch LF/MF drivers (with 150W amps on each) and a 100W amp pushing a TBEPRO inverted beryllium dome tweeter. Response is 40 to 40k Hz, with its tri-amplification yielding 115dB SPLs from its 19.7x9.8x13.4-

inch, 31-pound cabinet. A more compact design, Focal's two-way Solo 6 Be pairs a 6.5-inch woofer and inverted beryllium tweeter with 250W (total) of bi-amplification, providing a 40 to 40k Hz response with 113dB peak SPLs. Mag shielding is standard on both models.

The Fostex ([www.fostex.com](http://www.fostex.com)) NX-6A (\$849 each) near-field studio monitor is a two-way active design with a 6.5-inch woofer and a 20mm dome tweeter. The rigid frame woofer uses the company's Hyper-Radial diaphragm cone with UDR (Up/Down Roll)



**Fostex NX-6A**

tangential edge technology to eliminate unwanted resonance. The magnesium dome is designed to eliminate harshness while providing fast transient response, and is recessed to the woofer for a focused sound image. Inside the mag-shielded enclosure, 60W and 40W amps provide power.

Debuting at AES Barcelona last month, the Genelec ([www.genelec.com](http://www.genelec.com)) 8020A is the company's smallest speaker to date. Combining a 4-inch bass driver with a ¾-inch tweeter loaded into a directivity-controlled waveguide, response is 66 to 20k Hz ( $\pm 2.5$  dB), with dual 20W amps for treble and bass pushing 105dB peak SPLs. The 10-inch cabinets include an Iso-Pod stand for aiming the speakers while decoupling them from the surface on which they sit. A companion 7050B subwoofer extends the LF response down to 25 Hz with its 8-inch woofer, 70W amp and patented Laminar Spiral Enclosure, and includes bass management for 2.1 or 5.1 applications.

Another recent addition to Genelec's 8000 Series of bi-amplified active monitors, the 8130A (\$995 each) provides a 192kHz/24-bit AES/EBU digital interface and analog audio inputs. Like other 8000 models, the 8130A has an all-aluminum Minimum Diffraction Enclosure™ design. The 8130A features a 5-inch LF driver with ¾-inch tweeter coupled to a directivity-controlled waveguide. Response is 58 to 20k Hz ( $\pm 2$  dB).

Priced at \$32,000/pair, the Griffin ([www.griffinaudio.com](http://www.griffinaudio.com)) G1 has two 8-inch magnesium cone drivers for mids, a Stage Accompany SA8535 ribbon tweeter on highs and an 18-inch long-throw woofer. The driver crossovers are all passive, with full-band EQ system handled by Class-A analog filters in the accompanying system controller. Frequency response is rated at 20 to 20k Hz ( $\pm 2$  dB), and the power rating is 1,600W on music signals. The mid and tweeter cabinet have a beveled front baffle to minimize diffraction.

Griffin's G2A active mid-field studio monitor (\$6,400/pair) employs dual 8.6-inch magnesium-cone woofers with a planar magnetic ribbon tweeter. Amplification is provided by ICEpower™ amps with switch-mode power supplies driven by custom active filter/crossover boards matched to the



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**- Alonzo "Zo" Lee Jr. & Shamar "Sham" Daugherty**

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drivers. Response is rated at 39 to 22k Hz.

Retailing at \$6,499/pair, the bi-amplified Hot House ([www.hothousepro.com](http://www.hothousepro.com)) ARM 265 has twin 6.5-inch woofers and a recessed dome tweeter in a rear-vented sixth-order alignment, coupled with a 150kHz signal path bandwidth. System response is 30 to 21.5k Hz (-3 dB). Amplifier output is rated at 250W RMS (x2) and signal-to-noise is 102 dB. The cabinets feature fully radiused edges finished on all sides in black, red or golden oak veneer.

The JBL ([www.jblpro.com](http://www.jblpro.com)) LSR6300 Series combines patented transducer technologies with Room Mode Correction (RMC) circuitry to correct inaccuracies caused by room acoustics. All models in the series are THX pm3-approved. Priced at \$399 each, the compact LSR6325P has a 5.25-inch woofer, a 1-inch titanium composite tweeter and 150W of amplification. The LSR6328P (\$1,339 each) uses JBL's 8-inch differential drive carbon-fiber woofer and a 1-inch titanium composite tweeter for a 50 to 20k Hz response. The bi-amplified system outputs 250W (LF) and 120W (HF) amps. The optional LSR6312SP powered subwoofer (\$1,499) uses a 12-inch Neodymium Differential Drive (NDD) woofer with 250W of power. An integral bass-management system provides LCR and direct LFE inputs, multiple subwoofer summed output, RMC and more. If a larger monitor is required, the non-powered, three-way LSR6332 (\$1,399 each) combines a 12-inch NDD dual-coil woofer, a 5-inch Kevlar midrange and a 1-inch titanium composite tweeter. Frequency response is 60 to 22k Hz, with LF extension to 35 Hz.

New from Klein + Hummel ([www.klein-hummel.com](http://www.klein-hummel.com)) is the O 900 studio subwoofer, a passive design typically used with the company's O 300D, O 400 and O 500C active studio monitors. The O 900 is a direct-radiation, bass-reflex system using two magnetically shielded 12-inch woofers. The O 900 is designed for use with K+H's Pro A 2000 power amplifier. Low frequency extends to 17 Hz. Protection circuitry for the O 900 includes a look-ahead peak and thermo limiter. Input and Thru connectors are Speakon. The enclosure design can accommodate optional stacking of the O 500C monitor.

Priced from \$299 to \$599 each, KRK's ([www.krksys.com](http://www.krksys.com)) Rokit Powered Series comprises the RP-5, RP-6, RP-8 and RP-10S. The RP-5, 6 and 8 are active two-way designs, while the RP-10S is a powered subwoofer. Driver complements include 5, 6 and 8-inch glass-aramid composite woofers and 1-inch neodymium soft-dome ferrofluid tweeters. Power is supplied by 75, 100 and 140W bi-



**KRK V8**

amped systems. The RP-10S uses a 225W powered 10-inch high-excursion woofer. The V Series 2 monitors include the \$1,399 V12S powered sub and the V4 (\$499 each), V6 (\$699 each) and V8 (\$999 each)—all active two-way designs. Driver complements include 4/6/8-inch Kevlar woofers and 1-inch soft-dome tweeters. Power is supplied by 90/120/180W bi-amped systems. The V12S uses a 12-inch high-excursion Kevlar woofer mated to a 250W amplifier.

The high end just got higher with the KS Digital ([www.ksdigital.de](http://www.ksdigital.de)) ADM 0 studio monitors (\$49,000/pair). The powered three-way system borrows a page from KS' ADM 1 and ADM 2 studio monitors. The ADM 0 uses the KS Digital Firtec technology, boasting an uncolored response across the full frequency spectrum. Digital processing and a newly designed cylindrical waveguide offer linearity in phase response and amplitude. The 10-inch bass, 8-inch mid and 1-inch tweeter are powered by two 600W amps, and come



**KS Digital ADM 0**

with AD/DA converters, digital crossover and optional PC software to remotely adjust various parameters for room equalization.

The ADM 2 (\$9,800/pair) from KS is an active, two-way midfield monitor with a frequency range of 38 to 22k Hz ( $\pm 3$  dB) using an 8-inch woofer and a 1-inch HF driver. The ADM 2 supports analog and digital inputs. For digital feeds, the ADM 2 supports the AES3 format with an XLR-symmetric, active bypass connector. The ADM 2 supports

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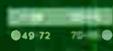
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sampling rates upward of 96 kHz. Analog connections also use XLR-symmetric, active bypass connectors. Power amplification for the system is rated at 200W and 100W.

The Linn (www.linn.co.uk) 328A is a



Linn 328A

four-way active reference monitor for near- and mid-field monitoring. The driver complement includes two 8-inch independent servo-controlled bass drivers integrated with the company's 3-K driver array: a grouping of the midrange, high-frequency and super-high-frequency drive unit. These include a 3-inch midrange dome, a 1-inch tweeter and a ½-inch super-tweeter. The 328A includes a 500W three-way active amplifier module and twin 500W bass amplifiers.

M-Audio's (www.m-audio.com) BX5a is an active two-way design using a 5-inch LF

driver with Kevlar cone and damped rubber surround mated to a 1-inch silk dome. Priced at \$399/pair, the BX5as are bi-amplified (40W LF; 30W HF), magnetically shielded and feature XLR balanced and ¼-inch balanced/unbalanced inputs and a volume control. Response is rated at 56 to 22k Hz.

Priced at \$999 each, M&K Professional's (www.mk-sound.com) MPS-1611P is a bi-amplified (110W LF; 50W HF), two-way design with a port on the enclosure's rear panel. A removable port plug configures the MPS-1611P for either stand-alone (ported) or as a sealed cabinet for satellite/subwoofer applications. For use without a subwoofer, remove the plug, throw a mode switch into "full-range" and the system delivers down to about 45 Hz ( $\pm 3$  dB). The driver complement includes a 6.25-inch polypropylene woofer and 1-inch soft-dome, ferrofluid-cooled tweeter. Upper-end response is rated at 22 kHz ( $\pm 2$  dB).

With its down-firing tweeter, the New Audio Spatial One (dist. by Sound Control Room, www.soundcontrolroom.com) sports a unique appearance. (See review on page 120.) This two-way design lists at \$1,200/pair, and features an inverted Kevlar cone tweeter and a 6.5-inch polypropylene rubber surround woofer. The monitor's 2-inch rear vent is flared on both ends to avoid adding wind coloration under heavy loads. The Spatial One's passive five-way binding post input can be removed and replaced with an active input terminal. The company has a specially fitted active amplification system with the crossover built into the amplifier. System response is 50 to 20k Hz.

NHT Pro's (www.nhtpro.com) M20 (\$1,000 each) is designed for multichannel environments and has a long-throw, 6.5-inch woofer and 1-inch aluminum-dome tweeter, both of which are shielded. Included with each M20 monitor is a single-rackspace, Class-A/B 250W control amplifier with front panel controls for boundary and distance proximity and input sensitivity.

Featuring DEQX Calibrated™ DSP speaker correction technology, NHT Pro's M60Xd (\$4,600/pair) has a magnesium-cone, 6.5-inch woofer in a unique cabinet in which the baffle is flat and wide across the tweeter to ensure smooth HF response, but it is considerably narrower around the woofer to eliminate reflections. The M60Xd is bi-amplified, and all crossover functions are managed by the included Xda DSP processor/amplifier. With two 8-inch magnesium-cone woofers, two 2-inch aluminum-dome midrange drivers and single 1-inch aluminum-dome tweeter, the M80Xd (\$5,500/pair) also fea-



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tures DSP speaker correction technology. Its inputs and outputs include line and balanced (XLR) inputs, four powered outputs to power the midrange and high-frequency drivers for up to two monitors, and line and balanced outputs that connect to the XdB. The XdB is a separate, external stereo 250W amplifier that drives two 8-inch woofers per channel.

Developed in partnership with Tannoy, the Pelonis ([www.pelonissound.com](http://www.pelonissound.com)) Signature Series includes the PSS28 MKII and PSS210 MKII near/mid-field systems, and the PSS212 MKII and PSS215 MKII main monitor systems. Priced from \$5,500 to \$40,000/pair, all four models are active three-way systems developed around a new driver technology first introduced in the company's PSS215AW MKII four-way active wide-band model. The systems use custom dual-concentric drivers combined with Linear Drive Motor woofer technology.

Unveiled a year ago at AES Berlin, PMC's ([www.pmccloudspeaker.com](http://www.pmccloudspeaker.com)) DB1-A and TB2-A monitors feature integral Flying Mole ([www.flyingmole.co.jp/en](http://www.flyingmole.co.jp/en)) digital bi-phase fusion reference amp modules weighing only 1.1 pounds and supplying 160W. The units incorporate 5.5-inch and 6.7-inch LF drivers, respectively, with the same 1.1-inch soft-dome tweeter used in PMC's larger mid-fields. PMC is also now offering a \$7,995 Mix Pack, an active 5.1 kit with five DB-1A monitors and a powered 150W SubTLE1 subwoofer. The 100W DB-1A has a 5.5-inch woofer, a ferrofluid-cooled aluminum tweeter and a response of 5 to 25k Hz (+0/-3 dB).

Questaed's ([www.questaed.com](http://www.questaed.com)) S6/S7/S8 Series reference monitors are all two-way active systems. Priced at \$695 each, the S6 has a 5-inch LF driver and a 1-inch soft-dome tweeter. The \$995 (each) S7's driver complement is a 6.5-inch woofer paired with a 1.25-inch soft-dome HF driver; priced at \$1,495, the top-end S8 uses an 8-inch LF driver and 1-inch soft-dome tweeter. The S7 and S8 incorporate a ported enclosure design. User-selectable EQ settings are a

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**Quested S6**



**Samson Rubicon 6a**

common characteristic of the line. The S6 is driven by a 65W LF amp, with 45W driving HF. The S7's amplifiers are rated at 120W and 7W, while the S8's are rated at 220W and 150W. Response ( $\pm 2$  dB) is given as 75 to 22k Hz (S6); 65 to 22k Hz (S7) and 50 to 20k Hz (S8).

Roland's ([www.rolandus.com](http://www.rolandus.com)) DS Series of bi-amplified monitors includes the DS-5, a 45W 5-inch two-way system (\$229 each); the DS-7, a 60W 6.5-inch two-way system (\$349 each); and the DS-8, a 120W, 8-inch two-way system (\$579 each). All models are shielded and provide XLR, coaxial and optical digital inputs in AES/EBU and S/PDIF formats that support 24-bit audio and sampling rates to 192 kHz. All feature an efficient heat sink power amplifier that's compatible with new



**Roland DS-8**

field using the company's new Evenstar™ Sigma-Delta digital amplifier technology. The driver complement includes an 8-inch woofer with an integral phase plug for the LF and the company's PRD500 5-inch ribbon driver for the HF. The ribbon tweeter has 120-degree horizontal and 30-degree vertical dispersion, allowing for a wide sweet spot. A user-selectable limiting circuit can protect the woofer from over-excursion. The LF amplifier has 180W of power; the HF amp provides 40W. Response is rated at 44 to 20k Hz ( $\pm 2$  dB). Retail is \$1,495 each.

Unveiled at Musikmesse 2005, Tannoy's ([www.tannoy.com](http://www.tannoy.com)) Precision (passive) and Precision D (active) monitors use the company's Dual-Concentric Constant Directivity drive unit, which comprises a cone LF/MF driver and a 1-inch titanium-dome tweeter positioned on the back of the woofer for true point source playback. Additionally, there is a 1-inch titanium-dome SuperTweeter™ that extends the monitor's bandwidth to 51 kHz. Both active and passive models are shielded, and are available with 6- and 8-inch woofers.

Tannoy's second-generation Reveal Series monitors are now available in active, passive and digital configurations. The active Reveal 5A (\$399 each) has 40W and 20W amps driving its 5-inch woofer and 1-inch soft-dome tweeter, for a 65 to 30k Hz response. The passive (Reveal 6, \$229 each; and Reveal 66, \$339 each) and digital (Reveal 6D; \$629 each, and Reveal 66D, \$799 each) models are available with single or dual 6-inch LF/MF drive units sporting the multi-fiber paper pulp cone and SuperTweeter for response to 51 kHz. The digital line also includes Reveal 8D (\$799), an 8-inch woofer version. The



**Tannoy Reveal 66**

Reveal 8D provides S/PDIF coaxial inputs and slave outputs, as well as XLR analog inputs. Optional Activ-Assist software can help Reveal 8D users set the speaker equalization to compensate for room acoustics and/or placement. The program measures the characteristics of the monitor compared to an anechoic free-space reference and recommends from more than 2,000 DIP switch combinations for the best possible response. The software, supplied with a pre-calibrated mic and the necessary cables, requires a typical Windows or Mac computer with a standard soundcard I/O facility.

Tapco's ([www.tapcogear.com](http://www.tapcogear.com)) active monitors include the S•5 and S•8 and the accompanying S•10 subwoofer. The \$499/pair S•5 and \$749/pair S•8 are two-way desktop designs and employ a waveguide-loaded 1-inch silk-dome tweeter. The S•5 has a 5.25-inch, polypropylene cone woofer; the S•8's is 8-inch. Power for both the LF and HF sections is 60W for both models. Frequency response ( $\pm 3$  dB) is rated at 64 to 20k Hz for the S•5; the S•8 is 40 to 20k Hz ( $\pm 3$  dB). Both include balanced TRS/XLR and unbal-



**Tapco S•5**

anced RCA inputs. The optional \$419 S•10 Active Studio subwoofer uses a steel-frame, dual voice-coil 10-inch woofer and onboard 120W amp that takes it down to 34 Hz.

The VL-S21 from Tascam ([www.tascam.com](http://www.tascam.com)) is a low-cost monitoring solution that pairs two thin satellite speakers with a powered subwoofer for home recording/edit suite/multimedia use. The powered left/right speakers use NXT technology single drivers that provide wide dispersion, uniform frequency response and reduced room interaction, offering full-range sound in a compact package. Retail is \$129.

Designed by John Oram, the Trident ([www.oram.co.uk](http://www.oram.co.uk)) LS102 is a mag-shielded near-field featuring twin 4-inch, white coned LF/MF drivers flanking a 1-inch dome tweeter. Power handling is 60W RMS, and the dual gold-plated speaker terminals allow for bi-wiring. Response is 55 to 22k Hz; sensitivity is 85 dB, 1W/1m. The

IEC60065 safety standards, and the power switch is conveniently built into the front panel.

Samson's ([www.samsontech.com](http://www.samsontech.com)) Rubicon active ribbon monitors feature 2-inch ribbon HF transducers as part of a two-way active design that also includes 4-position HF level controls. The Rubicon 6a (\$559/pair) has a 6.5-inch inverted-cone LF driver and is bi-amped with 75W for the LF and 25W HF. Priced at \$449/pair, the Rubicon 5a sports a 5-inch inverted-cone LF driver and is bi-amped with 50W LF and 25W HF. Both models have ¼-inch TRS and XLR inputs.

The PS8R from SLS Loudspeakers ([www.slsloudspeakers.com](http://www.slsloudspeakers.com)) is a bi-amplified near-



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**Oram LS102**

17x12x7-inch cabinets weigh 20 pounds each and list at \$1,506/pair.

Triple P Designs' ([www.triplepdesigns.com](http://www.triplepdesigns.com)) Pyramid is an unusual design because the cabinet is, indeed, a pyramid: The enclosure's dimensions are 7.12x7.87x6.5 inches



**Triple P Pyramid**

(HxWxD). The system's driver complement is listed as 2.92 inches for the HF with a 5.4-inch woofer. The Pyramid provides dual binding posts for the inputs. This passive monitor has a power rating of 5W to 30W, and retail is \$310/pair.

Truth Audio's ([www.truthaudio.com](http://www.truthaudio.com)) TA-1P (\$998/pair) comprises two 5-inch mineral-filled polycone woofers and a tuned chamber, 1-inch cloth-dome tweeter. Response is rated at 48 to 20k Hz. The power handling capability for this rear-ported passive monitor is rated at 160W continuous into 4 ohms. All rear panel connectors are gold plated.

The Westlake Audio ([www.westlakeaudio.com](http://www.westlakeaudio.com)) Lc265.1V (\$5,275/pair) is a passive three-way design with dual 6.5-inch woofers, a 5-inch midrange and coaxial 1-inch dome tweeter. The Lc265.1V employs dual ports and includes the company's Iso-Back dual-path, integrated passive crossover for single or bi-amp operation. Designed for stereo and multichannel monitoring (a horizontal center-channel version is available), the Lc265.1V is fully mag-shielded. Response is rated at 42 to 18k Hz ( $\pm 3$  dB). Inputs include two dual banana/five-way binding posts.

Wharfedale Professional's ([www.wharfedalepro.com](http://www.wharfedalepro.com)) Diamond ProActive monitors are available in two configurations: The 8.1A (\$299/pair) uses a 5-inch woofer and a 1-inch dome tweeter, and its sibling, the 8.2A (\$399/pair), with a 6.5-inch LF driver and 1-inch dome HF. Both feature bi-directional Kevlar weave woofers. The neodymium-magnet tweeters are ferrofluid-cooled. Both models employ a bi-amped power section with 60W dedicated to the LF and 40W for the HF. A TRS/XLR Combo connector and RCA inputs are provided, with a gain control and a bass cut switch to compensate for wall or corner placement.

Yorkville Sound ([www.yorkville.com](http://www.yorkville.com)) has added a more compact active studio monitor to its YSM line. The new YSM2P is a 46-watt, two-way bi-amped, loudspeaker delivering a 70 to 19k Hz bandwidth from its 5.25-inch laminate cone woofer and 1-inch soft-dome tweeter. The speakers have 1/4-inch and XLR inputs and are mag-shielded. ■

*Roger Maycock is an independent writer based in Los Angeles.*

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

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

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

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

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

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# SERIES EAST MEETS WEST

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PHOTO: GEORGE ROOS



# C L A S S O F

## ON THE COVER

### THE BARBERSHOP

Designed by Fran Manzella of Francis Manzella Design Ltd. and housed in a 100-year-old stone church on New Jersey's Lake Hopatcong, The Barbershop is the Tri-State area's newest 5.1 and 7.1 recording, editing, mixing and mastering facility. Cathedral ceilings, stained-glass windows, old-style herringbone wood panels, revealed veneer curly maple panels and hints of the building's original stone characterize the spacious live room, which is built, like the two control rooms, on a floating floor. "Being able to integrate elements of the church throughout its various incarnations into a 'new' design that juxtaposed much of the old with newer architectural and acoustic elements turned out to be very interesting and rewarding," says Manzella. "All in all, I'd have to say this is one of our most successful design projects to date."

Studio A offers a 72-channel SSL XL9072 K Series desk, custom Griffin studio monitors and Griffin G2A 5.1 surrounds, a Pro Tools|HD Mix system and ample new and vintage mics and outboard gear. The smaller Studio B features an additional HD rig, a Genelec 8050A surround system and an iso booth. Amenities include an on-site Italian restaurant, full-service marina and in-house production services courtesy of its owners, Mark Salamone and Scott Barber. "We wanted to create a world-class recording studio where artists can relax and enjoy the lake and the good vibe of the church," says Salamone. "We went to great lengths to create a beautiful environment for people to work and an even more beautiful-sounding room."

# 2005

## The Hottest Rooms to Open During the Past Year

### BOMB SHELTER STUDIOS

Launched in January 2005 by producer/former Stone Temple Pilots drummer Eric Kretz, who partnered with Professional Audio Design's Dave Malekpour on design, the L.A.-based Bomb Shelter's worldly feel comes from abundant ethnic fabrics and soft lighting in the spacious control room, as well as the 100-year-old tri-color brick walls, custom acoustical treatments incorporating African poplar, exposed wood beam ceilings, and perforated steel and insulated diffusers that adorn the 2,500-square-foot tracking room. Equipment includes an SSL 4048 G+ with Neve sidecar, Pro Tools|HD3, outboard gear from TC Electronic, Lexicon, Tube-Tech, dbx, Alan Smart, Empirical Labs and Drawmer, and a closet of Neumann, Royer, AKG, Shure, Sennheiser, Crown and Lawson mics. Monitoring is via KRK, Tannoy and Yamaha models. Thanks to a recent partnership with RETRO ROOM, the studio now incorporates a 10-channel Helios, Fairchild 670 and Studer Mark III with JRF 2-inch 8-track headstack. Bonus: A 2,000-square-foot lounge and half-court basketball provide ample space for stress-relieving activities.

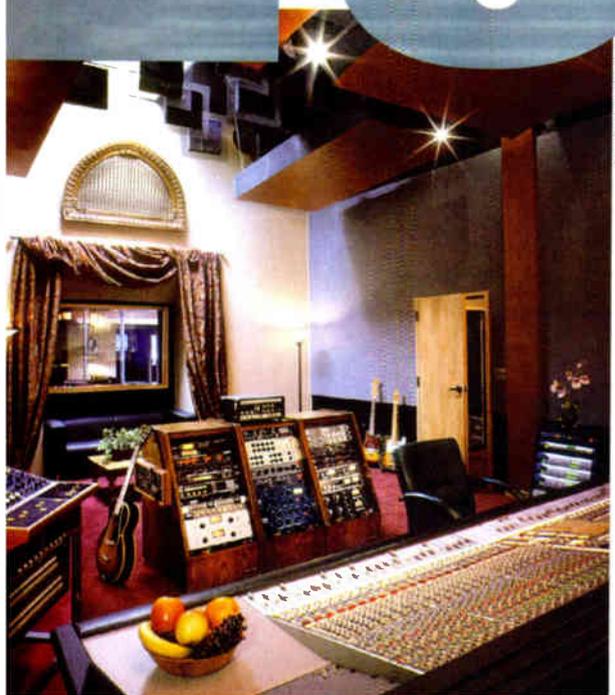


PHOTO: ED TRELMAN

## CHERRY BEACH SOUND

Cherry Beach Sound opened in January 2005 in the heart of Toronto's port area. The full-service music, audio post, commercial production, CD mastering and audio enhancement facility's newly designed (by Martin Pilchner of Pilchner Schoustal) Control Room A features an SSL 6056 E/G+, Genelec 1034B surround mains with 7073A subwoofers and Bryston 4Bs for the Yamaha NS-10M studio monitors. Recording/mixing options include Pro Tools|HD (with ProControl Edit Pack) and Studer A827 2-inch 24-track and A810 ¼-inch 2-track. Outboard gear includes pre's and EQs from Neve, Manley and API; Focusrite ISA 110 modules; processing from UREI, Neve and SSL; and the prized EMT 140 stereo plate reverb. A glass-walled corridor between the control room and studio optimizes lines of sight.

PHOTOS: MARTIN PILCHNER



## CIDER MOUNTAIN RECORDERS

Cider Mountain offers seven flexible recording spaces, including a 1,600-square-foot tracking room with 20-foot-high ceilings, two control rooms, an editing suite and guest accommodations, all situated on 240 acres just north of Coeur d'Alene, Idaho. The spacious live room offered designer Chris Pelonis "the palette required to create an extremely involved trapping and diffusion system rarely experienced," he says. Studio A features a 64-channel API Legacy Plus, along with a Pelonis Signature Series PSS215AW main monitor system and ADAM S3As near-fields. Clients can record to Studer A827 Gold Edition 24-track analog or Pro Tools|HD using the studio's 22 API 512s; Neve 1057 and 1073s; Manley, Millennia and Ampex tube pre's; and more. Studio B features a Trident TSM console with Pelonis Signature Series PSS115AW monitor system, a Studer 880 and a Pro Tools|HD3 rig.

PHOTOS: JARED MILGRIM



## EFFIGY STUDIOS

Engineer Thomas Johnson returned to his native Detroit to open Effigy Studios, a 7,862-square-foot space designed by Vantine/Guthrie Studio of Architecture in Northville, Mich. Four years in the making, Effigy opened in November 2004. The birchwood-dominated space features a main room with 17-foot ceilings, no parallel walls, multipurpose iso booth and adjoining vocal booth. The large control room, directly visible from all three rooms, contains a 48-input API Legacy Plus, Pro Tools|HD3 and a custom TAD monitoring system with ADAM SA3 near-fields. Outboard gear includes units from ADI, Drawmer, Daking, dbx, Empirical Labs and Manley, while the mic list offers AKG, Beyer, Earthworks, Electro-Voice, Neumann, RØDE, Royer, Sennheiser and Shure models. Classic gear is provided by local reseller Vintage King.

PHOTO: JUSTIN MACONOCHE



PHOTO: DICK RASPSGROT

## FUTURE POST

Opened in February 2005, Future Post in Los Angeles handles sound design and mixing for TV and radio trailers, promos and long-form shows in stereo and 5.1, game sound, DVD remastering and more. The studio's shell was originally built in 1990, but everything else—from floors to fabric walls—was designed by owner Paul Robie and design/integration consultant Chip Mullaney, with construction and wiring assistance from Alexander Lvov and WIRE. A Yamaha DM2000 with Argosy enclosure serves as "master control," powered by Pro Tools|HD3 and Logic workstations running on Apple G5s. Other equipment includes CEDAR DNS2000, Dolby 563/564 surround encoder/decoder, Sony A-500 Digital Betacam, Tascam DA-98s and Mackie Universal Control.

# 2005 CLASS OF

## HEADROOM DIGITAL AUDIO

Headroom's (New York City) three studios each have their own iso booths and the equipment to handle voice-overs, music recording/mixing and post services. Control rooms A and B both offer Yamaha DM2000 consoles, Genelec 8040 5.1 monitoring systems and a Furman multichannel personal monitoring system. Their Pro Tools|HD3 rigs and video playback systems (Virtual VTR) all run on dedicated G5s. Designer Fran Manzella combined "modern and Tuscan palazzo styles, including an etched concrete floor and Venetian plaster walls to create a distinctive, relaxed and uniquely client-friendly atmosphere."

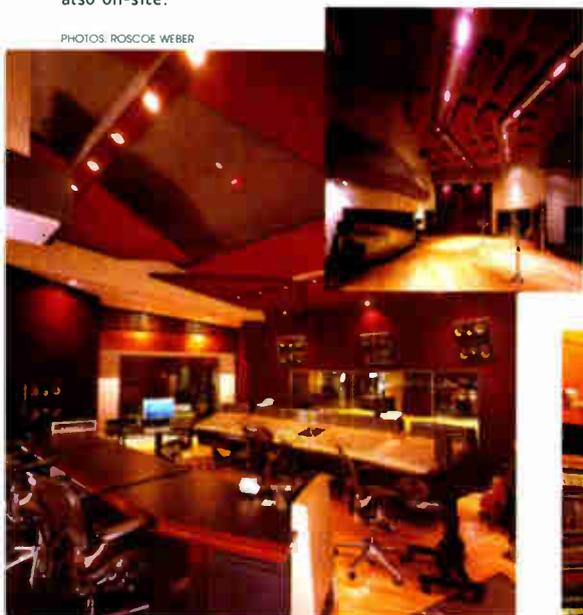
PHOTO: GEORGE WILDS



## ST. CLAIRE RECORDING

Owner John Parks created his dream studio when he launched St. Claire Recording, a one-room facility in Lexington, Ky., this month. Two years in the making, the 7,800-square-foot "retreat facility," designed by Pilchner Schoustal, boasts an ultra-spacious control room with an 80-input SSL 9000J console and Pro Tools|HD3 Accel, along with a RADAR system with Nyquist AD/DA, Princeton Digital Reverb 2016, Korg Tape Echo, Lexicon 960LS, Manley Massive Passive and more. The surround setup includes a Pilchner Schoustal-designed Max Monitor System and pairs of ADAM S3As and Auratones. The live room contains four iso booths and, like the control room, ample natural light and a view of the Kentucky countryside. Guest accommodations are also on-site.

PHOTOS: ROSCOE WEBER



## HIGH POINT MANOR

Designed by Carl Tatz of Carl Tatz Design, one-year-old High Point Manor in Brentwood, Tenn., features a dual CTD PhantomFocus monitor system, with Dynaudio M3 and BM6A monitors, 12S subwoofers and Bryston 7B SSTs; mains and near-fields share the same subwoofer system, which is achieved through a custom Event Horizon switcher, allowing the use of NHT X2 crossovers and Meyer CP10S EQs for each 20 to 20k Hz system. First reflections are attenuated with ASC half-rounds and Perue Acoustics wedge diffusers installed behind acoustically transparent fabric in the rear sidewalls. Pro Tools|HD3 with Argosy console, Tube-Tech compressors, Groove Tubes Vipe and Great River preamps, Alesis Masterlink and Aviom cue system round out the facility.



PHOTO: LOU JOHNSON

## KARIAN STUDIOS

Owned by music industry players Ian and Karen D'Sousa and designed by Nashville-based Christopher Huston, Karian Studios occupies part of a 10,000-square-foot Mediterranean estate in Gallatin, Tenn. The control room features a custom SSL 4072 E/G+ with Total Recall, Pro Tools|HD3 Accel and Otari RADAR II, as well as outboard gear from Universal Audio, Neve,

API and Focusrite. Genelec 1036s and Dynaudio M2s hold monitoring duties. The 1,000-square-foot live room features 20-foot ceilings, Brazilian walnut floors and four iso booths. Karian also offers a writing room for composers and arrangers and a mastering suite with Sonic Studio HD. Amenities include overnight accommodations, access to a courtyard with bistro area, tea with white linen and a guard dog.



PHOTO: KARIAN STUDIOS

## SILVERTONE RECORDING STUDIO

Silvertone, which opened in Groton, Mass., last September, is based around the 40-channel Sphere Eclipse C discrete console formerly used in producer Brian Ahern's famed Enactron Truck. Built by owner Neal Ward and designed by Michael Blackmer, the vibe-y facility uses rough-cut wood in both the tracking and control rooms, while the live room contains variable acoustic treatments through the use of five large rolling bookshelves that can be used to create isolated areas anywhere in the room. In addition to the Sphere, the control room contains outboard gear from Neve, Helios, Universal Audio, dbx, Avalon and John Hardy, Melcor modules, Sony DRE-777 and Lexicon 480 reverbs, Pro Tools|HD and iZ RADAR recording options, and a collection of both "standard and unusual" studio mics.



PHOTOS: STEPHEN BRIGGS



World Radio History

## STUDIO.METRONOME

Built on a 100-acre hilltop in southern New Hampshire just over a year ago and designed by John Storyk of Walters-Storyk Design Group, this tracking/mixing room has attracted such clients as The Hives, Phil Vassar, Interpol, Tesla and The Pixies, among others. The control room features an SSL 4048 G+ with TR/Ultimation, Pro Tools|HD with 48 analog I/O and such outboard gear as Neve 1073/1066s, Pultec EQs, Universal Audio and Teletronix compressors, a full API rack, an Echoplex II and a large vintage mic collection. Monitoring includes Boxer T5 mains, Blue Sky surrounds, Genelec 1032s and KRK 8Ts. The live room contains a Yamaha C7 grand piano; location and broadcast recording are provided by MetroRemote, the studio's 64-input Amek-equipped mobile recording and broadcast truck.

PHOTO: MIKE PERLA



PHOTOS: BILL MYERSON

## BROKEN PONY STUDIOS

Broken Pony is the one-year-old personal project studio belonging to Marietta, Ga.-based composer/author Paul Gilreath. John Storyk of Walters-Storyk Design Group designed the live room to include a series of adjustable treatments that can be opened and closed via hinged doors to change the "liveness" of the room. The control room includes a custom rear panel diffusor system and side-panel absorption panels. Equipment includes eight computers running Nuendo, with various soft synths, samplers and "nearly every major piano and symphonic library available," as well as Apogee Rosetta 800 and Big Ben, NPNG custom Class-A mic preamps, Mackie 1604 VLZ-PRO, Mackie Control Expander, custom Argosy console and racks, and five Mackie 824 monitors.

## UNIT EYE

The new studio home of producer Bruce Botnick, Unit Eye (Ojai, Calif.) features a Digidesign ICON, a surround sound system with five freestanding Nautilus speakers and subwoofer, along with cotton acoustical pads and porous polypropylene panels. According to studio bau:ton architect Peter Grueneisen, ideal room proportions, bass traps and curtains control the sound, while indirect and recessed lighting and a flush-mounted flat-panel monitor tie together the visual aspects.



PHOTO: PETER FIGEN

## THE CATHEDRAL

The recording lair of rap artist Snoop Dogg, this Hollywood-based studio features a Mackie Digital X Bus console, Pro Tools|HD, a Mackie Big Knob, two Avalon 737 SP mic pre/compressors and a Mackie Onyx pre. The studio combines traditional near-field monitoring and a "rule-breaking" application of high-powered active P.A. speakers as mid-field monitors, with a setup that includes four George Augspurger 1603Bs with TAD woofers, two Mackie 1801 subwoofers, two Mackie 1530 three-way mid-fields, two Mackie HR824s and two Yamaha NS-10s. The room was originally designed by Carl Yanchar with redesign completed in April 2005 by Snoop and studio manager Nate Oberman.



PHOTO: EDWARD COLVER

## STUDIO RECORDS

This private facility designed by Russ Berger of Russ Berger Design Group was incorporated into the construction of owner John Evans' new residence in Fort Worth, Texas. The 1,700-square-foot suite includes a control room stocked with a Pro Tools|HD3 Accel workstation, 24-fader ProControl with Edit Pack, and extensive outboard gear from API, Manley, Universal Audio, Avalon, Lexicon, Eventide, dbx, Focusrite and more. The studio area includes a piano booth and an additional iso booth. Notable design features include a custom stretch-fabric wall system for acoustic absorption, cherry wood floors and cabinetry, sound-rated doors and a Lutron GRAFIK Eye control system for lighting and shades. Large sound-rated windows that reach to the floor open up the studio to the control room and piano booth. Double-wall construction isolates the studio from the house and street traffic.



PHOTO: JAMES WILSON

# 2005

CLASS OF

## Top Mastering Facilities of 2005



PHOTO: ROBERT WELTSCH DESIGN

### TRUTONE MASTERING STUDIO B

Ensnconed in the original home of the Record Plant, Trutone Mastering Studios in New York City has attracted clients such as Def Jam, Island and Rocafella for its CD and DVD mastering services, as well as its commitment to vinyl. The two-studio complex was redesigned by John Storyk of Walters-Storyk Design Group and reopened in October 2004. Both rooms feature a Neumann VMS-70 lathe retrofitted with a Zuma disc computer and Technics quartz-controlled turntable motor. The Neumann SP-77 and SP-78 consoles have been extensively modified. Outboard gear includes Weiss BW-102 digital EQ and compressors, Sontec solid-state EQ, Prism and NTP compressors, Pultec vacuum tube equalizers and the highly touted Fairchild 670 compressor. CD masters are created with the Sonic Solutions high-density premastering system. Monitor speakers are KEF Reference 207s; near-fields are Yamaha NS-10s and Tannoy 6.5s, with power supplied by Bryston, McIntosh, Ramsa and Hafler amps.

PHOTO: LOU JOHNSON



PHOTO: EDWARD COLVER

### AUDIO MECHANICS

Audio Mechanics opened in January 2005 and quickly became one of Southern California's most in-demand mastering and remastering facilities. Designed for 6.1 from the get-go by Chris Pelonis, the studio's "Detailing" shop features an ITU placement of five matched dual 15-inch Pelonis Signature Series 215AW mains. Audio Mechanics reportedly boasts "the first ever hybrid acoustical solution to use Pelonis' patented 'Edge' low-frequency technology, combined with RPG's patented B.A.D.D. diffusion technology." Sonic HD, Pro Tools|HD, Lexicon 960L, TC M6000 and Genex HD converters fill the control room. A twin mastering room, stereo master/control room, live room with vocal booth for recording and ADR, and a killer jukebox round out the facility.

### JOAO CARVALHO MASTERING CORP.

The ultra-roomy Joao Carvalho Mastering in Toronto has the feel of an old English study or library with its warm colors and rich wood. Martin Pilchner of Pilchner Schoustal designed the suite—which opened on Valentine's Day 2005—to be "one of North America's most acoustically accurate rooms," with sonic excellence derived from Wilson Maxx Monitors and 2-channel Bryston 14B SST amplifiers, an Airfield Audio mastering console, Pro Tools|HD and peripherals from Weiss, Manley, Waves, Tube-Tech and GML, among others. The comfortable studio borders on decadent, with a fully stocked kitchen and two lounges that seem to ooze world class in both style and sonic quality.



PHOTO: RICK SCHOUSTAL

### YES MASTER

Owned by Nashville mastering engineer Jim Demain, Yes Master's new suite was designed from the ground up by Carl Tatz of Carl Tatz Design in April 2004. Critical dimension calculations were observed, as well as a proprietary axial mode attenuation protocol. The room features a Carl Tatz Design PhantomFocus Mid-Field System that boasts a 20 to 20k Hz frequency response. Other boxes include Lipinski 707 monitors, Bryston 4B SST amps and M&K 5410 subs. Additional equipment includes Goldpoint SA2X volume control EQ, Millennia Media NSEQ-2 with Telefunken tubes, Weiss EQ1-MK2 and DS-1, Waves Linear Phase EQ and more. Master control includes a Custom PC Wavelab 4 Samplitude 8, BIAS Peak converters, Alesis Masterlink and Ampex ATR-102.

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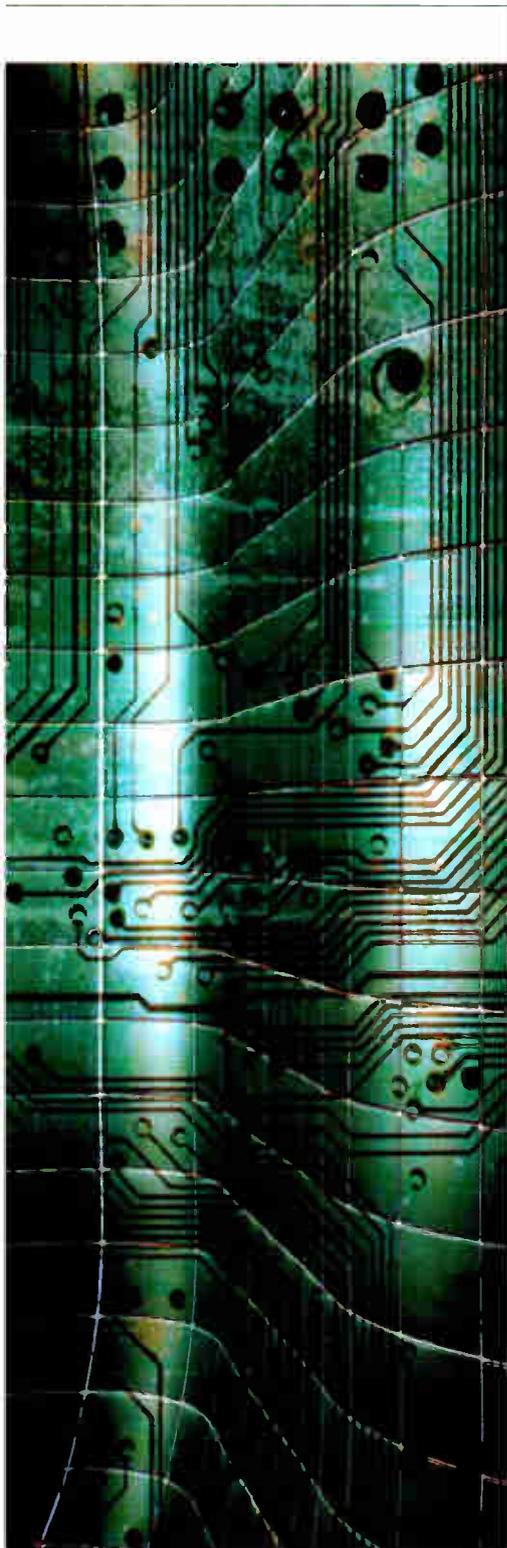
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### DESIGNERS PAVING THE DATA PATH

These days, studio designers are integrating networks at the project's concept stage. "Networks allow building infrastructure to be designed and installed before final speaker and other system components have been determined," says acoustician John Storyk of the Walters-Storyk Group. "Larger projects are often built over a three- to four-year period, with infrastructure needed very early in design. Networking concept assists greatly in this process."

Working out networks early in the planning stages is especially crucial in larger venues and projects in which large distances are involved. "For larger facilities, networked audio is vigorously discussed in most planning stages," Storyk says. "Networks, and specifically certain digital console and speaker configurations, require different wiring diagrams, thus different cable-management schemes." More than ever, comprehensive and flexible conduit routing is needed, but when choosing to install modern network systems, smaller sizes of conduit can be used, which can save quite a bit of money. Storyk also insists that because networking technology is advancing by leaps and bounds at a rapid pace, incorporating plentiful data pathways helps tremendously in major multi-year projects.

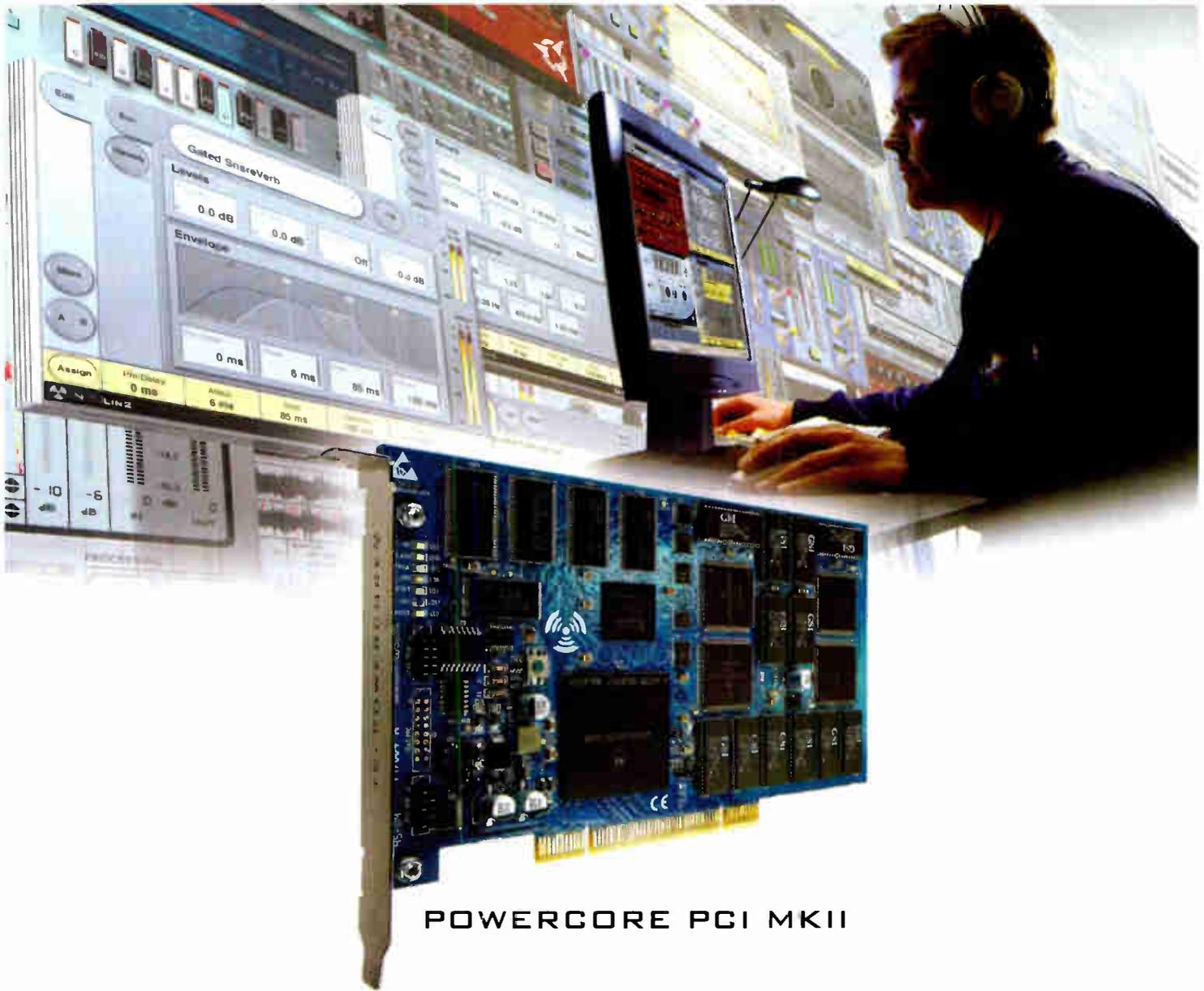
Martin Pilchner of the Pilchner Schoustal International acoustic design team says that the decision to build a studio with an installed audio network gives him a new design stage on which to begin. This new stage is present in nearly each of the firm's designs. "As the core part of the technical infrastructure, establishing the network system is the first part of the global backbone of a facility from which all other systems stem," he offers. "Practically all multi-room facilities are integrating networked audio systems of some type. This is especially the case in post-production facilities where each part of the job may be happening in a different part of the building."

Incorporating studio networks not only makes things easier for audio engineers, says Pilchner, but it has also eased his own job. "In reality, planning cable-management systems is becoming easier. Much more information is being moved in many more similar ways. The requirements for trunking systems are becoming smaller and easier to handle. For engineers, the ability to instantly access data in any part of a facility dramatically increases productivity and, in some cases, promotes creativity by [letting them easily] experiment and try things in other rooms."

### D.I.Y. NETWORKING

Not everyone has the luxury to hire a world-class designer, or to even build a room from scratch. There are plenty of options for those looking to build networks in existing spaces, whether choosing all-in-one solutions or off-the-shelf

BY STROTHER BULLINS



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## Get Connected!

building blocks. Anthony Vanger—producer, composer, engineer and owner of New York City's Antmusic ([www.antmusicny.com](http://www.antmusicny.com))—has a fully connected music and sound design facility featuring a seven-DAW, PC/Mac hybrid system. Like many other studio owner operators, Vanger tackled the job of networking his facility. Sure, his network may not be the fastest or most complex system out there, but according to Vanger, it's well-suited for his needs. "The most important thing you need to remember when networking a studio is to decide what you need," he says. "Figure out how you want to run your system and build one that can accomplish that. You don't have to spend a lot of money. You just need to consult with someone who understands computers."

Antmusic is networked via "traditional



Martin Pilchner builds networks into room designs.

Ethernet connections" and standard computer industry networking equipment, insists Vanger. Two identically equipped workstation-based rooms featuring Pro Tools|24 MIXPlus systems and a Focusrite Control|24 mix surface are connected to each other and other workstations via an SMC router. "As a result, you can edit in either room and go back and forth between the two," Vanger says. Each workstation has access to a central server with a large hard drive, and all data is backed up to an auxiliary Sony DDS drive.

Because much of Vanger's clients listen to his work by accessing Antmusic's Website, a server designated for such purposes was a must. "Just use one computer for all your posting and downloading," he explains. "You don't want your music computer tied up with posting and downloading—closing and re-opening Logic or Pro Tools takes forever!"

What was the hardest part of setting up Antmusic's network? "Running the cables," Vanger says. As a matter of fact, he says that when he soon moves to new digs on New York City's 26th Street, he may even configure a wireless network.

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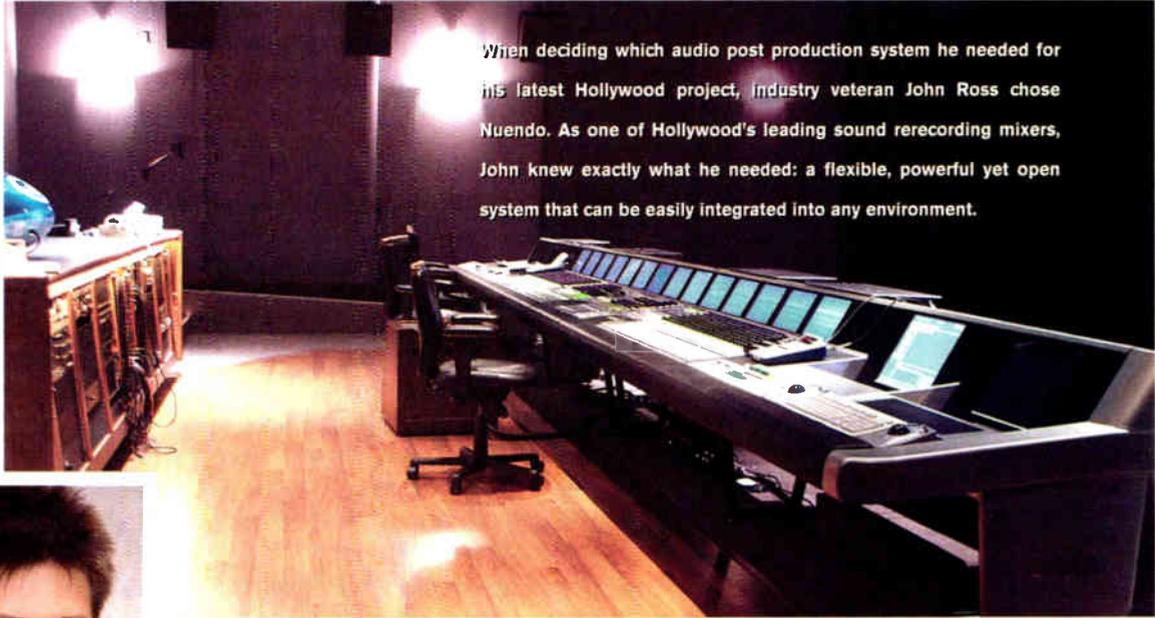
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# Post pro's, no cons.

Part One – John Ross



When deciding which audio post production system he needed for his latest Hollywood project, industry veteran John Ross chose Nuendo. As one of Hollywood's leading sound rerecording mixers, John knew exactly what he needed: a flexible, powerful yet open system that can be easily integrated into any environment.



“ What excites me about this product is you've now come out of that little world of DSP cards that were setting the pace of development. This system is both powerful and flexible enough to accommodate anything that would come our way. ”

Not only did editing with Nuendo turn out to be a joy, John was also impressed by the next-generation Nuendo networking features.

"The editing in general is far superior in Nuendo. And the networking for editing is another layer that hasn't been achieved by any other system I've seen." John also treasured his Nuendo system's ability to blend in to almost any existing post facility with its huge range of supported interchange formats.

With major Hollywood movie credits under his belt such as *Austin Powers: The Spy Who Shagged Me*, *Blade II*, *American History X* and *Lost Highway*, John was wrapped with his system's performance throughout his work on *De-Lovely: The Life Of Cole Porter*. So much so that he used Nuendo as the sole DAW on this major motion picture, which he mixed at leading post facility Todd AO West, California. In fact, John has adopted Nuendo as his number one preferred system for all his future post projects.

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### THE POWER OF PREFAB SYSTEMS

For those needing faster and more advanced networking capabilities than what a basic D.I.Y. Ethernet system provides, a few innovative manufacturers have developed a variety of notable technological advancements in the realm of audio data networking and storage. It is these quantum leaps forward that has provided new network users with the most important benefit, which—according to Pilchner—is “definitely convenience.”

Many manufacturers focus on solutions for studios to become flexible, connected workspaces. For example, Avid's ([www.avid.com](http://www.avid.com)) Unity MediaNetwork enables



Antmusic's Anthony Vanger built his own network.

sharing of high-bandwidth digital media files among more than 60 network clients simultaneously. The Avid Unity LANShare EXA is a “little brother” solution for small- to mid-size facilities. Glyph ([www.glyphtech.com](http://www.glyphtech.com)) offers high-quality rack-mount data storage and backup hardware. Lines include the flagship GT Series of A/V storage solutions, and Classic series of hot-swappable FireWire and SCSI drives. Rorke Data's ([www.rorke.com](http://www.rorke.com)) A/V pursuits include ImageSAN, a file-level SAN management system for Mac and PC; StreamMine, an A/V networking server system for digital broadcast; and Galaxy HDX, a lower-cost A/V data storage system.

According to Studio Network Solutions ([www.studionetworksolutions.com](http://www.studionetworksolutions.com)) president Gary Holladay, having a fast, secure and robust audio network/data storage system no longer requires deep pockets. “We realized that not every studio has the budget for a full-blown Fibre Channel system,” he says. “Most of the audio industry is using FireWire, unless it's a top-line studio that needs full track-out and they mix in every room. So we built a solution that was specific for DV, offline video, and Pro Tools—the globalSAN iSCSI SAN. GlobalSAN is the first solution to offer

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RAID 5 protection and full track count in Pro Tools over Gigabit Ethernet." SNS designed the X-4 as a low-cost Pro Tools drive solution that has the same features of their SAN product at a price point similar to a FireWire hot-swap chassis.

Small Tree Communications (www.small-tree.com)—a designer of networking products specifically for Mac OS X—is also destined to build on the burgeoning networking momentum. Led by president Corky Seeber, Small Tree focuses on ways to enhance the Apple G5 platform via dedicated networking products such as 10-gigabit Ethernet cards.

"We have been pushing the networking performance envelope with support for gigabits and jumbo frames on Ethernet, which improves networking bandwidth and latency performance while reducing the CPU overhead usage for the system of a pro audio engineer," explains Seeber. "As a result, users are more effective and, hopefully, more creative in the studio as they work."

### THE FUTURE: GOING GLOBAL

Holladay says that the future of networking lies in collaborating across the world. And much to the joy of independent audio professionals worldwide, working in this manner is possible for a variety of studio types and budgets. Moving large amounts of data at lightning-fast speeds isn't that far away. "Many of the major phone companies have miles and miles of untapped fiber-optic cable," he offers. "That technology is going to be a huge content delivery mechanism—and could be part of the new Internet2 backbone. Los Angeles is getting 5MB pipe, and in two years, that will easily be a 10MB pipe. When that happens, actual online production will be possible."

Seeber echoes the forecasts of Holladay and insists it is even more reason for Small Tree to help audio professionals harness the networking potential of their existing rigs. "We try to educate the audio industry," offers Seeber. "Many are being impacted by a lack of networking performance and may not even realize it. It's kind of like having a great engine in a car but not having it tuned properly to take advantage of all the horsepower—that's what we've been finding over and over again. Getting clients to move to gigabit Ethernet, multiple ports and running in jumbo frames—particularly those three things—doubles to quadruples output over everyone doing things the older conventional way." ■

*Strother Bullins is a North Carolina-based freelance writer.*



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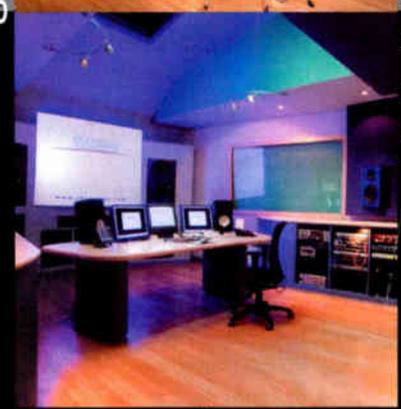
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# The Dust Brothers

## Talking Tech With the Godfathers of Sampling

The Dust Brothers, aka Mike Simpson and John King, worked on an avalanche of records during the late '80s, '90 and '00s, trying their hands at a great number of studio activities: sampling, composing, mixing, remixing, recording and producing. The results were varied, with some of their projects biting, so to speak, the dust and many others being only moderately successful. But on a remarkably large number of occasions, the Brothers managed to add a touch of fairy dust.

Some of those best-known albums are Tone-Loc's *Loc-ed After Dark* (1989), Young MC's *Stone Cold Rhymin'* (1989), Technotronic's *Trip on This* (1990), the Rolling Stones' *Bridges to Babylon* (1997), Hanson's *Middle of Nowhere* (1997), Santana's *Supernatural* (1999), Linkin Park's *Hybrid Theory* (2000) and Tenacious D's eponymous album (2001). As a staff producer for Dreamworks, Simpson produced The Eels' *Beautiful Freaks* (1996), while King gained distinction last year as the producer of Medeski, Martin & Wood's *End of the World Party (Just in Case)*.

Not a track record to be sniffed at by any standards, but the duo's reputation has become the stuff of legends because a couple of their projects did a rare thing: changed the course of music. The first was the Beastie Boys' *Paul's Boutique* (1989). Simpson and King, at the time unknown college whiz kids eyeing careers as lawyers and computer programmers, had become rather adept at their hobby: using the era's state-of-the-art sampling equipment to create musical collages of their favorite recordings. The Beastie Boys liked these concoctions so much that they asked to rap over them. The result, *Paul's Boutique*, was awash with innovation. It reputedly featured the first recorded instance of intentionally added vinyl crackling noises and turned the Dust Brothers into the Godfathers of Sampling.

The other epoch-defining masterpiece the duo co-created was Beck's *Odelay* (1996). As co-writers and co-producers, they guided Beck through myriad musical styles and samples, all delivered with a deadpan attitude. *Odelay* was the perfect marriage between the Dust Brothers' left-field sampling, engineering and production skills, and Beck's playing and songwriting inclinations. Simpson and King later contributed to Beck's *Midnite Vultures* (1999), and their relationship with the artist continues with Beck's latest album, *Guero*, which has garnered mostly strong reviews and sales since its release.

In the many years since their 1989 breakthrough, Simp-



John King (l) and Mike Simpson collect keyboards and beats as The Dust Brothers.

son and King have remained relatively publicity-shy and a certain mystique has begun to surround them. When the duo recently spent more than two hours spilling the beans, it came as a welcome surprise.

*Your name reputedly is a reference to PCP or the drug Angel Dust. Is this correct?*

Simpson: Not quite. When our name was to appear on a record sleeve for the first time [in 1989 on a single by rapper Tone-Loc for Delicious Vinyl], we reckoned that since King and Simpson are pretty common names, we'd better come up with a cool name. We were bringing back music that no one was listening to anymore, so we wanted the name to be an anachronistic reference to things of the past. While we were working for Delicious Vinyl, many people had been describing our music as "dusted," and that's what we took the name from. The state of hip hop was pretty minimal at the time, and we were doing these very textural, tripped out, almost hallucinogenic remixes. Angel Dust was just an additional whacked-out reference that also fit with what we were doing.

*Can you elaborate on the exact nature of your innovations on Paul's Boutique?*

Simpson: Up until that point in hip hop, people had been using samples very sparsely and minimally. If anything, they would use one sample in a song and take a drum loop and that would be the foundation. But what we were doing was making entire songs out of samples taken from different sources. On *Paul's Boutique*, everything was a collage. There was one track the Beastie Boys played

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Larry Seyer

Grammy-winning engineer Larry Seyer and drummer Pat Mastelotto (*King Crimson, BOMO, XTC,*

*Mr. Mister*) collected hundreds of vintage and current drums for this library.

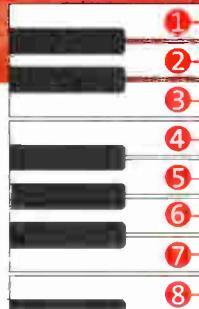
Using up to 6 mics per drum, they recorded 8,330 stereo 24-bit samples and then configured them as 115 drum kits using 13 new GigaPulse™ rooms created specifically for this library. Each of the 115 kits comes in 12 versions for a total of 1,380 drum kits!

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- ▶ Exhaustive illustrated manual
- ▶ Expandable with future drum kits and rooms



Hear samples from *Larry Seyer Acoustic Drums* at: <http://www.globalfulfillment.net/gfsnet/giga/10Expand.aspx?ProductCode=LSACDRUMS> There you can also sample Larry's video tutorial. For more general GigaStudio information, visit [www.tascamgiga.com](http://www.tascamgiga.com) ©2005 TASCAM, a division of TEAC America. All Rights Reserved. All specifications are subject to change without notice. GigaStudio and GigaPulse are trademarks of TASCAM/TEAC.

**GIGASTUDIO™3.0**

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some instruments on, but apart from that, everything was made of samples. But we never had a grand vision of trying to make groundbreaking music. We just enjoyed making music in a way that was an extension of our DJ'ing: combining two to three songs, but with greater accuracy than you could do with turntables.

*In 1989, it was still relatively straightforward to clear samples, but anti-sampling legislation and attitudes tightened soon afterward. How did you respond to that?*

Simpson: It was tough. People asked us why our stuff from the late 1980s sounded so good, and we said that it simply was because the original recordings that we sampled sounded so good. After *Paul's Boutique*, we signed a publishing deal that gave us some money to live [on], and we took the opportunity to buy a house and build a home studio, which we called PCP Labs and existed from 1991 to 2001. We spent several years there learning how to record and engineer. *Paul's Boutique* and *Odelay* were sort of the crowning achievements, but there were a lot of less great records in between.

*Odelay was the ideal synthesis between your sampling activities and the traditional 'record what people play' approach to making records.*

Simpson: During those years, when we learned how to engineer and produce, we sometimes would record musicians the way you would traditionally record a live band and then add samples. And not very successfully, because for some of the more traditional musicians we worked with, the idea of sampling was sort of foreign and they wanted to play things right. But we don't necessarily want you to play things right; we want you to play things cool. You play over a groove until you have a good bar, and then we take that bar and loop it. I always say that our best music comes from mistakes. You're trying to do one thing and then someone makes a mistake and that mistake ends up being the hook of the song, the coolest part of the song.

Beck really understood the benefits of sampling from the beginning, and he understood all along what our goal was. He's totally uninhibited and not necessarily trying to play it right. He's just trying to play it with attitude and flavor. He really understands the medium and what we do, and he hand-delivers us these great out-of-control performances that leave us with tracks that we can draw all these great loops from.

*Guero is Beck's eighth studio album. How does it compare to its predecessors?*

Simpson: Beck wanted to do more of a con-

temporary R&B record with *Guero*. To me, it picks up where *Odelay* left off. There's a little bit of everything: rock, hip hop, blues-inspired, 1980s dance-inspired and so on. It's a melting pot of all the types of songs Beck loves. Sometimes, there will be a few genres within one song.

*Was your way of working on the new album similar to Odelay?*

Simpson: We had worked with Beck on some songs for *Midnite Vultures* and we finished off only two in time to make the record. There were six other songs that were pretty well developed, sometimes only needing Beck to finish his vocals and some sprucing up here and there. Beck loved those songs and wanted to revisit them. So we pulled them up and took some of them apart and re-constructed them. We began this the way we did with *Odelay*: pulling up loops or samples, pulling out records, saying, "Oh yeah, I want to do a song that sounds like that." Whereas *Paul's Boutique* was made from samples, a lot of *Odelay* and the new record is more based on sound than on the samples.

*Now that it's harder to get permission for samples, what do you create your loops and rhythms from?*

Simpson: Many of our samples come from years of tracking. Everything we ever tried

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or worked on, apart from the Stones' material, which we were forced to turn over, ended up on hard disk. When making backups, we would pull out all the beats and other samples and put those on a separate drive. At one point, we had one of our employees compile all the samples from throughout our history, and we now have one sample library called Dust Beats.

*Guero was recorded at your commercial facility, The Boat, in Silverlake (Los Angeles), which sports a 1969 56-input 8028 Neve desk and a Pro Tools|HD3 system. Odelay was recorded at PCP Labs, with a 24-channel Soundcraft Spirit desk. Did the equipment make a difference in the way you worked?*

King: Yes. The creative process in making the new album was very similar to the making of *Odelay*. It was about Mike, Beck and myself in a room, having fun, coming up with ideas, then embellishing and finishing them. But the major difference is that for *Odelay*, we used Studio Vision software and Digidesign hardware with a 2-channel interface, so we could only record or play back one or two tracks of live audio at the same time. I had to take everything that we did and convert it into samples that could then be played back with the SampleCell card and make MIDI notes that corresponded with wherever I wanted the samples to happen. But for the new album, we had many inputs and outputs and as many tracks as we wanted. We don't use a sampler anymore because there are so many tracks. And so we got to layer more vocals and instruments, using multiple mics on instruments, which we couldn't do before.

There's more live playing on *Guero* and it's thicker with sound, but the spirit is similar. One thing Beck remarked on was that we did everything so fast this time. He remembered with *Odelay* having a lot of time to sit around and write lyrics or melodies while I was converting playing into samples and thinking about how to make it all work. By the time I was ready for him, it seemed like he had a finished song ready to go and we'd do a first take. But this time, he had to sit and listen more to what we were doing because we would accomplish everything so quickly.

*Was there other equipment that played a pivotal role in the making of Guero?*

King: We began songs written from scratch in Ableton Live, running with Pro Tools. I love Ableton. It's a quick way for me to get the ball rolling and quickly make ideas happen that Beck likes and then plays over. I get that going and then I set up microphones, like the SM57 combined with Neumann 47 or 47 FET for electric guitars—I tend to use 47s on almost everything—sometimes a Royer 122 ribbon mic using an LA-3A compressor and



The Brothers' studio, *The Boat*, combines old and new technologies—great creative grounds for artists.

a 47 with a Royer for acoustic guitars.

I record all that stuff in Pro Tools and pick out my favorite things and cut and paste and create verses and choruses. Then I see what Beck likes and start some arrangements. We continue to go back and forth with each other until I feel the song is there, at which point, I hand things over to the studio's Pro Tools assistant, Danny Kalb, who would continue to work with Beck on overdubs.

Because of the way I produce and create with samples and loops, Ableton is what I dreamed of back in the mid-1980s, when I was using primitive software with numbers flashing across the screen. I had to program it all and it was just so complicated. I knew that the ability would be there to do what Ableton does, which is that you can work with loops and time stretching in real time. If I have a beat going or even maybe just a tempo running, I can click on Files in my library and then on Samples, and audition beats or music or guitars or basses or whatever, and they will instantly play back to whatever I'm playing. In the past, I had to pull the sample up, choose which one might work, trim it, tune it, sync it and after a long process, I could decide whether it really was cool or not.

*There are a lot of really weird noises on the track "Emergency Exit."*

King: Those are strange digital artifacts and stretching noises in Ableton. I think it has some loops that went at half-speed. The average person would say, "That sounds horrible, they need to improve their stretching algorithms," but Beck was like, "Wow, that sounds amazing!" A lot of the exploratory nature of the work we do with Beck comes from his open-mindedness and eagerness to do new things. The same happened with several effect-y plug-ins, like SoundToys and

some of the GRM Tools stuff, which I used for creating crazy, freaky effects.

*In addition to The Boat, you both have pretty elaborate home studio, where you can create finished products.*

Simpson: My home studio setup contains a full Pro Tools|HD3 rig with a couple of Neve mic pre's and LA-2A compressors. Basically, all the stuff we have at The Boat minus the Neve desk. I have probably one-third of what The Boat has in terms of outboard gear.

King: I have converted one of my two houses into a studio complex where I have two studios. We moved here six months ago. I've always had a studio in my house, and in the last house I lived in, we converted this huge beautiful living room into a studio [called The Medina]. I have Pro Tools|HD3 with ProControl so I can mix virtually. I also have various Pultecs, a couple of LA-2A compressors, a couple of 1176s, LA-4A, RCA BA6A, Neve 1073, 1076, Neve stereo compressor, Neve mastering EQ, Manley Massive Passive, Manley DI, Manley mic pre's, Telefunken V72, V76, Mastering Labs mic pre's, Distressor, the SSL compressor and all the great microphones.

And we use tons of synthesizers. You name it, we have it. They are all hardware synths. I don't like using soft synths; I like to have knobs. I don't really like presets; I like to be able to tweak things. We have every keyboard ever made. Many of them are in The Boat, but we also have them in storage. I have closets here at home that are stacked floor to ceiling with all kinds of crazy keyboards. We have all kinds of Moogs, and I'm a big fan of the whole Korg line of keyboards, so I have Korg PolySix and Mono/Poly.

*So what about The Boat? It was originally purpose-built in 1941 as a broadcast studio.*

*You bought it in 1997, made several changes and then stacked it with a striking combination of state-of-the-art digital and vintage and value analog equipment.*

Simpson: Combining old and new has been our goal as musicians and producers and now as studio owners. We've made our name staying abreast of the latest technology, but at the same time, we've used that technology to sample all those brilliantly recorded recordings from the 1970s. As it got more and more painful to use samples, we realized that we were better off creating those sounds ourselves, and the way to do that is to get all the equipment it was originally created on.

King: I love collecting gear, and after I collected all the gear I could handle, I kept finding more and that's how I started acquiring what we have at The Boat. The old gear has the aspect of a vintage car. It's beautiful, it's historic, there's a definite nostalgia to it.

*Surely there's more than nostalgia involved in running a commercial studio. Do you still feel that there's a place for analog now that we have HD digital?*

Simpson: The Pro Tools|HD system sounds a lot better than the old system, but there's still a huge gap between analog and digital. HD digital still lacks a certain emotion. The late 1960s and early 1970s probably saw the pinnacle in sound reproduction. The imaging and dynamics are just so much better. I'm sort of a bass junkie. I like it when you can really feel the low end, and those late-'60s and early '70s records were the last time you really felt that, at least in the rock and soul stuff. Now everything is so thin and brittle, it makes me cringe when I hear snare and kick drums.

The centerpiece of the studio is the wonderful Neve console. It's such a nice-sounding board. Being able to record and pump channels back through the console really makes a huge difference. But a year after we had The Boat up and running, we found that neither us of was using The Boat that much. Instead, we spent most of our time at our home studios so we could be closer to our families. So we decided that it was a shame to just have The Boat sitting there and began interviewing studio managers. And Adam [Moseley] really brought The Boat to life. He had great ideas and started pulling clients in.

*After The Boat was opened as a commercial studio in January 2003, you've seen artists like Madonna, Avril Lavigne, Marilyn Manson, Lenny Kravitz, Don Was and many others there. What have you done there yourselves?*

King: The only thing we've done at The Boat is record and mix Beck's new album. The mixes we did there sounded fantastic

everywhere else. I really trust the room and the monitoring, especially the UREI 813C main monitors, which are great. We didn't really use much outboard during the mix because it was already sounding so great. We used the SSL [Logic FX384] compressor pretty much on every mix. If nothing else, it's a security blanket and lets you adjust the levels nicely as the mix is going back into Pro Tools.

*Having seen your 20-year-old dreams about what sampling gear should be doing finally come true, what dreams do you now have for the future of technology?*

Simpson: I'm pretty satisfied. The next step

would be me not having to enter commands with a keyboard and mouse anymore and computers being able to read my mind.

King: I'm still a student of recording and producing. I would love to do a Dust Brothers album. We've been working on a Dust Brothers album since 1987, but songs continually are given to artists we work with. And now we're both so busy with things we're working on, and we both have families that it's hard to get around to doing your own thing.



*Paul Tingen is a Dutch guitarist and writer who lives in Scotland.*

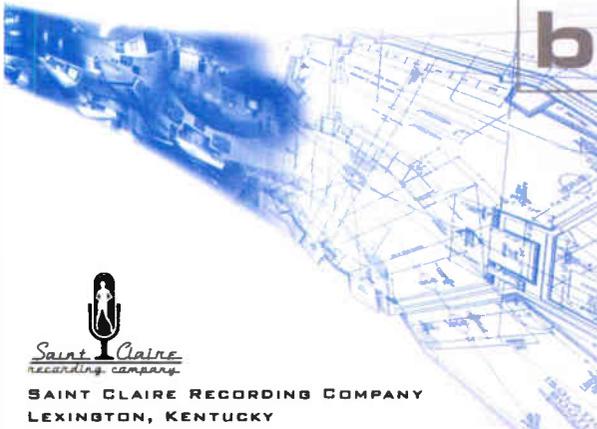


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# From Bedroom to Control Room

## David Gamson's Mechanism Studios Gets a Tune-Up

Producer/songwriters David Gamson (Miles Davis, Meshell Ndegeocello, Chaka Khan) and Oliver Leiber (The Corrs, Aretha Franklin, Paula Abdul) have collaborated on many projects, from scoring cues for *Mission Impossible II* to producing records for Ricky Martin. Their process is to track and overdub at Leiber's Hollywood Hills studio and complete editing and programming at Gamson's Mechanism Studios (L.A.).

However, Gamson moved to a home in Long Beach, Calif., and was midway through massive renovations. He decided to move Mechanism to a nearby commercial property, but it wouldn't be ready for about nine months. Needing an interim studio space, Gamson assembled his absolute necessities for recording (a Nuendo rig, preamps, converters, Genelec monitors, etc.) into a spare 11x11-foot bedroom. It was far from ideal, but he could finish editing and mixing in this space. "I gave my temporary setup a 'test drive' during some songwriting sessions and it was horrible," laments Gamson. "With all of the reflections, it was hard to hear imaging at the mix position, and the bass wandered around the room."

In small rooms, most acoustic problems involve interaction of strong sound reflections between surfaces, creating the cancellation of sounds at certain frequencies and hotspots at other frequencies. Gamson e-mailed pictures of the room and a floor plan to Auralex Acoustics' regional manager Rusty Sulzmann, who returned an architectural drawing specifying the type and placement of the company's diffusers, absorbers and corner treatment products.

"In a small room such as David's, axial modes and standing waves are largely one and the same," Sulzmann says. Gamson's bass complaints at the mix position were caused by the first-floor ceiling axial mode at 70 Hz—close to an open D-string on a bass guitar—and a front-to-back axial mode at 49 Hz, low G on a bass guitar.

"For the 70Hz mode, deeper bass traps above the mix position would help, but the space required might occupy more headroom than David is willing to sacrifice," Sulzmann continues. "The quickest way to cure this is to space the ProFusors down about six inches from the ceiling and treat behind them with 4-inch Studiofoam or several layers of SonoFiber." For the 49Hz mode, Auralex CT45 panels on the rear wall could help, but opening the rear double doors during mixdown would provide extra "breathing room" for the bass.

Auralex Acoustics designs and builds studios through its network of worldwide representative companies. Local custom installer Nigel Martinez—who runs NJM, a one-man studio design operation in Southern California—accomplished Mechanism's "studio makeover" in one day.

"You address all the frequencies you're going to



*Spare bedroom turned recording outlet: Mechanism Studio. Inset: Oliver Leiber and David Gamson*



hear in the room to make it as pleasant and accurate as possible," Martinez says.

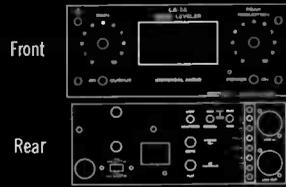
"This room required a lot of bass trapping in the corners because of all the bass buildup in that small space. In a home setup with near-fields, you have to adjust the mix position to accommodate the room. In David's room, that position is in the exact middle—maybe not the most ergonomic spot, but the best place for the most accurate monitoring."

Each of the four corners uses LENRD (Low-End Node-Reduction Device) bass traps behind B-24 absorption panels set off by at least two inches of air space. Sound vibrations go through the panel and get lost in the air space, with lower frequencies absorbed by the LENRD. "The ceiling treatment above the mix position is made up of our ProFusor panels," Martinez continues. "In small rooms, diffusion is sometimes preferred above the mix position, as too much absorption can pull too much life out of a room."

The end result is a neutral and balanced-sounding room that's great for overdubs. "I was concerned I'd end up with a very lifeless-sounding room," Gamson says, "but now I'm surprised how much more open and clear everything sounds. There is better imaging and no flutter echoes at the mix position, with no flutter echoes or bass problems."

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 Output level: +20 dBm nominal, +27 dBm maximum  
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 Release Time: 0.06 seconds for 50% release; 0.5 to 5 seconds for complete release  
 Noise: 80 dB below program at threshold of limiting

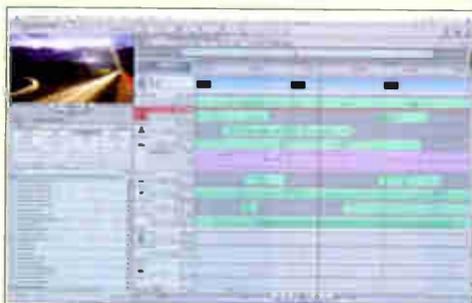


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By the *Mix* Editors



Digidesign ICON D-Command



Apple Soundtrack Pro



Tascam X-48



Marantz PMD671

A few years back, when the South Hall was completed at the Las Vegas Convention Center and the shuttle buses stopped running back and forth between the Sands, it looked like NAB might return to being a unified show. All of the manufacturers, traditional and "new" (i.e., software-based), were together again, and attendees had a much easier time getting around this massive event.

But the merger didn't exactly happen. The first year out, the South Hall—which featured massive anchor booths by Avid/Digidesign, Apple and Sony—captured all the buzz, and there was the "hip" factor to contend with: If you didn't understand the South Hall, then get out of the way and let the next generation take over. But over the past few years, with uncertainty during the adoption of high-def and a lack of major purchases at the show, the mood, despite the hype of new media, was still wait and see.

This year, NAB still seemed to be two shows, though the South Hall's emphasis on workflow "solutions," content management and the like had oozed its way to established and new manufacturers alike. And this year, many of the 104,000 registered attendees were buying. Fairlight alone announced 14 console sales on the first day of the show. SSL, DiGiCo and Calrec also reported new sales and installs. Console business is back!

Other trends: HD was everywhere on booth signs, mostly video but a smattering of audio. Workflow is definitely the word of the year, as version upgrades and updates seem focused on efficiency rather than gargantuan sets of new features. And companies can still make a buzz with a single sentence, as Adobe did, kicking off the show by announcing its \$3.4 billion purchase of Macromedia. Still, *Mix* went to cover audio, and audio was what we found.

### TAKING DAWs TO THE NEXT LEVEL

Everyone seemed to be talking about Apple's ([www.apple.com](http://www.apple.com)) Soundtrack Pro, the new audio app built into the Final Cut Studio video production suite. (Other apps include Final Cut Pro 5, Motion 2, Shake 4 and DVD Studio Pro 4 authoring

software.) Also sold separately at \$299, Soundtrack Pro offers full multitrack editing and mixing, 50 Logic plug-ins, serious noise-reduction tools, loop-based music creation and more. Sweetening the deal, Apple announced Mackie Control Universal support for Final Cut Pro, which sent video editors to Mackie and Tascam and product reps scrambling to place orders.

While perhaps lacking the glam appeal of Soundtrack Pro, announcements made by other computer companies will have a profound impact on how audio is processed and managed. Anticipating Microsoft's announcement of its x64 OS, AMD ([www.amd.com](http://www.amd.com)) said that all existing and upcoming single- and dual-core Athlon 64, Opteron and Turion 64 processors are fully compatible with Windows Server 2003 x64 Editions and Windows XP Professional x64 Edition—all the better to run those virtual instruments and memory-intensive plug-ins.

Intel ([www.intel.com](http://www.intel.com)) didn't have a booth but partnered its presence with a number of manufacturers. In the audio world, that would be Cakewalk ([www.cakewalk.com](http://www.cakewalk.com)) and Digidesign ([www.digidesign.com](http://www.digidesign.com)), both of which are working with the company on dual-core 64-bit technology; Cakewalk has integrated it into Sonar; Digi will have more news in the coming months.

Tascam ([www.tascam.com](http://www.tascam.com)) generated lots of gawkers with its hot X-48 HD workstation. The rackmount unit can record up to 48 tracks at 96k (24 tracks at 192k), runs Tascam's workstation software and is capable of operating VST plug-ins. It comes standard with TDIF digital I/O and has card slots ready for any other I/O you need. It also includes tri-level sync for HD.

The Marantz ([www.d-mpro.com](http://www.d-mpro.com)) PMD671 high-resolution Compact Flash field recorder offers multiple recording modes and up to 36 hours of stereo recording on a 1GB CF card. Features include confidence monitoring, XLR mic inputs, USB 2 connectivity, an optional remote and time-shift playback that lets users back up and listen to passages while continuing to record an event.

Content providers were agog at the



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Sony ([www.sonyproaudio.com](http://www.sonyproaudio.com)) booth, both from its sheer size and the fact that the company released upgrades of the Vegas video and audio editing system and DVD Architect authoring program. The duo forms the new Vegas+DVD Production Suite, specifically upgraded for HDV, which also includes a Dolby Digital AC-3 encoder for 5.1 output.

BIAS' ([www.bias-inc.com](http://www.bias-inc.com)) Peak Pro 5 adds a ton of features, such as a new graphic view, replication-ready CD burning and DDP file export. An Extended Technology edition, Peak Pro XT 5 includes five new BIAS plug-ins: Repli-Q, Sqweez-3 and Sqweez-5, PitchCraft, Reveal and GateEx.

The Blu-Ray disc format is making slow but steady inroads. Developed in collaboration with Panasonic, Sonic Solutions ([www.sonic.com](http://www.sonic.com)) released Blu-Ray Creator, touted as the first commercial authoring system to let studios create titles for the anticipated format. In addition, Dolby ([www.dolby.com](http://www.dolby.com)) announced that Dolby Digital Plus and MLP lossless compression were officially made part of the Blu-Ray spec.

## CONSOLES, CONTROLLERS AND EVERYTHING IN-BETWEEN

Digidesign was busy showing ICON D-Command, a scaled-down and less-expensive version of D-Control. Digi called it a "medium-format integrated console environment," but we called it the "Baby ICON." Meanwhile, the new cross-platform Pro Tools 6.9 system brings inline console emulation mode and other expanded features to ICON systems.

Australian manufacturer Fairlight ([www.fairlightau.com](http://www.fairlightau.com)) has been on a roll since CEO John Lancken took direction of the company a few years back. At NAB, the company was playing up its new Pyxis HD/SD nonlinear video system, but also announced its Constellation console sales and support for Waves Diamond Bundle plug-ins.

With more than 100 AWS 900 consoles sold, SSL ([www.solid-state-logic.com](http://www.solid-state-logic.com)) used NAB to show its new automation system, clubbed AWSomation. But with the emphasis on broadcast and post, the company spent a lot of time showing Version 2 of the C100 broadcast board, now with touchscreen panning, and V. 3 of the C200, which now takes advantage of the DAW control integration first shown on the AWS 900.

Harrison's ([www.glw.com](http://www.glw.com)) Trion digital console features a traditional surface rather than a central, shared-knob control panel. Running on Harrison's IKIS™ platform, Trion uses Linux and USB technology with Ether-



**Waves MaxxBCL**

net connectivity. A 15-inch monitor for every eight faders offers a dedicated view of each channel's information, and Harrison's Pre-View™ waveform envelope display provides a visual representation of channel names, stem assignments, EQ/dynamics, aux sends, metering and surround panning.

Euphonix ([www.euphonix.com](http://www.euphonix.com)) had its System 5-MC DAW Controller ready and shipping, with EuCon control of Nuendo and Pyramix, and Pro Tools, Digital Performer and Logic Pro available under the HUI protocol. Also, the company announced a partnership with SAN Systems and Hitachi to provide facility network storage.

English console maker Calrec ([www.calrec.com](http://www.calrec.com)) announced a system upgrade for Alpha, Sigma and Zeta 100 consoles called System Plus. It brings configurable TFT metering and 5.1 source input capability.

## HOT BOXES!

The MaxxBCL (Bass, Compressor, Limiter) from Waves ([www.waves.com](http://www.waves.com)) brings the MaxxBass enhancer, Renaissance Compressor and L2 Ultramaximizer limiter into a two-rackspace box. The unit has analog I/O, AES/EBU and S/PDIF running up to 96 kHz for flexible interfacing.

Prism's ([www.prismsound.com](http://www.prismsound.com)) ADA-8 XR converter has enhanced clocking technology and supports sample rates from 32 to 192 kHz. A range of expansion cards for Pro Tools|HD, AES, S/PDIF, DSD, Supermac DSD and FireWire allow use with applications such as Nuendo, Cubase, Logic, Digital Performer 4 and Pro Tools.

Digigram's ([www.digigram.com](http://www.digigram.com)) UAX220 pro USB audio interface features two balanced analog ins and two outs on XLRs, 24-

**Digigram UAX220**



bit/48kHz operation and zero-latency direct monitoring. UAX220 is plug-and-play, with DirectSound, Core Audio and Linux ALSA management—and it's not much bigger than a breakout cable.

There are always a few new mics at NAB. Holograph ([www.holograph.com](http://www.holograph.com)) intro'd a camera mount surround mic, the Holograph-MINI. It partners with an attachment that encodes the 5.1 feed in Circle Surround format in real time, making portable surround recording for video a reality.

Beyer's ([www.beyerdynamic.com](http://www.beyerdynamic.com)) MCE 86 II shotgun mic can be used for film/video, lectern or theater applications. It's light and rugged, making it ideal for mounting onto cameras or camcorders.



**Beyer MCE 86 II**

## THE (UN)TANGLED WORKFLOW WEB

At Studio Network Solutions ([www.studionetworksolutions.com](http://www.studionetworksolutions.com)), the emphasis was the new X-24 globalSAN, which brings iSCSI FibreChannel connection to all users. So those with SCSI, you can now connect. With the only OS X-compatible iSCSI-FC (at under \$30k for 9.6 terabytes, 10 users!), SNS has a leg up on the coming boom in storage networks. And Digigram was showing its EtherSound networking capabilities for live sound and installs, with 64 channels of uncompressed audio—bi-directionally—over standard Ethernet.

Creative Network Design ([www.creative-networkdesign.com](http://www.creative-networkdesign.com)) demoed NetMix Pro 3.3, a file management system that works with Pro Tools 6.9, includes spot-to-timeline in Windows XP and includes Avid and ReWire integration. Not to be outdone, Virtual Katy ([www.virtualkaty.com](http://www.virtualkaty.com)) announced V. 2 (coming this fall) and showed its use on *The Lord of the Rings*. Soundminer ([www.soundminer.com](http://www.soundminer.com)) showed Soundminer 4 and announced the coming of an XP version. And finally, mSoft ([www.msoftinc.com](http://www.msoftinc.com)), which has made a big stake in music library and asset-management worlds, was showing MusicCue 3.6 and the new VisionClip video library server. We told you workflow was big.

NAB returns to Las Vegas April 22 to 27, 2006. See you there! ■

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# Star Wars: Episode III—Revenge of the Sith

## Blurring the Lines Between Edit and Mix

By Larry Blake

The public's perception of George Lucas and his filmmaking empire can safely be called "big": his top-grossing films, his 6,000-acre Skywalker Ranch and the massive scale of the crews that realize the images that flow from his Number 2 lead pencil.

So it's somewhat surprising to note that he is—and always has been—a staunch advocate of smaller post-production sound crews in which a few key people do the entire job. Thus, the mandate for the final *Star Wars* film, *Episode III—Revenge of the Sith*, was that conventional workflow be put aside for one that would seamlessly integrate sound editing and mixing, if not obliterate the distinction between the two jobs. It's nothing new to Lucas: It's the way he began in the early '70s at American Zoetrope in San Francisco and it's where he wants his films—and his facility—to go.

To that end, two years ago, extensive construction started at the Technical Building at Skywalker Ranch, its first major renovation since it was built in the mid-'80s. While the original four mixing stages were modified and in some cases expanded, the

most notable change was the construction of a wing that added nine 20x16x9-foot premix/sound design rooms. Most of the premixing on *Episode III* would take place in two of those rooms, where the primary dialog and sound effects editors, Chris Scarabosio and Tom Myers, would also function as re-recording mixers.

### INITIAL SOUND DESIGN

Leading the sound crew would, of course, be sound designer Ben Burtt, whose involvement in the series began in July 1975 when Lucas was writing the first film, now referred to as *Episode IV: A New Hope*. Joining Burtt as co-supervising sound editor was Matthew Wood, who had been there for both *Episodes I* and *II*.

Burtt actually began work on *Episode III* months before principal photography began, shooting "videomatics" as a guide to all departments to visualize what would be required in terms of production design and visual effects. From there, he jumped over to picture editing (a credit he shares this time with Roger Barton) and stayed in that mode until late 2004 when he started devoting most of his time to sound.

While Burtt regards going out in the field to do sound effects recording as the "fun part" of his job, little time remains in his multitasking job description. Nonetheless, he had his Pro Tools LE system next to his Avid Film Composer, along with the complete 7,000-effect *Star Wars* sound effects library on a FireWire drive. "I did a fair number of recordings at the Avid that were used in the final movie," he says. "For the buzz droids that pop open and crawl around on the ships, while sitting at the Avid, I performed them on a trombone and later ring-modulated the sound in Pro Tools.

"I tend to work in a 'non-objective' sound design mode first: I'll have a gut feeling about the pieces of sound that I want and will lay them on the [sampler] keyboard. I'll experiment and do a performance until I hit on a combination of sounds that I like. Then I can fine-tune by further working with the samples."

In this low-key part-time mode, Burtt created the first 500-plus new sound effects for *Episode III*. They would be put into the Avid "for trial and error. I'd do temp mixes and keep them in that track as I went. George could react and things would get weeded out early on."

As efficient as this system is for the creation of effects and putting them up against picture, Burtt says that Lucas and he "have always wanted to have one integrated system for all editing and mixing, including picture. What we would love to be able to do is edit the film on some platform, add the soundtrack to it and have it behave as if it were Pro Tools, with all of the voices, processing and 5.1 mixing capabilities right there in the hands of the picture editor. You can do a picture change at any moment and ripple that change through all the soundtracks.

"A lot of the inspiration to mix in Pro Tools came from the idea, 'Well, look, we can't combine picture [editing] quite successfully with Pro Tools and the mix, but we *can* now blend the sound editing, premixing and final mixing into one system.' And so we decided to commit to that goal on *Episode III*."



The small sound crew is armed and ready for the final mix in front of the three Digidesign ICONs on the Orson Welles stage. Front row, from left: Tom Myers, Ben Burtt, Matthew Wood and Chris Scarabosio. Back row, from left: Brion Mogerkurth, Juan Peralta, Coyo Elliott, Terry Eckton, David Acard, Ronald Roumos, Kevin Sellers and Steve Slonec; not pictured, Andy Nelson



PHOTO: LUCASFILM LTD. © 2005

## R2-D2 SPEAKS AGAIN

The sound effects for the *Star Wars* films have been part of the sonic cultural landscape for the past 28 years. Probably the most recognizable sound effect in the *Star Wars* canon is not really a sound effect at all, but the voice of R2-D2. The bulk of Artoo's lexicon in the five previous films dates to what Burt created for *Episode IV*, with some additions made in 1983 for *Return of the Jedi*.

For the first two prequels in 1999 and 2002, Burt found a lot of outtakes in the original 1/4-inch 2- and 4-track library, remixing from the original elements as necessary. These new additions notwithstanding, Burt says that "when *Episode III* came up, I was feeling a little guilty that I didn't have time and was a little bit worried that I couldn't do it anymore. I was also getting tired of some of the well-worn phrases. One day Matthew said, 'Why don't you do some new Artoo?' So I went back and got all of my notes and paperwork as to how I had done a lot of it, including microphone selection."

One problem was that the Arp 2600 synthesizer that was a key component for much of Artoo had been in a crawlspace in Burt's house for 20 years and was covered with algae and mold. Skywalker engineer Howie Hammermann, who has been with Lucasfilm since the first

film, resurrected the Arp and wheeled it into Burt's room, all clean and shiny on a metal gurney. "Howie had replaced components and capacitors, and it worked!" Burt recalls. "I got my patching diagrams out and with some practice, I was able to re-create Artoo. I did my best to make it match with the old stuff. Maybe 30 percent of what we have in *Episode III* is new."

The emotional opposite of Artoo's chirps, Darth Vader's breathing, is back for a brief appearance as Anakin completes his transformation. Burt didn't have to don scuba gear again, opting instead for his original recordings.

## PREMIXING

Work began for Myers and Scarabosio in fall 2004, with Myers cutting effects on reel 2. From the beginning, he was setting up his Pro Tools session like a console, effectively cutting and mixing at the same time—adding 'verb and panning. Although he has worked at Skywalker as a re-recording mixer for the past 10 years, this was Myers' first opportunity to see a film through to a final mix within Pro Tools.

Because of the large number of tracks that would eventually be playing in his master effects sessions (all hard effects and backgrounds), Myers wanted to "keep the automation relatively simple so it wouldn't choke the machine. I

had upwards of 200 tracks. Most of the EQ that I did was region-specific that I would then re-render and incorporate into the session. I was conscious of not trying a lot of insert automation for EQ, as I was already doing so much panning and volume automation."

Burt cut and premixed in his edit room the opening space battle—having been working on it in some form for almost two years—plus the General Grievous speeder chase in reel 4 and all of reel 7. Those sessions were then handed over to Myers for integration into what would be the final stage sessions.

Longtime Burt associate Terry Eckton—who has worked on all of the *Star Wars* films since *The Empire Strikes Back*—came on in the fall as a second sound effects editor. "We got Terry going, put a 5.1 system in her room and she managed to pull off some amazingly good stuff," says Burt. "She put together laser battles and I was really happy about that. I was sort of using Terry as our 'traditional' editor, and she had the option of being as traditional as she wanted to. But as time went on, she picked up the challenge, and in the end, we should have given her a full-fledged system.

"It was the same thing with Kevin [Sellers] and the Foley [editing]. The volume mapping and panning were retained in the mix. We didn't start over when we got down there [at the final

mix]. If we needed to change it, we would, but we never really went back. In the end, it saved a lot of time and hassle. But it does require the entire team having the attitude that this is how we're going to do it. We were a tight team; we had only 11 people [in the sound department], including all sound editors, mixers and assistants."

Foley was walked at Skywalker (by *Star Wars* veterans Jana Vance and Dennie Thorpe) at a relatively very late point in the process—January 2005—because of the large number of characters such as General Grievous, Yoda and innumerable droids, which didn't exist in reality and were C.G.-animated by Industrial Light & Magic.

#### DIALOG WORK

Repeating from *Episode II* as production sound mixer was Australian Paul "Salty" Brincat, this time onto a Fostex PD-6 hard disk recorder. As with *Episode II*, there were

problems with the "video village" noise generated by the plasma screens, tape decks and general wall of equipment that supported the high-definition videocameras. Still, Scarabosio notes that Brincat's tracks are heard for 80 percent of the film, a record in the *Star Wars* series.

One of Scarabosio's first tasks on the film was to search for "alts," readings other than the sync take that would allow production audio to be used in lieu of ADR. "George wanted us to save production at all costs," he says.

It was originally Scarabosio's intention to use real-time processing of the dialog,



Chris Scarabosio's edit/premix room with ProControl/Pro Tools

including noise-reduction plug-ins. Waves X-Noise and X-Crackle, and Digidesign DINR were his primary tools, with the one piece of outboard analog processing being the Dolby Cat 430 unit. However, all of the noise-reduction processing was rendered back into the dialog sessions. He tried, whenever possible, to do the noise reduction to takes before he started dialog editing, "so you can make the air with clean-up air instead of having four tracks of noise changing all over the place."

The X-Crackle software was used when dealing with the costume noise that's ever-present in the *Star Wars* films. "You have to be careful with it because it kind of crushes sibilance," Scarabosio cautions. "Steve Slanec, who edited the dialog with me, would go back and replace the 'esses.'"

Although much of the work in using plug-ins is done offline with mouse and cursor, Scarabosio notes one of the benefits of working with the Digidesign ICON control surface at the final mix: "It used to be that if you had a plug-in with 12 pages and you want something on page 1 and other [parameters] on page 4 and page 6, and you want to be able to automate them [simultaneously], you couldn't. But you can on the ICON and can customize those parameters on the console."

His primary reverb was Altiverb, using it also for processing such as helmet futzing. These and other voice processing settings ran on auxiliary faders during the dialog premixing of the 18 foreign-language dubs that were mixed at Skywalker.

#### FINAL MIX

Throughout the sound editorial/premix period, Burt, Myers and Scarabosio would frequently make bounces of premixes and play them on the mix stages and in the Stag Theater (the 300-seat screening room at the Tech Building) to check the translation.

## Music, Music Everywhere

The two-hour-plus music for *Episode III* was recorded and mixed by Shawn Murphy at Abbey Road Studios in London during a period of 14 sessions. Murphy recorded his submixes (orchestra, percussion, synth and choir) direct to Pro Tools at 96 kHz (using Weiss converters) as he had for the previous two films. This time, however, he didn't record a "permanent" analog multitrack because they were unable to locate enough tape stock! Instead, the archival multitrack recording was done to 36 tracks of Pro Tools at 192 kHz using Genex converters. The analog tapes were recycled after the multitrack data was backed up and confirmed.

The mixes were for the most part done live, with only a few cues remixed from the 192kHz multitrack Pro Tools through the Neve 88R analog console at Studio One. The rate of the mixes was 96 kHz instead of 192 because most of the sample rate converters that would be handling the premixes—such as the Euphonix converters at the final mix—didn't work at the higher rate.

The music was delivered to the stage premixed into 5.1 orchestra, 5.1 synth, 5.1 percussion, a 5.0 choir and a 5.1 "other," which would change according to the needs of a cue, often including percussion overdubs. As edited by supervising music editor Ken Wannberg and music editor Ramiro Belgardt, cues were checkerboarded into 29-track "A" and "B" groups for ease of mixing.

The music was first edited without any reference to the picture to pick the best parts of all of the takes, during which time, Belgardt had done volume graphing to help smooth edits.

The *Star Wars* movies are noted for their end-to-end music of John Williams. Ben Burt ruefully notes, "George, left to his own devices, would spot music from beginning to end. My job is always to chip away at that and come up with a balance that allows the music to breathe and be better and be refreshing when it comes and goes."

In one sequence, Burt's initial sound design work was able to influence the final shape of the music. A key dialog scene between Anakin and Palpatine occurs during the "squid dance scene." Burt remembers that Lucas "referred to the scene as the 'opera,' although when they shot it, there was nothing out there on the stage. It wasn't in the original script; it was added after George went to the Sydney Opera House during shooting and said, 'This is a good setting for a scene in the movie!'"

As a scratch track in the Avid, Burt did some "new-agey and electronic music on a synthesizer using some samples of Tibetan monks chanting." Lucas liked that, and Burt re-did it with just voices, steady tones. That is what was heard in the temps, and Williams eventually decided to mimic that in the final score.

—Larry Blake

Once the premixes were finished, everyone moved to the Orson Welles stage (formerly known as Stage D) on March 8 for the first day of final mixing. Wood says, "The premixing was a long period of time. The only reason we call it the 'final mix' is that George is there and we're all together."

Myers and Scarabosio used ProControls in their rooms and were planning on using them at the final mix. However, at the last moment, Skywalker obtained three DigiDesign ICON D-Control surfaces, each with 16 faders. Foley ran on a fourth system, connected to a ProControl on the credenza.

At the final mix, the crew was joined by noted Los Angeles re-recording mixer Andy Nelson, who would be handling the music. Although Nelson was well-known to the Skywalker crew, having been there for the final mix of *A.I.: Artificial Intelligence* in 2001, this was his first experience mixing in Pro Tools.

"I was obviously a little anxious," says Nelson. "I went up to the Ranch with the layout that I had in mind and wanted them to show me what I would have to work with. I spent the whole day working on

what I was used to hearing."

During the final mix, everyone recorded their stems onto MMR-8 digital dubbers in the standard practice. However, all parties agree that the automation in the final stage sessions is 99 percent representative of the final recorded stems. The reason for recording the stems was to allow editing to take place offline (to internal QuickTime picture) while the others mixers carried on. Nelson notes that it took "some getting used to. I would be doing a music pass and would look over and see my fellow mixers in editorial mode with headphones on."

Burt concurs: "At first, Andy was bewildered, with everyone on headphones in the room: Tom, Chris and I'd be cutting something on headphones, Kevin doing something on Foley and it's all quiet except for little mouse clicks and bleed-through from headphones. But for me, the mix stayed very active. You didn't have a situation where people would go make phone calls or play ping-pong in the back room. You often have situations where two people are working and nobody else is working, or there's one person working and everybody else is out of the room.

archival version from the final sessions.

In a similar vein, Wood will eventually load up the final effects session and string off the individual groups to what could be called a "premix stem": including all fader, EQ and processing done in the final mix, but containing only, say, light sabers or space ships. In this manner, should there ever be a need to "open up" the film again, they would not have to worry about the automation following in the final Pro Tools sessions or the presence of required plug-ins.

The need for just this type of element has become clear during the years at Skywalker, first with the restoration of *Episodes IV through VI* for the 1997 theatrical reissues, and then last year with the further remastering for DVD release.

• • •

"George's goal, really, is to sit on a couch watching the movie, point at something and say, 'I want to change *that*,'" says Burt. "Using Pro Tools at the final mix, you can dial up a region and cut something then and there, volume map something differently and you're done."

This new workflow, Burt believes, is "definitely something that will be nourished. There were a lot of naysayers: 'This can't be done, no one ever will want to do it.' Unless you have the director and producer and everybody committed to that process, it isn't going to work. George is of the idea that post-production should evolve with the technology in radical ways, just like he likes to shoot digital video. And, by crackey, he's going to do that, whether anybody wants to or not."

"As far as the future goes, I think that this will become a more mainstream way of working," Nelson adds. "I definitely see advantages to working in that direction from the creation of the soundtrack through virtual pre-dubbing, and the ability to work in small environments to prepare for the final mix. In the long run, it doesn't matter what you're working on. What matters is the competence that you bring to the job. Sound is a subjective medium, and all the equipment has to do is provide you with a way to get on the screen what you want. It doesn't matter if what you have is large or small, or the biggest or the best. If you can get what is in your head up there as part of the storytelling process, that's all that matters." ■

*Larry Blake is a New Orleans-based supervising sound editor/re-recording mixer whose next film is *Syriana*.*

*www.mixonline.com • June 2005, MIX 81*



PHOTO: LUCASFILM 2005. ALL RIGHTS RESERVED

the ProControl and thought, 'This is going to work out,' and then I got a call a week later—"Well, we put an ICON in now."

Nelson could see that the ICON was much closer than ProControl to what he was used to. "But I'm not an editor and not Pro Tools-savvy," he says. "I needed a starting point that I'm comfortable with, and basically I got into a roll with it. I really liked the Sony Oxford EQ; I had tried a couple of others, but when I used it and would turn the knob, I would get back

Here you had a situation where everybody stayed engaged. It contributed a great deal to the efficiency, the *creative* efficiency of the mix, because people were aware of where we were at that moment."

The stems were laid out as 5.1 for dialog, creatures, Foley and music, with the effects stem in the 6.1 Dolby Surround EX format. The music stem was recorded at 44.1 kHz (via Euphonix sample rate converters) to match with the others, although Wood will record a 96kHz

## New Order



**Text and Photos by Steve Jennings**

*Mix* caught New Order in late April at Oakland, Calif.'s Henry J. Kaiser Convention Center, where they co-headlined with the Chemical Brothers. Although the band is on a short tour leg, their show was packed with an enthusiastic crowd, with many attendees dancing in the aisles.

"I have been mixing New Order since 1993, and they're a great bunch of guys" says front-of-house mixer Dian Barton. "We're not carrying production so I am at the mercy of the vendors, but I usually get what I need. I'm using a Midas XL4 tonight. Midas boards are the cleanest sonically and can handle more level before distorting than other consoles. I find them easy to use because they are well set out with accurate metering and have LEDs for most functions, which is very important at festivals."

At the Oakland show, they used an L-Acoustics rig, with eight V-DOSC per side, six dV-DOSC under-hung, nine SB218 subs, four Power Physics 422 three-ways on bleacher fills and four ARC for front-fills. A look inside Barton's rack reveals five Drawmer DS201 gates, four BSS 402s and 901, three Yamaha SPX-990s and a Summit DCL 200, a Lexicon 480XL and a TC Electronic D2. Bernard Sumner (vocal/guitars, above) is using a Shure Beta 58 mic and PSM700 in-ears with EC3 earphones.



**FOH engineer Dian Barton**

## FixIt

**Philip Harvey**

*In addition to being front-of-house engineer for the Secret Machines, Philip Harvey recorded the six-week tour using a 24-track Metric Halo rig, a PowerBook and a FireWire hard drive.*

"I'll take the preamp sends from the direct outs of the [venue-provided] mixing console and send them to the 24 analog inputs of the three Mobile I/O 2882+DSPs. The main problem is going back and listening to all that material to find the best songs. You can add all the Mobile I/O boxes together through each unit's corresponding digital bus. The first eight analog input tracks can be assigned/connected to the second Mobile I/O as an AES EBU digital bus input. Then those 16 channels can be assigned to the third unit's digital bus input. I just record the digital bus outputs of the third unit for a rough mixdown."



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## News



**ABBA tribute musical Mamma Mia! is currently touring Europe with a configuration comprising 10 L-Acoustic KUDOs per side and a center cluster of 11 dV-DOSCs, rounded out by two SB218 subs.**

**Entec Sound & Light** (London) purchased three **Lake Technology Pro 26** digital loudspeaker processors, PC tablets and wireless LAN facilities from UK distributor **OutBoard**, which were used during **Alanis Morissette's** recent acoustic European tour and **Teenage Cancer Trust** week at London's Royal Albert Hall. For both events, the loudspeakers were used for EQ and delay zone control; for the Morissette concert, the d&b C4 concert system was on hand, while the event at Royal Albert Hall employed a Q1 line array system and Q7, Q10 and E3 in-fill systems...**Delicate Audio Productions** (Camarillo, CA) handled production during **Music for Relief**, a benefit concert supported by musicians such as No Doubt, Linkin Park and others to benefit UNICEF and Habitat for Humanity's work with tsunami victims. **Martin Audio** provided line arrays comprising 12 W8Ls, four W8LCs (downfill), 12 W8LCs per side on bleachers, four W8CS and four W8Cs each...**Huntington College's** (Huntington, IN) **Merillat Center for the Arts** recently purchased the **BSS Soundweb London BLU-16**. The college's technical director **Justin Spitzer** says, "Hosting events from rock concerts to Indiana Supreme Court hearings, we really need quick and easy setups."



PHOTOS: CRAIG DALTON

## On the Road

### Matt Svobodny

Many engineers begin in sound reinforcement and then gravitate to studio work. Not so for Nashville recording engineer Matt Svobodny, who moved to a successful career in live sound, working with top acts such as Ryan Adams and Steve Earle. Having just completed Earle's *The Revolution Starts Now* tour in the U.S., we caught up with the FOH mixer while packing for the show's European leg.

#### *Are you carrying production?*

We're doing all in-ear mixes, so we carry a Yamaha 02R to do six mono mixes and two thumper mixes for the two drum kits. We carry all the mics, cables, stands, monitor console, splitter and backline, so whether we're doing a club or a festival, all we ask for is a clean stage and three AC drops.

#### *What are your must-have items?*

I have minimal needs at FOH, but I do bring some compressors—Universal Audio 1176s and a JoeMeek SC2—and use house gates and other comps.

#### *Is there a secret to Earle's live sound?*

Everything to me is about gain structure. I get Steve's vocal as loud as humanly possible by notch filtering. I keep the EQ on the channel strip mostly flat, although I'm not afraid to EQ something to make it sound right. Steve's mic is an Audix OM-6. It's got a wide pattern that's not too wide, with good off-axis sound. If Steve's vocal is huge, brilliant and sounds great, then everything else mostly falls into place.

#### *Where can we find you when you're not on the road?*

My parents have a cabin in northern Minnesota and I like to spend as much time as possible up there with my wife and dogs hiking and fishing for walleye and northern pike.

## Now Playing

### Mudvayne

Sound Company: Rainbow Production Services (Hampstead, N.H.)

FOH Engineer/Console: Chad Olech (also tour manager)/Yamaha PM5D

Monitor Engineer/Console: Bruce Pendelton/Midas Heritage 3000

P.A./Amps: venue-provided

Monitors: Ultimate Ears UE7s, Shure PSM700; EAW KF850s and 850SBs (side-fills), SM500 wedges

Outboard Gear: Eventide H3000; TC Electronic D2, D-One; Avalon 2044, 747; BSS Audio 901; Yamaha SPX-990; Drawmer 404 gates, 441 comps

Microphones: Shure Beta 52s (toms, bass guitar), Beta 52 (kick), Beta 91 (kick), SM57 (top/bottom snare, guitar), SM81 (hi-hat), KSM32 (overheads), SM81 (ride)

Additional Crew: Scott Tkachuk (crew chief), Chris Campbell (systems tech), Ryan Fielding (production manager)



PHOTO: GREG WATERMANN



PHOTO: DAN LOGGE

### The Dears

FOH Engineer/Console: Renaud Lussier/venue-provided (Midas, Crest, Soundcraft, Allen & Heath)

Monitor Engineer/Console: provided/provided (Crest, Soundcraft, Allen & Heath)

P.A.: provided (Meyer, V-DOSC, Adamson,

EAW, JBL, Electro-Voice)

Monitors: EAW, Meyer, JBL or Electro-Voice wedges

Outboard Gear: BSS, Klark-Teknik or dbx EQs; TC Electronic M-One, M3000; Yamaha SPX-990, 01V

Microphones: Shure Beta 52 (bass drum, bass), Beta 56 (toms, guitar), SM81 (hi-hat, overheads), Beta 57 (vocals), SM57 (snare top/bottom)

## The Quietest Show on Earth

On April 11, the Rock and Roll Hall of Fame and Museum (Cleveland) presented a Mick Fleetwood and Energizer EZ Change co-sponsored concert as part of their "It's Hip to Hear" program, which educates music fans about hearing conservation. Rock band Eagles of Death Metal played two songs without any amplification—each audience member listened through portable FM radio headsets—and then followed it with three amplified songs.



Eagles of Death Metal playing very quietly

According to monitor engineer Ron Musarra, for the quiet portion of the show (i.e., sans wedges), Shure 700s, 600s and E1s were used for the ear mixes, which were livened up with two SPX-990s. "It was basically your typical ear mix, but I was a bit concerned because the band had never done a show with ear mixes only. In the end, they were surprisingly happy with the sound—all hail the in-ear mix. With the lack of sound coming from the stage other than taps of the drum pads and strumming of the electric guitars and bass, the vocals were basically a cappella—that will give you an idea of how quiet the stage volume was."

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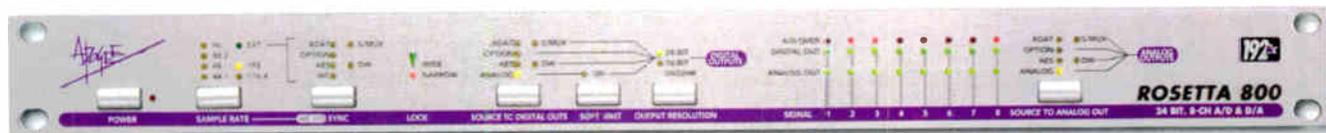



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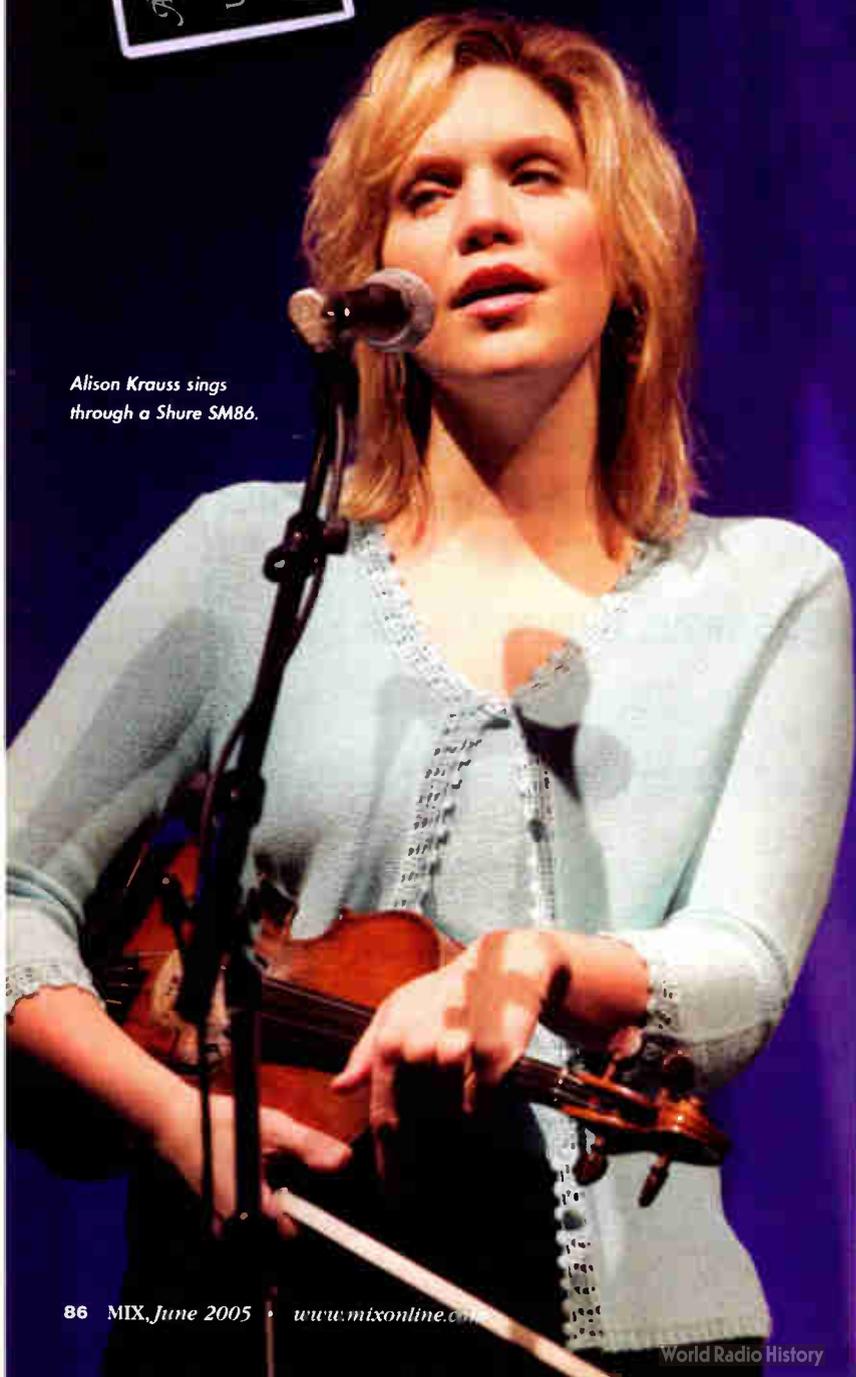
# ALISON KRAUSS & UNION STATION FEATURING JERRY DOUGLAS



Photos and text by Steve Jennings

**S**till riding high on the success of the *O Brother, Where Art Thou?* movie and *O Brother* tour, Alison Krauss & Union Station with Jerry Douglas are bringing their bluegrass musical stamp to theaters across the nation. *Mix* caught up with the tour at the Berkeley Community Theater (Berkeley, Calif.) in mid-March; the tour continues to wind through the U.S. until July.

Alison Krauss sings through a Shure SM86.



Jerry Douglas' dobro is miked with a Shure KSM32.





From left: Ed Welsh, lighting director; Cliff Miller, SE Systems president; Bernie Velluti, front-of-house engineer; Alex Blagg, first electrician; and Mark Richards, monitor engineer



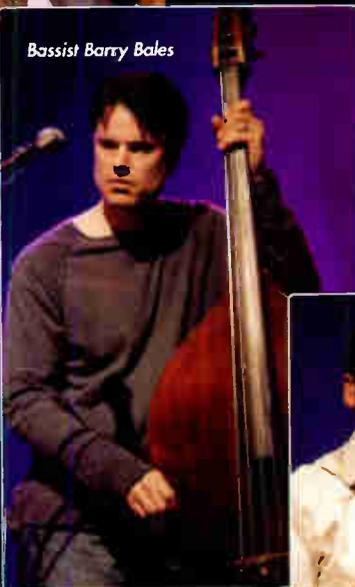
Monitor engineer Mark Richards is also mixing on a Yamaha board: a DM2000. "I really like having all of my comps, EQs and effects on the console," Richards explains. "It reduced the amount of gear I had to carry and set up, which is great at festivals and other places where space is at a premium. We just got some of the new [Yamaha] AD8HR remote preamps, which sound great. Having recallable scenes is one of the best features of the digital console. I have changes on almost every song, whether it's effects, different mix levels or muting instruments." Using the digital console has reduced Richards' external processing, but he still relies on a rack of Aphex Dominator II 720 limiters for in-ears. "You just can't beat them," he says. There are no onstage monitors; IEMs are Shure PSM700s with a PA821 active combiner and a PA805WB antenna. "Mixing this band is a dream come true," Richards continues. "I grew up in Western North Carolina where bluegrass and old-time music really matter to people. I had seen Alison and the guys when I was 16 or so, when I was first getting started doing this at MerleFest in North Carolina. I got to work with them many times after that doing stacks and racks for AKUS and during the O Brother tours.

"Mixing them does have its challenges. They have really good ears, especially Alison. She can hear the smallest change. Being all acoustic leads to challenges [especially in] going from arenas to theaters as far as tone, phasing and levels, but we make it work."

Equipment for the tour is provided by SE Systems (Greensboro, N.C.). According to front-of-house mixer Bernie Velluti, "I've been working with Cliff [Miller, SE Systems] and the guys from SE for quite a few years. All of us go back as fans of this style of music and as players. Our main concern is for the quality of the acoustic [instruments] to still sound truly acoustic once they come out of a large P.A. system. Timbre, tone and presenting this band and its outstanding level of musicianship is what we're after. We try to be as transparent to the process as possible."

The main speaker system comprises various models of JBL VerTec boxes. "For the theater/short arena tours, we carry 24 4888s and 16 4887s," says Miller. "This summer, the 4888s will be replaced with 24 4889s, which work great in the outdoor sheds. Line arrays are the greatest thing that's happened to acoustic music. Very little energy comes off the rear of the cabinets. The longer the array, the better the low-frequency control."

Velluti is mixing on a Yamaha PM5D, which replaced the tour's Heritage board and three processing racks, allowing for a much more contained and less-cluttered FOH footprint.



Bassist Barry Bales



Guitarist Dan Tyminski



Ron Block's (left and below, respectively) guitar and banjo are miked with a Shure KSM32.





Photos by Steve Jennings

# U2'S VERTIGO TOUR

BRINGING THE STUDIO SOUND TO HUGE VENUES

By David John Farinella

It's just two songs into U2's two-plus-hour show at the HP Pavilion (San Jose, Calif.) in early April and audio director/front-of-house mixer Joe O'Herlihy's right leg is bouncing along with the music. Standing behind one of two DiGiCo D5 consoles at FOH, O'Herlihy watches a band whom he's worked with for 27 years rip through a 21-song set that included some of their best-known past tunes ("The Electric Co.," "An Cat Dubh," "New Year's Day" and "Sunday Bloody Sunday") and some of their new work—opener "Love and Peace or Else," "Vertigo," "Beautiful Day," "Elevation" and "Miracle Drug."

O'Herlihy's exuberance could be caused by any number of factors, the least of which might be that he's seeing a world tour kick off after 18 months of planning with U2 band manager Paul McGuinness. Those 18 months were spent investigating and auditioning everything from P.A. systems to mics to outboard gear. "You plan out the type of tour you're going to do, the cities you're going to be in, the type of territories, the worldwide aspect of it and whether it's going to be an indoor arena tour or an outdoor stadium tour, and then you look at what's required in the sense of cutting your cloth according to measure," O'Herlihy reports.

Even while O'Herlihy spent time checking out other systems, the team returned to Clair Bros. Audio, carrying 44 i4 cabinets, 40 i4b subs, 12 Showco Prism Series 1 sub-lows, a number of P4 "Piston Box" rear- and center-fill cabinets and eight FF2 front-fill cabinets.

"We have brand-new front-fills and we've changed the sub-low configuration slightly for space reasons, but the P.A. is basically the same one we used on the Elevation tour," explains systems engineer Jo Ravitch. "We've gone to the P4 rear-fills because we have a little more freedom on where to put them and they cover more than most of the arrays we have available." Powering the main cabinets are 15 Crest/QSC amp racks; seven Carver 2 amps are used for the rear- and



In front of one of two DiGiCo D5 consoles at FOH: Jo Ravitch (l) and Joe O'Herlihy

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front-fills, as well as the subs. The standard cadre of outboard gear—Lexicon 480L and PCM70, Yamaha SPX-1000, Eventide H3500 and TC Electronic 2290—is also at FOH.

The overriding concern for any U2 tour, O’Herlihy says, is bringing a studio-like quality to the stage. “We do spend quite a bit of time in rehearsal,” he says. “The work ethic that this band introduces at every level—from the blank canvas that we have when we go into the studio to the finished product when you leave the audience singing ‘How long to sing this song?’ at the end of ‘40’ as the show closes out—requires a huge effort. It’s always been a huge responsibility to make sure that the onstage [sound] is as good and is delivered as well as the creative product that comes from the studio. From that point of view, we do agonize over things, and at this period at the start of a tour, it’s 48 hours a day, eight days a week. The total commitment to that value is why we’re getting such good results so far.”

#### MIKING THE BAND

While the goal is to get as much of the studio sound into the live setting, O’Herlihy reports that there have been times when mic selection has made the live sound just too perfect. For instance, when it comes to The Edge’s guitar setup, “We’ve always started out with what they used in the studio where it sounded great,” O’Herlihy says. “But when it comes to what we’re doing out here, sometimes those things just sound too good and he’s looking for that extra bit of distortion that he feels is part of the image of his sound. Sometimes, good microphones don’t deliver that, but when you put a crusty [Shure] 58 in front of it, you

don’t have to do anything to it.”

Picking the right mic for the guitar amps turned out to be crucial, as the number of amps has doubled since the Elevation tour. “The Edge orchestra has finally decided to go from a string quartet to a symphony,” O’Herlihy says with a laugh. Three Fender amps have joined the three Vox AC30s—as well as the standby “Vox In a Box” that is now a part of The Edge’s live sound—which makes things interesting for the crew. “The amplifier technology is all vintage and we just trust in God that it works every day when we take it out of the box.”

O’Herlihy opted to change some things while miking the drum kit. “There was a time when the aesthetic nature of microphone technique became the feature, and everyone went for the smallest, grooviest, fashion-driven commodities,” he explains. “But after listening to what they were doing in the studio with big old Neumanns for the kick drum and ambient overheads, I went back to using the larger-diaphragm microphones.”

Larry Mullen’s kit is now miked with Sennheiser 421s on the toms, a combination of Shure Beta 52 and 91 on the kick drum, an 81 on the hi-hat, an Audio-Technica 4050 on the overheads and an AKG 460 on the ride cymbal positioned underneath by the bell. On snare, he’s using a Shure 57 (fitted with a Beta windscreen), with Beyer M88 on top and a Shure 56 on the bottom. “I’m sure the Beta windscreen does something from a sonic perspective, but I think it’s more of an insurance policy to stop Larry from knocking the head off of the 57, which he’s done on several occasions,” he says, laughing. “He’s quite

the industrious drummer when he gets going.”

Bassist Adam Clayton is continuing to use the Ashdown speaker and amp technology that he started to use on the last tour, and O’Herlihy mikes the cabinet with a Sennheiser 421. He’s also getting an effected line from Clayton’s rig and a feed from a Line 6 Bass POD. Regarding the latter, “I call it ‘the energizer’ because it gives me a really clean quality of the actual bass sound without any sonic devalue,” O’Herlihy says. “I use that for depth of field for the bass and sometimes for intelligibility, because for some songs, like ‘City of Blinding Lights,’ the bass is the driving implement that pushes the sound along.”

As for Bono’s vocals, O’Herlihy says, “We’ve tried 101 different manufacturers because I’m always striving to figure out what’s out there,” he says. Yet he continues to come back to the Shure Beta 58: The crew has eight of them ready to put into action because of the singer’s constant onstage activity. “With him, anything goes, so we have to be prepared for it,” O’Herlihy says. At FOH, Bono’s vocals go into a Manley VoxBox and into the DiGiCo D5’s preamp. The singer also plays guitar on six or so tracks on the set list and O’Herlihy has an SM58 on a Vox AC30 to get those sounds.

Both Mullen and The Edge add background vocals to the U2 sound. Mullen uses a Countryman microphone on a headset, while The Edge sings into a Shure Beta 58 at the piano position and onstage. He also has a Countryman headset on hand.

#### THE BUNKER

Back in the old days, the under-stage space was a place to store road cases, extension cords and the random gum wrapper. Those days seem to be long gone, especially during this tour, where everything from changing rooms to monitor engineers are located under the stage. In fact, Robbie Adams, Dave Skaff and Niall Slevin spend the two-plus hours there working on the band’s in-ear monitor mixes. Adams handles the mix for Bono and The Edge, as well as records the show, while Skaff works up Mullen and Clayton. Slevin assists Adams with The Edge’s monitor mix.

“There’s a lot going on,” Adams says of the reason why the monitor responsibilities are split, “and it’s really too much for one person to do. It’s been tried, and it just doesn’t work.”

Adams is mixing on a DiGiCo D5 console, and for Bono’s vocals, he is using



Laying low in monitor world, from left: engineers Niall Slevin, Robbie Adams and Dave Skaff

a Neve 1083 preamp and an LA-2A. "It's not something that usually would come out on the road, but they wanted to start with what they had in the studio because they liked the sound there," he explains. "If that doesn't work, then at least we went to what we liked and then we pared it back from there." Bono, Mullen and Clayton all wear Future Sonics Ear Monitors.

According to Slevin, The Edge is experimenting with a number of different in-ears manufacturers. "His mix is extraordinarily musical and that's why there has to be so much concentration on it," he says. "When he sings, he's found that the seal around his ears comes loose, so we're trying different sets of ears, some with foam and some without foam." For the San Jose show, The Edge was on Etymotic ER4 earpieces.

Adams' recording responsibility is made easier thanks to the D5's MADI output, which goes directly into a Nuendo rig supplied by ADK Pro Audio. Every show is being recorded, and so far, the tracks have been used on VH1 and HBO. Plans are also in the works to offer live recordings or work with a service such as iTunes.

Skaff, who has been working with

the band since 1985, is mixing on an AT1 Paragon II, preferring the analog desk to a digital one. "I've spent time with pretty much all of the digital consoles and some of the new ones just coming out, but the demands of this job, the number of outputs that I'm using for three guys, is fairly over the top. I'm using every output of this 40-output console and I'm certainly using nearly every input," he says.

#### AN EXERCISE IN REDUNDANCY

Bono's collection of eight Shure 58s and three Manley VoxBoxes is just the beginning of the duplication found on this tour. From the pair of D5s that are at FOH to the extra D5 and Paragon II that will be available in the monitor bunker to the extra set of guitar effects, U2 is a study of redundancy. "It's a double-edged sword," says Ravitch, "because the redundancy has to work if it's truly going to be redundant and that means you've got to check it all the time. It's got to be up and running simultaneously all the time, and that makes your day that much longer and a little bit more complicated. But if you're going to have a redundant system, you've got to be able to step over to it at

a moment's notice."

Just how far does it go? Adams has doubled his Nuendo rig so each show is recorded twice in the monitor bunker and an assistant records the shows at FOH with a CD recorder.

#### AT THE END OF THE DAY

To be sure, the entire crew takes great care to make sure every fan walks out of the venue smiling while singing the exiting salvo from "40." "That's part of my job," O'Hierly concludes, "and it's certainly my responsibility to make sure that is the case, because with a band like U2, every element of everything we do is scrutinized to the 'nth' degree to make sure it's perfect. We spend a hell of a lot of time to make sure we get it right, because the fans are the people that will ultimately pay our wages. The band puts a huge effort into it to make sure we're all doing the right thing. I won't say that enough people get it wrong, but we try our hardest to get it right. We may not get it right every single time, but at least we died trying." ■

*David John Farinella is a San Francisco-based writer.*

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# Venue Acoustics

## FROM THE Ground-Up

By Sarah Benzuly

When it comes to acoustically treating a new live performance venue, selecting the correct P.A. is of prime importance. However, the P.A. does not work alone in the room and as such, sound system designers must include the room's characteristics into their audio equation. Does the space have an echo or sound boomy? Does it envelop the audience member as if the nosebleed section is actually in the sixth row? For acoustical and sound system consultants, matching the right rig with a venue's sonic signature—and the music that will be played in that space—is imperative; otherwise, the audience will never hear the music in the way it was intended.

Just as in making sure that studio mixes translate to whatever playback medium the buying public listens on, these designers must find the perfect blend of gear and acoustical design so that the energy occurring onstage translates to the crowd. Perhaps the single-most important element in this equation is the P.A. Is there room for a hanging system? Are there issues with maintaining sight lines? Does the room exhibit a long reverberation time? There's also the "neighbor factor": Is the venue located in an urban or suburban environment where strict sound level control is a necessity?

With these and other questions in mind, we spoke with the audio consultants on two recently opened projects on their sound system design that would best match the venue's acoustics and keep the fans—and bands—coming back.

### THE JAY PRITZKER PAVILION

The new home of Chicago's Grant Park Symphony Orchestra and Chorus, the Jay Pritzker Music Pavilion is the centerpiece of the 24-acre Millennium Park and opened to a highly responsive crowd last summer. One aspect that makes the Pavilion unique is its use of the LARES system—which generates the reflected and reverberant energy that surrounds and envelops the listener in an indoor performance venue—for an outdoor venue; in fact, the Pavilion is the first outdoor venue to permanently install the LARES system in the U.S. The Pavilion employs a trellis to suspend the loudspeakers—the LARES system and the reinforcement system—at the correct heights and orientations. This trellis allowed audio system designer Jonathan Laney and acoustician Rick Talaske (of TALASKE) to precisely place the loudspeakers so as not to cause visual obstructions. It also creates a visual canopy that unifies the 4,000 listeners in the fixed seats and 7,000 sitting on the Great Lawn.

When Laney and Talaske started working on the project

## A Marriage of Room and P.A.

in 1998, they wanted to improve the outdoor listening experience by using a two-fold approach: providing the musicians with an enhanced environment in which to play and creating a more enjoyable listening experience for the audience. "One of the primary objectives of the new facility was to maintain 'music under the stars,'" relates Laney. "Quite a few facilities have a roof as part of the pavilion, but this facility wanted to maintain the views of the skyline, which then limited the amount of architecture that was used in the seating area. With that perspective, in an orchestral performance, the concert hall is just as much a part of that performance as the orchestra. So when you take the orchestra outdoors, you no longer have a concert hall and part of that performance is missing.

"As a result," he continues, "we introduced not only sound reinforcement for the loudness and clarity [Fig. 1], but also an acoustic enhancement system [Fig. 2] to create reflection patterns, the reverberation, the sense of envelopment and the sense of being immersed in that music." Laney and Talaske contacted Steve Barbar of LARES Associates, which allowed the duo to create that "immersive" feel. The LARES system delivers lingering, enveloping sound characteristics with supplemental loudspeakers and simulates reflections and reverberation using specialized electronics and digital processing. Because the Pavilion is located in downtown Chicago, Laney opted to not use a line array and instead installed Electro-Voice's X-Array as part of the "distributed reinforcement system," which provides direct or frontal sound, delivering clarity to the audience. "As a result," Laney says, "we decided to go with the distributed approach, which is what we needed to do the LARES system. We have our main stacks [45 of L, C, R] and then about every 70 feet or so, we have a delay ring [32 speakers in eight rings] that runs the entire length of the property. That helps us fire the energy at the listener and not outside the area. In addition, the geometry of the seating bowl wasn't conducive to the horizontal coverage pattern of line arrays. That's the reason why we have a traditional trapezoidal arrayable system with our left, center and right main stacks. With the delay lines, there are two speakers at every position. There is a downward-firing loudspeaker for the acoustic enhancement system and a loudspeaker that fires toward



*The Frank Gehry-designed Jay Pritzker Music Pavilion in Chicago's Millennium Park involved a two-prong sound design approach.*

the listener—providing frontal energy—for the sound reinforcement system.”

The second part of the system design was creating a better environment for the musicians, which fell into Talaske's hands. Back in 1999, architect Frank Gehry and the Talaske Group wrestled with a building constraint that defined how tall a building could be, which severely limited the pavilion's ceiling height, “and we knew that the low ceiling height would have a detrimental impact on the acoustic environment onstage,” Talaske says. “So we lobbied with the city to work around this restriction. The city concluded that this wasn't a building but a piece of sculpture. The height restriction didn't apply and we were able to create a pavilion stage area designed with proper ceiling height and that's real important for developing a good onstage acoustic environment and for projecting some sound out to the audience.

“In the design,” Talaske continues, “there are no right-angle corners. When you have a right-angle corner, the sound is reflected back to the musicians. We wanted a condition where the sound created by the bass player is reflected across the stage to the first and second violinist on the other side. We carefully shaped the sidewalls and ceiling and upstage wall of the stage enclosure to facilitate this cross-stage communication. [See Fig. 3.] We also worked to create an audio-friendly acoustic environment onstage. We didn't want an excessive amount of sound being held onstage that would reduce the clarity of sound as picked up by microphones. We were able to have a

nice clean signal in microphones that Jonathan could work with in his audio system.” The orchestra risers incorporate a new platform system that allows the musicians to feel the vibrations created by cellos and bass instruments. This system (a floating floor with rigid interconnections and resilient materials introduced just below the floor surface) acts to maximize cross-stage vibrations.

“Even though it was going to be home to the Grant Park Music Festival,” Laney concludes, “they wanted a facility and a system capable of festival-type events. To accommodate the varied musical styles, the stage house's acoustic design includes variable acoustics that can be brought in to soften the house for a traditionally amplified event.”

*Acoustician Rick Talaske (l) and audio system design Jonathan Laney*



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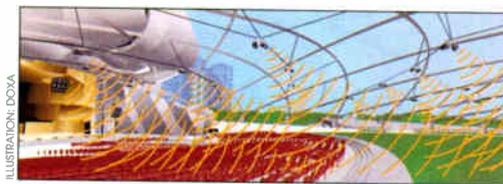
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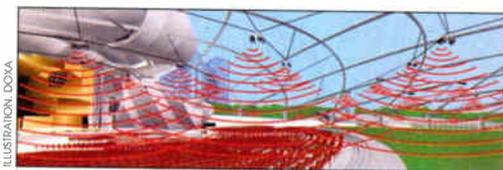
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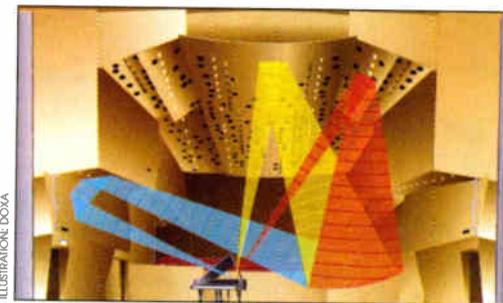
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**Figure 1:** The concentric arrangement of loudspeakers and use of digital delays creates the impression that sound is arriving from the stage.



**Figure 2:** Downward-facing loudspeakers deliver sound that is enhanced by specialized LARES electronics to simulate sound reflections. Laterally arriving sound also masks city noises.



**Figure 3:** The walls' and ceiling's shapes allow sound to be reflected across the stage, providing musicians with cross-stage communication.

**STAGE 1 AT CANDLEWALK**

A little less than an hour east of downtown L.A. lies Stage 1 at Candlewalk, a new 3,000-seat indoor arena that hopes to attract touring fly dates: bands that did shows in L.A. and are on their way to Phoenix, for example. According to technical/acoustic/video/lighting designer Rob Smoot, the Crossroads Christian Church (also in Corona) owns the property and, in addition to meeting at the building, wanted to make it more multipurpose to host outside events and concerts and “actually use it the other six days of the week,” Smoot says.

“We spent a lot of time and energy on the audience since they’re our core product and they’re the ones actually listening to giant speakers,” he continues. “We went for more of a soundstage approach, where we take away all of the naturally occurring sounds of the room—reflections, reverberation, anomalies—and try to minimize them. If we had to, we could always artificially re-introduce those. We are currently working with Yamaha and bringing in one of their AFC [Active Field Control] systems [which controls acoustical conditions based on the existing room condition by using the system’s acoustical feedback] to help augment the room. We tried to tune the room as quiet as possible—get our reverb time down below 1.5 to 1.8 ms—knowing that we could increase it to whatever setting we wanted. If we damped

it, we could control it. We handpicked [Johns Manville ceiling treatments] for their acoustical value. Then we went with the Manville soundboard on all the walls: We did opposing walls [stage-left and stage-right in the house] and the back of the house.”

In addition to looking at the acoustical “forest,” Smoot also analyzed the trees: the chairs and floor. Anyone who has attended a soundcheck knows that an empty room sounds much different than a fully occupied space. Therefore, Smoot brought chairs (and their absorptive quality) into his approach.

“We went with cloth-backed chairs,” he says. “We asked Bertolini for samples of the materials and did in-house testing where we took a laptop running Smaart, set up an Earthworks SR22 reference mic and ran some pink noise at it, and we tried to figure out which one would give us the most absorption value. In our venue, this was an issue because the majority of the people—especially the maintenance crews—wanted concrete floors for foot travel, cleanliness and clean up. So how do I get treatment on the floor? Well, if we have enough people and enough seats, it’ll do the same job. Now you have a giant sound baffle on the floor where it’s not a planar area—we have a flat seating area and stadium seating in the back-half—so all these seats are basically acting as a giant trap.”

Another design aspect was being rider-friendly—especially in P.A. choice: EAW KF761s (eight per side for the line arrays) and EAW KF750s over four 755s for the center cluster. “We flew it off of chain motors knowing that if a tour rolls in where they’re VerTec guys or V-DOSC guys or Meyer guys, we can drop ours, put it on the caster pallets, push it out of the way and hang theirs,” he says. “We went the same way with our amp room: We went all Crown IT 4000 Series, which all land on a speaker [NL-4/8] patchbay. Again, we can roll in their amp racks and processing and just patch straight across.”

Smoot says that the line arrays are pri-



Stage 1 at Candlewalk

marily used for music programs as Stage 1 is a wide room and sloped, and as such, Smoot needs to be able to control the array. "We wanted to cut reflections down as much as possible and the line array gives us that ability," he says. "It allows us to pinpoint from the back of the room to the front of the room. The seats at the front of the room, they're barely 20 feet from a driver, whereas people in the back of the room, they can be 120, 130 feet away from a cone. So that ability to steer the acoustical power around the room works great. But we brought in a twist when we added the point-source center cluster. We wanted spoken word to feel like it's originating from center stage. We're using all 750s because it gives us the ability to tightly control the pattern."

Smoot used EASE and Smaart for pre- and post-gear selection, respectively. With EASE, Smoot was able to tell the architects



Stage 1's acoustic/technical designer, Rob Smoot

what types of problems he was encountering with the room. "When we were positioning our cat walk," Smoot recalls, "I asked the architects if we could try to move it one way or the other to accommodate hang points to make sure our sound source was in roughly the same ballpark as we originally wanted. We can do a lot of the stuff in the virtual world." But in the real world, Smoot relied on Smaart to check the room once the majority of the gear was installed and the array was hung. "Granted, it may not be the perfect scientific method, but it did give us the ability to get that ballpark a lot smaller. We can really feel what the room is doing and you can justify what you think your ears are hearing and quantify what the room is doing in reality."

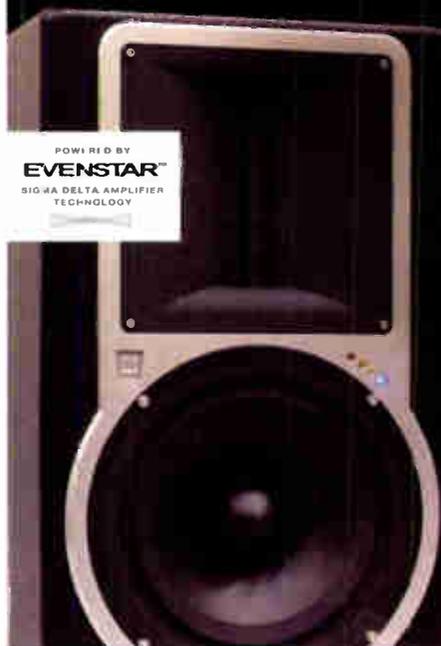


Sarah Benzuly is Mix's managing editor.

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# Musikmesse/Prolight+Sound 2005

## PRODUCT HITS FROM FRANKFURT

By George Petersen

Frankfurt's Musikmesse/Prolight+Sound has developed into the premier international marketplace for music, DJ and lighting gear, with this year attracting 93,000 visitors from 100 countries. Coming on the heels of NAMM and NSCA—and a week before NAB—one might assume that the gargantuan (14-exhibit hall!) convention might lose some of its attraction as a launchpad for new gear, but as in years past, we found no shortage of cool product debuts—from fun musical toys to high-end pro gear. Here are just a few.

The big buzz at Musikmesse was the joint announcement by Digidesign ([www.digidesign.com](http://www.digidesign.com)) and M-Audio ([www.m-audio.com](http://www.m-audio.com)) about Pro Tools M-Powered, a new cross-platform (Mac/PC) version of Pro Tools that runs on select M-Audio hardware. The \$349 software is similar to the familiar Pro Tools LE, but lacks certain features such as SMPTE timecode support. However, this powerhouse package includes 30 plug-ins and Digi Command|8 controller support, and sessions created on the software can be imported directly into Pro Tools TDM and LE systems, making it ideal for inter-studio collaborations.

Having purchased the company back from Mackie, Soundscape ([www.sydec.be](http://www.sydec.be)) has opened a U.S. office in Florida (954/572-6391) and previewed Editor Version 5. Adding the ability to play/record native (PC-based) tracks, V. 5 will be offered as an update to all Soundscape 32 and Red users later in the year. Also new are a full line of 24-bit/96kHz interfaces supporting 24 to 64 simultaneous I/O channels in various formats, two new hardware controllers and a remote 8-channel mic preamp.

RME (dist. by [www.synthax.com](http://www.synthax.com)) unveiled some serious pro I/O solutions. Its AES-32 puts 32 channels of 24-bit/192kHz AES (plus MIDI and timecode/MADI options) into a PCI card, with an optional rack breakout box with XLR (AES) jacks, as well as Tascam and Yamaha pin-outs on 25-pin D-sub. The ADI-6+2 handles multichannel MADI/AES conversions at up to 192 kHz, and the ADI-192 DD is a 192kHz-capable, 8-channel format/sample rate converter with

ADAT/AES/TDIF ports.

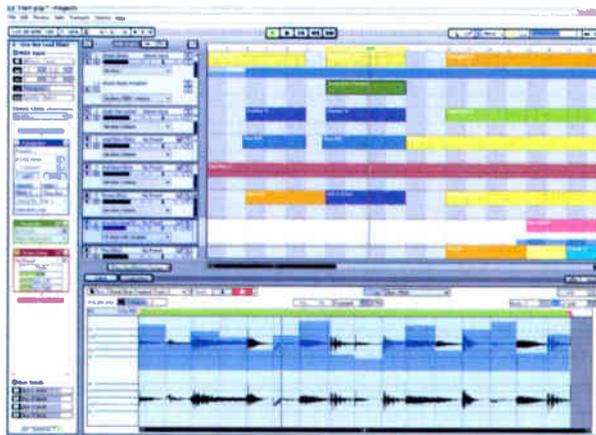
TerraTec Producer's ([www.terratecproducer.com](http://www.terratecproducer.com)) Phase X24 FW is a 24-bit/192kHz FireWire recording interface featuring two SPL-designed preamps (hi-Z/line/mic with phantom power), ¼-inch insert jacks, four TRS outputs, optical I/O (AC-3, DTS and S/PDIF), MIDI I/O and headphone monitoring in a compact chassis.

### MUSIK SOFTWARE

A stunningly powerful tool for real-time music looping/sequencing/arranging, Cakewalk's ([www.cakewalk.com](http://www.cakewalk.com)) Project5 V. 2 is now enhanced with the muscle of a full-on recording/editing DAW. Add in its pro-quality synths, loops, samplers, drums and the Roland Groove Engine™, and V. 2 is nothing short of a bargain. Reaktor 5 from Native Instruments ([www.nativeinstruments.com](http://www.nativeinstruments.com)) takes the concept of virtual instruments and sound design to a higher plateau, fusing synthesis, sampling and effects via new Reaktor Core Technology, opening a near-unlimited range of custom modules (oscillators, filters, delays, EQs, etc.). Yeah!

As if 1.5 million samples in its holdings weren't enough, the Opus 2 from Vienna Symphonic Library ([www.vsl.co.at](http://www.vsl.co.at)) adds 9.3 GB of orchestral articulations, strings, brass, woodwinds, percussion and more in EXS24, Giga, HALion and Kontakt formats. And Swar Systems expands its sampled Indian instruments and loops with a new collection of Carnatic (south Indian) sounds, all in VSTi and AudioUnits formats. Hear them at [www.swarsystems.com](http://www.swarsystems.com) and spice up your productions!

Offering the same edge as the PowerCore FireWire rack, TC Electronic's ([www.tcelectronic.com](http://www.tcelectronic.com)) PowerCore PCI mkII packs four 150MHz DSP chips onto a short-length PCI card for a VST, RTAS (via FXpansion's VST-to-RTAS adapter) or AudioUnits-compatible system. The card includes 14 plugs and runs current and future PowerCore plugs.



Cakewalk Project5 Version 2

### MISCHPULTE—ANALOG UND DIGITAL

Lawo ([www.lawo.ca](http://www.lawo.ca)) demoed new software for its MC 66 broadcast/production console. The update adds a new, easy-to-use bus assign page and a slick sequence automation page that makes cue management a breeze and is ideal for theater snapshot tweaking, even during a show. SPL's ([www.spl-usa.com](http://www.spl-usa.com)) DMC dual-channel mastering console



SPL DMC

is a compact mastering mixer with the same superhigh-performance, 120-volt rails as its acclaimed MMC1 and MMC2 cousins, but in a stereo version. Alto ([www.altoproaudio.com](http://www.altoproaudio.com)) showed its L Series of recording/live analog mixers, which feature an assignable USB port that can be set to either the main or sub 1/2 outputs for recording or routed to the main mix or channels 15/16 for playback.

On the live side is the first suite of plug-ins designed for Digidesign's VENUE console: Drawmer's ([www.drawmer.com](http://www.drawmer.com)) TourBuss is a collection of dynamics (gate/compressor/limiter/expander) and HP/LP



Neumann BCM 705

filters for live TDM applications. DiGiCo's (www.digiconsoles.com) D-Tube is a hardware 8-channel tube mic pre module that works with any of its digital mixers.

### SIGNAL PROZESSOREN

Universal Audio (www.uaudio.com) reissued the LA-3A—a clone of UREI's 1969 solid-state opto-compressor—that comes with an IEC power cord, XLR I/O and a switch for the popular "gain-mod" option. Waves (www.waves.com) previewed MaxxBCL, a 2U box that combines MaxxBass, L2 Ultramaximizer limiting and Renaissance compression for the ultimate in "no bottom" bass enhancement for live, studio,



Universal Audio LA-3A

post, broadcast or mastering. I finally got to hear Empirical Labs' (www.empiricalaudio.com) Lil FrEQ, a monster that will destroy the way you think about EQ. This single-channel unit has two shelving bands, tunable low cut, four parametric bands, dynamic EQ for de-essing and direct box input—all noiseless and distortion-free. Best of all, its smooth processing is absolutely addictive.

### LAUTSPRECHER SYSTEME

For an MI show, Musikmesse showed some serious studio monitors. These are detailed in the monitor article on page 36, so I'll mention them briefly here. The \$49,000/

pair ADM Zero from KS Digital (www.ks-audio.de) combines FIRTEC DSP control and an amazing slot waveguide for wide, smooth response. Event's (www.eventi.com) Active Linear Phase (ALP) 5 puts a sweet-sounding, bi-amplified design in a small cabinet. The tri-amped Twin 6 Be and bi-amped Solo 6 Be models from Focal (www.wavedistribution.com) feature a beryllium tweeter and single or dual 6.5-inch woofers. I got to preview Genelec's (www.genelec.com) 8020A, which was officially unveiled at last month's AES Barcelona. The 8020A pairs a 4-inch LF with a ¾-inch tweeter and bi-amping in a 10-inch aluminum cabinet. An optional LSE sub provides 25Hz lows and adds bass management for 2.1 or 5.1 systems.

The Tannoy (www.tannoy.com) Precision Series combines 6- or 8-inch dual-concentric coaxial drivers with a SuperTweeter™ for 51kHz response. The company also upgraded its entire Reveal line—now in active, passive and bi-amped digital input versions—with SuperTweeters on the high-end models. Also new is optional Activ-Assist software (Mac/PC) that includes a calibrated measurement mic to help users set speaker EQ to compensate for room acoustics or placement.

### MIKROFONEN

The BCM 705 from Neumann (www.neumannusa.com) is the company's first dynamic mic. This \$799 supercardioid model is designed for broadcast and voice-over work, but would be equally at home on close-in vocals in the project or pro studio. A hypercardioid FET condenser for handheld vocals, the \$149 Groove Tubes (www.groovetubes.com) GT Convertible features a removable ball windscreen that converts the mic for instrument miking use. Now distributing BLUE Microphones, Electro-Voice (www.electrovoice.com) debuted two models produced exclusively for Electro-Voice. The E-V/BLUE Cardinal (condenser) and Raven (dynamic) are front-address, cardioid models for vocal or instrument miking and feature a two-way integrated swivel mount for positioning ease.

Microtech-Gefell (www.microtech-gefell.de) expanded its line of excellent measurement mics—insiders know how good these



really are. The MV230 Digital/MK221 package combines a ½-inch capsule condenser mic with onboard 24-bit A/D converter and AES43/AES3 output with a pocket-sized adapter providing USB for interfacing with laptops for field measurements. Also new is the M950, a wide-cardioid version of the company's popular studio condensers with 7dBA self-noise and the same pricing as the M930.



E-V/BLUE Cardinal

A *zusatzgerät* that anyone could use, RØDE's (www.rodemic.com) D-PowerPlug is a phantom-powerable, instrumentation-grade circuit that boosts a dynamic mic signal to a high-level, balanced line output that drives 100-meter cable runs without loss or signal degradation. It's available as an external XLR adapter that plugs into any mic or as a tiny PC board with attached XLR connector for retrofit into many standard dynamics.

Start packing your *lederhosen* now, because Musikmesse/Prolight+Sound returns to everyone's favorite German city next year, from March 29 to April 1, 2006. *Auf wiedersehen, Messe!*

George Petersen is Mix's editorial director.

# DJ Classy D

## The Changing Face of Digital Amplification

This month, I'm starting a rant about commoditization and the increasing integration and digitization of electronic functions formerly given over to Ye Olde Analog methods. One longtime holdout has been amplification, which, as with most other applications, has finally begun what some view as the downward spiral toward (blech) digital. Let's take a look at these so-called digital devices to understand why people think they're digital and give some respect to a worthy technology that sure could use some.

Digital amplifier. The phrase conjures up the vision of either an esoteric piece of hi-fi gear or a cool, compact rackmount amp for reinforcement. What you don't know is that digital amplifiers are now cheap, ubiquitous and available in virtually all power ratings. First off, they aren't digital, not in the generally accepted sense. They are digital in the binary sense, but pulse width modulation (PWM) power amps are more in the delta sigma vein of DSD than the brute force approach taken by PCM.

Pulse width modulation converts analog amplitude variations into duty-cycle variations of a very high-frequency square wave. If the amplitude is zero, then the square wave is off, not present. If the amplitude is low, then the square wave spends most of its time off, with a teensy-weensy proportion of its time on. As the amplitude rises, the duty cycle, or amount of "on time," increases and, at full power, the output devices are at 50 percent duty cycle—a full-power square wave—dumping all the current the power supply can muster into the load.

At the final output sits a high-current LPF, which filters the spurious harmonic energy, leaving the amplified, reconstructed audio program to pass unencumbered. Sound familiar? It should, as the lowpass filter serves the same purpose as an anti-image filter in a D/A converter.

Pulse width modulation is basically the same approach, but taken with cheap, SCR (silicon-controlled rectifiers) or triac-based lighting dimmers—the kind that are banned from any self-respecting audio facility. What you may not know is why they're banned, and that's all about the RF-induced noise in your studio, which we'll look at later.

Most of you know that, in the realm of amplification, Class-A is the Holy Grail and only accessible to those who genuflect to the efficient, indirect radiator-horned (loaded) God. If you are a Class-A acolyte, you should grab the prayer beads now and run screaming for the next article, because PWM amps are philosophically anti-Class-A. While Class-A seeks to confine the output device within a small but linear operating range, a PWM amp's output devices are purposefully designed to go nonlinear and stay that way until they're shut off. One is extremely

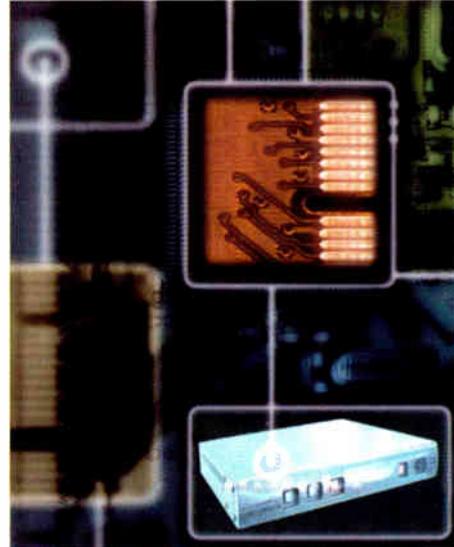


ILLUSTRATION: PHOTODISC/LIZABETH HEAVERN

wasteful, while the other is efficient to the max.

Efficiency is one thing, but there are many other metrics by which one should judge an amplifier, and Class-D has its share of problems. Because we as an industry have yet to concoct a standardized testing regime that correlates to our impressions of an audio system being tested, we have to blunder our way through a quagmire of operational parameters to find something meaningful. When it comes to Class-D, slew rate, power supply, current-limiting and band-limiting output filters all have a major stake in the overall operation.

Now let's talk about that RF noise I referred to earlier. For those of you who have listened to a 1kHz square wave, you know it doesn't sound much like a 1k sine wave. The reason is that damnable gotcha: harmonics and the distortion they create. Square waves comprise an infinite summation of odd-harmonic sine waves with decreasing amplitude (6 dB/octave). That odd-harmonic energy is what lends that air of, shall we say, annoying timbre. Notice that I said infinite: It's that harmonic energy marching out to the microwave band that makes SCR dimmers an audio pariah. Whenever you switch an electronic circuit off and then back on as fast as you can, the circuit will generate radio frequency noise. That radiated noise will worm its way into poorly shielded and grounded analog inputs nearby. Class-D amplifiers—like their distant relative, the switching power supply—require inclusive Faraday cages to contain the RF beast.

Looking at a power amp's power aspect, Class-D amps behave differently than Class-A or A/B when it comes to maxing out. When the supply rails reach their limits, Class-D amps tend to compress rather than clip, but the power supply's current capability is what shapes the amplifier's overload behavior to which it's attached.

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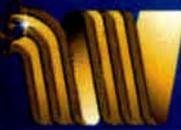


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If the amplifier is of the digital input variety (DSD or LPCM), then the input can clip when presented with continuous digital overs. If the amplifier is a hybrid design with an analog input, then that can, of course, clip in the old-school way. Though some manufacturers refer to Class-D amps with digital inputs as "pure digital," don't be bamboozled. Because a Class-D amp's output is analog, you cannot really call them "digital" amplifiers. As I said before, they're analog amps, just a wee bit nonlinear in their operation.

The final gross performance arbiter with Class-D products is slew rate, or the rate-of-change capability of the output devices. The device's finite rise and fall times—how fast the transistors can switch on or off—determines how faithfully they can track the pulse width commands given to them. If the transistor is still slewing up or down when a command is given to head in the other direction, then it won't be able to complete the last command. This results in slewing-induced distortion, which is very different from that same distortion in an "analog" amplifier. There are other factors that govern performance such as stability of the modulator's clock. Along with power supply voltage regulations, it dictates linearity by the same mechanism seen in an A/D converter.

When the above considerations are carefully balanced, the result is a physically small, efficient and good-sounding amplifier whose deceptive form factor belies the power trapped within.

Nowadays, everything from iPods and cellphones to self-powered studio monitors sport versions of Class-D amplification. Some of the many manufacturers providing products, from single-chip versions to complete modular OEM assemblies, include Apogee, Bang & Olufsen ICEpower, Carver, Cirrus Logic, D2Audio, DEQX, Maxim Integrated, Microsemi, Mitsubishi, Mueta, PowerPhysics, Pulsus Technologies, Sanken, Texas Instruments, Tripath Technology, Wolfson Microelectronics and Zetex. Next time you're at a hi-fi store or tradeshow, take a moment to recognize the changing face of amplification. Class-D, it's not just for reinforcement anymore!

Many thanks to Ken Kantor for his patient guidance in the ways of The (Electromotive) Force. ■

*OMas has had too many tradeshows on his mind, but still found time to chill with the tranquil alt rock of The Album Leaf's One Day I'll Be on Time (Tiger Style Records).*

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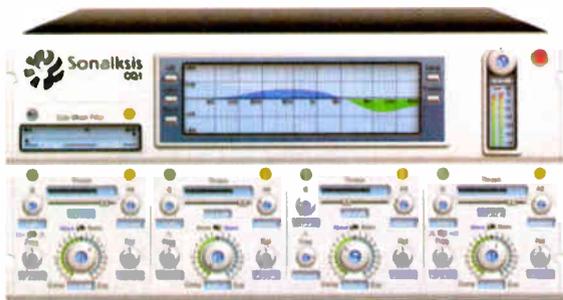
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# Tools of the Trade



## SONALKSIS CQ1

Sonalksis, the tongue-twisting company from the UK, offers its CQ1 Multiband Compressor (\$279), designed to provide gentle or aggressive shaping of signal dynamics in explicit frequency bands. Features include definable sidechain filtering, zero latency, 64-bit floating point internal processing and support up to 192 kHz. The cross-platform (Mac/PC) plug-in supports VST, DirectX and AudioUnits formats. It's available via download at [www.sonalksis.com](http://www.sonalksis.com).



## SOURCE ELEMENTS SOURCE-CONNECT 1

Offering a new way to achieve long-distance audio production, Source-Connect 1 ([www.source-elements.com](http://www.source-elements.com), \$1,495) is a fully featured Pro Tools plug-in that allows broadcast-quality audio to be transmitted between remote locations. The simple-to-use interface offers a number of expandable control panels. Once a connection is made, a status panel monitors system performance. Source-Connect supports Pro Tools LE and TDM 6.4 and above. Additional requirements include a high-speed Internet connection and an iLok.

## MARIAN UCON-CX INTERFACE

Those needing on-the-go high-resolution audio will love this new I/O box from Marian ([www.plus24.net](http://www.plus24.net), \$899). The unit features four mic pre-amps (which also double as hi-Z inputs), eight line I/Os, headphone outs with separate volume control and digital I/O (S/PDIF). In addition, the

box provides ADAT I/O, MIDI in, two MIDI outs, a 32-channel DSP mixer and word clock I/O. The box is powered and communicates via USB 2 and is only 9.5 inches wide.

## ANTELOPE AUDIO OCX CLOCK

From the mind of Igor Levin, father of the AardSync line of clocks, the Antelope OCX ([www.antelopeaudio.com](http://www.antelopeaudio.com), \$1,250) uses an oven-controlled crystal that boasts 4 to 10x lower jitter and up to 100x higher stability than competing products. Supported

sample rates range from 32 to 192 kHz, with outputs for Digidesign Superclock, eight word clock outputs, two AES/EBU outputs and two S/PDIF outputs. It can also be slaved to the Rubidium Atomic Clock, a first for an audio clocking product.

## MEET YOUR BEAT MYB VOLUME THREE

Meet Your Beat offers a new collection of loops and one-shots from percussionists Doc Gibbs and Larry McDonald. MYB Volume Three features Gibbs (Chef

Emeril's personal percussionist) on conga, agogo blocks, conga, shaker, tambourine and the Roland Handsonic. The loops and sounds are royalty-free and available through Sonomic ([www.sonomic.com](http://www.sonomic.com)), where customers can buy individual samples for \$1.99 or a \$29.99 monthly subscription that allows 30 downloads each month.

## ILIO ORIGINS

Doing a *Gladiator* or *Troy* sequel? This new collection of historical sounds from ILIO ([www.ilio.com](http://www.ilio.com), \$349) features rare instruments including Greek aulos, Roman war horns, animal horns, flutes, whistles, reed pipes, bone flute, historical harp and lyre, and historical zithers. The multi-samples are presented in a variety of dynamics and articulations, and feature a large number of expressive phrases and performances. The DVD-ROM includes other rarities, including vocal clusters, solo vocal notes and effects; Shamanic circular breathing songs; slave chants; war and celebration; swords and armor; mysterious pads and drones; and sound effects. Origins supports EXS24 and GigaStudio 3 formats.

## TL LABS DRUM REHAB

Letting bad drum sounds surrender control to a higher power, Trillium Lane Labs

Drum Rehab has a sample-accurate triggering system that automatically replaces drum hits in existing recordings with pristine samples in real time. The cross-platform, Pro Tools-based software (LE and TDM) offers up to 16 levels of multi-sample support, and includes a powerful browser and converter, a full



envelope and tone shaping of drum samples. The software ships on a DVD of more than 4 GB of samples that can be imported, with additional samples promised online from [www.tllabs.com](http://www.tllabs.com).

**OPEN LABS NEKO GS WORKSTATION**

It's a workstation, it's a keyboard, it's a sample playback unit. No, wait! You're all correct. Open Labs' NeKo GS ([www.openlabs.com](http://www.openlabs.com), \$4,995), the jack-of-all-trades disguised as a keyboard, is designed to work with Tascam's GigaStudio 3 sampler, Pro Tools and the E-mu Proteus X sound module. The unit contains a Pentium 4 computer that's further optimized by Open Labs' mFusion software. mFusion partners with a control panel that lets users easily navigate, access and re-map control surfaces for all Open Labs' control panels and third-party MIDI control devices.



**M-AUDIO KEY RIG, DRUM AND BASS RIG**

M-Audio ([www.m-audio.com](http://www.m-audio.com)) offers two virtual software instrument packages. The bundles work stand-alone or inside popular apps compatible with AudioUnits (Mac), VST (Win/Mac) and RTAS (Win/Mac). Key Rig includes the SP-1 stage piano module, MS-2 polyphonic synth, MB-3 electromagnetic organ and the GM-4 general MIDI module with 128 General MIDI instruments. The Drum and Bass Rig offers the LC-5 loop



creator, BL-6 bass line module, EB-8 electric bass module and RD-7 real drums module. Both collections share the same engine and features, including a MIDI/mixer section and master effects section. Price: \$129 each.

**SOUND GRINDER V. 2.1**

Making batch conversion a breeze, Sound Grinder 2.1, the latest version from Monkey Tools ([www.monkey-tools.com](http://www.monkey-tools.com), \$39), offers conversion to and from .WAV, .AIFF, Quicktime, AMR Narrow Band, AudioUnits, MP3, OGG and Sound Designer II. The simple GUI offers a one-window mentality

that allows the user to run multiple batch operations simultaneously. Features include RMS and peak normalizing, rapid convert, pull-up/down sample rates, 31-character name support and many speed and ease-of-use enhancements.

**SE ELECTRONICS TITAN MICROPHONE**

The unique-looking new mic from SE Electronics ([www.seelectronics.com](http://www.seelectronics.com), \$1,499) is a transformerless, Class-A FET condenser microphone that offers figure-8, cardioid and omni patterns. The name alludes to the center-terminated titanium diaphragm that boasts enhanced clarity, detail and transient response. The mic also features a -10dB pad and low-frequency roll-off switch.



**NATIVE INSTRUMENTS KONTAKT 2**

Native Instruments' über-sampler, KONTAKT 2 ([www.native-instruments.com](http://www.native-instruments.com), \$579; \$169 for the update), is equipped with numerous new features and enhancements that promise to make sampling more versatile and efficient. Improvements include a new user interface, surround capability, unlimited voices, universal import and a RAM-saving Sample Purge function. The player offers a new multi-browser allowing for easier imports, while the multi-effects, custom modules, filters and convolution effects give users new ways to mangle and enhance their audio.

**KJAERHUS AUDIO GAC-1**

The latest virtual processor from Denmark is a twin-channel plug-in featuring two EQs, two compressors, a noise gate and a de-esser. The effects are interconnected with 10 selectable routings, including normal instrument setups, dual band setups and some interesting extras, such as mid-side processing and filtering for the compressor's sidechain inputs. The unit operates in stereo, stereo with sidechain and mono with sidechain. The plug boasts no latency, and is available from [www.kjaerhusaudio.com](http://www.kjaerhusaudio.com) for \$198.

**MILLENNIA HV-3C**

Millennia's ([www.mil-media.com](http://www.mil-media.com)) latest proves that good things can come in smaller packages. The HV-



3C (\$1,995) delivers two of the same preamps used in its HV-3D 8-channel units, but in a single rackspace. The transformerless design outputs up to 60.5 dB of gain (78 dB upon request) on a 36-step gain control with both channels gain-matched within 0.8 dB. Options include 130V mic inputs (B&K/DPA), 192kHz/24-bit POW-r A/D converters and DC input. THD+N measures 0.0005%, and gold-plated switches and connectors are used throughout.

**ENHANCED AUDIO MIC MOUNT**

The M600 universal mic mount from Enhanced Audio ([www.enhancedaudio.ie](http://www.enhancedaudio.ie)) provides an innovative approach to mic mounting with super



three mounting screws, supporting Deltrin polymer pads for complete isolation from external vibration and infrasonics.

**LINEAR INTEGRATED SYSTEMS JFET**

The LSK170 Series of ultralow-noise JFETs from Linear Integrated Systems ([www.linarsystems.com](http://www.linarsystems.com)) are a direct

pin-for-pin replacement for Toshiba's 2SK170. Available in surface-mount SOT-23 and through-hole TO-92 packages, the devices are specifically designed for low-noise, high input-impedance applications in which high headroom and transient response are required, such as audio front ends and preamps.

**PHONIC HELIX BOARD MIXERS**

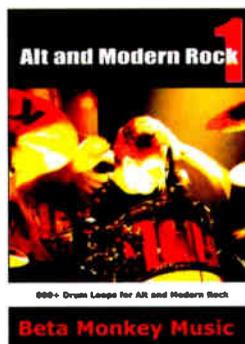
Three new line mixers from Phonic ([www.phonic.com](http://www.phonic.com)) offer FireWire computer connectivity, up to 96kHz operation and the Phonic 32/40-bit DFX engine. The Helix Board 12 FireWire is a 12-input FireWire mixer offering an alternate 3-4 stereo bus and 16 high-definition digital multi-effects. The Helix Board FireWire 18 is an 18-input, two-subgroup, tabletop FireWire mixer with S/PDIF out, 10-band graphic EQ and eight mic preamps. The Helix Board FireWire 24 is a 24-in, four-bus console with 16 mic preamps and subwoofer output with variable lowpass filter and source from main mix or aux 4.



**Upgrades and Updates**

**MOTU** ([www.motu.com](http://www.motu.com)) is now shipping **OS X Tiger-compatible versions** of its products. Drivers and software updates can be downloaded from its site...**Sony** ([www.sony.com/mediasoftware](http://www.sony.com/mediasoftware)) is now shipping **Sound Forge 8**, which now comes with CD Architect 5.2 software, ASIO driver support and VST plug-in support...**Eventide** ([www.eventide.com](http://www.eventide.com)) has shipped **Version 4.5 for the H8000 and H8000A** Ultra-Harmonizer effects processors. The updated software enables custom-scale pitch-shifting, MIDI virtual racks, effects stacking and new 5.1 algorithms...**Octiv's** ([www.octiv.com](http://www.octiv.com)) **Volume Logic** digital remastering software for iTunes is now shipping for Windows Media Player, Real Player, Musicmatch Jukebox and Nullsoft Winamp...**Kaysound Imports**, which distributes **Hercules Technologies** ([www.hercules.com](http://www.hercules.com)), has announced a **\$100 price drop of the Hercules 16/12 FW** audio/MIDI interface...**Native Instruments' ABSYNTH**

**3 demo is now available** as a free download for Windows and Mac OS X at [www.native-instruments.com](http://www.native-instruments.com)...**Propellerhead Software** announced the availability of **Sonic Reality Sonic Refills for Reason 3** with Retro Keys, Vocal Textures and Mello T. Get the download from the company PropShop at [www.propellerheads.se](http://www.propellerheads.se)...**Beta Monkey Music** is now shipping its **Alt and Modern Rock III and IV** collections. Nearly 1.4 GB of 24-bit drum loops and samples are available only to Beta Monkey users from [www.betamonkeymusic.com](http://www.betamonkeymusic.com)...**Cycling '74** ([www.cycling74.com](http://www.cycling74.com)) released **Mode for Windows XP-host applications** supporting the VST and RTAS formats. Mode is a package of native audio processing plug-ins, featuring three instruments and two



effects units that integrate functions and performance controls typically found in rackmount and workstation hardware...**Edirol** ([www.edirol.com](http://www.edirol.com)) is shipping an **improved R-4 4-channel** portable digital recorder. The R-4 now supports Broadcast .WAV format files and writes the required metadata to comply with BWF standard...**Spin Audio** ([www.spinaudio.com](http://www.spinaudio.com)) has released **RoomVerb M2 V. 2.2** with an improved reverb engine that promises more realistic reverberation and better stereo image. The update comes bundled with a redesigned set of 250 ready-to-use factory presets...**Muse Research** has expanded the number of plug-ins that are compatible with its **Receptor** plug-in host unit. A complete listing of the available plug-ins is available at [www.plugorama.com](http://www.plugorama.com). ■

# Put **your** outboard EQ inside your DAW

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World Radio History

# TC Electronic M6000 Mastering Processor

## Precision Stereo and Multichannel Audio Tools

In this brave new world in which plug-in processors have quickly come to the forefront, the TC Electronic System 6000 hardware unit has maintained its prominence in the audio workplace. This is due in large part to its scalability. With the advent of the new 3.5 operating system, users potentially have a fully loaded system that can be upgraded at will by a simple challenge/response system.

The new M6000 Mastering package is targeted to the mastering engineer's needs. The new tools work in mono, stereo, LCRS, 5.1, 6.1 or 7.1, with additional cascading of the four internal engines for extended formats (8.1, 10.2, etc.).

### HARDWARE OVERVIEW

The Mastering 6000 hardware comprises three major components. The Mainframe is a 2U box that houses the DSP and three optional I/O cards. The ICON is a touch-sensitive TFT active matrix color LCD (640x480 pixels) and moving-fader remote control. The ICON is an optional, but highly recommended, accessory. In its absence, the M6000 comes with software so it can be operated from a Mac or PC. Last is the Remote CPU, a Windows NT-compatible computer housed in a 1U frame whose primary function is to run the ICON.

Minimum physical I/O configuration is eight AES/EBU via a DB25 connector housed on the DSP6000 card. Additional I/O in the remaining three slots can be configured with the AD/DA cards, each having two channels of balanced analog I/O on XLR connectors or one additional digital card—the AES-8—which has four channels of AES/EBU I/O on XLR connectors. One AES-8 card can be installed, while AD/DA cards can be installed in any remaining slots. My unit was configured with the required DSP6000 and three AD/DA cards, for a total of eight AES/EBU I/O and six balanced analog I/Os.

If you're familiar with how the System 6000 operates, then you'll fall right into lock-step with the new algorithms. Once configured, ICON's FRAME screen shows routing, algorithms and levels. The entire screen becomes a relative metering system, displaying signal at the physical input,

the processor input, processor output and physical output. Hit the Route button, and you get labels for every input and output.

### STEREO TOOLS

The Mastering 6000 includes stereo and multichannel licenses for a number of algorithms. The stereo package includes the MD3 multiband dynamics processor, which is the successor to the M5000's MD2 dynamics processor. It uses a 3-band compressor, expander, limiter and 4-band parametric equalizer—all in a single algorithm. It can run in stereo or dual-mono configurations. Stereo signals can be processed conventionally or in MS mode, and an MS signal can be converted to stereo. The limiter uses an "overshoot-proof micro-delay" to avoid any samples exceeding the threshold.

Next is the MD4 multiband dynamics, featuring five bands of compression, the DXP (expansion) mode used to lift up low-level detail and a 4-band parametric EQ. The compressor has three different configurations: Normal mode operates like a standard downward compressor until a second threshold is reached, at which point, the limiter kicks in. Parallel mode mixes the compressed signal with the dry signal (complete with delay-compensated primary path dry signal). DXP Mode is designed to enhance subtle details without boosting portions of the audio that are already loud enough in the mix. This process can be applied to the M and S portions of the stereo signal individually.

The three modes use 48-bit fixed-point processing. The EQ section uses 48-bit fs/2 analog modeling, regardless of the M6000's set sample rate; i.e., you can input a boost at 24 kHz and the signal will be effected within the bandpass of the current sample rate limitations. In MS mode, mid and side can be EQ'd separately, offering the same operational flexibility as the compressor.

Rounding out the group is Brickwall 2 and De-Esser. Brickwall 2 is an



"investigative tool" designed to analyze the incoming signal and detect any samples above 0 dBfs and remove them. It can even be used on previously mastered material to remove intersample peaks associated with the overuse of loudness maximizers. The De-Esser's 100 to 20k Hz bandwidth makes it suitable for de-popping and frequency-dependent limiting in the sibilant range.

### MULTICHANNEL TOOLS

The MD3, MD4, Brickwall 2 and De-Esser are enabled for multichannel use. The system also offers the MD 5.1 (5.1-channel dynamics processor), a 3-band compressor, expander and limiter in one algorithm.

The Toolbox 5.1 features level, test and bass management, as well as a downmix conversion option, providing precise monitoring of your surround mix in mono, stereo, LCRS and 5.1. The Toolbox also provides speaker solos, mutes and reference levels for various listening environments.

Lastly, the EQ 5.1—a 6-channel 4-band equalizer—offers different linking options, parametric, shelving and notch selectors, as well as Butterworth- and Bessel-type filters. The range for the notch is -100 dB to 0 dB, with the bandwidth selectable from 0.02 to 1 octave. The shelf can be set to 3/6/9/12 dB, allowing you to adjust the slope and gently reproduce the Baxandall curve or conventional console-style plateaus.

### IN THE 5.1 STUDIO

TC Electronic has extensively researched the characteristics of source audio to develop "profiles" that work well with specific types of material, given the spectral information and dynamic range. For instance, the Brickwall 2 has dynamic, soft, universal,

# ALL OF THE WARMTH... NONE OF THE HASSLE

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Most agree the sound of a good tube microphone is wonderful. We have all heard the warmth and silky-ness that they can produce. But most will also agree that it's a lot of work to set them up, and valuable time is wasted waiting for them to heat. This, and the inevitable tube replacement reality. We also make some of the best tube mics available, like the V69 Mogami Edition, and we have a solution to these age old dilemmas.

The new **MXL V6 SILICON VALVE™** solid-state microphone.

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"We had already fallen in love with the company's products, and now the MXL tradition continues with the new V6 microphone. The mic has a classic look and solid construction coupled with an incredible sensitivity to capture the subtleties of human performance. The V6 has the full, rich sound we need to produce hit records".

**Joey P and Dale "Rampro" Ramsey,**

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"Here is a mic with all the sonic elegance and qualities of vintoge tube mics in a phantom powered condenser. They rocked the house as room mics, every bit as good as my matched pair of U 67's and also sounded warm and transparent on vocals. I am a fan!!!!"

**Joel Jaffe,**

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

"The V6 easily lives up to the claims made by Marshall Electronics. It's a big sounding mic, with plenty of open top end, good dynamic response, low noise, and a warm tone. It lines up next to the V69 very well, delivering similar tone, and excellent value. I don't know how they do it, but Marshall continues its history of delivering value-packed microphones".

**Mitch Gallagher,** EQ magazine

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loud and voice profiles that are good starting points for classical music, acoustic music, pop music, distorted music (read: hard-core) and aggressive voice material, respectively. The timing, phase, threshold, etc., can be altered after the initial profile is selected.

I used the Brickwall 2 on several different sources, including soft voice and piano, choirs and a pop band track (Rhodes, drum kit, synths, distorted guitars, bass, vocals). Original sources were recorded on a Pro Tools|HD2 system running through a 192 I/O using both 16-bit/44.1kHz and 24-bit/88.2kHz files. The transparency of this software is beyond question: You really have to push the parameters into the silly zone to hear the time smear and the pumping. Yes, if you are looking for loud, you can make it loud. The point is, the company has given you a very fine polish that can be used with discretion and finesse. Numerous processors will give you loud; the M6000 gives you precision.

The MD4 algorithm's DXP mode worked exactly as stated: It gently raised the lower-level dynamics of acoustic guitars and delicate bells, bringing them more in focus with the rest of the mix. Once the crossover points were set for the multiband compressor, a

distinct harshness around 5 kHz was brought down in level on the huge Broadway choir recordings. In Parallel mode, the desired result of punching up the low end on a pop recording without adding loudness to the rest of the track worked very well.

When I used the De-Esser, the sibilant frequency on a female vocal track was easily found with the sidechain monitoring and surgically removed, leaving the surrounding frequencies intact.

The MD 5.1 and EQ 5.1 worked as well as the others—with precision, clarity and virtually indecipherable time shift and artifacts. I did not find any ringing when using the EQ. This is a linear phase EQ, eliminating the phase distortion created by the signal delay associated with conventional analog EQs. Operating the EQ screen takes some getting used to as you must select the Frequency screen, then the Gain, then the Q; all parameters are not available at the same time on the same screen as with most software EQs. It is not a huge effort to toggle between them, and operation becomes second nature in short order. The MD 5.1 perfectly tamed a pair of slightly hot vocal "answer" tracks in the surrounds without effecting the other channels.

## MASTER OF THE UNIVERSE

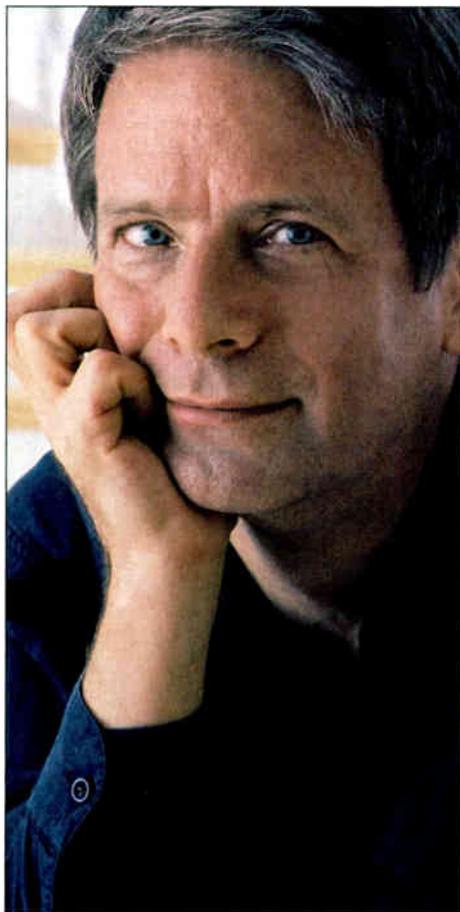
The M6000 is a pleasure to operate. During the course of this review, it was difficult to pinpoint any inadequacies within the system. Ergonomically, it is easy to navigate and sonically beyond reproach. As for the base system, the outstanding AD/DA converters include a virtually jitter-free DAC and what some say is the quintessential internal clock included at no extra charge. There is a reason that this device is used by the finest ears in the business: It is a precision tool that, in the hands of an experienced mastering engineer, will give results that will turn a well-mixed record into a polished, marketable product.

Prices for the Mastering 6000 start at \$7,995 (MSRP); mainframe with eight channels of AES/EBU I/O, stereo and multichannel dynamics, EQ, matrix and software editor are included. The optional ICON remote lists for \$3,250.

TC Electronic, 818/665-4900, www.tcelectronic.com.



*Bobby Frasier is a digital audio product specialist, professional audio consultant and educator.*



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# MXL V6 Condenser Microphone

## Solid-State Design With a Warm Tube Sound

In today's microphone market, it's a nice surprise to see a new approach to a traditional concept. MXL's parent company, Marshall Electronics, has introduced a low-cost alternative to its tube (valve) V69 mic. The V6, the first member of the company's Silicon Valve mic line, was created to blend the reliability and cost-effectiveness of solid-state electronics with classic tube sound.

### OUT OF THE CHERRY WOOD BOX

Manufactured in the U.S. and shipped in a cherry wood box, the V6 is a large-diaphragm (25mm capsule), side-address, pressure-gradient condenser model inside a gold-plated grille and mounted on a silver torpedo-shaped body. Weighing in at 1.15 pounds, this mic's heft and feel inspires confidence (and requires a solid mic stand) for use in studio and onstage. MXL states that a solid-state FET amplifier's transformerless output simulates what tubes naturally do. (No, the company is not telling how it was done, but MXL does claim that the circuit reduces the harshness created by odd-order harmonics and musically unrelated distortions caused by a variety of components within the signal path.)

I immediately liked the classy look and feel of this microphone, yet its low cost made me somewhat skeptical. But then I began using it in all kinds of applications and on all kinds of instruments with truly excellent results. MXL recommends it for vocalists and musical instruments, and it proved useful in a wide variety of settings and styles, perhaps more than originally intended.

### IN THE STUDIO

The first test of this cardioid mic was recording a male voice-over. The result was warm and crisp, comparing quite favorably against my trusty Audio-Technica 4033 and an AKG 414. After that, I used the V6 on a variety of pop and classical singers and it handled just about everything I threw at it, offering a smooth and lush tube-like sound. It was a little strident on an operatic soprano (in a living room recital recording environment), but

a touch of shelving EQ at about 8k tamed things considerably. Male pop and classical vocals were full-bodied and clear; proximity effect was there just as with any cardioid, but not overly exaggerated.

The V6 was robust and detailed on a 1994 John Zeidler Excalibur cut-away rosewood model acoustic guitar and easily handled my male artist's breathy, intimate vocals. Again, it performed admirably against the 4050 and a Neumann KM84; not better or worse, just a little different in the upper mids. Perhaps most surprising was the sound of vocal and guitar together, with the V6 backed off enough to pick up both. I truly didn't expect the kind of solid, detailed imaging I got with the V6 alone.

### ON THE STAGE

Quite an eye-catcher, the V6's attractive gold grille and silver body turned quite a few heads when used on tenor saxophone in a Coltrane tribute concert recorded for radio broadcast from Philadelphia's Kimmel Center for the Performing Arts. Not only did it *look* good onstage, but the V6's sound created quite a stir. The house engineer was immediately impressed with its sound in the main mix; we had none of the usual dreaded "sqonk and honk" associated with putting a large-diaphragm condenser mic in front of a saxophone in the middle of a busy live jazz ensemble. In live use, there's lots of gain, plenty of presence and no harshness.

The V6 continuously surprised me when used for additional stage applications, including recorder, orchestral harp and even a solo double bass.

Surprisingly, I needed very little limiting or compression at mix time; this mic makes mixing so much easier, with the kind of sound one might expect from a much pricier tube mic. Dispelling any coincidence, the V6 produced the same kind of smooth, articulate detailed sound from a different saxophonist a few weeks later in the same venue on another live broadcast recording.

In multitrack miking and mixing,



unwanted spill from other sources usually necessitates a lot of gain riding and ducking to keep things clean. Some mics sound quite ugly when picking up anything but sound immediately in front of them. The V6 doesn't seem to have that problem; another nice surprise. Off-axis material wasn't overly harsh or muddled. There seemed to be less proximity effect than expected from a cardioid microphone such as this. More forgiving with performers who move around a bit, the V6's sound stays consistent. That's a big help at mixdown, making the V6 worth having in your collection for more sonic choices.

### READY FOR PRIME TIME

Clients and associates have commented favorably on the V6's sound (and look); it's been very well-received. It's equally at home in pop, classical and jazz environments, and it just happens to look great contrasted against wood trim under amber lighting.

The V6 appears to have met its design goal and more at a surprisingly affordable \$349 MSRP. At its modest price, you can take it out for live gigs and studio use without too much worry. It's become my "go-to" mic for live saxophone, and at this price, I want another one!

MXL Microphones, 310/333-0606, [www.mxlmicro.com](http://www.mxlmicro.com). ■

*Joe Hannigan runs Weston Sound & Video in Philadelphia.*

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*Phat's Good.*

# Lexicon Omega Portable Recording System

## Affordable, All-Inclusive Desktop Workstation

Lexicon seems like an unlikely candidate to throw its hat into the large ring of relatively inexpensive, computer-centric recording systems currently available. But if an industry heavyweight decides to offer a package with the flexibility and value that the Omega achieves, why ask why? With a list price of \$499, the system is really three components for the money: the Omega, Cubase LE and the Lexicon Pantheon VST reverb plug-in.

### THE ALPHA AND OMEGA

The Omega—an 8-input, 4-bus, 2-output USB I/O mixer—represents the core of the system. Sturdily constructed out of silver and blue plastic and sporting red, blue and green LEDs, the squat Omega has a 7x3.25-inch footprint and bears a striking resemblance to *Star Wars*' R2-D2.

A closer look at the uncluttered front panel reveals a surprising amount of features and functionality. Two mic-level input potentiometers control up to 50 dB of input gain for the unit's corresponding dbx Silver Series XLR mic pre's, and are equipped with peak indicators and bus assigns that allow the user to assign the inputs in pairs to the four USB buses. Moving down the panel, four similarly equipped line-level pots do the same for Omega's four RF-filtered TRS active balanced inputs, with maximum input of up to +22 dBu. Below that, the monitor mix pot conveniently allows balancing between live input and the playback mix level, and is flanked by a knob controlling the overall output level with a 2-channel, 4-segment assignable bar graph meter for monitoring exact levels at the A/D converters in between. At the bottom are an ultra-hi-Z instrument input (which overrides line input 3 if both are plugged in), a ¼-inch headphone output and a S/PDIF assign button for routing to USB buses 1 and 2.

Flip the Omega around and cute turns to brute: The rear panel is a no-nonsense array of connectivity. Four of the aforementioned line inputs are on top and accept either balanced or unbalanced signals on the way to 24-bit A/D converters. The XLR mic pre's each have their own -20dB pad and TRS insert for outboard

processor connectivity, with one phantom power switch for both. Beside the XLRs are two ¼-inch RF-filtered TRS servo-balanced outputs and MIDI I/O. S/PDIF I/O, the USB port and external power supply connector round out the package.

A key feature in the Omega package is Cubase LE, a stripped-down version of Steinberg's DAW Cubase suite. While featuring 48 audio and 64 MIDI tracks, support of up to eight VST instruments and two insert/four effect sends per channel, it lacks Cubase SX's higher track count and effects capabilities, as well as numerous functions such as Freeze and surround support. However, LE does share SX's intuitive user interface and smooth operation. As a longtime Cubase user, I felt instantly at home.

Experienced recordists who prefer another DAW may not want to use Cubase, however, and they won't have to as Omega serves as a USB audio device that any platform will recognize. They will, however, want to leave Cubase LE on their system as it serves a vital function as the host for Lexicon's Pantheon reverb VST plug-in. While the choicest algorithms remain reserved for the company's higher-end systems, there's still no question that Pantheon is a killer reverb with the creamy goodness for which Lexicon is famous.

### IN THE FIELD

As both a field recording solution for my Dell laptop (running Windows XP and a 1.7GHz Pentium processor with 256 GB of RAM) and a supplemental audio device for my IBM tower (Windows XP with a 2.26GHz processor and 1 GB of RAM), I quickly became hooked on Omega's capabilities. Installation of drivers and recognition of hardware on both machines went smoothly, with all my software (Cubase, Reason, Acid, SoundForge) immediately capable of making the switch to the Omega.

As a frequent headphone mixer, I immediately heard a major improvement over my soundcard in Omega's headphone amp, which sports a very open sound and plenty of power. Subsequently, the unit shined in a variety of recording and mixing applications. The hi-Z and line



inputs cleanly recorded instruments, and the dbx mic pre's delivered a very clear and transparent sound for male and female vocals, a bass cabinet and percussion instruments. While they don't deliver the meaty analog warmth of a tube mic pre, they're not intended to: Omega is geared to quickly capture an accurate 16- or 24-bit signal into your computer.

### I'M IMPRESSED

For overall ease of use, Omega and its mixer-based architecture (as opposed to a patchbay structure) is an absolute pleasure. Between its assignable buses and well-thought-out interface, it just goes where you point it for highly intuitive portable or desktop recording/mixing.

I would have appreciated separate phantom power switches for each XLR input, as one for both presents a limitation of its own. Lexicon Pantheon is application-specific to Cubase LE, but the company says it will open in other Steinberg apps. There is also no custom carrying bag, although a laptop bag does easily hold everything.

When you take into account the fact that VST reverb plug-ins of Pantheon's quality can easily sell for \$200 or more, the addition of the extremely flexible and handy I/O box—not to mention Cubase LE—makes the Lexicon Omega an outstanding value. Now if I could just get that hologram of Princess Leia to stop showing up.

Lexicon, 801/568-7567,  
www.lexiconpro.com.



David Weiss is Mix's N.Y. editor.

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# Eventide H8000 Multichannel Effects System

## Oodles of Algorithms, Pumped Up DSPs, One Powerful Unit

Eventide's new flagship multi-effects processor, the H8000, resembles its Orville processor on steroids, employing more powerful DSPs that also run at higher clock speeds. The H8000 uses two independent processors—each with eight ins and outs—that can be chained in various series or parallel configurations for either stereo or surround applications.

Most of the H8000's effects programs can be loaded into either or both DSPs. And, unlike any of Eventide's previous models, the H8000 can also combine the power of its two DSPs to run highly complex monolithic programs (mostly 88.2/96kHz and multichannel algorithms). Also new to the H8000 is Flash memory support.

### GETTING TO KNOW YOU

The 2RU, steel-encased H8000 provides a whopping 1,588 of Eventide's best algorithms (as of Version 4.5 software), including more than 80 presets for 5.1. Of special note is the inclusion of Eventide's UltraShifter, a formant-corrected pitch shifter/corrector that is optimized for voice. Also notable are nearly three minutes of mono sample time (87 seconds of phase-locked stereo) and up to 87 seconds of mono delay.

Rear panel I/O connections include

of +30 dB/-90 dB.) Eventide offers the H8000A for more analog I/O, providing four channels each of analog and AES/EBU I/O, eight channels of ADAT and two channels of S/PDIF I/O.

You can only select eight H8000 inputs for use at any given time, but all outputs are simultaneously hot. Sound reinforcement engineers will be happy to note that all audio inputs, with the exception of ¼-inch analog inputs, are directly routed to their corresponding outputs when power is interrupted. (There are no ¼-inch analog outputs.)

The H8000 can operate at any standard sampling rate from 44.1 to 96 kHz and sync to either internal crystal, word clock (I/O on BNCs are provided) or clock embedded in a digital audio stream. The rear panel RS232 serial port can be used for data transfers to/from a PC running Eventide's VSIG graphic editor. An Eve/Net remote-controller jack is also provided. Eve/Net is a proprietary LAN that links up to four remote controllers with up to four Eve/Net-compatible processors. As the H8000 is an 8-channel processor, Eve/Net users need to specify (from the H8000's front panel) which of the processor's four channels they wish to display on the LAN. (Eve/Net is limited to viewing four level meters at once.) Also on the rear panel

other similar controls. Eight nine-segment, multicolored, peak-hold LED level meters on the far-left side of the front panel alternately show your choice of various internal I/O levels or levels at the unit's output connectors. A front panel Bypass button provides system-wide mute or bypass (programmable in software). Numerous status LEDs keep you apprised of current operating conditions. A slot is provided for a memory card, which is used to load and store programs and routing configurations; compatible card formats include PCMCIA type-I ATA, PCMCIA type-I SRAM (up to 4 MB) and Compact Flash ATA. The unit ships with a flash memory adaptor and 16MB card.

### UP AND RUNNING

The HD8000's I/O—both from physical and virtual (DSP-block) connections—can be routed in just about any way imaginable. That flexibility would make initial setup overly complicated if it were not for the menu of 13 practical routing configuration presets provided. Pushing a few buttons was all it took for me to mult both analog inputs to the H8000's two DSPs—arranged in parallel configuration—and sum the first two outputs of each DSP before sending them to the analog outputs.

Just as easily, I routed the first four ADAT



eight AES/EBU, eight ADAT, two S/PDIF and two balanced analog (20 ins and outs total). The analog ins are on XLR/TRS combo jacks, while analog outs are on XLRs; all AD/DAs are 24-bit. All analog I/O can accept unbalanced lines if the cold (pin 3 or ring) signal is shunted to ground, making the H8000 plug-and-play with instrument inputs. (The H8000 can accommodate both line and instrument levels via its pre-A/D boost/cut capability.

are two ¼-inch TRS foot pedal/foot switch jacks; MIDI In, Out and Thru jacks; and a TRS phone jack serving two relays. These can all be used to modulate effect and setup parameters or load programs.

On the front panel, menus and editable effects parameters (the latter shown for only one processor at a time) are viewed on the large display. Navigation and editing are facilitated by four soft keys, four cursor keys, a large parameter knob, numeric keypad and

inputs to the unit's first DSP and patched that DSP's four outputs to the first four ADAT outputs, while simultaneously routing ADAT inputs 5 through 8 through the H8000's second DSP and on to correspondingly numbered ADAT outputs. Using this multichannel ADAT configuration with two discrete effects assigned to each DSP (using the H8000's Dual Machines presets), I ran four discrete stereo effects simultaneously from one H8000!

# "Slammin'!"

Anthony Roberts, Monitors - Tower of Power

"I'm in the studio with R.O.D and lovin' the i-5 on guitar cabs. Great punch in the upper mids and perfect for heavy guitars that need that special drive. Also fantastic on snare - it can sure handle some serious SPL's!"

Travis Wyrick, Producer,  
Engineer, Mixer - R.O.D.,  
Charlie Daniels, Pillar

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

Phil O'Keefe, EQ Magazine

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

Ian DuBois, Monitors -  
Phil Lesh and Friends, The Dead

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

Karen Stackpole, Electronic Musician

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

Gary Hartung, FOH -  
Crosby, Stills & Nash

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

Dave Rat, Rat Sound

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

Tom Edmonds, Engineer -  
Lenny Kravitz



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WILLIAM WHITE, PROJECT COORDINATOR - THE DISCOVERY CHANNEL

"I have dreamed of this day—I can now retire the last of my SM57's. Now that I've been exposed to the future, why would I want to live in the past?"

Eugene "Gino" Mulcahy, Lead  
Audio Engineer - Mohegan Sun

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

Anthony Roberts, Monitors -  
Tower of Power

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

Larry Crane, Tape-Op Magazine

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

Deanne Franklin, FOH - Tom Waits

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

Neil Citron, Head Engineer -  
The Mothership

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

Mark Parsons,  
Modern Drummer

"The i-5 is more than an impressive upgrade to my usual snare and guitar cab mic—it's a big leap forward."

Ed Tree, Studio Engineer -  
The Spencer Davis Group

"Who needs a condenser when you can get this sound out of a dynamic. Audix has again come up with a winning microphone."

John Gatski, Pro Audio Review

"The best thing to happen to snare drum since Charlie Watts!"

Paul Hagar, FOH - American Hi-Fi

## "qualifies as THE all-purpose dynamic workhorse in any mic collection."

Gary Hartung, FOH - Crosby, Stills & Nash

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Electronic Musician MIX REMIX

A huge part of the H8000's allure lies in the staggering number of effects algorithms, with powerful search and sort utilities. For example, I searched for stereo delay programs suitable for guitar and sorted the resulting list by bank-related preset number. Alternatively, I searched for 5.1 reverbs that sounded good on drums and produced an alphabetical list of programs. When I found a program I liked, I stored it in a user group for the current project or for a specific application, enabling lickety-split recall at a later date.

I found many of the H8000's presets to be immediately useful. I loved how drums sounded on various presets, such as UK Ambience, Masterverb Hall 1, Nonlinear #1, Tight Snare Verb and Boston Chamber. Electric guitars sounded awesome on presets that offered chorused delay taps or distortion. And the H8000's Auto-Pitch Correction preset did wonders to sweeten a slightly off-pitch lead vocal track, while chorused delays tastefully fattened up background vocals.

### VERSATILE UNIT WITH CAVEATS

The H8000 is the most versatile effects box I've used, and many of its programs have that certain "it" factor I found instantly useful and exciting. My complaints with the H8000 have no impact on sound quality. Although each DSP can be independently muted, it takes several button pushes to do so and the setting is volatile with power cycling. (Eventide says it will fix the volatility issue.) I wish there were dedicated mute buttons for each DSP on the front panel. Naming custom programs and user groups is fairly tedious (though intuitive). The parameter wheel's responsiveness is annoyingly inconsistent (alternately being too sensitive or not sensitive enough). The manual's documentation of some of the more arcane algorithms is so vague—sometimes offering just shorthand notes—that I could only guess at what they did.

But most importantly, a lot of the H8000's programs sound awesome and are easy to work with. Many of the LFOs, delays and even reverb decays can be synched to MIDI clock or a specified bpm tempo (either typed or tapped in), and synched parameters can be adjusted in musical terms. There are a number of weird special effects—such as reverbs with wildly modulating resonant filters—that are probably of use only to sound designers, but most of the programs are highly applicable to music production.

The bottom line is that this outstanding product offers a gourmet smorgasbord of effects for the engineer who is hungry for both standard and exotic fare. Price: \$5,995.

Eventide, 201/641-1200, [www.eventide.com](http://www.eventide.com).

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#### Radial JD7 Injector - suggested list \$849 US

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#### Radial J48 Active DI - suggested list \$199 US

For great sound without choking, look no further than the Radial J48. Features a 48V phantom supplied active drive circuit with a unique DC-to-DC transformer isolated switching power supply to provide amazing headroom while eliminating hum and buzz caused ground loops. Radical.

#### Radial JDI Passive DI - suggested list \$199 US

Jensen Transformer equipped, the Radial JDI has become the standard passive DI in the business. Exceptional noise rejection eliminates troublesome ground loops and virtually zero phase distortion at any level makes the JDI a must have for studio and stage. Available in single, stereo or 6-pack. Magic.

#### Radial X-Amp Re-Amplifier - suggested list \$199 US

Ever wish you could go back and change the sound of a pre-recorded guitar track? Now you can with X-Amp. When tracking, record a spare dry track and play it back through the X-amp after the guitarist has gone home. Two outputs lets you drive amps and pedals to create thick new textures. X-plosive.

#### Radial JPC Stereo DI - suggested list \$199 US

Designed specifically for PC sound cards, DVD players and all those cool consumer devices that cause nothing but havoc, the JPC is 100% transformer isolated to eliminate nasty ground loops and equipped with a 48V active drive circuit for long cables. Easy to use. Great sounding. Indispensable.

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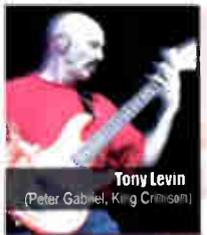
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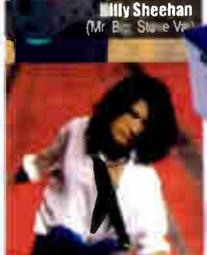
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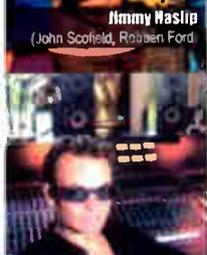
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(Mr. Bungle, Stone Temple Pilots)



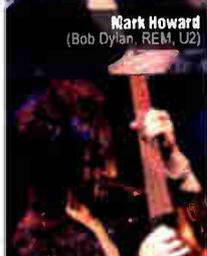
Joe Perry  
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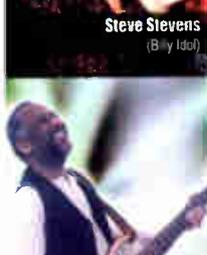
Jimmy Haslip  
(John Scofield, Robben Ford)



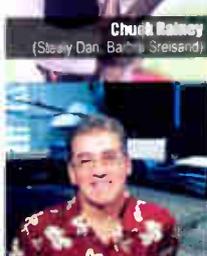
Mark Howard  
(Bob Dylan, REM, U2)



Steve Stevens  
(Billy Idol)



Chuck Rainey  
(Stevie Nicks, Barbra Streisand)



Robert Scovill  
(Tori Amos, Rush, Matchbox 20)

# BLUE Microphones Robbie the Mic Preamp

## Desktop Operation With Removable Tubes

Looking like a prop out of the 1956 sci-fi movie *Forbidden Planet*, Robbie the Mic Preamp is BLUE Microphones' first outboard recording product. Robbie is a single-channel, Class-A unit that can reside on your desktop adjacent to the console or a DAW's QWERTY keyboard—within easy reach. You can also rackmount Robbie or two Robbies side-by-side with an optional kit.

### IT'S A BEAUTY

Robbie's aesthetically pleasing and clean industrial design features a front panel with three parts: a clear, plastic removable canopy that provides access to the ECC88 twin triode tube; a ¼-inch high-impedance (1-megohm) instrument input jack; and a smooth-working, large gain control knob. I immediately loved the gain knob, as it's the perfect height and size for my hand to rest comfortably on the desktop while "riding vocal levels"—exactly as I would do when using a mic fader channel on a console. This "lost art" has been made inconvenient by some outboard preamps and impossible by others.

When the mic is powered up, the tube's compartment—a clear plastic spacer surrounding the front panel—the gain knob's pointer and a ring of 11 frosted windows surrounding the knob glow blue. (That's right, this pre goes to 11!) I wish the ring conveyed useful information, such as the approximate setting of the 8 to 68dB available mic gain. I'd prefer that it had a calibrated scale marked in 5dB steps for the blue LEDs to back light.

The preamp's back panel has switches for power on/off, phantom power on/off, mic or instrument input, a -20dB attenuator pad (which also works on the DI input) and phase/polarity flip. Because the controls that are normally found on the front panel are consigned to the back, you should make sure that you have access to them in your studio setup. Try using a sliding rackmount tray if you rack Robbie. Also on the back are an XLR mic input and preamp output jacks, and a single Neutrik Speakon jack for connection of the line-lump power supply module.

### THE INS AND OUTS

Inside the unit, the sturdy, single-sided main PC board is suspended within the metal case—sandwiched between the thick aluminum front and back panels. The front panel, with the tube mounted horizontally, uses a separate board with an edge connector that mates directly to the main board.

Robbie is a hybrid design that uses discrete transistors, metal film resistors and polystyrene capacitors—neither chips nor transformers. Class-A throughout, there is an electronically balanced, low-noise bi-polar transistorized circuit for the input stage with up to 35 dB of gain controlled by the gain knob. This feeds the ECC88 tube stage, adding another 45 dB of gain. The tube stage is followed by a low-impedance balanced output stage comprising an emitter follower acting as a current source. For the high-impedance instrument input, an amplifier comprising a pair of MOSFETs with 8 dB of gain feeds the bi-polar input.

Because the tube stage is fully powered and easily changed from the front panel, you can freely experiment with Robbie's sound. You can plug in any tubes from the 12AX7, 12AU7 or 12AT7 families, etc., with no worries. Obviously, you won't get the cleanest and purest amplification with every tube choice, but that's the whole point, isn't it?

### ITS FIRST RECORDING GIG

First up, I used Robbie as a DI bass guitar. I compared a Universal Audio 6176 (no EQ or compressor in circuit) to Robbie and I found that the 6176 set to 0dB gain position went into distortion sooner than Robbie when a loud low B was played on a five-string bass. The 6176 had a little more top and bottom than Robbie, and more of a noticeable bell-like quality when playing harmonics or fretted fifths on the D and G strings. Robbie had a very slight pronounced midrange that I liked for the rock track I was working on.

Recording male vocals went well using



an antique Neumann U47. For reference, I compared Robbie against the transistorized 512C mic pre's in my studio's '70s API console. With oodles of gain available, Robbie was much warmer and rounder-sounding than the API. Robbie would be the perfect preamp for smoothing out very bright mics or edgy singers on bright mics. The API, with its sharper detail and harder transients, was not as kind.

Robbie does not have a peak clip LED or a separate output level control. I connected an 1176LN compressor to Robbie's output and was able to overdrive the unit and reduce the final recording level with the 1176LN's output control. Increasing gain on Robbie gets you into tube "blooming" territory, where the sound spreads out and gets thick and gooey.

Recording female vocals confirmed my sonic opinion of Robbie: This preamp has a real "personality," a pleasing coloration that is brought out with increased input level; i.e., as the singer or instrument gets louder.

### BACK TO THE FUTURE

Robbie, living up to its neo-retro design, actually sounds like a vintage tube mic pre from the 1950s. Its modern features, super specs and reliable operation make recording everything very easy, with more than enough warm gain, low noise and ear-friendly sonics. Price: \$1,299.

BLUE Microphones, 818/879-5200, [www.bluemic.com](http://www.bluemic.com). ■

*Barry Rudolph is an L.A.-based recording engineer. Visit his Website at [www.barryrudolph.com](http://www.barryrudolph.com).*

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# New Audio Spatial One Studio Monitors

## Passive Near-Fields With a Radically Different Design

One of the first things I learned as a neophyte engineer back in the early '80s was that near-field monitors should always be placed so that their tweeters point directly at your ears (or, alternatively, slightly behind your seated position). Well, throw that theory out the window for the next 10 minutes while you read this review. New Audio's Spatial One monitors (\$1,400 a pair, \$700 each) take an entirely new approach to sound reproduction.

### LET'S DIFFUSE THE SITUATION

Spatial One's 1-inch inverted-cone Kevlar tweeter is mounted underneath a hood of sorts so that it fires downward at a slot diffusor that's mounted at roughly a 45-degree angle on the front face of the monitor's cabinet. The theory behind this unusual design is that the diffusor creates a planar sound field (instead of point-source propagation) at the speaker, thereby lessening the first angle of incidence reflections off of the control room's walls. The purported result is the elimination of phase anomalies in early acoustic reflections (producing greater clarity), not to mention a wider sweet spot.

Measuring 16x7.5x12 inches (HxWxD) and weighing 27 pounds each, each cabinet is fashioned from 17mm-thick MDF. In addition to the tweeter, the two-way passive monitor sports a 6.5-inch polypropylene woofer with rubber surround and snap-on dust cover. A rear bass port, two inches in diameter, is flared on both ends to reduce wind coloration. Five-way, solid-brass binding posts accept heavy-gauge wires. An integrated carrying handle (embedded behind the tweeter's hood) can be used with the company's optional Scaffolding Clamp Mounts to fly the monitor from a truss. Alternatively, three supplied screw-in floor spikes can be used to decouple each cabinet from a stand.

Maximum short-term power handling is rated at 150 watts. Sensitivity at 1 meter from the speaker is a respectable 88 dB @ 1 watt. The stated frequency response is 59 to 18k Hz,  $\pm 3$  dB, with 10dB down points at 50 Hz and 20 kHz, and a tweeter/woofer crossover frequency of 2.7 kHz. The Spatial One's polar response at 10 kHz is specified to

be  $\pm 120$  degrees, corroborating theoretical claims of a wide sweet spot inherent to the diffuse tweeter design.

### TESTING... 1, 2, 3

I placed a pair of Spatial Ones in my Acoustic Sciences Corporation (ASC) ATTACK Wall, a modular and contiguous arrangement of tube traps that wrap around the back side of my mixer to tighten up the impulse response at the front of the control room. Each Spatial One sat on a 16-inch-diameter ASC Monitor Trap (part of the ATTACK Wall) that, along with the monitors' installed floor spikes, decoupled the speakers to prevent audible resonances. Because the Spatial One is rear-ported, I removed the ATTACK Wall's top monitor trap and sidefill tube traps so that vented low frequencies could wash back to the listening position unimpeded.

I listened to a variety of familiar major-label pop and country cuts and several of my own recent country mixes whose nuances were fresh in my mind. The Spatial Ones sounded much darker than my Yamaha NS10M Studio monitors, with an overall sonic signature that leaned more toward the "big-sounding monitor in a small box" effect. The Spatial Ones were also much less efficient than my NS-10s, which was not surprising—NS10Ms rip!

I quickly discovered that the Spatial Ones have a very small vertical sweet spot—about four inches. It was critical that my ears were positioned at the same level as the tweeters' diffusors so that I could hear midrange frequencies in proper balance with lows and highs; otherwise, the monitors would sound somewhat murky in the low mids and upper bass frequencies.

With the Spatial Ones properly positioned, their high end was nicely voiced, offering good transient reproduction and revealing sibilance without sounding harsh. The majority of material that I listened to sounded slightly flabby and indistinct on the bottom end. As with most small monitors, you'll probably want to add a subwoofer to a Spatial One monitoring setup to faithfully reproduce frequencies below approximately 60 Hz. (To that end, New Audio offers its Isobarically Stable Active Subwoofer for



\$1,400.) The Spatial Ones do a significantly better job at reproducing bass frequencies than NS-10Ms did, but the Spatial Ones didn't sound nearly as smooth, clear and focused as my DAS Monitor-8s placed in the same position.

### SO, HOW WERE THEY?

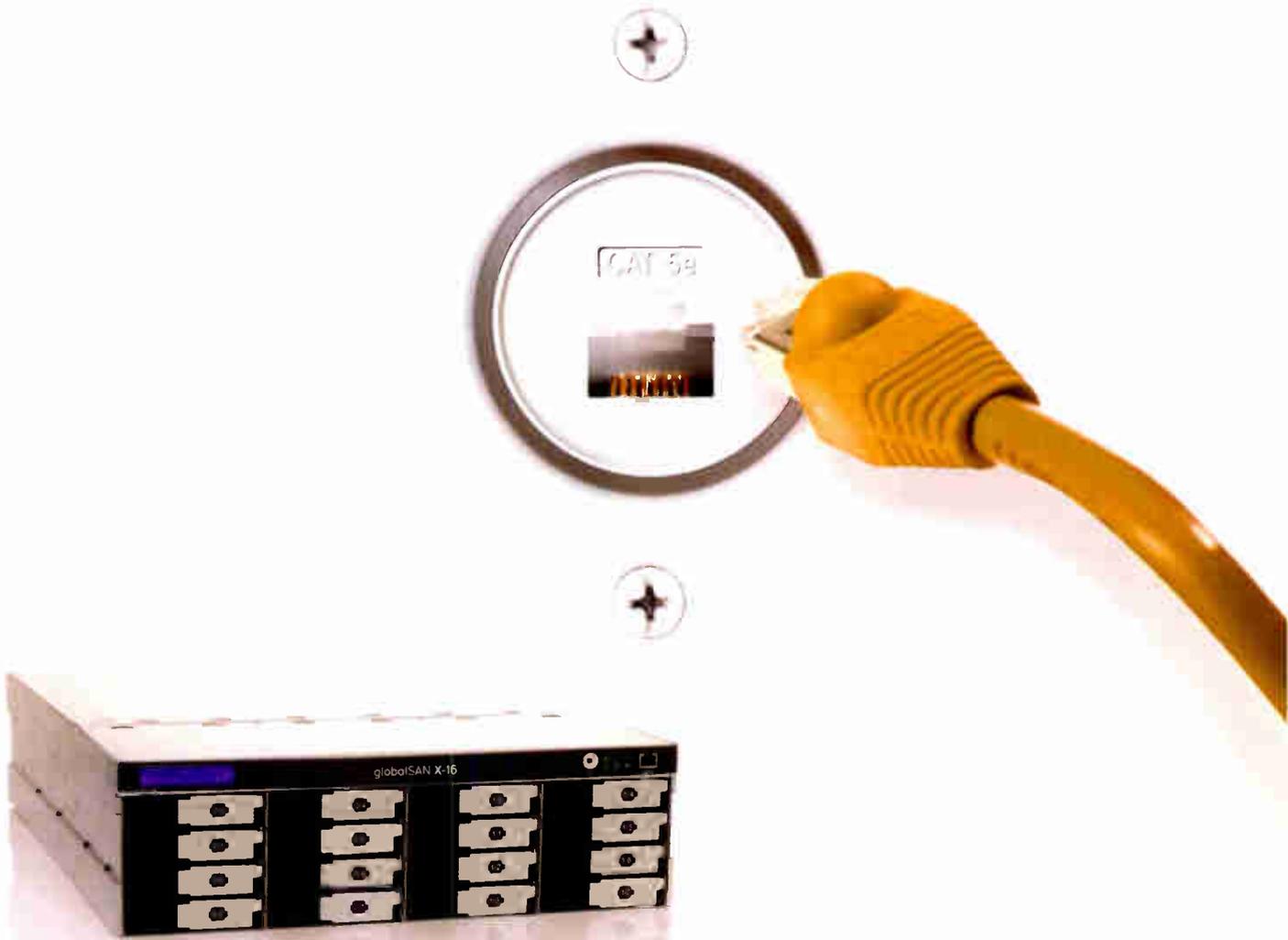
When it comes to personal taste, monitors are like ice cream. I was disappointed in the Spatial Ones' stereo imaging, which was compromised by imprecise and ghostly localization of individual tracks. On the other hand, the sweet spot in the horizontal plane (with regard to spectral balance) was much larger than with most other speakers I've heard. That's a major selling point for people who mix at large consoles and sound designers who work with hardware synths and samplers displaced from their DAW's operating position.

Because of their highly unusual design—and resulting benefits vs. trade-offs—the Spatial Ones are worth a listen. Depending on your application, they might be your favorite flavor.

New Audio (dist. by Steven Klein's Sound Control Room), 866/788-1238, [www.soundcontrolroom.com](http://www.soundcontrolroom.com). ■

Mix contributing editor Michael Cooper is the owner of Michael Cooper Recording, located in beautiful Sisters, Ore.

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# Taming the Acoustic Frontier

## Tips for Your Control Room and Studio

No matter what amenities you associate with world-class facilities, space is the biggest luxury. Forgive the generalization, but facilities that begin on a much smaller scale tend to have less space and, conversely, require more attention to acoustic detail. And no matter what, there is a point where the acoustic treatment decisions become as subjective as the recording process itself—a mixture of art, intuition and science.

Whether we realize it or not, we are all students of acoustics. Yes, there is an art to microphone choice and placement, but when the results fall short of the mark, too often it's the transducer that is unfairly judged. For the moment, consider the mic as a piece of test equipment that's simply "reporting" on the surroundings. Now, assuming you have a decent mic and its placement is okay, if you don't like what you hear, then perhaps you should think about the recording environment.

In the '70s, I struggled to capture ambience in acoustically dead studios. Now, I often work in smaller, "harder" spaces. If I'm not careful, I end up with a much more brash sound: too much is being reflected back into the mics. This also occurs when musicians are playing to that imaginary arena in their heads rather than playing to accommodate the space. Smaller spaces generally need a more complex approach to acoustic treatment.



Acoustician Terry Hazelrig used three rotating vertical panels to surround Fur Seal's drum area.

## what's the Diff?

By Terry Hazelrig

Diffusion (for audio purposes) is the control of reflection's phase relationships in a recording studio or performance venue. There are several ways to achieve diffusion in the studio. One is to alternately place acoustically absorbent materials with reflective ones. (Think of a checkerboard.) This is frequently recommended when replacing/upgrading acoustic foam panels. Another way to make reflective surfaces irregular is by placing stairway "stringers" of different elevations side-by-side on a wall and nailing boards to it to create a "zigzag" pattern.

A more complex approach is to use mathematical sequence diffusers that are designed so that each elevation of the unit—its wells—are precise mathematical ratios to one another. This gives excellent diffusion and is extremely effective in controlling reflections. They are not easy to build—so they can be quite costly—but are well-worth the investment. These types of diffusers provide either

one- or two-dimensional diffusion: Some reflect only in the horizontal plane while others reflect in the horizontal and vertical planes. One is not "better" than the other; each does its job in different ways.

Lastly, using curved panels—shaped like a cylinder, half- or quarter-moon—has been around for much longer and proves to be very effective. These poly-cylindrical elements—or "polys"—provide diffusion by virtue of their rounded shapes, sending any incident sound wave in different directions according to where it strikes the surface. Only waves directly on-axis are reflected back toward the source, thus creating a diffuse sound field. (Note: When the angle of incidence equals the angle of reflection, it is referred to as being "specular" in nature.) TubeTraps® are a form of poly-cylindrical diffuser (currently manufactured by ASC), a well-designed product that can make a big difference in smaller studios.

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World Radio History

## THE ACOUSTIC TRIO

Absorption at frequencies above 500 Hz is fairly easy to comprehend. No smoke is required, but the simple use of a few carefully placed ordinary mirrors will allow you to see the most obvious reflective paths, such as from the side walls to the listening position in a control room.

Trapping from 500 Hz down to the bass region is a bit more challenging—another facet of the treatment process that I addressed in my April 2005 column. Simple bass traps placed in corners are effective down to about 100 Hz. In either case, the goal is to get an even decay time across the frequency spectrum rather than excessively absorb any one region.

Diffusion is another animal altogether. Whether in a control room or studio, the goal is to break up an obvious reflection in an area that does not require absorption. For example, two parallel reflective surfaces will ping. Diffusion breaks up a single obnoxious ping into many more “random” reflections that contribute in a more subtle and positive way to the decay time. This parameter tweak is included in better reverb/room simulators, hardware and virtual.

## CRATE R. B. WARE

In the old days, the creative home studio geek nailed egg cartons to the walls, breaking up flat surfaces to fix the

obvious pings. While the mere thought of this makes acousticians cringe—even more so than shag carpeting—it was a positive conceptual step for those on a budget. Diffusion needs to be more random or, at least, pseudo-random. Not only are egg cartons a fire hazard, but the many pockets of identical cavities have the potential to resonate and tend to affect a very narrow range of frequencies.

This brings us back to what makes a diffuser. Surely you've seen the skyline-style diffusers made from wooden building blocks (or molded plastic) of various heights and roof angles. The “buildings” are as important as the cavities they create.

This month, I enlist the help of two acoustic scientists to write about their soapbox issues. Terry Hazelrig is an Alabama-based acoustician who has been helping me understand the math and science behind the art of creating diffusers. (See “What's the Diff?” sidebar.) During our conversations, Hazelrig casually mentions more than a passing interest in the recently closed Muscle Shoals Studios. The resulting overflow will be included in the online version of this column at [www.tangible-technology.com](http://www.tangible-technology.com).

Three of Hazelrig's vertical panels are shown in the photo on the previous page. These were designed to surround the drum

area at Fur Seal, a Minneapolis-based studio. One face is partially covered with absorptive panels and the opposite side with cedar shakes. The shakes are at different heights to improve their effectiveness in dispersing sound coming from almost any angle. The panels can be rotated to optimize the sound to an engineer's taste. The space between the panels allows the drums to “breathe.”

Sometimes we forget or overlook the obvious, to which there may be a simple solution. The near-field monitoring environment is addressed by Todd Rosso. (See “Don't Forget the Little Guys” sidebar.) Rosso is a physicist who teaches basic acoustics at IPR (The Institute of Production and Recording) in Minneapolis.

The more you learn, the more you realize what you don't know. While acoustics is a science, there are only so many known quantities to plug into an equation. After construction, it is still necessary to listen and make adjustments. It cannot be over-emphasized that there is no one “fix,” and excessive treatment can be as bad as no treatment. Be moderate and be well!

*Eddie, Todd and Terry love to experiment. You can hook up with them at [www.tangible-technology.com](http://www.tangible-technology.com).*

MIX  
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# Don't Forget the Little Guys

By Todd Rosso

More often than not, near-field reference monitors are the primary critical-listening tool. Here are some simple tips to optimize the near-field listening environment.

## ISOLATION AND REFLECTION

Placing near-fields on the console's meter bridge creates the combination of direct and delayed sound, which causes a comb filter effect, a cyclical cancellation of frequencies. Reflections from the console surface will affect mid- to high frequencies. As an experiment, send pink noise to one monitor, sit in the stereo sweet spot and have an assistant lift the speaker off the meter bridge. You will hear the difference almost immediately in the midrange.

Sound travels faster through solids than air, causing the low to mid-frequencies to arrive slightly before the direct sound. A dense rubber pad between the monitor and the bridge minimizes mechanical transmission, but doesn't solve problems at the other end of the spectrum.

You can kill two birds with one stone by placing the monitors on speaker stands behind the console. It's still a good idea to mechanically decouple the speakers to avoid transmitting sound through the floor. The rear “face” of the console should be acoustically absorptive to minimize potential reflections.

## LOCATION AND SYMMETRY

As a starting point, speakers should be the same distance from each other as they are from the listening position, forming an equilateral triangle. Angling the monitors 30 degrees toward the center will improve the stereo image and minimize reflections to nearby surfaces outside of the primary listening area.

Consider the room boundaries. For example, parallel left/right side walls should be acoustically treated with absorptive material. In the design stage, splaying the side walls out—so that reflections are directed toward the rear of the room—requires less treatment.

## LEVELS AND BALANCE

Confirm that your stereo bus is balanced by sending tone through a channel strip, panning hard left to set the reference level—0 VU if analog; between -14 dB below fs and -20 dB below fs if digital—and then pan right to hopefully see the same level.

Pink noise and an SPL meter can be used to calibrate and balance monitor levels. Achieving proper phase (timing) and level balance from each monitor to your ear will not only improve the stereo image, but also allow the monitors to deliver their designed frequency response.

cakewalk

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PHOTO: RICK JACOBSON

Tracking at Right Track Studios involved a Decca Tree setup of B&K 4006s poised over the 5 Browns' five Steinway pianos.

## THE 5 BROWNS

**CLASSICAL PIANO PRODIGES  
CLIMB TO THE TOP OF THE CHARTS**

**By Blair Jackson**

While there will always be a market for, say, a bold new version of Wagner's Ring Cycle or a fresh interpretation of Beethoven's Middle Quartets, to sell a lot of classical albums these days usually requires either crossing over into more popular genres—purists be damned—or having some sort of gimmick such as a tie-in with a popular film. Or, how about this: five attractive piano-playing siblings, all of them Juilliard students or graduates, sometimes playing five pianos at once on well-worn classical "hits" such as Rimsky-Korsakov's "Flight of the Bumblebee," Paul Dukas' "The Sorcerer's Apprentice" and Edvard Grieg's "In the Hall of the Mountain King."

As I write this in mid-April, the 5 Browns' epony-

*Engineer/producer Tim Martyn and the 5 Browns developed a clean piano sound.*



mous debut album (actually, a dual-layer CD/DVD, the latter with a surround mix and video documentary) has been sitting atop the *Billboard* Classical chart for more than two months. There have been appearances on *The Tonight Show*, stories in magazines and even a *60 Minutes* profile about this Mormon family of piano prodigies. And with a major U.S. tour currently underway, the 5 Browns look to be a fixture on the classical music landscape for a long time to come. However, a gimmick will only take a group so far; fortunately for the 5 Browns, they are a genuinely gifted bunch. The album offers a showcase for both their individual and collective talents—indeed, the strongest tracks may not be the pieces for five pianos, but rather, sisters Desirae and Deondra's moody take on Ravel's "La Valse" and brother Ryan's alternately sensitive and powerful reading of Prokofiev's "Sonata No. 3 in A Minor."

Because this issue of *Mix* was set to feature a tutorial on piano recording (see page 26) we thought it would be interesting to investigate how the 5 Browns were captured in the studio. The CD was produced by Jay David Saks—an eight-time Grammy winner for various Broadway cast albums, and classical and opera recordings—and engineered by Tim Martyn, who recorded the family at Right Track Studios in Manhattan and mixed it in his Glen Rock, N.J., home studio using a Merging Technologies Pyramix workstation as his recorder and mixer. While the Browns may have been new to recording, their engineer was not: Martyn has engineered and/or produced hundreds of albums and is known as something of a piano specialist (not to mention a skilled pianist and Juilliard graduate himself). He has worked on and off with producer Saks for the past 15 years—often as a

—CONTINUED ON PAGE 132

# SHELBY LYNNE KEEPS IT BARE-BONES

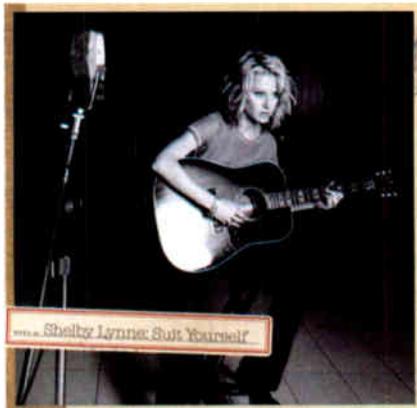
**SUIT YOURSELF RECORDED FROM  
HEART IN HOME STUDIOS**

**By Elianne Halbersberg**

Sometimes the greatest albums come together in the most unusual ways. Take, for example, Shelby Lynne's newest release, *Suit Yourself*. "It was one of those weird, serendipity kind of moments," says Nashville-based engineer Brian Harrison. "I've known Shelby's drummer, Bryan Owings, for 25 years. Shelby was in town for the *50 Years of Hits* tribute for George Jones; a lot of artists were here for the show. Around 9 p.m., Bryan and Shelby showed up at my studio, the Rendering Plant, which is in my house. I poured them some brown liquor; she saw my guitars and rig and asked me to turn it on. Next thing I knew, we were rolling tape and having fun until 2 a.m.

"The next night, after the George Jones show, she came over and we rolled tape again. Shelby just oozes music, and, basically for me, it was like meeting a younger sister who happens to dig music. We became friends, then she called later and asked if she could come here and record the album."

Lynne had actually begun working on the songs for *Suit Yourself* in her home studio, Sherry Lane in Rancho Mirage, Calif. "I have a Studer 2-inch machine and very little gear," she says. "I use a small Mackie board and I don't change anything from song to song. It's easier to walk in and push Record and be sure not to erase something I wrote the day before. It's pretty analog in my house. It's easier to put on a roll of tape



PHOTOS: JIM MARSHALL

and keep it on the reel, ready to go.

"I try to use the best of the best, what works with what I like on guitar and vocals," she continues. "But my most important piece of equipment is the Studer 2-inch; it's the end-all, and seeing tape spin and hearing the big machine run—it's the God of recording equipment. I use a Telefunken mic for vocals, a Neumann on my acoustic guitar and I try to keep it as dry and real as possible without any frills—no fancy board, just go straight to tape and worry about that later.

"I realized while I was writing the songs and putting them on 2-inch that they usually don't improve from that moment. I decided to keep what I had, and when Brian entered my life, he could see my vision. We have a great deal of respect for each other and we speak the same language."

It makes sense that she would see her project through from start to finish: She has been making records since she was 18 years old and has a very keen sense of what she wants from the end result. This comes from: a history of shuffling from one record label to the next, experimenting stylistically—country, western swing, a hint of R&B and finally her stripped-down, back-to-basics approach—and ultimately giving the figura-

tive finger to all that is "business" about the music business. For what it's worth, she won a Best New Artist Grammy several years into her career, when her best-known album, *I Am Shelby Lynne* was released. But ever a restless soul, she didn't merely try to repeat the successful formula of that album. Instead, she took control of her career, her music and how it was created and executed.

"Shelby did the genesis of the album in L.A.," says Harrison. "I don't believe in demos, so six songs on the record—'Where Am I Now,' 'You're the Man,' 'You and Me,' 'Johnny Met June,' 'Iced Tea' and 'Sleep'—were derived from her tapes. She sent them to me and we dressed them up as needed. She did a lot of her harmonies at home with her 2-inch tape machine. Those songs were cut there and we just put lipstick on them here. The rest of the stuff we cut from the ground up."

Lynne, singing and playing guitar, gathered her musicians—engineer Harrison on bass, Owings on drums, guitarist Mike Ward, Heartbreakers keyboardist Benmont Tench, pedal steel/dobro/mandolin player Robby Turner and guest artist Tony Joe White on guitars and harmonica—and basically set up camp at the Rendering Plant. The studio has

—CONTINUED ON PAGE 135

## JANIS IAN'S "AT SEVENTEEN"

By Gary Eskow

She scored her first hit, "Society's Child," in 1966. An earnest plea for the acceptance of interracial relationships that cleverly ends with the protagonist copping out and telling her to hit the road, Janis Ian was 15 when it was released. By 1975, she was an industry vet who knew a lot about the road, the studio and her mind. Producer Brooks Arthur had also carved out a place for himself in pop music's history by that time through his engineering work on a string of Number One singles that stretched back to The Angels' "My Boyfriend's Back" and The McCoys' trash-rock hit, "Hang on Sloopy." Together, Ian and Arthur would team up on three albums, including the 1975 multi-Platinum smash *Between the Lines*, which featured the Number Three hit single "At Seventeen." Ian, who carried home a Best Pop Vocal Performance Grammy for the single, and Arthur, who received a Best Engineered Recording Non-Classical Grammy for the album, cemented their positions in the pop pantheon with this record, which was tracked at the latter's studio in Rockland County, N.Y.

An accomplished player with a feel for the nylon string guitar, Ian was also brutally honest with her pen. At a time when Jobim and other South American musicians—and those influenced by their style—were using the round tones of the classical guitar to evoke images of bronze babes and warm sand, Ian was ready to explore the underbelly of the bossa, the flip side of Ipanema: "I learned the truth at seventeen/ That love was meant for beauty queens/ And high school girls with clear skinned smiles/ Who married young and then retired... And those of us with ravaged faces/ Lacking in the social graces/ Desperately remained at home/ Inventing lovers on the phone/ Who called to say come dance with me/ And murmured vague obscenities/ It isn't all it seems at seventeen." (©1975, Rude Girl Publishing)

Gutsy writing for an artist who sings her own material, and not easy to perform for Ian, who closed her eyes while belting out "At Seventeen" for a long time after its release, fearing audience ridicule. Arthur, who for the past 11 years has produced multi-Platinum and Gold comedy/music albums for Adam Sandler, recalls his work with Ian vividly.

"I engineered 'Society's Child,' he says, "and Janis and I became very good friends. But we fell out of touch for a while. The next time we met, she had all these goodies that would become the album *Stars*, the first one that we did together at 914, the studio I had put together in Blauvelt, New York." (Eds. note: *The virtually unknown Bruce Springsteen would record "Born to Run" at 914 several years later.*)

Arthur and Ian honed their working relationship on *Stars* and were in full stride when they began production on *Between the Lines*. "Janis was an arranger and a performer [she wrote



the flugelhorn/trombonium duet that softens up the single), she was very studio-aware and studio-conscious, and she loved to learn. However, the control room was more my domain.

"I loved 'At Seventeen' all the time we were working on it, but I never considered it a single; I thought 'When the Party's Over' might be the single. But I'll never forget the day a friend of mine, Alan Steckler, walked into the studio before we sweetened 'At Seventeen' and immediately told us that the record sounded like a smash."

Arthur remembers 914 as an early example of the true project studio. "I was living in Valley Cottage, which is close to Blauvelt, back in 1971, and I thought it would be a great idea to have a workshop where artists and producers could hang out for a week at a time, relax and build a record at affordable rates. New York City by-the-hour pricing was already getting expensive, and I envisioned a place where artists like Janis, Dusty Springfield and, later, Bruce would be able to roost for a while and create an album. We built a football field behind the studio and the great Blauvelt Diner was within walking distance. Bruce loved that place!

"A&R Studios and I went into partnership with Phil Ramone, Don Frey and Art Ward owning half and me the other half. We put a lot of care into that studio, which Hank Cattaneo—a true genius, in my view—built. The place had been a garage, so we double-bricked the area where the pull-up doors had been and created an air lock in the building. I loved the sound of the cement floor at A&R's 112 West 48th Street studio and I was going for that kind of live sound, which we softened by adding a series of decorative absorbent panels.

"A guy named Neil Monsey, who had a company in Cincinnati called Suburban Sound Inc., built my board. We were already working with 16 tracks by this time, and the board had, if I remember correctly, 32 inputs and outputs with Melchoir EQ on all of them.

"We also had a pretty full microphone cabinet. I'd

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generally use an Altec saltshaker 633 on the snare—or a Sennheiser 421 if that wasn't working—and AKG 451 capsules on the overhead mics. I'd also throw a 421 at the kick, and I loved the acoustic bass sound we'd get when we rolled up an AKG C60 tube mic in rubber and stuck it in the bridge of the instrument.

"The important thing was—and is—to have options for mics. I used Barcus Berry mics on Janis and James Taylor, but if the sound wasn't working, I'd go to something else, maybe an ECM-50 Sony clip inside the sound hole. I loved [Neumann] U86s on strings, and I used them and U47s on Janis' vocals—Bruce's, as well. Depending on the song and the number of acoustic guitar players, I might use an 87 on one of the guitars and a pair on the piano.

"The remaining microphones included some of my favorites. I have about a dozen RCA 77s and 44s that I would use wherever I needed them: brass, guitars—amped and acoustic—and even vocals on occasion, if I needed to pull a deeper tone out of a singer. The king of vocal mics was my tube [Neumann] 47, though. Along with the 87s, that was my workhorse.

"We also had the very first Eventide

digital delay line made and an Eventide Harmonizer, which I purchased directly from the New York AES show back in '71 or '72. Bruce loved those, and he had us use them everywhere. We tracked to both an Ampex 440 2-track and a 440 4-track machine, along with our Scully 16-track recorder, which was brilliant. We had two echo chambers, an EMT plate and an AKG BX-10, which had springs and sounded like a live chamber. We monitored through a pair of huge Altec speakers and a small pair of KLH bookshelf speakers that we referenced our mixes on."

Given the luxury of tracking 16 wide, did Arthur record Ian's "At Seventeen" vocals with the band or as an overdub? "As I recall, we had Janis sing along with her guitar and the rest of the instruments on the basic track, but after everyone was gone, we redid her entire vocal," Arthur remembers. "She mystically fit her vocal into the ebb and flow of the track that had been cut, without straying too far from what she'd done the first time through.

"I felt that the track needed to grow as it developed, and so we added strings and just snuck them in when Janis sings 'It was long ago and far away.' The beautiful

thing about that string part is that it's barely present—you needed radar to find it. The three things that I loved most about the mix were the feel, Janis' riveting vocal and those subtle strings.

"There's one more surprise that I don't think I've shared with anyone in all these years. Remember, we didn't have automation back then. After we'd finished the mix at Columbia Records in Manhattan, Janis and I, and maybe her manager, Jean Powell, or our executive producer, Herb Gart [Rainbow Collection], felt that we needed to keep building the record after the strings were introduced. We already had a 2-track mix and we didn't want to redo it, so we brought in a conga player; it might have been Ray Barretto or Jimmy Maelin—I can't remember. We set up a pair of 2-track recorders and added the conga part onto the second machine, then spliced from that point on back onto the original!

"Speaking of those mix sessions," he continues, "Russ Payne spent a few weeks working with us, but the album was largely mixed by me and my then assistant, Larry Alexander. Larry was a real find. He showed up at A&R one day looking for a gig and I just happened to run into him. Larry told

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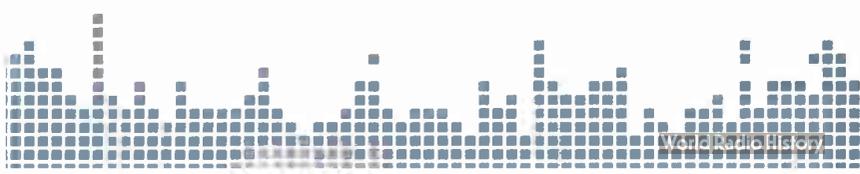
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me he lived near Nyack, which is very close to Blauvelt, and that he had studied engineering at the University of Buffalo. Working with Larry for the four or five years that I had at that studio was like having the greatest sidekick in the world. I felt like a spider with four arms. Larry was completely focused, worked very hard and the hours didn't matter. He witnessed history, man, and helped create it."

*Between the Lines* was the last project Arthur worked out of 914 Studios. With an eye on the West Coast and partners who were moving in different directions, he would pull up stakes and relocate to Los Angeles,

where his streak of successful associations would continue to pile up. Arthur helped Peter Cetera develop his *Karate Kid II* hit, "Glory of Love," established his partnership with Sandler (which led to their co-writing the animated feature *Adam Sandler's Eight Crazy Nights*) and continues to ply his original crafts of singing and songwriting to this day.

Although the mature Ian found it hard to match the success she enjoyed as a precocious teenager and young adult, she continues to write, tour and actively campaign for the social causes that are important to her.



## THE 5 BROWNS

FROM PAGE 126

post engineer doing editing—and somehow also found the time to work as the audio engineer and live sound director for the Boston Symphony Orchestra's Tanglewood Music Festival every summer for more than two decades. He is also the founder and former co-owner of New York's Classic Sound recording studio.

Whether recording one piano or five, Martyn has a well-defined approach: "When I first got started 22 years ago or so, the engineers and producers I emulated all seemed to favor the two omnidirectional microphone approach. I follow much the same techniques today that I've used for over two decades. I did experiment with three spaced omnis for a while, but I am somewhat of a minimalist, I have to say.

"I started out in the early '80s," Martyn continues, "when the Schoeps MK2 omni was sort of the only flat response tool that we had in the early digital era, until B&K showed up with their 4006 omni. I haven't used Schoeps microphones for a long time on piano; almost all of the recordings I've done up until somewhat recently have been with the B&K 4006s. And most of the Browns' album was recorded with them."

What does Martyn like about the B&Ks? "They're very transparent and they have a very tight, clean low end," he says. "A lot of the other omnis, like the Schoeps and the Sennheiser MKH-20s—as beautiful as they are—tend to swim a little in the bottom. For piano, it's not that I like less bass exactly, but I like less bass than those other mics give you. And that's one of the reasons the transparency is there with the B&Ks—they just clean out the bottom."

However, Martyn notes, "On some of the piano recordings I've done recently that I'm quite happy with, I've started using a somewhat more unorthodox microphone choice: a pair of Neumann M149s, which I acquired a few years ago. The M149 has full selectable patterns and I've been experimenting using what I call the 'almost omni' setting, which is halfway between subcardioid and omni. It's definitely a somewhat colored sound and it even requires a bit of EQ for my taste. But I've made some nice recordings with them."

Back to the Browns: Martyn tracked the five-piano numbers first, and though it might seem like it would require a complicated setup, "It actually wasn't too complex," he says. "It was a 10-mic setup, all recorded at double sample rate [88.2 kHz]. We had a Decca Tree of 4006s over the five pianos [see

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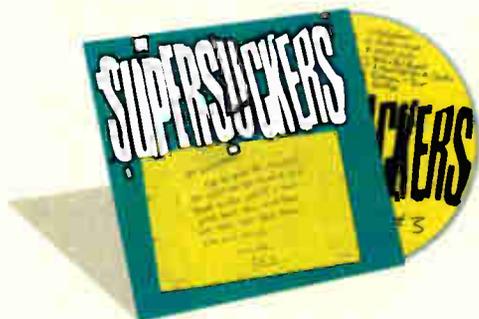
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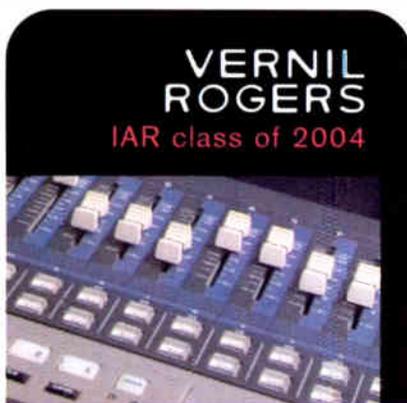
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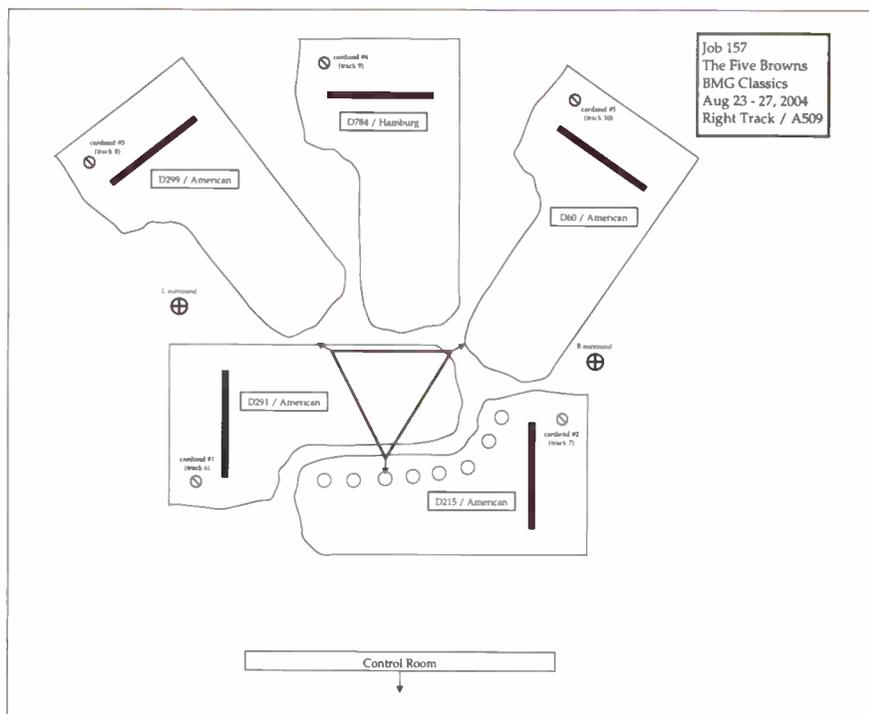


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*Martyn's 10-mic setup for The 5 Browns' Right Track sessions.*

photo, p. 126, and diagram above) and one Sennheiser MKH-40 that was a spot [mic] over each pianist's right shoulder. Then there were two more mics on very tall black poles: two more 4006s fitted with nose cones, which were there for the rear surround and really not in the stereo mix at all. So we had 10 mics fed to a pair of Grace 801R mic preamps; they're each eight channels. In the case of the five-piano pieces, I would say most of the pickup comes from the Tree, but the spots are definitely contributing." Four of the pianos were American Steinways and one was a German Steinway.

Martyn describes the room at Right Track, A509, as "one of the last big rooms in New York that's a real recording studio. In studio lingo, it's 'a live room,' but it's actually a fairly short reverb [time] as compared to what classical people are used to. We like to get up to two seconds or more, and this room does not get up to that. We have some other rooms that are better for classical music, but they're not studios, so you have to bring all the equipment in. The American Academy of Arts and Letters is the hall we use most often to record solo piano, but Right Track worked out really well for this project."

To record a single piano, as he did on half of the album's tracks, "I put the lid back on the piano and then tried to get the mics—a pair of 4006s—at kind of a 45-degree angle, aimed at the hammers. They're not at the tail of the piano looking at the pianist's face, and not out front of

the piano looking at the lid; they're halfway in between those two perspectives." Martyn varies the distance of the pair from the piano depending on a number of different factors, including the sound of the individual piano and the hall or studio in which it's being recorded, but typically double an arm's length or a little more.

Martyn says that the pieces required minimal editing, and mixing in Pyramix was relatively easy; it's been his preferred medium for some time. However, the surround mix was a little more complex and for that task, Saks and Martyn went to New York's Sync Sound and worked alongside noted mixer Ken Hahn. "People say, 'Great, five speakers, five pianos.' But we didn't approach it that way," Martyn says. "That would've been like the early quad days: four speakers, a string quartet, put one in each. But with the Browns on the pieces with five pianos, we were after a more traditional surround sound environment: very good stereo up front and a little real hall ambience [in back] to give it some realism.

"I came up with a static mix for each piece using the Tree and a certain level for the spot mics. Then Jay listened and there were a handful of places where he thought piano three or piano one or whatever needed to be enhanced for a bar-and-a-half, so we made some little fader moves, but mostly the musicians balanced themselves."

Since recording the 5 Browns, Martyn has worked on a number of other classical



piano recordings, such as Dubravka Tomsic for IPO Records, Cuban master Juana Zayas (who is re-recording the Chopin Etudes she famously cut in the early '80s) and the talented Czech Ivan Moravec. But he's also clearly enjoying the unparalleled success of *The 5 Browns*. "I'm pretty sure it's my first *Billboard* Number One piano album," he says with a chuckle. "Those kids deserve it, too. The whole family—the mother, father, all the kids—is amazing. They're smart, they're nice, they work hard. They are genuinely great kids, so it's nice to see them do well." ■

## SHELBY LYNNE

FROM PAGE 127

also been home to such artists as Kim Richey, Lucinda Williams, Jimmy Hall and Harrison's band, The Hubcapthieves.

"My whole house is wired—everywhere except the bathroom, although I have tracked in there, too," he says. "We had folks in every room. The keyboard room has a Hammond C-3, a Baldwin, a spinnet, a Wurlitzer, an electric piano and a clavinet. The whole thing is old-school instruments, and other than Robby, who brought his pedal steel, we used my stuff. Shelby and Mike used my guitars. Benmont used my keyboards, Bryan used my drums and I used his 1970s Fender P-Bass."

As the vocalist, musician, songwriter and producer, Lynne went into the sessions with a very precise—and very simple—vision: "Get together and say, 'Here's the song; let's record it.' I welcome anyone's input, but usually it's really easy—everybody plays and sounds great. Working with Brian, we were almost like family in the best sense of the word. I was comfortable and liked him the minute we met. He understood what I wanted to do, which was to just sit and play."

"My place isn't clinical," adds Harrison.

"It's a home, so people feel at ease here. I have mic lines running in every room, directly into mic pre's, bypassing everything. I used unusual mic pre choices for recording Bryan's drums: Langevin mic pre's [AM-301 and AM-17] that were used in the U.N. in the 1960s. In most cases, I used very little compression. I don't use it on drums unless someone wants level control. I went from mic to preamp.

"Shelby sang through her Telefunken 251 into a Vintech X73 into a UREI 1176N straight to tape. She wanted to sing and play guitar at the same time, and I dig that because it totally changes the dynamic of the songs. I used a Little Labs IBP direct box. If you've got a vocal mic and a mic for an acoustic guitar, there can be phasing issues because of bleeds. This device lets you tweak the phase like focusing a camera and makes the mics work together to capture the sound you want and avoid bleeds and overdubs.

"There are two reasons most engineers and producers want you to track separately. One is for absolute control. If you screw up a part, you go back and fix it. If you record both at the same time and screw up, you have to redo both parts. These guys are top-notch players and everything on the record is first or second takes. If Shelby has to do three

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or four takes, she's tired of it and moves on.

"Case in point: We tried to recut a couple of songs, but there's always something about the vibe of everybody playing live and very little overdub. Anytime we listened back to the tunes, and we all felt it—for example, on 'Johnny Met June,' you can hear the quivering and emotion in her voice. When we tried to recut it, halfway through, she said, 'Stop.' Everybody realized on that track, you can't get there again and re-create the emotion.

"I'm so proud of her for not being afraid," Harrison continues. "There are flaws on this album. She's a great guitar player. She picked emotion and humanness over perfection,

and that's a ballsy thing in this day when everybody is used to hearing homogenized music where you don't even have to sing in tune or in time and America has learned to accept crap on a stick. Three-dimensional singers like Frank Sinatra are a dying art.

"I've never, ever, ever had this much fun in the studio," he says. "It was hard work in some ways but very, very rewarding. She wrote 'I Cry Everyday' and 'I Won't Die Alone' on the spot, which is a huge testament to her creativity and being comfortable enough here and with the guys to try something.

"It was such a complete, absolute blast to have these players. I played 'Rainy Night

in Georgia' hundreds of times in bands and I was in awe of having Tony Joe White and Shelby 25 feet from me covering that song. It was a complete out-of-body experience to play bass with them. It was a really cool, soulful thing," Harrison concludes.

Lynne and Harrison mixed *Suit Yourself* at The Village in Los Angeles with assistant engineer Andy Borham. The disc was mastered by Ron McMaster at Capitol Mastering in Los Angeles. "It was analog to the bitter end," says Harrison, "including using plates and tape slap on old MCI machines in L.A. I tried my best not to drench anything in too much reverb, and we were really fortunate to master in the same room [Bob] Dylan and Sinatra used. I used an analog chain the whole way."

"I almost hate to say it," says Lynne, "but the whole thing was done in 21 days and we turned it in. It's a simple record: no strings, five musicians and not hard to mix. It was close to being mixed while it was being recorded. I don't like to waste time in the studio. I go in and know what I want. I wrote a couple of tracks there, it happened in the moment and I'm open to whatever the vibe is and being able to catch it.

"I'd rather leave something bare and naked than overcrowd it with a bunch of unnecessary things. I think the songs should do the work and everything else should be the icing. I know when I have it, when to stop, and I guess there's something to be said for that. When you have the privilege of producing, it's a tug of war with yourself. I could have made this record a lot slicker, but that's not what I want to listen to."

"This album came on like a whirlwind," says Harrison. "We did 10 days of tracking, 10 days of mixing, one day of mastering and the record was done. That's because she picked the right people to come to the party and she doesn't like to belabor things.

"The most important thing I could do was be prepared, have good sounds ready, be ready to change horses in midstream and wear three or four hats at one time: bass player, engineer, tape operator and bartender. We had a runner to get things for us. You're hosting all these people in your house and you don't want to run out of snacks, toilet paper, paper towels. That explains why there may be some sloppy engineering and bass playing going on! But the most important thing was to make sure everyone was comfortable, that the vibe was right and make sure my instruments were maintained. And a lot of pre-production on my behalf so that I could be ready.

"So my job was really to supply a comfortable environment and be technically sufficient enough as an engineer and musician to get out of the way of the songs." ■

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### Elvis Costello And The Imposters

*Club Date: Live  
In Memphis* DVD  
(Eagle Vision)

*Live In Memphis* is an explosive set that clearly shows that

Costello has lost none of the magic or fire that imbued his finest rock recordings. This night was captured fresh from the making of Costello's latest studio album, *The Delivery Man*, which was recorded and produced by Dennis Herring at his compound nearby in Oxford, Miss. It makes sense that this would be captured in Memphis, a town known the world over for earthy soul, blues and rock, but also a town that has a long love affair with great English rock 'n' roll.

Many of Costello's best tracks have embodied the best of incendiary rock band chemistry and deep soul grooves, and all of that is clearly evidenced on this sweaty set. It's hard to narrow down highlights, but "Blue Chair" is a stand-out, as are any of his classics, like "Radio Radio," "Pump It Up," "Mystery Dance," "(What's So Funny 'Bout) Peace, Love & Understanding" and "Alison," which ends with a nod to that other Elvis' made-in-Memphis Chips Moman classic, "Suspicious Minds".

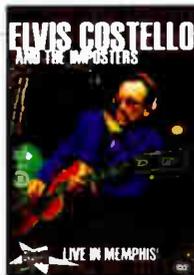
Costello also throws down a nice trashy version of Dave Bartholomew's overlooked gem, "The Monkey," and Emmylou Harris appears on five tracks supporting Costello on vocals.

The mix is approached in a way that is clearly intended to capture the roaring low-end sonics of a band playing so loud and furiously that the room is practically on overload. The result may not be everybody's taste, as some may find it too compressed, bottom-heavy and a little muddy. That said, there is no doubt that the excitement in the performances hasn't been cleaned out of these grooves.

DVD bonus features include Costello and Pete Thomas getting an interesting music tour through Memphis and the Mississippi/Arkansas Delta in a '50s Cadillac, with stop overs at the Stax Soulsville USA museum and a video of crazed fans lining up for tickets for the show held in the tiny venue.

All in all, this is a must for any fan of Costello's work and a perfect introduction to the passion and genius of this artist's long career.

—Rick Clark



### Lucinda Williams

*Live at the Fillmore  
(Lost Highway)*

Finally, an artist so beloved for her emotion-

ally cathartic live performances issues an expertly mixed concert recording covering three nights at the Fillmore in San Francisco. True to form, roots-rock's grand dame opens the two-CD set with "Ventura," oozing deep despair and longing like a jar of slowly spilled ink. From there, Williams gives us "Reason to Cry" and a couple more melancholic tunes before leading into more upbeat numbers such as the bluesy "Change the Locks" and the ZZ Top-inspired "Atonement." Disc two holds pace with "I Lost It," an early gem, "Pineola" and more recent favorites such as "Joy" and "Essence." Her band—guitarist Doug Pettitbone, bassist Taras Prodanuik and drummer Jim Christie—flat-out rocks.

Executive producer: Frank Callari. Producers: Lucinda Williams, Taras Prodanuik. Engineers: Guy Charbonneau, Charlie Bouis, Michael Dumas. Studios: Le Mobile, Radio Recorders. Mastering: Stephen Marcussen, Marcussen Mastering.

—Heather Johnson



### Beck

*Guero* (Interscope)

From beyond the heart-break that inspired his beautiful and pensive release *Sea Change*, re-appears the playful, the inimitable Beck. With signature guitar and scratch- and hand beat-driven grooves, *Guero* (Spanish slang for "white boy") provides yet more evidence of his talent to conjure up a world of contrary images through lyrics and a collage of sounds—some bizarre, some everyday—while getting you to dance along. From a haunting harmonica on "Farewell Ride" to sounds from an L.A. street scene on "Que Onda Guero" (presumably a nod to his Southern California upbringing and its rich Hispanic culture), Beck's love for experimentation translates into these upbeat but sophisticated tracks—overall, some of his very best. (See "Producer's Desk" for more.)

Producers: Beck, the Dust Brothers and Tony Hoffer. Engineers: Beck, the Dust Brothers, Hoffer and Danny Kalb. Mixers: Beck, the Dust Brothers, Hoffner, Nigel Godrich and Dan Grech-Marguera. Recorded at The Boat (L.A.).

—Breean Lingle



### Nine Inch Nails With Teeth (Interscope)

Nine Inch Nails' Trent Reznor has emerged after a six-year hiatus—not to reclaim his throne, but to remind us

that it was always his. In his latest opus with NIN, Reznor's typically raw, candid lyrics now complement an atypically untreated, dirty, honest sound. For the first time, Reznor recorded live drums, enlisting drummer Dave Grohl on six of the album's 13 tracks. Between Grohl and resident drummer Jerome Dillon, *With Teeth* sounds not only live, but alive, peppered with meaty bass lines. The standout track, "Only," is a tribute to '80s synth pop, with Reznor drolly delivering lines such as "Yes I am alone/but then again I always was" over an up-tempo beat, tongue perhaps in cheek.

Produced/engineered by Trent Reznor, Alan Moulder. Engineers: Leo Herrera, James Brown, Rich Costey. Programming by Atticus Ross. Mastering: Tom Baker at Precision Mastering (L.A.). Recorded at The Village Recorder, Sound City Studios and Grandmaster Recording Studios (L.A.).

—Lori Kennedy



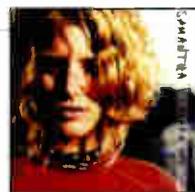
### Samantha Square One (In the Pocket)

San Francisco Bay Area-based singer/songwriter Samantha

Stollenwerck caused a mild sensation at SXSW this year, and this well-made indie album shows why: She is a magnetic singer and an interesting songwriter. At times, Stollenwerck's style recalls *Tuesday Night Music Club*—era Sheryl Crow, with a sort of earthy folk charm that occasionally veers into rock and R&B, and obviously personal songs that are still easy to connect with. The mix puts her singing up front and mostly unadorned, and that's as it should be: The vocals carry the album. I wouldn't be at all surprised to see a song or two from this disc turn up on *One Tree Hill* or *The O.C.* and for Stollenwerck to be signed by a major label. She's clearly ready for prime time.

Producers: Jordan Feinstein, Stollenwerck, Gregory Haldan and Jim Greer. Engineers: Jonathan Chi, John-Paul McClean. Mixing by Chi, Stollenwerck and Feinstein. Studio: In the Pocket (Forestville, Calif.). Mastering: Robert Hadley.

—Blair Jackson



## L.A. GRAPEVINE

by Maureen Droney

The Wilshire/Western district is one of the few neighborhoods in Los Angeles with Manhattan-style energy and foot traffic. Packed with Art Deco landmarks, Korean businesses, bustling cafes and high-rise offices, it's also home to the studio of Victor "XMAN" Taylor, a writer/producer/bassist with a very full plate.

Taylor, who's worked with Ice Cube, KRS-One and Prince, among others, has also contributed music to the soundtracks

PHOTO: MAUREEN DRONEY



Victor Taylor shares his passion for "Rhythm and Rhyme."

for *Be Cool*, *Set It Off* and *Bowfinger*, and television projects for the Wayan Brothers, ESPN and *NY Undercover*. He's still pursuing those endeavors, but recently, he's taken a left turn into what he calls "Rhythm and Rhyme," co-producing (with keyboardist/mixer John Myers) the poetry compilation *Spreading Love-n-Spoken Word*.

Taylor has record production in his genes: His father owned a recording studio in Compton that hosted such musical greats as Marvin Gaye, George Clinton and The Crusaders. "It was CASH Recorders—Compton Audio Specialists Headquarters—the first 24-track room in Compton," Taylor relates. "My first exposure to music was there listening to the heavyweights. My older brother played bass. When he wasn't home, I'd play his instrument and listen to the music he had around, which was also a

lot of heavyweight stuff by jazz greats like Stanley Clarke. By the time I was nine, I was playing advanced jazz/fusion bass. I thought that's how everybody played!"

Stints with bands ensued, but Taylor soon caught the producing and recording bug. "Once I understood how much went into making a great record," he says, "that became my primary focus. I saw the studio as a means to an end, an empty canvas that was a way to get my point across. Writing and producing music enabled me to get things out of my head that had been there all the time."

Pursuing socially conscious lyrics, Taylor hooked up with the Leimert Park Poets, a contingent of African American spoken word artists coalesced around South Central L.A.'s Leimert Park Village. A cultural Mecca since 1989, when drummer Billy Higgins and poet Kamau Daáood opened the World Stage storefront performance gallery there, Leimert Park is an Afro-centric haven for art, dance, theater, music and spoken word. After attending readings at the World Stage and at 5th Street Dick's Coffee House, Taylor was inspired to compose music to accompany the poetry.

"I write lyrics, so I've always been a poet," he explains. "But when I went down to Leimert Park, I began to see people with such amazing talent. Their words touched me and I wanted to work with them."

The poets were recorded a cappella first. Most of the performances were cut in the studio to Pro Tools, but several pieces were captured live to a Roland 1680 using an AKG C414 mic at Magic Johnson's Starbucks/Ladera open mic series.

The music is, for the most part, simple: Beats and melodies enhance the words but stay out of the way. Instrumentation is also simple: Akai MPC 2000 and MPC 60 drum samples, a Fender Rhodes, acoustic and electric guitar, some live drums,

—CONTINUED ON PAGE 142

## NASHVILLE SKYLINE

by Rick Clark

There was an album that came out a few years ago on Sony by a sisters duo (The Pierces) called *The Pierces* that featured the kind of smart pop that would appeal to anyone who loved the first Mitchell Froom-produced Crowded House albums. The album was produced by Roger Moutenot and Joe Pisapia.

Pisapia had already earned a rep in Nashville as quite a pop/rock guy as leader of Joe, Marc's Brother. As a guitarist, Pisapia is one of the most distinctive players I've ever heard, and as a songwriter, he delivers powerful Anglo-pop rockers that would do Big Star or the early Who proud.

So when I heard Pisapia had hitched up with Guster, a popular college rock band, I had to think that this band must be awfully special to attract him to the lineup. Guster was formed in 1992 by three students at Tufts University in Boston: Ryan Miller (guitar, vocals), Adam Gardner (guitar, vocals) and Brian Rosenworcel (percussion). In 1994, they recorded their first album, *Parachute*, with producer/engineer Mike Denneen. Since then, Guster has put out three more albums: *Goldfly*, *Lost and Gone Forever* and *Keep It Together*, which generated two college radio hits: "Careful" and "Amsterdam." Along the way, Guster became a hugely successful live act, knocking out around 200 shows a year. Their 2004 CD/DVD set, *Guster on Ice: Live From Portland, Maine*, is a great document of the band's show.

As it turns out, Guster discovered Pisapia by way of the music from Joe, Marc's Brother and fell in love with their sound. When that band took a hiatus, Guster invited Pisapia to be a part of their road band. "The last record we made was musically arranged for way more than just three people, and up to that point, we were a trio," says Gardner.

When I got word that Guster had come to Nashville to record their new album with Pisapia producing at the Sound Emporium, I headed over to check out the proceedings. Before they had

## NEW YORK METRO

by David Weiss

even arrived in Nashville, the band had spent an extensive amount of time in pre-production.

"The reason that I really wanted to do a long pre-production was to get all the thinking done at that point—take the whole thing apart and really look at it," says Pisapia. "Once we put it together and it felt like it was working, we could rely on the feeling of it and let go of all the thinking.

Jason Lehning, who is also an associate producer on this project, engineered and mixed. The band was already a fan of Lehning's work with Nashville pop/rock band The Bees.

The first day I hung out with Guster and crew, they were only a few songs into tracking. Lehning was quick to point out that the Sound Emporium was his favorite full-service studio in Nashville, noting that he really liked the staff and the options each studio offered.

One of the characteristics that sets Guster apart from many bands is the way they constantly switch instruments from song to song onstage. "Even though this

—CONTINUED ON PAGE 144

It's funny how film professionals in New York City can sometimes feel like the country bumpkin cousins to their kin in L.A. Fact is, making a living as a film composer is a much safer bet in California, as it is close to the massive and well-organized Hollywood studios. New York City film scorers are a riskier bunch, taking a chance at getting work in exchange for the magic of the Big Apple.

For every established film composer based in New York City—giants such as Carter Burwell and Terence Blanchard—there are dozens more working hard just under the radar. Case in point is Wendell Hanes ([www.bangworld.com](http://www.bangworld.com)), a prolific visionary who's just one lucky break away from entering major studio land and never looking back. The commercial/TV work (*Sports Illustrated*, VH1, NFL, Porsche) is steady, the indie film portfolio (*Ghetto Dawg*, *Sucker Punch*, *The Fittest*) is growing and the theories on movie composition today are flowing. "The key is to take what's current today and use that as a musical foundation for the nuances that you score. It's basically staying current with pop culture," Hanes observes. "While

I think the traditional approach is still prevalent in movie scoring, what I find as an independent composer is that the traditional is not the direction that most of the films in the indie world takes.

"They want the young, edgy vibe or the alternative 'create me something I've never heard before' vibe, and that's where I've found my niche: Creating the music you would not necessarily expect in some scenes, as well as being very conscious of contemporary music and what is current. That's where my commercial experience has helped me out a lot because I'm always told about target audiences. Target audiences are key for movies, as well."

Working out of a comfortable production room in Bang Music in Manhattan's bustling Union Square

PHOTO: MONTE DESHAUNE



**Film composer Wendell Hanes, coming out from under the radar at his Bang Music headquarters**

neighborhood, Hanes is currently scoring for the film *Kiss of Chaos* from director Ricardo Sean Thompson, working extremely quickly in stereo or surround with a power-plant combo of Yamaha 02R96 consoles and Pro Tools. "Everybody asks me, 'You use Pro Tools, so what do you need a mixing board for?'" Hanes says. "I look at it as if I have Pro Tools and an outboard mixing console, then I double my power. Some of the sounds I create are made by having the capability of using effects in the computer and in the board."

While the New York City base can be a problem for getting the mainstream jobs, Hanes is more than willing to work with the challenges. "Out of sight, out of mind," he acknowledges, "which is why I try to be as versatile a composer as possible so I'm not limiting myself any further. I do, however, believe you can score films in New York City with the production base being in California by using MP3 technology as FedEx technology. At the same time, I think there's an advantage to being a New York City creative composer. You see so many different characters, the club scenes are so widespread and there's so many different styles, you can't be in a better place to listen for and hear new music that's budding up in the underground."

While he may be decidedly aboveground in the pop world, another composer

—CONTINUED ON PAGE 146



**From left, seated: Jason Lehning and Ryan Miller. Standing: Brian Rosenworcel, Zach Dycus, Joe Pisapia and Adam Gardner at the Sound Emporium**

PHOTO: RICK CLARK

## WORKBOOK STUDIOS COLUMBUS SPOT SPECIALIZES IN "HIGH-SPEED RECORDING"

Workbook Studio may hold the world's record for on-the-fly recording. Located in a converted warehouse that once housed Columbus, Ohio's first Packard car dealership, Workbook owner/engineers Neal Schmitt and Jon Chinn, engineer Dan Wilburn and two other part-timers triumphantly recorded 25 songs by 25 bands in 25 hours. "The original plan was 24, but we got a little over-excited," says Schmitt.

Aided by chilled Red Bull, hot coffee and the buzz of a revolving door of musicians, Schmitt, Chinn and Wilburn fired up the automated Tascam 3700 24/48-channel console in the control room of their 3,000-square-foot loft space at 4 p.m. one Friday afternoon. Several mic swaps and level-checks later, they sent the last band home at 5 p.m. on Saturday. The lineup of mostly local and regional acts were recorded using Digidesign's 002 LE system (the studio also owns a few Alesis ADATs and a Tascam MS16 1-inch 16-track) with assistance from AKG, Neumann, Shure, Sennheiser and BLUE Baby Bottle mics, and the studio's large selection of guitar amps, drums and keyboards. "We had two drum kits and tons of guitar amps set up everywhere for bands to pick from," Schmitt explains. "While one band was doing vocals and finishing their mix, the next one was setting up. We worked in two-hour blocks; the second engineer became the main engineer. We thought the hardest part would be



A Planet for Texas, one of the 25 bands to filter through Workbook Studios in 25 hours. Inset: Workbook's control room

filling the late-night slots, but some bands wanted the worst slots!"

The fruits of their labor, a CD titled *Workbook Studio's 25 Hour Grand Prix*, is available through Reverbose Records at [www.reverbose.com](http://www.reverbose.com) and via Columbus music scene site [www.cringe.com](http://www.cringe.com), while individual songs can be downloaded from iTunes.

### BEHIND THE GLASS

## ALL-STAR CAST JOINS JERRY LEE AT RECORD PLANT



Front row, from left: guitarist Nils Lofgren, Ringo Starr and Jerry Lee Lewis. Back row, from left: Keith Allison, Jimmy Rip, Jim Keltner, bassist Hutch Hutchinson, Ivan Neville and guitarist Kenny Lovelace

Rock 'n' roll purveyor Jerry Lee Lewis brought a few of his talented friends to the Record Plant (L.A.) to track songs for his forthcoming album, *The Pilgrim*, due out this summer. Jimmy "Rip" Rippetoe produced the 20-song collection, which features guests such as Eric Clapton, Keith Richards, Mick Jagger, B.B. King, Bruce Springsteen, Neil Young and Toby Keith, among others. Record Plant alum James Saez engineered the West Coast sessions, while Steve Gamberoni engineered additional tracks at Sam Phillips Recording Studio in Memphis.

## LEO KOTTKE, MIKE GORDON REUNITE IN SIXTY SIX STEPS

PHOTO: TAMARA SCHILLER



From left: assistant engineer Todd Gunnerson, engineer Jared Slomoff, producer David Z., guitarist Leo Kottke and bassist Mike Gordon

Guitar virtuoso Leo Kottke and Phish bassist Mike Gordon recently stopped by the Sound Kitchen's (Nashville) Studio A to overdub and mix their latest collaboration for RCA Victor, *Sixty Six Steps*. With David Z. (Jonny Lang, Kenny Wayne Shepherd) onboard as producer and engineer, the duo tracked the album at Compass Point Studios in Nassau, Bahamas, with a special visit from Bahamian drummer/percussionist Neil Symonette. The album is tentatively set for a late-summer release.

## INDIE BUZZ

### TRAMPING GROUND WRAPS UP NEW ALBUM



Clockwise from right: *Tramping Ground's* Rob Dixon, Brandon Hockaday, Ohio Johnson, producer Void, Shawyn Raymer, Chris Hockaday

Indie band *Tramping Ground* marched over to Dream Maker Sound Studios in Westbury, N.Y., to record and mix their new album, *A Sequenced Unity of Confessions*, with producer/engineer Robert "Void" Caprio. Equipment assistance was provided by an SSL 4048 G+ and a Pro Tools rig with six 888 I/Os.

## MASTERS CORNER

### STUBBLEBINE MASTERING GOES PLUM CRAZY!



From left: *Plum Crazy's* Skip Urmson, Greg Garvey and Josh Yenne, mastering engineer Paul Stubblebine and engineer Bob Daspit

San Francisco Bay Area groove/rock band *Plum Crazy* brought their self-titled debut to Paul Stubblebine Mastering & DVD (S.F.). Producer/engineer Sean Beresford (*Third Eye Blind*, *The Donnas*), who produced and mixed the album, and Bob Daspit (*Sammy Hagar*), who mixed the album's three live tracks, joined the band to oversee the mastering sessions.

## TRACK SHEET

### SOUTHEAST

Matt Knobel produced an EP for Boston indie rockers *Stocklan* at *Criteria/Hit Factory* (Miami)...Danny Kadar is producing indie artist *Ryan Edwards* at his own studio, *Paradigm Park* (New Orleans)...At the *Sound Lab* (Atlanta), *Trilville* worked on their second release with *Lil Jon* and *Don P*, with *Lil J* producing and *Taj Mahal* engineering...Engineer *Allen Morgan's* newly launched *A&R Studios* (Nashville) was the site of tracking and mixing for *Dr. Hook's* new release, which was produced by *Ron Haffkine* and engineered by *Morgan*. *Morgan* also finished mixes on Christian pop/rock artist *Gayle Godkin*...*Music Row* neighbors *JamSync* recently completed the sound design and 5.1 mix for *KOOL 105.3's* 35mm teaser, which is showing in regional movie theaters. *Theresa Thornhill* of *Bark Productions* produced...*Tooth* and *Nail* artist *Spoken* tapped producer/engineer *Travis Wyrick* to produce their new release; the group worked at *Wyrick's* 5.1-equipped *Lakeside Studios* (Knoxville, TN)...*SugarHill* (Houston) senior staff engineer *Steve Christensen* mixed *Arthur Yoria's* latest project, *Suerte Mijo*, in *Studio C*, while staff engineer *John Griffin* tracked indie synth/pop act *Ronnie Spozio* in *Studio B*...*Workplay Studios* (Birmingham, AL) welcomed *Monte Montgomery*, who shot video and recorded an upcoming live DVD with engineer *Ben Trexel*. *Trexel* also engineered live recordings for *Vanessa Carlton*, *Paul Thorn*, *The Pierces* and *Blue Merle*, and audio tracks for *American Idol* promo spots.

### MIDWEST

At *Smart Studios* (Madison, WI), *Ryan Hewitt* produced tracks for Chicago indie rockers *Madina Lake*. Meanwhile, *Brandon Mason* engineered B-sides for *Secret Machines*...*Spoken* word artist *Michael Maglaras* and producer *Terri Templeton* mastered their latest project with *Greg Reiersen* and *Brynn Kowalczyk* at *Rare Form Mastering* (Minneapolis).

### NORTHEAST

*Walkerecordings Jazz* (NYC) hosted recording and/or mix projects by *Allison Miller's* band, *Tilt*; *George Walker Petit* engineered and mixed...*Antony* returned to *Dubway Studio's* (NYC) *Yellow Room* to produce new band *Beaut* with engineer *Emery Dobyns*. Composer *Elizabeth Ziff* tracked music for *The L Word's* second season with engineers *Julian McBrowne* and *Mike Presta*...At *Barking Doctor Studios* (Mt. Kisco, NY), *Mick Guzauski* mixed songs for *Eric Clapton's* next album and a *Robbie Buchanan*-produced track featuring *Peabo Bryson* and *American Idol's* *Kimberley Locke*...*Avatar Studios* (NYC) welcomed *Lawrence Manchester*, who mixed a score for composer/producer *Ryan Shore* for the film *Prime*...*Tony Visconti* has been having a great time producing Sony/Denmark artist *Kashmir* at *Looking Glass Studios* (NYC)...*The*



Smooth jazz pianist *Jim Brickman* recently mastered his latest *Windham Hill* release, *Grace*, at *Future Disc* (L.A.) with mastering engineer *Steve Hall*. From left: engineer *David Graw*, *Hall* and *Jim Brickman*

*Donnas* and L.A. engineer *Paul Hager* crossed the U.S. to *studio.metronome* (Brookline, NH) to mix songs in stereo and 5.1, while *Dropkick Murphys* (*Hell-Cat/Epitaph*) tapped engineer *David Bianco* to mix their latest...*Sound on Sound* (NYC) welcomed artists *Memphis Bleek*, *Olivia*, *Altar Boys*, *Tony Yayo* and *Brooke Valentine* to *Studio A*; *Yolanda Adams*, *Kenny Lattimore* and *Chante Moore* to *Studio B*; *Whoopi Goldberg*, *Brasco*, *Prodigy*, *Joan Baez*, *The Federation* and *Fabulous* to *Studio C*; and *Foxy Brown* with *Jermaine Dupri* and *Remy Martin* in *Studio D*...Producer *Eric Foster White* stopped by *Threshold's* (NYC) *Studio A* to work on various projects with engineers *Kato* and *Hillary Johnson*. *Road to Recovery* and *Crazy James* tracked and mixed with producer *James Walsh*, *Kato* and engineer *Jay Rodriguez*.

### NORTHWEST

At *Fantasy Studios* (Berkeley, CA), *Josiah Gluck* recorded and mixed *Nnena Freelon's* upcoming *Concord Records* release...*Detroit* natives *FULL* teamed with Seattle producer *Rick Kowal* to record their third full-length at *Black Vegas Studio* (Seattle)...*Nettleingham Audio* (Vancouver, WA) engineer *Kevin Nettleingham* mastered releases for PDX artists *RyeHollow*, *Novum Chamber Singers*, *Skip vonKuske*, ambient noise band *Bdong*, punk band *Filthy White Trash* and *The Stivs*, among others.

### SOUTHERN CALIFORNIA

Producer *Dave Sardy* has been ensconced in *The Village's* (L.A.) *Studio A* mixing *Oasis*, *OK Go!* and *Rock N' Roll Soldiers*; *Ryan Castle* engineered. Down the hall, *Liz Phair* tracked new songs with producer *John Alagia* and engineer *Brian Scheuble*, and, working on *Studio F's* new *Digidesign ICON*, *Janet Jackson* teamed with *Flyte Tyme Productions'* engineer *Ian Cross* to record and mix songs for a new album...*Skip Saylor* (Hollywood) welcomed *Chaka Khan* and engineer *Ian Blanch*, who tracked her vocals with *Soulive* for a new *Ira Schickman*-produced release. *Brandi Carlile* mixed her new album with producer/mixer *John Goodmanson*, and *Taproot* tracked and mixed their next album with producer/engineer *Toby Wright*. ■

Send your session news to [hjohnson@primediobusiness.com](mailto:hjohnson@primediobusiness.com). High-resolution photos encouraged!

percussion, flute, trumpet and Taylor's pre-CBS vintage Fender Precision bass.

The 13 poets on *Spreading Love-n-Spoken Word* (the title is also the name of the Magic Johnson Starbucks series, organized by several of the CD's featured poets) are uniformly excellent. While they don't practice slam verse à la Russell Simmons' HBO show *Def Poetry Jam* (where poets battle head-to-head with rhyme), their chops have obviously been honed by competition.

"We've got schoolteachers, scholars, street poets and an ex-gang member named Mr. Foster, who is a profound performer," enumerates Taylor. "We've also got some radio-friendly pieces. There's African stuff, world and street stuff, and some pieces just about the glory of being a person. We spent a lot of time watching how the audiences responded—that's how we decided which poems to put on the album. It's our goal to take the poetry out of the coffeehouse and put it on CD so people can take it with them wherever they go."

*SLNSW* is out on Taylor's Cyber Street Records. Look out: Cyber Street's aim is to change the world, one poem at a time.

You probably ought to have Dale Manquen's contact info (805/529-2496, [www.manquen.net](http://www.manquen.net)) in your database. A key resource for keeping all kinds of consoles alive and well, he's now the sole source for Penny & Giles faders and fader parts. And as one of the original designers of Flying Faders® automation, he's also the go-to guy for FF repairs and retrofits.

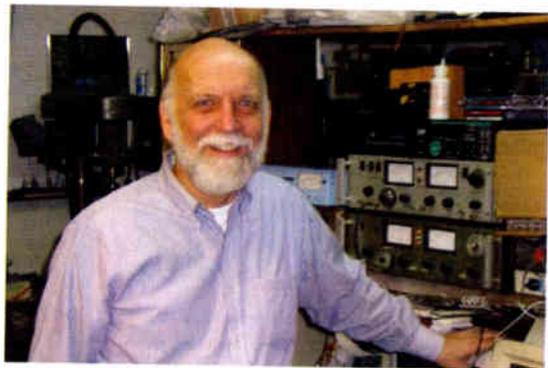
Manquen is also an analog tape machine expert. Back in the day, he designed tape recorders for 3M, including the revolutionary Model 56 16-track, the first machine that—rather than merely comprising a collection of single-channel electronics modules—incorporated multiple circuit boards into a single chassis controlled from a single remote-control module.

Part scholar, part inventor, all engineer, Manquen—who holds degrees as an electrical engineer and has taught at Cal State Northridge—is just plain fascinated with making things work, especially audio-related things. He's also worked for Ampex Corporation creating recording products, including the MM1100 multitracks; for Disney's Epcot Center; Warner Bros. Studios; and on optical disk recorders at Burroughs Corp.

In the mid-'80s, Manquen went to

work with Joe Martinson at Martinsound, where he was responsible for the design of several aspects of Flying Faders hardware. (Manquen and Martinson jointly hold the Flying Faders patents.)

"The faders came about because we were working to come up with a software-designed virtual console—what's now known as a control console," Manquen explains. "We finally decided the P&G



Dale Manquen knows all things Penny & Giles.

fader was the best approach. That led, with the help of four or five other people, including Morgan Martin and Sean Michael, to Flying Faders. We delivered the first system around 1988."

Recognizing a good match for its consoles, it wasn't long before Neve bought the exclusive rights to manufacture Flying Faders. "They controlled the product for 10 years," continues Manquen, "and we went into doing support and building custom systems for consoles like at Todd-AO that weren't Neve and needed different hardware."

Manquen estimates that approximately 250 to 300 systems were ultimately built. No longer in manufacture, they're still prized, although the actual computer components are becoming increasingly hard to find.

According to Manquen, Martinson has for several years been working on an updated replacement system, however no release date is scheduled for the new version. Meanwhile, Manquen, who retired from Martinsound in 1999, accepted an offer from Penny & Giles to take over its fader parts-related business in North America. "They wanted to concentrate on their bigger clients," he explains, "aerospace, industrial transportation, et cetera. P&G's big product now is joysticks."

Now in charge of fader (manual and motorized) and rotary pots for audio, video and lighting consoles, Manquen keeps inventory and a wealth of technical reference information on hand that helps him identify customer needs. He also refurbishes and retrofits faders and consults

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on fader automation design (most recently for Digidesign and APD).

"A lot of young people are picking up analog consoles to refurbish," he comments. "But they don't know a lot about how to maintain them, so I do a lot of mentoring. I also get calls from all over the country, from recording studios, manufacturers, radio stations, et cetera. When people find me, they're often extremely relieved! They're happy to realize that they can still get support and parts for their old faders." ■

Got L.A. stories? E-mail [Maureendrone@aol.com](mailto:Maureendrone@aol.com).

## NASHVILLE SKYLINE FROM PAGE 139

is a four-piece band, it's really interesting how everybody switches around and how important it is to be transparent and ready to help them move quickly," says Lehning. "To enable this, we have things set up with instrument stations as opposed to people stations. There is a keyboard world and a bass world and two electric guitar worlds and an acoustic world and the drums. Everyone also sings, so there are vocal mics at every station. You can talkback on it or do a scratch vocal."

For tracking, the band cut to Quantegy GP9 and then transferred straight to Pro

Tools. "We've got a cool system down where we are pretty time-efficient," Lehning notes. "Any time the band wants to come in and listen to a take, I'll do a transfer off of the repro head to Pro Tools during the playback. The interesting thing is, when we do fixes, I just leave the Otari on input and punch in the Pro Tools."

"Truthfully, I would be just as happy with the sound if we were going straight to HD. The biggest difference I noticed is not in character as much as some of the transients are softer with analog. I've always thought analog sounded better, but is it better enough to be worth the extra hassle? Talking about the differences between analog tape and digital mediums sometimes seems like a colossal waste of time. Good songs are worth talking about."

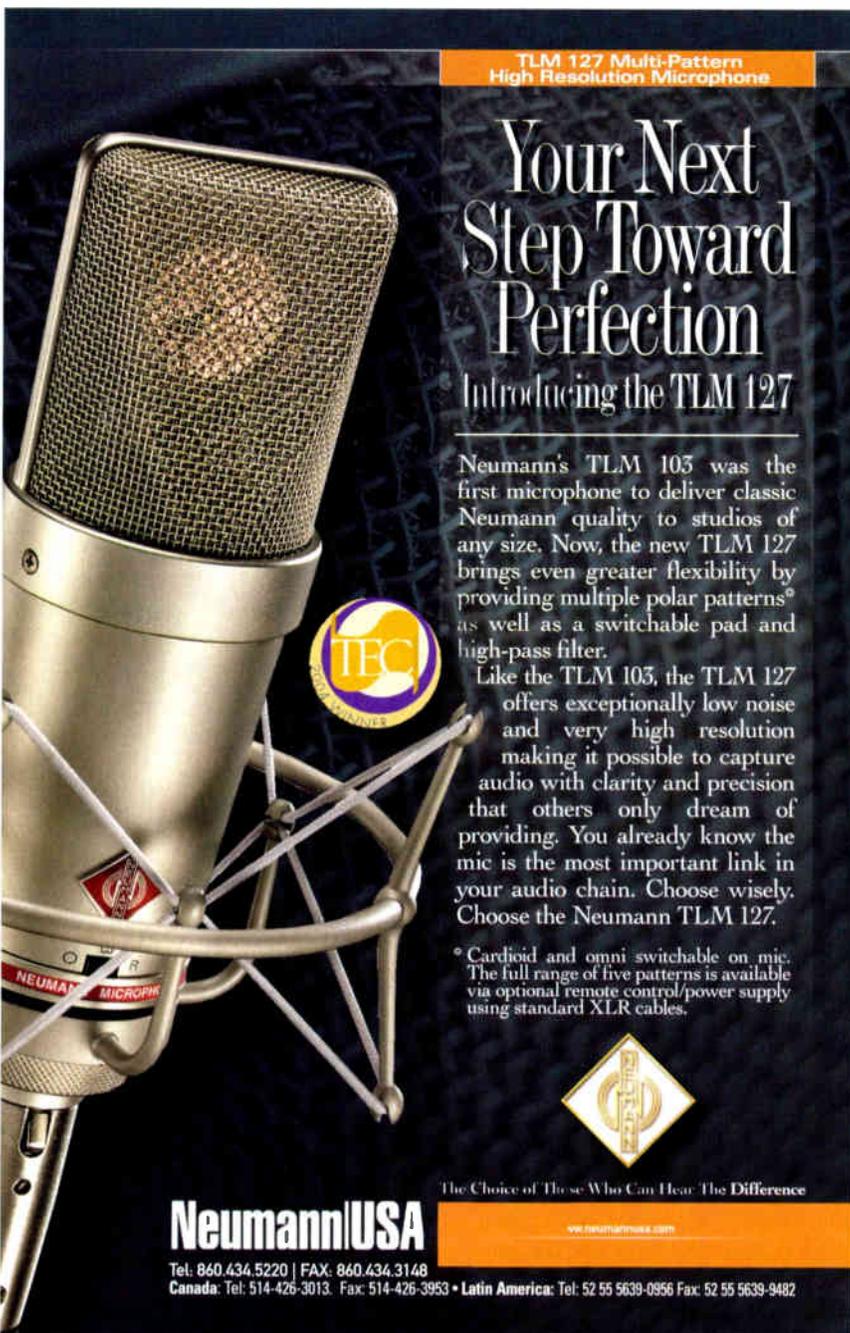
One thing that struck me about Guster is the band's commitment to not agreeing on a song or arrangement idea unless everyone has signed off on it. I wondered out loud to Pisapia if this kind of democratic process really worked.

"At first, I wasn't sure, because there really isn't one leader in this band," he replies. "In most bands, there is usually one guy who is the dominating creative force and everyone else responds to that. At first, I thought, 'I'm not used to this process.' It is very democratic and no one has ideas that are etched in gold or more precious than anyone else's. But the more we worked on things, the more the melodies and ideas became clearly defined. It takes longer and it sometimes takes away from the spirit of spontaneity; you still have spontaneity, but it is open to veto." [Laughs]

Among the songs recorded for the still-untitled album are "You're My Satellite," "Dear Valentine," "I'm Through" and "Emily Ivory," which is possibly the album's single. "Emily Ivory" has an interesting mix of instruments," says Pisapia. "It is sort of a funky song with piano and banjo as main instruments, and it has a ragtime feel. As long as the label hears a single, they pretty much let us do whatever we want on the rest of the record," he says with a laugh.

In that spirit of creative license, "Ruby Falls" is a seven-minute epic rock song that Pisapia describes as "Pink Floyd meets *The White Album*. It has a full end section, where the song changes and the ending is like a whole different song. It's pretty sick." At just over a minute, "Sorority Tears" is a strange synthesis between ornate Klezmer music and garage rock drums.

The overdubs were done at Pisapia's Ivy League Studio and mixing was at



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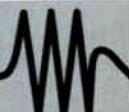


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Lehning's facility, The Compound, in Belle Meade, Tenn. [For more information on The Compound, see the December 2003 "Nashville Skyline."]

In conclusion, Pisapia offered these thoughts: "There are two things that prevent bands from enduring: People don't find their musical soul brothers and they don't stick together because it is one of the hardest relationships to maintain. These guys have been together for 10 years and, unlike many bands who chase previous hits or are trying to keep a career going by just doing another record, Guster continues to delve deeper into its musical spirit with each album. The agenda with Guster is just to make a record that each member would really enjoy listening to and be proud of at the end of the day.

"On this record, everyone really stepped up to the plate," he concludes. "The album feels great. I think we really worked hard every step of the way and we are really confident that we nailed it without any stones left unturned."

Guster's new album is tentatively set for release in September on Reprise Records. ■

*Rick Clark would like to thank Belmont's Scott Campbell and MTSU's Tanner Shores for their help in putting together this piece.*

working the film system in the underground is Duncan Sheik ([www.duncansheik.com](http://www.duncansheik.com)). As the writer/performer of one of the most enduring hits of the 1990s, "Barely Breathing," it would be easy for Sheik to rest on his laurels. Actually, Sheik points out that his great track record on radio has made him twice as determined to prove himself all over again in film. "As happy as I am that people enjoyed the song, they relate you to that one particular style if you're not careful," he says. "I've been working hard in other areas to get away from that, so in a certain way, it's good because it forced me to move into these other mediums."

For Sheik, the opportunity to write songs for major Hollywood films opened up his eyes to the magic of scoring for picture, leading to recent scoring assignments such as Michael Mayer's *A Home at the End of the World* and the upcoming basketball documentary *Through the Fire*. "This whole idea [is one of] understanding what it means to have music move through a scene where it's constantly changing mood and tempo and changing instrumentation over maybe 30 seconds or a minute or two. Whereas when you're writing a pop song, you have five or 10 elements that happen through the song and that's that. This is more nuanced."

Sheik's studio, housed comfortably inside his spacious and airy downtown loft, is enough to inspire creativity no matter what the situation. With a Pro Tools/Logic-based command center that also includes a 32-channel computer-based Calrec console acquired from the BBC, Sheik has quick access to a select group of keyboards, guitars and even a small live room with a killer drum set. "I wanted to get the Calrec instead of a digital Mackie or Q2R because I felt I've got to be able to put [the music] through something that's alive in some way," he says. "The workflow is very ergonomic now, but that was a process that took a couple of years. I had all these keyboards before and I got it all out of there so I could maneuver. That's the main criteria: to really know how to use the things that are in my studio." [For more information on Sheik's studio, see the July 2001 "New York Metro."]

For the busy multimedia veteran Steve Shapiro ([www.xylophobia.com](http://www.xylophobia.com)), whose recent film arranging credits include Disney's *Chicken Little* and promotion for *The Incredibles*, the key to his workflow was moving his studio out of Manhattan and into a spacious barn north of the city.

A producer/arranger who helped pioneer the construction of MIDI studios in New York City in the mid-'80s and a successful

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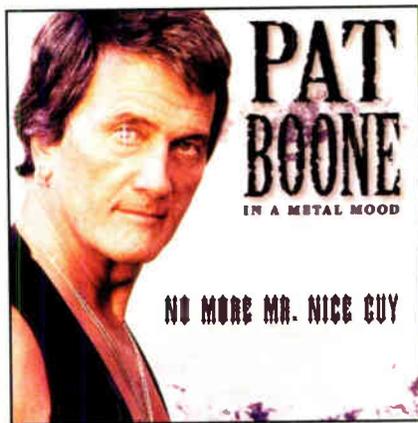
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—FROM PAGE 20, THAT SPECIAL LOVING FEELING  
**SOMETHING'S HAPPENING HERE**  
**WHAT IT IS AIN'T EXACTLY CLEAR**

Boone, Shatner, Wing... What is this stuff? Humor, parody, torture? Certainly all of these, but it's the *mix* that bothers me. What percentage of each? These people are apparently *serious* about these releases, and perhaps most alarming, these people (well, not Boone) are making *money* from them. Or from the ridicule.

And that's what I find so disturbing. Are they really trying and either just deaf and hopelessly deluded by their managers and agents? Or are they just clawing for the last few dollars that they may be able to collect by publicly humiliating themselves? I just can't tell. It appears to be a pathetic combination.

Oh, well, you can't save everybody, and certainly not from themselves. It seems that the American public clearly wants this stuff. Sort of a giant experiment in redefining the lowest common denominator. And I do believe this stuff successfully redefines it.



But wait! There's more! If you act now, you can listen to these songs yourself and discover the second unbelievable surprise—the actual underlying music itself!

While Wing's music appears to be anything from cheesy synth copies to the original releases through an old Thompson Vocal Eliminator, good ol' Billy Enterprise and Black Leather Biker Boone have apparently found a way to make actual studio musicians and producers sound as if their souls have been surgically removed.

Take Shatner's *Has Been*. There are *real pros* involved in this! Yet these are the flattest, most unexpressive, compressed, trite, boring, poorly produced and engineered music beds available today. Why? Hell, I have no idea. I thought for a moment that it could be on purpose, as to



PHOTO: DAVID WEISS

**Duncan Sheik is more than a sensitive singer/songwriter; he also composes for film.**

vibist with his own project called *Low Standards*, Shapiro knows what he's missing in California and he's fine with it. "I basically made the choice *not* to move to L.A.," he explains in his high-energy manner. "I've had opportunities there and I like the weather, but I said, 'I'm going to be a New York City guy.' I've always been into the jazz thing, and New York City is the heart of that. Plus, with all the Internet communication, Disney didn't seem to mind."

Running Pro Tools with a Digital Performer front end, MOTU 896HD, Gigasampler and Reason via OS 9 and OS X on Mac G4s, along with a SONAR drum kit and his beloved vibes, Shapiro has honed his studio to ergonomic perfection. "For recording a live band, such as the *Low Standards* CD, I'll run the room from a laptop so I get no fan noise," he says. "Then I move back to my dual-processor G4 for mixing. The instruments are ready to jump on, so if I need a jazz drum part—I never program that—I sit down and play it. In Digital Performer, you can replace things so easily, I'll just take an audio track and immediately trigger MIDI. But the idea is to get any resources—your sampler, digital audio sources or live stuff—at any moment. That's the way I've always wanted to work."

When he moved his studio out of Manhattan in 2001, Shapiro took a gamble that broadband would soon be in full bloom for music production, making New York City, L.A. or lunar locations irrelevant. Naturally, he was right. "I have my own 3GB server," he notes. "It has a fast DSL connection, so I can finish a session with singers, and an hour later, they have it in Burbank [Calif.]. Even a year ago this wasn't the case, but now everyone's got a high-speed connection and you're not just talking about putting a two-mix up, you can put up a whole Pro Tools session. That's the way everybody works now." ■

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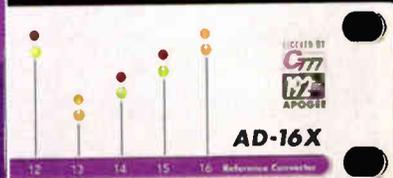


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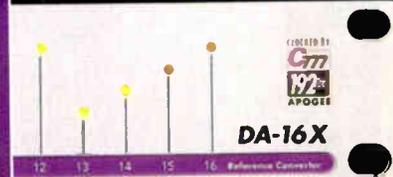
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element like aural wallpaper. Because audiences aren't focusing so much on the music, the quality of the systems that many listen to has been allowed to slip backward. Personal stereos have been a major factor in this: From the Sony Walkman to the iPod, people are listening to crummy sound reproduction at top volume, screening out any kind of sonic reality and replacing it with a lo-fi sound. Everyone can now have their own private soundtrack, as if they were perpetually walking alone through a theme park, without any other aural distractions, with a 15dB dynamic range and nothing below 100 Hz.

I remember this hitting me like a ton of bricks one day in the summer of 1979. I had been out of the country for a few months, and soon after I returned to the U.S., I was walking in New York City's Central Park and came upon an amazing picture: On a patch of blacktop were several dozen gyrating disco-dancing roller skaters, but the only sound I could hear was that of the skate wheels on the pavement. Each of the dancers was sporting a pair of headphones with little antennae coming out of them. Inside each of the headphones, I soon realized, was an FM radio, and they were all dancing to music that I couldn't hear. But it became obvious—after I watched them for a few minutes—that they weren't all dancing to the *same* music; each was tuned to a different station.

The "multimedia" speaker systems that people now plug into their computers so they can listen to MP3 streams have taken us further down the same road. Companies that decades ago revolutionized speaker designs—such as Advent, KLH and Altec Lansing—have had their brands swallowed up by multinational electronics foundries that slap those once-revered names on tinny little underpowered speakers connected to "subwoofers" that produce a huge hump at 120 Hz so that consumers think they're getting something for their money.

More recently, the tools of personal audio wallpaper have entered the production chain. Again, one incident sticks out in my mind that showed me clearly where this was going: A couple of years ago, I went into a hip coffeehouse—where the blaring post-punk music makes it impossible to hold a normal conversation—and sat down at a table near a young man wearing earbuds and peering intently into a PowerBook. I glanced over, and to my amazement, I realized he was working on something in Digital Performer.

How many composers live in apartment buildings where they work late into the night and, for fear of disturbing their

neighbors, never turn on their monitors but only mix on headphones? How many of your colleagues, or even you, boast of doing some of your best audio editing on a transcontinental plane flight?

A pessimist looking at this might conclude we were approaching a kind of "perfect storm" in which we lose complete control over what our audience hears. No one ever finds out what a real instrument sounds like; the systems that we use to reproduce and disseminate music are getting worse. And because most people don't even listen closely to music anymore, they don't care.

In my own teaching, I've seen how the lack of proper aural context results in an inability to discriminate between good and bad, real and not-real sound. In one of my school's music labs, I use a 14-year-old synth that, although I really like it as a teaching tool, I'll be the first to admit has a factory program set that is a little dated. But one of my students recently said, "The sounds are so realistic, why would anyone need to use anything else?"

There are nine workstations in that lab, which means the students have to work on headphones. We use pretty decent closed-ear models and the students generally don't have any complaints. That is until we play back their assignments on the room's powered speakers. "Why does it sound so incredibly different?" one will invariably ask. I take this as a splendid opportunity to teach them something about acoustics: how reflections and room modes affect bass response, the role of head effects in stereo imaging and so on. They dutifully take it in, but then they say, "Yes, but why does it sound so incredibly different?" The idea of the music and the medium being separate from each other sometimes just doesn't sink in.

If you're looking for an answer or even a conclusion here, I haven't got one. But I do know that the next generation of audio engineers and mixers—if there's going to be one—will have a hard time if they don't have more exposure than the average young person to natural, unamplified and unprocessed sound. If every sound we ever hear comes through a medium (and most of them suck), then how are we ever going to agree on what we hear?

Which means that our ears and our judgment are still all we have. Try to take care of both of them. And keep listening and keep learning. ■

*Paul D. Lehrman has only heard one MP3 he's liked, which was on a collection of Goon Shows.*

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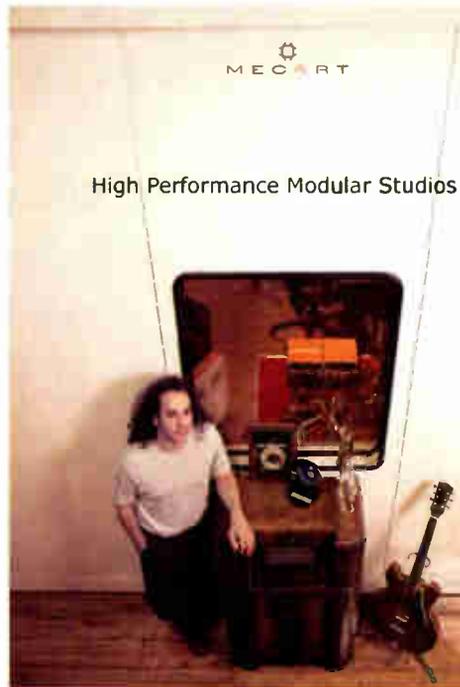
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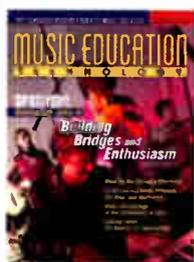
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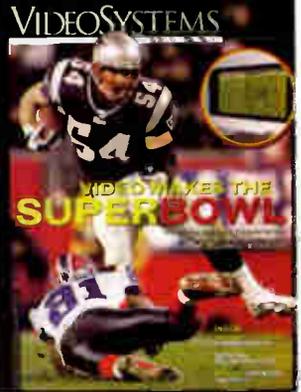
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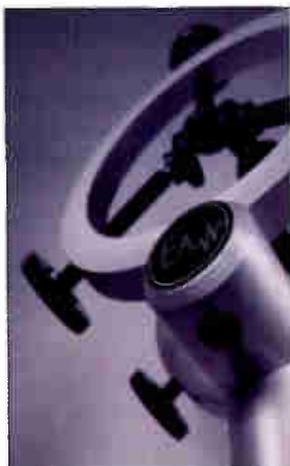
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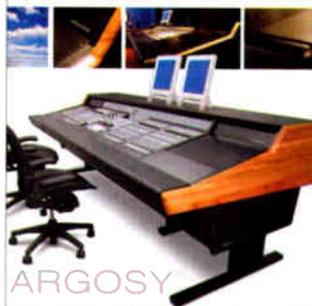
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# Want the ultimate studio-to-go?



## Apple 17-inch PowerBook G4™

The most powerful PowerBook ever. More power. More speed. More Digital Performer. As in more tracks, more plug-ins and more virtual instruments. The breathtaking 17-inch PowerBook has just been speed-bumped. Again. To a blazing 1.67GHz. The PowerBook is the ideal platform for DP, the all-new Traveler, and a host of third-party plug-ins and add-ons.



## MOTU Traveler™

**Bus-powered high definition FireWire audio**  
The first bus-powered FireWire audio interface to offer four mic inputs and exceptionally high-quality high definition analog recording and playback. Just plug in the FireWire cable and power everything off the battery in your computer — you can operate your studio anywhere! Slides easily into your knapsack or bag, next to your PowerBook.



## Alesis Photon™ X25

**Portable 25-Key USB MIDI Controller / Audio Interface**

Looking for the ultimate compact keyboard controller for your MOTU studio-to-go? The Photon X25 delivers the revolutionary Alesis Axyz controller dome and ten 360-degree rotary knobs, giving you powerful hands-on MIDI control of your Digital Performer studio and software plug-ins. Advanced features include 24-Bit 44.1/48 kHz USB audio I/O with balanced stereo audio inputs and outputs, 25 key, velocity sensitive keyboard, full-size pitch and modulation wheels, and an LCD screen with dedicated encoder for fast and easy set-up.

# Call the DP 4.5 and MOTU experts.



## Waves **IR Convolution Reverb Series**

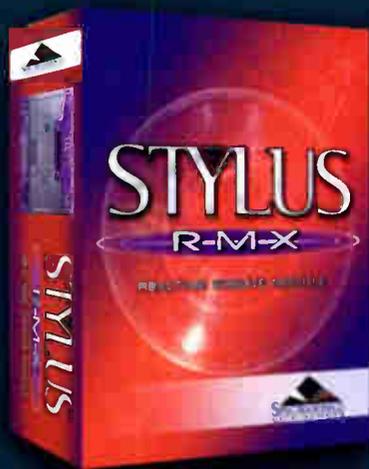
Stunningly realistic acoustic environment simulation

The new Waves IR convolution reverb series brings unprecedented realism to your MOTU studio, while also offering the flexibility of traditional parameter control not found in other convolution reverb systems. IR-L lets you start with exact reproductions of well over 50 acoustic environments, and then tweak things like pre-delay and reverb time while maintaining the character of the original space. IR-1 V2 adds even more parameter control, plus the ability to sample your own acoustic spaces. No matter where you track, Waves can put you in control of your aural environment!

## Native Instruments **Komplete™ 2**

Software Bundle with 11 Standalone or Plug-in Instruments / Effects

For DP4 users who want it all: the legendary sound of the B4, the endless possibilities of REAKTOR, the award winning sample engine of KONTAKT, the incredibly unique ABSYNTH — KOMplete 2 delivers an infinite universe of sound, uniting every essential type of instrument and effect in a 22GB sonic workstation for your DP4 studio. But it doesn't end there: explore even more sonic territory with the 8 sound libraries bundled in KOMplete SOUND: 15 ground breaking REAKTOR instruments, more than 4500 inspiring drum samples for BATTERY and KONTAKT, a total of 512 exciting new presets for the FM7, 256 outstanding patches for ABSYNTH and an additional 11 tone wheel sets for the B4. KOMplete SOUND is an inspiring parallel universe of sounds, samples and presets for KOMplete 2. Expand your Digital Performer studio today!



## Spectrasonics **Stylus™ RMX**

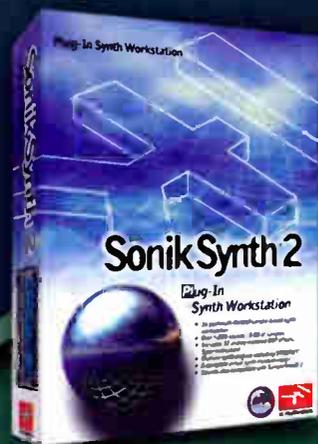
The power of groove production

Stylus RMX is the first product to offer the combined power of Groove Control™ with Spectrasonics Advanced Groove Engine (S.A.G.E.™) giving you dramatic new control over groove production. Dozens of new features include a completely redesigned interface, a new 7.4 GB core library of cutting edge grooves and sounds produced by Eric Persing, and the ground-breaking, always changing Chaos Designer™. Expand Stylus RMX with 9 new S.A.G.E. Xpanders, featuring live drums, percussion, remix elements, and more. The ultimate real-time groove module for DP!

## IK Multimedia **Sonik Synth™ 2.0**

Synth Workstation Plug-in with 8.5GB Sample Library

Imagine creating new and unique sounds from a combination of traditional instruments, one-of-a-kind acoustic textures and classic synth sounds, all in a plug-in. Sonic Synth 2 gives you thousands of samples from its 8.5GB sound set developed by Sonic Reality which is powered by the flexible synthesis and effects capabilities of IK Multimedia's SampleTank engine. Includes orchestral soundscapes, ethereal vocal layers and wine glasses, plus traditional keyboards, guitars, drums and ethnic instruments and a comprehensive selection of analog and digital synth sounds. Sonik Synth is the perfect way to bring sound of a powerful synth workstation to your Digital Performer desktop.



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## Glyph GT 051™

### High Performance Desktop Hot Swap FireWire Hard Drive

Perfect storage for a PowerBook/Traveler-based studio, the GT 051 tabletop chassis works with highly portable, Seagate 7200 RPM-equipped GT Key hot-swappable drives, available in capacities up to 400GB. Using Integrity™, Glyph's proprietary FireWire hot-swap technology, you can swap drives without rebooting your computer or restarting drives. GT Keys are housed in sound-dampening metal for ultra quiet operation. With a stainless steel fan-cooled enclosure, the GT 051 has a built-in power supply and is rack-mountable. The GT 051 comes standard with a three-year warranty, while GT Keys carry an additional overnight advance replacement warranty for the first year.



## PreSonus Central Station™ A Console Master Section Without the Console!

The PreSonus Central Station is the missing link between your MOTU recording interface, studio monitors, input sources and the artist. Featuring 5 sets of stereo inputs (3 analog and 2 digital with 192kHz D/A conversion), the Central Station allows you to switch between 3 different sets of studio monitor outputs while maintaining a purely passive signal path. The main audio path uses no amplifier stages including op amps, active IC's or chips. This eliminates coloration, noise and distortion, enabling you to hear your mixes more clearly and minimize ear fatigue. In addition, the Central Station features a

complete studio communication solution with built-in condenser talkback microphone, MUTE, DIM, two separate headphone outputs plus a cue output to enhance the creative process. A fast-acting 30 segment LED is also supplied for flawless visual metering of levels both in dBu and dBfs mode. Communicate with the artist via talkback. Send a headphone mix to the artist while listening to the main mix in the control room and more. The Central Station brings all of your inputs and outputs together to work in harmony to enhance the creative process and ease mixing and music production.



## Gator GRC-Studio-2-Go™

### Road-worthy case for your MOTU gear

The GRC-Studio-2-Go is a roadready, ATA style 2U rack case constructed of rugged Polyethylene with an extra, plush adjustable laptop compartment with web strap tie-downs for extra protection. Permanently connect your PowerBook, Traveler and rack gear through an accessory hole between compartments — convenient!



## Apple AppleCare™

Extend the life of your PowerBook. Of course, the tech support wizards at Sweetwater can help you with any operational issues you might encounter, but if you want complete peace of mind, the AppleCare Protection Plan is the perfect insurance policy. No matter what dangers may meet your portable rig on the road, with AppleCare, you're totally protected.



# Call the DP 4.5 and MOTU experts.

## Mackie Onyx Mixers with Optional Firewire Interface

High-quality compact mixers with direct connection to your studio

When you're on the road and looking to record a full band, the Onyx series of mixers from Mackie is the perfect complement to your MOTU Traveler. Whisper quiet and built like a tank, Onyx mixers feature an all-new mic preamp design capable of handling virtually any microphone. With the optional Firewire card, you can connect an Onyx mixer to your laptop with a single Firewire cable and have all the extra mic preamps and line inputs you need to capture every drum mic, vocal mic, individual synth output and all the band throws at you. Since Digital Performer works seamlessly with multiple Core Audio devices, configuring a Traveler/Onyx system is a snap.



## Mackie HR-series Active Studio Monitors

Nearfield monitors for your MOTU studio

Mackie's HR-Series Active Studio Monitors are considered some of the most loved and trusted nearfield studio monitors of all time, and with good reason. These award-winning bi-amplified monitors offer a performance that rivals monitors costing two or three times their price. Namely, a stereo field that's wide, deep and incredibly detailed. Low frequencies that are no more or less than what you've recorded. High and mid-range frequencies that are clean and articulated. Plus the sweetest of sweet spots. Whether it's the 6-inch HR-624, 8-inch HR-824 or dual 6-inch 626, there's an HR Series monitor that will tell you the truth, the whole truth, and nothing but the truth.

## Mackie Control Universal and Extender

Automated hands-on control for the DP studio

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



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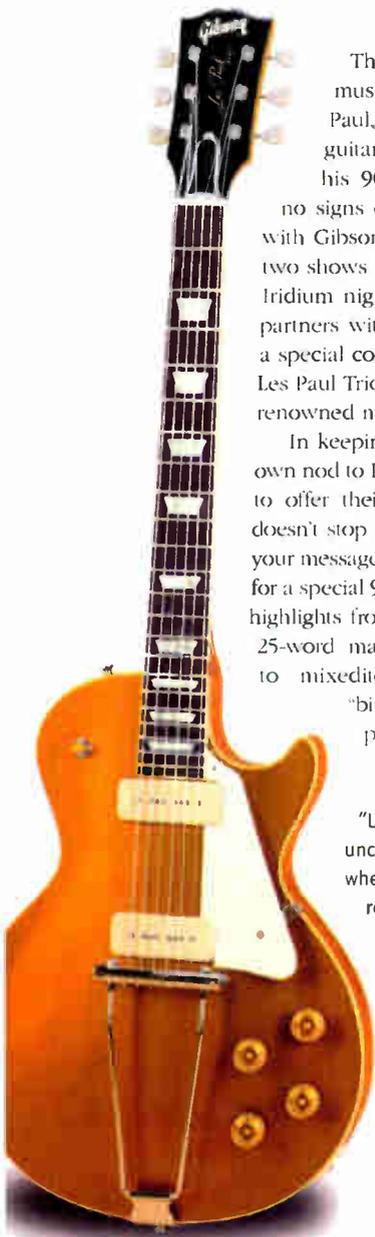
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# Happy Birthday, Les!



This month—June 9 to be precise—musician/innovator extraordinaire Les Paul, inventor of the solid-body electric guitar and multitrack recording, marks his 90th birthday. But this guy shows no signs of slowing down; he still consults with Gibson on new guitar designs and plays two shows every Monday night at New York's Iridium nightclub. On June 19, Carnegie Hall partners with the JVC Jazz Festival to present a special concert salute to the master, with the Les Paul Trio joined by a huge lineup of world-renowned musicians.

In keeping with the festivities, we offer our own nod to Les. We asked some industry friends to offer their birthday greetings. But the fun doesn't stop here. Through June 9, we'll upload your message to Les Paul at [www.mixonline.com](http://www.mixonline.com) for a special 90th birthday page with rare photos, highlights from his career and more. Send your 25-word maximum greeting with your name to [mixeditorial@primediabusiness.com](mailto:mixeditorial@primediabusiness.com) (put "birthday" in the subject line) and we'll post the comments for all to see.

—George Petersen

"Les, you were so nice to me at my uncle's studio [Harry Smith Recording] when I was growing up. It's one of the reasons I'm in this business. Happy birthday and many more!"

—Al Schmitt

"Happy birthday, Les! It's been great knowing you, and I look forward to being with you on the 19th. Here's to many more, young man—you inspire me to keep playing!"

—Neal Schon

"In 1951, I heard you and Mary Ford doing 'How High the Moon' on the radio and ran out and bought a copy. Other than Mary's voice, there's not one truly natural sound on this fantastic recording. This one single piece of recorded music forever changed the way we experience popular music. Les, you're a brilliant musical and technical talent who's much more than merely ahead of your time. You're a visionary—and you've got soul!"

—Bruce Swedien

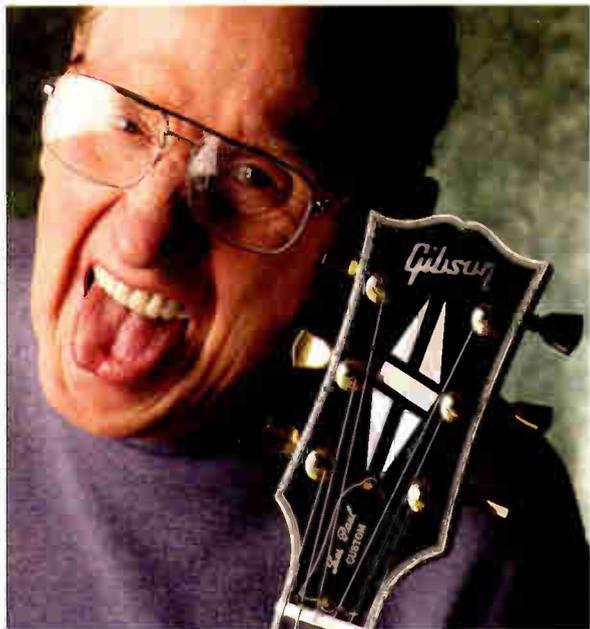


PHOTO: GRIFF MARTIN

## Industry Legend

### Celebrates the Big 9-0

"Dear Les, it's a *huge* b-day. I can only wish and hope that I am as cool as you are when I grow up. Great thing is, you never have! Ha ha! Happy birthday and God bless."

—Steve Lukather

"Les, you are the chairman of us all. Happy birthday, with love."

—Phil Ramone

"Les, it's been one of the highlights of my career to have met you and make music with you on a few occasions. Thanks for the privilege and congratulations!"

—Larry Carlton

"Les, you changed the quality of all our lives. If they put an electric guitar in a spaceship time capsule, it would be a Les Paul. Also, I never thought I'd know a person 50 years my elder who can kick my ass so hard on that damn thing. With the deepest of respect and gratitude from all your six-string children."

—Steve Vai

"A big happy birthday to someone who's such an inspiration to so many guitarists and music lovers around the world. It is truly incredible that you are 90, so I've still got a chance to play some tricks on you. Thanks for making guitars sing!"

—Steve Howe

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