

Mix Masters: Frank Filipetti · Paul Simon's "You're the One" · String Cheese Incident

An INTERTEC/PRIMEDIA Publication

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CIRCLE #001 ON PRODUCT INFO CARD

World Radio History

‘I get better results on the MT because I can switch between projects with such ease. Previously that took between 15 and 20 minutes a song. When you’re used to the MT’s speed you suddenly realize how much time you gain.’

#### DIGITAL MIXING TIP

Try working with automation all of the time, automating EQs and hand sweeps. Creatively, you can then build up the picture you want and keep it in front of you. Rather than try to explain a concept to an artist or A&R guy, you can give them a snapshot or replay of what’s happening.

‘For the producer digital is the most versatile way of working because you can keep all your options open. Now, if I can’t work digitally, I feel a bit cramped because things aren’t as readily available and the results I want aren’t so easy to achieve.’

## ‘MT IS THE MOST VERSATILE DIGITAL BOARD’



Photographed at Backstage Studio, Nashville



### TOMMY SIMS

Tommy Sims is a multi-talented singer, songwriter, producer, and musician whose creative contributions span musical genres. Winner of a Grammy Award for co-writing “Change The World,” Sims is able to divide his time between songwriting and recording his own material, and producing and playing on the recordings of others.

### CREDITS INCLUDE

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BABYFACE  
ERIC CLAPTON  
JOAN OSBORNE  
GARTH BROOKS  
AMY GRANT  
BRUCE SPRINGSTEEN



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The human voice is our passion and it shows!  
Try a VoicePrismPlus and hear what it can do for you.

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THE ORIGINAL POINT SOURCE SPEAKERS

# NATURE'S WAY

In 1947 Tannoy recognized the naturalness, and a whole host of performance advantages, that a point source drive unit such as our Dual Concentric™ design offers. These two pictures explain why such a drive unit will perform in a more natural way than a traditional two or three way speaker system. Notice how no words are required to explain this - it's plain common sense.

Like many things in life, getting it right is all about basics. If design basics aren't right, what follows will eventually become extinct. Ask Mother Nature... If the natural order of communication is disrupted, then the ultimate confusion takes place, deceiving the recipient into believing what isn't REAL, actually is.



FOR THOSE WHO KNOW

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CIRCLE #003 ON PRODUCT INFO CARD

World Radio History

# MIX

PROFESSIONAL AUDIO AND MUSIC PRODUCTION  
MARCH 2001, VOLUME 25, NUMBER 3

## FEATURES

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Back in Anaheim after a three-year stint in L.A., the Winter NAMM show was bursting with new products, groundbreaking technologies and plenty of surprises. The *Mix* editors cover the convention floor.



### 32 The Main Attraction: Theme Park Rides Demand Complex Sound

Theme parks have figured out that audiences want a complete entertainment experience—one that includes multichannel sound. Dan Daley takes a look at the “experiential” design for the *Men in Black* and *Star Trek* rides.



### 41 Top-of-the-Line Multichannel Power Amplifiers

For recording and mixing facilities expanding into surround sound work, multichannel amps offer a cost-effective solution for driving 5.1 loudspeaker systems. Michael Cooper surveys the market.

### 62 Paul Simon: The Making of “You’re the One”

He’s an American icon. He’s also been a master producer, arranger and record-maker for the past 30 years. Blair Jackson explores the making of Paul Simon’s latest CD.



**On the Cover:** Founded by Lou Pearlman, the man behind Backstreet Boys and 'N Sync, Trans Continental Studios became a full-blown commercial concern in 1998 and now caters to a range of clients and projects. Studio A contains an 80-input SSL 9000 J, a Quedstedt four-way Active 210 LCR monitoring system and a huge list of outboard gear. For more, see page 14. Inset photo: Steve Jennings.

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

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# The HDR24/96 versus recording on

## A fully-equipped LESS than three

**W**ith an HDR24/96 it's so easy to record, edit, and manipulate tracks, so easy to be creative... whether you're recording for yourself, your band or for a Fussy Client.

With all due respect, recording onto linear media (a.k.a. tape) has some pretty severe limitations: Access time to cue points is slow. Punch-ins erase stuff you previously recorded. And the tracks just sit there side-by-side on the tape with no chance to easily slip, slide, cut or paste them in new ways.

**Hard disk recording and workstation editing for less than the price of linear recording.**

It's no secret that non-linear hard disk recording is the way to go. But until now, 24-track/24-bit recording and playback required serious investment in a digital audio workstation. — And a heckuva lot of mousing and clicking.

Only the HDR24/96 combines the intuitive, analog-like convenience of a tape deck with the editing versatility of a computer-based workstation.

**As easy to use as an analog recorder.**

All basic functions are right there on the HDR24/96 front panel including transport buttons and individual Record Enable buttons for each track. Just hit Record and Play



\* based on current U.S. list and pro audio dealer "street" prices at the time of ad product on and on the assumption you will buy a CRT-type SVGA monitor and not an ultra-pricey flat panel model like our art director insisted on using for this ad.

\*\* based on average of length of current pop songs using 24 tracks @48Hz/24-bits and a liberal number of extra regions and virtual takes. Does not apply to extended trance remixes.

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# long thin strips of rusty plastic.

## Mackie 24-track HDR24/96 Hard Disk Recorder/Editor costs less than three tape-based, 8-track digital recorders\*...and does much more.

without even cracking the manual. But if you plug in an SVGA computer monitor, things get even better.

**The graphic interface that tape recorders always should have had.**

Even if you immediately don't use the HDR24/96's editing functions, you'll love the graphic interface for recording.

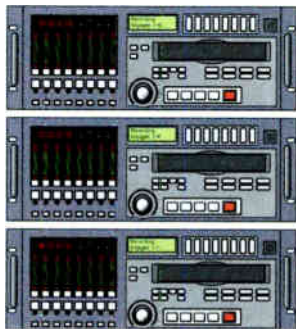
It gives you one-click access to all deck functions without a lot of annoying pull-down/fly-out menus.

Choose from 2x, 4x, 8x, 12x or 24-track views and then watch them scroll smoothly past a centerline.

Mark hundreds of cue points and four locate points for looping and auto-punch-in modes. Cue points are visible on screen and are accessible from a side list.

Use the mouse to "scrub" individual tracks, Cue, Punch and Loop points with continuously variable velocity.

Each track also supports eight "virtual tracks," so you can do multiple takes and comp them together easily.



**Even with three OPT-8 I/O cards, a MackieMedia removable disk, SVGA monitor, keyboard and mouse, the HDR24/96 costs less than three digital tape recorders\*...which don't offer loads of workstation-style editing features, super-fast access and true 24-bit recording.**



**Think of MackieMedia™ as "tape in a brick."**

Right out of the box, the HDR24/96's internal drive will record 90 minutes of 24 tracks at 48kHz. Your backup choices are simple—

1 Record directly to a MackieMedia™ M90 external drive. They're considerably less expensive than the SCSI drives some HD recorders require — \$10 a song\*\* — and they're in stock at your Mackie dealer.

2 For a quick back-up of just a song or two, we also offer an optional 2.2GB ORB™ drive that uses really inexpensive media.

3 For real economy use the HDR24/96's 100BasT Ethernet port to back up to your computer and its media.

**Serious editing tools built in... with 999 levels of un-do.**

Once you've experienced non-destructive editing of tracks, you'll never go back to linear recording.

You can mark a segment

(or multiple non-adjacent segments) as a region and then cut, copy and paste it anywhere — onto a blank track or right in the middle of an existing track

without erasing anything (the part of the track after the insert just "slides down").

You can audition regions or modify their start/end

points instantly, capture them as "sound elements" for later use or quantize them to user-defined time grids. And all regions are easy accessible from a side menu.

Create fade-ins, fade-outs and crossfades just by dragging and dropping them... and then set their length by dragging the mouse.

Add volume envelopes for simple level automation of regions or whole tracks.

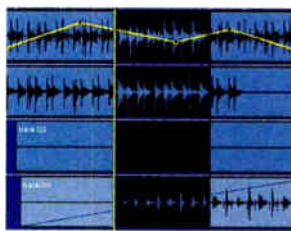
Then use Track Render to combine all or selected regions of a track just as you hear it — complete with

crossfades, volume envelopes, mutes, etc. — into a single region.

**Get a demo at a Mackie dealer.**

This ad only scratches the surface of the HDR24/96's features, options and capabilities.

Visit our web site... or get your hands on an HDR24/96 and experience (pun intended) unparalleled creativity.



**Zoom in to the waveform level. Drag, cut, paste, and slip tracks and segments of tracks just like on super-expensive workstations. Adjust track levels. Add editable crossfades. All with 999 levels of un-do.**



Hard-shell case.  
Really ugly pink anti-static foam.

**T**wenty-four track songs for under ten bucks each!! Divide the cost of a MackieMedia M90 into the 20+ pop tunes you can record on it and you're looking at under a ten-spot for each 24-track master. —Much less if you do a little disk drive house-keeping. Remember, hard drives can choose only to store audio data, not silence. Tape just rolls merrily along...costing money... whether you're using a track or not.\*\*



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# FROM THE EDITOR

## AUDIO TO THE MAX

The quest for high-fidelity audio began in the home, expanded to the car, spread into the cinema, blossomed into houses of worship and returned to the living room in the guise of home theater. But the movement is alive and very much on the rise.

New release formats have traditionally fueled consumer awareness of—and expectations for—high-quality playback systems. Mono LP records began “hi-fi” enthusiasts in the 1950s, but it was the acceptance of the stereo LP that really pushed home stereo from a passing fad into a full-blown industry in the '60s. In the '70s, improvements in tape technology launched the car stereo market, while the birth of Dolby Stereo films in 1975 brought LCRS capabilities to the local bijou. By the 1980s, churchgoers—accustomed to hearing concert audio—began demanding high-end, high-SPL music reinforcement systems in houses of worship, a far cry from the old “two-line radiators and a 3-input P.A. head” that had been the standard setup in most churches. The debut of DVD-Video has created a major resurgence in the residential/home theater market, with increasing numbers of consumers investing in systems that rival the quality of Hollywood screening rooms.

Having enjoyed a taste of what audio could be, consumers have developed a more than passing interest in sound quality. This penchant for better sound, meanwhile, has produced a spillover effect in nonentertainment industries. The retail environment has turned into big-time showbiz, with outlets such as The Nike Store and the Disney and Warner Bros. franchises leading the way.

New theater complexes such as Sony Metreon in San Francisco are also getting into the action, transforming straightforward establishments into entertainment destinations that lure the customer with kiosks, light shows, video walls and impressive sound systems. No more AEI- or Muzak-style music feeds; the new buzz phrase is “business music systems,” high-fidelity foreground/background installations, complete with subwoofers to supplement the ceiling/wall speaker arrays.

Meanwhile, what used to pass as simple, full-range, 8-inch ceiling speakers just don't cut it when consumers (read: customers) want hyperfidelity. With this in mind, audio manufacturers have been offering an assortment of new designs, ranging from high-power coaxials and discrete-component, two- and three-way systems—all designed to fit in the space once occupied by the lowly ceiling speaker. Add in a couple in-wall, in-ceiling or free-standing subs, and a distributed sound system can ROCK—while keeping installation time (and costs!) under control.

This month, as NSCA comes to Orlando (a well-known haven for certain theme parks), *Mix* looks at special venue audio—those spaces where audio can equal or exceed the visuals in terms of visceral impact. Whether part of a theme park attraction, interactive museum display or full-motion thrill ride with 180° wraparound screen, audio development for such applications combines the very different worlds of sound design with customized playback systems and takes them to the limit. These situations often present the designer with the ability to specify any playback format, such as having 10, 20 or 30 output channels anywhere in the venue.

Mixing to stereo or 5.1 seems pretty tame in comparison...



George Petersen

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Founded in 1977 by David Schwartz and Penny Riker Jacob

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"What a great machine!"

- ROGER NICHOLS, Grammy Award Winning Engineer/Producer, [www.eqmag.com](http://www.eqmag.com)

"The R100 packs more creative power per sample than most full size digital consoles." - BRUCE BOTNICK

# HOW DO YOU EVALUATE A DIGITAL MIXER? LISTEN.

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- JOHN NEWTON, Grammy-nominated engineer and owner of Soundmirror, Inc.

"We loved it... sonically beautiful and clean...the best small-format console ever... outstanding performance, execution and design."

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- TOM LAZARUS, Engineer and owner of Classic Sound, NYC

"...pretty fantastic...rave reviews...incredible sonic integrity...and incredibly easy to learn and operate...a new generation of digital console."

- DENNY PURCELL, Award-winning mastering engineer, President - Georgetown Masters

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The DMX-R100 is changing even the experts' opinion of what to expect from a compact, affordable digital console. A full input module with a knob for every key function; selectable high sample rate operation; 5.1 surround mixing and

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# FEEDBACK

*Editor's note: Wow, nothing generates letters like opposing columns on MP3 and new music distribution models. Read on.*

## NAPSTER, ANOTHER SONGWRITER'S VIEW

Regarding Wendy Waldman's letter to "Feedback," which appeared in your December 2000 issue: As a composer, songwriter and producer, I have a vested interest in the quick and just resolution of the issues regarding the broadcast and distribution of music via the Internet. This has caused me to question why the Internet isn't treated in the same manner as any other broadcast medium and simply licensed accordingly? BMI, ASCAP, etc., should collect licensing fees from Internet service providers as they do with radio and television broadcasters. Available watermarking technology would provide a means of accounting for downloaded or broadcast music in the same way that radio station playlists provide tallies. This would seem to resolve or circumvent many of the issues currently surrounding the Internet and intellectual property rights, while providing rightful payment to the creators/owners of distributed musical material.

*Jeff MacDonald  
Via e-mail*

## AND IN THIS CORNER...

Let me begin by saying that I have been a great devotee of Stephen St.Croix's terrific column ("The Fast Lane"). It is only with admiration and respect that I write to differ with some ideas expressed in the January issue's "MP Promises."

The public appears to have voted in favor of new music distribution systems that circumvent the traditional music industry that we all have come to know and tolerate. I suspect that no amount of bloodletting, flagellation, swinging the dead snake or righteous indignation can change either of these two facts: The new Internet music distribution mechanisms exist and are not going to go away; and neither the artist nor the consumer community "loyalty levels" to the music establishment are sufficient enough to dull this "threat."

Clearly, the music industry can't be

blamed for the rise of Internet music distribution systems anymore than yesterday's family farmer or furniture craftsman can be blamed for the rise of industrial mass-production systems that led to their demise. And, frankly, the "loss" of today's music property and distribution industries saddens me no more (and possibly less) than these other epochal industry changes.

Copyright and intellectual property laws, as we know them, are going to change. The world is a pretty old place, and musicians have been creating music far longer than today's copyright laws have been in effect. Truth be told, it's pretty tough to argue, especially when contemplating the great music cultures of the past, that the musical arts can only be served (or, are best served) with today's disintegrating model.

Assume that the public will continue to love music. Assume that an increasingly networked world will accelerate the discovery, rediscovery and cross-pollination of all types of global music, and that music lovers will have instantaneous, pervasive and (dam near) free access to this content from (darn near) everywhere. I also assume that the new music industry, as it comes to exist, will need to move away from mass production and toward mass customization; away from monolithic and toward decentralized (or even democratic) structures; away from product-centric toward customer-centric (with "customer" defined as both artist and consumer); and, finally, away from "marketing" and toward "service."

I would humbly submit that Stephen St.Croix and all of the other people that produce music for a living or simply for love are going to remain very much in demand, and that the definition of the size, shape, trajectory, artistic potential and ethics of the new music industry is constrained only by our ability and willingness to re-examine our assumptions, hop into the fray and get our hands dirty.

*Jim Stagnitto  
Via e-mail*

## AROUND THE CORNER

It is ironic that Stephen St.Croix is featured as *Mix's* "Technical Provocateur" in the magazine masthead and then

comes across as the last champion of technically antiquated hyperbole in his "MP Promises" column.

St.Croix apparently holds the obsolete view that the "creator" is the driving force in the production of art in a digital culture. Wrong. He's still speaking from the analog culture, where authenticity (where something comes from) is king. In the digital culture, resonance (where something goes) rules. The story, not the author, is the point.

Analog culture, like analog electronics, depends on a continuum, a bed of meaning in which to carry the signal. Remember when you used to cut tape? Well, that meant from point A to point B. Digital culture, on the other hand, does not depend on a continuum. It is entirely discrete and can therefore be assembled and dissembled at will. Future artists will not be the "creators" of "original" tunes and other works of "art," but the assemblers and dissemblers of the signs and symbols of the times, which exist only on the dazzling, superficial surface of the hyperculture. In the future, we will all be "repro" people.

MP3 downloads are merely one manifestation of the trend to appropriate the signs of the times and make them "unique" to one's commercial moment; and commercial moments are all that exist in a digital culture. Other manifestations of this trend are already familiar to readers of *Mix*: the appropriation of samples, riffs, popular music clichés, etc. The kings of the digital future will not be the artists and creators, but the brokers—the ones who link up the digital flotsam of interesting sounds and symbols and send them out into the etherworld of transitory meaning, where they are assigned a commercial value and broken down for other brokers to sell. Everybody will get a taste (including "creators"), but no one will eat the full meal. That's because a "meal" is an analog experience. In the digital future, it's all grazing and fast food.

*Roger Hughes  
Via e-mail*

*Send Feedback to Mix  
via e-mail  
mixeditorial@intertec.com.*



Model 1027  
TEC Winner



Model 1030  
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Model 1031



Model 1032



Model 1030D



Model 1034B



Model 1034C



Model 1035C



Model 1032



Model 1034



Model 1037B



Model 1038A



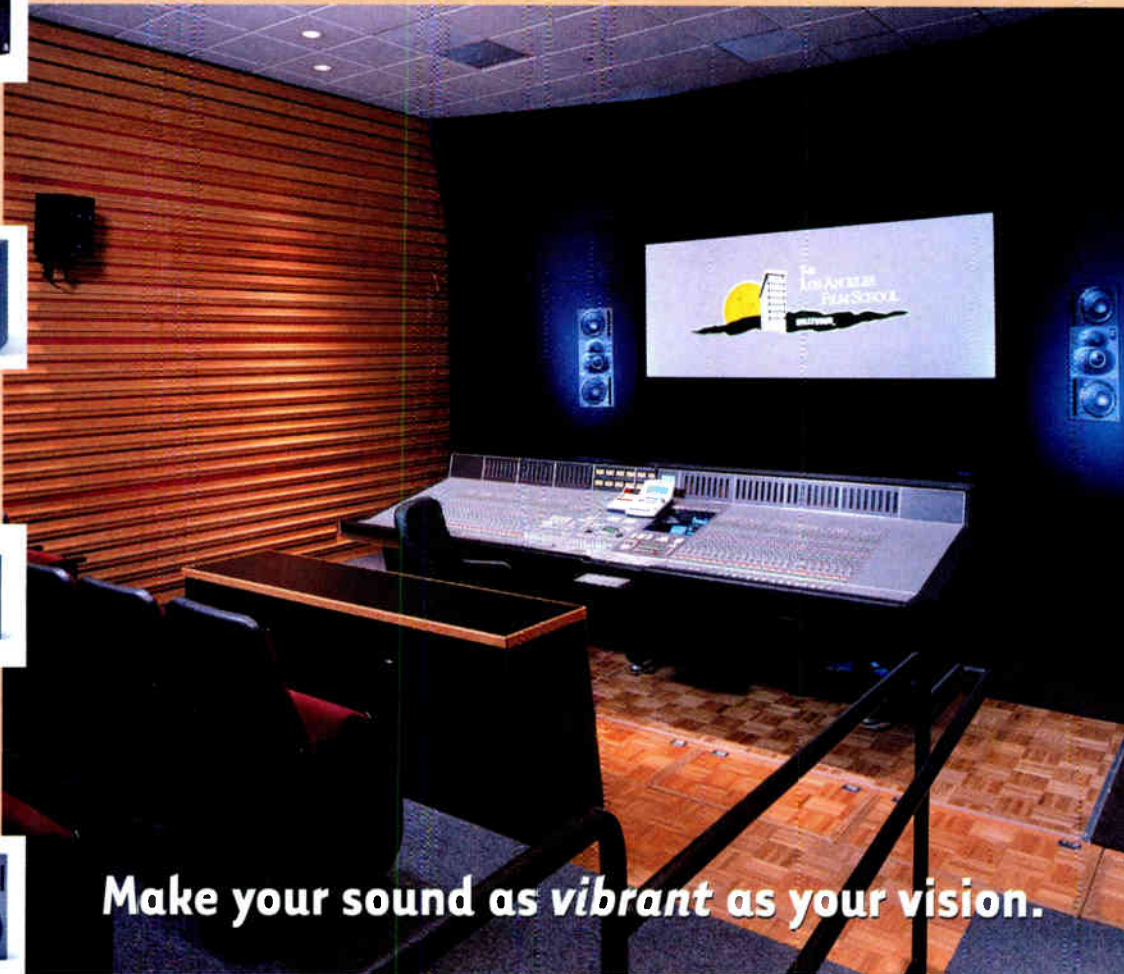
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# CURRENT

## PROFESSIONAL AUDIO NEWS AND EVENTS

### MIXED RULING IN NAPSTER CASE

For the second time in almost six months, a federal district court, on February 12, ordered an injunction against Napster, the online file-swapping application. The federal appeals court in San Francisco held that District Court Judge Marilyn Patel's original injunction (July 2000) would be modified to only address the file-trading portion of

Napster's service. In doing so, the court held that Napster would be liable for copyright infringement if it continued to offer illegally distributed music files after the company received a takedown notice from the copyright holder.

As of press time, the service was not shut down. Napster is likely to again appeal this verdict to prevent the injunction from going into effect. It is unclear, at this time, if the major record labels will strike content deals with Napster, or if Bertelsmann will continue to work with Napster to create a new distribution model. ■

### EXPANDING YOUR MIND

The Consumer Electronics Association is sponsoring the **Digital Download: Public Access to Content in a Digital World** conference on March 6, 2001, at the Mayflower Hotel in Washington, D.C. Panelists will discuss the legal, political and technological issues that affect consumers in the digital realm. For more information, visit [www.CE.org](http://www.CE.org).



Shure kicked off its 75th anniversary at NAMM with a special concert appearance by Spinal Tap, the only band that can turn it up to "11." For more details on NAMM, with complete coverage from the show floor, turn to page 22.

### DVD...COMING TO A LABEL NEAR YOU

AIX Media Group announced a new record label division, AIX Records, West Hollywood, Calif., for the new 5.1-channel formats, namely DVD-Audio and DVD-Video.

"As a DVD-Video production house," said Mark Waldrep, CEO at AIX Media Group, "we have been patiently waiting for the DVD format to migrate to the

recording industry. Having produced 5.1-channel surround tracks for a CES demonstration disc and numerous projects for Rhino Records, BMG and Jive Records, it became obvious that the consumer experience when listening to surround music was a tremendous improvement over stereo and the CD. Nobody who hears one of our recordings is prepared to return to their

stereo system."

For the live recordings of musicians from all types of musical genres, AIX has acquired a Euphonix 24-track 96kHz/24-bit R-1 recorder/reproducer, Euphonix System 5 digital console, Sonic Solutions HD System, B&W 801 and FCM-8 monitors, and Audio Upgrades preamplifiers.

DVD titles will appear on shelves in spring 2001.

For more information, visit [www.AIXrecords.com](http://www.AIXrecords.com). ■

## QUARTERLY ROUND-UP

### A PARTNERSHIP

**Agreement:** Digidesign and Prosoniq announced their first strategic alliance with the release of Prosoniq Orange Vocoder, a real-time audio suite effects processor for Pro Tools. Digidesign will be the exclusive distributor for the product.

**What It Means:** Prosoniq announced plans to discontinue its plug-in distribution relationship with Steinberg GmbH, as well as phase out its development plans for VST in order to fully focus on RTAS- and TDM-processing platforms for Pro Tools.

**What They're Saying:** "For the past few years, we have repeatedly been asked for TDM products," said Prosoniq CEO Bernhard Bouche. "RTAS and TDM combined are the 'best of both worlds' solution, both for you, the potential user, and for us as developer."

### AN ACQUISITION

**Agreement:** John Meadows, owner of Able Design, acquired Trace Digital LLC, a CD duplication and printing solutions company, and Trace's Affex division from Nakamichi of Japan. Concurrently, Dave Kalstrom was named CEO for Trace Digital.

**What It Means:** Kalstrom's plans for 2001 include introducing audio software and incorporating user-friendly CD-recording software from Prassi.

**What They're Saying:** "Combined with [John Meadows'] stockholder status and his background in the robotics field, the acquisition was a natural evolution of his talents and Trace's product lines," said Kalstrom. "Nakamichi was no longer interested in Trace and wanted to move on to other endeavors."

### A NEW COMPANY

**Agreement:** Cube-Tec has been launched to handle marketing and distribution of AudioCube and Quadriga on an exclusive, worldwide basis.

**What It Means:** Houpert Digital Audio will now just develop software and processing tools. Purchases can be made directly from Cube-Tec instead of through HIDA.

**What They're Saying:** "Cube-Tec was founded by the principals of HIDA, ICM and Sascom and will be a completely distinct company," said Curt Smith, president of Sascom. "The distribution was separated into two functions: HIDA will deal with the manufacturing and technological side of AudioCube, and Cube-Tec will handle the marketing and distribution."

For more, visit [www.sascom.com](http://www.sascom.com).

## Industry Notes

**Fairlight USA** (Hollywood) welcomed **Shaun Kerrigan** to its staff as president of U.S. operations...Get out your address books: **Steinberg North America** (Chatsworth, CA) is now located at 9200 Eton Ave., Chatsworth, CA 91311; **Klipsch** (Indianapolis) changed its address and phone number to 3502 Woodview Trace, Suite 200, Indianapolis, IN 46268; 317-860-8100; and **Harris, Grant Associates** (Surrey, England) UK offices found a new home at 16 Trinity Churchyard, Guildford, Surrey GU1 3RR...Many appointments at **EAW** (Whitinsville, MA): **Michael Jackson**, senior designer; **Jeffrey Mason**, market manager for installation products; **Eaton Sales & Marketing** (Binghamton, NY) will cover upstate New York; **Cordial/Riley Marketing** (Clarkston, MD) will handle Michigan; **John Anthony Co.** (Fairfield, NJ) is responsible for metro New York and northern New Jersey; **Sound Sales** (Columbia, MD) will cover Maryland, eastern Pennsylvania, Virginia and Delaware; and **Online Marketing** (Wadsworth, OH) will represent Ohio, western Pennsylvania, Kentucky, West Virginia and Indiana...**Chris Reason** joins **Telex Communications** (Burnsville, MN) as sales manager for the Mountain region...**Renkus-Heinz** (Foothill Ranch, CA) announced that **Eakins/Bernstein & Associates** (Shawnee, MO) will represent the company in Kansas, Nebraska, Missouri, Iowa and southern Illinois, and **McFadden Sales** (Columbus, OH) will cover Indiana and Kentucky...**Kip L. Hansen** and **Robert C. Atwell** join **DRS Technologies Inc.** (Parsippany, NJ) as VP of government relations and VP of marketing for Army programs, respectively...Two new faces at **Symetrix** (Lynnwood, WA): **Cari Casteel**, VP of sales, and **Jim Latimer**, director of sales for pro audio...**Community Professional Loudspeakers** (Chester, PA) announced new representative firms: **SK MacDonald** (Hunt Valley, MD) will handle the Middle Atlantic states, and **V-Com** (Jamaica, NY) will take on the New York metro area and northern New Jersey...**Cordial/Riley Marketing** (Clarkston, MD) is the new Michigan representative for **SoundTube Entertainment** (Park City, UT)...**Peter Sherman** has been tapped as **Tonos**' (Culver City, CA) VP of business development and strategy, and **Richard Lewis** was named the company's senior VP and CFO...**Emtec Group** (Valencia, CA) was named to be the seller and distributor for **Front Porch Digital Inc.**'s (Cherry Hill, NJ) digital media products and professional services worldwide...**Steve Thompson** joined **POP Sound** (Santa Monica, CA), a digital audio post house, in the newly created position of creative director, and the new account executive is **Danita Jo "DJ" Fox-Engstrom**...The new editor-in-chief at **live-audio.com** (Whitinsville, MA) is **Chris Kathman**...**Real Media** (New York City) secured new CEO and president **Walter Annasohn** from its corporate parent, PubliGroupe...**Carmen Flowers Liebert** was named executive producer/VP of marketing at **DJM** (New York City). ■

## ON THE MOVE

In January 2001, Colin Pringle was promoted to managing director of Solid State Logic. *Mix* caught up with Colin and asked him about the man behind the desk. Read on!

**Who:** Colin Pringle

**New Position:** Managing Director at Solid State Logic

**Previous Positions:**

- 2000, group marketing director at SSL.
- Development director of worldwide music, entertainment technology and electronics divisions of United News & Media.
- Helped re-establish AMS Neve after its purchase from Siemens.
- 1988-1995, joined SSL.
- Youngest editor and publisher at Haymarket Publishing.
- 1975, recording, writing and producing at the BBC Transcription Services Studios (London).
- Late teens, wrote music reviews for magazines.



**In the CD Changer:** "I listen to a wide variety of music. Today, it is Don Henley's *Inside Job*, Michael McDonald's *Blue Obsession* and Bach's French Suites, especially No. 3."

**What He Likes:** "I enjoy hiking. I've hiked in many of the western U.S. national parks, like Zion, Canyonlands, Capitol Reef... also places in the U.K., like the Lake District, Yorkshire Dales and Scotland. Although I still dabble with guitars, keyboards and MIDI, these days I like to get out of doors when I get the time." ■

## TEC AWARDS RETURNS TO NEW YORK CITY New Categories Announced

The Mix Foundation for Excellence in Audio announced that the 17th Annual Technical Excellence and Creativity Awards will be held on Saturday,



September 22, at the New York Marriott Marquis in New York City. It was also announced that significant revisions will be made this year to some of the TEC Awards categories.

"We believe the time has come to make some changes to ensure that the TEC Awards will honor not only individuals and companies, but the best creative efforts of audio professionals each year," says Hillel Resner, Mix Foundation president. "To that end, we are completely revamping the Institutional and Creative categories to make the awards more 'project-based.'"

Beginning this year, the Institutional and Creative Awards categories will be combined under the heading of Creative Awards; six new awards will combine what were previously 13 categories. The new categories are: Outstanding Record Production (Single); Outstanding Record Production (Album); Outstanding Tour

Production; Outstanding Remote Production (recording or broadcast); Outstanding Film Sound Production; and Outstanding Television Sound

Production. All engineers, mixers, producers and production facilities connected with the winning nominees will receive TEC Awards recognition.

The TEC Awards is also seeking new members for its nominating committee. Call Karen Dunn, executive director, at 925-939-6149 or e-mail KarenTEC@aol.com.

The article "Music Meets Multimedia: Understanding the DVD-Audio Format" in the December issue included the statement that DVD-Audio players "may optionally include support for formats such as Dolby Digital..." Although support for Dolby Digital is optional on audio-only players, it is required on any DVD-Audio player with a video output.

"The Tech's Files" in the January 2001 issue contained an editing error. The sentence that read, "If the drum is turned counter-clockwise..." on page 115, should have stated, "If the drum is turned clockwise..."

In our February issue, in the "Nashville Skyline" column, we inadvertently gave the impression that Masterfonics was out of business. Masterfonics, part of the Emerald Entertainment group, remains one of the leading mastering facilities in the country. *Mix* regrets these errors.

# Trans Continental Studios

by Barbara Schultz

Trans Continental Studios Inc. in Orlando, Fla., was off and running with a Platinum roster almost as soon as it opened. The facility was founded by Lou Pearlman, who used the facility and label Trans Continental Records to launch his then-new acts the Backstreet Boys and 'N Sync. Since then, the TC Studios have become a commercial enterprise (1997) and gone on to produce several more in-house success stories, including the bands O'Town and LFO.

Today, the studio is managed by veteran studio and engineer manager Susan Schilling. She ran the Estefans' Crescent Moon Studios for five years in Miami, and then moved into engineering management and recording production coordination, booking many of Florida's best into top studios, such as Criteria/Hit Factory, New River, Crescent Moon and others. Her experience has shown her exactly what's needed in a top-end facility: that balance of fun and relaxation for the clients, professional and detail-oriented behind the scenes. "We try to provide a fun, relaxing atmosphere," she says, "by supplying clients with a basketball area, a pool table and in-house chef services. We do anything extra. If a client mentions something, we try to take care of it right away—every little detail."

Toward that end, TC's strong technical staff can cover every base. Technical director Neils Kastor has been with the studio since its inception and knows it inside and out; he should because he designed it, along with Ross Alexander of Synergistic Services. Recently hired is George Cowan, whose background includes long-term studio and FOH gigs with Todd Rundgren and Natalie Merchant and extensive work at Bearsville Studios in New York. "I did some recording with Natalie last summer, up in Bearsville again," Cowan says. "Around that time, Susan and I had become good friends through a mutual friend at SSL who introduced us, and she asked me to work here, so I moved my wife and my daugh-

ter to Orlando."

"One of the reasons that I really wanted George on our staff," Schilling says, "is the range of experience he brings. We were excited about having

## ON THE COVER

him as part of the studio team, as part of our technical team and as part of our remote truck team. I knew it was a great idea to get so much in just one person."

Studio A contains an 80-input SSL 9000 J board and a Quedsted four-way Active 210 ICR monitoring system with Quedsted surrounds. There's also a huge list of outboard signal processing, effects and mics. Tape machines include Studer A27s, Sony 3348 DASH, RADAR II, DA-88s, plus Dolby SR. The recording room is 21x22 feet, plus an iso/vocal room and a piano room with a Baldwin grand. The control room is 22x24 feet, and Cowan says a lot of recording work gets done in there as well. Acoustically, he says, the A room is "pretty diffuse. It's a balance of live and absorptive. It's a nice medium-sized room, and people seem to be happy with the drum sound they get in there."

"Studio B is a smaller, more intimate room," he continues. "It's got quiet corners and a section that's more live for a drummer." B has a 40-input SSL 4000 E/G console and JBL LSR-32 monitoring. Studio C is a smaller demo/overdub room with a 44-input Amek Big console with Supertrue™ automation and JBL LSR-32 speakers. All three of the studios offer full-blown Pro Tools systems, and there's plenty of floating gear—effects, preamps and monitor choices—that can be used in any of the rooms.

Schilling says the facility doesn't promote its rehearsal facilities; they are mainly used by clients who are already booked into one of the main studios, but occasionally rock bands will prefer the feel of the rehearsal space for playing live. In that case, the rehearsal rooms can be interfaced with the remote truck, which offers an API Legacy board, Tascam recorders, Mackie HR824 monitoring and its own collection of outboard gear. The truck is also set up to accommodate a variety of other formats and has been used for top-shelf recording and broadcast work; it was recently used for the Latin Billboard Awards, and artist credits include Marc Anthony, Christina Aguilera, Baha Men, Harry Connick Jr., Destiny's Child, Enrique Iglesias and Tony Bennett.

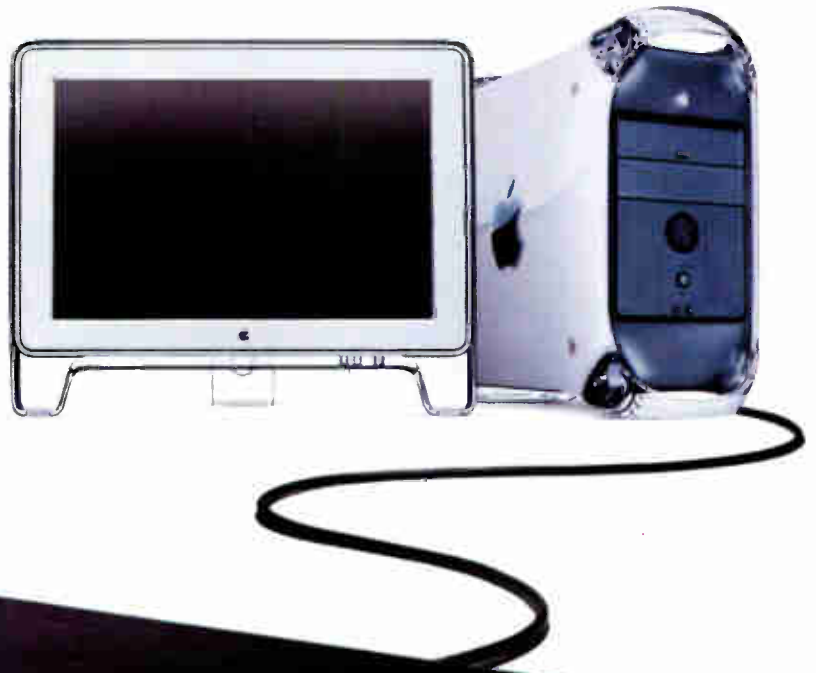
At press time, the internal studios were all booked, though Schilling was discreet, saying simply that there was a "hip rock client visiting and mixing in A, and an R&B project in Studio B." She says that in addition to Orlando's obvious tourist attractions, beautiful coast and vibrant nightlife, she believes that one of the reasons TCI remains successful is because "I make it very easy for clients to work here. Everything is included from our chef services to the Pro Tools system to the outboard gear. No hidden costs and no surprises." ■



Studio B



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# WHO WILL FIX OUR STUFF?

## THE CHANGING FACE OF THE SERVICE BUSINESS



ILLUSTRATION DAVID BALL

One of my computer monitors has been flaking out recently. At random intervals, one of the color circuits would fail, and my screen would turn a sickening pink. It's long past the warranty: It's one of those old, bright, Sony 19-inch jobs that weighs about 60 pounds and costs about \$2,000 when it was made eight or nine years ago (I don't know exactly when—I bought it used). At first, it would respond to what my friend Coleman Rogers calls "the Fonzie technique"—referring to the *Happy Days* character who could fix anything, because he knew exactly where to whack it and how hard. But, as time went on, that became less reliable. Fans of this column

know how reluctant I am to part with old gear, and although I do like this monitor, it only displays at one resolution, and with all the different types of work that I do, I came to realize it was time to retire it and replace it with a brand-new, modern, lighter, multisync model, which I was able to acquire for the piddling sum of \$350.

But I figured that if I could get my old monitor repaired, then it would be nice to have an extra 19-inch monitor lying around. So I went through the phone book looking for "Macintosh monitor service" and found a place, located a distance away, but in an area I go

to periodically, who promised to repair it for a fixed, payable-up-front fee of \$165, assuming the tube was okay (which I knew it was). It would take two or three days, they said.

That was a month ago. I'm still waiting. They can't really tell me whether it's done. They tried it on a PC first, because they said they didn't have the right cable to try it on a Mac, and it didn't work at all. So I gave them my cable, as well as the Griffin sync adapter that has served me well on many Macs and on many monitors. They then told me that they had checked it out, soldered down everything they could see, didn't find any bad parts, but

BY PAUL D. LEHRMAN

—CONTINUED ON PAGE 201



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# 'T WAS THE NIGHT BEFORE NAMM TIME

OR, WHY THE ELVES NEED A MONTH IN BERMUDA

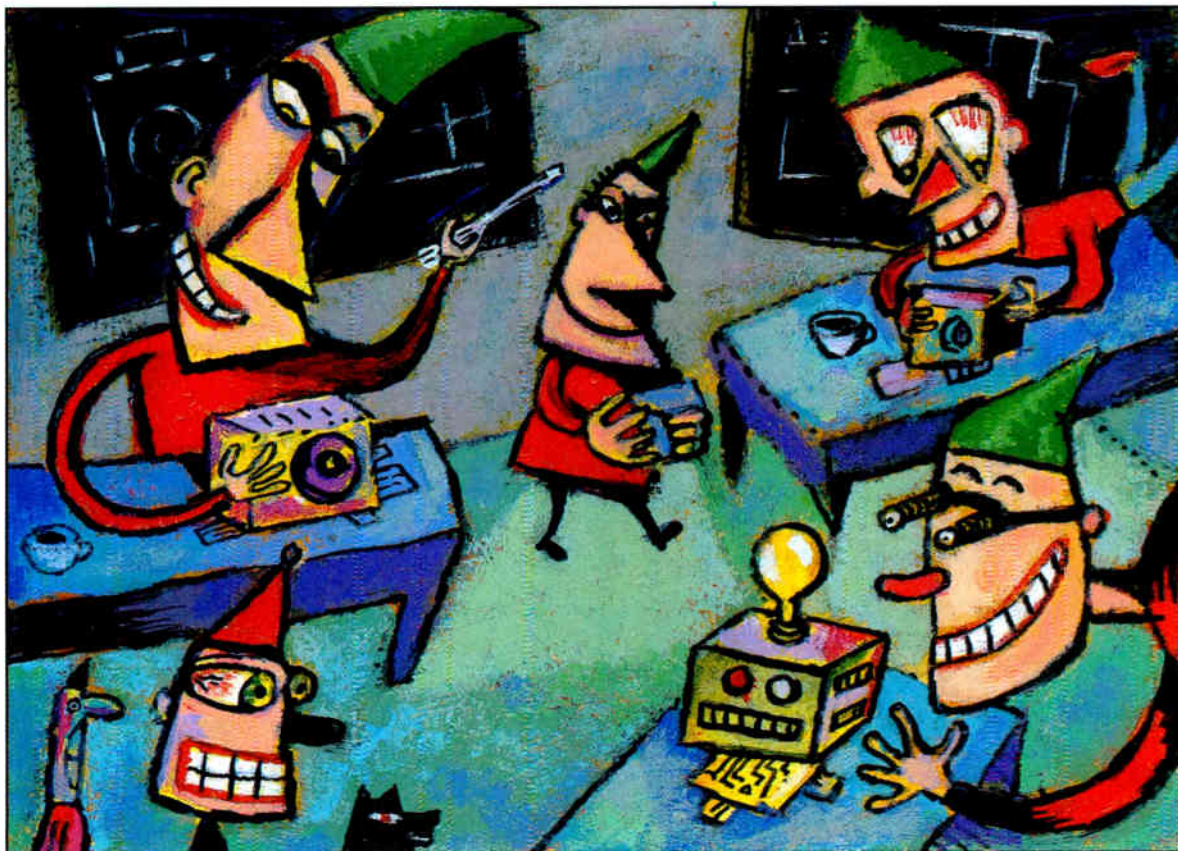


ILLUSTRATION ANDREW SHACHAT

**T**was the night before NAMM-time, when all through the house,  
Not a creature was stirring (except for his mouse).  
The server was hung, and it doesn't seem fair,  
'Cause in 24 hours we'd have to be there.

Our brains had exploded with pre-NAMM show dread,  
The visions we needed just weren't in our heads.  
Our printer, all inky, said he had to wrap,  
But all I could think was I needed a nap.

When up at the front there arose such a clatter,

*I crept from my desk to see what was the matter.  
Away to reception I crawled with panache,  
And there was the driver, his hand out for cash...*

If you are a manufacturer, then you have probably been there, and more than once. If you are a dealer or a customer, then you might not fully understand the impact that this sick practice has upon our merry little lives. Let's take NAMM, for example. Why NAMM? Because it's tomorrow. (Well, not your tomorrow as a reader, but mine as a writer.)

Every person in my company (Intelligent Devices) has been on

double-time for a couple of months, and several of us have literally been living at work for the past five weeks. Yes, it's the Big Crunch: eating coffee directly out of the bag, automatic pizza deliveries three times a day without even calling, friends bringing in clean clothes because 85 lines of code can be written in the time it takes to pop home and change... Ah, the good life.

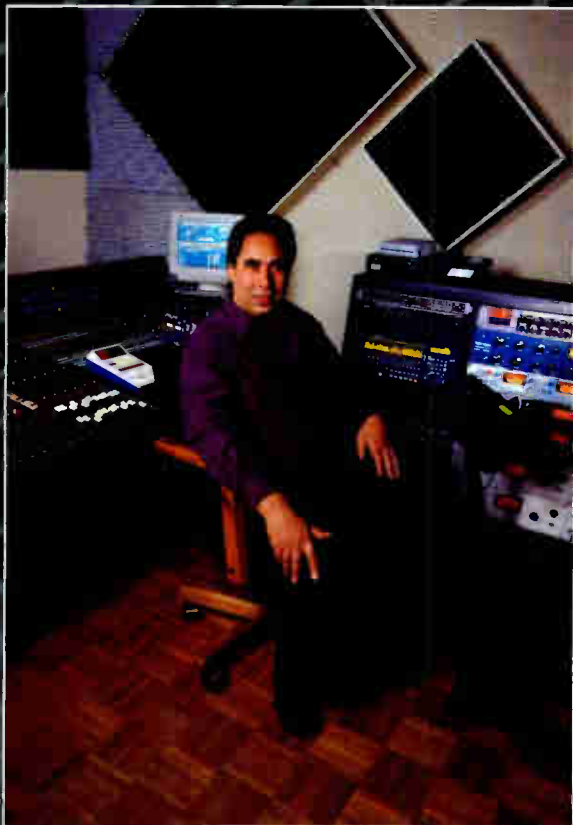
And we are not a start-up company. This is not our first trade show. (This is my 66th.) Nor was NAMM an unscheduled surprise event. And it's certainly not just us. I called my brother yesterday (he is pres of THD in Seattle), and though he answered the secret direct-access, family only number, he only said,

—CONTINUED ON PAGE 196

BY STEPHEN ST. CROIX

# MX-2424 Profile: Rudi Ekstein of Foxfire Recording

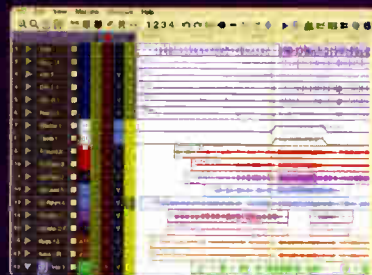
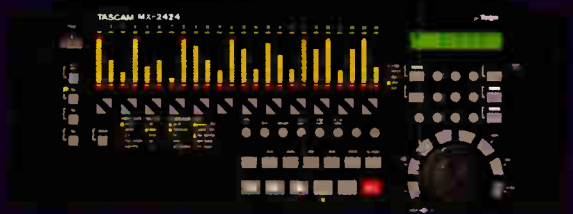
MX-2424 24-TRACK 24-BIT HARD DISK RECORDER/EDITOR



Rudi Ekstein may not be a household name. But his studio, Foxfire Recording, has been thriving for over ten years, with over 40 hours of bookings every week. And the new cornerstone of Foxfire is the TASCAM MX-2424 24-Track 24-Bit Hard Disk Recorder.

When you can have any recording system you want, why pick the MX-2424? "After looking at other hard disk multitracks, I chose the MX-2424 based upon its incredible versatility," says Rudi. "First and foremost, the MX has fantastic sound quality that is comparable to anything I've ever heard. The ability to use 24 channels of analog and digital I/O simultaneously was another big reason for my decision. Plus, the ability to edit from the front panel, to easily set locate points and to use the auto-punch and scrub features have helped make sessions run smoother and quicker."

With audio file format and disk drive compatibility with your favorite DAW systems on Mac® and PC, easy interfacing with popular analog and digital gear and all the advantages of our world-class hard disk engine, it's easy to see why thousands of musicians, project studios and professional facilities like Foxfire have chosen the MX-2424 for their main recording system. For the complete MX-2424 story, see [www.tascam.com](http://www.tascam.com) or visit your TASCAM retailer. You never know...the next MX-2424 profile could be yours.



The new MX-View graphic user interface software, available soon for all MX-2424 owners. Includes powerful waveform editing and much more.

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# The Magic (Kingdom)

**HOT  
PRODUCT  
HITS  
OF  
WINTER  
NAMM**

**By the *Mix* Editors**



Founded in 1901, the National Association of Music Merchants celebrated its 100th birthday at its Winter Show in Anaheim, Calif., January 18-21, 2001. Marking a triumphant return to "The City That Disney Built" after three years of lackluster shows in Los Angeles, this year's show was NAMM's largest and most successful to date. Attendance topped 65,000—including a 16% jump in buyer registration: over last year, although judging from the packed show floor, it seemed more like 60%.

This NAMM was a star-studded event, with celebrity appearances by Carlos Santana, Keanu Reeves, Tony Bennett, Elvira, Korn, Peter Dinklage, Spinal Tap and Big Bird, to name a few. The show was big on birthdays, too: In addition to NAMM's 100th, **Bag End** and **HHB** marked their 25th anniversaries, **BGW** marked its 30th and **Shure** celebrated its 75th with a booming Spinal Tap concert, while our sister publication, *Electronic Musician*, lit 15 candles on its cake.

Cooperative ventures were the *buzzwords du show*: **Digidesign** ([www.digidesign.com](http://www.digidesign.com)) and **Focusrite** ([www.focusrite.com](http://www.focusrite.com)) showed Control|24 (\$8,000), a new hardware controller for Pro Tools. The mixing surface has 24 motorized, touch-sensitive faders, dedicated channel EQ and illuminated switching for mute, solo, record arm, channel selects and automation modes; it includes 16 Class-A Focusrite mic/line inputs; and has surround monitoring capabilities. **Emagic** ([www.emagic.de](http://www.emagic.de)) and **Mackie Designs** ([www.mackie.com](http://www.mackie.com)) announced a plan to develop a family of hardware controllers, beginning with Logic Control, a modular surface for Emagic's Logic Audio software. Mackie also signed an agreement to purchase SYDEC n.v. of Belgium, a major innovator of digital audio technology products in partnership with **Soundscape Digital Technology** ([www.soundscape-digital.com](http://www.soundscape-digital.com)). Rival giants **Roland** and **Yamaha** plan to work together to improve MIDI data compatibility. In addition to the two



# Is Back!

companies supporting the GM2 format established in 1998, both will have open access to Yamaha's XG format and Roland's GS format, developing products for all three. In other partnership news, Mark of the Unicorn is working with Rocket Network to develop a Rocket-powered version of Digital Performer.

## BEHOLD THE 24-TRACKS!

It seemed everybody had a stand-alone 24-track at NAMM. The Alesis ([www.alesis.com](http://www.alesis.com)) HD24 is a 24-bit, 24-track disk recorder with a street price of \$1,999 (\$2,499 list) and will ship this summer. Based on low-cost IDE hard drives and offering ADAT sync, with BRC- and Lightpipe-compatibility, the HD24 shatters the price/performance barrier Alesis set a decade earlier with the 8-track/16-bit ADAT. The HD24 base price includes 24 channels of 24-bit analog I/O and 24 channels of digital I/O. No waveform editing is offered, but tracks can be exported via Ethernet to other workstations.

Roland's ([www.rolandus.com](http://www.rolandus.com)) VS-2480 is a 24-track, 24-bit/96kHz recorder in a stand-alone desktop chassis. Users can navigate via an internal LCD or connect a VGA monitor, keyboard and mouse.

Akai ([www.akaipro.com](http://www.akaipro.com)) unveiled its DPS24, a combo 24-bit/24-channel disk recorder/editor/digital mixer in a single unit, with touch-sensitive 100mm moving faders, 3-band EQ, onboard effects, 44 input channels on mix and a built-in CD-R drive. Price: \$4,995.

"It's shipping, it's shipping!" was the battle cry of many vendors. iZ ([www.izcorp.com](http://www.izcorp.com)) has been shipping its RADAR 24 for some months now. Mackie ([www.mackie.com](http://www.mackie.com)) is delivering its HDR 24/96 hard disk recorder and was demoing it with the 96kHz option and with its large Remote48 autolocator, due out this summer. Tascam's ([www.tascam.com](http://www.tascam.com)) MX-2424 is also shipping, and the company touted its MX-View software, which adds waveform editing and multiple MX-2424 transport control. Not to be left out, Fostex ([www.fostex.com](http://www.fostex.com)) is delivering its D-2424 24-track hard disk recorder/editor, priced at \$3,995.



Fender Cyber-Twin



Crest FB-88



Danelectro Dan-O-Wah



Alesis HD24



Korg KARMA



## HARDWARE, SOFTWARE

TC Works' ([www.tcworks.de](http://www.tcworks.de)) PowerCore (\$1,599) is an open DSP platform for VST applications. This 24/96-capable PCI card features a PowerPC and four Motorola 56K chips, boasting the power of four G4 processors. PowerCore integrates with any VST-compatible sequencer or audio application. TC Works also debuted a new plug-in format as an extension to VST, where the user interface code runs on the host and acts like a VST plug-in, while DSP code runs on the card, saving CPU power. PowerCore works with any audio hardware supported by the host application, including ASIO, Direct I/O and Sound Manager.

Universal Audio ([www.uaudio.com](http://www.uaudio.com)) announced Powered Plug-Ins, a DSP-intensive family powered by UA's new UAD-I PCI DSP card. The first bundle (available next month for \$795) includes Kind of Loud's RealVerb Pro, the UAD-I card, EQ-I module, CX-I compressor module and MD-I delay module, and will also support VST/PC. More plug-ins—including Vintage Compressors to emulate Universal's classic gear—and expanded platform support are planned.

Lynx ([www.lynxstudio.com](http://www.lynxstudio.com)) introduced the LynxTWO, a line of half-size PCI multichannel interface cards offering up to 192kHz/24-bit resolution, +4/-10 balanced analog I/Os, AES/EBU and S/PDIF I/O, plus two Lstream ports capable of transferring eight input and eight output channels, along with onboard 3:1 SRC and an LTC reader/generator.

Cakewalk ([www.cakewalk.com](http://www.cakewalk.com)) took its software applications to the next level with Sonar, a new Windows-based program offering multitrack recording, editing and mixing with unlimited audio and MIDI tracks; loop construction and editing; DXi (DirectX Instruments) software synth plug-ins; fully automatable DirectX 8.0 effects; real-time MIDI FX plug-ins; and extensive audio loop and Sound Font libraries.

Mark of the Unicorn's ([www.motu.com](http://www.motu.com)) Digital Performer 3.0 adds Pro Tools import/export, surround support, the ability to edit MIDI and audio together in a single window, 15 new effects plug-ins and more, all in a completely redesigned interface. Another highlight: Audio Ease's ([www.audioease.com](http://www.audioease.com)) new Altiverb reverb for MAS (\$1,000) samples impulse responses of

acoustic environments (or hardware reverbs). Many presets are included with JPEGs of the acoustic spaces; users can also create their own. The secret? Altiverb is optimized for Apple's Altivec velocity engine in the G4.

Berkley Integrated Audio Systems' ([www.bias-inc.com](http://www.bias-inc.com)) VBOX is a new multi-effects control environment for VST plug-ins, which can be combined, patched and mixed in real time in an effects matrix. The application ships with more than 25 free VST plug-ins, and can run as a stand-alone program or within VST applications.

Event Electronics' ([www.event1.com](http://www.event1.com)) EZ8 is a PCI audio interface card for PCs or Macs. Designed for use with the company's EZbus and other Lightpipe-equipped products, the \$199 EZ8 provides eight channels of 24-bit/48kHz input/output or four channels of 24-bit/96kHz I/O, providing affordable expansion of simultaneous record/playback tracks. The card is also bundled with Event's EZbus as the \$999 Ezbus Plus! package.

Microboards ([www.microboards.com](http://www.microboards.com)) showed the M.A.S.S. 5.1 surround system. The PC-based application provides 5.1-channel busing, automated surround panning and MIDI timecode generation. Users can also premaster and author DVD-A discs using DVD-R media.

The new Studio Series FB-88 IEEE 1394 (FireWire) Audio Interface box from Crest ([www.crestaudio.com](http://www.crestaudio.com)) works with any PC or Mac program

using ASIO or WDM drivers to provide an 8-channel AD/DA recording interface. The FB-88 simplifies both the transmission of digital audio data over Firewire and the integration of ADAT recorders/Lightpipe peripherals into a disk-based recording system. The 24-bit unit supports up to 96kHz sampling; sync includes ADAT, wordclock and 1394, plus MIDI I/O. Price: \$1,600.

Waves ([www.waves.com](http://www.waves.com)) also announced a partnership with Yamaha to include its new Y56K add-on DSP cards with Yamaha's AW4416 workstation. The card features two 100MHz Motorola 56K chips, comes loaded with six Waves processors and includes ADAT Lightpipe I/O. We also heard that Waves intends to release a plug-in each month this year, starting with Renaissance VOX voice processing.

Carillon Audio Systems ([www.carillondirect.com](http://www.carillondirect.com)) showed a line of turnkey, rackmount, PC-based audio workstations. Each system is centered around a specific audio application (Cubase, Logic, Pro Tools LE, etc.) and are outfitted accordingly.

## INTERNET PUBLISHING

Sibelius ([www.sibelius.com](http://www.sibelius.com)) is now online. Sibelius Internet Edition allows users to create Internet-ready versions—including encryption and customization (such as key change) of scores. And with the free Scorch plug-in, customers can view, play, customize and print Sibelius scores on the Internet.

## SLICK PICKS YOU MIGHT HAVE MISSED . . .

- While JBL was making a fuss (and rightfully so) about its cool new EON10 G2 and EONSUB G2 systems, we noticed a nifty wheeled case in the corner of the JBL booth. The "EON 15 Bag/W" may look like a pregnant airline carry-on bag, but fits all 15-inch EON products and gets you to the gig in style—with your back intact! Retail is \$129 from [www.jblpro.com/store.htm](http://www.jblpro.com/store.htm).

- **miniMusic's** ([www.5thwall.com/minimusic](http://www.5thwall.com/minimusic)) Notepad 1.0 turns your Palm Pilot into a MIDI sequencer! An add-on interface to most popular Palm OS devices, the Notepad 1.0 includes a piano-scroll touchscreen for inputting notes, a score display and a step/pattern editor.

- **Danelectro** ([www.danelectro.com](http://www.danelectro.com)) has been knocking us out with its groovy, way-too-cool line of retro-looking pedals for the past couple of years, but its new \$99 Dan-O-Wah is the hippest yet, with ¼-inch I/O jack "headlights" and red LED "taillights" forming the look of a sleek '50s cruiser. Yeah!

- **Peterson** ([www.petersontuners.com](http://www.petersontuners.com)) puts the power and accuracy of its famous—and pricey—strobe tuners into a compact, \$329 package. The VS-1 Virtual Strobe Tuner has an LCD "strobe" display, ¼-inch input and thru jacks, built-in mic, and nearly more tuning scales and temperaments than Wendy Carlos would ever need. Now where's the plug-in version!?! ■

# IF YOU COULD ONLY HAVE ONE MICROPHONE...

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# It's Time to Change the Channel...

In the digital world, you're only as good as your weakest link or channel. So, why settle for any less than the warmth and integrity offered by the new **dbx® 376 Tube Preamp Channel Strip with 96k Digital Outs?** For more than 25 years dbx has been setting the standard, and the 376 is the culmination of those years of innovative success.

With a feature list that includes a vacuum tube preamp section, three-band parametric EQ, compressor and the *real* kickers: built-in De-Essing and AES/EBU and S/PDIF digital outputs, make the 376 an all inclusive Channel Strip toolbox that's just as much at home in a conventional analog mixer application as it is in a state-of-the art digital workstation. With the 376 you can bypass the mixer all together, while producing warm and rich tube mic preamp tones in the digital domain by using dbx's proprietary Type IV™ A/D conversion system. Stop by your local authorized dbx dealer and tune into all that is available on the next channel.

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Artistpro.com, a new Web site providing free, interactive educational services to musicians and recording engineers, announced that producer Al Schmitt is hosting a regular series of mentoring sessions.

### SIGNAL PROCESSING

Eventide's ([www.eventide.com](http://www.eventide.com)) Eclipse Harmonizer effects processor (\$2,250 retail) promises to deliver five times the processing power of the Eventide H3000 and twice the features. Eclipse features a dual-engine architecture, enhanced user interface, a Compact Flash card port

for preset storage/recall, as well as analog and digital I/Os and wordclock. A/D conversion is 24-bit at 96 kHz.

Kurzweil's ([www.kurzweilmusicsystems.com](http://www.kurzweilmusicsystems.com)) KSP8 is an 8-channel, 24-bit multiprocessor with twice the effects power of the company's KDFX system, but in a two-rackspace box. Algorithms (mono, stereo or multi-channel) include reverbs, EQs, filters, chorus/flanges, dynamics, distortions, rotary simulators and tempo-based effects. Retail: \$2,995; due late spring.

Alesis' CLX-440 compressor/limiter/expander and PEQ-450 parametric EQ both feature 4-channel "dual-stereo" pro-



Kurzweil KSP8

cessing and retails at \$399. The CLX-440 has separate compression and expansion sections for each stereo channel, with "look-ahead" capability, sidechain and keying functions. The PEQ-450 offers five true parametric bands/channel with continuously variable Q, high/low shelving and high/lowpass filters. The \$199 Ineko is a tabletop stereo multi-effects processor with 48 high-quality, 24-bit effects and three knobs for fast, real-time tweaking for live performance or studio use.

Crest ([www.crestaudio.com](http://www.crestaudio.com)) launched its Studio Series IPro One Intelligibility Processor, a single-channel unit with a mic pre, tube sound enhancer circuit, expander/compressor/limiter functions, two parametric EQs—one assignable to the dynamics sidechain—and individual mic/line gain controls (both can be used simultaneously). Price: \$649. The \$829 IPro Two is a 2-channel unit featuring mic inputs with pan controls.

The TheaterPhone™ HSM6240 from Lake Technology ([www.lakedsp.com](http://www.lakedsp.com)) acts as a 5.1 surround simulator/decoder, providing surround sound monitoring on conventional stereo headphones. Based on Dolby Headphone technology, the TheaterPhone uses a dedicated DSP processor to provide realistic room simulation.

Designed for live sound, the Presonus DEQ624 ([www.presonus.com](http://www.presonus.com)) is a 24-bit DSP box containing dual 31-band graphic equalizers with analog-looking sliders, high-/low-cut filters, onboard compression/limiting and a powerful adaptive hum removal algorithm. Retail is \$599.95.

The continuing popularity of in-ear monitoring systems was underlined by the dbx ([www.dbxpro.com](http://www.dbxpro.com)) IEMP In-Ear Monitor Processor. Based on dbx's Quantum Series mastering processors, the stereo rackmount IEMP includes 24-bit A/D/DA converters and offers 4-band stereo compression with gating and limiting, 5-band parametric EQ, PeakStop limiting and Lexicon reverb algorithms. Price? Just under \$1,500.

### TUBES, TUBES, TUBES

Summit's ([www.summitaudio.com](http://www.summitaudio.com)) half-rack TLA-50 Tube Leveling Amp has sim-

## STEPPIN' UP TO THE MIC!



Rode NTK

Australia-based Rode Microphones ([www.rodemicrophones.com](http://www.rodemicrophones.com)) unveiled two large-diaphragm, cardioid condensers. The \$595 tube NTK has a low 14dBA self-noise; the NT1000 is a solid-state JFET design with an ultra-low 7dBA noise spec. But the big news at Rode was the company separating from its U.S. distributor, Event Electronics, and establishing a new Rode USA division based in Southern California. Audix showed a working prototype of its \$799 SCX-25 "Stick," so named because it mounts a large-diaphragm cardioid capsule on a tubular stalk containing the low-noise preamp from its SCX-1. CAD ([www.CADmics.com](http://www.CADmics.com)) showed the M9, a tube mic based on technology developed for its acclaimed VX2 valve mic and the large-diaphragm cardioid capsule used

in its E300. Retail is a low \$499. BLUE—Baltic Latvian Universal Electronics—([www.bluemics.com](http://www.bluemics.com)) is now shipping its Kiwi mic, combining Class-A discrete electronics in a distinctive green body with a choice of nine polar patterns. Retail is \$2,299.

Independent Audio ([www.independentaudio.com](http://www.independentaudio.com)) now distributes the Soundman OKM line of miniature condenser mics that fits inside the user's ears for the creation of binaural recordings. A real (molded plastic) dummy head will also be offered in the future. Retail: \$155 to \$395 per pair.

Electro-Voice ([www.electrovoice.com](http://www.electrovoice.com)) showed its new Cobalt™ Series with three vocal mics and a high-SPL instrument mic for live applications. All are dynamic designs using neodymium magnet structures for high-output performance. Improving on the original, AKG's Emotion II is a line of affordable dynamic mics for vocal and instrument applications. Priced from \$142 to \$238, the entire Emotion II Series is spotlighted on AKG's new expanded Website: [www.aggusa.com](http://www.aggusa.com).

Shure ([www.shure.com](http://www.shure.com)) had no major new mics—after all, its flagship KSM 44 is just a few months old—but kicked off its 75th anniversary with its endorsers Spinal Tap, who turned it up to "11" with a free concert held during NAMM. It was definitely the hottest ticket in town! ■



BLUE Kiwi mic

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ple two-knob control over input gain and gain reduction, with switchable attack/release times, stereo linking and sidechain access. It can also match levels between +4 and -10 systems with the tube circuit providing tube "warming" in Bypass mode.

The ES-8 Variable Mu Tube limiter from Pendulum Audio ([www.pendulumaudio.com](http://www.pendulumaudio.com)) is designed to offer the same compression profile as Fairchild's 660 and 670 limiters. Controls for the stereo unit include input, threshold and output pots, and six release time presets. Price: \$3,495.

Universal Audio's ([www.uaudio.com](http://www.uaudio.com)) 2-610 Vacuum Tube Mic Pre is a 2-channel unit based on the mic preamp circuit in the original Bill Putnam-designed UA 610 modular mixing console, but also offers boost/cut settings, phantom power, direct inputs and impedance controls. Price: \$2,295.

ELOP II, The Limiter, is a hefty new 2-channel unit from Manley ([www.manleylabs.com](http://www.manleylabs.com)). This rackmount limiter has both opto circuits and fast FET "brickwall" limiters, both circuit types are user-adjustable to optimize their desirable sonic qualities. The unit includes mic pre's for both channels and a slot for an optional 24-bit A/D converter. Price: \$3,250.

The Atomic Squeeze Box mono limiter from InnerTube ([www.innertubeaudio.com](http://www.innertubeaudio.com)) is a charming retro-looking device ("Bakelite" VU meter!) with six large rotary pots to control input gain, threshold, attack time, release time, compression ratio and output level. Price: \$4,500.

### COMPACT MIXERS

Panasonic's ([www.panasonic.com/proaudio](http://www.panasonic.com/proaudio)) DA7mkII update to its acclaimed DA7 digital mixer has more than 70 new and improved features, including a streamlined V.2.5 operating system, new control shortcuts, advanced MIDI faders, new LCD and LED area panels, and enhanced visuals and navigational controls. Retail? The same as the original.

Three new Spirit M Series mixers from Soundcraft ([www.soundcraft.com](http://www.soundcraft.com)) include four stereo line input channels, four aux sends (two pre-fade, two post-fade), four effects return inputs and 100mm faders. The M4 also has four mono inputs with 3-band EQ (sweep mids), while the rackmountable M8 and M12 have eight and 12 mono inputs.

Additional features include direct outs on every mono channel and S/PDIF digital output. The M4, M8 and M12 are \$700, \$850 and \$1,000, respectively.

The XR-20 from Crest Audio ([www.crestaudio.com](http://www.crestaudio.com)) is the first in the new X-Rack Series of compact 4-bus mixers. The XR-20 includes 12 mono and four stereo inputs (a total of 20), all with mic preamps and switched phantom power. Each input channel offers 4-band EQ, with highpass filters on the



Panasonic DA7mkII

mono input channels. Six aux sends are selectable pre-/post-fader in pairs, and there are insert points on all inputs, subgroups, aux outs, and left, right and mono outputs. Price: \$1,800.

The new Venice™ Series of mixers from Midas ([www.midasconsoles.com](http://www.midasconsoles.com)) is available in three versions. The Venice 160, which offers eight mono and four stereo line/mono mic inputs, will fit in a 19-inch rack. The Venice 240 includes 16 mono inputs; the Venice 320 has 24.

Shure ([www.shure.com](http://www.shure.com)) was showing the AuxPander, an 8x8 line-level rackmount matrix mixer providing four stereo or eight mono mixes from eight inputs. Price is \$990. Crest's new matrix mixer, the X-Matrix Expander module, allows users to derive additional matrix mixes from the Crest X-VCA mixing console; it can also be used as a stand-alone matrix mixer (multiple X-Matrix units can be daisy-chained together).

### MUSICAL INSTRUMENTS!

Clavia ([www.clavia.se](http://www.clavia.se)) added two new keyboards to its Nord product line—the Nord Electro and the Nord Lead 3. The Electro boasts high-quality emulations of traditional electromechanical keyboard instruments without the "fluff" of extra brass and orchestral banks. The Lead 3 offers traditional analog waveforms, a

two- or four-operator FM engine, and improvements such as 18-note polyphony, 4-part multitimbrality and improved DSP.

Shipping this month, Korg's ([www.korg.com](http://www.korg.com)) KARMA combines the sounds, effects and sequencing capabilities of its Triton with a powerful new technology. Based on the notes/chords played, KARMA can automatically generate phrases that are impossible to produce with conventional arpeggiators or static pattern playback, such as complex interweaving cascades of notes, techno arpeggios and effects, dense rhythmic and melodic textures, glissandos, intricate finger-picking and guitar strumming, random effects, sweeping portamento and pitch bends. Retail: \$2,250.

Ideal for studio players, Fender's ([www.fender.com](http://www.fender.com)) Cyber-Twin programmable guitar amp has 120 factory/85 user preset effects/amp combos, including 11 reverbs, four tone stacks and 28 effects, along with a 130-watt amp, dual 12-inch Celestion speakers and MIDI in/out for controlling amp settings via sequencers or pedal controllers. Studio cats will dig the S/PDIF digital and XLR stereo line outputs, but coolest of all are the eight motorized rotary knobs that automatically turn to the current preset. Ooooweee—and it sounds great!

DigiTech ([www.digitech.com](http://www.digitech.com)) showed a series of affordable guitar processors based on its powerful new AudioDNA™ DSP chip, designed specifically for audio and 24-bit AD/DA. Carrying a street price of \$99, the new line consists of the RP100/200/300 modeling processors. The top-end GNX1/2/3 live processors and the Genesis1/2/3 recording processors use DigiTech's advanced GeNetX™ modeling algorithms, allowing users to recombine various amp models to create a trademark sound.

TC Electronic ([www.tcelectronic.com](http://www.tcelectronic.com)) celebrated a milestone: Its famous chorus pedal is still in production after 25 years! Now TC unveiled G-Major (\$699), a rackmount guitar processor (with optional MIDI foot controller), featuring seven simultaneous effects, including reverb, delay, compression, filter/mod pitch, tremolo, chorus/flange, tap delay and gates. Both analog 24-bit and S/PDIF digital I/Os are standard.

There were plenty of other hot products at NAMM, and we'll present these in our regular product columns in the months to come. Meanwhile, the NAMM Summer Show returns to Nashville, the Music Capital of the World, from July 20-22, 2001. See you there! ■



# THE ROAD TO A BETTER MIX.

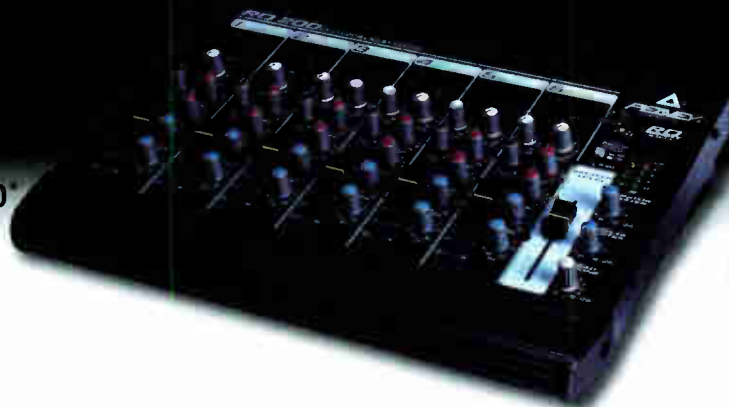
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# the MAIN

Theme Park Rides Deliver Complex Sound



Whatever the artistic merits of film, the success of the movie industry depends on its ability to satisfy a universal human need—to experience feelings and emotions, both positive and negative. As long as the movie studios can create engaging and credible fantasies, people will happily pay to sit in a darkened room and be thrilled, scared, shocked and dazzled by events and situations that the average movie-goer would rarely, if ever, experience in real life. Of course, movies are not the only form of entertainment that satisfies this demand to be simultaneously terrified and amused, and film studios that also operate theme parks—Disney and Universal, for example—have created themed attractions based on such blockbusters as *Terminator 2*, *King Kong*, *Batman* and *Twister*.



PHOTOS: ©UNIVERSAL STUDIOS ESCAPE

**BY DAN DALEY**



A Men in Black alien

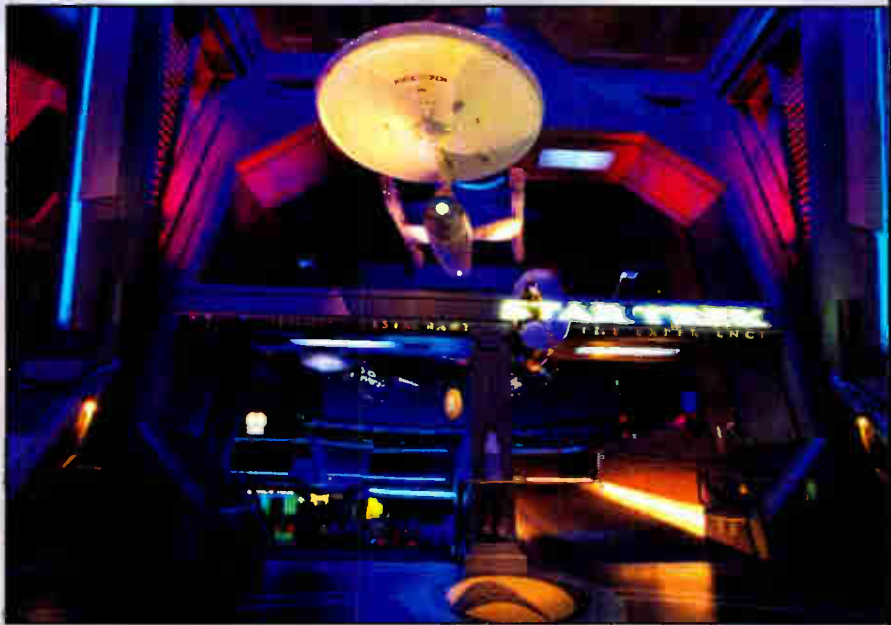
### **MEN IN BLACK**

Soundelux Showorks was involved in all of the above-mentioned themed attractions, and then some. The latest effort from the Orlando-based company is *Men in Black*, predicated on the 1997 Will Smith comedy, sci-fi romp and situated at Universal's Orlando theme park, where it opened last spring. And this ain't no Tunnel of Love. As Showorks president John Miceli describes it, "This is more like total immersion into the world of a video game. It's completely interactive, even though visitors go through it in tracked vehicles guided by a central control system. And, just like a video game, people tend to get better at playing it the more they do it, so you often see the same people going through it two and three times a day."

In a nutshell, *MIB*, the ride, puts six passengers into each of two vehicles on parallel tracks that pass through a 40,000-square-foot building. Broken into 14 scenes, the first phase informs riders—each car is now considered a team—that Earth has been invaded by aliens, and it's their job to stop them with the laser guns aboard each car. After a quick



Audience participation at the Men in Black attraction



The entrance to The Star Trek Experience at the Las Vegas Hilton

# Attraction



how-to on operating the weapons, the cars and riders pass through several urban tableaux populated by animatronic aliens who can be both fired upon and can fire back. Hits are tabulated electronically by a computer and graphically by special video and audio effects, all to the sound of a high-energy rock music track created by Showworks staff composer/producer Pete Lehman. In the penultimate phase, each team of riders is made to appear to the other as aliens via a video overlay, and they get to fire at each other. Finally, points determine the winning team, which is congratulated by a video of Will Smith. The losers are told by an animatronic alien that they are not quite *MIB* material.

Showworks, which entered the theme park and multimedia market 11 years ago and develops related content, production, post and new technologies for its clients, faces a different mix of those tasks each time out, says Miceli. For *MIB*, the company performed the character animation, as well as video and audio production, including dialog, sound effects and music.

"The challenge in this case was that, normally you have control over the occupants [of a ride]," Miceli explains. "They're captive to the narrative, as are the effects and dialog, so mixing them is similar to mixing a feature film in post. In *MIB*, [the participants'] ability to shoot determines how the ride goes. The more hits, the more effects. And we have to keep the sound focused on them."

Brian McQuillian, project manager for Soundelux Showworks, elaborates on some of the additional technological challenges: "From a design standpoint, careful placement and integration of speakers into scenes and set pieces was required to avoid sound bleed from scene to scene, and [to] maintain control of the overall sound level. By implementing careful speaker placement, we were able to create a three-dimensional feel that also complemented the scenic



**Audience members blast the aliens in *Men in Black***

design of the attraction." Main components of the installed sound system include Community SLS915 and SLS918 speakers, Tannoy CMS-55/-65 ceiling speakers and EAW SB150 subwoofers, all powered by Crown CT and MT Series amplifiers and controlled via a Peavey Media Matrix System.

Sound for *MIB* comes from all over. About 20 speakers per zone—nearly 450 total speakers throughout the attraction, each under independent



**John Miceli, Soundelux Showworks president**

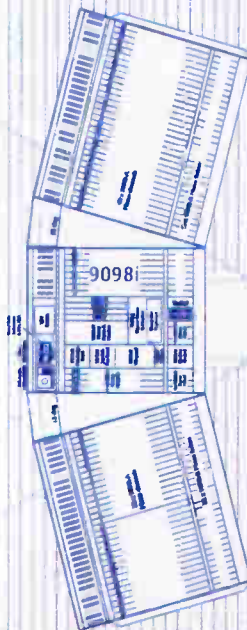
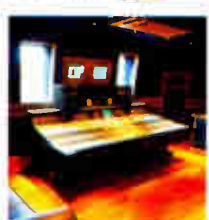
control—are placed linearly through the experience. The music track, which is the sole linear component of the entire sound design, is stored on Anitech DSM-4020 digital playback devices and is synched to start with the launch of cars. While the music track is not interactive, its playback is: VCAs control the volume of zone speakers, cued by the master computer as to each car's relative location within the ride. Each car has a laser gun for each

occupant, and each laser gun has its own pair of speakers for its sound, as does each alien and effect in the set. "That way, there's directionality and localization of each sound," Miceli says. "You can localize cause and effect when a gun is fired or an alien is hit." Those sounds are stored on flash PROM chipsets, controlled by the master control computer and triggered by events, such as trigger pulls and hitting specific targets.

Showworks created the entire soundtrack from scratch, though the film's dialog tracks provided inspiration for the aliens' attitudes and personalities. The laser sounds were created by staff sound designer Richard Morris, mainly with analog synths—reflecting the fact that many of Showworks staff are still musicians at heart—with other elements like recorded gunshots pitched up or down in Pro Tools and layered in for impact effect. When an alien is hit, each one has its own particular blood-curdling or comical response, most of which are also organic, combinations of screams, custom Foley recorded splats and ricochets.

What's particularly interesting is that the soundtrack went through its final design and mixing phase in the field, at the attraction site, as the ride was being built and tested. "We'll bring our custom SmartTerminal interface station, which consists of a large Pro Tools system and a controller and processing gear into the site, along with sampling and analog keyboards," says Miceli. "You want to see how each animatronic character moves and reacts in order

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to get a better sense of what it should sound like, as well as seeing the environment in which it's set."

Depending upon how expert the riders are—and don't forget some of them have done this quite a few times—the potential for cacophony is ever present. A lot of hits at once can overwhelm the effects. Thus, Miceli stresses that the frequency ranges of each effect were carefully coordinated. In addition, the cavernous space was given significant acoustical treatment by Showworks' senior VP of the technology group, Bill Bittel. "That tightened the space dramatically," says Miceli. "It also added a lot more intelligibility for the effects and dialog. Combined, all these elements make the experience more believable."

## STAR TREK LANDS IN VEGAS

*The Star Trek Experience*, which opened two years ago at the Las Vegas Hilton, manages to combine virtually every iteration of Gene Roddenberry's brainchild into a single, bombastic attraction. The event, which was devised and produced by Landmark Entertainment Group, a 20-year-old Los Angeles-based firm specializing in themed attractions—and whose previous work includes *Spiderman 3-D* at Orlando's Islands of Adventure, *Terminator 2 3-D* at Universal in Orlando and *Jurassic Park—The Ride* at Universal locations in Orlando and L.A.—is designed to sneak up on patrons. What appears at first to be a museum-like, 30-year retrospective of *Star Trek's* television and film incarnations, including displays of memorabilia and video montages from the original show and its successors, such as *The Next Generation* and *Deep Space Nine*, plus the theatrical film series, suddenly and dramatically transports visitors onto the deck of the

Starship Enterprise itself, via the ship's famous transporter room. There, they become part of a journey through time and space, culminating with a celestial chase by aliens and a fast and low approach over the Vegas Strip back home.

Ted King, VP of show production for Landmark, who supervised the audio and video production and post of the attraction, won't reveal how the transformation takes place, citing trade secrets. But he stresses how important the audio was for not only the experience of the ride but to the way that sound helps lull visitors into a comfortable credulousness, which makes the transition from a museum stroll to a chase with Klingons through space that much more dramatic.

"The familiar sounds are critical to the success of the attraction," King says. "The transporter itself is a very well-remembered sound by generations of viewers. We took the essence of the sound used on the different series—the original and *Next Generation* had two different signature sounds for the transporter, for instance—and enhanced them considerably. But the basis for the sounds are ones that people find instantly familiar."

That was the case with much of the ride's sound effects. Paramount made

they expanded and enhanced them, making them bigger and tailoring them to the live-action setting of a theme park attraction. Many of the effects are played



Ted King of Landmark Entertainment

back from discrete multichannel playback sources—both hard disk- and solid-state memory-based—which are controlled by a show control computer created by Triad AV Services, of Des Moines, Ia. In many instances, point-source speakers are placed close to or within the visual effects they're meant to animate. EAW was the prime speaker vendor on the project.

The mix of the audio was done *in situ*—the only way, King says, it could be done. "We took all the various sound elements from our studio to the actual site for mixing," he explains. "We'd been sending over stereo versions as they were created for the [attraction's] creative director to listen to and evaluate. But when it comes down to the final mix, there's only one place that they will ever need to sound good, and that's at the attraction itself. It's unlike any dubbing stage or studio." Landmark brought in a 32-channel Digidesign Pro Tools system and a Yamaha 02R digital console for the mix process for the entire attraction, with the exception of the final four-minute ride, which was mixed by Paramount. "Each space was very different," King points out,

adding that the line between sound design and sound effects became a no-man's land that Landmark's audio technicians have dubbed "museffects." "The room with the [memorabilia] displays is large, and we used sound design to create a setting for all the effects from the shows and movies. Setting the



Inside the Star Trek ride

specific sound effects from its *Star Trek* libraries, as well as music and dialog excerpts, available to Landmark's team, which included soundtrack producer and mixer James Fielden and creative director Luc Mayrand. Using the original sound effects as the fundamental building blocks of the event's sound design,

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mood was important—did it need to be dreamy and futuristic, or did it need to have electronic and mechanical sounds underneath the effects? We sent over various ideas for evaluation in the rooms themselves.”

The sound design was intended to have significant though subtle subliminal impact: In the antechamber, King says it was kept relatively low-key, in part to “lower expectations” and thus set the stage for an even more dramatic transition later. During the ride, subwoofers add a viscera! low-frequency impact that exceeds that of even movie theater sound systems, contributing to the sense of motion.

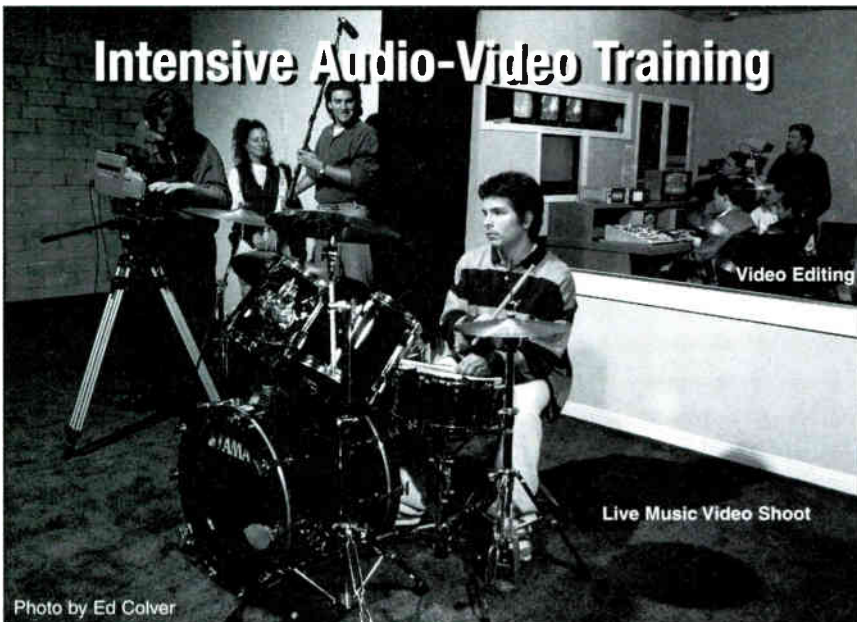
Recording was to both hard disk and to three Tascam DA-88 digital tape multitracks in a rack, which were later used as the archive and transfer medium to load the final mixes onto the installed playback systems, which include an AKAI 16-track digital reproduction system.

The most critical aspect about the sound design was that it had to both enhance the events at hand and conform to the memories that anyone who has not lived in a cave for the last 30 years invariably has of *Star Trek*. “We had to have respect for the *Star Trek* image and brand, certainly,” says King. “But we also had to have as much respect for how people remember the shows and the movies, and the fact that they were part of millions of peoples lives.”

Themed attraction audio is going to grow as a part of the audio industry in coming years. But as the attractions themselves are increasingly tied into other entertainment ventures, and as live entertainment ventures have to progressively outdo each other, the challenge to audio professionals is going to increase proportionately. Make it big, make it real, but also make it true to our collective unconscious. Theme park sound has its future cut out for it. ■

Dan Daley is Mix's East Coast editor.

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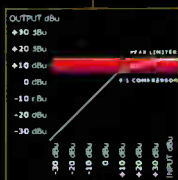
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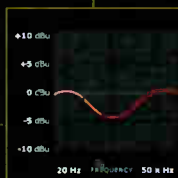


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# Multichannel POWER Amplifiers

by Michael Cooper

The recent release of the first DVD-A titles from Warner Music Group has spurred renewed interest in multichannel amplifiers for surround sound applications. For those recording and mixing facilities expanding into surround sound work, multichannel amps offer a cost-effective solution for driving 5.1 loudspeaker systems. Even for stereo monitor setups, multichannel amplifiers may be appropriate for powering two- and three-way reference monitors. But multichannel amps have other applications, and, for years, they have been found in sound systems for movie theaters and live shows and are commonly used in a wide range of fixed installations, such as music venues, theme parks and sports facilities.



# Multichannel POWER Amplifiers

Because multichannel amps are used in a range of applications, feature sets and specifications vary. For example, cinema and sound reinforcement applications generally require direct low-impedance amplifier outputs capable of driving 2-, 4- or 8-ohm loads. Amps designed for live sound applications must often drive multiple speaker cabinets, so hefty power output is a requirement. Because sound reinforcement systems also need to be set up and broken down quickly, amps used in this application generally feature binding posts and/or Speakon outputs, whereas amps intended for permanent installations more often offer barrier strips. Weight is also a factor: In order to reduce shipping weight and minimize rigging loads when amps are flown along with speaker clusters, amps designed for touring applications must also be as small and light as possible.

A recent trend in amplifier design is the inclusion of a computer interface, which allows for remote monitoring of the clipping and thermal status of amplifiers. Some computer monitoring systems allow for comprehensive remote control of all amplifier parameters, a useful feature when aligning or troubleshooting large, fixed installations and complex live sound rigs. Some amplifier models allow for optional add-on DSP modules, which provide onboard processing functions, such as delay, EQ, filtering and crossover facilities. Such local DSP, integrated with a multichannel power amp, offers obvious benefits. Rather than sending processed signals via multiple long feeds from your originating signal source out to your amps, you can send a stereo feed to your remotely placed DSP and split the processed signal from there out to your various feeds. Say goodbye to all that extra expensive cabling and clutter!

Of course, multichannel amplifiers are also a critical component in fixed, multizone installations. These installations typically feature distributed systems where clusters of small speakers are permanently installed in ceilings for paging and/or background music delivery. Distributed systems typically use "70-volt" (70.7V to be exact; 100V in Europe) amplifiers to drive

numerous, relatively low-powered speakers. So a critical consideration here is to provide as many channels as possible in as small a chassis as possible. Such amps generally use barrier strips in lieu of binding posts (as do those intended for use in theaters) for more secure connections over time.

As you might expect, not all products fit neatly into these exclusive classifications. Some amps can serve multiple applications, either straight out of the box or after optional modifications. But whatever the intended application, multichannel amplifiers offer significant space and cost savings over multiple mono-block or stereo amps. Because there is no need for discrete power supplies for each channel in a multichannel amp, everything can fit conveniently into one chassis.

What follows is a list of the newest, top-of-the-line, multichannel power amplifiers. Only those amps that feature three or more channels and were first introduced in 1999 or later are included here. To learn more about a particular model, check out the accompanying sidebar for the manufacturer's contact information. Feel the power!

## AB INTERNATIONAL MODELS 6600A, 6600JS

Amplified Design International is the manufacturer for AB International Products. The AB International Professional Series Model 6600A (\$3,500) is a full-featured, 4U, rackmountable, 6-channel amplifier capable of delivering 400 watts into eight ohms, 600 watts into four ohms or 750 watts into two ohms. Features include three individual power supplies; six independent, balanced and unbalanced inputs; outputs on five-way binding posts; detented level controls; comprehensive protection circuitry; Signal Present and "Soft Clip" indicators; dual, temperature-activated fans;

and Stereo/Bridge switches for each pair of channels. Channel 6 features a fourth-order Linkwitz-Riley lowpass filter, set at 100 Hz and selectable from the rear panel for use with a subwoofer. Input sensitivity is selectable internally. Optional 70V transformers are available for use with distributed systems.

AB International also offers the Model 6600JS (\$3,750), which is a sonically advanced version of the 6600A and was developed specifically for state-of-the-art theater installations.

## ASHLY AUDIO POWERFLEX 6250

Ashly Audio's new 6-channel Powerflex 6250 (\$TBA) boasts an efficiency of greater than 80% due to its high-speed MOSFET switching design. The 3U, rackmountable unit delivers 150-watts RMS at eight ohms (250-watts RMS at four ohms) through six independent channels, and it can also be used in 3-, 4- and 5-channel configurations. Features include XLR/¼-inch combi and Euroblock input connections with level controls, a switchable highpass filter for each input, five-way binding posts for outputs, multiple protection circuits, and a quiet, two-speed fan. The Powerflex 6250 may also be configured as three independent 70V amplifiers in Bridged mode for paging applications. Initial shipments are scheduled for April 2001.

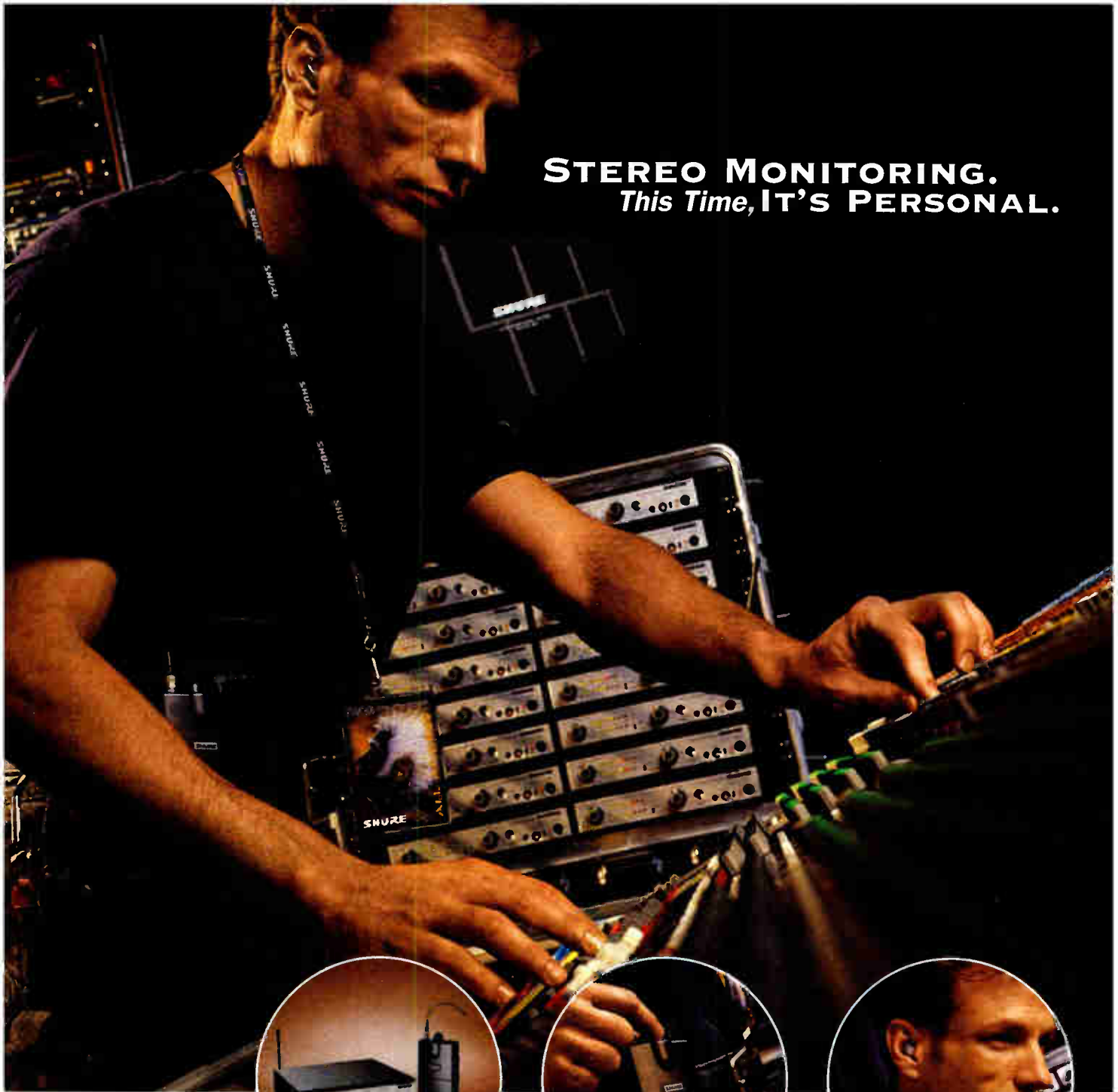
## AUDIOCONTROL INDUSTRIAL MODELS 510, 710

Models 510 and 710 are 3U, 12-channel amplifiers intended for multizone installations. Each channel is discrete and provides 50 watts of power at eight ohms, built-in limiting, and short circuit and DC offset protection. Channel pairs may be bridged. Each channel pair also has controls for input gain, programmable highpass filters

AudioControl Industrial Model 710



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## Multichannel **POWER** Amplifiers

and defeatable signal sense mute. Other features include a remote power-on trigger, phoenix-type connectors for I/O, fan-free operation and an optional rackmount kit. Model 710 adds 6-band custom equalization for small speakers to the feature set.

### **BRYSTON 6B ST**

New for Bryston is the 3-channel Model 6B ST (\$TBA), a high-powered and rigorously engineered amp intended for recording studio use. Each channel consists of an independent amplifier module with its own power transformer and  $\pm 80V$  power supply. The 6B ST delivers a minimum of 300 watts into eight ohms or 500 watts into four ohms per channel. Both XLR/TRS 1/2-inch combo jacks and RCA connectors are provided for each channel to accommodate balanced and unbalanced input signals, respectively. Outputs are on three-way, gold-plated binding posts. Features include rear panel input attenuators, external power-up terminals, a clip-sensing circuit for both inputs and outputs, and thermal over-temperature protection.

### **C AUDIO PULSE 4X300**

The 4-channel Pulse 4x300 (\$1,650 list) is part of C Audio's Pulse Series line of amplifiers. Like other amplifiers in this line, the 4x300 uses state-of-the-art Switched mode power supplies to dramatically reduce weight and provide consistent performance at all power levels. The 2U, rack-mountable 4x300 delivers 170 watts into eight ohms, 300 watts into four ohms or 330 watts into two ohms. Standard features include electronically balanced inputs on XLR connectors; indented level controls; extensive protection circuitry and associated status indicators; relay-less muting circuits for power-up and -down; and two variable-speed cooling fans. Channels may be switched for bridged operation in pairs. Outputs may be ordered as binding posts or Speakon connectors. Other options include internal analog crossovers, input transformers, fan filters, front and rear rack support brackets, and remote control and monitoring facilities over a low-cost network that can address over 100 Pulse amplifiers.

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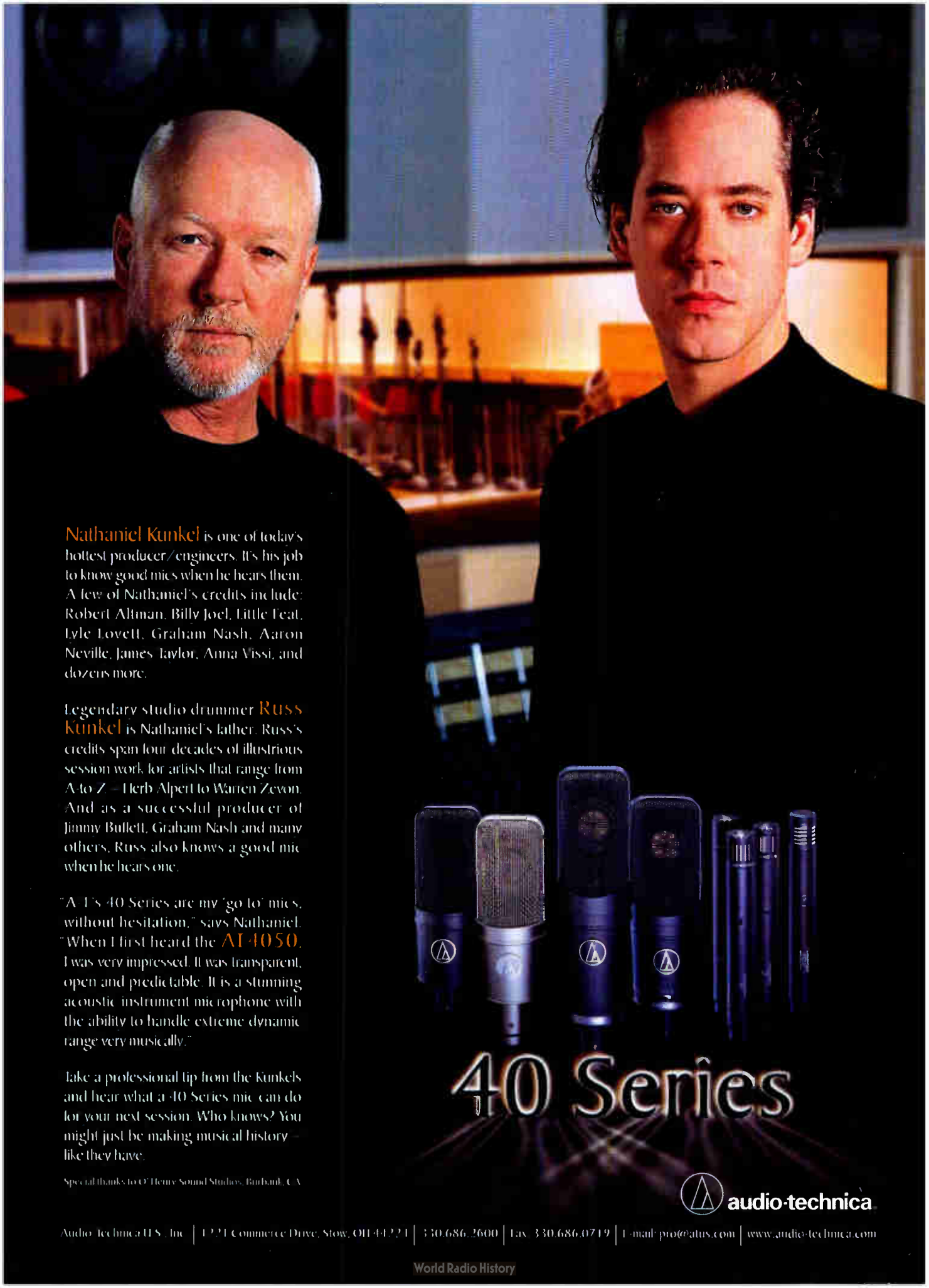
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**Nathaniel Kunkel** is one of today's hottest producer/engineers. It's his job to know good mics when he hears them. A few of Nathaniel's credits include: Robert Altman, Billy Joel, Little Feat, Lyle Lovett, Graham Nash, Aaron Neville, James Taylor, Anna Vissi, and dozens more.

Legendary studio drummer **Russ Kunkel** is Nathaniel's father. Russ's credits span four decades of illustrious session work for artists that range from A to Z — Herb Alpert to Warren Zevon. And as a successful producer of Jimmy Buffett, Graham Nash and many others, Russ also knows a good mic when he hears one.

"A 1's 40 Series are my 'go to' mics, without hesitation," says Nathaniel. "When I first heard the **AT 4050**, I was very impressed. It was transparent, open and predictable. It is a stunning acoustic instrument microphone with the ability to handle extreme dynamic range very musically."

Take a professional tip from the Kunkels and hear what a 40 Series mic can do for your next session. Who knows? You might just be making musical history — like they have.

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## Multichannel POWER Amplifiers

### GEMINI SOUND XPM-3000

New for 2001 is the XPM-3000 3-channel MOSFET Professional Power Amplifier (\$899.95 suggested retail). The 2U, rack-mountable XPM-3000 features two satellite channels and one subwoofer channel. The amp delivers 200 watts to the satellites and 220 watts to the sub at eight ohms. A two-way, 60Hz Linkwitz-Riley crossover handles the transition between the satellite and subwoofer channels. The subwoofer channel offers a switchable low-frequency boost (flat, +3 dB or +6 dB) at 40 Hz and can easily serve dual subwoofers via its two parallel, five-way binding posts (120V unit only). Other features include post crossover line-level outputs for chaining additional speakers, comprehensive protection circuitry and two-speed dual fans. Inputs are on balanced XLR and balanced/unbalanced ¼-inch jacks. Outputs are via five-way binding posts for 120V models and Neutrik Speakon connectors for 230V models.

### QSC CX204V, CX254, CX404, DCA1644 AND DCA1824

QSC Audio offers three multichannel amplifiers in the CX Series product line and another two in the DCA Series. Each of the five models fits four amplifier channels into a lightweight, 14-inch deep, rackmountable 2U chassis. The company's exclusive PowerWave™ switching power supply technology, which purportedly virtually eliminates hum and noise, is featured in all CX Series and DCA Series amps.

The CX Series is geared toward permanently installed sound systems, with the CX204V rigged to service 70-volt distributed systems, and the

CX254 and CX404 intended for cinema sound applications. All three models in the CX Series have the same \$1,400 list price and feature bridgeable channel pairs; selectable high-pass filters; detachable, Euro-style input connectors; barrier strip output connectors; comprehensive protection circuitry and front panel status indicators; a low-noise, variable-speed fan; gain controls detented in 1dB increments (for fast setup and accuracy); an integrated security cover; and an Ethernet-based HD15 DataPort. The DataPort interfaces with a PC running the company's optional QSCControl software (\$2,800). QSCControl provides remote computer monitoring and control of clipping and thermal status for all amps in the system. An optional, piggyback DSP module—the DSP-3 (\$525)—is also available.

The CX204V supplies 200 watts per channel. The CX254 supplies 170 watts at eight ohms, 250 watts at four ohms or 450 watts at two ohms per channel. The CX404 is not rated for 2-ohm operation but is the most powerful amp in the CX Series line for driving 8-ohm loads (250 watts/channel) and 4-ohm loads (400 watts/channel).

QSC's DCA1644 and DCA1824 amplifiers (each \$1,438 list) are 4-channel models geared toward cinema sound applications. The DCA1824 was designed for driving surround channels, with each amplifier channel capable of powering up to four 8-ohm speakers in parallel for a total of up to 16 speakers. The amp supplies 170 watts at eight ohms, 250 watts at four ohms or 450 watts at two ohms. Its more powerful sibling, the DCA1644, delivers 250 watts into eight ohms or 400 watts into four ohms (the DCA1644 is not rated for 2-ohm operation) and is better suited for powering screen channels in small to medium theaters. Pairs of channels can be

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# Multichannel POWER Amplifiers

bridged in both models for powering tri-amp speaker systems. Other features common to both models include inputs on 3-pin, detachable terminal blocks; outputs on a safety-shrouded barrier strip; two HD15 DataPorts (one for each channel pair); a variable speed fan; comprehensive protection circuitry and status indicators; and a gain control security cover.

## YAMAHA XM6150, XM4220

Yamaha's versatile XM6150 and XM4220 power amplifiers (\$899 each) can power standard speaker systems and/or 70V distributed systems, in any combination. All channels can be used for the same type of application, or you can mix and match channels for different systems. Both the XM6150 and XM4220 incorporate Yamaha's exclusive EFEngine technology for extremely high-power efficiency. Each of the XM6150's six channels delivers 100 watts into eight ohms or 120 watts into four ohms.

The XM4220's four channels each supply 140 watts into eight ohms or 180 watts into four ohms. Both models feature bridge on/off switches for each channel pair, allowing you to simultaneously operate some channels in Bridged mode and others in Unbridged. Other features common to both units are a parallel input switch that allows you to drive all amplifier channels from one source/input; rear panel attenua-

tors; highpass filter switches; input connections on balanced XLRs and Euro-block terminals; outputs on five-way binding posts; comprehensive circuit protection and system indicators; a variable-speed fan; and a lightweight, 8.2 lbs. chassis. ■

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



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# FRANK FILIPETTI

## LIFE ON THE DIGITAL EDGE

A down-to-earth guy with a refreshingly honest style, Frank Filipetti is well-respected by his peers. He's also an independent thinker and was one of the first engineers to embrace digital. His credits include mixes for such Number One singles as Foreigner's "I Want to Know What Love Is" and "I Don't Want to Live Without You" (which he also produced), Kiss' "Lick It Up" and The Bangles' "Eternal Flame." He's also recorded and mixed albums for Carly Simon, Barbra Streisand, Vanessa Williams, George Michael, 10,000 Maniacs and James Taylor, whose elegant *Hourglass* Filipetti produced, engineered and mixed, winning Grammy awards in 1998 for Best Engineered Album and Best Pop Album.

A proponent of surround sound, Filipetti has nine 5.1/DVD projects under his belt, including works for Billy Joel, James Taylor and Meatloaf. And lately, this accomplished studio engineer has



PHOTO: STEVE JENNINGS

*Your Gun*, and this year's Tony Award-winning and Grammy-nominated *Aida*, among others.

*Mix* spoke with Filipetti during Christmas break, when he was enjoying some time off at his New York home before heading to L.A. to begin recording the latest effort by rock/metalists Korn.

*As a singer/songwriter and drummer, you actually had a musical career going when you switched gears to become an engineer.*

I was brought up in Bristol, Conn., where I had a band in high school, whose claim to fame was that we got to open for the Dave Clark Five. When I went to the University of Connecticut, I formed another band called Park. After college, we made a demo tape on a 2-track Tandberg, and we took it to New York City. A producer heard it and signed us up, and we ended up moving there. After that, I had a couple of minor record deals, and, in the process, I won first prize as a writer in the American Song Festival. That led to a publishing deal with Screen Gems, where I was signed to a salaried contract. I also recorded an album for Lifesong Records as a solo artist. Upon fin-

ishing the album, I was informed that they'd lost their distribution deal with Epic, and suddenly everything in my life began to crash. Screen Gems decided not to pick up my option, and my girlfriend and I split up. She got the apartment, and there I was on my 31st birthday: no job and no place to live. I decided that it was time for a new approach. I'd been trying for nine years to make it as a singer/songwriter, and I was always so close to having something happen. But it never really did.

*So the next logical step was...*

I thought I'd be good at engineering, because I was always interested in sound. So I went to Simon Andrews, the owner of Right Track Studios, where I'd done my album. At the time, it was a 16-track demo studio, and I'd gotten to know Simon because he would engineer my demos for Screen Gems there. I said to him, "I'm 31 years old and it's a little late to be changing careers. I know I can do this, but I can't afford to be an assistant for two years. Would you give me a shot at engineering?" He said, "Why not?" So for 30 days I assisted other guys. Then he started putting me on 4-track demos, and I did very well. After six months, I became chief engineer, and, not long after that, I got a very fortuitous gig with Peter Asher.

*How so?*

By the end of '81, Simon wanted to expand, and he found a pretty large space on 48th Street where we built a room. We didn't know a whole lot about what we were doing, but somehow we came up with something. The recording area was 40 by 50 with, at that point, two iso rooms and an MCI console. We could fit a reasonably large group of people in there, and it was very inexpensive.

Peter [Asher] was producing *The Pirates of Penzance*, and he was looking for a reasonably priced



been taking his chops on the road, recording and mixing numerous live albums including the *Pavarotti and Friends* series, last year's *Minnelli on Minnelli*, James Taylor's *Live at the Beacon* and most recently, Elton John's *One Night Only*. He's also recorded original cast albums for *A Funny Thing Happened on the Way to the Forum* featuring Nathan Lane, the Grammy-winning *Annie Get*

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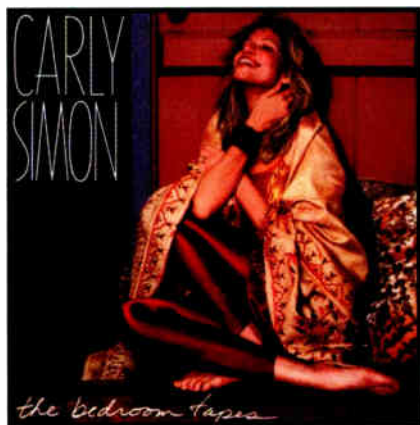
recording space to put the whole cast in. He booked Right Track and asked for the chief engineer, *moi*, to do the project. He did bring his own engineer from L.A., Niko Bolas, just in case I wasn't any good. But, after two weeks, he was able to send Niko home. From that point on, it was amazing. He took me to England with him to mix the film soundtrack, and he recommended me on several other projects. A year later, he called me about doing a James Taylor album. But first, I had to do a demo to make sure it was okay with James. So, James' band traipsed over to Right Track one afternoon before their gig at Radio City Music Hall. I guess I did okay, because two months later, I was on my way to Montserrat with Peter and James for the *That's Why I'm Here* album.

**Once you decided to engineer, you had good luck.**

For 10 years, I was trying to get songs to Peter Asher; suddenly, I'm traveling around the world working with him.

**But did you ever sell him a song?**

No. Previously, my whole life was writing songs, but once I decided to engineer I never looked back. It obviously wasn't my calling and engineering was.



And, basically, through Simon's and Peter's belief in me, I got my career started.

**You were an early proponent of digital recording.**

It's funny about my digital journey. Around '85, during *That's Why I'm Here*, we were asked by Sony to try their new digital multitrack, which I didn't mind as long as I could double bus. So on the tracking sessions we had a Sony 3324 and a Studer A800, and the Studer just blew it away. I didn't like the digital at all, and for the next few years, I was very anti-digital.

**What changed your mind?**



*A mix master on location: Filippetti recording tribal songs and ceremonies in Botswana.*

In 1990, Allen Sides came to visit me at Right Track. We had a long talk, and I think we both had a sort of epiphany. I was remarking that I didn't go home and play my recordings anymore, now that they were on CD instead of vinyl, because I didn't really like the way they sounded. And I started thinking that maybe the approach I was taking in making them was wrong. With CDs being 80 or 90 percent of the market, instead of complaining, I should be using it to my advantage. I needed somehow to be mixing my records so that, whatever it was that digital was doing to the sound, I could at least hear it before it got to mastering. I mean, we'd be sitting in the studio playing half-inch mixes going, "Wow, this is great." And then you'd get a CD ref back from the pressing plant and say, "What happened?"

Now, granted, the filters and the A/D converters at the time were pretty poor. But I decided that I should mix to a digital format, and, instead of listening to the console out, I should monitor after the signal was converted to digital through the machine. That way, if digital does add harshness, or take away some warmth, or dry up the ambience, I could compensate for that before I finalized the mix.

So, that's what I did, with a Sony 2-track DASH machine that my good friend David Smith at Sony Classical got me. And, when we took the project to mastering, Ted Jensen was able to go direct into the 1630. When I got the CD back, for the first time in years my mix sounded like what I'd heard in the studio. From that point on, I mixed everything digitally.

**That was an unusually logical approach to an often emotional subject.**

It just made sense. I also started tracking digitally because, unlike my experience with the 3324, when the 3348 came out, I immediately warmed up to it. I did two projects with both an analog and a digital machine. What I found on the first project was that on tracking day, the analog machine sounded better than the digital. But after two months of running the tape across the heads, the digital killed the analog.

So the analog vs. digital debate took on a "he said she said" kind of thing. And I got used to not having to go in and check the tones every day and being able to sample and move things around. The flexibility of the 48-track was so much better than locking up two 24-tracks that whatever slight sonic benefit there might be [to the analog] became negligible. Slight benefit is even arguable, because, while analog sounds wonderfully warm and cozy, there are some areas where digital does a better job. For example, being a drummer, what I always missed in analog was the front end of the snare and kick. You never get that initial impact because analog is terrible on transients. The digital machine has those transients.

**You were recording and mixing to digital tape but still working on an analog console. That led you to the Neve Capricorn.**

Right Track was building a new room, Studio C, and I started reading about this Capricorn. The only one Neve had was at the Penthouse at Abbey Road in London. They flew me there, and I brought along some 3348 tapes that I'd just finished mixing. I was there for two

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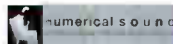
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days, but within the first five minutes, I had a mix that sounded better than the mix I'd done in New York. It was another epiphany.

*What was it that so impressed you?*

The flexibility. The idea that you can have a center section where all your work is done, where you can move tracks around at your whim. You never have to move away from the sweet spot to do your EQ or ride a fader. I do a fair amount of 96-track mixing, and when I'd be mixing background vocals on an analog console on track 96, I'd be 20 feet away from the center. On an 11-

minute Jim Steinman track, that's a long time to be listening just to the right speaker. On the Capricorn, it doesn't matter if it's channel 23 or 193; you can move it to the center instantaneously. That just blew me away.

*You made a move that was very bold for 1994, convincing Simon Andrews to put in the Capricorn. How did it go?*

When we got it to New York and started doing real mixes, it was a bit of a disaster. You'd mix for five hours, and the thing would crash and you'd be down for six hours. Three days later, it would corrupt the mix tree, and you'd lose those three days' work. It was a nightmare. But I still had in my mind that, if

we could get this to work, it would be incredible. Right Track and I lost a lot of money in billings that year. But I so believed in it, and the concept was so unique and brilliant that we stayed with it. And, at the end of that year, after endless meetings with the tech people and the R&D people and phone calls across the waters, finally we had a system that was stable and operating like the console it was supposed to be.

*You're now a great believer in staying*


**When I got the CD back, for the first time in years my mix sounded like what I'd heard in the studio. From that point on, I mixed everything digitally.**

*in the digital domain once you've converted to it.*

This was the other reason I went for the console. When I first played my 3348 tapes on the Capricorn in London, I suddenly heard the music in a way I hadn't heard it before. I'd been working on that album for four months. I knew it well. But when I brought up the faders on the Capricorn and heard this wonderful sound, I realized it didn't make any sense to record to digital, then mix on an analog console only to go back to digital again for the CD.


Initially, you sample the analog signal into the digital format of your multitrack. Then, to get into your console, your numbers have to be reinterpreted back into an analog waveform. You've taken your original signal, made suppositions about it, and reinterpreted all those suppositions only to resample and reinterpret further down the line. The more times you do this, the worse the sound gets. What happens between each of those 44,100 samples per second is predictive supposition. Ninety-eight percent of the time, they're right; two percent of the time they're wrong. And each time you do this, that two percent becomes four, then eight, etc. Whatever anomalies the digital process adds to the analog signal is compounded with each successive conversion.

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**What about degradation between digital-to-digital transfers?**

Copying digitally, the main problems are clock-based. The more stable the clock, the better your copy. It's true that, even under the best of conditions, there are questions about digital copies. But I did a test on a 3348 that was properly set up, where we recorded a piano on tracks one and two, then bounced it down 24 times. I then brought up tracks 47 and 48 on the Capricorn and flipped the phase. They canceled—on a twenty-fourth-generation copy. That was good enough for me.

I go to studios all around the world and I talk to engineers who say that they've tried digital, but it just didn't sound right. And then I find out that they're using mic cable for AES lines, or they don't run a wordclock source. Or they're daisy-chaining wordclock through the AES line. And, of course, it *will* sound terrible if you don't do it right. Just like analog. We've spent 40 years massaging analog technology to work to its strengths, but people expect digital to magically happen without the same attention to detail.

People think they can just run an AES line from one machine to another, and the clock will run along that line

just fine. Trust me, AES-derived clock does not work as well as dedicated wordclock, and people who are using it are making a big mistake. It amazes me that guys who will wheel in racks of preamps and vintage devices won't insist on a dedicated wordclock. One of my pet peeves is that manufacturers are starting to eliminate wordclock inputs on a lot of their devices. I'm furious

**There are so many exciting techniques and technologies out there. To cut myself off from them would be inexcusable.**

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about that, because you cannot have a good-sounding digital box without wordclock. Period. All you have to do is listen to it to know that. And that's why, in a lot of people's minds, digital doesn't sound good, because they may try it in studios that either cut corners or don't know how to set it up properly.

**What do you hear when the clock isn't right?**

It's that grating, tearing, hard-edged "digital" sound. Also, the stereo width shortens. There's less depth. It sounds smaller, more compressed and harder.

**What causes that?**

First of all, jitter. Jitter is exactly what it sounds like; the clock source is a moving target. Second, the AES clock actually works something like FM, where there are several data streams piggy-backed on the AES signal. If you filter out the audio portion of the AES signal and just listen to the clock, you can actually hear how unstable it is. The absolute, fundamental rule in digital is the stability of the clock.

What I insist on, and what we do at Right Track, is ensure wordclock home runs to all of your important digital devices, like your multitrack, your console, your Pro Tools...

**You've said that working on a digital console has changed your approach to mixing an album.**

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ized that I could mix the whole album. I work a couple of hours on each song, get great rough mixes, get a vibe for the whole record, then go back and start doing it again. That allows me to hear the whole album as a work, as opposed to individual songs. The old way, you'd mix a record and maybe have to remix three or four songs, because, when you'd finally hear them in context with everything else, they didn't work.

Now I can mix in a sequence, out of sequence, place different songs next to each other—because I can instantaneously get that mix back up, and it's identical. It's not like I have to sit and tweak for two hours to get the mix back.

Some people say they like to get in a zone while mixing. There are times that I do, too, and when I do, I stay there. The point is, I can mix any way I want. If I've been working on an aggressive rock number for three hours and I need to clear my ears out, I can put up a ballad, then go back fresh a couple of hours later.

**How do you deal with your outboard when you change songs?**

The Capricorn has 16 sends on every channel. In addition, every function on the console is totally automatable. I usu-

ally have about 26 sends set up, using duplicate sends. For example, send eight may go to a Sony reverb or a Lexicon reverb, and I mute or un-mute them in the mix as needed.

**You have a lot of different effects set up so you can switch songs without having to reset them.**

I'll have something like two sets of long, medium and short reverbs. I have several different delay devices, flangers, etc. **What about conversion delay when you use analog gear?**

Most of my reverbs have predelays; or if I'm setting a delay in time with the beat, I just set it so it's in time when it comes back to the console. If I'm using a chorus and there's an extra millisecond of delay that the A/D conversion adds, that's not going to change my chorus, which has a 30-millisecond delay anyway.

For the most part, it doesn't become an issue. When it does, you have the capability of moving things either in Pro Tools or on your digital tape machine to compensate. It's more of an issue when you're recording or setting triggers.

**What is your preferred mix format these days?**

My favorite mixing box is the Sony PCM-9000, a 2-channel, magneto-optical box that sounds terrific, but which

Sony has stopped supporting. There are several new boxes I've been testing out: I like the Alesis MasterLink, but I hate the fact that there's no wordclock in. I'm also mixing to Pro Tools 24-bit, to Genex MO and I'm trying a couple of the new Tascam units. So far, nothing has won me over.

I'm waiting for the multichannel recorder that I can use for my surround mixes that blows me away the way the PCM-9000 did. On the Elton John recording [*One Night Only*], I used a Euphonix R-1, which was intriguing. I'd like to spend more time on that.

**How did you come to use the R-1 for that recording?**

I talked to Randy Ezratty of Effanel, because we'd done James Taylor *Live at the Beacon* with his Capricorn truck a few years before, and I've always considered that my benchmark for live recording. The Cap truck was booked that night [for the Elton show] on the VH-1 Fashion Awards, but Randy knew of another Capricorn truck [TNN's], and he offered to split his team with me.

We booked it, and a few weeks later, Randy called up to say that he'd been talking to the people at Euphonix. Their R-1 was ready to go, and they were wondering if we wanted to use it. I discussed it with Phil Ramone, the show's musical producer, and with Elton John's manager Derek MacKillop, and we felt that as long as we could minimize any risk, we should go for it.

**So you said, "Yes, if I can double-bus."** Exactly. In doing a live recording like this, you absolutely have to assume that whatever can go wrong, most likely will.

Because of the complexity of the show, we wanted to lock up two 48-track recorders. Elton has two drummers, up to eight background singers, a percussionist, a bass player and two guitar players, one of whom also doubles on saxophone. Also, Guy Babylon has a massive keyboard setup, and we were going to have guest stars like Mary J. Blige, Bryan Adams and Billy Joel, who was to come out with a second piano. There would be no commercial breaks or time for any changeovers. There was a lot going on.

The problem was, two 48s and two 48 backups physically wouldn't fit in the TNN truck. In addition, we had to limit ourselves to 72 inputs. So we decided on one 48 for the main band and Elton, an Otari RADAR 24-track for Nigel Olsson's drums and all the guest artists, and a DA-88 for the eight audience mics. We duplicated those machines for our backup,

## FRANK FILIPETTI SELECTED CREDITS

E: Engineering; M: Mixing; P: Producer

**Annie Get Your Gun** cast album (1998, E/M)

**The Bangles:** *Greatest Hits* (1990, E)

**Tony Bennett:** *On Holiday* (1996, E)

**Beth Nielsen Chapman:** *Beth Nielsen Chapman* (1990, P/E/M); *You Hold the Key* (1993, P/E/M)

**Marc Cohn:** *Burning the Daze* (1998, E/M)

**Al DiMeola:** *Kiss My Axe* (1988, E); *The Infinite Desire* (1998, P/E/M)

**Foreigner:** *Agent Provocateur* (1984, E); *Inside Information* (1987, P/E/M)

**Hole:** *Celebrity Skin* (1998, E)

**David Grusin:** *West Side Story* (1997, E/M)

**Billy Joel:** 5.1 remixes for *The Stranger* and *52nd Street*

**Elton John:** *One Night Only* at Madison Square Garden (2000, E/M)

**Elton John and Tim Rice:** *Aida* (1999, E)

**Kiss:** *Lick It Up* (1983, E)

**Meatloaf:** 5.1 remixes for *Bat Out of Hell*

**George Michael:** *Songs From the Last Century* (1999, E/M)

**Bette Midler:** *Bathhouse Betty* (1998, M)

**Liza Minnelli:** *Minnelli On Minnelli* (2000, E/M)

**Carly Simon:** Ten albums, including *Hello Big Man* (1983, M); *Spoiled Girl* (1985, E); *Coming Around Again* (1987, P/E/M); *Film Noir* (1997, E/M); and *Bedroom Tapes* (2000, P/E/M)

**Barbra Streisand:** *Higher Ground* (1997, M)

**James Taylor:** *That's Why I'm Here* (1985, P/E/M); *Hourglass* (1997, P/E/M)

**10,000 Maniacs:** *Blind Man's Zoo* (1989, E)

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and, in addition, sent a split to the R-1.  
*How much rehearsal time did you get?*  
None. Just an hour soundcheck on Friday afternoon. There was no chance to go through each song and determine the instrumentation. It was seat-of-the-pants time.

*Were your mic pre's onstage?*

Yes. I'd hoped to use a fiber-optic run from the stage to the Capricorn, which was some 800 feet away, as we had done with James. Unfortunately, the TNN truck wasn't equipped with fiber, but we felt it essential to place the mic pre's as close to the band as possible. If you can't get fiber, you at least want a line-level signal going down that 800 feet of cable. The stage mics went to a splitter that went to FOH, then to 90 Aphex mic pre's. From there, we split to our setup and to the R-1. I combined them as best I could down to 72 instrumental inputs and eight audience inputs.

*You had someone onstage watching mic pre levels.*

Yes. As my mic pre's were remote, any time we'd come close to an overload, I'd get buzzed from the stage. Then we'd coordinate: He'd tweak it down two as I'd tweak it up two. Basically, I was just trying to make sure that I was getting a decent level without overloading anything.

As we were 24-bit, I had a little more leeway than on some of the other live shows I do, which are usually 16-bit. With digital, it's very important to stay as close to full-scale as you can, because digital performs poorly as you approach the least significant bit. Every dB you lose translates into a lower bit rate. But with 24-bit, even if you're a couple of dB down from full-scale, you're still well over 20 bits.

*Wasn't there one of those angina-producing moments during the recording?*

We did have a scare about two-thirds of the way into Friday's show—a hiccup where the console froze momentarily. Back in my early Capricorn days, one of the first things I insisted on was that the console would always pass audio, even in the midst of a crash. And it did just that. There was some scrambling, but no one panicked. And listening back, there's not even a hint of a problem.

*For mixing, you ended up going with the R-1.*

We only had six days to edit, mix, fix everything. From the show to the stores in three weeks.

*I think that's a new world record.*

It was tight. We got to Right Track on

Sunday, and it became clear immediately that locking up all those machines wasn't going to allow us to mix fast enough.

Although I couldn't do a direct audio A/B between the R-1 and the Sony/RADAR, I was able to quickly determine that the R-1 was certainly not inferior. And the fact that you can have 96 tracks of 48 k on one machine was truly a lifesaver.

*A Frank Filippetti hallmark seems to be an open-minded attitude toward the new.*

I try to be. I've developed a way of working over the years that I feel very comfortable with. But if someone can show me a better way, then I don't see the sense in resisting it. I'll never forget my first day on the Capricorn, or my first session in a Martha's Vineyard cottage recording James Taylor with an 02R, or my first ISDN...there are so many exciting techniques and technologies out there. To cut myself off from them would be inexcusable. That doesn't mean you can't be cautious.

Working with the latest digital equipment has been, and will continue to be, a risky business. No matter how often a manufacturer says that something's tested and ready-to-go, once it gets into the real world, it ain't necessarily so. Because, let's face it, most of this digital stuff breaks down to lines of code. And, if the person writing the code doesn't understand all the permutations that are going to crop up on a recording session, you're going to have problems. Invariably, unless the machine has been in the field for a year or two, you're going to run into difficulties.

*But you're still willing to move forward through those difficulties.*

Absolutely. How boring would life be if every new day were just like the day before. Last February, I was asked to record the songs and ceremonies of several Bushmen tribes in Botswana. We spent several weeks on safari in the Kalahari Desert catching up with various tribes. Being with these people, under a moonlit African sky as they sang and danced around a campfire, was about as far away from a New York recording environment as you could ever get. But I was able to connect with the true spirit of music in a way that is sometimes lost in our business. It was one of the great experiences of my life. To try something new, to see something a little differently, to embrace change and add it to your repertoire...to simply take a chance— isn't that what life's all about? ■

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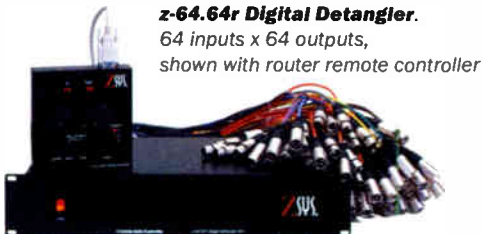
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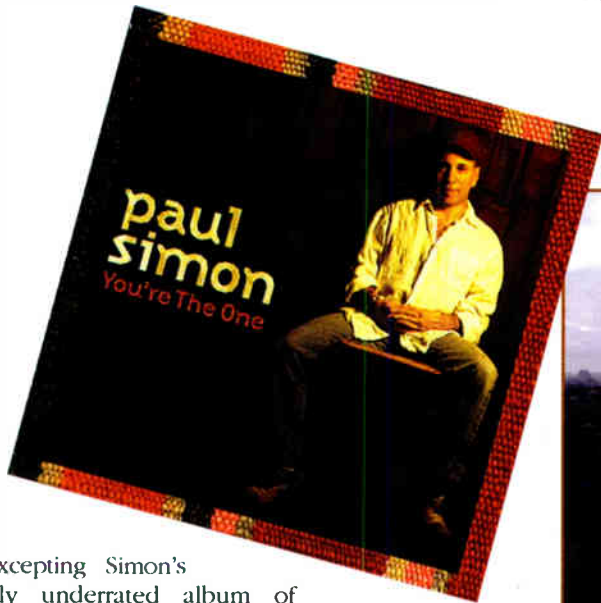
ation of singers/songwriters.





# PAUL SIMON

The  
Making  
of  
"You're the  
One"



Excepting Simon's highly underrated album of songs for the ill-fated Broadway musical *The Capeman*, this is his first studio album since *Rhythm of the Saints* came out 10 years ago. On the first couple of passes, *You're the One* might not grab the listener the same way as the more up-tempo material on *Rhythm* and the unsurpassable *Graceland*. But it's an album that insinuates itself subtly and reveals more and more with each listening. We expect flesh-and-blood characters and a certain scattershot impressionism from Simon, and on those fronts the album succeeds wonderfully. Few writers move with such fluid grace between fiction and what appears to be autobiography, or at the very least his own philosophical musings. Musically, there is no particular overriding ethnicity this time around; certainly the polyglot has African and Latin flavors sprinkled throughout, but by this point Simon's oeuvre is so singular and identifiable, it transcends its influences and has become its own thing—an impressive feat for any songwriter.



Simon is well-known for his studio perfectionism; it's part of his artistic personality, and it is a byproduct of working for so many years with the legendary engineer Roy Halee, who goes back to the late '60s Simon & Garfunkel days. Halee is semiretired now, and for the past several years, Simon's recordings have been in the very capable hands of Andy Smith, a one-time assistant for Halee who stepped up to become Simon's primary engineer for the *Capeman* sessions in the mid-'90s. "I learned a lot from Roy," Smith says. "I was already in studios before I started working with him, but he really molded me in the direction of the way he works."

# PAUL SIMON

The Making of "You're the One"

Simon's studio of choice for many years has been The Hit Factory in Manhattan. Smith notes, "They take really good care of us, and they have everything we need." *You're the One* was recorded in Studio A and mixed in Studio 5, The Hit Factory's Sony Oxford room. Though Studio A is equipped with a Neve VR, Smith only used the console for monitoring, choosing instead to record through various preamps directly to Pro Tools.

"We had the preamps out in the rooms with the musicians, a rack filled with them, and we had harnesses made that went straight from there to the digital converters, so there were short mic cables—as short as we could get away with to the mic pre's—and then one run from there to the Apogee [AD-8000SE] converters," Smith says. "We used all different kinds of preamps. The main solid-state mic pre's we used were Martech MSS-10s; we found those to be the best out of everything we had. At times, we had up to eight of those going. We also used two different kinds of Avalon mic pre's, including two M5s, and some Earthworks and some old Neve 1073s and Grace mic pre's. Also, we were looking for a high-quality headphone amp, and [Grace] said they had finished a design but hadn't started manufacturing

it. They quickly put one together for us, and we used that for headphone monitoring for Paul's vocals and for when we were mixing. It's a really good-sounding headphone amp. For tube mic pre's, we used ones by D.W. Fearn."

The album was recorded sporadically over a two-year period. "For the most part, the songs would come together with Paul and his guitar and the drummers—Steve Gadd and [percussionists] Jamey Haddad and Steve Shehan," Smith says. "It was almost like they'd go into the studio not knowing exactly what they were going to work on, so the album was constructed in the studio rather than coming in with demos. They would work on different rhythms, try out various things, experiment. Probably over half of Steve's drum kit parts aren't even using sticks; he's using his hands on the snares and toms. There were songs where he taped handkerchiefs on his toms to make them even deader and

**Counterclockwise from below: 1) A Fender DeVille amp miked with a Shure SM7 for a guitar overdub. 2) Steve Gadd's kit setup for replacing conga parts. The congas are miked with Sennheiser 421s. Those are Shure SM98s on the toms and an A-T 4011 on the hi-hat. 3) During tracking, a pair of Neumann TLM170s in a MS configuration were used to pick up room sound. 4) Andy Smith's rack of mic pre's included (from top) models by D.W. Fearn, Martech, Avalon, Earthworks and Grace. For drum overheads, Smith usually used Earthworks omnis and B&K 4003s. 5) Paul Simon**



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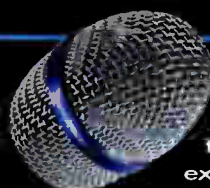
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less like a drum kit. And it gets to the point where you don't know which is which; which is the standard drum kit and what the other percussion is. There are only a couple of songs where there's an actual backbeat, where you hear a snare snapping. A lot of times Paul wouldn't have lyrics, but he'd have a melody, and then he'd build from the foundation they came up with."

Simon and Smith opted to record these drum/guitar sessions live in the medium-sized room, with Simon's guitar (ranging from a Gurion acoustic to a Paul Simon model Martin to custom electrics by Flip Scipio) miked at an amp with either a Sennheiser 421, Shure SM7 or a Shure SM57, and the drums captured with a combination of close-mics and overheads.

"We were trying to get a natural sound of what was going on in the room rather than a slick studio sound," Smith says. "Without having the drums being hit the regular way, it wouldn't sound like studio drums anyway. We

# PAUL SIMON

The Making of  
"You're the One"

that seem to be missing, but it's because there are low drums that interweave with the bass line."

On top of the basic unit of Simon, the drummers, Kumalo and nimble-fingered guitarist Vincent Nguini (in the band since *Rhythm of the Saints*), there are a number of other interesting and

unusual instrumental additions and combinations that give the CD so much richness and depth. For instance, on the lovely opening track, "That's Where I Belong," the warm sonorities of a Wurlitzer piano, bass clarinet, bamboo flute, vielle and vihuela mingle effectively at the edges of the track to create an engaging sonic tapestry. On other songs, it's a tasteful pedal steel guitar or harp or banjo or pump organ or hammer dulcimer or sitar guitar that add memorable touches. Simon loves to experiment in the studio and he loves combining textures to create new, natural sounds.

"There are no synths or samples on the whole thing," Smith says. "It wasn't something we thought about in advance, but it turned out that way. Some of the guitar



**FOR THE MOST PART, THE SONGS WOULD COME TOGETHER WITH PAUL AND HIS GUITAR AND THE DRUMMERS. IT WAS ALMOST LIKE THEY'D GO INTO THE STUDIO NOT KNOWING EXACTLY WHAT THEY WERE GOING TO WORK ON, SO THE ALBUM WAS CONSTRUCTED IN THE STUDIO RATHER THAN COMING IN WITH DEMOS. —ANDY SMITH**

ended up using a lot of the overheads—that was the main sound of the drums—and a little fill from some close mics."

Smith used a number of different mics as overheads, including B&K 4003s, Neumann TLM170s and Earthworks omnis, which he admits is a little different for live tracking. This approach limited their flexibility in altering the basic tracks somewhat, but Smith believes the trade-off was worth it: "We usually couldn't do too much to the basic tracks because of the fact that they were all sitting in the room together and we were using one set of room mics. There were a couple of times we wanted to replace something later and we couldn't, but we wanted that live sound and the feeling of interaction between the three percussionists and Paul.

"Sometimes we'd be in there just getting levels and the musicians would get into a groove, and Paul would say, 'Hey, that sounded good,' and then we'd start working on constructing something out of this 10- or 12-minute piece—maybe add a top and an ending, do some editing. 'Pigs, Sheep and Wolves' fell together like that."

Typically, the bass lines, by Bakithi Kumalo (Simon's regular bassist since *Graceland*) and studio ace Abraham Laboriel were added secondarily. "In a sense," Smith says, "the percussion would supply the bass line, which made it difficult for the bass players because there were certainly low drums that were implying bass parts. But that also gave the bassists the opportunity to play in different ranges and to play in weird syncopations. There are some tracks where, if you solo the bass part, you're surprised because there are notes

effects sound synth-like in places, but most of the atmospheric stuff comes from combining different sounds. Like in 'The Teacher,' Paul wanted to combine the pedal steel, the flute and the bass clarinet to get a synth sort of wash." Still, one of the strongest tracks on the album is also perhaps the most straightforward: "Old" is a whimsical (and wise), two-minute slice of pure Buddy Holly-esque rock 'n' roll, down to the spring reverb on the guitar. Smith says that most of the guitar effects on the CD were achieved using an Eventide DSP4500, Eventide Orville or TC FireworX. Other mics used on the project, in a variety of different applications, included B&K 4011s and 4006s, Neumann TLM50s and FET 47s, Sennheiser 421s and Shure SM98s.

The lyrics (and thus the final vocals) tended to be completed late in the recording process. Simon likes to experiment in this area, too, working with different phrasings and emphases. "The vocals aren't heavily comped," Smith notes. "He likes it to sound like a performance." Simon's vocal mic throughout the album was a Neumann M149. "Before this album, he switched around a lot. For instance, on the *Capeman* album, sometimes we'd have five mics set up if he was going to do vocal fixes because we chose different mics for different songs, but that was fitting because some of them were supposed to sound like old '50s songs, and in general there was more variety to the sound we were going for, so we played around. But for this we stuck to the M149 through the Martech mic pre for the whole thing."

—CONTINUED ON PAGE 201

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# PETE LEONI'S DEMOTECH AUDIO LABS

## HIGH-TECH OFF OF THE BEATEN TRACK



New Orleans. Partying. Syrupy-thick accents. Creole cooking. And all that jazz. Wanna leave the Gold Coast to produce music and live on the bleeding edge of the continuing technical revolution? “No thanks,” says Bay St. Louis, Miss., resident Pete Leoni. “Everything I need is right here at home.”

Leoni runs a project studio, Demotech Audio Labs, out of his home. He’s had some commercial success too, stretching all the way back to his work with songwriter Wanda Mallette back in the ‘80s. “I had a demo studio back then that I ran out of the back room of a music store in Gulfport,” Leoni recalls. “I had a 1-inch Tascam 16-track that I synched to a Scully 1-inch 8-track recorder. Wanda, who I consider to be one of the finest songwriters in the country, co-wrote ‘Looking for Love in All the Wrong Places,’ the song Mickey Gilley turned into a big hit, as well as many other notable tunes. For about two years, she was in my

place two days a week, writing and producing demos. Wanda and I got some time to write together and came up with a little tune called ‘We Still Shoot Horse Thieves in Texas.’ Country legend Mel Tillis got a hold of that demo and included it on his *Coca Cola Cowboy* album.

“Because of the success we had with these, I started to see a lot of songwriters wanting to get in on the action,” he continues. “At that time, with the advent of MIDI, it was just becoming feasible to do sessions electronically and save the cost of musicians. I synched up everything in sight! To make a long story short, I bought every damn keyboard, drum machine and sound module that came along, as soon as it came along! Of course, I had the early Apple stuff running sequences by this time. I began to get pretty dang good at doing high-quality demos for a fair price. Throw a couple of ad agen-

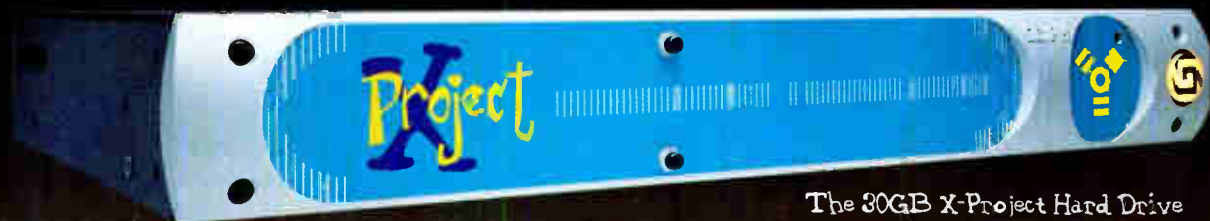
cies wanting jingle production into the mix, and I guess you could say I was damned busy. So busy, in fact, that I was getting pretty burned out.”

Leoni took a job at a local casino as an entertainment director and checked out of the studio business for several years. By the mid-’90s, he was ready to jump back in. “Can you imagine not being plugged into the world of tech for about five years?” he asks. “As soon as I started to look around for gear, I was astounded to see that people were not taking the PC seriously as a recording platform! I was aware of what people had been doing on the Mac side, and I started looking into a Mac setup, but on further thought, it seemed to me that, with the PC practically taking over our lives, there was no way that people could continue to ignore the platform as a viable option for professional audio.”

E-mail and the Internet allowed Leoni to educate himself on computers and music. Along the way,

BY GARY ESKOW

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## THE PROJECT STUDIO

he disabused himself of some accepted industry notions. "The innate superiority of SCSI over IDE, for example, was taken for granted," he says. "I could see that assumption was wrong." He began posting (and answering) questions on any audio-related news group he could find. Pretty soon, he found himself appearing in ad copy for companies like Antares, Cakewalk and Gadget Labs.

These days, Leoni relies almost entirely on a three-computer setup. All three are Q-Performance 850MHz Windows machines. One houses both Cakewalk 9 ("My favorite audio app, simple and rock stable."), Cubase 3.7 and a pair of Yamaha DSP Factory cards running the C-Maxx C-console interface.

A big Nemesys Systems GigaSampler fan, Leoni houses GigaStudio in his second computer outfitted with an Aard-

mic and use it to create a stereo field. I also couldn't work without the Antares AutoTune plug-in, and you know why."

Leoni's work, which includes lots of his own excellent keyboard playing and programming, features exceptionally clean, up-front vocals. "I don't feel the need to have a huge mic cabinet like I did in the analog days," he says. "I use a RØDE NT-1 and an NT-2 on vocals. To me, they sound like Neumanns without the hefty price tag. I find that they sound too warm for most other uses, though. My AKG 414 gets a lot of use. I especially like the way it tracks background vocals and piano. Sometimes, the tried-and-true is best. I use an AKG C-1000 on acoustic guitars and other stringed instruments, except the violin, where I use one of the RØDE mics. I try to apply the same standards to my work that would be applied if every session I did wound up on the majors. That

**I try to apply the same standards to my work that  
would be applied if every session  
I did wound up on the majors.**

vark Ark 20/20 plus card, upgraded to 24-bit resolution. The two machines interface via Lightpipe.

Software synthesizers are the current rage, and Leoni dedicates his third computer to them. "I've got Cubase on this computer running a bunch of soft synths," he explains. "In addition to a Frontier Dakota, I've got the Pulsar card from CreamWare. It's quite a card, but it's difficult to negotiate. The Pulsar has four SHARC DSP chips built into it. You can actually run soft synths right off of these chips. I Lightpipe out from the Pulsar back into computer one."

Other equipment includes a Prosonus MP20 mic preamp ("One hell of a pre-amp for \$500!"), his Mackie 16-channel VLX Pro console ("As far as I'm concerned, the pre's on these Mackies are the closest thing you can get to a straight wire with gain.") and a pair of Event 20/20 monitors.

Leoni also claims to have almost every plug-in on the market, with some of his favorites being the Sonic Time-works 4080L—a 64-bit plug-in that he says sounds a lot like the Lexicon 480 on vocals. "I couldn't master any project without using the Waves L1 Ultramaximizer," he adds. "The Cakewalk FX3 Soundstage creates such realistic stereo tracks from a mono source that I sometimes record acoustic guitars with one

kind of quality doesn't go unnoticed in a smaller market."

As for other project studio owners, the Web has made Leoni's studio location less a factor than it might have been in the past. The Net even brought him in contact with his friend, and current business partner, Morgan Pettinato. The owner of the East Coast Music Mall, Pettinato was looking for a computer audio expert to help build and distribute a line of custom-built music machines. Scouring the Net for information, Pettinato kept coming across articles penned by Leoni. "He simply was the most knowledgeable person I found in the field of computer music who was actually using this equipment on a day-to-day basis," says Pettinato. Their relationship led to the formation of Q-Performance Systems, which began shipping turnkey PC DAWs earlier this year.

If you can't catch Leoni online, then just head over to Bootsie's Brass Anchor in Waveland, Miss., where you'll find him playing keys in a group that includes a bunch of guys from the old Dr. Hook band—three nights a week, just like he's been doing for the past 20 years. ■

*Gary Eskow is a contributing editor to Mix.*



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# KARL RICHARDSON

## HOOK, LINE AND SINKERED IN MIAMI'S AUDIO VISION STUDIOS

I have no idea what it's like to be in the studio with Karl Richardson. But I do know what it's like to be out on a fishing boat with him, five miles off of the Miami coast, looking for a different kind of hit. Waiting his turn in the chair rig, Richardson is quiet. He watches what happens during others' stints with the big tackle, with its lines connected to kites trailing the boat to give the bait a wider range. He pulls on an occasional Merit Ultra Light, and it's clear he's having fun, but he rarely seems truly relaxed. He joins in the banter with his once and future cohorts, Ron and Howie Albert, whom he preceded in their long, collective stints at Miami's Criteria Recording Studios, and singer/producer/TV show host (*Where the Action is*) Steve Alaimo. All four of them are now partners in Audio Vision Studios, a few miles away



Eric Clapton

from the now rehabilitated and renovated Criteria in northeastern Dade County.

Including Richardson's contributions—which include engineering and/or producing records for the Bee Gees (including "Stayin' Alive"), Kenny Rogers (the multi-Platinum "Islands in the Stream"

with Dolly Parton), Barbra Streisand ("Guilty"), Eric Clapton (*461 Ocean Boulevard*), the Ohio Players and Olivia Newton-John—the Platinum quotient of this fishing expedition is approaching 200 million units. But in the end, Richardson is satisfied with a 15-pound dolphin that takes about 20 minutes to land (and gets thrown back).

Richardson was born in Philadelphia, but grew up in south Florida, where he still lives. He attended Citrus Grove Elementary School and North Miami High and had an adolescence that could have been found in the Cleavers' home—if Ward and June had let the Beaver have a garage band.

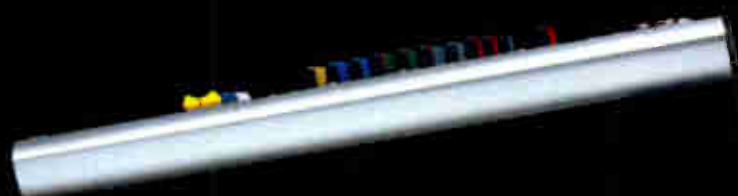
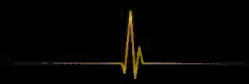
"It was great growing up down here," he says. "I got my first job doing live sound at the old World Dance Hall in north Miami, and I was listening to Chuck Berry and The Beatles. I wasn't a musician—I bought a guitar when I was a kid, and I've been thumbing it for the last 40 years but still can't make any sense of it. But I got involved in the technical end of things early on. As kids, my brother and I tore apart TV sets and radios. I had my ham radio operator's license when I was 11

years old. At the World, there wasn't a lot to work with, just some old Altec Lansing stuff, but we could figure out what sounded good, and then we could figure out why."

That dual affinity for music and technology set the stage for Richardson's career. After a stint as a technician and DJ at a radio station in the Florida Keys, Richardson applied for a job at Criteria Studios in 1967, just as the landmark studio was putting its second room online. Miami's moment in the musical sun was just on the horizon, as a new generation of snow-weary and newly affluent rockers, from the Bee Gees to Eric Clapton to Joe Walsh, were about to descend upon the city and make it a musical Mecca for the next decade. Criteria founder Mack Emerman must have sensed that he would soon need more manpower, because after one interview, he took Richardson on as Criteria's new mastering engineer. And though the gear in the MCI-equipped facility was eye-popping to Richardson, he wasn't going there naively. "At the time I applied at Criteria, I was still in junior college and making \$300 a week part time fixing two-way radios," he says. "That was pretty good money for a college

BY DAN DALEY

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kid in 1967. I gave that up to work for Mack at \$75 a week. I went there because I needed to go to something bigger than fixing RF boxes."

**MASTERING MASTERING**

Richardson stayed at Criteria's mastering lab for the next five years, learning from staffer mastering engineer Chuck Kirkpatrick, whom he eventually became roommates with. Criteria's mastering department was a moment in time: A Scully lathe—vintage even then—had manual adjustments for pitch (the spacing between grooves and a function of

volume) and depth (the deepness of the grooves, determined by the depth of the stereo image). Jeep Harned, who owned MCI and had built Criteria's consoles and tape machines himself, had also built the mastering department's stereo compressor, which Richardson says was modeled after a Fairchild. Among the albums that Richardson mastered were records for Stephen Stills, Manassas and the Todd Rundgren-produced Grand Funk Railroad classic, *We're an American Band*. "They wanted that record on the street in two weeks, so as soon as the mixes were done in the studio, they were sending them down to me, and I was getting

them out to the label the same night," Richardson recalls.

The decision by Atlantic Records' creative brain trust of Arif Mardin, Jerry Wexler and Tom Dowd to make Criteria and Miami their base of operations effectively established a music factory that churned out hit after hit for over a decade. Ron Albert arrived in 1968, and his brother Howie came later after a tour of duty in Vietnam. Richardson had a front-row seat for the historic sessions that resulted.

"It was incredible," recalls Richardson. "I mean, Tom and Jerry and Arif had the

**We were bouncing  
and submixing  
all of this stuff  
every step of the way.  
And we wanted  
each part perfect,  
so it became a very  
punched-in world  
we lived in.**

studio booked every day, starting at three o'clock—for years! I was doing maintenance as well as mastering, and I would hang around the control room, waiting for something to break. But I was soaking so much up watching those guys work. The first session I watched them do was Delaney & Bonnie; I saw them record Aretha Franklin's 'Spanish Harlem'; I watched them produce the Young Rascals. Every day was like that. And it wasn't a matter of looking back and saying, 'Oh, those records became hits.' You knew when they were recording it that it was going to be a hit. This was the heyday of Atlantic Records, and Criteria was the place they block-booked to make their records."

Little by little, Richardson came out of the shadows of the tape machines in the corners of the control rooms and was soon sitting at the console doing horn section overdubs for Delaney & Bonnie and others. The first major record he would gain credit on as an engineer was 1973's *In the Right Place* by Mac Rebennack, aka Dr. John. "The record was produced by Alan Toussaint, and this was the record that put Mac over the top on

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the charts," says Richardson. "He had been a cult figure up to that point, but now this record was on Atlantic, and they were pushing for it to be big. The band Alan brought down was The Meters, and Mac wanted his horn guys from New Orleans—he called them the Bonnaroo Horns, which is some Creole word that means 'really, really good stuff.' The Neville Brothers sang backups. This was the kind of thing I had been waiting five years to do."

But in Miami in those days, a studio owner was hard-pressed to take a guy like Richardson away from the other things he could do well. So in addition to a growing number of artists and producers who were requesting his engineering services, he kept on mastering and maintaining, including spending

**Each of us knew what the others were good at, and we let each other do those things.**

**The result was hit records.**

two weeks modifying two MCI consoles to accommodate the 24-track machines that producer Bill Szymczyk wanted to use for The Eagles' *Hotel California* record.

Richardson had to keep the machinery well-oiled; Atlantic's demands on the studio continued to increase, with Mardin doing charts, while Dowd engineered and Wexler looked for songs and did A&R. The Dixie Flyers were hired as one of several house bands, all of which were put up in the 1950s-era hotels along the beach and would cram into Rascal House at 3 a.m. after sessions for dinner/breakfast before the next round of Brook Benton, Aretha Franklin and Petula Clark sessions started later that day. And if Richardson wasn't recording them, then he was mastering them. "And when you could compare all of those mixes day after day on the same equipment, boy was I getting an education," he says.

If Dr. John launched Richardson's career behind the console, then Eric Clapton secured it. *461 Ocean Boulevard*, in 1974, was Clapton's return from the



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netherworld of rock 'n' roll excess. "Tommy [Dowd] got the call out of the blue from Eric one day, telling him he was back on the planet and was coming to Miami to make a record," Richardson recalls. Dowd called on Richardson and on musician/arranger Albhy Galuten, who had worked on the Derek & The Dominoes record with Clapton and Dowd several years earlier and who now was renting the living room, for \$25 a month, of the house that Richardson and Kirkpatrick shared. "It was old home week at Criteria for that record," Richardson says. "Me, Tom, Albhy, the Alberts, everyone. We were sharing work, we were sharing girlfriends."

**TRANSITION TO PRODUCTION**

Richardson and Galuten would share more than that in years to come. Arif Mardin brought the Bee Gees to Atlantic, and Robert Stigwood then took them onto his RSO Records, a custom label distributed by Atlantic. But when Stigwood and Atlantic split in 1975, Dowd, Mardin and Wexler, as Atlantic staffers, were no longer available to work with the brothers Gibb, and Richardson and Galuten

filled the breach, beginning a long collaborative career where Richardson supplied the technical chops and Galuten the musical interface. Their first co-production together, the Bee Gees' *Children of the World*, was also the point in time that Barry Gibb "discovered" his falsetto, the vocal gag that turned the Bee Gees from a shaky pop band into a dance music juggernaut.

The Bee Gees were a vocal band, and recording them was something that Richardson eventually got down to a science. "All the harmony parts were doubles and triples, and we would set the boys up on a single microphone—usually a Neumann U67 or U87—and whoever was singing lead would go in the middle, in cardioid, with the guys standing in front of the pattern," says Richardson. "I tried it in omni a few times, but for some reason it just never worked with them. It's one of those things where the textbook tells you one thing and reality tells you something else. The nature of their voices lent themselves to recording this



The Bee Gees

way, too: Robin almost always had this cool vibrato in his delivery; Maurice had hardly any; and Barry would sometimes have vibrato and sometimes not, and when he did, it was more like tremolo. This gives you a very unique blend, which might at first seem very different from one another, but you have to remember that they're brothers, so they have this DNA thing going.

"I used to keep two 24-track machines in the room so we could record a lot of tracks of vocals and then bounce them down, using Dolby A noise reduction. So a lot of the Bee Gees' vocal tracks are second-generation tracks. We needed a

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lot of tracks because Barry liked to experiment with sounds. On 'You Should Be Dancing,' we had 18 tracks of percussion alone. We needed more people to play, so we went next door and got Stephen Stills and Joe Lala out of a session with the Alberts and had them come in and play congas and triangles and such. We got this Phil Spector 'Wall of Percussion' effect. We were bouncing and submixing all of this stuff every step of the way. And we wanted each part perfect, so it became a very punched-in world we lived in."

Ron Howard remembers how musicians like Stills would wander out from his sessions into Richardson's Bee Gees dates and how Richardson remained unflustered. "Stephen would just walk unannounced into a vocal session and start playing percussion, and Karl wouldn't miss a beat, open up a mic and get him on tape—and they'd keep it!" Howard recalls. "And not many people realize it but Karl was the first guy to make a tapelooop and record an entire hit single—'Stayin' Alive'—way before there were drum machines. He's pretty fearless when it comes to cutting up tape, yet he made the transition to Pro Tools seamlessly."

Richardson and Galuten and Barry Gibb were the natural choices for producers when youngest Gibb brother Andy made his major-league debut with 1977's *Flowing Rivers*. It was during this period that Richardson says he felt the most confident in himself as a producer, largely due to the sense of openness and honesty that had evolved between him, Galuten and the Gibbs over the course of several records. And, if there is a key factor to long-term success for production teams, particularly ones that are brought together by serendipity like this one was, then it's that mutual trust and a clear division of talents—and respect thereof—is a must. "That's definitely true," says Richardson. "Each of us knew what the others were good at, and we let each other do those things. The result was hit records."

Which kept on coming. The Bee Gees' successes engendered demand for both their songwriting and production talents by other major artists, and Richardson found co-production credits on records for Barbra Streisand, Kenny Rogers, Dolly Parton and others during the 1980s as a result. "We had to turn people down it got so busy during that period," he remembers. "We would do things like go to Los Angeles for a day

to do Frankie Valli, then fly back and do the mix for 'Guilty.'" (Which was the first mix done at the Bee Gees' new studio in Miami, Middle Ear, in 1980.)

**DAYS ON BROADWAY**

But what serendipity gives, it also takes away. If Richardson felt empowered by the team's growing successes, then it also made him more assertive in certain areas, one of which was his suggestion that Andy Gibb formally join the Bee Gees, which did not sit well with Maurice or Robin Gibb at the time. An incident in which Richardson replaced an acoustic guitar part played by Maurice Gibb on a track sparked what Richardson called a feud between them. The team spirit was further drained by a creatively fallow period for the band in the mid-'80s in the wake of a \$200 million suit against RSO. "The sense of cohesion and creativity was beginning to peel away," Richardson recalls. "Albhy had already moved on to other things. It may have been time for this to happen." Any esprit de corps was dashed completely with Andy Gibb's death in 1988 from heart failure. (Ironically, just before Andy's death, the Bee Gees considered including him officially into the band.)

But, by then, Richardson had not only departed the team but was also reinventing himself, this time as a sound designer for Broadway shows, which also led to recording cast albums. His repertoire now includes *The Scarlet Pimpernel*, *Jekyll & Hyde* and *Civil War*. The shift came when he met budding composer Frank Wildhorn in Orlando and formed a professional relationship that Richardson says "has driven the last 10 years of my life." But, as when he went from fixing radios to audio engineering, he realized he needed mentoring—"dozens of wireless microphones and 75 speakers for one show was very different from making records," he exclaims—and found it in two veteran Broadway sound designers and FOH engineers, Scott Stauffer and Cindy Hawkins, whom he credits as his "Broadway gurus."

Karl Richardson has now become the Pro Tools guru for Audio Vision, and the studio is expected to have added new rooms by the end of the year, one of which will be Richardson's Pro Tools editing and recording suite. Yet another reinvention of the self. But, in retrospect, he says he would not change a thing. "It's really been one heck of a ride," he says, "and it's not over yet."

Dan Daley is Mix's East Coast editor.

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# THE CHRIS ROCK SHOW



## Comedy and Music on Centerstage

BY ERIC RUDOLPH

The riotously funny and critically acclaimed *The Chris Rock Show*, which explored the boundaries of outrageous, politically tinged humor for four years on HBO, began each night with a barbed stand-up routine, then brought out a guest, then fea-

tured a single musical number, usually with amped-up energy. It's not easy to translate the raucous feel of a live audience to the small screen at home, but Chris Rock did it every Friday night, and the show's commitment to on-air and in-studio audio quality played a large role. In fact, a

tour of the production (made during the last days of the final season, which ended just after Thanksgiving—after four Emmy nominations, the show was canceled), showed just how TV shows can incorporate live sound systems, without compromise.

*The Chris Rock Show* used

what was essentially a small touring package for the in-studio musical sound reinforcement, and there was a definite method to the seemingly audio overkill. Star and executive producer Rock wanted the tapings to be high energy and fun for the studio audience. "*The Chris Rock Show* was the closest thing [I've done in television] to a real, live stage show," says FOH engineer Paul Cohen. "Grandmaster Flash [the show's musical director and founder of the seminal 1970s-1980s-era rap group Grandmaster Flash and The Furious Five] would warm the crowd up," spinning and scratching records on his two turntables from his mid-audience perch. "Then the warm-up MC

—CONTINUED ON PAGE 86

ABOVE PHOTO: PAUL SCHIRALDI/HBO

Charlie Jones, at right, in Audio Control.

Below: Audio tech manager, Tora Halmes at the monitor mix position.

Bottom right: Paul Cohen at the FOH mixing position.



3 ENGINE: PHOTOS: ERIC RUDOLPH

# SCORING TO SURVIVE

## Russ Landau Tracks the Hit CBS Series

BY DAVID JOHN FARINELLA

He knew! Composer Russ Landau knew that Richard was taking home the million bucks last fall, and he didn't tell a soul. "We had the option of knowing, and David [Vanacore, his musical partner] and I discussed it," he says. "We didn't want to know, we wanted to watch the show from a view-

the haunting introductory score to last season's smash CBS hit *Survivor*. To hear him explain it, the process wasn't easy, and all he knew was that it had to be big. "I think I wrote 14 or 15 very big, cinematic, over-the-top orchestral themes," he recalls. "But the show was reality, and it was drama, so it was dram-ality. They mine for stories

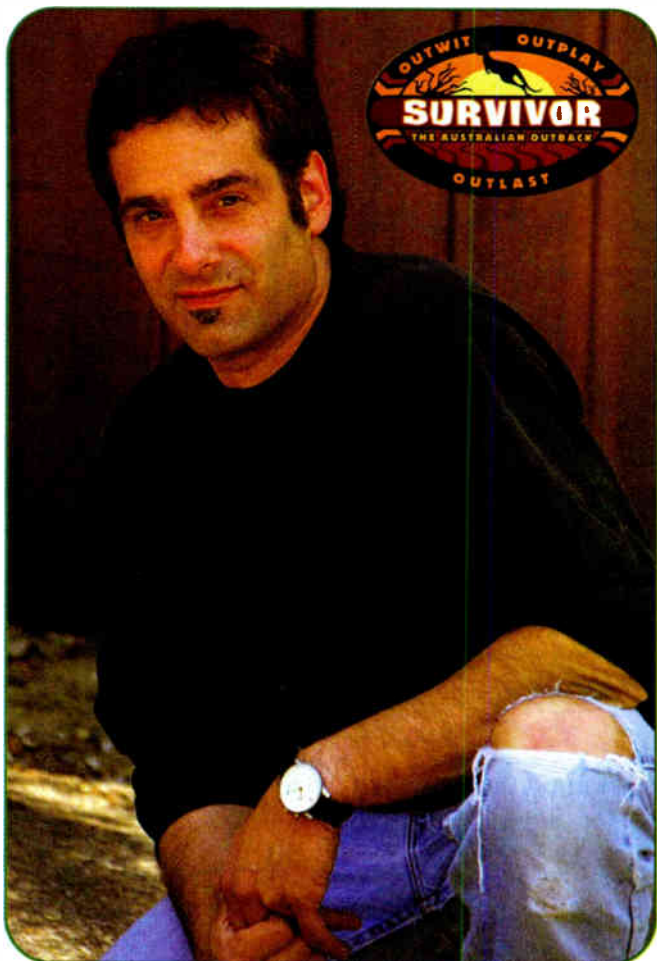
Burnett took with their families to the ski town of Mammoth, Calif. Once back in Los Angeles, Landau wrote "Ancient Voices." "For me, at that point, the concept was *Lord of the Flies* and MTV's *Real World*," he says. To get that mood, the composer turned to a recording of Russian folk singers Tamara Smyslova, Elena Sidorenko and Masha Nefedova that had been collected by musician Paul Winter for an Earth Beat album. The women's voices—Landau explains they are singing "Yippee Ki Yeah"—were edited, made into a loop and then processed.

Landau was relieved once he found the magic score; after all, writing a show's theme is tricky. "It is kind of like writing a song for an artist," he explains. "You have to pull in all these sources and try to figure out what's going to identify this show, this series. What's going to be its brand? You're putting a stamp on the show, so it's very critical. It was trial-and-error until finally we found something that the show was about."

Though he started his musical life studying as a classical guitarist, Landau earned his living as a bassist and record producer before turning to keyboards, samplers, computers and scoring work. "And I'm a really bad trumpet player," he adds with a laugh. He edits, and his studio is stocked with an assortment of software, including Logic Audio, Performer and Cubase. His keyboards include a Kurzweil 2500-X (his controller), a GigaStudio (which replaced 14 Akai S2000s), Kurzweil S5000 and three E-mu Emulator-IVs.

Still, Landau prefers working with live musicians. "At the end of it all, we use a combination of synthetics and real, but nothing can replace a real orches-

—CONTINUED ON PAGE 94



er's perspective and not have things given away and score it that way. You don't want to open that Christmas gift until Christmas morning." But then he found out anyway. His job can't be done live, in real time.

Russ Landau is the man responsible for coming up with

during the show, so it does have a drama quality to it. But is it funny? Is it serious? Is it dangerous? Is it adventurous? Well, it's all those things, so how do you get that?"

The theme came to Landau after a vacation that he and *Survivor* executive producer Mark

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# ADVENTURES IN TDM

## PART 2: DEALING WITH MIX LOGISTICS

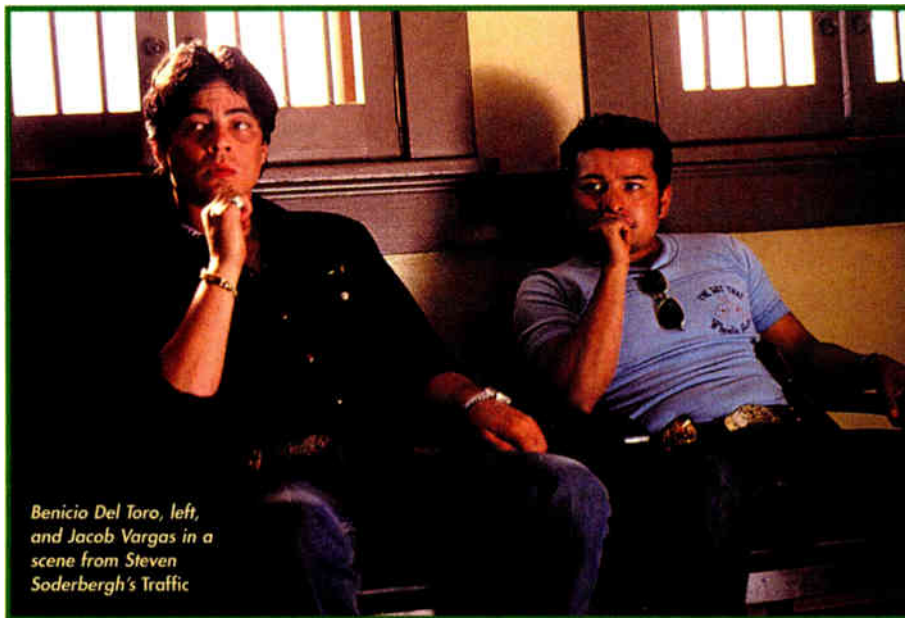
by Larry Blake

I heard a wonderful "definition" of the goal of gymnastics during the broadcast of the Olympic Games last fall: The athletes make what is extremely difficult look extremely easy.

While I would never compare the difficulty of what we do at the console to what those young athletes do on a balance beam (I, for one, would have to be

parts) will attempt to show the time and energy shortcuts made possible by automating virtual mixes in Pro Tools, eliminating consoles altogether.

When I first started explaining to colleagues how I had done a film completely within Pro Tools using TDM automation (summer 1999), I received the same response from a number of them: It sounds like it would be good for low-budget movies. There were two direct implications from these comments:



Benicio Del Toro, left, and Jacob Vargas in a scene from Steven Soderbergh's *Traffic*

PHOTOS COURTESY OF BOB MARSHAK/USA FILMS

placed on the beam by a crane) by any yardstick, film sound is certainly the most logistically complex of the sound recording arts. We have to record, edit and mix dozens, if not hundreds, of tracks together into a continuous, seamless ribbon that stretches two hours long and keep it in sync with picture through sometimes hundreds of changes.

To deal with this high degree of difficulty, the film sound industry has evolved a set of techniques and procedures that allow sound editors and re-recording mixers to deal with crazy films, crazy filmmakers and crazy schedules. While those techniques made much sense in their day, I believe that day has ended. To that end, this month's column (the second of three

Such equipment would not be up to the demands of big Hollywood sound jobs, and such a system would never fly with re-recording mixers, because it makes total use of what is normally thought of as editing gear (Pro Tools) and completely sidesteps their normal equipment (an elaborate film re-recording console). Not to be overlooked is the considerable amount of money that the film post-production community has spent on the latest generation of film consoles.

As I noted in my column last month, I viewed my work this past summer and fall on *Traffic* as a chance for me to answer the first implication and to prove that these techniques were ready for prime-time Hollywood. I should note

that *Traffic* was not, by any stretch of the imagination, a complicated sound job according to today's standards. We didn't have crazy picture changes or dozens of tracks of effects. It was a straightforward sound job, no easier than most, a lot simpler than many.

The important thing to note is that my experience (both on *Traffic* and on *Housebound* in 1999) leads me to believe that the more complicated the film, the more this technology makes sense. (I'll deal with this shortly.)

As to the second implication, let me answer that with an old proverb: Don't let the peasant know how good the pear and cheese are together. Translation: Some of the best things in life (or, in this case, film sound) are also the least expensive. It's not exactly in the best interest of the feudal lords, er, studios, to embrace new technology that makes obsolete the very expensive consoles they have recently purchased. Perhaps the most direct analogy would be to re-recording mixers, who would understandably want to keep the role of the console (in film mixing) as this forbidden, impressive contraption, instead of merely being a control surface for a workstation.

Perhaps the best way to illustrate all of this is to walk through a verbal "time and motion" study that compares the ergonomics of virtual mixing to the time-honored technique of record-as-you-go, as practiced in all U.S. feature film re-recording.

In the standard film mix situation, there will be two separate mixing/recording periods: premixing and final mixing. (Important though it may be, I will always regard printmastering as a controlled *transfer* and not any form of creative mixing.) Premixing involves the recording of anywhere from four (probably dialog, backgrounds, Foley and hard effects) to 20-plus separate groups (if you factor in ADR, group walla and sound design, plus many levels of hard effects).

The first premix on the first day will involve setting up a workstation or two to play back the cut sessions, which will usually have, at best, basic volume mapping. The mixers will go through the standard ritual of checking tones from the recorder, setting up the monitor matrix and the PEC/direct keys to reflect the material at hand. The recordist in the machine room will

—CONTINUED ON PAGE 96

# STING'S NEW PRODUCTION TOOLS...

When Sting and engineer/mixer Simon Osborne went shopping for a new multi-track recording and editing system they wanted the best A/D and D/A conversion available. The new system is equipped with 8 ADA-8 units providing 64 channels of Prism Sound A/D and D/A conversion and AES I/O.

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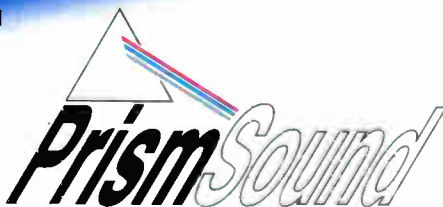
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—FROM PAGE 82, CHRIS ROCK

would segue that energy, and [the tape would roll and] Chris would come out, and we'd tape straight through as if the show was live."

"Chris liked to keep the energy level high and going straight through," adds *The Chris Rock Show's* young, energetic and enthusiastic mixer Charlie "C.J." Jones. The show was indeed conducted as if it was going out on the coaxial live; short live or pre-taped bridge comedy segments allowed for a few minutes of musical soundchecking, so the half-hour show could be taped straight through in that exact amount of time. "We rarely did the musical numbers a second time," Jones explains,



PHOTOS: PAUL SCHIRALDI/HBO

again noting the star's interest in maintaining an energetic live feel. "So it was imperative to get the music mix right the first time."

Getting it right from the start was crucial, because there was no multitrack recording of the music and therefore no audio post-production (except to fix occasional glitches). "With the show's reputation for audio quality, yes, some acts and their managers were surprised to learn there was no multitracking or post," acknowledges Jones. Also, multitracking was eschewed for the practical fact that the show taped at 6:30 on Friday evenings and aired at midnight, leaving precious little time for retakes or tweaking.

#### WHISPER AND SHOUT

We'll get back to the music in a minute. The show is about Chris Rock, and the biggest challenge for Jones came in dealing with the wide dynamic range of

the star's voice. "Chris Rock's voice, in musical terms, ranges from pianissimo to fortissimo," Jones explains, "and I wanted to capture that dynamic range so his voice would be right in the viewer's face; I wanted the viewer at home to feel like they were in the studio audience. So I needed to get the presence right without overmodulating."

All show talent used RF lavaliers. Typically, the level on the body pack of a Sennheiser wireless lav unit is set at three, Jones explains. However, with that setting Rock was "overmodulating like crazy. We went to two, then to one and we lost the presence at that lowest setting and could also hear the companders pumping. So we ended up back at two, which gave us just the right balance of presence and signal-to-noise without distortion."

The star's mic was compressed with the inboard compression unit of the (custom-made for CBS) angled Neve

Above: Ice-T guests on the season finale of "The Chris Rock Show," and, at left, Red Hot Chili Peppers make an appearance in September 1999.

7056 board, on which Jones mixed the nonmusical show elements, and from which the final mix emanated. For the star's mic, Jones used a 3:1 compression ratio with an average gain reduction of six to eight dB with the threshold on the limiter at plus-eight.

(*The Chris Rock Show* taped its final season at CBS's huge production facility on West 57th Street in Manhattan, in the largest studio there. Jones notes that the room hosted the early days of *The Ed Sullivan Show* before that long-running variety hit moved to the Broadway theater that later came to bear Sullivan's name. David Letterman currently broadcasts from that theater.)

Another challenge in dealing with the star's voice was the fact that the studio was kept quite cool, around 50 to 60°, and so there was a lot of ventilation and mechanical noise. "There was a giant AC duct right over Chris's home base that would blow air right on him. I had to use some tactful EQ to lose it," Jones says. He notched the noise out at around 80 to 100 Hz, 200 to 300 Hz and again at about 700 Hz to one kHz. He confesses that during many of the interview segments, he had hoped that the guests wouldn't move around too much, because a small turn of their body in either direction would send a whooshing sound into the guest's mic from the ventilation system.

An invaluable aid to deal with the noise was a Dolby CAT-430 background noise suppressor, a "sophisticated low highpass filter that sucks out all of the room noise but leaves integri-



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ty of the voice," Jones explains. The Dolby CAT-430 unit was used for all of the show's lavaliers.

The other talent mics were run through a dbx 160S with a ratio of about 4:1 and a gain reduction of about six dB. The stereo output of the Neve (the show was mixed to stereo only, not to surround) was set at about 1.5:1, with "scant gain reduction so that the peaks would stay at about plus-eight to plus-12," Jones notes. A Dorrrough loudness meter "allowed me to see the peaks so I could run the program as hot as possible without distortion. That, together with the Neve stereo compressor-limiter, kept me from going too far into the red."



Chris Rock, Jay-Z and Al Sharpton this past November on the set

### IN THE HOUSE

The main house system, the one that got the audience pumping, was supplied by Clair Bros. and included a 32-input Clair Bros. CBA console and 10 Clair Bros. S-4 speakers (six S-4s and four S-4 subwoofers). "I've always wanted to hang S-4s in a TV studio," says Cohen with a mischievous grin. The main S-4 cabinets were hung in groups of three, stage right and left.

The freedom to make the in-studio

sound reinforcement live large was exhilarating for Cohen. "I've never had a [TV] client allow me to do what *The Chris Rock Show* did," he says. "Having an audience of 250 people and 10 S-4s is vastly out of the norm. I never measured the audio output, but I know it was butt-loud!"

"S-4s are not usually used in TV studios," explains Greg Hall, business manager for Clair Bros. "Normally, TV

uses more of a distributed system rather than something that provides the gee-gosh-wow and bump" of the S-4s, a four-way enclosure with two 18s, four 10s, one horn and a tweeter array. Four S-4s alone are "enough P.A. to do a 1,500 to 2,500-seat theater," he notes. "The S-4 is our flagship touring box and is used by everyone. It is a very powerful, constant-coverage, full-range cabinet made for vocal intelligibility and

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good dynamics.”

Additionally, the use of four S-4 subwoofers initially struck Hall as gilding the lily. “The S-4’s two 18-inch speakers usually take care of the lows; there’s normally not a need for subs,” he says. (Hall did not deal directly with the show and so was unfamiliar with the gear list; he noted that Mike Wolf was the Clair Bros. project manager for the show’s gear, which was assembled by FOH man Cohen. Wolf, however, was busy arranging sound reinforcement for a last-minute concert at Camp David to honor President Clinton a week from the election when *Mix* called. Understandably,

Wolf was too busy to comment.)

#### THE STAGE

“My music console was a Clair Bros. CBA,” Jones says. “It was designed as an FOH board, but the sonic quality is so high that it made a very good on-air console. Engineers would come in and see it and say, ‘Wow, this was my console from when I first went on tour’ and be thrilled to see it. The mic preamps are superb and the EQs are accurate. It is a very open and dynamic-sounding console.” Jones used Genelec 1030A control room monitors and an Auratone Sound Cube as a mono reference.

Jones also used Lexicon PCM 80 and

PCM 42 delays and an Eventide Harmonizer to round out his outboard effects. “The Eventide helped me to recreate the sound of the guests’ records or to create an entirely new vibe, as we often did,” he says. “Most of the records [of our musical guests] had the vocals cut quite dry with a lot of chorus effects. The Harmonizer was a great help in recreating those effects.”

However, Jones occasionally wouldn’t even listen to the musical guest’s record, especially if they were appearing with a backing lineup that differed substantially from the recording. “A lot of the artist’s records were basic hip hop grooves, everything MIDI’d,” he recalls. “But some of these acts, notably Common and Jill Scott, showed up with live drums, bass, horns and Fender Rhodes piano.”

Mic selection was kept simple. Jones had occasionally served as an A2 for industry legend Ed Greene at the Kennedy Center in Washington, D.C., and he learned from the veteran the importance of a simple microphone selection for television work. “Ed Greene always kept things simple in order to facilitate the fast musical turnovers television dictates,” Jones says. “As an audio lover, the temptation is to always search for the best-sounding microphone, but so often it comes back to 57s and 58s and a few condensers. On *Chris Rock*, we always started with a simple foundation, using the things we know well, because one had to get it right the first time.

“The M88 is my favorite kick mic for television,” he continues. “You want the kick to have the thud, the actual smack, to create the feeling of tempo and pulse. I’d also use an SM91, which also has a good punch and attack that translates well to TV.” Otherwise, he would use the standby SM57 for snare and SM81 for hi-hat, SM98 for toms and SM81 for overheads. Amplifiers nearly always took SM57s, as well; basses were either Countryman DI or SansAmp DI units.

Lead vocal mics were also sent over a Shure RF system. “We had a mic unit that we would use with either an 87 or a 58 capsule, and everyone was happy with them,” Jones relates. No one ever brought their own vocal mic, he says.

Clair Bros.’ low-profile 12AM wedge monitors were mixed on a Yamaha PM3000 console situated directly behind the performance area. Four of the foldback boxes were hung above the stage. In addition to the 10 S-4s, 30 Tannoy I-12 boxes took the nonmusical show sound elements from the other



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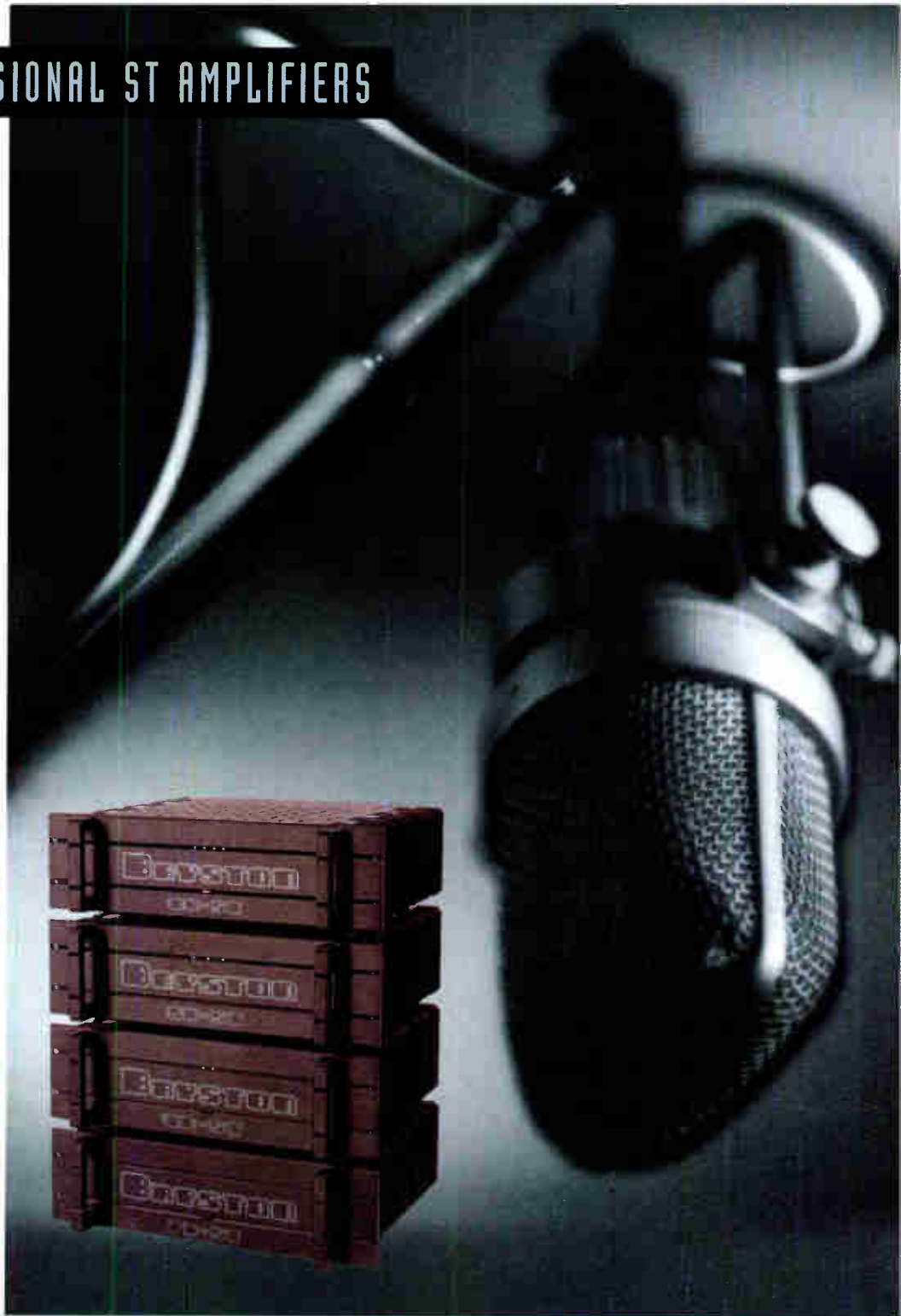
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console at the FOH, a 48-input Allen & Heath GL4000.

### THE GUESTS, THE AUDIENCE

When *Mix* visited the taping of one of the final shows, musical guest Jay-Z had to redo his performance of "I Just Want to Love U (Give It 2 Me)." The audio department did not cause the glitch; the members of the group were too often cloaked in shadows as they moved about wildly on the stage. Additionally, the group's DJ was a bit late in triggering the backing track from his onstage Replay unit. (Jay-Z, who had subbed at the last minute for no-show R. Kelly, didn't arrive at the studio until moments before the 6:30 taping, so there was not a musical run-through whatsoever, perhaps explaining the miscues.)

The audio preparation for the musical guests was typically somewhat more involved. Normally, Jones' audio technical manager, Tom Holmes, reviewed the act's specifications with the band's representatives early in the week and "knocked their input list down to 30. Most of these acts were touring and so were used to 40-plus ins, but we limited everyone to 30" for the sake of simplicity, Jones explains. Holmes wrote and circulated the downsized input list, and the load-in began early Friday afternoon, leaving about two hours to set up and run through the song twice. "That's it," says Jones, regarding musical pre-production.

While there was no musical multi-tracking, it wasn't all flying by the seat of the pants. The show was videotaped to Digital Betacam, and the format's audio tracks were used to isolate the main mics, including Rock, the interview guest, sketch actors, Grandmaster Flash, as well as the stereo bus of the audience, in case something crucial was flubbed.

The audience was intensively covered, using 20 AKG CK-31 mics submitted to a Mackie 24x4 board that sat upright in a dark corner of Jones' crowded control room (bearing a label scrawled on masking tape reading, "Audience"). Why such intense coverage? "When you're doing TV comedy, the most important thing is the audience response, and this was especially important in *The Chris Rock Show*," Jones says. "You want at least one mic for every 10 to 20 people. This was the first season we used the AKGs; previously,

the mics were SM81s, but the art department asked us if there was something smaller, for the sake of appearance, and we just loved the sound of the tiny AKGs."

For communications, Jones employed a 40-matrix Telex system. Because the producers wanted the stage managers to be on comm even when they were on other floors (where some of the dressing rooms were), antennas were placed much more widely throughout the studio area than is common.

Jones was thrilled with his audio



PHOTO: PAUL SCHILD/PHO

crew, who were "the most top-notch individuals that could've come together as a team. They've all worked on the Grammys, VH-1 or MTV and were the strongest unit of audio professionals that I've ever worked with." They included: Paul Cohen, FOH; Tom Holmes, audio technical manager; Tony Bandelato, monitor mixer; Dennis Deane, RF A2; Larry Gumpel, communications A2; and alternates Sean Kelly, Skip Tent and John Pernal.

Jones came to *The Chris Rock Show* from Black Entertainment Television (BET), where he worked on several shows including *Teen Summit* and *BET Tonight with Tavis Smiley*. There he was confronted with every conceivable television audio challenge and learned a great deal. But how did the famously BET-bashing Rock respond when he learned his audio mixer was recruited from the cable network that he so humorously derides in nearly every other show? "Chris and I never talked about my coming from BET, but producer Liz Stanton Tormey, who hired me, used to laugh" whenever Rock would make fun of BET, Jones notes. "It is interesting, however, that so much of my knowledge came from my BET experience. There is some irony there." ■

*Eric Rudolph is a freelance writer in the New York City area.*

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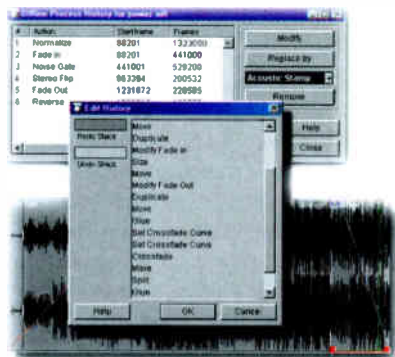
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—FROM PAGE 83, RUSS LANDAU

tra," he says. "There's nothing like having humans playing their parts together. As much as I love the ease of writing—and I say ease reservedly—with computers, pencils and paper, an orchestra is the most pleasurable way for me to write. It's so much fun to sit in the middle of an orchestra and conduct and hear your music come alive. I use the tools that are available to me and what the budget sort of dictates that we use."

It wasn't budgets but time that dictated Landau's work with partner Vanacore during *Survivor's* first season. Their first assignment was to come up with 10 three-minute pieces that could be used throughout the season. "We gave those pieces to the [picture] editors, and they started cutting to the music, which gave the show almost a music video kind of look," Landau says. "It worked out kind of nice, because then we could do these wacky kind of groove pieces with our elbows in the music, and the editors would take advantage of the elbows."

As the show progressed, the relationship between the film editors and the composers changed. "The film editors started editing the music, which provided all kinds of interesting results that I actually really liked," Landau recalls. "Where as I edit from a sound point of view—I'll cut something on the beat, I'll cut from the melody or whatever seems musical—they're cutting from a visual point of view that created these jarring edits." From week to week, they'd take that collaborative effort, smooth over some of the edits and rescore others before delivering Tascam DA-88s locked to picture.

Looking back over the first season, Landau remembers a couple of tough scenes. The first revolved around Richard's use of a spear to hunt fish. "He was pretty damned cut throat, and it was kind of horrifying," Landau says. "He was maiming fish, and I had to find a way to soften the blow so that it was palatable to watch him. So I had to come up with this happy, hunting, tribal thing that would make it seem more ritual and natural." Then, of course, there were the rat scenes. "When they were getting ready to chop the heads off of the rats, you can't make fun of it, but you have to soften it a little bit," he explains. "It's pretty tough, and we had to find ways of softening it by making it more adventurous and lighthearted in a way without being funny."

One of the other challenges that the team faced was the fact that they could-

n't compose consistent themes for characters that might not be around another week. According to Landau, though, they were able to do some fun things. "Richard did have his own quirky cues, because he was a quirky guy," he says. "B.B. was fun to write for, because he was so cantankerous and you'd want to outline that. Everybody loves Rudy. I love Rudy. Rudy was sort of like a father figure. Colleen, there's nothing you could do wrong with Colleen; she looked great no matter what. Greg was quite interesting. He got these very psycho-quirky melodies, because he was kind of a psycho-quirky guy."

While he won't discuss characters for *Survivor 2*, Landau is happy to talk about the show's new opening theme. The conch shell has been replaced by the didgeridoo, which was recorded live from the Undara Lava Tubes using a Macintosh PowerBook, Digi 001, a global star satellite system and Rocket Network technology. Aboriginal didgeridoo player David Hudson performed the track. Rocket allowed them to track Hudson's performance and beam it back to Wild Wood Studios in Los Angeles, where it was mixed in real time.

The didgeridoo will be a main staple of the season's soundtrack. "It is almost like voice," Landau explains. "There are so many different kinds of sounds that you can make with one. It's like singing, so there's a lot of different textures that we can fold into the music. It doesn't just have to be drones, it can be animal calls and spiritual calls."

Landau is excited to be working with Hudson and learning more about the Aboriginal history. "This is a cultural collaboration, so we can really get into having all of this great world music all come together," he says.

When all is said and done, is there a small part of Landau that is worried his theme song will go the way of the *Gilligan's Island* theme song? "What would be wrong with that?" he answers. "It's television, after all. It seems that somehow the theme has managed to become woven into a minor part of the American culture right now, and that is a huge honor for me, to have something that everybody seems to know. We're writing pop music, and TV themes are part of the pop music lexicon, so that would never disturb me. If it has that longevity, then great, fantastic." ■

David John Farinella is a freelance writer based in the San Francisco Bay Area.



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—FROM PAGE 84, ADVENTURES IN TDM

patch the outputs of the workstation into the desired board inputs, plus all signals going to and from the recorders.

Some of these tasks will remain constant from reel to reel, so mixers who have totally automated boards will create templates for each type of premix. Nonetheless, there are certain procedures that must be done a la carte during each premix, like changing output busing, plus the very obvious, punching in and out as needed.

The premix of a given food group is often preceded by the ritualistic laying of the cue sheets end to end to see how to best split up everything with the idea of control in finals. The mixer might want to take certain effects originally cut for the A preduub and combine them into the B preduub so that a certain controversial A element can be kept by itself. Sometimes, the change can be accomplished by re-busing during the

premix; sometimes, it requires more complex shuffling of tracks.

And all of this is re-created every time a new food group is premixed: a new monitor setup, new outputs from the workstations, new group of recorders and a new set of previously recorded premixes to be put back in the monitor.

All of this takes time, much of it of the "wasted" variety. Furthermore, with each tick of the footage counter beneath the screen, the mixers are recording the material "for the first time." Translation: Although the material has probably been mixed at least once before for temp dubs, those EQ, fader, etc., decisions are history. Result: All that time in the temp has also been wasted.

When picture changes are exploding at the last moments of a mix, as is all too frequent these days, sound editors find themselves in the middle of a mountain of material, faced with the question, how much do I have to con-

form? The easiest answer is always to conform only the final mix stems. This can be done very quickly, but this is only workable with simple deletions that don't require remixing, and if they do, then they are of a level nature only. To solve this conundrum—how you change something from itself—the old stems are cloned so that they are simultaneously on the recorder and a dubber. It's a snap to match levels, punch in, adjust levels and match back to tape mode convert.

But more often than not, it's considered better hygiene, if not simply necessary, to conform all predubs and stems. What might have begun life as 15 FX predubs became a single 6-track FX stem, and internal mix changes require access to everything. But the list doesn't stop there, because you also have to conform any relevant sweetener sessions that are running at the final mix *plus* the console automation data.

Add, on top of this, there are some techniques that cannot be automated and must be manually written down and re-created, if made necessary by a picture change. The most common examples of this are when predubs are offset (either to correct sync problems or to creatively move the position of some elements) or when a nonautomatable piece of outboard gear was used.

Oh, yeah, we've forgotten about this 400-pound pink elephant in the middle of the room: What about the original editing units and their sessions? This is the only way to really have *maximum* flexibility, and you could be talking about 30 different sessions, spread across who knows how many drives.

So, let's list what needs to be done to keep up with a change that's only a one out of 10 in the degree of difficulty (keeping the gymnastics analogy going at all costs here, folks): Conform stems (four 8-track groups), conform all premixes (20), conform all final mix sweetener sessions (believe it or not, sometimes these can total 10; see glossary entry), conform all edit sessions (30) and, if you're so willing and able, conform console automation data. Let's not dwell too much on such niceties, because the material will make its way from digital dubbers to the edit rooms. Are files renamed so that the editors have an idea what they're dealing with during conforms? This is a huge amount of time and effort just to keep track of something that is going to go away at the end of the final mix.

This is no way to run an airline, in

## GLOSSARY

This month's glossary focuses on terms applicable to Pro Tools users.

**CHAMPIONSHIP CALENDAR:** When marketing- and PR-types in film sound try to make it seem that being the first to use a piece of equipment is *ipso facto* proof of a quality sound job. In fact, such statements—e.g., "The first all-digital film"—are footnote fodder at best, especially because claims like these are a dime a dozen these days.

**AUXILIARY INPUTS:** Input channels in Pro Tools sessions that can't record audio to or play it back from hard disk but are used to control the returns of plug-ins, such as reverb. They can also be used as sends or returns from analog or digital outboard gear.

**SWEETENERS SESSIONS, FINAL MIX:** Pro Tools sessions that are designed to accompany premixes at the final mix, either to add new sounds or to fix problems within premixes.

**IPSO FACTO:** Consult a dictionary.

**PRO TOOLS:** The digital audio editing system of choice among slightly pasty, overweight Caucasian males. (This definition is courtesy of the smart-aleck director of *Traffic*.)

**PRO TOOLS 5.1:** The next major software upgrade for Pro Tools, incorporating multitrack panning and busing. There is also the claim that sessions with extensive TDM automation can be opened on any system, regardless of DSP horsepower. While the automation data can't be accessed, neither will it be blown away, as is the case today.

—Larry Blake



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my book.

Now, let's compare and contrast virtual mixing. To recap those joining this program in progress, what we're talking about during this three-part series is about mixing entirely within TDM automation, with all EQ, reverb and processing handled by plug-ins. (The issue of perfunctorily doing *everything* in TDM automation, and resisting the temptation to use external gear, will be discussed next month.) Level adjustments are made with moving fader automation on workstation control surfaces. Premixes are "recorded" as automation data only and begin using data from the temp dubs. Clear?

with only your master stage sessions, numbering from four to eight. That's a lot less than 50, no?

Okay, what are the downsides of this approach? First, it requires much more brainpower, not to mention DSP horsepower, than simply conforming audio. This is especially true when dealing with auxiliary faders: Danger, Will Robinson! There's also the issue that, after your first temp, any editor who will be conforming and tweaking those sessions has to have a Pro Tools rig that is stocked with the requisite DSP and all of the plug-ins. This obviously limits the number of editors who can work on a project, so you have to delegate the manpower allocation carefully.

The funny thing is that, while I've

has always been the "word processors," which were really just typewriters with computer memory and storage. They were on the market to make warm and fuzzy objects out of these new, complicated, high-tech units called personal computers. Eventually, even die-hard technophobes discovered that computers were not all that complicated, bringing with them distinct benefits that could only be had by using the genuine article.

You, indeed, can have your film sound pear and cheese and eat them too. You can supervise the sound editing and re-recording of a major feature film without having to wind up with the whole big Hollywood sound apparatus. Yes, Virginia, flowing from the sound

**F**LOWING FROM THE SOUND EDIT TO MIX WILL  
**MAKE THIS DIFFICULT PROCESS LOOK EASY.**  
**NOTE THAT I SAID, "LOOK." —LARRY BLAKE**

On a low-budget movie when you don't have that much material (and, indeed, resources), you can get away with two large sessions, the logical division being dialog and music on one, and all Foley and sound effects on the other. As I said last month, we had four on *Traffic*: dialog, music, BGs and Foley/hard effects. Even the craziest of films could be done with seven, with separate sessions for Foley, two for hard FX, and a separate one for ADR and group walla. Maybe an eighth one dedicated to source music, if this is used extensively.

There is huge cumulative time saved from the first day of premixing: There is no busing to be messed with at any point. Each session's outputs define the layout of its respective stem, and it stays that way from the temps to the last day of the finals. I set up the monitor matrix one time on that first day so I could easily mute and solo groups as needed. Sure, there might be panning changes with sound effects, but again, these would be mimicking decisions made during the temp.

And let's not forget that dealing with picture changes require you to deal

expended all of these words showing the advantages of virtual TDM mixing with respect to dealing with the specter of picture changes, I've managed to omit the *real* reason why I've chosen to commit my soundtracks to this approach: It brings the art and craft to the next level, giving me a level of creativity that's simply not possible when you have a Mason-Dixon line between workstation and console.

I certainly understand any misgivings that sound editors and mixers might have with regard to this technology and the instinct to use it in a hybrid situation, getting one's toes wet before diving in head-first. Indeed, I had used a hybrid situation on a half-dozen films, using completely automated consoles (O2R on low-budget films, Harrison Series 12 on the tonier ones) being fed from multiple Pro Tools workstations. I did almost all of the EQ and reverb within TDM, using the consoles for level and output busing.

However, I felt that merging the two approaches simply slowed everything down and diluted their best parts. The quintessential pejorative example of a hybrid approach to new technology

edit to mix in this manner will make this difficult process look easy, just like those athletes on the balance beam.

Note that I said "look." While much of the needless logistical headaches are removed, the hard parts—creating the right sound for the image—is still a function of your taste and elbow grease. If you want to brag about the fact that your mix was "completely automated," then be my guest. I shudder to think of the variants of Championship Calendar that will be played with this next level of technology, now that every possible flavor of "all digital" has been milked to death for the past 19 years.

Tune in next month for the final exciting installment. As always, you can tell me why you think I'm nuts by writing to PO Box 24609, New Orleans, LA 70184, or [swelltone@aol.com](mailto:swelltone@aol.com). ■

*Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them would have to be that, if he's at home in January, he can go to the King's Day party at the Gonzalez family home as he has done for the past 25 years.*

# ESSENTIAL READING



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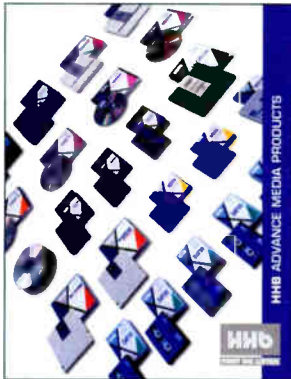
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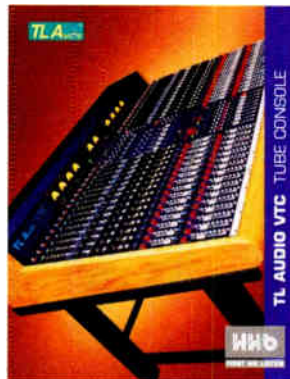
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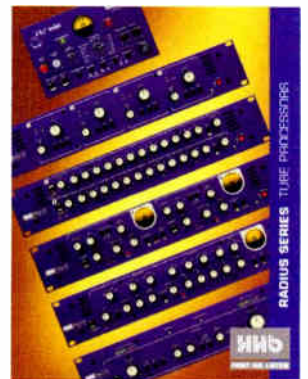
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CIRCLE #063 ON PRODUCT INFO CARD

World radio history

# THE POWER PLAY

## DOOM, GLOOM & DARKNESS ALL 'ROUND

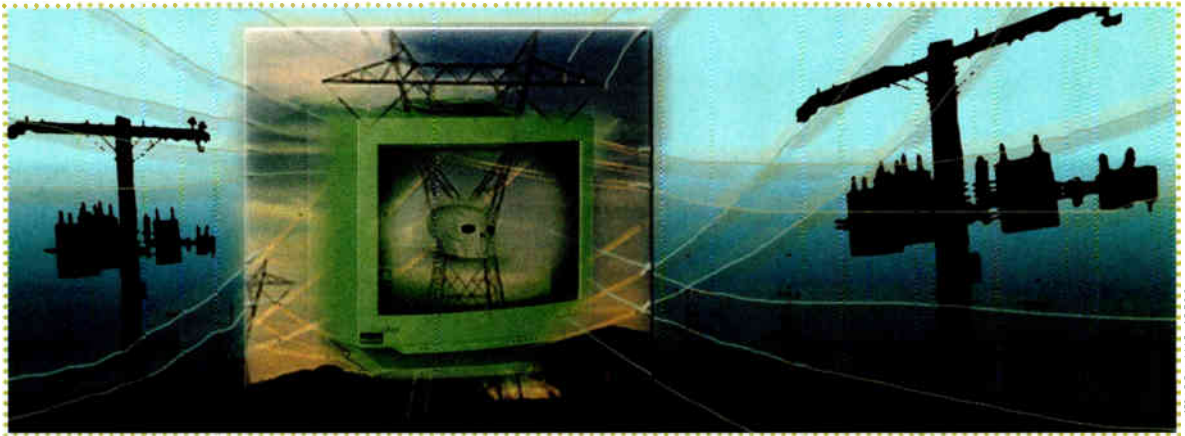


ILLUSTRATION: MAE JACOBS

I'm just now heading to Boulder, Colo., seat of the U.S. data storage industry and domestic home to Sony's SACD effort, in an attempt to better understand some of the new production tools that my clients and I use. I'm traveling from L.A., the Seacoast of Iowa, as the basin was called long ago due to all the Midwest transplants. My visit to La La Land was not specifically targeted at trendy nightspots and posh restaurants, but a few stops along the way certainly didn't hurt. No, it was the Surround 2001 show, a somewhat choppy affair that combines useful information with a healthy dose of trade show fluff. Maybe it's time to combine all "surround" shows into one cooperative, multichannel lovefest...but that would make too much sense.

Anyway, I come to you today not to lament on the state of trade shows, but to make you aware of a trend that is both serious and fundamental to our work. And that is, in a word, power. Or lack thereof. As you may have heard, recently, California almost ran out of juice. Juice as in AC electricity. Strange but true. Imagine if all of the special venue rides around the Golden State had to temporarily close down due to insufficient power reserves for critical industries. No more rockin' roller coasters, no more Iwerks shakers.

From the country that brought you manifest destiny and cultivated corporate greed comes Energy Crunch II, A New Beginning. California, predicting the future of technology and entertainment, is the bellwether for the rest of our fragmented country. The audio community lives at the intersection of these two industries, and so the trend of cheap, reliable power becoming costly and unpredictable should be alarming to all of us.

It all started with deregulation, as the state's ambitious former governor decided that the consumer would benefit from relaxing the strict controls that had been in place for many a year. Wouldn't have hurt his positioning with consumers for a presidential bid either if things hadn't gone horribly wrong. Now, you may wonder how one makes power a commodity, what with the electrons always flowing around on the grid with nary a care as to who generates or dissipates. No one can guarantee that a particular source will deliver its electrons to a particular consumer's home, because them little buggers have a mind of their own. What made it possible were, of course, computers: Computer management of suppliers and consumers, which brings me to my point. The audio industry cannot

exist without electricity. These days, audio production cannot exist without computers, either, and those brainy little chips require a reliable connection to the mains.

Let's look at the trends: First off, e-commerce is at an all-time high, though there have been some heavy doses of reality delivered to the vulture capitalists of late. This means more server farms and data centers sucking the headroom out of the grid. When I'm not writing this doggerel, I'm working alongside a small cadre of tech-ninjas, providing professional services to enterprising computing vendors and end-users. We're currently helping one customer with a new data center in the Northeast, and we've found that the local utility cannot supply sufficient electrical power for our project. So, we're makin' our own, designing in on-site co-generation to make up for the shortfall! In fact, many experts believe that there isn't enough capacity available for all of the computer-based stuff that's on the drawing boards. Meanwhile, power utilities have been slow to build new generators due to what was predicted to be a slow, long-term economic growth. They've also been holding off, waiting to see how California's deregulation progressed. In addition, nuclear isn't the darling of power professionals that it once

BY OLIVER MASCIAROTTE



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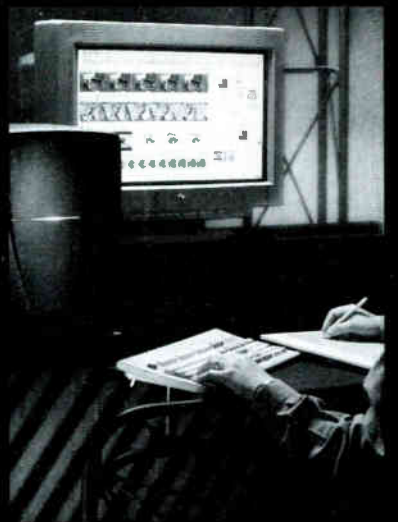
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## THE BITSTREAM

was, and fossil fuels are costly all 'round. All the while, prices for natural gas, which supplies 20% of our nation's energy needs, are three times what they were last year, resulting in higher electricity cost in the West and probably elsewhere. These aggregate shortfalls and spiraling costs will limit the growth of our high-tech world and magnify the economy's slowdown in general.

Yet, there are small glimmers of hope. In the "everything old is new again" department: Think about all of the wall warts and power supplies that are trickling away right now in your homes, studios and offices, even when the "power" switch is off. Worldwide, that's a good chunk of electricity being used only to store data in volatile memory. Those gray beards in the audience may remember a time when RAM was magnetic and nonvolatile and didn't need a power supply to retain its contents. So-called magnetic core memory is still used in hardened environments, such as military applications and the space shuttle. Well, the era of mag RAM may just experience a renaissance with IBM's announcement of MRAM, a new memory technology with the potential to store more information, access it faster and use less power. Sandip Tiwari, manager of exploratory memory and device modeling at IBM's Watson Research Center, notes that, "[Such devices] have the advantage that they don't leak, like capacitors, and so don't need to be refreshed periodically, saving a lot of additional circuitry." Don't forget power...IBM and Infineon Technologies AG, a Munich-based memory chip manufacturer, have announced plans to move MRAM into commercial production.

While Quest and Level 3 are gleefully expanding the global IP infrastructure, resources needed to power it are in crisis. Gotta love progress. Me-thinks it's time to invest in an UPS and power conditioner. That's all for this month, so I bid you a fond farewell from 40,000 feet and beseech you to consider responsible resource use. Oh yeah, turn the lights off when you're done. ■

*OMas, a guy steeped in the folkways of audio arcana, thinks core memory should be framed and hung as art. To voice your own opinions on science, aesthetics and the inexorable march of electrons in a bulk conductor, drop a line to [bitstream@seneschal.net](mailto:bitstream@seneschal.net).*

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# NEW SOFTWARE/HARDWARE FOR AUDIO PRODUCTION

## SEK'D SEQUOIA

SEK'D's ([www.sekd.com](http://www.sekd.com)) Sequoia is a new audio-editing system based on the company's Samplitude and Red Roaster software applications. The program offers 4-point edit functions for stereo and multi-channel operation, a new source/destination panel concept, easy-to-use cross-fade editor, stereo, Dolby 5.1 and ProLogic surround mastering, integrated real-time CD-premastering, 32-bit floating-point audio resolution, up to 192kHz resolution, more than 64 stereo tracks, a comprehensive effects section, DirectX support, an integrated digital mixing console, and a SMPTE/MTC-sync (master/slave) option for tape mastering and Dolby Digital (AC-3) encoding.

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recording mixer and 16-channel surround mixer, plus EQ and compressor effects. Other features include two analog and two digital I/Os with 24-bit/96kHz capability. MIDI interface and Z-Link port. The Luna ADAT Expansion adds two ADAT ins and outs plus one Z-Link.

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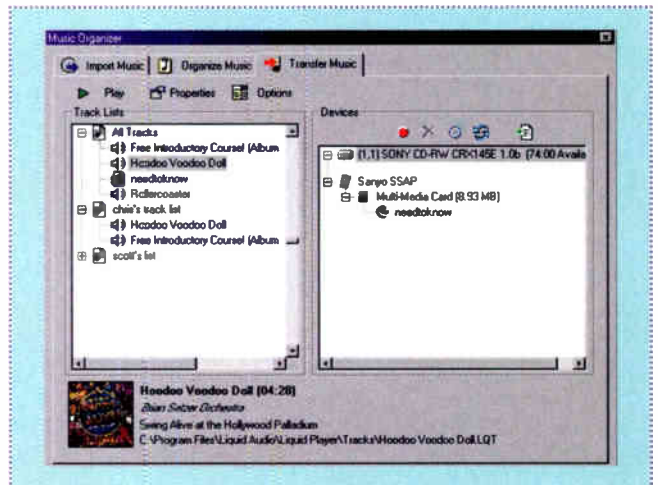
## SOUNDSCAPE MIXPANDER

Soundscape Digital Technology ([www.soundscapedigital.com](http://www.soundscapedigital.com)) announces the mixpander PCI card, which adds DSP processing power to the Soundscape R.Ed and SSHDRI-Plus digital audio workstations. Mixpander connects to the 512-channel expansion bus port on the rear panel of Soundscape DAWs and

offers 24-bit, 96kHz operation for complete compatibility with R.Ed, allowing

pander/5 (\$1,800) contains five Motorola 563xx DSPs for up to 1.4 GIPS of processing power. Mixpander has up to 32 channels of MME (wave), ASIO-2 and GSIF (native multichannel Gigasampler/Gigastudio) drivers, which are full duplex, multicient and are said to have a latency as low as 1.5 ms.

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the system to run many DSP-based real-time plugins at 96k. Two configurations are available: Mixpander/9 (\$2,500) contains nine Motorola 563xx DSPs on both sides of a full-length PCI card; stated processing capability is up to 2.6GIPS (Giga Instructions per Second). Mix-

## LIQUID PLAYER PLUS

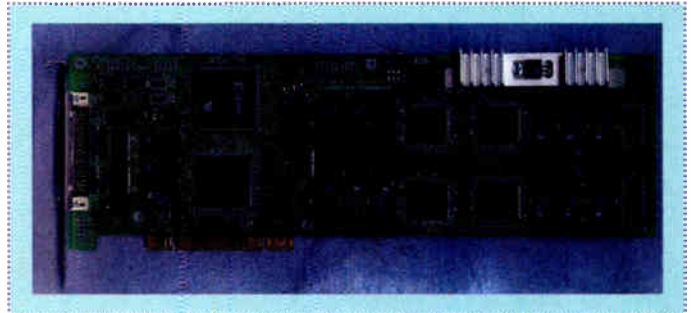
Liquid Audio Inc. ([www.liquidaudio.com](http://www.liquidaudio.com)) introduces Liquid Player Plus software, the first SDMI-compliant means for hardware manufacturers to offer secure digital audio devices. OEM partners include Aiwa, IOData,

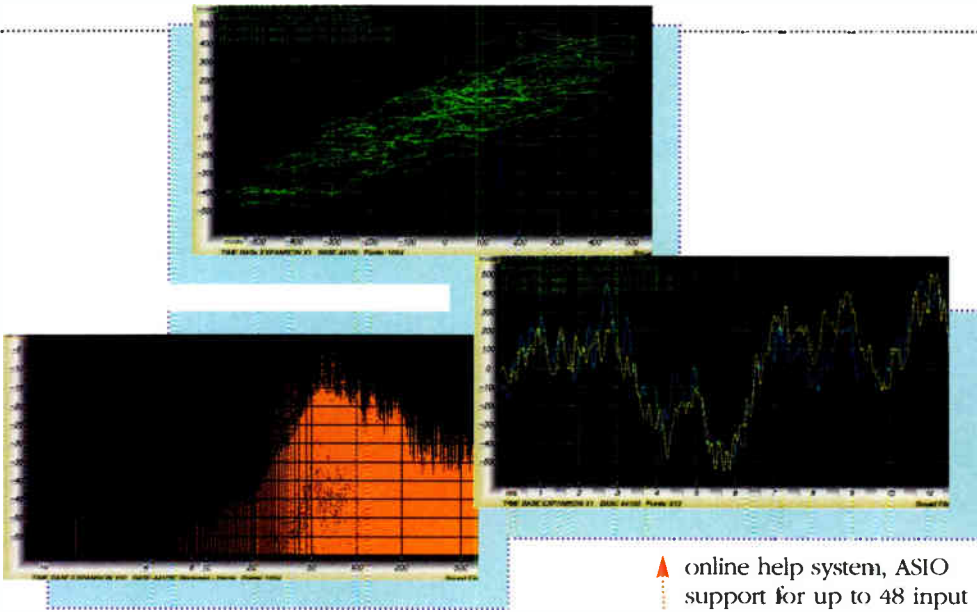


## CREAMWARE LUNA II

CreamWare ([www.creamware.de](http://www.creamware.de)) debuts the Luna II I/O interface card for native audio software, compatible with the Pulsar/SCOPE plug-in library. Luna II is available for Mac or PC and features an onboard 24-channel

transparently integrates with the Soundscape mixer; the V3.0 Dynamic Mix Automation feature in the SSEditor software extends automatically to mixpander. (External control of mixing and effects is via Soundscape's console manager.) Mixpander





Sanyo, TDK and Toshiba. New features: Find Music links to the Liquid catalog or manufacturer's site so users can download music; Import Music calls up a step-by-step wizard to import music from personal CDs; and Organize Music lets users arrange, sort and make a list of favorite songs. Export to CD and Export to Portable Device functions are also built-in. Liquid Player Plus lets users import music from audio CDs as secure Liquid Tracks and export secure music to portable devices and CD-RW drives,

and the software supports leading audio codecs. Liquid Player Plus uses Gracenote's CDDB music recognition technology to retrieve related album/artist information for imported music.

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#### MAC THE SCOPE 4PR

Channel D's ([www.chanrld.com/software.html](http://www.chanrld.com/software.html)) Mac The Scope 4PR is a prerelease of Version 4 of the software-based signal analyzer, signal generator and synthesized bandpass filter RTA. New features include an integrated HTML-based, customizable, illustrated,

online help system, ASIO support for up to 48 input and 48 output channels, and a built-in Audio Delay Finder that measures the time delay between two signals. Swept sine measurements are said to be faster and more precise, and signal level triggering is now usable when analyzing files. Also, sound input capability is not required; sound files can be analyzed with an iBook or G4 Cube.

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#### DIAMOND CUT LIVE REAL-TIME NR SOFTWARE

EnhancedAudio.com ([www.enhancedaudio.com](http://www.enhancedaudio.com))

.com) is now shipping Diamond Cut LIVE, a professional audio restoration tool that processes audio in real time with no read/write processing delay. Diamond Cut LIVE includes a complete noise-reduction toolkit with a full complement of audio enhancement tools, including over 200 factory presets for hiss removal, continuous noise removal, click and pop removal, plus a range of filters and enhancers. Multiple filters can be arranged and adjusted graphically before audio is fed through the system; a Virtual Valve Amplifier simulates radio vacuum tubes. Additional features include a harmonic exciter, an expander/gate, compressor, de-esser, 10-band equalizer with a dual-function display and instant bypass mode. Diamond Cut LIVE can also log to disk in order to record processed audio as it is being passed through the system. Price is \$995.

Circle 345 on Product Info Card

## UPGRADES AND UPDATES

Propellerhead Software ([www.propellerheads.se](http://www.propellerheads.se)) announces the release of Recycle! 2.0, the groove-maker. The 2.0 release can now work with stereo files, and most settings within Recycle! can be previewed in real time. Other new features include a built-in gate, an envelope for controlling

attack, decay and stretch of the slices; a transient Shaper for dynamic control; 2-band parametric EQ with high and low cut; and ASIO support... CreamWare has opened its online shop ([www.creamware.de](http://www.creamware.de)) to third-party companies developing plug-ins for the Pulsar/SCOPE platform. SPL, Amptown/Grenz-frequenz and Orbitone are among the first companies signed up. As with CreamWare's own products, 10-hour

evaluation versions of all devices are available for free download... Fostex ([www.fostex.com](http://www.fostex.com)) has signed an agreement to be the exclusive distributor of the Digigram ([www.digigram.com](http://www.digigram.com)) VXpocket laptop sound card in the U.S. and Mexico... BitHeadz ([www.bitheadz.com](http://www.bitheadz.com)) announces Version 2.1.1 of the Retro AS-1 Analog Synthesizer and Unity DS-1 Digital Sampler. Version 2.1.1 will include direct support for

the Roland PC-300 USB MIDI Keyboard. BitHeadz is also introducing four new Unity-format sample libraries from East West: Quantum Leap Brass, Percussive Adventures, Steve Smith Rhythmic Journey, and Quantum Leap Guitar and Bass. All of these titles can now take advantage of Unity's extended polyphony, large-sample capacity, fast-sample load times and phase-locked stereo processing. ■

# WHAT'S UP WIT' DAT?

## COMMON FAILURES OF DIGITAL TAPE MACHINES

Technology is not perfect. One aspect of technical perfection can be accomplished by balancing a healthy skepticism with a talent to extract the most from your tools. Don't blindly assume all systems are "go" simply because no obvious distortion is audible.

Products that inspire creativity and confidence do so with a combination of functionality and their ability to deliver mission-critical feedback warning of impending doom instead of crapping out at the most inappropriate time. This, however, assumes we have been paying attention to the warning signs.

### ARE THE REELS TURNING?

Digital technology has turned products that were formerly easy to "read," such as tape recorders, into black boxes. Like the heading above, simple questions no longer have simple answers. This is especially true for the various digital cassette formats. Once the cassette is loaded, problems are displayed as cryptic messages—made worse when using a numeric readout to display alpha-characters. We scurry to the manual to decipher error message codes, only to find that they have been poorly translated from another language. For all of our efforts to do the right thing, ending up with such a meaningless result is, as Orson Welles once described a voice-over session, "unrewarding."

### USER CONFIDENCE

I recently read an article that included an interview with a mastering engineer who, in my opinion, did a disservice to the DAT format by claiming that tapes become unplayable over time. I have a collection of music DATs used for post-surgery recorder evaluation. Some are nearly 10 years old and still playable.

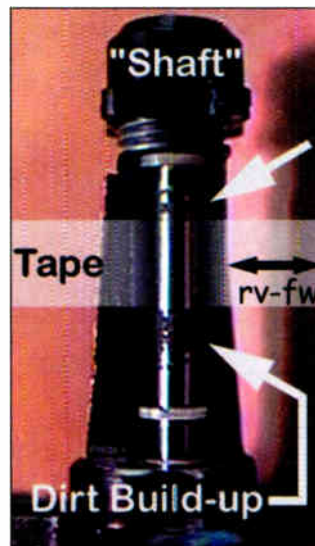
To make such an uninformed

statement does not take into consideration that a poorly maintained machine can make tapes hard to play and that any machine can be adjusted to maximize playability. For helical scan digital audio recorders, the two guides that wrap the tape around the heads are the equivalent of the height and azimuth adjustments for an analog recorder. No matter what format—DAT, DTRS or ADAT—some tape recorders are more tolerant than others to tape manufacturing variations, because both mechanisms and head assemblies have tolerances as well, some of which (in my opinion) are too wide.

### FKA: FORMERLY KNOWN AS...

In the January 2001 "Tech's Files," a basic block diagram detailed two test points—the RF Envelope and Head Switching signals—intended for oscilloscope connection to monitor the signal from tape for calibration purposes. I recently modified a Panasonic SV-3700 for Michael Ryan at EMTEC (the recording media manufacturer formerly known as BASF), bringing the test points out to the rear panel for quick and easy 'scope access without popping the cover. There is no question if a tape is in or out of spec.

One side effect of this mod is that the 'scope connection affects error rate—no surprise, because technicians know to use "x10" probes to minimize the effect of capacitive loading on signal integrity. Using cables and not probes on the modified machine loaded the signal enough to increase error rate, although the degree of data corruption inconsistently varied from tape to tape, proving that some tapes have more "data headroom" than others. This is more of a function of



Panasonic capstan shaft is typical of those in DAT machines that make regular dental check-ups part of a yearly routine.

the recording process than the tape formulation.

### VARIATIONS ON THE BATCH THEME

Because tape is made in batches, there are variations to this "ironic" theme—hence, the recommendation that new tapes be fast-wound from end to end before use. Most of the "bad tape" I've encountered was sold under the now-defunct DIC brand. As much as we'd like to blame the tape—and people have preferences—there are only a few actual tape (and disc) manufacturers whose products are distributed under several brand names.

Your bad experience may have been batch-related, but often a tape recorder's condition is more to blame for the intolerance. Familiarity with head and tape path cleaning techniques, combined with the knowledge of electronic monitoring procedures, will make you and your machine less vulnerable to occasional clogs. In future columns, I will be detailing machine-specific tips. Based on these, the astute reader

BY EDDIE CILETTI

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<sup>1</sup>-Computer Music, January 2001; <sup>2</sup> Sound on Sound, January 2000  
\* - Dependent upon CPU resources. Multicard drivers for Mac coming soon.

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can become less tolerant of problems and more likely to send a machine out for service.

### GETTING ALONG IN THE MAGNETIC WORLD

When tape and machine work together as one, you can't beat them for tangibility. When the marriage fails, we often accuse the tape of poor performance or worse, shedding. In reality, one tape played in several machines will behave differently—some machines are simply more capable than others are at extracting useable data. A "good" machine puts the strongest, most readable signal *on* tape and, conversely, is capable of extracting the most useable data *from* any tape. How do you know? Check the Error Rate for starters!

The same applies to *all* media. There will always be errors—Sony refers to the ability to recover data

and tolerate errors without sonic disturbances as "concealment," the digital data equivalent to "headroom," the difference between nominal operating levels and clipping.

### A METER FOR EVERY TRACK

Record a series of test tones to all tracks of an analog tape recorder, and each meter responds instantly (in most cases) with a "systems" report. In addition, the trained eyes, ears and fingers of a seasoned technician can evaluate mission-critical areas of an open-reel machine and feel its pain without tools. Ballpark tension can be judged by hand. With a good light source, the tape path can be inspected for tape skew at each guide. (Beyond this, tools are suggested!)

Evaluating a digital cassette recorder is never easy. Sony's PCM-1610 and -1630 formats took advantage of existing video recorder technology—via ½-inch U-Matic tape—but from this point forward, the professional user

has been insulated from the media and the mechanism. From a pro standpoint, these machines should have kicked DAT into oblivion, yet the 4mm format has proven to be a formidable contender, more reliable than many people give credit to—considering its size and affordability. Remember that DAT is a trickled-up consumer product that was severely compromised during its formative stages by the hyped-up RIAA. (And, yes, I have my own suggestions for Napster et al. Contact info for my two wonderful lawyers is available upon request.)

### BIG WORLD HEADROOM

Ages ago (January 1986), this humble technician stepped aboard *Le Mobile* to play tape op for Joe Jackson's live album, *Big World*. The goal of the recording was to capture the live performance—of both the musicians and engineers Michael Frondelli and Guy Charbonneau—to stereo while run-

## MY "OTHER" LIFE ONLINE

My day often starts like this...

Dear Eddie,

Hi there! I have a Panasonic SV-3700 that is driving me crazy. Call it Machine A. Sometimes the transport won't move, but if the tape is exercised in Machine B, then it will play in Machine A, for a while. I have replaced the brakes, tension arm and pinch roller, which seemed to give relief for a few months, but now the problem has returned.

Any thoughts?

—Wes (via Internet)

Dear Wes,

I too have periodically entered the Panasonic twilight zone, but each time I have managed to escape, with just a few less brain cells. Just when I think I can repair anything these machines can dish out, along comes a batch that makes me feel nearly clueless.

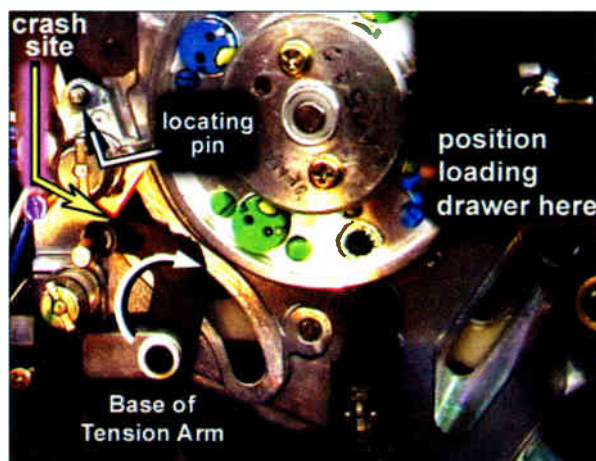
There are a series of possible answers requiring a reasonable amount of research on your part. You've done most of the obvious work, but how old is the machine? Is it pre-'94? The first three characters of the serial number tell the story. "AA4" means 1994. Then look at the case. Is it textured (all machines up 'til late-'94) or smooth (late-'94 and after)? If pre-1994, then did you cut the PCB trace on the servo board? (As per details at [www.tangible-technology.com](http://www.tangible-technology.com)) Have you ever changed the mode motor?

What kind of jamming is occurring? Is the left guide hanging up on the tension arm? Have you measured the tension? Does the right guide seem to be stuck in

the "loaded" position? These are but a few of the questions you should ask yourself.

The first things I look for are the stainless steel "locating pins" at the head of each slant block/precision guide assembly. They are supposed to be press fit, but many come loose. Replacing them is a bear. *All* service issues ultimately come down to how much you are willing to spend.

—Eddie Ciletti



After positioning the loading drawer as shown, this Panasonic SV Series transport (not applicable to the SV-3500) shows the tension arm in position to jam the left precision guide assembly. The other precision guide, on the right side, is obscured by the loading mechanism. Also note that each guide has a locating pin that can come loose.



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ning 24-track analog only as backup. The 2-channel digital recording was made via Sony's PCM-1610 converter/processor and two U-Matic rental decks.

After the show, a quick spot check confirmed a clean recording; a relief, until the tapes were swapped. Playback in the opposite machines was not inspiring. Compatibility was fair with occasional and inconsistent dropouts. The machines were black boxes to me. Now I understand that poor alignment was the reason for the erratic performance.

**THE MANIACAL MECHANISM**

It is not my intention to suggest that users go much further than popping the cover and cleaning the heads. Head cleaning is not a panacea but just the first suggestion from customer support and your local technician. You should know at least that much and have some familiarity with what "normal" is. As described in January and in more detail at [www.tangible-technology.com](http://www.tangible-technology.com), learning to access the Error Rate display is the very best preventive medicine. As we come to

rely more heavily on CD-Rs, I encourage users to contact manufacturers, coercing them to include an Error Rate display as part of the feature set.

If you are a geek in training, then let me recommend WIHA screwdrivers, available from my friendly competitor Paul Plotnick at Pro Digital at [www.prodigitalinc.com](http://www.prodigitalinc.com). You can't have enough tools, and these are the best screwdrivers I've found yet.

**WHERE THE RUBBER MEETS THE ROAD**

Okay, enough about heads and tape. Let's look at some of the other problems that often plague digital cassette recorders. I am not obsessed with changing pinch rollers unless they are really glazed, but the capstan shaft should be scrutinized carefully, especially on a DAT recorder where tolerances are critical. See figure on page 108 to see the dirt build-up on a capstan. While they are not at all easy to clean, I've seen DAT capstans coated in a thick, black funk (except for a 4mm swath where the tape travels). This muck can lift the pinch roller away from the capstan enough to alter the tape path—reverse-play is a challenge for every recorder, even on its best days.

**COLD BLOODED**

In my first *Mix* column (April 2000), I trounced the myth that Sony and Panasonic machines are aligned to a different standard. Older Sony DAT recorders are more likely to make out spec tapes, yet they are also more tolerant of the same. Panasonic decks hold their alignment better but are less tolerant of poorly recorded tapes.

Most Sony recorders have fewer moving parts, because separate reel motors simplify and replace numerous wear-item parts, such as clutches, gears or pulleys, that transfer motion from the capstan motor to the reel tables. Pioneer and some Alps transports have the aforementioned wear-item parts, as does Panasonic, the DAT machine most likely to jam.

While most DAT problems are mechanical, many Sony recorders, for example, slowly fail from cold solder joints. (Some of the most technologically advanced manufacturers use consumer-grade construction techniques that compromise their most innovative designs.) Poor soldering can cause frustrating intermittence that ultimately enrages users to do damage to the more vulnerable "accessories," such as the loading mechanism.

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While the Sony PCM-R500 is a favorite in its price class, it also has the most vulnerable loading mechanism of all DAT decks save for microportables. At the first sign of intermittent behavior, it's best to repair "simple" problems before more serious damage is done. Have a professional closely inspect the soldering at all connectors and power transistors.

#### MORE FEEDBACK

Current tape-based systems that start

ed life in the 16-bit world have been expanded to their limit—either more bits or more samples but not both. Disc-based systems will permit higher sample rates and bit depths together, putting more emphasis on the quality of interconnections, cables, transmitters and receivers—all the more reason to include data integrity indication of the incoming signals, as well as the media, on all products.

As with error rate, knowing the "quality factor" of the arriving signal

can either inspire confidence or initiate the investigation process. Better signal quality (from tape, disc or cable) improves the data recovery "headroom" and ultimately the quality and consistency of the sound. Without it, all the king's horses and all the king's men will not be able to reassemble a digitized Humpty Dumpty. ■

*Eddie Ciletti can be reached at his Web site at [www.tangible-technology.com](http://www.tangible-technology.com).*

## A SPIKED JOINT

What exactly is a "cold" solder joint? Prior to soldering, most components are "stuck" to the printed circuit board (PCB) by their legs, which are also called "leads." The PCB is "wave soldered," a process that electrically bonds the joint where the lead meets its designated PCB "pad." The primary problem associated with this process is the consistency of the soldered connections across the board.

Big, heavy transistors need more solder than resistors, capacitors or ICs. In addition, transistors, connectors, pots and switches too often rely solely on the sol-

der for physical support as well as the electrical connection. The PCB design, its temperature presoldering and the solder temperature must be just right so that *all* connections are well-made (shiny, not crystallized). Enough time must be allowed post-soldering before the board "travels," because vibrations can corrupt solder that has not yet fully cooled. Post-manufacture temperature changes, vibration and "road use" will all conspire to weaken the vulnerable joints until the connection becomes intermittent. This is especially true of the "wear items," especially connectors and heavy parts like TO-220-style power transistors.

—Eddie Ciletti

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# PREVIEW

## AUDIO-TECHNICA STEREO SHOTGUNS

▼ The AT815ST and AT835ST stereo shotguns



microphones from Audio-Technica ([www.audio-technica.com](http://www.audio-technica.com)) are designed to capture high-quality stereo audio in demanding field situations. Requiring 11-52V phantom power, both models feature independent line-cardioid and figure-8 condenser elements. Users can switch between a nonmatrixed M-S mode and two internally matrixed left/right Stereo modes for traditional stereo in either wide or narrow patterns. The AT815ST has a frequency response of 30-20k Hz and a length of 15 inches. The 9.3-inch AT835ST has a frequency response of 40-20k Hz. Both models have switchable LF roll-off (80 Hz, 12 dB/octave) and include foam windscreen, stand clamp and 24-inch stereo cable terminating in two standard-XLR connectors. The AT815ST is \$999; the AT835ST is \$899.

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## ARGOSY MASTERING WORKSTATION

The new DUAL 15m3 workstation from Argosy

([www.argosyconsole.com](http://www.argosyconsole.com)) is designed specifically for mastering systems. Three eight-rackspace modules

positioned above the solid work surface place control and processing equipment within easy reach; other rack sizes are available. Features include a full-length padded armrest, wrap-around design and an internal shelf, while cable grommets keep cabling

organized and out of sight. The DUAL 15m3 comes in a standard black or gray finish; options include hand-finished mahogany end panels. The DUAL 15m3 is factory-direct priced at \$1,399.95.

Circle 328 on Product Info Card

## DIGISPY ANALYZER

The DIGISpy digital audio transmission analyzer from Schmid Electronic ([www.schmid-electronic.de](http://www.schmid-electronic.de)) is a handheld test unit that analyzes physical transmission quality and checks compliance of the data format against all relevant standards. Levels and test results are displayed on a backlit LCD screen, and a time-stamped error counter enables unattended measurements. The DIGISpy accepts AES/EBU and S/PDIF datastreams and automatically selects the valid signal format. Additional features include peak meters with peak-hold and clipping indicators, vectorscope display to indicate stereo correlation and an adjustable multisource monitor output. The DIGISpy dis-

plays sampling frequency and can process CD track and start IDs and Q channel information. Compact and lightweight, the unit runs on batteries or a power supply/charger.

Circle 329 on Product Info Card

## IZ RADAR 48

iZ Technology ([www.izcorp.com](http://www.izcorp.com)) is shipping its RADAR 48 self-contained, 48-track, hard disk-based digital recorder. Featuring the new V-24+ recording engine, RADAR 48 records at sample rates of up to 192 kHz and uses the real-time BeLA software platform. (Software upgrades available at [www.recordingtheworld.com](http://www.recordingtheworld.com).) RADAR 48 offers users the ability to control, record and edit 48 tracks of digital audio simultaneously in a single turnkey package.

Reference Monitor, a two-way system that consists of a 6.5-inch woofer and a high-frequency driver vertically oriented in a mag-shielded, vented enclosure. Capable of handling 125 watts continuous, the SRS6.5 features a frequency response of 50-20k Hz ( $\pm 3$  dB) and has a sensitivity of 92.5dB SPL, 1W/1m. A Flat/Contour switch on the front inserts a midrange dip to emulate typical hi-fi speakers. Dimensions are 9.25x4.75x9 inches, and weight is 21 lbs. Price: \$279.99/pair.

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## EMPIRICAL LABS FATSO PROCESSOR

▼ Empirical Labs offers the EL7 FATSO (Full Analog Tape Simulator and Optimizer) 2-channel audio



Also from iZ Technology, the RADAR M8 Surround Sound Master Recorder is the world's first 192kHz, 8-track, hard disk-based digital recorder.

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## CARVIN TWO-WAY REFERENCE MONITOR

Carvin ([www.carvin.com](http://www.carvin.com)) offers the SRS6.5 Studio

processor. Distributed by Wave Distribution ([www.wavedistribution.com](http://www.wavedistribution.com)), the EL7 FATSO is a digitally controlled analog device that emulates the sound of tube and Class-A discrete circuit topologies and the effects of magnetic tape mediums. A soft clip feature models the effect of broadband tape saturation,

## PREVIEW



and the unit also offers HF saturation, transformer and tape head emulation functions. Four stereo-linkable compression modes include "classic" knee compression and a range of attack and release times. Additional features include distortion indicators ("0 VU" and "Pinned" LEDs), sidechain access and lockable, calibrated output settings for fast setup. I/Os are balanced XLR, 1/4-inch phone and RCA. Price: \$2,499.

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#### MACKIE D8B SOFTWARE

Mackie Designs has released Version 3 software for the Mackie D8B digital mixer. Available for download at [www.mackie.com](http://www.mackie.com), the V.3.0 operating system features third-party plug-in support, new surround sound mixing features and innovative networking capabilities, plus many user-requested features.

Circle 333 on Product Info Card

#### SSL SL 4000

##### G+ CLASSIC

Solid State Logic ([www.solid-state-logic.com](http://www.solid-state-logic.com)) intros a special Classic configuration of the famous SL 4000 to include the latest sonic improvements of the G+, combined with a return to the original appearance of the E Series, with its black "Raven" finish. Standard features include moving-

fader and VCA-based automation, Total Recall technology, LCR panning, additional aux buses, and sidechain and control linking of multiple outputs. The Classic is available in frame sizes from 48 to 64 channels, with a choice of E or G Series EQ and optional packages to extend multi-channel capabilities, and machine control requirements can be tailored to the specific customer needs.



#### WESTLAKE AUDIO THREE-WAY ACTIVE/ PASSIVE MONITOR

▲ Westlake Audio ([www.westlakeaudio.com](http://www.westlakeaudio.com)) has introduced the Lc3W12V, a three-way passive monitor that can also be bi-amped. Standing 29.5x14.5x15.5 inches (HxWxD) and weighing 102 lbs., the vertically oriented, bass-reflex enclosure has a 12-inch woofer, 6.5-inch mid, 1-inch soft-dome tweeter and extensive electro-mechanical-acoustical

damping. Designed as an alternative to the horizontally oriented Lc3W12, the Lc3W12V has a 40-18k Hz frequency response and is rated at 100/300-watts LF, 100/250 MF and 90/220 HF per IEC 268-5 power handling capacity. Finished in black utility paint, the Lc3W12V has a one-year warranty. Price is \$3,799/pair. Westlake has also redesigned the BBSM-5, a two-way, medium-power reference monitor. The redesign includes a re-proportioned bass-reflex cabinet and has a frequency response of 55-20k Hz. Price is \$2,495/pair.

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#### EARTHWORKS 4-CHANNEL MIC PRE

▲ Earthworks ([www.earthwks.com](http://www.earthwks.com)) is shipping the 1024 4-channel mic pre-amp, a high-quality unit featuring flat frequency response (2 Hz to 100 kHz,  $\pm 0.2$  dB) and unmeasurably low distortion. Each channel in the single-rackspace unit offers a precision input

gain control, stepped in 5dB increments over a 55dB range, plus a variable output control with a 20dB range. Toggle switches engage 48V phantom power and reverse polarity for each channel; individual standby switches mute inputs while keeping phantom power active. LEDs indicate phantom power on and overload and clipping conditions. Inputs are balanced XLR; outputs are XLR and TRS. Price: \$3,500.

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#### Tsunami CLASS-H POWER AMP

▼ Tsunami Technologies ([www.tsunamitechnologies.com](http://www.tsunamitechnologies.com)), known for its switch-mode power supply power amplifiers, has introduced a conventional power supply-based, 2-channel power amp capable of more than 1,800 watts of power per channel (at two ohms). The new Tsunami HQ 3.4 amplifier features Class-H output amplification and protection against DC, temperature, in-



## PREVIEW



rush current and overcurrent conditions. Price: \$1,169.

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#### FOSTEX 24-TRACK HARD DISK RECORDER/EDITOR

▲ Fostex Corporation ([www.fostex.com](http://www.fostex.com)) is now shipping its D-2424 24-track, hard disk recorder/editor, which features 32 virtual tracks (for a total of 56 tracks) and records at 24-bit/96kHz resolution. Features include 128x oversampling AD/DA converters, a timecode generator/reader, optional 4.7GB DVD-RAM backup and an 8-channel AES/EBU interface. The removable front panel also

serves as a full-function remote. The unit offers unlimited Undo capability, Copy/Paste between programs, a dedicated All Input key and a footswitch for remote Punch In/Out. Sync

To Video integrates the D-2424 with video editors that comply with RS-422 P2 protocol. Options include timecode, an 8-channel AES/EBU card and a DVD-RAM drive. Price: \$3,995.

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#### EAR Q REFERENCE HEARING ANALYZER

► The Ear Q Reference Hearing Analyzer from Ear Q Technologies ([www.earq1.com](http://www.earq1.com)) is a system that lets audio pros map and monitor their own hearing characteristics. Most hearing tests only provide data on the 125-8k Hz speech range; Ear Q provides a fast, simplified means of

self-assessment over the music range of 60-20k Hz, using the signal-generating capabilities of 16- and 24-bit soundcards. Software allows for saving and displaying multiple test results to monitor changes in hearing acuity, such as Temporary Threshold Shift and impaired Loudness Perception, and level-specific equalization settings based on Etymotic Research's FIG6 algorithms guide the user to compensate for given levels of hearing loss. Designed to interface directly into any PC, each Ear Q Analyzer includes the software package and custom high-isolation headphones with 25 dB of isolation (sufficient enough to make almost any room comply with ANSI standards for audiometric hearing test booths). Price: \$149.

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#### TRUTH AUDIO NEAR-FIELDS

Truth Audio ([www.truthaudio.com](http://www.truthaudio.com)) offers the TA-1P Near-Field Studio Monitor, a passive two-way design featuring two 5-inch woofers and a single 3-inch cloth-dome dynamic tweeter in a rear-ported cabinet. The mineral-filled polycone woofers feature a 14.6-ounce magnet. Frequency response is 48-20k Hz ( $\pm 3$  dB), and power-handling capability is rated at 165 watts into four ohms. All rear panel connectors are gold-plated. Price: \$999/pair.

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## HOT OFF THE SHELF

Sound Ideas has recently acquired all rights to the following sound collections: **Designer Sound Library**, a three-CD special effects collection created by sound designers Clive Smith and Jonathan Helfand; the John M. Peters three-CD **Science Fiction Sound Effects Library**; **Jurassic Dinosaurs and Futuristic Creatures**, a 665-effects CD also created by John M. Peters; and **Wild World of Animals**, a 10-CD collection from Hollywood Sound Factory, including over 850

hard-to-get effects. Visit [www.soundideas.com](http://www.soundideas.com)...Amek has released **Supertrue™ 4 V2.2 software for the Amek 9098i master recording console**. Newly extended capabilities include additional dynamics, auto save, mute, solo and grouping functions. For more details, visit [www.amek.com](http://www.amek.com)...**Music and More** has released a comprehensive line of **analog processors and sound generators** at prices ranging from \$149 (the DI 16 16-channel direct box) to \$499 (the SQ 16 Midi Step Sequencer). The eight new products also include the VF 11 11-band True Analog

Vocoder, the HP 48 headphone amplifier, the RS 3 mono in/stereo out resonator/filter/flanger/phaser and the Warp 9 analog effects processor. Call 800/732-6982 or visit [www.mam-america.com](http://www.mam-america.com)...Symetrix has redesigned its ambient noise-sensing gain controller, adding refined processing algorithms at a lower cost-per-zone. The 371 SPL Computer continuously monitors ambient noise conditions via an external microphone and adjusts system gain accordingly. Price is \$549. Call 425/787-3222 or surf to [www.symetrixaudio.com](http://www.symetrixaudio.com). ■

# They say, "If it ain't broke, don't fix it."

# But we just couldn't help ourselves.

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A major upgrade of the worldwide standard in professional pitch correction

Hailed as a "holy grail of recording" by *Recording Magazine*, Auto-Tune is used daily by thousands of audio professionals around the world. Whether to save studio and editing time, ease the frustration of endless retakes, save that otherwise once-in-a-lifetime performance, or even to create unique special effects, Auto-Tune has become the professional pitch correction tool of choice.

Now, never content to leave a good thing alone, Antares introduces Auto-Tune 3. Preserving the great sound quality, transparent processing, and ease of use of Auto-Tune, Auto-Tune 3 adds significant new features as well as a snazzy new user interface.



**AUTO-TUNE 3'S AUTOMATIC MODE** corrects the pitch of a vocal or solo instrument in real time, without distortion or artifacts, while preserving all the expressive nuance of the original performance.



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- "Source Specific" processing algorithms that provide even faster and more accurate pitch detection and correction.
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- The ability to set target pitches in real-time via MIDI from a keyboard or sequencer track.
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### Auto-Tune 3

**We made it better because we just couldn't help ourselves.**

*Auto-Tune 3 will be available in TDM, MAS, RTAS, Mac VST, and DirectX versions. Upgrades are available for registered Auto-Tune owners. Check our website for details.*

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# MACKIE HDR24/96

## 24-BIT/24-TRACK DISK-BASED AUDIO RECORDER/EDITOR



single four-rackspace chassis weighing in around 35 pounds—a lot less than your typical 400+ pound, 2-inch, analog deck and substantially less than a rack of three ADATs. Speaking of Modular Digital Multitracks, the HDR24/96's front panel looks and operates (with a few exceptions) a lot like most MDMs. The recorder's face-

much as possible, and other than simple selections such as choosing a project or which disk to record to, the menu operations are mainly "set and forget."

Familiar-looking, tape recorder-style keys (Rwd/Ffd/Stop/Play/Record) handle basic transport functions, and the unit defaults to 2-button (press Record *and* Play) record enabling; it can be set to one-touch record if desired. A floppy drive is provided for loading software updates, tempo maps or reinstalling the system software, should the user later decide to install a larger internal hard disk (a 20GB drive is included as standard equipment). A second bay is designed to accept interchangeable media, such as Mackie's M90 22GB removable hard drives or 2.2GB Mackie PROJECT cartridges.

plate holds few mysteries, and most users can be up and recording just minutes after unpacking the HDR24/96.

The front panel is logically laid out, with a bank of 24 (selectable) peak/VU LED meters with track arming lights and buttons beneath each track. A large, bright, numerical LED display shows locations in hours/minutes/seconds/frames or bars/beats/ticks, and includes status LEDs indicating clock and bit status. A 24-character, 4-line LCD indicates operational status and menu navigation with four softkey switches and data  $\pm$  (increment/decrement) keys beneath the menu select parameters and set modes. Eighteen additional switches are dedicated to various functions—ranging from looping and locate options, monitoring and record safe keys, SMPTE chase enable, etc. And every switch on the HDR24/96 has an associated LED that gives the user quick, visual feedback on what's selected. The idea here is to reduce the user's dependence on menus as

The last time I tested a product that was eagerly talked about, then announced, delayed and finally shipped, it was the Mackie D8B Digital 8-Bus mixer. And at Winter NAMM, February 2000, just over a year ago, Mackie announced an equally ambitious project: a 24-track, 24-bit (and 96kHz capable) disk-based recorder/editor with an affordable base price of \$4,999. The product is the Mackie HDR24/96, and, though it did ship a couple months late, Mackie probably set some kind of record for the speedy delivery of a product of this magnitude; it was definitely worth the wait. The unit offers an ease of use that should make disk-recording novices comfortable, while including an impressive feature set that will appeal to seasoned pros.

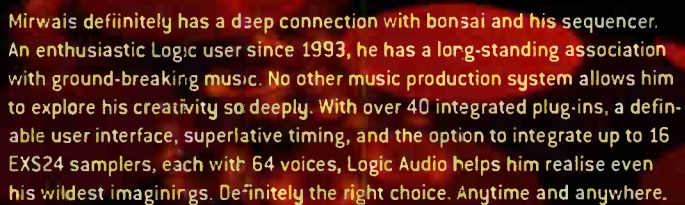
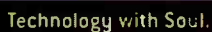
Starting from the top, the HDR24/96 is a stand-alone (no computer required) 24-bit/24-track recorder/editor housed in a

### DEALING THE CARDS...

The base HDR24/96 does not include any I/O, and users may choose to fill its three I/O card slots with any of the four I/O cards available—which happen to be the same I/O cards that are offered for Mackie's D8B digital console. The \$399 AIO-8 has eight analog inputs and eight analog outputs (all are +4dB line-level), terminated as two 25-pin D-sub connectors that are pin-compatible with the Tascam DA-88 connectors, so all the user needs to do is connect some DB25-to-XLR (or TRS) snakes, and start tracking. The \$450 DIO-8 card includes eight channels of digital I/O in both Tascam TDIF and ADAT Lightpipe formats, as well as a TDIF wordclock sync output on a BNC connector for older DTRS decks. The \$399 PID-8 carries four stereo pairs (eight channels) of digital I/O in the form of AES/EBU signals on a single DB25 connector. The OPT-8 is the bargain of the lot: This \$99 card has input and output ports (eight channels

BY GEORGE PETERSEN



The emagic logo is located in the top right corner of the advertisement. It consists of the word "emagic" in a lowercase, sans-serif font, with a blue swoosh above the "i".The "logic audio" logo is positioned below the emagic logo. It features the words "logic audio" in a white, lowercase, sans-serif font against a black rectangular background.The text "Music Production Software" is located at the bottom of the black box containing the "logic audio" logo. It is written in a white, sans-serif font.A white-bordered text box containing the text "Mirwais, producer of Madonna, just stepped out to get some water for his bonsai." is located in the upper middle section of the advertisement.The main headline "Definitely Deep" is centered in the middle of the advertisement. It is written in a large, white, sans-serif font.A white-bordered text box containing a paragraph about Mirwais's experience with Logic Audio is located in the lower left section of the advertisement. The text describes his long-standing association with the software and its features.The phrase "Technology with Soul." is located at the bottom left of the advertisement, below the main text box.The text "CIRCLE #072 ON PRODUCT INFO CARD" is located at the bottom center of the advertisement.The text "World Radio History" is located at the bottom center of the advertisement, below the circle number text.The website address "www.emagic.de" is written vertically along the right edge of the advertisement.

each) in ADAT Lightpipe format.

Using the AIO-8 converters, the HDR24/96 audio quality was very good overall—in fact, if you've heard Mackie's D8B, then you're already familiar with the HDR24/96's sound. For those who want more, of course, the unit will work with any number of excellent third-party converters. (Many of which cost more than the HDR24/96 itself!) Ninety-six kHz recording (which halves the number of tracks to 12) is made possible by using three of the PDI-8 AES cards in double-wide (double-wire) mode, fed from external third-party 96kHz ADCs.

I/O cards can be mixed and matched as desired and installing them is easy. Each card slides into a slot on the rear panel cardcage, snaps into place with a reassuring thunk and attaches via two captive (no, they don't fall out and get lost, thank you) thumbscrews. Also on the back panel are ports for attaching a PC keyboard, mouse, ¼-inch punch in/out foot switch, 15-pin D-sub for a SVGA external monitor, Ethernet 100 Base-T via RJ-45, remote control (also RJ-45), MIDI in/out on a 9-pin D-sub (breakout cable to standard 5-pin DIN jacks included) and a sync card with wordclock/SMPTE chase in/video black burst sync. Speaking of the latter, the HDR24/96 locked up nearly instantaneously to incoming SMPTE LTC. Nice!

### GOING INSIDE

The HDR24/96 seemed pretty solid—at least hefty—on the outside, so I decided to go inside to check it out. You can learn a lot about a piece of audio gear by completely disassembling it *before* testing it out, although

I don't recommend you do this at home: It's really bad on the warranties! After I removed the 22 (!) screws on the cover, the secrets of the HDR24/96 were revealed—well, some of them, anyway.

The heart of the unit is a PC—a 433MHz Intel Celeron motherboard, to be exact—and it has all of the usual PC stuff there. This is good, because Mackie didn't have to reinvent the wheel to develop this product, and standard items, such as the ATI Rage Pro AGP 8MB monitor graphics card and PC power supplies, are commonly available parts, so if you're HDR24/96 ever "goes south" at some future date, then the fix may involve little more than a quick trip to a local computer swap meet for \$20 in parts. Cool! At the same time, components such as the internal IDE drive could be swapped out for a bigger drive someday, and with the way that drive prices have plummeted lately, you might just be picking up a \$150 terabyte drive and dropping it into your HDR24/96 in a year or so. Another interesting point is that the motherboard has three RAM slots but only uses one for its 128MB DIMM. As it stands, more RAM wouldn't make a difference in the unit today, but the HDR24/96 also has two unused PCI slots (these are marked as "accessory" slots). Who knows what tomorrow may bring—perhaps a synth/sampler-on-a-card or maybe a dedicated DSP card loaded with hardware plug-ins? And because it locks so well to SMPTE, perhaps one of those "accessory" slots could someday house a sync expansion card supporting Sony 9-pin control, opening up a whole new market for the HDR24/96 in big-time post applications.

### DRIVES!

Perhaps one of the HDR24/96's most intriguing features is the Mackie Media drive bay on the front panel. The bay accepts Mackie Media M90 cartridges—essentially 22GB UDMA IDE hard drives (offering approximately 90 minutes of 24-track record time at 24-bit/48 kHz) that are preformatted, mounted in a standard RH-58 removable drive tray and include a padded library storage case for keeping your creations (or backups) on a bookshelf. Do-it-yourselfers may want to buy their own trays (around \$40 from computer suppliers on the Web) and IDE drives, but won't save much money going this route, as Mackie is intentionally keeping the street price of the M90s fairly low—around \$199. As it is now, one M90 holds the equivalent of about six reels of 2-inch tape running at 30 ips, making the M90s an affordable alternative for backup or direct recording, because the M90 media has adequate throughput for live 24-track tracking sessions or remote recordings.

Another possibility involves Mackie's "Project Media," which are 2.2GB carts based on Castlewood Systems' ORB drives, using Magneto-Resistive technology to create high-density media on an inexpensive (\$29) disk that's about the size of a Zip cartridge. The Project Media kit includes an adapter caddy that allows the ORB disk to slide directly into the HDR24/96's drive bay, offering enough storage for two typical song files, and while not fast enough for direct recording, the ORB disk offers a viable means of file backup and project exchange between studios.

On the subject of file exchange, the HDR24/96 writes files in standard .AIFF format, and there are several



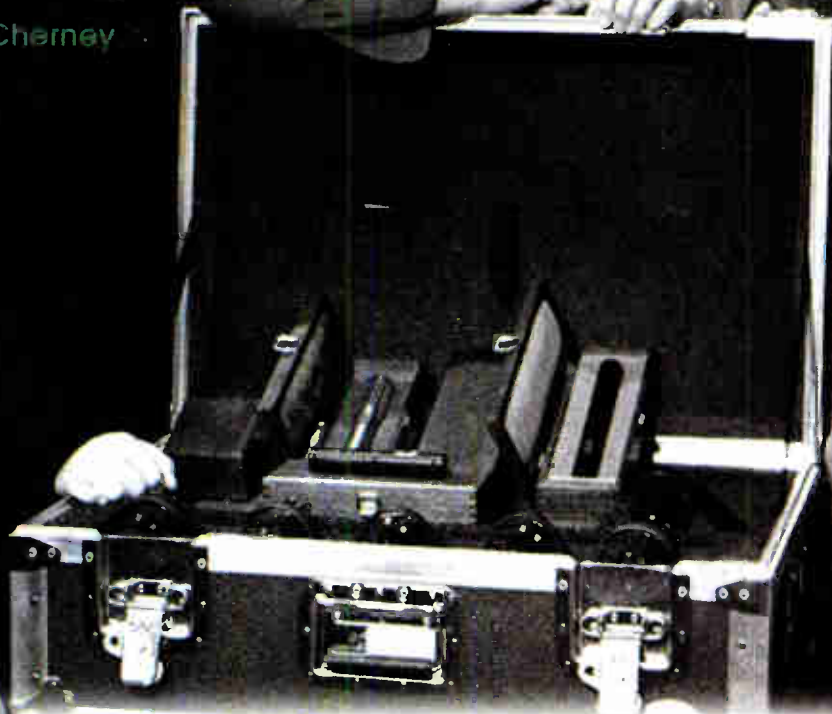
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SF-1

R-121

SF-12

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- Recording Magazine, July 2000

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- EQ, September 2000

"...a very satisfying and rewarding microphone that can lend itself to a huge variety of applications"  
- Studio Sound, November 1999

"The Royer R-121 gets my heartiest recommendation"  
- Electronic Musician, May 1999

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# ROYER

## FIELD TEST

ways to transfer files to/from another workstation. The simplest is simply to play all the files (output via Lightpipe) and record them digitally into the other system. Alternatively, files written to either of the HDR24/96's removable drive formats could be read by a PC or a newer Mac—assuming you invest in an external (or internal if you're doing it all the time) RH-58 drive bay. The other option is to use the HDR24/96's built-in 100 Base T Ethernet port to transfer tracks to another Ethernet-equipped computer or server.

## OPERATIONS

Once the I/Os were installed and the drives selected, I recorded a quick demo project with the basic HDR24/96. On this session, I was using the analog I/Os, and after setting the desired sampling rate and naming a new project, I was off and running and had not yet used the manual at all! Navigating the menus was no sweat, with the only glitch a lack of an Exit key to get you out of a menu. After 90 seconds or so of trial and error (remember, I was trying to get by *without* consulting the documentation), I realized that pressing the same menu button (Track-Project-Backup-Disk-Utilities-System-

Digital I/O-Sync) that gets you in also gets you *out* from there. It also took me a while to find the page where sampling rates are set: I expected it to be part of the Digital I/O menu; it turned out to be within the Sync page.

Once set, all I had to do was arm some tracks (pushing the buttons under each track meter) and press Play-Record to get rolling. By the way, the transport buttons have a great feel—you can hear the reassuring clunk of an internal relay whenever any of the keys are pressed. I didn't, however, like the AC power switch, which clicks on with a slight touch; unfortunately, it also switches off with a similar light touch. Here, I would have preferred a rocker switch or a pushbutton with a little more force.

So far I had used the HDR24/96 without an external monitor/keyboard/mouse, and here is where a small investment (\$200 or so for the package with conventional 17-inch SVGA display) really pays off. The ability to use the HDR24/96 *without* a monitor is actually one of the product's virtues, especially in situations, such as remote recording gigs, where a monitor is not really required or even desirable—space is often limited at live gigs and a monitor can be distracting to nearby audience members, etc. That said, adding a monitor/keyboard/mouse to the HDR24/96 really opens up the unit's creative and utilitarian potential, as well as speeding operations. Seeing the scrolling waveforms, virtual transport controls, timecode display, onscreen metering, etc., also adds a definite cool factor.

I almost dreaded adding the accessories to the HDR24/96, because, at this point, I still hadn't opened the manual, and my past experiences with adding monitors/mice/etc. to computers or audio devices usually entails a lengthy process of installing drivers, setting preferences and/or resolutions. I feared the worst, but I figured I'd give it a shot and hooked up the Viewsonic View Panel VA800, a 17.5-inch, flat-screen display I reviewed in the January *Mix* ("Auditions"), along with a Logitech Trackman trackball (sort of a mouse) and a PS/2-style keyboard. I did great with the monitor and mouse, but the HDR24/96's keyboard jack is an older-style, 5-pin, DIN-type, so lacking a mini-DIN to 5-pin adapter (available almost anywhere), I just grabbed an old AT-style keyboard I had laying around, and it worked fine. On power-up, everything worked



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perfectly, and I should add that the sharp, brilliant display (which, by the way, is immune to speaker monitor magnetic distortion) looked great. And navigating the menus is much simpler with a mouse and monitor—you don't have to squint to see that tiny LCD display!

One distinct advantage of using the keyboard/mouse/monitor rather than front panel navigation is the ability to locate the HDR24/96 remotely from the user. The unit's fan noise is not excessive—about as loud as a PC (which it is)—but it is audible in a quiet control room, and moving the main unit to the floor or farther away in the room

will be offered by the large RM48 remote, a full-function pro auto-locator that includes the ability to control multiple HDR24/96 transports and is due out later this year at \$1,499. Both remotes communicate with the HDR24/96 via standard RJ45/CAT5 cabling and can be placed quite a distance from the main unit.

#### EDITING ON THE HDR24/96

The real power of an additional monitor is demonstrated when using the extensive and comprehensive editing functions. As well as the usual Cut/Copy/Paste commands, the unit includes such features as 999 levels of undo, nondestructive drag-and-drop crossfades, regions and super regions, looping, track slipping, shuttle and analog style scrubbing, quantization, track/take bouncing, snap-to-grid and 192 virtual takes (eight per track x 24 tracks). The virtual takes

and mean—in fact, the entire OS fits on two floppy disks.

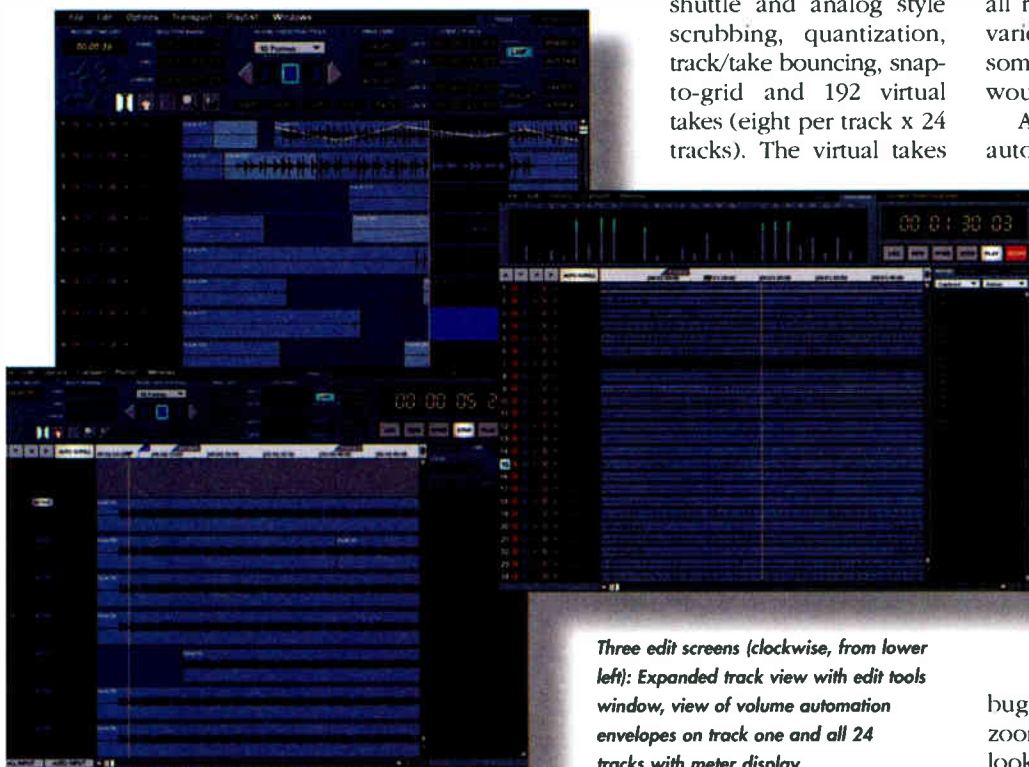
The edit interface is clean and logical. A large 24-channel meter panel at the top of the screen (great during tracking/overdubbing) can be replaced with a large editing tools window, which offers quick access to any of the edit modes, locator points and nudge tools. As with accessing the recording functions, users can stumble in and do about 85% of all editing operations without getting bogged down in manuals or becoming lost. The look and feel of the edit screen will be familiar to anyone who's used other workstations, and users have the option of working with mouse or keyboard commands. The keyboard commands—such as CTL+A to select all regions in a project—are noted at various places in the manual, but some kind of quick reference chart would be nice.

A node tool provides a volume automation function for creating envelopes that can dynamically change track output levels via simply clicking on sections using the pencil tool. Although no substitute for full-blown mix automation, I found it useful for creating fades or muting unwanted sections (say, a tempo count at the beginning of a drum track) without actually deleting the material.

#### MAKING IMPRESSIONS

Overall, I liked the HDR24/96. There were a few bugs—such as a dive key (quick zoom) that misdirected zoom-ins when looking at expanded virtual takes—but these were relatively minor. There are also a few missing features (for example, track normalization, time compression/expansion and phase inversion) that I'd like to see in the next version—but as Version 1.0 software from a company's first workstation, the HDR24/96 is a stunning development, with excellent sonic quality, an extensive feature set and versatile file management that will allow it to coexist with the rest of the audio universe. Besides, it's easy to use and is priced right. This one rocks!

Mackie Designs; 16220 Wood-Red Road NE, Woodinville, WA 98072; 425/487-4333; fax 425/487-4337; www.mackie.com. ■



Three edit screens (clockwise, from lower left): Expanded track view with edit tools window, view of volume automation envelopes on track one and all 24 tracks with meter display.

does make a difference. As well as accepting the keyboard/mouse input, the HDR24/96 also responds to standard MMC transport commands from a console (Mackie's D8B, perhaps), sequencer or hardware device such as JL Cooper's ([www.jlcooper.com](http://www.jlcooper.com)) line of external controllers. At press time, Mackie was shipping its \$299 RM24, a compact remote control for the HDR24/96, featuring transport keys, track arming, looping and more, including a "meter stick" that displays the level of any selected track. Neither the RM24 nor the HDR24/96 unit itself has hardware jog/shuttle control—this

are ideal for comp'ing multiple vocal or solo takes into a seamless performance, without having to give up tracks to get it done.

Despite the modestly powered 433MHz CPU, the HDR24/96 never seemed sluggish at all, and edit operations and screen redraws were fast—actually redrawing waveforms as they were being edited. One secret to this is the unit's custom operating system, which is based on the OS developed for the D8B mixer and was designed specifically for audio. The Mackie OS is somewhere between Windows and MacOS in appearance and operation, yet with no "bloating" at all. It's lean

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# ROYER LABS SF-1

## RIBBON-VELOCITY STUDIO MICROPHONE

Two years ago, Royer shipped its first ribbon microphone—the R-121—and the mic became an instant hit with studio pros. At the same time, Royer began building stereo ribbon mics based on Bob Speiden's SF-12, which has gained favor with classical and scoring engineers. Now, Royer debuts the SF-1, a mono version of the SF-12, priced at \$1,075—exactly half the price of the stereo model.

Housed in a 1-inch diameter, 5.6-inch-long cylindrical body and presented in a velvet-lined wood case, the matte black chrome SF-1 is both beautiful and impeccably machined. The side address mic body contains the SF-1's cross-field motor assembly ribbon transducer, which includes four Neodymium magnets and Permendur iron pole-pieces surrounding a low-mass, 1.8-micron aluminum ribbon assembly. The SF-1's iron case forms the magnetic return circuit for the transducer. The polar pattern is a classic figure-8, and the mic handles SPLs of up to 130 dB.

Using the SF-1 requires little more than opening the mic's storage box: There are no pads, roll-off switches, etc. It's plug-and-go, but with a few caveats. As with other ribbons, the mic is extremely sensitive to air motion and can be damaged by excessive air movements, but other than avoiding blowing into the mic, "cleaning" the ribbon with compressed air or putting the mic inside a kick drum, the SF-1 is rugged and durable—hardly fragile at all. Hey, I don't drop my U87s onto a concrete floor either!

I began testing the SF-1 as a Blumlein (coincident) pair on a 4-string dulcimer track. The mic has a fairly low sensitivity (in the -52dBV range) and really needs a quiet, high-gain preamp, which, in my case, was the Millennia HV-3. The gain issue is less of a consideration

with close-miked or high-SPL sources, but on this dulcimer track, I wanted a more distant ambient sound with the mics about six feet away. Here, the SF-1 did a remarkable job of capturing the sound of the instrument, with plenty of zing, a smooth, unexaggerated top end and a nice blend of the room color.

On another session, used close up on a clarinet overdub, the result in the control room was exactly what I heard in the studio—rich and woody, and free of any edginess caused by the upper-HF rise common to most studio condenser mics. Interestingly, the SF-1's same lack of an upper presence boost that was great on clarinet led me to choose a condenser when cutting male vocals and where I wanted that extra boost to help the voice cut through a busy rock track. However, I liked the SF-1 on female vocals, where the mic's proximity effect added a nice, warm fullness to the lower notes, with smooth mids and absolutely no brittleness in the highs. Also, the SF-1's pattern is extremely consistent from front-to-back and off-axis coloration was nonexistent.

I gave the SF-1 a workout using a trick I heard from *Mix* contributor Barry Rudolph. For guitar overdubs, I placed two Marshall 4x12 cabinets facing each other with the SF-1 placed in between them. Because the back side of a figure-8 mic is out-of-phase with the front, I wired one of the Marshall bottoms out of phase, and—after a little experi-

mentation with mic-to-cabinet distances—I wound up with a *huge* guitar sound; high SPLs were not a problem.

Although the SF-1's flat, wide response, fast transient tracking and high-SPL handling would make it a good candidate for drums, the mic's inherent figure-8 pattern limits its use to tracking drum overheads when no other instruments (loud guitars, etc.) are present. In such cases, the SF-1—as spaced or coincident overhead pairs—offered a nice balance of cymbals, toms and snare, requiring only a supplemental kick mic.

Due to multiple internal reflections within piano cases, the only way to avoid muddiness and cancellation with figure-8 mics on piano is to remove the lid. This precludes use of the SF-1 for most live or multi-instrument piano sessions, but for (lid-off!) overdubs or solo piano recordings, the SF-1 offered an unhyped, natural reproduction that matched what I heard in the room.

Overall, I loved the SF-1. Its low sensitivity does require a high-quality/high-gain preamp, and its wide, flat, uncolored response lacks the in-your-face presence boost common to most studio condensers and even found in Royer's R-121 ribbon model. However, users seeking an accurate, transparent studio mic may want to add one (or more) SF-1 to their mic lockers.

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# TC HELICON

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A year ago, Danish signal processing specialists TC Electronic joined up with Canadian IVL Technologies Ltd. to announce the formation of TC Helicon Vocal Technologies, a new company focusing on the development of vocal processing tools. TC Electronic has long been associated with cutting-edge studio tools, and IVL has largely operated in the background, developing products for other companies. For example, IVL was involved in the development of DigiTech's award-winning Vocalist Series harmony processors, TC's acclaimed Intonator pitch corrector, DSP technology in Mackie's digital 8-bus console, and numerous projects in the gaming and other markets.

"Back in 1990, when we started out, we were limited in DSP horsepower, and we decided to confine ourselves to time-domain techniques for vocal processing," says IVL's chief technical officer Brian Gibson. "By the mid-'90s, things were changing radically in terms of available processing power, and we decided to throw off the shackles and do research into some new products—some pretty sophisticated stuff using 100 MIPS DSPs."

Unveiled at last fall's AES show in Los Angeles, TC Helicon's first product was VoicePrism, an all-in-one box voice formant and pitch processor that includes mic- and line-level inputs, compression, gating, dual fully parametric EQ, four-voice harmony (with individually adjustable gender controls and humanizing parameters), fifth lead doubling voice for automatic double-tracking, and two separate post-effects blocks with chorus/flange, delay and reverb and harmony libraries. "It's been a while since we came out with a major upgrade in the area of vocal processing, which is why the VoicePrism is so much better

than anything we've done before," Gibson explains. "But the most exciting stuff is our next-generation technology involving physical modeling."

VoicePrism's simple interface and excellent vocal effects made it a hit at the show; however, one of the unit's most important features—a socket for an expansion daughter board—was almost entirely overlooked. Slated to ship this month are the VoiceCraft Human Voice Modeling Card and the VoicePrismPlus (essentially the VoicePrism with the card pre-installed). "VoiceCraft is the result of several years of research into doing vocal processing in a different way," Gibson continues, "modeled on real singers and incorporating some of those things into a physical model, such as pitch, glottal effects, inflection and formant manipulation."

Vocal modeling is not exactly new. In fact, research and development of voice models has been around for years in the telecommunications industry. However, the real difference is a matter of quality—assembling voices to read back phone numbers from automated directory assistance is a far cry from creating professional-quality voice manipulation that holds up to studio standards. The first professional implementation of Voice Modeling™, the VoicePrismPlus Human Voice Modeling Formant Processor expands the VoicePrism's lead vocal processing with real-time reshaping and resynthesis of the human voice. It includes numerous parameters for tweaking the lead vocal input, such as the ability to add breath, growl, rasp, head and chest resonances, inflection or vibrato, along with TC compression, EQ, studio effects and digital I/O.

The process of developing Voice Modeling™ is no easy chore. "An instrument

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—CONTINUED ON PAGE 204

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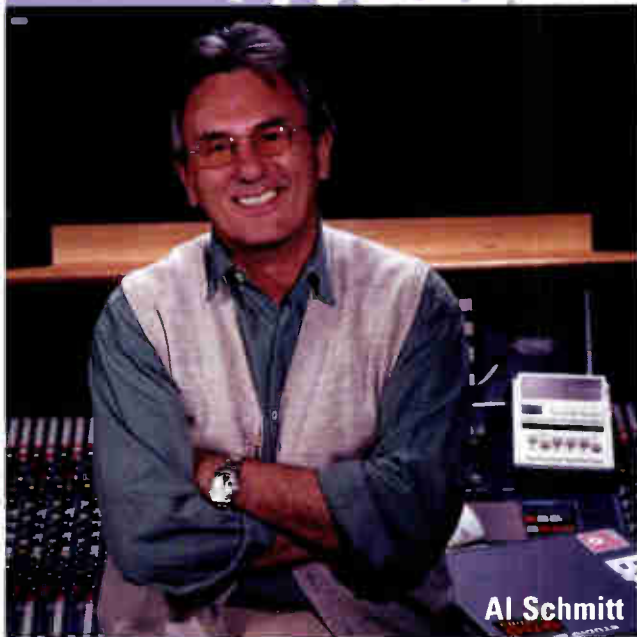
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# SUMMIT EXTENSION 78 AND MPE-200S

## MIDI-CONTROLLABLE PREAMPS, PLUG-IN

All sorts of MIDI gear can be controlled directly from your digital audio sequencer. From an armchair in front of the computer display, you can manipulate parameters and change patches on sound modules in other rooms, operate multi-track machines that are locked in a closet and even adjust the gain of your audio interface's line inputs—assuming that you have the proper gear, of course. However, microphone preamps have remained largely outside of this world of remote-control magic. There just aren't a lot of MIDI-controllable, high-end, studio-quality microphone preamps available.

Summit Audio recognized the need for such a product. Designed in cooperation with Rupert Neve, the Element 78 Series includes two MIDI-controllable preamps with built-in EQ, the MPE-200 (\$4,495) and the MPE-200S (\$3,895). The MPE-200 has a full complement of knobs and buttons for easy front panel control, while the MPE-200S is optimized for remote-control use with just one knob and a button on its face. Both preamps can be remote controlled via a TDM plug-in called Extension 78. Also part of the Element 78 line are two dedicated MIDI-tweakable, two-channel, parametric equalizers, the EQ-200 (\$3,995) and EQ-200S (\$3,495). They too can be controlled via the Extension 78 plug-in and are configured similarly to the preamps—the EQ-200 sports front panel controls, and the EQ-200S has a single knob and a button. (The "S" at the end of the model name stands for

"slave" unit.)

The Extension 78 plug-in can be used with any digital audio sequencer that will run Digidesign's DAE engine, such as Emagic's Logic Audio or MOTU's Digital Performer. The Element 78 products can also

ronment to control an MPE-200S.

### MPE-200S

The MPE-200S is essentially the same unit as the MPE-200 minus the front panel controls. Because the MPE-200 was covered in a pre-



The Extension 78 TDM plug-in controls the MPE-200 and MPE-200S preamps via MIDI; it can be used with any sequencer that will run Digidesign's DAE engine, such as Emagic Logic Audio and MOTU's Digital Performer.

be remote controlled by any digital audio sequencer that allows the creation of custom MIDI control templates, so you can map an Element 78 unit's SysEx and CC commands to your own virtual faders and knobs—a tedious task—but worth the effort. (The SysEx and CC commands are not published in the manual but are available from Summit Audio on request.) For this field test, I used Extension 78 in a Pro Tools envi-

vious issue of *Mix* (October 1999), I'll focus on how the MPE-200S and MPE-200 differ and the use of the Extension 78 plug-in.

The MPE-200S is no lightweight. It's only two rackspace high but weighs in at a hefty 27 lbs., is solidly constructed and creates a striking image with its blue-gray anodized aluminum faceplate and minimal controls. The power switch is on the rear panel, near the removable IEC AC cable socket and 100-240VAC, 50-60Hz AC power select. And, like the MPE-200, the MPE-200S has a

BY ERIK HAWKINS

Standby mode that is entered by a combination of pressing and holding the front panel controls.

All the audio connections are balanced XLRs on the rear panel. The two preamp/EQ channels are designated A and B, and each is given its own discrete set of I/Os. This configuration makes using each processor independently a snap. Simply plug into the I/O of the processor that you need and voilà, all of the other electronics are bypassed. To use the processors in tandem, simply connect the output of one processor to the input of another. This flexibility also simplifies inserting a compressor or other effect between the unit's individual processors.

As sparse as the front panel controls are, they are amazingly intuitive—the design is actually very ingenious. Tapping the unit's single, large, square key steps you through pages. The key itself is backlit and does double-duty as the display window. A large, infinitely rotating dial lies just beneath the key and is used to enter values. Pressing the dial lets you scroll through the different parameters in the display window. The only catch is that the controls only address the preamps, filters and MIDI channel assign parameters and not the parametric EQ settings. To control the EQ, you need to use either the MPE-200 (which can be used as a master controller for up to 15 MPE-200S machines) or the Extension 78 plug-in.

Like the MPE-200, the MPE-200S is a great-sounding unit. The preamp is clean with plenty of gain (64dB worth). The filters are extremely useful, providing 17 steps of highpass and lowpass cut. The 4-band parametric EQ is accurate and flexible with low- and high-bands switchable between shelving or peak, and low mid and high mid with variable EQ. I recorded a wide range of instruments through the MPE-200S, including drums, voice and classical guitar—everything sounded wonderful. The unit's tone can be summed up as having a nice solid-state quality that lends a touch of analog warmth to recordings without sounding muddy or "wanna-be" vintage.

### EXTENSION 78

The Extension 78 control module is a free plug-in that is available for download at Summit Audio's Web site. Cool Stuff Labs wrote it for the exclusive purpose of controlling the Element 78

products from within your TDM recording environment. Though the plug-in's graphical interface vaguely resembles the MPE-200 machine's front panel, it is not nearly as exciting to view. It would have been nice if Cool Stuff Labs had put some time into making the plug-in look a little hipper—perhaps replacing the dark gray background with a representation of Element 78's neat anodized aluminum faceplates, like the Focusrite series of plug-ins.

But despite appearances, Extension 78 gets its job done. Controls for all four bands of the parametric EQ are present, as are preamp input gain, master output level, filter and output attenuation (which Summit Audio calls an "Output Fader"). MIDI settings can also be accessed from the plug-in, and there is a handy "MIDI OK," or "Check MIDI," status message. Because the MPE-200S doesn't have a MIDI activity light (a feature that would be a nice addition), this indicator is appreciated. The only control that I really missed was a key for switching preamp phase. The phase for each preamp channel can be reversed from the unit's front panel but not from the plug-in. Having phase control right on the plug-in would be super.

Previously posted on the Summit Audio Web site was a phrase that said, because Extension 78 is simply a MIDI-control module, "it uses no DSP power." Not exactly the case. I see their point, however—one mono instance of the plug-in eats up 25% of a DSP chip. Additional instances and stereo instances use up more DSP, accordingly. However, the plug-in will instantiate on either SRAM or DRAM chips. (After pointing out the online oversight, Summit Audio has since omitted this misinformation.) The plug-in can be inserted in stereo to give you control over both channels of the MPE-200S simultaneously, or mono to allow independent operation of each channel—very cool.

### CONTROL FREAK

Hooking up the MPE-200S and Extension 78 was no problem. I downloaded the plug-in from the Web site, stuck it in my DAE plug-ins folder, connected the MPE-200S to my MIDI patchbay and rebooted the computer. With a Pro Tools session up and running, I inserted the Extension 78 plug-in on an audio channel, selected the proper MIDI ports for communication and that was it—I was in control.

The plug-in's knobs are easily

tweaked by either up and down or circular mouse movements, depending on where you click. I was also able to control Extension 78 from a Mackie HUI digital audio mixer worksurface. All of the onscreen elements tracked the HUI's controls fine. However, when the plug-in's dials are selected for editing by HUI, the LED around the onscreen dial became so dark that it was barely visible. This is a minor graphical problem, but a hair confusing when you first see it, because you're not sure if HUI is actually moving the onscreen dial or the dial has been deactivated—something to keep in mind.

One of the best things about the Extension 78/MPE-200S combo is the ability to save presets. Saving your EQ and preamp values is exactly the same as saving your settings on a traditional plug-in—all you have to do is hit the "Save Settings" command and you're done. This feature makes recalling a previous session's preamp and EQ adjustments no sweat. For example, there's no longer a need to write down all of your preamp levels when a vocal session must be continued at a later date; just save the preamp setup as a patch, and all you have to remember is which microphone you were using. This is a real time saver.

To my knowledge, there is nothing else on the market quite like the Element 78 line and its associated Extension 78 plug-in. While the plug-in price can't be beat (again, it's free), the Element 78 hardware might be a bit pricey for some. But if you have the cash, these units are a solid investment. However, for the less financially endowed, it would be nice to see an inexpensive, single-channel MIDI preamp from Summit Audio based on the same operating principles as the Element 78 products. With the advent of the Element 78 system, all that's required now is a plug-in controlled mic stand and we'd hardly need to move at all, though I'd recommend going to the gym regularly to burn off all of those all-night session junk food calories.

Summit Audio, 390 Westridge Drive, Watsonville, CA 95706; 831/728-1302; fax 831/728-1073; [www.summitaudio.com](http://www.summitaudio.com). ■

*Erik Hawkins is a musician/producer working in Los Angeles County and the San Francisco Bay Area. Visit him at [www.erikhawkins.com](http://www.erikhawkins.com) for more equipment chitchat and tips on what's hot for the personal studio.*



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# ART TUBE MP STUDIO AND DI/O

## MIC PREAMPLIFIER/DIRECT BOX AND DIGITAL CONVERTER

Applied Research and Technology has two new desktop recording units that provide the necessary links from the analog world to your workstation or digital tape deck. Expanding on the original Tube MP, the Tube MP Studio is a single-channel mic preamp/direct box with VU meter and peak limiter. The DI/O is a stereo, 24-bit and up to 96kHz AD/DA converter with 128x oversampling. Both units are packaged in small, 1.5-lbs. desktop boxes measuring 5x5.5x2 inches (DxWxH) and use 12AX7A dual-triode vacuum tubes—powered by 9VAC wall wart supplies.

### TUBE MP STUDIO

The Tube MP Studio has a lighted VU meter for monitoring both the output level and the action of the output peak limiter (OPL) circuit. A bicolored LED glows green with low-level mic signals present and turns red when the tube's output is either about to clip or when the OPL limits the signal. The MP Studio has XLR and 1/4-inch I/O connections, a phase reverse switch and +48-volt phantom powering



for condenser mics.

Using the Tube MP Studio with a Shure KSM44 mic provided good results. This gave a clear, clean sound without harshness in the



top end. Plugging an electric guitar into the 1/4-inch jack turned the unit into an instant direct box. The direct sound compared with a FET-based direct box was clean, without coloration or compression. The Input Level Control sets gain from 6 to 40 dB or in High mode, 26 to 60 dB. The Equivalent Input Noise (EIN) is -129 dBu (A-weighted). By deliberately overdriving the input for a little tube distortion, you can still adjust the final output level with the Output Level control. Maximum output level is an impressive 28 dBu into 600 ohms. The Output Peak Limiter uses a FET-based peak limiter to control output peak levels. With the OPL active, the output level is limited to 0 dBu at the 1/4-inch output jack and 6 dBu at the XLR output. The attack time is internally set to very fast, while the release time is set to slow. These presets worked well for most situations and contributed to the overall sound of this cool little box.

The Tube MP Studio is designed to sit next to your computer keyboard for easy access. But I found that in the High Gain mode, I had some increased noise and interference caused by my computer's monitor.

After I moved the MP a little further away, all noise stopped. Using the OPL is simple: Just crank up the Input control and you'll see the red LED light up more and more. The limiter action is very affirmative: an absolute peak clamp! On one recording, I used it as an effect and loved it. The sound of this "brickwall" limiter is reason enough for me to own the MP.

### THE DI/O

The DI/O has stereo analog inputs and outputs, 24-bit S/PDIF digital input and output connections, and switchable 44.1, 48, 88.2 and 96kHz sample rates. The unit will also sync to external digital systems automatically in External mode. Multichannel workstation users will use this mode, because you'll want to sync with the rest of your A/D converters. The D/A converter syncs to incoming audio up to 100kHz sample rates and will mute audio if something is wrong. However, this action does not affect A/D conversion.

DI/O's simple front panel has an input gain for adjusting analog audio levels from 0 to 20 dB. The 12AX7 tube in the DI/O's signal path can be adjusted with the Tube Warmth control to add "character" to the A/D conversion. The control ranges from a very

BY BARRY RUDOLPH

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clean and pristine sound to a more warm and fuzzy nature. At higher tube warmth settings, a yellow LED lights to show saturation of the tube; the same LED moves up to red when the A/D is three dB from clipping. Sample rate is selected with a "Function Tree" push-button: Just push it until the right combination of LEDs light up, indicating your desired sample rate.

Using both the DI/O and Tube MP units together (they stack on one another), I can skip the analog front end of my cheap soundcard by going through the S/PDIF ports. The DI/O's D/A converter was better than the one in my old DAT machine. On another session, I tried plugging the analog output of the D/A converter into the analog input of the A/D converter. As silly as this sounds, I was able to add a tubey sound to an already recorded Pro Tools file.

The DI/O is a great portable stereo AD/DA converter that sounds different enough from your other converters to make it more than worth its \$249 MSRP. The ART Tube MP Studio is \$159; both units include one-year warranties.

ART, 215 Tremont St., Rochester, NY 14608; 716/436-2720; fax 716/436-3942; [www.artproaudio.com](http://www.artproaudio.com). ■

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

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### SPEC SHEET

#### DI/O

AD/DA Converter	24-bit, 96kHz, 128x oversampling
Sample Rate	44.1, 48, 88.2, 96kHz switchable
External Sync Range	22 kHz to 100 kHz
Digital Interface	S/PDIF
Frequency Response	10 Hz to 30 kHz, ± 0.5 dB
Dynamic Range (D/A)	108 dB (A-weighted)

#### Tube MP Studio

Maximum Input Level	XLR +14dBu
Maximum Inout Level	1/4-inch +22dBu
Maximum Output Level	XLR +28dBu
Maximum Output Level	1/4-inch +22dBu
CMRR	greater than 75 dB @1 kHz
Frequency Response	10 Hz to 30 kHz, ± 0.5 dB
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Equivalent in/out Noise (EIN)	129 dB (A-weighted)

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# SNAPSHOT PRODUCT REVIEWS

## SD SYSTEMS STM 99 Saxophone Miking System

Over the years, the Netherlands-based SD Systems has developed a number of microphones designed for the needs of



reproducing specific jazz and orchestral instruments. The company's latest offering is the STM 99, a modular system intended to provide high-quality miking of saxophones onstage or in the studio.

Priced at \$1,395 (individual mic capsules, mounts and accessories are also available separately) with a foam-lined wood box, the STM 99 system consists of three interchangeable mic capsules (cardioid, hypercardioid and omnidirectional), a 5-foot cable connecting the mic body to a 4-inch pre-amp section (with a standard-XLR output), a removable foam windscreen and three mic mounts. Among the latter are a stand mounting clip (for using the STM with other instruments), an on-axis mount that centers the capsule about five inches in front of the sax bell and a clip-on mount with a flexible 6-inch gooseneck.

All of the mounts include shock-mounting hardware that suspends the mic capsule via elastic bands, isolating the mic from thumps, bumps and other vibrations. The

on-instrument mounts have thick rubber coatings at the point of contact, which adds to the shock resistance while protecting the instrument from scratches. Either mount holds securely while allowing for easy removal after the gig. A minimal screen over the capsules provides for an open sound, which, unfortunately, exposes more of the diaphragm to smoke, dirt, etc. For live applications, I suggest using the foam windscreen for additional protection. Also, the threads on the capsules are very fine, and caution should be used when changing capsules to avoid cross-threading.

In use, the system offers an extraordinary degree of flexibility, both in mounting and placement options, as well as in capsule choices. The omni capsule had the best LF response of all and was especially nice on bari and tenor saxes; the omni also exhibits a rising top end that added an airy, breathy quality. The cardioid had the flattest overall response of the three (especially in the upper registers) and was ideal for altos and sopranos, where the omni's HF rise could get somewhat edgy.

The choice here, however, depends on the sound of the sax itself and the type of music or track it was in—for example, as a spot mic on an orchestral or light jazz piece the cardioid may not be right, while that same tone for a screaming rock solo could be spot-on. The sound of the hypercardioid capsule was somewhere between the omni and cardioid in character and, due to its tight pattern, would be my first choice on a busy, high-SPL stage

where isolation or feedback is problematic. The availability of the on-axis mount or the gooseneck clip also allows for more variation in the audio palette, offering either a down-the-throat growl or a smoother, more ambient effect.

The need for an on-sax mount is obvious onstage, but I'm surprised at how many sax players refuse to stand still in front of a mic while tracking in the studio. For such players, the STM 99 is ideal. But whether onstage or in the studio, the STM 99 offers an elegant solution to an old problem.

Dist. by Advanced Sonic Concepts; 609/726-9202; [www.advancedsonicconcepts.com](http://www.advancedsonicconcepts.com).

—George Petersen

## DENON DN-F20R Portable IC Recorder

Designed for ENG or location sampling applications, the DN-F20R is a portable stereo recorder that stores audio on CompactFlash Type I memory cards via two front panel card slots. Up to 999 tracks of audio can be stored as stereo or mono files in various formats, depending on the user's fidelity needs: linear PCM (16-bit/48kHz .WAV files); MPEG1 Layer 2 (16-bit/48kHz, 128 kbps); or MPEG-2 Layer 2 (16-bit/24 kHz, 64 kbps).

The 2-pound unit features AC or DC powering (six AA batteries), XLR-balanced mic inputs, RCA stereo line inputs/outputs,





traditional Play/Stop/Record buttons and a simple set of keys for selecting recording modes. A backlit LCD shows metering, recorder status, time/locator information, etc. The mic inputs also have switches for selecting or bypassing a highpass (low-cut) filter, -20dB attenuator and an overload protection

The Distressor's recently released British Mode option brings even more excitement and flexibility to the party. The option can be ordered for a new Distressor or retrofitted to any unit you already own and costs only \$100. (Without British Mode, the Distressor's list price is \$1,499; list is \$1,599 with the

Whether you already own a Distressor or are thinking of buying a new unit, you owe it to yourself to order the British Mode option. This is the Holy Grail at a bargain price. I'm buying!

Empirical Labs; 973/541-9447; www.EmpiricalLabs.com.

—Michael Cooper



limiter. Plugging into the 1/4-inch headphone jack disables the small onboard monitor speaker.

Operating the DN-F20R is only slightly more complicated than using any portable cassette or DAT deck. One nice touch is the fact that the connections on the two side panels are recessed for protection, as are the Power, Record Level and Record buttons, to avoid any unexpected "changes," and there is also a key hold switch for locking the transport controls. One obvious difference the DN-F20R offers is its no-moving-parts design, which should keep the unit running for years to come. The CompactFlash cards have a maximum capacity of 192 MB, offering up to three hours of recording at 16-bit/24 kHz. Via an optional adapter, the CompactFlash cards can fit into a standard PCMCIA slot for quick uploads directly to a PC.

Retailing at \$1,299, including shoulder strap, soft carry case and external AC adapter, the DN-F20R is a convenient, simple-to-use unit providing great-sounding field recordings with affordable, reusable media, and simple interfacing to other systems for editing, storage and archives.

Denon Electronics; 973/396-0810; www.del.denon.com.

—George Petersen

## EMPIRICAL LABS EL-8 DISTRESSOR

### British Mode Option

The Empirical Labs EL-8 Distressor single-channel compressor immediately turned heads when it was introduced in '96. The unit's ratio settings call up four alternate circuit paths, each having its own distinct personality, making the Distressor one of the most versatile compressors on the market. Additionally, second- and third-harmonic distortion can be added to the audio path to simulate tube or analog tape saturation.

option.) Enabled by a front panel switch (the retrofit also includes an associated status LED), British Mode changes the unit's attack and release reference voltages to create totally new time constants and curves for all ratios and circuit paths. Empirical Labs' guiding inspiration here was to emulate the UREI 1176LN. In fact, with a fast manual attack time dialed in, British Mode makes a Distressor sound startlingly similar to an 1176LN with two or more ratio buttons pushed in.

British Mode serves up an absolutely savage "power pop" snare drum sound that is to die for. It also sounds stunning on electric guitar with a 20:1 ratio switched in, imparting a wonderful crunchy attack. On vocals (with the "1:1" ratio setting chosen), British Mode produces a clear, in-your-face quality much like an 1176LN. For comparison

## NATIVE INSTRUMENTS B4 Virtual Tonewheel Organ/ Rotary Speaker Emulator

The B4 from Native Instruments (the people who developed the acclaimed Reaktor software-based synth) is a virtual re-creation of the legendary Hammond B3 organ and Leslie speaker, with a host of other features and goodies thrown in. Priced at \$235, the ASIO-compatible software can be used as a stand-alone application with a PC or Mac, or used as a plug-in with Digidesign DirectConnect or with any VST 2.0-compatible sequencer.

Features include 91 tonewheels, two manuals and one pedal keyboard, nine drawbars per manual, scanner vibrato/chorus, percussion on any harmonic, adjustable keyclick, tube distortion parameters, independent treble and bass rotor tweaks, and an array of "miking" adjustments, including balance, pan angle and distance from the rotor. All parameters can be saved as presets, named and stored for recall; any changes can be dynamically altered via MIDI or mouse commands. The soft-



purposes, the 1176LN offers a bit more presence. But the Distressor's British Mode does a surprisingly authentic emulation of that distinctive "over-the-top" compression curve that the 1176LN is famous for.

Bottom line: British Mode kills.

ware can also be used to process other (nonorgan) sounds, such as voice, guitar, drums, other keyboards, whatever, by using it as an insert effect within the VST environment.

Installation on either a Mac running Pro Tools 5.0 or a PC with Steinberg

Cubase 5 was straightforward. The software is provided on a CD-ROM, and the copy protection scheme simply asks the user to occasionally insert the master CD into the drive on boot-up. There are no dongles, online codes or disk authorizations to lose. I like this. Also, the user interface is simple: Drag a drawbar or click on an effects switch and there you are. One minor hassle is using a mouse to turn rotating controls, such as pots, but by holding the Shift key while adjusting a control, the knob goes into a "fine-tune mode," which increases the degree of movement required to make changes.

Despite a dazzling collection of adjustable parameters, the strength of

software on the company's Web site. But best of all, give your roadies a rest: You won't need that B3 dolly to move this software package around.

Native Instruments; 800/665-0030; [www.native-instruments.com](http://www.native-instruments.com).

—George Petersen

## PRO CREATION "CUTTING THE EDGE"

### Pro Tools Music Library System

There are over 100 production music libraries available worldwide, representing tens of thousands of music tracks in buyout, blanket-licensed and needle-drop forms. So does the industry really need another music library? If a library is as unique and versatile as *Cutting the Edge* from Pro Creation, then the answer is a resounding, "Yes!"

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Here's where the versatility sets in: Once in the Pro Tools environment, users can solo or mute tracks, extend or shorten the performances, tweak the mix or add a new solo instrument over the existing rhythm beds. The original files are protected on the CD-ROM, so there's no risk in altering the files. All the tracks are assembled in easy-to-loop segments, so editing is a breeze. Each track also includes the tempo and key signature information for adding solos over the top of the existing tracks, if desired.

All in all, Pro Creation has devised a different and ingenious way of creating customized production music that's fast, easy and fun. The five-CD set is \$550—not cheap, but not unreasonable for a set of production music that uniquely reflects *your* style.

Pro Creation; 27/11/886-6411 (South Africa); [www.procreation.co.za](http://www.procreation.co.za).

—George Petersen

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# Internet Audio



this program is the audio quality of its virtual organs. It would be too easy to unknowingly dismiss the B4 as a collection of B3 samples. However, in developing the B4, Native Instruments engaged in an extensive research project, analyzing all of the possible components and parameters that make up the B3 sound and constructing a software model that re-creates nuances of the B3 sound, such as harmonic fold-back, drawbar crosstalk and loudness robbing, for a sound that is virtually (pun intended) indistinguishable from the original and rivals the sonic quality of the best hardware organ emulations from Roland, Korg and Kurzweil.

The bottom line is, this thing rocks! The price is downright low, latency was never an issue, there's plenty of parameters to get exactly the sound you need and it's fun to play. Oh, and it sounds great; you can check it out for yourself by downloading a demo version of the

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## TOUR PROFILE

# STRING CHEESE INCIDENT

**CAPTURING THAT HIGH MOUNTAIN SOUND WITH LINE ARRAYS**



PHOTO: JEREMY STEIN

**B**lending bluegrass, reggae, jazz, blues and straight-ahead rock 'n' roll into their own unique musical stew, Colorado's String Cheese Incident has, in a few short years, risen to the upper tier of the jam-band echelon. As recently as 1999, the band was playing the 600-seat Fox Theater in Boulder, but in 2000, the band headlined a show at Red Rocks for a near sold-out crowd. Constant touring and a slot on the 1999 Summer Sessions tour with former Grateful Dead bassist Phil Lesh has let fans across the country in on the secret that Coloradans had tried to keep for over five years.

String Cheese Incident is made up of mandolinist/fiddler Michael Kang, acoustic guitarist Bill Nershi, bassist Keith Moseley, keyboardist Kyle Hollingsworth and drummer Michael Travis. The musical hopscotch the band performs every night keeps soundman Jon O'Leary working hard. "It is difficult to be perfect every single night, because we change so much from genre to genre in each song," says O'Leary. "Every song needs to be mixed differently. When we go from reggae to bluegrass, I have to redo my whole mix, and they genre-hop so much it constantly keeps me on my

toes. There are a lot of subtle things that need to be done to make it sound good, and that is what I like so much about working with these guys. They go so many places soundwise during an evening that it keeps me very focused on the music. It is a big challenge to make them sound good each night."

O'Leary has been doing sound for the band since 1996, when Kang approached him at the Telluride Bluegrass Festival and asked if he would care to mix the band's set. O'Leary, one of the founders of the Fox Theater, had gained extensive sound experience at the Fox and readily agreed. After leaving the Fox and joining up with String Cheese Incident, O'Leary formed Shaped Music Productions with Rich Werdes, and the company owns the entire SCI sound production setup.

The core of the band's sound system is a V-DOSC™ line array system, which they have been using since August 1999. For the theater tours, Shaped Music Productions provides 12 V-DOSC™ speakers and six d/V-DOSC™ speakers hung under the regular cabinets and used for downfill, all powered by QSC 6.0 amplifiers. Eight L-Acoustic SB218 subwoofer cabinets are powered by QSC

**BY CANDACE MORGAN**

9.0 amps. "In 2001, we will be upping to 16 V-DOSC™ speakers, split eight to a side, to cover more area," adds O'Leary. "We also use Meyer UPAs for near-fills; we stick those onstage for people in the front row."

O'Leary mixes on a Midas Heritage 3000 console. "It's a great-sounding desk and gives me a lot of flexibility," O'Leary comments. "It has 24 auxiliary ins, which help me create the full stereo effect and wide sound that we go for, and it also helps with the multitrack recording we do." For effects, O'Leary uses TC Electronic M5000 and M2000 multi-effects units, plus a TC Electronic D-2 delay unit and a Lexicon MPX-1. Dynamics are handled with dbx 1066 compressors and

Nershi is assigned a Neumann 170 on the speaker cabinet, plus a stereo direct input. Keith Moseley gets an Audix CX-111 on the bass cabinet, plus a direct input from his preamp. Keyboardist Kyle Hollingsworth's Leslie cabinet is miked with two Audix CX-111 mics on top and an Audio-Technica AT25 at the bottom. Left and right Rhodes piano and left and right synthesizer inputs are sub-mixed to a stereo pair through a Mackie 1201. "That isn't the way I want it, but it saves inputs for the multitrack," says O'Leary. "We might change that in the future."

Vocal mics were all Audix VX-10s at the time of writing, but

feedback nightmare, but in late 1997, the band switched to in-ear monitors, and that has made life easier for both O'Leary and monitor engineer Ian Skomski. In particular, O'Leary says using in-ear monitors helps him get the volume of the acoustic instruments up and balanced in the mix. "One of the things that certainly has contributed to getting volume out of Billy is using the in-ear monitors. Since no sound folds back from the monitors, I can get his guitar further up into the mix and get tonal qualities that I couldn't get if we had open wedges onstage. As far as bal-



L-R: Michael Kang, Bill Nershi and Keith Moseley (on bass)

PHOTO: CANDACE HORGAN

an ACP 88 for gating.

O'Leary has a variety of microphones set up onstage. The drum mics include six Shure SM98s on toms and percussion, two Shure KSM32s for overheads, an M88 on kick, Shure Beta 57 on the snare and Audix CX-111s for hi-hat. Michael Kang's amplified mandolin gets stereo Sennheiser 409s and an Audix CX-111 on his fiddle cabinet. Acoustic guitarist Bill

O'Leary intended to change vocal mics in the New Year. "I want to start using the Neumann 105s," he says. "Eventually, I would like to have a whole rack of mic pre's to go into, with the ability to remote-control the levels from FOH. That is all lots of money, and we will have to see if we can afford it. There is a lot of cutting-edge stuff we'd like to keep up with."

Mixing acoustic guitar with electric mandolin and keyboards could be a

ancing the tonal aspects, there are a lot of mid- to upper-midrange frequencies that Billy, Kyle and Mike live in. It is equally important for me to try to create space between them and for them to play parts that don't step on each other. They have to realize that they shouldn't fight each other, but complement each other, and I try to separate them a little bit in the stereo image to give them a little more space than if it was a strictly mono mix. It's more taste and who I feel needs to be on top a little bit and



L-R: keyboard tech Jimmy Purich, FOH engineer Jon O'Leary, drum tech Brendon Devane, sound tech Mike Gworek and guitar tech Boogie Parlow

who needs to be layered underneath. That is very tricky. I have to understand where each individual wants to be in the mix. We talk a lot about that, about where they should be in the mix during parts of songs, and I do my best to find a balance between what is working for me at front of house and where they want to be in the mix."

Monitor engineer Skomski, who joined up with the band in the summer of 1998, describes the in-ear setup: "We use a Midas XL250 monitor desk and Shure ESM600 personal in-ear monitors. Everybody in the band has a stereo mix going to their head. We use a pair of AKG microphones onstage to add stage and audience ambience to the in-ear mix, so the band can really pick up a little on what the audience is hearing and adjust accordingly. Those mics just go to the monitors; one is between Mike and Billy, and one between Kyle and Keith. There is also one for Travis. The mics also allow each bandmember to talk to each other, which really helps them give each other cues for the segues between songs. In-ears cut about 20 dB, so the mics are necessary for communication. It's much better

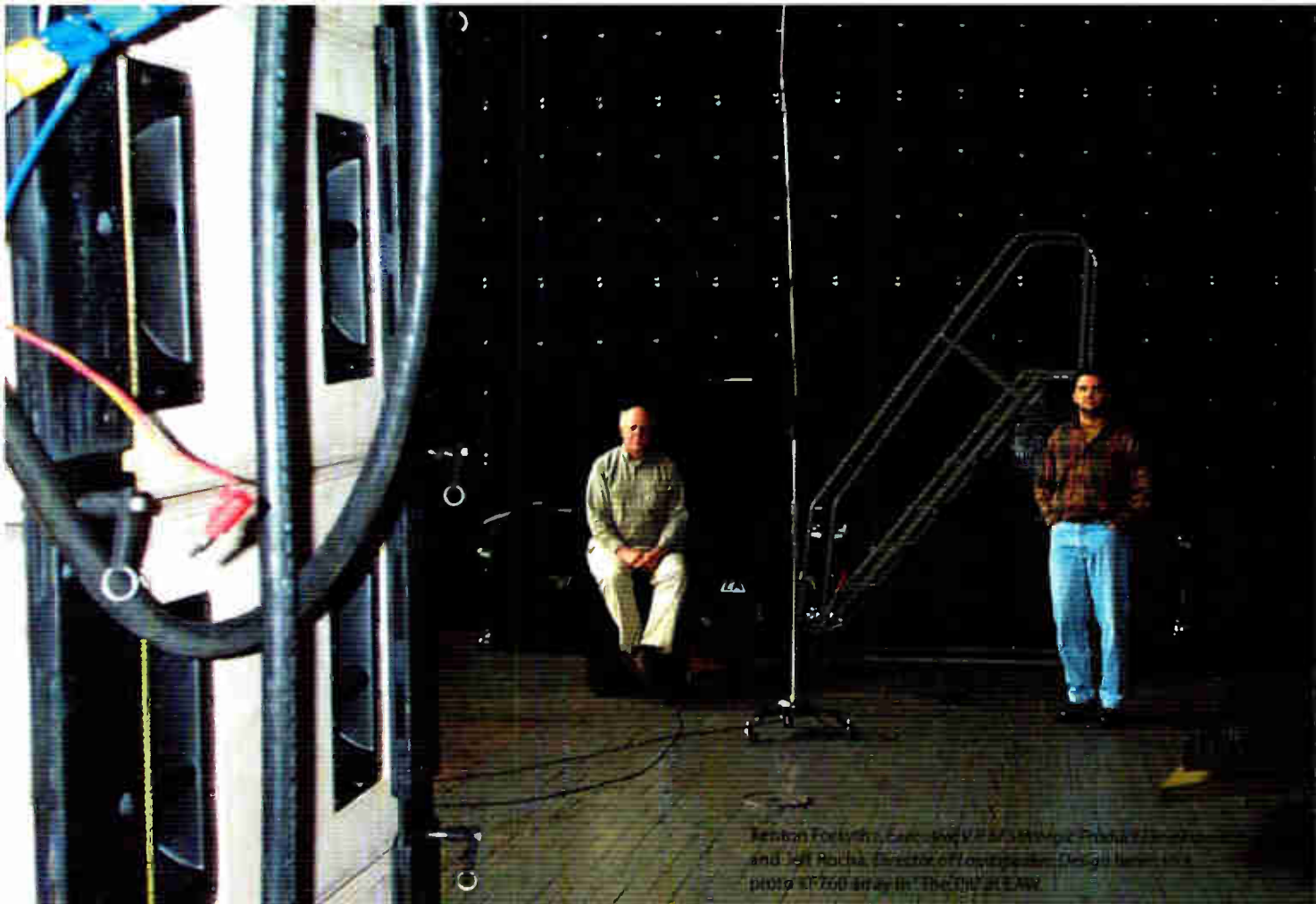
than having everyone yelling at each other. We use very little outboard EQ on the monitor desk. We use some Ashly EQ, but no other processing. We have a reverb, but they don't even use it."

Placing the cabinets each night is something O'Leary works out scientifically with systems tech Phil Krumrine and is an important element in the finished sound. "Phil will measure the dimensions of the room and the height of the rise to the back of the room and the height of the balcony to the back of the balcony," explains O'Leary. "Specifically, we measure where the ear level of the front row of the balcony is to the ear level of the rear row of the balcony, and that is where we aim the sound. We only shoot sound where the patrons are sitting or standing. After we get the measurements, it goes into the computer, and it will give us a physical display of the P.A. and what angles straps to use between each speaker. The computer gives the optimal splay to make the sound the most consistent, so that people in the back row should hear the same tonal qualities as someone in the first row. Obviously, dB levels will be different. The whole technique is called

'wave front sculpture technology,' and that is critical to making line array systems sound good.

"We are pretty happy with the L-Acoustic V-DOSC system," O'Leary continues. "Judging from the number of brand-new line array systems on the market, it is a growing field, but L-Acoustic was really the first company to invest in it, and they patented their wave guide in 1992 and started making those V-DOSC speakers. All the major companies are moving toward using line arrays for several applications. There is a debate over what systems are best for different applications, but some of the biggest tours in the world use V-DOSC now. It has been a great system for us and works in theaters, outdoor festivals and big outdoor shows, and I think we will be able to grow with it. I mean, Aerosmith uses V-DOSC for arenas, so it must work. If we ever get to that level, we will try V-DOSC first. I haven't done a show yet where I wasn't happy with V-DOSC, and I have used it everywhere from small clubs to big outdoor festivals."

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



Kenan Fortin, CEO, and Jeff Rocha, Director of Loudspeaker Design, with the photo KF760 array in the EAW facility.



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CIRCLE #087 ON PRODUCT INFO CARD

# Line Arrays

The Pros and Cons of SR's Latest Sensation **by Chris Michie**



*JBL's VERTEC system (six VT4889 cabinets shown).*

**FOR THE PAST TWO DECADES,** most large-scale sound systems have been configured as multicabinet "clusters," typically made up of components either purchased from a handful of manufacturers or designed and built by sound equipment rental companies. But the '90s saw the arrival of a new style of cluster, the line array, and, as the decade progressed, several major U.S. sound companies fielded systems based on this "new" technology. But whereas many system designers and engineers are familiar with the theory and practice of implementing multicabinet, multidimensional arrays, relatively few have had much experience installing and operating line arrays. To find out more about the practical aspects of using line arrays, *Mix* interviewed a select group of sound system designers and users. Our thanks to Lars Brogaard, Robert "Cubby"



**THE  
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IS KEY—IT HAS  
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—SCOTT  
HARMALA**

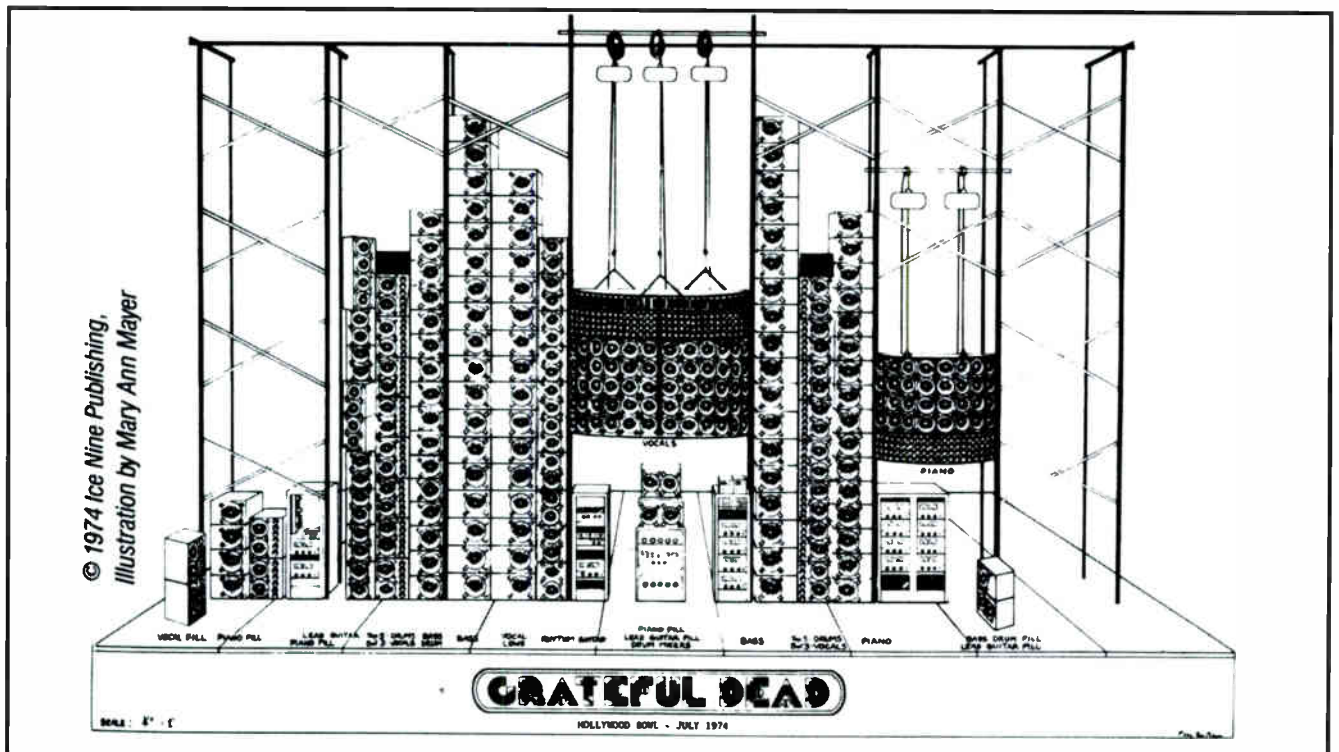
Colby, Scott Harmala, John Meyer and Robert Scovill.

In its most basic form, a line array is made up of identical loudspeaker components arranged in a vertical line. Line arrays have two striking characteristics: Doubling the number of drivers in the array results in a 6dB increase in SPL in the far field at all frequencies; and the vertical coverage angle of the array is largely determined by the number of drivers—the more drivers in line, the narrower the vertical coverage angle. (The horizontal coverage angle remains largely unaffected by the number of drivers and is typically about 80°, depending on the components used.) Because of the “6dB doubling effect,” a single line array can outperform a conventional multisource cluster in long-throw applications, and almost every major sound system manufacturer is either planning a line array system or has one in production—at least three line array systems came to market during 2000. (See the October 2000 edition of *Mix* for Technology Spotlights on Electro-Voice’s X-Line and JBL’s VERTEC line array systems.)

“It’s the way of the world right now,” says independent

engineer Lars Brogaard, who recently used a new Electro-Voice X-Line system for the Diana Ross & The Supremes tour. “This is what everybody is going to have to do now because it just makes sense. It’s easy to work with once you know what you’re doing, and it takes up less space.” Equally important, adds Brogaard, “For me, it just sounds a lot better. It’s much more controllable.”

Line arrays are not new—the principles were first described in the 19th century—and, before sound companies started building their own horn-loaded and direct radiating systems in the late '60s, most bands were amplified through line array P.A.s, or “columns.” Shure, University and UK-based WEM are names that rise from the fog of memory, but many other manufacturers made line array-based systems for public address and live music applications. However, line arrays have certain inherent limitations, and, faced with the demand for high SPLs, wide coverage and portability, live sound system designers increasingly turned their attention to modular horn-loaded systems. Apart from the notoriously impractical “Wall of Sound” system developed for the Grateful Dead in the mid-'70s, line arrays



The Grateful Dead’s “Wall of Sound” consisted of many individual towers of instrument and vocal speakers, essentially a system of multiple line arrays. At one time including 640 speakers and 48 amplifiers, the

system required a crew of 16. Grateful Dead tour productions of the time carried two complete stages, which were leapfrogged for consecutive dates.

# Line Arrays

were largely absent from the U.S. touring scene until the early '90s. That was when AudioTek, a Burbank, Calif.-based sound company that specializes in sound for TV awards shows and special events, first became interested in a new line array system designed by Dr. Christian Heil and manufactured in France by L-Acoustic.

Scott Harmala, AudioTek's chief engineer, takes up the story. "We are probably the first users of V-DOSC™ in the United States—we've been using it for, gosh, probably at least nine years. Jeffrey Cox, who was originally the sound guy at the Universal Amphitheater here in town, got word of this new system in France, and he went to check it out and was incredibly impressed by the technology and by Dr. Heil and just the whole package." Cox was in fact so impressed that Cox Audio became the North American distributor for L-Acoustic and the V-DOSC system. AudioTek, which already had a long-standing relationship with Cox, was among the first users of the 16-box V-DOSC system that was sent to the U.S. as a demo.

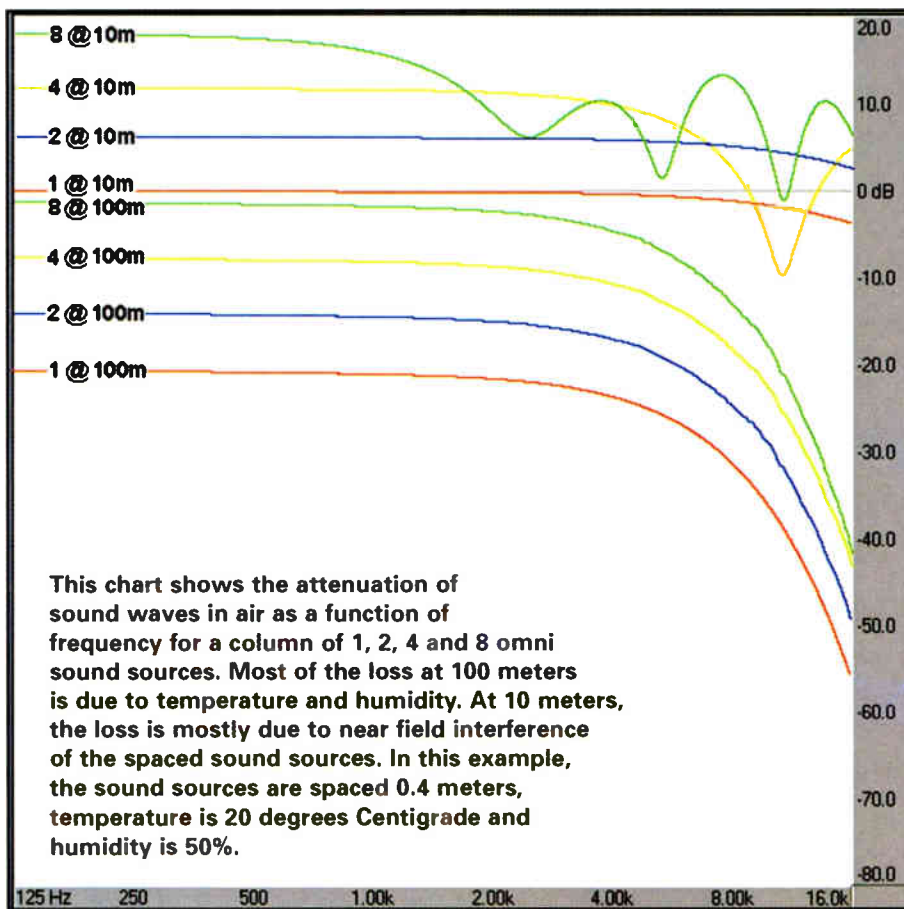
"At that time, we realized that line arrays had incredible potential, especially in this specialized [TV awards show audio] business we were in back then," continues Harmala. "Dealing with lavalier mics and podiums and other difficult things onstage in fairly large venues, the directional characteristics of the line array really gave us a lot of gain before feedback, a lot more than any conventional system that we'd experienced before."

Independent engineer (and six-time TEC Award winner) Robert Scovill was also favorably impressed. "The first time I ever ran into the V-DOSC system was at an awards show," he recalls. "It had just come over, and Jeff Cox, who was the house sound guy at the Universal Amphitheater, where they were holding the event, was kind of extolling the virtues of it, etc., etc. And at the time—especially in that setting—I was like, 'Yeah, okay, whatever. [Laughs.] I'm not

sure I'm buying it.' But having said that, upon listening to it throughout the day—because I was just a guest mixer, I was walking around listening to the other talent on it—I was thinking, 'Man, this is really good in terms of its coverage.' I had heard a lot of shows in the Universal Amphitheater, and that is not an easy room to cover. Just in terms of hanging P.A. and getting one that will cover that room properly has always been a big challenge. At any rate, I remember walking around and thinking, 'Man, the vertical coverage here is

clearly and for a very long distance. So no matter where I've been mixing in these bigger arenas, it's always been a pleasure to listen to the P.A." In addition to the V-DOSC system, Colby has also mixed on the Clair Bros. 1-4 and JBL VERTEC systems and is unstinting in his praise for all three. "The line arrays that I've used have been extremely accurate and very musical," he adds. "When you reach and turn your EQ knob, they're really responsive in a positive way."

"On V-DOSC, much like in a studio setting where you have control room



really, really good.' As well as the horizontal, for that matter. It was as good as I had heard it there."

It was not just the coverage characteristics of the V-DOSC™ system that drew positive reviews. "It would be very difficult for me to go back to any of the conventional systems that have been around, even though they were all very good, and they all still are very good," says independent engineer (and perennial TEC Award nominee) Rob "Cubby" Colby. "Primarily, it's been this incredible difference in vocal intelligibility and overall dynamics. For really percussive music, like, say, Latin music, which is currently what I'm doing with Ricky Martin, [the V-DOSC system] can really deliver the dynamics of the music really

monitors, if you're a bad mixer, it's going to show you as a bad mixer," notes Scovill. "If you're a great mixer, it's going to show you as a great mixer. There won't be this averaging down of the P.A. system where, if you're on a system that's terribly comb-filtered and really doesn't sound that good to begin with, if you're a great mixer, it's going to average your mix down. Whereas if you're a bad mixer, it's going to average your mix up."

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*— Carl Taylor, owner & president of CTS Audio.*

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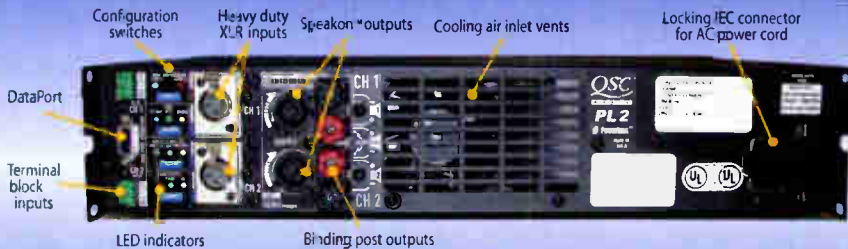
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Rear view of PowerLight 2"A" amplifier



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CIRCLE #088 ON PRODUCT INFO CARD

# Line Arrays

line arrays are now so widely praised, were they widely ignored for two decades during the major growth period of the live sound industry?

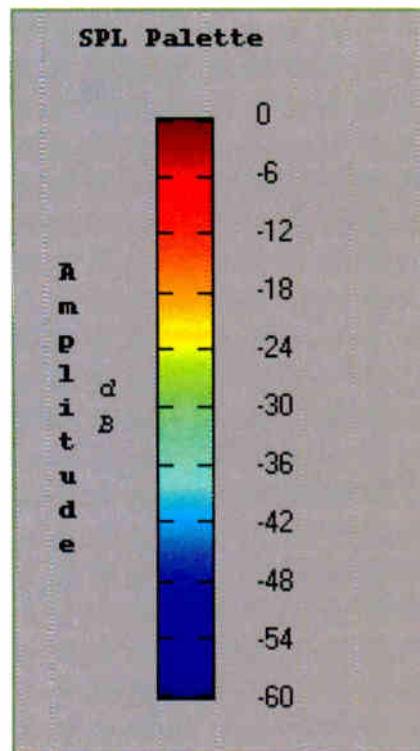
“What’s really elegant about a line array, a pure line array, is that every time you double the number of elements, you get exactly a 6dB increase in frequency response at all frequencies,” says John Meyer, founder of Meyer Sound Labs. “This is all when you’re far, far away—hundreds and hundreds of feet away, or thousands of feet away. When you’re in the near-field, you have a whole other set of cancellation problems that occur, which was why people didn’t like line arrays and why they disappeared. All the column-type speakers disappeared because when you were in the near-field of the things, 10, 20 feet away, and you stood up and sat down,

you heard great interference patterns. So they kind of fell out of favor.”

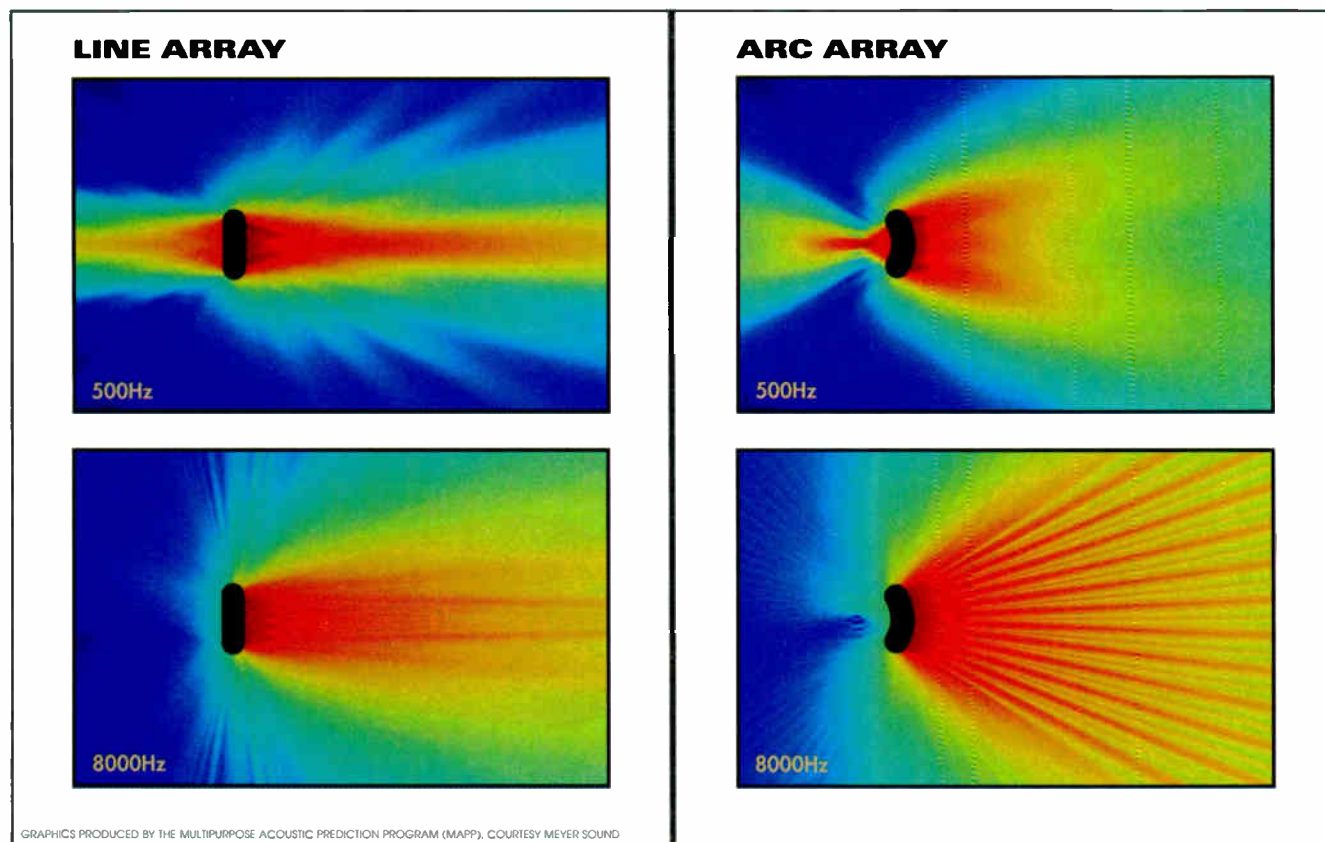
As large-scale sound systems became more common, system designers occasionally revisited line array theory, but back when P.A.s were typically stacked on stages or risers, the narrow vertical coverage angle sometimes worked against them. “We worked on line arrays with the Grateful Dead, I don’t know, 30 years ago, or whatever it was—I guess it was around 1970 they were doing their ‘Wall of Sound,’” says Meyer. “We found, when we were doing line arrays at Winterland, that there was no bass in the balcony.”

The “Wall of Sound” consisted of many individual towers of instrument and vocal speakers, essentially a system of multiple line arrays. Though each speaker tower was of a different length, none were so tall that their acoustical centers aligned with the balcony, so the bass frequencies would typically be projected along the plane of the auditorium floor and under the balcony.

Whatever problems current line array users have with the low end—several current touring line array systems include flown or stacked sub-



*SPL palette shows relative attenuation indicated by color in dB. (This palette relates to the arc at 8,000Hz, but it is representative for all charts.)*

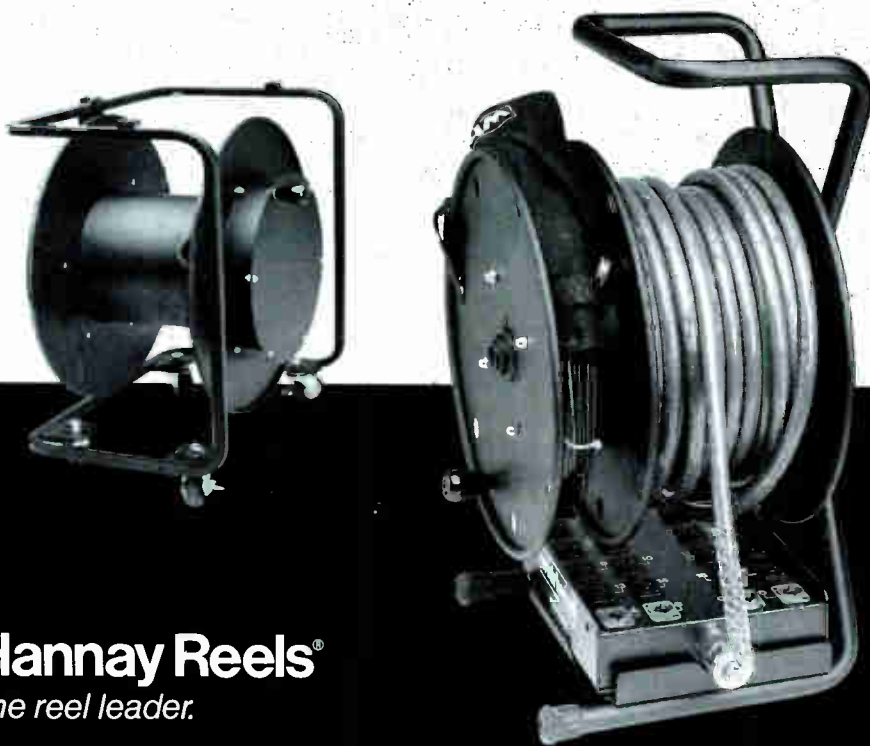


GRAPHICS PRODUCED BY THE MULTIPURPOSE ACOUSTIC PREDICTION PROGRAM (MAPP). COURTESY MEYER SOUND

These charts show the directional radiation characteristics of a line array source and a 60° arc, both arrays consisting of 13 sources spaced 0.4 meters apart, all parts of equal strength and phase. Each graph depicts the sound pressure over

an area of 50m by 50m in the plane of the line or arc. Each source is made up of a 12-inch direct radiator and a high-frequency directional horn-mounted perpendicular to the line in a sealed enclosure.

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# Line Arrays

woofers—the narrow vertical coverage angle of line arrays can be used to an advantage in certain situations. A properly positioned line array can be aimed to cover only the audience area on the floor, thereby minimizing the reverberation and slap echo that inevitably result when a P.A. system's coverage area includes building surfaces not covered by the (highly absorptive) audience. For most large-scale reinforcement applications, a line array must be hung from the auditorium ceiling or purpose-built support towers, which makes aiming the system particularly critical.

## RIGGING MATTERS

"I started having to learn alternate rigging techniques for V-DOSC," says Harmala. "We were very excited about reaching a new envelope that we'd only

dreamed about being able to hit before. But we were struggling with it in terms of application, because in order to have it be an effective system, you do need a fair amount of boxes in-line. Anywhere from six to eight, typically. And a lot of times, especially in TV, it's a very difficult thing to try to sell, because it's a long, vertical strip of stuff. And in TV, the whole idea is visuals. Audio is low man on the totem pole, unfortunately, until there's an issue. But, as a general statement, we're put in the backseat. [The V-DOSC system] has to be rigged and positioned to be effective, yet it has to be out of sight. So it was very difficult for us in our early days to figure out how to do it. Where to put it, in order to make it work and have it visually out of the way."

One of the factors in favor of line arrays is the relative compactness of the system and the minimal rigging requirements, especially compared with the number of hanging points necessary for the typical flying P.A. system. "The VERTEC system is extremely versatile in terms of rigging," says



E-V's X-Line system (eight cabinets) as used for the Diana Ross & The Supremes tour

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CIRCLE #090 ON PRODUCT INFO CARD

World Radio History

Harmala. "With a combination of the rigging design integral in it, and with two different types of rigging frames, you can rig it in any orientation. In other words, you could build the thing to be spraying straight down, laying as a flat line array spraying straight down if you wanted to."

As Harmala explains, there are also situations in which a line array, or at least part of it, must be aimed upward. "We've done jobs here at the Los Angeles Coliseum, one of those old stadiums that is one continuous rising bleacher section all the way up from the field all the way to the back, so it's really deep and tall. So if you're doing a gig there with maybe 50-foot scaffolding and you can rig your clusters 40 feet high, you're shooting like 15 or 20 degrees up in the air in order to hit the guys way at the top."

### SOME ASSEMBLY REQUIRED

The key to successful implementation of line arrays is a clear understanding of their capabilities. "Line arrays are very elegant, because they allow you to put more power into one area," notes Meyer. "As you keep adding units in the line array, you keep increasing your power. Every time you double the number of drivers, you double the power at the same position in the far field without interference. And this is much better than trying to crossfire a lot of speakers into that area. So when you're trying to get a lot of power at a long distance, line arrays are very good."

However, in all but a few situations, that segment of the audience nearest the stage will not be sitting (or standing) in the far field coverage pattern. For that reason, most of the line array systems currently in use are hung in a gentle arc or in a "J" curve with the lower part of the curve designated as a downfill or near-field system. Depending on the system and its configuration, this curve can introduce more problems than it solves.

"We started experimenting with arcs with the Grateful Dead, because we were trying to figure out how to get sound in the balcony," recalls Meyer. "But when you get into arcs, you start getting into real problems with directionality—certain frequencies become more directional than others. Line arrays are true line arrays only when they're straight; once you curve them, they're no longer line arrays—an arc is a different thing. As soon as you curve the array, you get some frequencies that spread and some frequencies actually

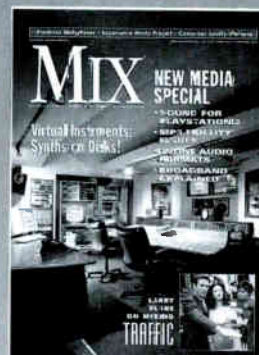
get more directional, depending on the curve and the radius of the curve."

### PAGING DR. HEIL

"You really need to understand the physics and the science in order to really apply it and maximize it in the right way," says Harmala. "I've seen a lot of V-DOSC [systems] used in the wrong way on a whole bunch of different shows, and a lot of it is because they just don't understand, and they're thinking of it in terms of conventional cluster layouts or designs. You gotta kind of drop all that you've been operating on for years and years, and you gotta kind of re-learn a new way of thinking about how to do this. And the fact that you can actually contour the SPL across the cluster is a very powerful thing that's very underrated. One of the things that Heil doesn't prescribe that we regularly do is that we split-process our clusters. We will divide clusters into a long-throw environment and a near-field processing to those different areas. In terms of purist line array mentality, I guess you could say that is a no-no, but in terms of application in real-world performance, we found it to be a must."

As Harmala implies, owners and users of the V-DOSC system are expected to hew to the manufacturer's recommendations on array angles, power configuration and processing, and those recommendations are proprietary. Before Robert Scovill embarked on his first tour with the system, he took the initiative to attend the V-DOSC training. "I was all for [setting up the system] via the method that they prescribed," Scovill recalls. "I'm kind of one of these guys that says, 'These guys have done all the research and spent all the man-hours on it. How about we give it a shot at how they're doing it before we come in and start changing things?' Sure enough, over time, I don't think I've changed anything on the P.A. I've used their guidelines for coverage and just been thrilled with it."

Lars Brogaard takes a more empirical approach. "When we did the [Diana Ross tour] with the Electro-Voice X-Line, we played around a lot with the crossover points, to where it would sound the best between the components," he explains. "We [also] did that a lot with the V-DOSC system when I used that. They have certain factory settings, and they might be fine for one venue, but those factory settings are not great for another venue. If you don't have enough cabinets, you don't get the



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# Line Arrays

[low-end] coupling out of it, so [you have to modify] your crossover points—how low you go with your 15s before you bring the sub bass in. I would vary that a whole lot—from down to 40 cycles up to 80 cycles, that crossover point there—and move it around until you get where it sounds the most in harmony.”

Harmala is more analytical, if not less skeptical. “We started really doing some very heavy, heavy analysis and measuring of V-DOSC,” he says. “And I realized the only way I’m going to really find out the facts is to analyze it and find it out myself. Our company has developed a lot of speaker systems, proprietary stuff, so we’re pretty up to speed in terms of dealing with measurement techniques. So I started a campaign of looking at what you can actually do in terms of wrap angles, the effects of different cluster shapes on performance and things like that. I started to learn a lot—some stuff that’s true and some stuff that’s false in terms of understanding how line arrays work. The shape of the cluster is key—it has everything to do with the performance of line array. It isn’t a matter of just put up 10 boxes and put a curve on it. The shape of the curve dictates the performance in the far field and near-field dramatically.”

Of course, the arced section of a “J” curve line array is typically designed to cover that segment of the audience closest to the stage, an area that few, if any, FOH engineers choose to mix

in. And though most sound engineers profess themselves interested in achieving even coverage throughout the room, those engineers who consistently praise line arrays include many who obviously enjoy the mixing aspect of live sound work and whose professional reputation depends on that ability—as heard at the FOH position. To those mixers who spend the entire show in the FOH compound, relying on their system techs to walk the house, it seems sensible to point out that getting a great sound at the mix position does little good if a large section of the audience is hearing

by the ease and speed of rigging. However, there are some situations in which conventional arrays may be more appropriate.

“You don’t have any control over the horizontal [coverage pattern],” notes Meyer. “So if you have a line array that’s 90 degrees, it has to fit the space that you’re putting it in. If it doesn’t fit very well... We could never use line arrays in Carnegie Hall, it’s too long and narrow. You need to be able to shape the array, so it’s never going to be practical for something like that.”

And though the frequency response anomalies caused by curving a line array



*JBL's VERTEC system in its public debut at the 2000 Democratic National Convention at the Staples Center, Los Angeles*

something very different.

For a variety of reasons, not every live sound company will join the rush to invest in line arrays, but there is no doubt that they are here to stay. The systems deliver on at least some of the claims of their designers and promoters, a significant number of “golden ears” FOH engineers endorse one or more of the competing systems, and production managers, once they adjust to the different silhouette, are generally impressed

may be correctable via DSP, a processor-based solution may prove expensive, or at least no cheaper than existing tools and techniques. “There’s a certain level of marketing that’s going on with line arrays that’s not really good science for the professional trade,” notes Meyer. “The manufacturers are not really showing why they came and went last time. Like any tool, there’s limitations.” ■

*Chris Michie is a Mix technical editor.*

**YOU GOTTA KIND OF DROP ALL THAT YOU’VE BEEN OPERATING ON FOR YEARS AND YEARS, AND YOU GOTTA KIND OF RE-LEARN A NEW WAY OF THINKING ABOUT HOW TO DO [LINE ARRAYS].**

**—SCOTT HARMALA**



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# ALL ACCESS PHOTOS AND TEXT BY STEVE JENNINGS

Returning to the road after a two-year break, Marilyn Manson and Co. turned in a consistently tight, aggressive and focused performance that would humble even the most jaded critic. The band showcased a wide sampling of material from their current album *Holy Wood*, in addition to such crowd favorites as "The Dope Show" and "Great Big White World." The production also spared no expense in the name of onstage theatrics, featuring a mock pulpit and Manson parading about on his signature stilts during the song "Tourniquet." *Mix* caught up with the band on the third-to-last night of the American leg of the Guns, God and Government world tour at the Event Center in San Jose, Calif.



Madonna Wayne Gacy, keyboards



Above, FOH engineer Brad Madix says he first got the gig because he was in the right place at the right time. "I was mixing for Rob Halford's band Two, and the guitarist for the band was John5, who is now Manson's guitarist," recalls Madix. Madix is using a 48-input Midas XL4. "It's a nice-sounding board," he says. "I like the fact that it's programmable—for a band like this, it's pretty useful in that I can recall a setup really quickly. These guys can be unpredictable; they might skip a song or just go into something different. This show is 'never a dull moment'—I don't know what's going to happen next."

All 48 inputs are in use, with 34 onstage sources, including 18 drum inputs. "Ginger Fish, our drummer, has a very distinctive sound, and he has a lot of effects returns," Madix explains.

An Eventide H3000 is used for doubling Manson's vocals. "I've made a couple of modifications to the program to loosen it up so it's not so tight on the doubling," notes Madix. "Then the only other effect of any note is on the guitar. John5 has a really nice, straight-up-the-middle guitar sound, and a lot of the record is spread wide left and right, so I have another H3000 on his guitar and put it way off left and right."

The tour is using a V-DOSC P.A. system provided by Electrotec.



Monitor engineer Maxie Williams has been working with Marilyn Manson for six and a half years, though he was most recently out with Stone Temple Pilots for a year. Williams is using a Midas Heritage 3C00, which he finds very user-friendly for combining in-ear and wedge monitor mixes, plus a V-DOSC setup for sidefills. "I have four mixes of in-ear and then conventional wedges all over the stage too, a lot of them with the horns turned off," he explains. "They like to feel the 15s. Manson likes a big, fat, round mix—he's not big for high end, and I actually take a little bit of top end out of his in-ear mix. He's hearing a complete round mix, everything except overheads." All of the bandmembers use Ultimate Ears UE Pro 5s.



Monitor engineer Williams' rack includes four wireless receivers for Manson's hand-held vocal mics and one "special"—a wireless mic fitted to a bullhorn. The Shure PSM700 system is used for his in-ear monitors. The Summit tube compressors are for Manson's vocal, while Drawmer gates and dbx 900 Series compressors are used on bass guitar and keyboard inputs. Graphic EQs are Klark Teknik DN360s.

# MARILYN MANSON



John5, guitars



Marilyn Manson endorses Shure mics and uses the Beta 58A capsule with the Shure UHF transmitter. "I've got six of those," says monitor engineer Williams. "I average about one a week, and if he doesn't destroy one in that time on a really good show, it might get tossed into the crowd." Williams notes that water in the capsules "has never really been a problem. I have backup mics that I can change out the capsules—we have two sets of three. I have them fed into a little splitter box, 1-2-3, with a single output so they stay on the same channel and Brad doesn't have to chase mics all over his console [at FOH]."

For Manson's headset, monitor engineer Williams fitted a Crown CM-311 mic into a flight helmet.

**BANDMEMBERS**  
Marilyn Manson, vocals  
John5, guitars  
Twiggy Ramirez, bass  
Madonna Wayne Gacy, keyboards  
Ginger Fish, drums



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Sabine ([www.Sabine.com](http://www.Sabine.com)) has announced the first wireless microphone system with True Diversity 2.4GHz spread spectrum technology. The 2.4GHz band is globally accepted and clear of the new DTV frequencies; spread spectrum allows up to 50 units to operate within a single location. Sabine's SWM-5000 Wireless Microphones are available in 1- and 2-channel models and include Sabine's new

both analog and digital audio outputs. Series 5000 systems are available with handheld, lavalier or headset microphones, and Switchcraft TA4F connectors allow users to choose other manufacturers' mics. All transmitters are built for heavy-duty use, with controls hidden behind security covers and hard rubber integral antennae on the beltpacks. Accessories include rackmount antenna distribution for up to six receivers and a low-profile extension antenna as well.

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The Entertainer Series E 27 loudspeaker from Stage Company ([www.StageAccompany.com](http://www.StageAccompany.com)) is a full-range, passively crossed-over system with a frequency response of 55–30k Hz and is capable of up to 127dB SPL. Featuring SA's Ribbon Compact Driver™ for mids and highs and a SA 1513 bass driver with a 4-inch voice coil, the E 27 offers multiple mounting options for truss, wall, ceiling and standmount applications.



## PAS EQUIPMENT RACKS

Professional Audio Systems ([www.pas-toc.com](http://www.pas-toc.com)) offers a range of amplifier and rackmount equipment racks. Manufactured from Baltic birch and featuring two handles per side, front and rear rack rails, removable wheeled pallets, and front and rear removable lids with "coffin lock" or twist-lock lid fasteners, the racks are available in eight, 12 and 16-space models. Stripped-down versions without wheels, handles, lids and rear rails are available for permanent installations. Finishes include TourTuff, black or white textured paint, or unfinished.

Circle 317 on Product Info Card

## TSUNAMI 10-INPUT MIXER/AMPLIFIER

Tsunami Technologies ([www.tsunami-technologies.com](http://www.tsunami-technologies.com)) has announced a new 10-input mixer/amplifier featur-

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**FIVE** on every rider”

Ed Pratt, Pratt Sound, Salt Lake City, UT



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Larry Carroll, Cascade Sound,  
 Salem, OR



“Time and time again the FIVE kept appearing on the riders but before we went ahead we had demos from all the main console manufacturers. The FIVE had that great warm British sound and musicality along with the sonic purity that was superior to the rest. It’s a very intuitive board, everything is where it should be and the layout is incredible.”

Brian Houle, Midwest Concert Concept,  
 Superior, WI

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Ed Pratt, Pratt Sound, Salt Lake City, UT

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## NEW PRODUCTS

ing three integrated amplifiers (two 400W 4-ohm master channels and one 200W 4-ohm monitor channel). The "boxtop"-style package weighs 45 lbs. and includes eight balanced lo-Z mic inputs and two convertible stereo or dual-line inputs. Channel EQ is 3-band with HP filter, monitor and effects sends, mute switch and stereo pan on each input. Additional features include multichannel digital effects and 9-band graphic EQs on stereo master and monitor outputs.

Circle 315 on Product Info Card

### NEW POWER AMPS FROM BGW

BGW Systems Inc. ([www.bgw.com](http://www.bgw.com)) has introduced three new 2-channel power amplifiers in its GT Series. Ranging from the 660-watts/channel (at 4 ohms) GT3000 to the 1,440-watts/channel (at 4 ohms) GT6500, the GT Series has been designed specifically for touring and live sound applications. Features common to the GT3000, GT4500 and GT6500 include Class-H design and conventional power supplies, which offer lower part counts over switching power supplies. Front panel LED indicators display power, signal, clip and protection status. Speaker protection circuitry is augmented by 30-15Hz switchable high-pass filters and a switchable fast Limit<sup>®</sup> circuit. All amps feature mono/stereo/dual stereo switches for signal routing and a ground lift switch. Inputs are XLR and 1/4-inch, and outputs are Neutrik Speakon<sup>™</sup> and touchproof barrier strips.

Circle 318 on Product Info Card

### B&C COAXIAL TRANSDUCER

The 8CX21 coaxial transducer from B&C Speakers ([www.bcspeakers.com](http://www.bcspeakers.com)) offers a frequency response of 70-18k Hz and can handle up to 200 watts of continuous program. Comprising an 8-inch woofer with a 2-inch voice coil motor structure and a B&C DE12 high-frequency compression driver, the coaxial unit is designed for wide bandwidth and consistent off-axis response: dispersion angle for the HF unit is 60° (-6 dB). Accessories include a passive crossover (2.9 kHz) with mounting bracket, a selection of 70-volt transformers, back box and grille assemblies. The 8CX21 weighs 11.5 lbs., and recommended enclosure volume is 0.5 cubic feet.

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### MEYER SOUND UPM-2P

The UPM-2P from Meyer Sound ([www.meyersound.com](http://www.meyersound.com)) is a bi-amplified, three-way system housed in a compact, low-profile enclosure. Featuring flat frequency response across a tightly focused symmetrical 45° coverage pattern, the UPM-2P is similar to Meyer's 2000 TEC Award-winning UPM-1P, the major difference being a tighter coverage pattern. The UPM-2P contains dual 5-inch cone transducers, a 1-inch titanium dome HF driver and two Class-A/B bridged complementary output MOSFET power amplifiers (225W and 125W RMS). Above 5 kHz, the UPM-2P's focused pattern control is achieved by a deeper symmetrical horn, while below 5 kHz, the proprietary signal processing circuitry adjusts phase relationships between the HF driver and dual low-mid drivers, achieving off-axis attenuation through phase interference. The compact UPM-2P system (18x6.7x7.7-inches) weighs 21 lbs., offers looping PowerCon AC connectors, includes modular audio input options and is compatible with RMS (Meyer Sound's Remote Monitoring System). Price is \$2,100.

Circle 320 on Product Info Card

### AUDIO-TECHNICA ADDS UHF FREQUENCIES TO 7000 SERIES

Audio-Technica ([www.audio-technica.com](http://www.audio-technica.com)) has expanded its 7000 Series Multichannel UHF Wireless system to include 100 additional frequencies in the 600MHz range (the original 7000 Series Systems operates in the 700MHz band). The new 7000x systems include the ATW-7373x Handheld Condenser System, the ATW-7375x UniPak<sup>™</sup> Transmitter System and the ATW-7376x Handheld Dynamic System.



Circle 321 on Product Info Card

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*Bill Thompson*

President, Ashly Audio, Inc.

(and just for the record, we think the Redwood trees in the picture are the perfect metaphor for Ashly...)



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## BLOOD ON THE PAVEMENT

**MARILYN MANSON AND PRODUCER DAVE SARDY CONQUER THE GUTTERS OF "HOLY WOOD"**

by Robert Hanson

Marilyn Manson seems to have little trouble dancing intellectual circles around the majority of his fans *and* detractors. The music journalist turned self-proclaimed anti-Christ began his 1998 autobiography, *The Long Hard Road Out of Hell*, with an all too telling and self-prophesying passage from Nietzsche's *On the Genealogy of Morals*:

*In a stronger age than this decaying, self-doubting present, he must yet come to us, the redeeming man, of great love and contempt, the creative spirit, whose compelling strength will not let him rest in any aloofness or any beyond, whose isolation will be misunderstood by the people as if it were flight from reality.*

Perhaps Manson's failing



is that he comes at the world from all angles: musician, visual artist, author, director, producer; he paints too many canvases with too wide of a brush, and it sometimes leaves the masses running for shelter. Then again, maybe



PHOTO: PEROU

that's the point.

Manson's real prominence as a celebrity figure began in '96 with the release of the Trent Reznor-produced *Antichrist Superstar*—a dark, dissonant journey through societal loathing and failed rebellion that earned Manson and Co. as many fans as sworn enemies. The following album pushed the envelope in a completely different direction; '98's *Mechanical Animals* saw Manson creating a parody of himself (the character Omega, a hollow, androgynous figure who is treated more like a product than a person) in an attempt to make people re-examine the notion of celebrity in modern culture. Manson also took the opportunity to jettison the Ministry-esque industrial grind in favor of a more melodic, vocal-oriented sound—all of which played to the album's larger themes of rebellion dissolving into merchandising.

Last fall, Manson stepped

back into the public eye with the release of *Holy Wood (In the Shadow of the Valley of Death)*. Emerging from his post-Columbine seclusion in the Hollywood Hills, Manson, as he puts it, "came out swinging." Thematically, the new album completes the *Antichrist/Animals* trilogy—a trilogy that actually begins with *Holy Wood*, followed by *Animals* and ends with *Antichrist*. *Holy Wood* is centered around Adam—a thinly veiled portrait of a young Manson—an individual determined to change the world that he feels has rejected and discarded him. Sonically, the album draws on both the intensity and the melody of its two predecessors with, at times, more bombast, volume and moments of sincere vulnerability. (Numerous parallels can also be culled from the three albums, such as the reflexive significance of the 12/8 groove from "The Beautiful People" that resurfaces in

—CONTINUED ON PAGE 166



## JONATHA BROOKE AND BOB CLEARMOUNTAIN

TEAMING UP  
FOR "STEADY PULL"

by Gary Eskow

Bob Clearmountain's success as a mix engineer through the years has led to a string of plum production assignments. By the early '90s, he'd earned production points with The Pretenders, Hall & Oates, Bryan Adams and about two dozen other high-profile acts. But the artistic and financial rewards didn't balance out the hassles, and so Clearmountain decided to stick to mixing. Until he heard the music of singer/songwriter Jonatha Brooke, who had made her



PHOTO MELANIE NESSEN

initial splash as co-leader, with Jennifer Kimball, of The Story.

Brooke enlisted Clearmountain to work on *10¢ Wings*, the album preceding

her current release, *Steady Pull*. "The record had been mixed," says Brooke, "but it wasn't popping out of the speakers. After Bob worked on it, every single word of the

vocals could be heard, the record had bottom end *for days*, and it all fit together."

Mixing involves more than knowing how much reverb to apply to a snare. His musicality is what made Brooke eager to work with Clearmountain. "Bob has a great ability to weed out extraneous material. We had a song on the earlier album called 'Secrets and Lies,' which featured an accordion part in the chorus. I kept wondering if it was corny, but Bob immediately went to that part, pulled it up in the mix and weeded something else out of the mix that was getting in its way." Brooke's desire to work with Clearmountain was later reciprocated. When she had enough material for another album, she dropped in at Mix This!. Clearmountain's home studio, to let him have

—CONTINUED ON PAGE 172

## THE DOORS ROCK AGAIN ON THE INTERNET

by Blair Jackson

"There's gold in them thar tape vaults!"

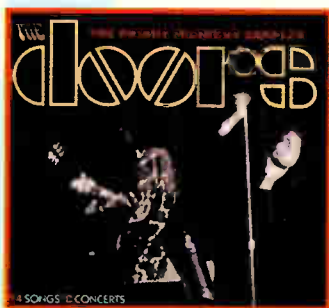
Old and new bands alike are increasingly finding that the relatively low cost and high-profit margin of manufacturing CDs and marketing them primarily on the Internet is a good way to get music that might not ordinarily be heard out to their hardcore fan bases. In a sense, it's easy money—but it's also a god-send to fans to be able to tap

into a mother lode of an artist's previously unheard live or studio tapes...or at the very least, replace mediocre bootleg tapes/CDs with sonically superior, formally mastered CDs.

One of the most interesting recent examples in this area is Bright Midnight Records, an Internet-only venture by The Doors, whose career effectively ended when lead singer Jim Morrison died in Paris in 1971, but whose

legacy still generates millions of dollars for the surviving former members. During Morrison's lifetime, The Doors released only seven albums—six studio LPs and a live set—and in the three decades since his death, there have been only a few peeks into the band's archives: a couple of authorized videos, a Morrison poetry album (*American Prayer*, which included some new music from the living Doors), a single live disc and 1997's Doors box set, which included a live disc culled from three shows in New York in early 1970.

The fact is, there aren't a lot of live tapes of The Doors in circulation, because the band didn't record their shows on a regular basis. There are some soundboard



and monitor tapes in The Doors' archives and, thanks to their fans, some bootleg audience tapes that have survived. But the best quality recordings The Doors have in their vault come from the winter 1970 tour (supporting *Morrison Hotel*) that became the basis for the double-LP *Absolutely Live*. These shows will be the heart of Bright

—CONTINUED ON PAGE 174

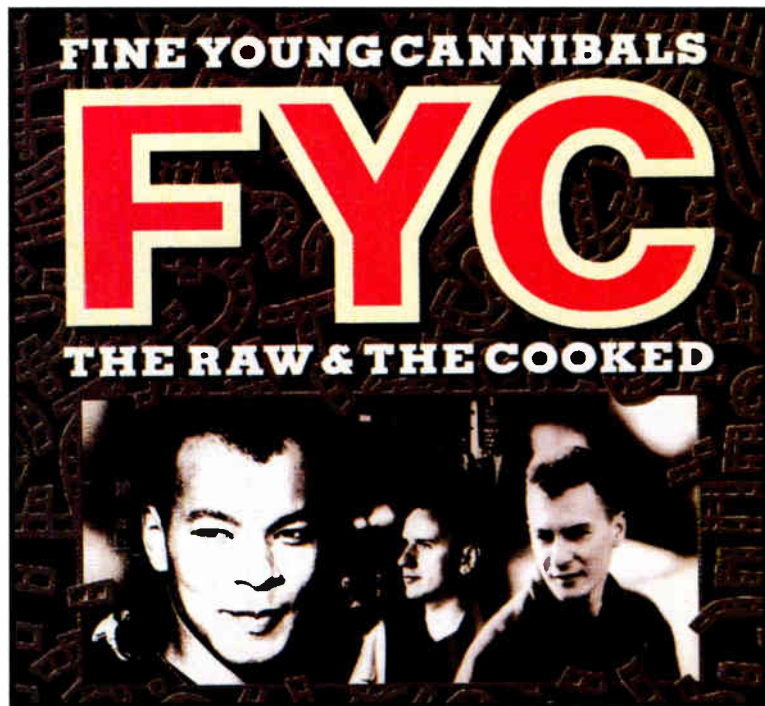
## FINE YOUNG CANNIBALS' "SHE DRIVES ME CRAZY"

by Dan Daley

Chaos may be the natural state of the universe, unless artificial order is imposed on it. But in pop entertainment, the most successful chaotic music will always ultimately be tamed and leavened to some degree. So it was in the post-punk era when the survivors of Britain's most fecund musical period since The Beatles began to get a coat of polish and make the rounds of *Top of the Pops* in search of wider audiences. And so it was for the ska-crazy English Beat, which rose out of the smoldering post-punk ruins of Birmingham, England, in the late '70s and early '80s. Though The Beat (as they were called in Europe) had been quite successful, they broke up in 1983, with leaders Dave Wakeling and Ranking Roger forming General Public, and two other members—guitarist Andy Cox and bassist David Steele—splintering off to start the more commercially oriented Fine Young Cannibals with singer Roland Gift. Gift's vocals were tailor-made for radio—a wonderful combination of rock's edge, Motown's soul and a classic R&B falsetto. It didn't hurt that he looked good, either. The trio put that together with their own vision of American soul, English pop and modern European dance music to create a powerful blend, whose eponymous debut record, in December 1985, drew critical acclaim and decent sales in England. The album was released in the U.S. on the IRS label the following spring.

The band toured relentlessly and also got involved with a couple of different soundtracks (their cover of The Buzzcocks' "Ever Fallen in Love" was a highlight of the excellent *Something Wild* soundtrack), but mass success eluded them until they put out their second album, *The Raw & the Cooked*, in 1989. A single from that record, "She Drives Me Crazy," roared to the top of the charts in the U.S. (Number One) and UK (Number 5) and became positively ubiquitous at the end of the '80s—a last gasp of UK pop power before the '90s muddy and melancholy deluge came rushing out of Seattle.

In 1989, David Z was an engineer



and producer based in his hometown of Minneapolis, working in the not-unpleasant shadow of the talented and demanding artist then (and now) known as Prince. Z had even recorded the demo that got Prince his first record deal. He continued to work with Prince and his musical minions over the next decade, but by the mid-1980s was chafing to establish his credentials outside of Prince's stable. But his association with Prince would turn out to be beneficial in an ironic way:

"I got called out of the blue on [Fine Young Cannibals]," recalls Z, whose production discography also includes records for Billy Idol, Big Head Todd, Collective Soul, Buddy Guy, Kenny Wayne Shepherd, Johnny Lang and Leo Kottke, as well as Prince offspring like Sheila E. "What it was, they wanted to work with Prince for their next record. They were told that Prince doesn't work with anybody that way, as a producer-for-hire. But they were also told there was someone who works with Prince who does. That was me, and they were willing to try it out."

Z had a meeting with representatives of Fine Young Cannibals' label, who mentioned that the band, then living in London, had been taking an unusually long time between their first and second records. "[The label] suggested that they come to Minneapolis so that they would have no choice but to work and get the record done," says Z, who also points out that there is precious little to do in Minnesota in the wintertime besides hibernation and work. "They faced extreme

culture shock when they got over here," he recalls. "They had shaved heads and a punk attitude, and we didn't have a lot of that yet in Minnesota. I took them over to some clubs on First Avenue, and all they could do was comment on how everyone looked so big and blond and Swedish. I don't think they ever really got used to it over here."

Regardless, the band and Z hit it off, and pre-production consisted of sending songs back and forth for consideration. When what would eventually become "She Drives Me Crazy" made it into Z's tape recorder, the melody got his immediate attention. However, the song—then titled "She's My Baby"—wasn't the band's favorite by a long shot. "I called them up and said I love this melody and I could create a great groove for it," says Z. "They said they were ready to throw it away. But I wanted to try it. So they started rewriting the lyrics to something they liked better, starting with the title, which immediately made a huge difference. 'She's My Baby' is kind of a nebulous sentiment—it's something you say, but it doesn't hit home. 'She Drives Me Crazy'—now there's something that every guy in the world has said at least once in his life with conviction."

In fact, it often leads to criminal convictions. But in telling this part of the story, Z underscores a critical point found in most great records: The sentiment of the lyric infuses and affects every aspect of the recording, from the production process to the vocal and musical performances to the passion with which technical expertise is brought to bear on it.



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# Cool Spins

The Mix Staff Members Pick Their Current Favorites

## Etta James: *Matriarch of the Blues* (Private Music)

Everything the great Etta James sings is infused with a blues sensibility but filtered through her background singing gospel music as a child and R&B in her early professional years. Age has made her voice deeper and richer, and, if anything, she's an even more skilled singer than she was in her early years. With James, the key has always been the quality of the material she chooses, and on this CD, she's selected a strong batch of mostly familiar songs. Seeing tracks originally cut by Big Mama Thornton ("Hound Dog"), Otis Redding ("Hog For Ya," "Try a Little Tenderness"), Ray Charles ("Come Back Baby") and Al Green ("Rhymes") is no surprise; in fact, it's



practically typecasting. But she continues to astound with her utterly creative interpretations of more rock-oriented writers, too: Here she tackles Bob Dylan's "Gotta Serve Somebody," the Stones' "Miss You" (a match made in R&B heaven!) and John Fogerty's "Born on the Bayou," making each her own. Her backup band is solid throughout, and the arrangements full but uncluttered. Her best in quite a while.

Producers: Donto James and Sametto James. Engineer: Donto James. Studio: Fort Athens Studios (Riverside, CA). Mastering: Doug Sax/The Mastering Lab.

—Blair Jackson

## Placebo: *Black Market Music* (Hut Records)

Why Placebo doesn't enjoy the same success in the U.S. that they have in Europe and abroad is beyond me. Their last album, 1998's *Without You I'm Nothing*, was probably the best record that year that no one



here in the States paid any attention to. The band's follow-up, *Black Market Music*, may suffer the same fate if it's allowed to continue wallowing in the import bins. Distribution issues aside, Placebo, which consists of singer/guitarist Brian Molko, bassist Stefan Olsdal and drummer Steve Hewitt, have simply outdone themselves. All of the great, noisy, neo-glam dissonance, swirling Thurston Moore-like guitars and debauchorous, self-loathing overtones that put Placebo on the map in the first place have been rethought and brought to an entirely new level. The album opens with the gloomy but instantly catchy "Taste in Men"; the song is built up from a processed guitar loop on top of which the band layers a wash of feedback guitar, reverb-drenched drums, basement-octave bass and Molko's sickly sweet croon. The next two tracks, "Days Before You Came" and "Special K," have Molko and Co. standing taller in their platforms and commanding more rock star ego than T. Rex ever dared. The album's second single, "Slave to the Wage," is possibly the best Cure song that Robert Smith never got around to writing. *Black Market Music* boasts the type of production, artistic vision and pure talent that is so noticeably absent from the current crop of pop musicians; the only drawback is that the experience leaves you feeling like a junkie in need of another fix. Oh, Brian!

Producers and mixers: Paul Corkett and Placebo. Engineers: Kenny Patterson and Lorraine Francis. Studios: Olympic, Townhouse and Moody Studios (London). Mastering: Ian Cooper/Metropolis Mastering (London).

—Robert Hanson

## Rodney Crowell: *The Houston Kid* (Sugar Hill)

Crowell has long been hailed as one of the strongest writers in Nashville, and though he's had his biggest successes with other artists covering his tunes, he always made pretty good records himself, too. *The*

—CONTINUED ON PAGE 176

"The change of the lyric to something they could get behind changed the attitude of everything and everyone toward the project," he observes.

The band went into Studio B at Paisley Park, Prince's recording complex in Minneapolis. The room had been designed with Z in mind and sported a DiMideo-modified API console, modeled after the one Z and Prince had used at Sunset Sound in Los Angeles. "Only this one had an even bigger, fatter low end," says Z. Z started the session for "She Drives Me Crazy" as he does most productions he's part of, by creating a groove loop on a drum machine, in this case a Linn 9000. Musically, the song is a celebration of space between parts, and the parts are all designed to be tight and funk-like in their precision but with rock-edged sounds, such as the distorted guitar that works as a counterpoint to the vocal melody and Gift's floating falsetto. But if "She Drives Me Crazy" is remembered for anything, then it is for its snare sound, which Z created that first day of tracking.

"I took the head off a snare drum and started whacking it with a wooden ruler, recording it through a Shure 57 microphone," he says. "As I did that, I started twisting the hell out of the [API 550] EQ around 1 kHz on it, to the point where it was starting to sound more like a crash. I blended that with a snare I found in the Linn itself, which was a 12-bit machine, so it sounded pretty edgy to start with." But the coup de grace for the sound was when Z pumped the processed and blended sample through an Auratone speaker set upside down atop another snare drum, which rattled the metal snares and gave the result some ambience and even more high end. The whole thing was limited slightly and then sent to a track on a roll of Ampex 456 running on a Studer A800 at 15 ips. Only a slight amount of reverb was added to the track later on. The sonic result was closer to a hollow wood block sound than any snare found on a conventional rock record, and in becoming, along with Gift's vocals, the signature of the song, it would go on to have many lives of its own subsequent to the single's run up the charts. More on that in a moment.

Guitars got similarly complex treatment that belied the seeming simplicity of their final sound. The staccato single-note lines were actually layered six deep, with a few chords thrown in here and there. Some of the lines and chords were actually recorded only once, then manually triggered from a sampler during playback and mixing. One of the lines was also

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played back through an underwater pool-type speaker Z had laying around, then re-recorded to tape, giving it a muted, mysterious quality that no on-board or outboard EQ could mimic.

"What really made the guitars stand out, though, was that as Andy [Cox] was playing to chord parts, I was slowly twisting the EQ from one extreme to the other, giving it this wah effect," says Z. "So every part on the record has a very individual and unique sound. But there aren't many parts at all, so the space between them becomes part of the sound."

Gift's vocals were recorded a couple of days later through a Neumann U87 microphone. Up to that point, the band had been rewriting the lyrics as they went along. As they came together, so did small but perfectly phrased vocal scats by Gift, as punchy and precisely placed as the guitar lines. "It was a matter of small things like that that were giving the track a personality to match the attitude of the new lyrics and the sentiment of the new title," says Z. "To me, that was as important as the snare sound and anything else. Every note on the track and every sound had its own sense of purpose, and all worked toward supporting the attitude of the song." And because each of the parts were recorded individually—there was no drummer on the song—the processes of tracking and overdubbing blurred into each other. "Parts worked off other parts and the groove, not off of a basic track," he adds. One result of that was a record that just about mixed itself. Because most of the sounds and signal processing were recorded during tracking, the mix consisted more of muting tracks than effecting them. "I don't like to leave decisions for later," says Z. "I like to make them as they go down. It's more spontaneous. So it sounds on the multitrack the way it's going to sound in the final mix pretty much. It really keeps people involved in the process of recording, not having to wait to see how it's all going to come together in the end during the mix. You don't spend the entire recording process trying to imagine what it's going to sound like. It already sounds like what it's going to sound like."

Reaction to the record was initially mixed from the label. Z recalls that a general comment was that Gift's vocals were too low in the track. "That was one of those pop music arguments, where they always want the vocal to be the center of attention and way out in front," he says. "No one in the band agreed with that, and we just said go and listen to a Rolling Stones record, and let us

know how far the vocals are up front on that." Meanwhile, Z also notes, label exec Jehrl Busby from distributing label MCA told the band it was a hit the moment he heard it in his office.

It was. But while "She Drives Me Crazy" would go on to be included in dozens of compilation records over the next decade, the snare sound created by David Z would have even more of a life, both by being approximated in various interpretations on records and commercial tracks and by being blatantly sampled on other recordings. The one that stands out most in Z's mind is its appearance on a national Pepsi-Cola campaign a few years after the single was a hit. "It was all over television, and there was no doubt as to what had inspired the sound," he says. "But it was before people thought seriously about protecting things like sounds. The legalities of sampling were still being thrashed out. No one was sure if you could copyright a beat or a groove. I'm still not sure. All I know is, I went to my lawyer about the Pepsi spot, and he said to me, 'What are you gonna do? Pepsi has a lot of money and a lot of lawyers.' Did I feel like being an expensive test case? It was so recognizable that any court would have seen it immediately. But who knows, and that's one of the pitfalls of making something sound very unique, of not just going for the usual pop sounds. Besides, it was so easy to steal—the song starts out with nothing but the groove, so no one has to do a lot of cleaning up or editing to sample it."

The matter irked Z but hardly traumatized him. He just went on to the next thing and the next sound and the next groove. "If you're going to get crazy about stuff like that, you lose sight of why you did it in the first place," he says. "If I didn't like music so much, I wouldn't have been in the studio in the first place."

As for Fine Young Cannibals, they had a second Number One hit from the album *Good Thing*, a Number 11 song with "Don't Look Back," won Best Group and Best Album honors at the Brit Awards in 1990, but have all but dropped from sight since. ■

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—FROM PAGE 160, MARILYN MANSON  
both "Rock is Dead" and "Disposable  
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And Alan Meyerson, film scoring mixer on such blockbusters as *Gladiator* and *The Thin Red Line*, insists on Apogee systems to interface with his Pro Tools rig. "Everything I do in the studio goes through the AD-8000s", he says. "It just doesn't make sense not to use them."

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To create his latest opus, Manson enlisted the help of Nitzer Ebb alumni/ programmer Bon Harris and producer/engineer Dave Sardy, who had worked with Manson on the band's live album, *The Last Tour on Earth*, as well as some soundtrack contributions. The recording process began in the fall of '99 at Manson's home studio in the Hollywood Hills. Manson, Harris and the rest of the band spent several months in pre-production, creating demos and experimenting with every instrument and noisemaker they could get their hands on. Harris handled all of the sequencing and tracking, which was done on Manson's Pro Tools/Logic rig. After the band had assembled a sizable amount of material, Sardy was then asked to come aboard to engineer and co-produce the effort with Manson.

"They had about 60 songs," Sardy explains with a laugh. "I mean, they write on the road, they write every minute of every day. They take a Pro Tools rig with them on the road and write while they're touring. Manson had his back house set up like a project studio, and some of the vocals were done there. There was a lot of music when I got involved. They had been working with a programmer, Bon Harris. They had been kind of doing demos with him and working on stuff and just going crazy in his pool house for a bunch of months. And then I got involved and just kind of helped go through the process of which songs they wanted to record and which ones to push further."

Sardy and Manson were impressed with how tight the band had become in the past couple of years and wanted to incorporate a more performance-driven approach in the recording of *Holy Wood*. "Having done the live record together," Sardy continues, "we were blown away by how good the band sounded live. We had been A/B'ing between the live versions and the album versions, and the excitement of the live versions was just outrageous. We definitely tried to push more of a performance approach, as opposed to all electronic. And it's just the natural evolution for any touring band; you go out on the road for a bunch of years, and you're just going to get really good. There's no way around it. That was a goal of both Manson and me; we wanted to make a very electronic-sounding record but a very organic record—take organic sounds and process them and use performances, as opposed to all sequencing and MIDI."

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## THUS SPOKE THE ALCHEMIST

Just prior to embarking on the current "Guns, God and Government" world tour, Marilyn Manson took some time to chat with *MIX* about the writing and recording process that produced *Holy Wood*.

**Take us through the last year or so. You guys came off of the Mechanical Animals tour a little prematurely following the whole Columbine mess; what was your next move?**

Things kind of got pulled out from under us. At the end of that tour, a lot of things were cancelled, a lot of doors were shut on us by a lot of people. We were put in a position where there was almost a need to respond. But rather than do it in the press or do it how the media would like us to do it—in a way that would just help them exploit the whole situation further—I locked myself away in a room for probably about three months, literally. And I came out with the ideas and the lyrics and the story of *Holy Wood*, completing the trilogy I started with *Antichrist Superstar*. This became the glue that bound them together.

At that point, which was before the end of [1999], I set up a studio in my pool house. An interesting thing about where I moved in is that the Rolling Stones had lived here and wrote *Let it Bleed* in this house. And if you ever watch that bootleg movie *Cocksucker Blues*, there are some scenes with them in my living room, composing some of the songs. My house has a very good inspirational atmosphere, as far as the writing went. So we did all of the songwriting here in my home studio, which took us up until about the beginning of the year. The band was very prolific—we probably wrote about 100 or so different things, 30 of which were turned into legitimate songs, 19 of which actually ended up on the album.

**Is this the point when you guys were working with Bon Harris?**

Yeah. At this point you could call it pre-production or demoing. But, in reality, a lot of the tracks we laid down while writing ended up on the record, sometimes vocal tracks,

sometimes guitar stuff, almost all of the keyboards. And that was working with Bon Harris doing editing in Logic and sequencing and working with my keyboard player [Pogol] and my drummer [Ginger Fish]. At that point, we decided to bring in Dave [Sardy] to co-produce and to engineer, because we wanted to take what we had kind of up to another level and record live drums and maybe try and track better guitars and bass and vocals, and just experiment and see if we could beat what we had. That's when we moved into the Harry Houdini house.

**Was there ever a thought to bring Michael Beinborn back in to produce another album?**

No. When I go back and I listen to demos for *Mechanical Animals*, they're so similar to the final product that I felt like, while he was good to work with, I didn't get anything new from him. And I didn't think that he really took it to another level as I had expected or maybe it was already at that level. I thought sometimes he ended up polishing things a little too much to the point that it took off some of the magic or the edge.

**It was certainly a sparser album than Holy Wood.**

Yeah. What Dave did was great as both a co-producer and as an engineer. He got me to try different things that I normally wouldn't do. The record is probably unlike things he's done before, because it's very electronic, but it sounds more organic than you'd expect. We kind of wanted to create a combination between The Beatles and Einstürzende Neubauten, something that was hard and ugly but also put together in a beautiful, melodic way. And I feel like we got to that point.

**Was that something you were trying to tie into the thematic substance of the album?**

Well, I think because I wanted this to tie all three records together, I suppose, just unconsciously, the songwriting is a pretty good combination of *Mechanical Animals* and *Antichrist Superstar*. What *Antichrist Superstar* lacked in melody, it made up

—CONTINUED ON PAGE 172

production, the band then moved from Manson's home studio to the one-time home of Harry Houdini in Laurel Canyon. Upon moving into the turn-of-the-century mansion, the band converted the 2,000-square-foot-plus ballroom into the main Pro Tools-equipped tracking room, which included a Neve 8038 and a Studer 800. Additionally, there were several smaller Pro Tools rooms, each with a dedicated focus: keyboards, drums, acoustic instruments, etc.

An "anything goes" work ethic and an insatiable desire to experiment permeated the entire recording process. The band incorporated everything from classic synths and guitar amps to the latest plug-ins and outboard gear. "Well, we actually wound up with a lot of older synthesizers and organs and old Moogs and Rolands," recalls Sardy, "and the Nord Lead, which is phenomenal: it's like having a huge patchable synth right at your fingertips. Then with Pro Tools you can do a lot of processing to acoustic sounds through the various plug-ins and the automation, which is phenomenal. We combined a lot of live drums with old drum machines and toy drum machines. We were experimenting in the way we actually recorded stuff. There was a lot of recording things using the themes of the songs, the thematic approach of the song and where the song placed in the album. We recorded outside in the rain, in the desert. It was like a year of experimenting."

The PCP Splitter by Little Labs was also used extensively in tracking guitars and bass; the splitter allows one guitar lead to be split among several different amp heads or effects units without any signal loss. "We had about 15 or 20 different vintage heads in the room and more guitar pedals than any human has the right to look at in their life," Sardy explains with a chuckle. "It was fun; we would just sit there and recombine things through bass amps and things like that. It was a lot of working with old vintage amps and weird Italian amps. On this record, though, I'd say the difference is that we used a lot of combinations of processed guitar, like a guitar plug-in, and maybe a big, fat, old-sounding amp. It's the way you'd imagine a '70s record sounding. That was at least [bassist] Twiggy's comment after listening to the album."

For vocals, Sardy again indulged in everything from the conventional to the bizarre. Some of his favorite mics for vocals included an UM-251, SM7, U67, some older Unit 9 mics and even a re-wired CB radio. The album's vocals

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Left to right: Twiggy Ramirez, John 5, Marilyn Manson, Ginger Fish and M.W. Gacy

—FROM PAGE 170, *THE ALCHEMIST*

for in just brutality. *Mechanical Animals* was very melodic. It wasn't about rage on that album; it was more about dynamics and subtlety. It was a different type of record. This one was a good combination of the two I think.

*What's the songwriting process like between you and the rest of the band?*

On this album, I think it's almost split down the middle. Either Twiggy and I went off to write them together, and our writing process would get as extreme sometimes as taking a trip out to Death Valley with an acoustic guitar and mini cassette recorder, or writing until the sun comes up and drinking absinthe to the point that we don't remember what we did until the next day, and we're surprised that we did something great—just letting the subconscious take over. And then working with John is very different. He, musically, is more learned and probably the most talented musician in the band, but he will probably not ever have the feel that someone like Twiggy has. And while Twiggy is a great musician, his strength is his ability to make music around what I'm thinking. Whereas John just has a great ability to make music, and sometimes I would write lyrics or try and shape things around his music, or I'd have to change some things that he would do to make them fit. We would put all of this together as a

band and come up with new ideas and shift things around. I think with this record...this is the first time that Marilyn Manson sounds and feels like a real band.

*Given the current music climate with people like Eminem and Slipknot, do you think the bar has been raised for what's considered shocking?*

No, I think there's nothing new under the sun. I think anything that I could say or do, someone else has already done in different ways hundreds of years ago. And if not music, then in some other form. I think the standard has been raised for making better records, because you just don't have the opportunities that you did 10 years ago. Fortunately, I've managed to establish a very loyal fan base that continues to grow. But there are not a lot of career artists left anymore. I can see a lot of bands disappearing. Someone who is huge now may not even be around in another two or three years. When I made this record, I really set out to make the record I wanted, and almost bitterly, I couldn't care less about commercial success. But, I didn't let that get to the point of self-indulgence, which some people can. That's the good thing about having someone come in to work with you. They can be a sounding board and tell you if something is working or encourage you to make something better, or whatever the case may be. ■

were also cut in numerous locations, ranging from closets to empty swimming pools. "Every aspect of the record was like we had a pile of crazy old junk and a pile of ultramodern equipment and combining the two—definitely the way to go.

"It's a pretty deep record," Sardy concludes. "There are a lot of heavy, slower songs and serious, aggressive songs. It's a pretty emotional record, in that you're running the gamut between all of the emotions, which is great." ■

—FROM PAGE 161, JONATHA BROOKE

a listen. What made Clearmountain, who has his pick of high-paying mix assignments, decide to co-produce *Steady Pull* on spec?

"Jonatha's an amazing songwriter," he says. "She's like Aimee Mann, in that instead of writing a song and leaving it at that, she keeps working, taking her pieces several steps further. She'll come up with a good lyric and changes and ask herself what can be done to take things further."

Her writing may not fit snugly into radio playlist formats, though. Occasionally compared to the young Joni Mitchell, Brooke's work is part pop but part art song, as well. Structures evolve rather than repeat, literally. Even choruses may appear with different numbers of bars. All of her songs are anchored by Brooke's first-rate guitar work, which often draws on tunings of her own devising. "Jonatha's tunings are very unique," says Clearmountain. "They make for unusual inversions, and she uses her remarkable voice to lay melodies over her guitar parts in unusual ways."

Brooke and Clearmountain wanted *Steady Pull* to have a live feel, so they set up a drum kit in the lounge area of Mix This! and tracked guitars, guide vocals and drums in a single pass on many of the songs. "The first thing we did on each track was work the vocal," says Clearmountain. "We would never record an overdub without listening to her vocal and making sure that parts would complement her singing. When you're working with a singer/songwriter like Jonatha, it's important to remember that all of the writing revolves around the voice, and that the mixer's most important job is to keep things out of its way. Anything that conflicts, or clouds over the singing, I dip frequencies on or take out completely. It's easier to make those kinds of decisions when you're

co-producing a record rather than simply mixing it."

Brooke says that Clearmountain's ability to get great sounds quickly is one of the most enjoyable aspects of his talent. "We wanted to keep the live feel of what band performances are like, playing rather than refining parts 'til the end of time. Sure, you know that drum sounds will be worked on in the mix. But Bob would bring up the drums in a matter of minutes while we were rehearsing, and they sounded great! The sound inspired us to play our best."

Contrapuntal compliments seem to be in order when either Brooke or Clearmountain is asked about the other. "Let me give you another example of just how extraordinary Jonatha is," says Clearmountain. "She speaks French and thought that recording French vocals on some of the tunes would be fun and might help sales in Canada and Europe. She came in one afternoon and sang all of the lead and background vocals in French on four songs, nearly perfectly. She's got an amazing control over all of



Jonatha Brooke and Bob Clearmountain

her techniques: writing, singing and playing."

Mix This! revolves around Clearmountain's SSL G+ console. "It's a 72-input board that's been customized quite a bit," he says. "Lots of little things, mostly. I put in an in-place solo system for the VCA group faders and added some bus features that make mixing a little easier. We've got an extra stereo cue send and a rotary master fader, which I find easier to use than a standard fader."

What new toys is Bob Clearmountain using these days? "The coolest thing I can see these days is the Apogee stereo mic pre. It sounds unbelievable. It has a slot on the back where you can put an 8-channel D/A, which lets you use it as a front end to Pro Tools, ADAT or DA-88. The mic pre sounds gorgeous. We recorded all of Jonatha's vocals through it. The Avalon M5 mic pre is also excellent, as is their U5 direct box, which we used a lot on this record. But I keep coming back to the Apogee converters. Everyone's looking for warmth in their digital recordings, and we're getting a lot of comments that *Steady Pull* is a very warm-sounding record, even though it was recorded entirely in the digital realm. A lot of that has to do with the Apogee converters."

Surround mixing is all the rage, but Clearmountain approaches multiple speaker setups with caution: "We mixed the record in surround, using five KRK E7s." Five speakers? Where's the sub? "I don't use a subwoofer." he

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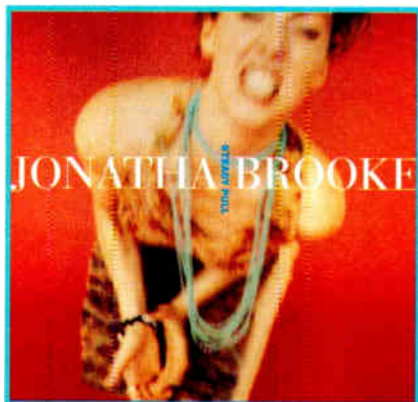
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says. "I'm nervous about putting things into it. I'd use a sub if there were explosions on the record; that's about it! You don't know how people are going to be hearing the work once you start getting into these frequency areas. Suppose someone has just watched a Schwarzenegger movie on their surround system and has cranked up the sub to get juiced by all of the sound effects. Then they put on our record. It would sound terrible! I feel that I have more control and can be more certain that the listener will hear the music the way we intended it to be heard. I leave out the sub."

Project studio mixers take heart. Like you, Bob Clearmountain runs out of faders. "Working in surround requires more faders," he notes. "The surrounds are separate and in addition to the stereo mix. I use the small faders on the G Series as sends to the surround matrix. In the past, I've normally used them for echo returns, which means that I run out of echo returns real quick. We solved the problem by bringing in an O2R, simply to be used as a static mixer.

"The interesting thing about surround sound—which I think a lot of people don't realize—is that there isn't one way to go about handling it. Effective use of surround depends on the type of music you're working on, the specific song and having a clear understanding of the effect you're trying to achieve. Tricks may be fun to play with in your studio, but are they advancing the idea behind the music?"

Clearmountain exploited surround mixing on one track in particular, Brooke's "How Deep Is Your Love." "Jonatha recorded multiple vocal passes, and we decided to treat them like an amusement park ride," he says. "The backgrounds bounce all over the surround matrix. Maybe we took things over the top a little, but it's fun to listen to. That's what listening to records is all about to me." In general, though, less is more is the advice Clearmountain would

give his colleagues when it comes to surround mixing. "Creating ambience, using reverb to expand the field; that's great. Possibly using room mics on the drums and mixing them a little wider, that's also good. To tell you the truth, though, I haven't mixed that much in surround. Lots of times we'll start out thinking surround. Then I'll go back to the stereo mix and find that I like it better. I ask myself, 'What's the point?' Again, any time you make any decision as a mixer, the question is, did it enhance the song? That's not to say that there aren't situations where surround is perfect. If I was mixing a Pink Floyd record, I'd go heavily into surround. But I wouldn't if I was mixing

**The interesting thing about surround sound is that there isn't one way to go about handling it. Tricks may be fun to play with in your studio, but are they advancing the idea behind the music?**

**—Bob Clearmountain**

a Bruce Springsteen record. Wait a minute—I *am* mixing a Springsteen record now in surround! But that's different. It's a live record, and we're simply sending the hall into the back speakers. I'm not using a subwoofer on that one, either. The only time I've used a subwoofer to date was on a live Bryan Adams record, a concert at Slane Castle in Ireland, and the only reason we used the sub was that there were fireworks at the end of the show!"

When we spoke, both Clearmountain and Brooke were looking forward to the release of *Steady Pull* on Mad Dog Records, scheduled for February 2001. Meanwhile, Clearmountain is dealing with a welter of high-profile mix assignments, while Jonatha Brooke is allowing herself a moment to enjoy the taste of artistic fulfillment. What's next for her? "I don't know what will come out next," she says. "I haven't been in a writing mode lately. As a side project, I'd like to explore ambient music, using weird, unidentifiable sounds. I'd also like to make a chamber record, using a string

quartet to accompany all of the waltzes I've written over the years—not traditional waltzes, but pieces in three. Right now I'm loving this record!"

Those interested in finding out more about Bob Clearmountain and his studio are invited to visit his Web site at [www.mixthis.com](http://www.mixthis.com). ■

—FROM PAGE 161, THE DOORS

Midnight's ambitious release program: The company is committed to putting out three titles a year for the next six years—mostly complete, unedited concerts, remixed from the original 8-track masters by the man who originally recorded them, Bruce Botnick (who engineered all of The Doors' studio albums, as well). They are being sold exclusively through the band's official Web site, [www.thedoors.com](http://www.thedoors.com).

The first batch of three CDs (each is sold separately), which came out at the end of last year, is a little different than what will come out subsequently. It includes one full concert—a fascinating double-CD of an alternately rambling and explosive show from Cobo Arena in Detroit; a historic four-hour radio program, called *No One Here Gets Out Alive*, featuring extensive interviews and plenty of rare Doors music (it was put together 20 years ago by L.A. radio personality Jim Ladd to coincide with the release of the popular Danny Sugarmans book of the same name); and a superb single-disc sampler showcasing tracks from some of the concerts that will be released on Bright Midnight, as well as a number of live rarities from other tape sources. It's quite a bounty for Doors fans.

According to Botnick, "The philosophy behind this is to bring to the fans everything we've got on multitrack from that tour—the good, bad and the ugly. And there *was* some bad and ugly stuff in there. Not all concerts were great, of course. Sometimes Jim was inebriated, sometimes he wasn't. A lot of it is really great, though, and deserves to be heard. We recorded everything on 8-track, and the goal now is to mix these shows as well as we can today and get them out there, because people have been listening to bootlegs that really sound lousy, and why should they have lousy in their house when they can have a lot better?"

Botnick says that the tapes were all in great shape. "They're playing just fine, which I suppose is a testament to BASF," he says. There was a problem

to overcome on the Detroit tapes, however. "A person who previously worked on the tapes when I wasn't around had pulled pieces out of the masters and they're gone. So I had to go back to the live 2-tracks I had recorded at the same time to fill all the holes. It didn't end up being too big of a problem."

In the case of that May '70 Cobo Arena show, Botnick was set up in a remote truck provided by Fedco Audio Labs, and he recorded the concert onto a Stevens solid-state, 1-inch 8-track and an Ampex 351 2-track. The truck was equipped with a custom console. Because The Doors were just three musicians and Morrison, he needed relatively few mics: AKG C-12As on guitarist Robbie Kreiger's and keyboardist Ray Manzarek's amps, and a Neumann U87 on Manzarek's piano bass. John Densmore's drums were captured by a Shure SM57 on the snare, an Altec "salt shaker" on the kick and Sennheiser 405s as overheads. Morrison sang into an SM57, and the audience was picked up by a Neumann SM69 stereo mic. The 8-track tape was BASF LR56 at 15 ips; the 2-track 3M 126. By today's standards, that list probably looks downright primitive, but the fact is, the tapes sounded great.

Each of the live releases (with the exception of the sampler) has detailed technical information by Botnick, who notes, "I figure there are a lot of fans out there who want to know all that stuff. When I was growing up, I got a lot of my information from reading the back of albums. You'd occasionally find someone saying, 'I used a U47 on the trumpets,' so when I got to do recording, I sometimes tried the things I read about. So I'm continuing in that tradition."

Botnick is mixing the tapes in his L.A.-area home studio, using a Sony DMX-R100 digital console as the heart of his system. Though the first concert set, *Live in Detroit*, was prepared at 48k, downsampled to 44.1 for CD (via db Technologies 3000s), Botnick has loftier intentions for other releases in the series: "The problem we have is that we're still stuck in the CD area, so I can't give everyone what it *really* sounds like because of the limitations of the CD. But all the future ones are going to be high-bandwidth—96k, 24-bit—and will be 5.1 as well as stereo. And we're hoping that we can release them in both SACD multichannel and DVD-A. I also really like the way DSD

sounds. Those will all be much closer to the way it should sound." Other equipment in Botnick's arsenal for these CDs includes the new TC Electronic 6000 reverb, Ayre Acoustics V-1 amplifiers, db Technologies A/D converters, and an HD Sonic Solutions System for editing and mastering.

For Botnick, the project is both business and nostalgia. The Doors have been a major part of his livelihood since he was a teenager recording that first Doors album in early 1967. Every time he goes into the vault to listen to a studio or live multitrack—and there has been a plethora of hits and other releases over the years—he's hearing himself at work as a young man. "In a way, when I'm mixing these tapes now, I'm trying to be 23 years old again," he says with a chuckle. "And that's hard. I'm not the same person today that I was in 1970. I have a different sensibility and obviously I've been listening to lots of different things through the years. Recording equipment has changed, of course. But what we're trying to do [on these CDs] is capture the music as accurately as we can so we can bring the best to the fans. That's really who it's for." ■

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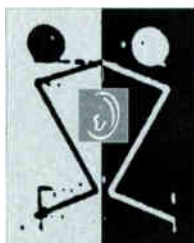
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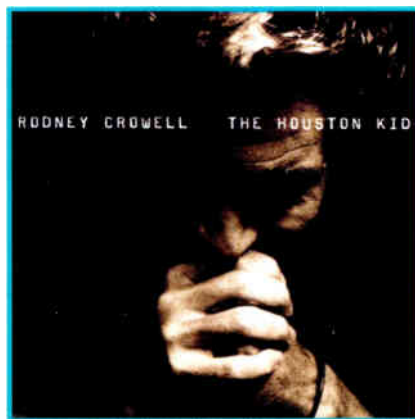
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—FROM PAGE 164, COOL SPINS

*Houston Kid* is his most overtly autobiographical album; it's a deeply felt and moving memoir of his childhood, growing up in a rough section of Houston, of some of the bad characters who drifted through his life during his teenage years and of his parents' turbulent marriage. Though there's fiction blended into the narratives he so skillfully etches, it all feels authentic and somehow *true*. Musically, the settings are spare and unadorned, but still powerful—a few tracks have the brooding intensity of some of Bruce Springsteen's more country-oriented ballads. One of the more intriguing numbers is "I Walk the Line (Revisited)," which combines



Crowell's memories of hearing that Johnny Cash classic, with the Man in Black himself (Crowell's former father-in-law) singing parts of the original song; it's very nicely done. Also particularly effective is the spoken story "Highway 17," which is told from the viewpoint of a career criminal. All in all, a superior effort.

Producers: Rodney Crowell, Stuart Smith, Peter Coleman. Engineers: Peter Coleman, Jim Dineen, Dave Thoener (some mixing). Studios: Treasure Isle (Berry Hill, TN), Sound Kitchen (Franklin, TN), the Tree House (Forest Hills, TN), Deepfield (Nashville). Mastering: Hank Williams/Mastemix (Nashville). —Blair Jackson

### Joe Maphis: *Fire on the Strings* (American Milestones/Sony Legacy)

The latest quartet of American Milestones reissues include some very familiar recordings: Kris Kristofferson's eponymous debut, and breakthrough records by Charlie Rich (*Behind Closed Doors*) and Rodney Crowell (*Diamonds and Dirt*). But the coolest album to get the Milestones treatment this time is Joe Maphis' 1957 instrumental *Fire on the Strings*. Maphis was born in the '20s and was reared listening to the Carter Family and his own dad's square dance band. He taught himself how to flat-pick fiddle melodies on the acoustic guitar and translated his original technique to the electric guitar in the late '40s. His rapid-fire style influenced scores of rockabilly and surf players; this release is still as hot as they come and was meticulously re-produced with seven (!) bonus tracks.



Original producer: Don Law. Reissue producer: Darren Salmieri. Reissue engineer: Mark Wilder. Reissue/remastering studio: Sony Music Studios (Manhattan).

—Barbara Schultz

### Dave Carter and Tracy Grammer: *Tanglewood Tree* (Signature Sounds)

Though contemporary folk recordings rarely get much attention in the press, the fact is there are a lot of talented singers and writers out there working in the idiom and turning out fresh, exciting music. Take this indie CD, for example: Oregon-based Dave Carter writes songs that are clearly steeped in the traditional music of the South—old-time mountain folk—but lyrically, he is unquestionably a child of the post-Dylan era. His strength lies in his ability to write evocative songs that blend the old and new, the accessible and the opaque; ones that sound familiar, yet have a fresh viewpoint. There's a wistfulness that runs throughout his writing—the characters always seem to be *leaving*, looking for greener pastures and happier days. But it's a sweet, sweet melancholy, and both Carter and his singing partner, Tracy Grammer, manage to make it all seem somehow uplifting. Both are talented multi-instrumentalists, and they are ably assisted by a small group of tasteful players on several tracks. A real find! (Signature Sounds can be found on the Web at [www.signature-sounds.com](http://www.signature-sounds.com).)

Producers: Dave Carter and Tracy Grammer. Engineer: Mark Thayer. Studio: Signature Sounds Studios (Palmer, MA). Mastering: David Glasser/Airshow (Boulder, CO).

—Blair Jackson ■





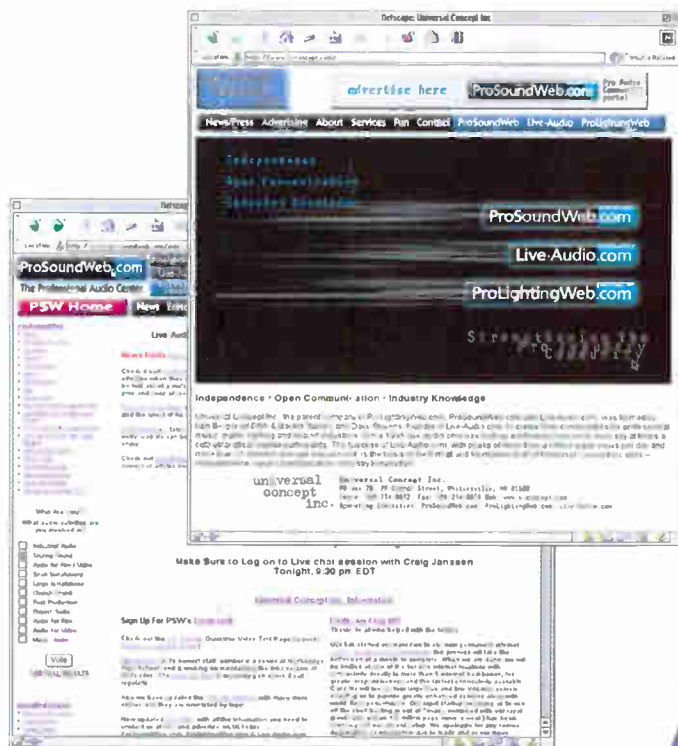
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CIRCLE #106 ON PRODUCT INFO CARD

World Radio History

# COAST TO

## L.A. GRAPEVINE

by Maureen Droney

On one of those beautiful only-in-L.A., just-after-a-rain winter afternoons, I stopped in at The Hive, 311's North Hollywood studio, where I



Ron Saint-Germain (left) and Nick Hexum of 311 at The Hive.

found New York-based producer/engineer Ron Saint-Germain and 311 band members deep into overdub mode.

A cozy complex replete with a mixture of old and new gear, The Hive was the scene of a heated synthesis between digital and analog. The control room, fitted with two 02R consoles, also housed several of Saint-Germain's custom outboard racks. Tracks were being recorded to both an Otari analog 24-track and to Pro Tools, a division of labor fostered by Saint-Germain, an avowed analog proponent.

Saint-Germain, who in 1995 produced 311's third album, the multi-Platinum *311* (aka the Blue Album),

has returned for their sixth effort and is clearly enjoying the project. He gave a brief tour of the homey studio, then settled in to discuss the project and offer some of his iconoclastic views on the state of modern recording.

"The previous album we

made together did very well," he comments. "A lot of people thought it was their first album, because their first two albums sold under 100,000, while the Blue Album went to three million. When you have that big a gap, people think it's the first record, because it's the first one they've heard of."

The team amicably parted ways after *311*, and in the intervening time the five-member, two-lead singer band put out two more albums, while continuing to tour almost nonstop, enlarging their already significant and loyal fan base. They also released *Enlarged to Show Detail*, a Platinum-selling home video of their live performances edited with glimpses

—CONTINUED ON PAGE 180

## NY METRO REPORT

by Paul Verna

You walk into a large control room and all around you is nothing but vintage analog equipment: Studer A827 and A80 24-track recorders, an Ampex ATR-102 half-inch mastering deck, Pultec EQs, 1176 and LA-2A compressors, limiters, a stereo tube EMT plate, tons of mics, tons of amps, tons of instruments and the centerpiece of it all—a 56-input Neve 80 Series wraparound console with Flying Faders (and a 24-input Trident sidecar to boot).

Without knowing it, you've entered one of New York's most advanced digital production facilities.

Magic? Sort of. It's actually the Magic Shop, a downtown haunt where scores of artists have made some of their best records in the past 12 years, from Lou Reed to Sonic Youth to Sheryl Crow to Mitchell Froom and Tchad Blake.

Even though the Magic Shop was built as—and remains—a state-of-the-art analog room, it leads a double life as a Pro Tools laboratory, with a nifty workstation that resides in a cabinet operated by a hydraulic lift. If you don't want to use it, then the computer stays neatly tucked away. But the minute a client requests it, the rig rises from its scone like a lion waking from a long sleep.

Once a staple of the U.S. alternative rock scene, the

Magic Shop has recently broadened its clientele to include acts from around the globe—which includes, of course, the studio's own neighborhood in the Soho section of Manhattan. "In the last six months, we've had a combination of very international records and very local records," says owner Steve Rosenthal. "It's not your typical major label bands from all over America."

To illustrate his point, Rosenthal rattles off a list of the studio's recent clients: Icelandic alt-rock star Bjork; Mauro, a Belgian rock act produced by Dave Sardy of Marilyn Manson fame; Bonnie Pink, a Japanese artist signed to Warner Japan; New York cult guitarist Marc Ribot, who was in producing Sony Japan act Sion; Andres Levin, an American/Venezuelan producer who brought Chilean rock act Panico to the Magic Shop; American/Brazilian musician Arto Lindsay, working on a new Brazilian music project of his; and Brazilian death metal stars Sepultura, who spent a couple of days at the Magic Shop.

On the local side, the one-studio facility has been buzzing with hometown favorite Reed, who worked with bassist Rob Wasserman on Wasserman's upcoming project; also with Latham at the boards. (Reed's wife, Laurie Anderson, logged in time at the Magic Shop herself last summer.) In addition, the studio hosted singer/songwriter Freedy Johnston, who worked on his latest Elektra project; one-time Dream Syndicate

—CONTINUED ON PAGE 183

# COAST



Some sweaty studio work at Elysian Fields, L to R: guitarist R. J. Ronquillo, co-producer/engineer Keith Rose, co-producer/vocalist/guitarist Eric Knight and bassist David Poole.

## NASHVILLE SKYLINE

by Dan Daley

The adaptation of Nashville to the New Economic Order continues. In February, Sound Stage opened a new and comprehensive Pro Tools-based studio. The 48-fader Pro Tools system is situated in a studio at Sound Stage, which previously held an older SSL 4000 Series console that has been moved to a second studio in the former Warner Bros. Records building. Sound Stage owns on Music Row.

The surge toward hard disk-based recording has accelerated in recent months in Nashville, observes Sound Stage owner Warren Rhodes, who says he also plans to convert the facility's accounting office into a Pro Tools hosting suite—an acoustically treated studio room in which users can bring their own Pro Tools and other hard disk recording systems in and use them in an envi-

ronment close to other studio activities around the Row and also access other aspects of Sound Stage's complex. The new Pro Tools suite, which retains the studio designation Second Stage, opened in early February with a daily rate of \$650, including a Pro Tools-trained engineer; the planned host suite will charge \$250 per day.

These moves are a response to an evolving economic and technological landscape that is changing the way Nashville's music recording business operates, says Rhodes. "The number of calls for Pro Tools that we've been getting has been steadily increasing," he states. "The trend in [surround] mixing is toward cheaper rooms, and this addresses that trend, with multichannel capability and a less-expensive console. Also, it's easier in that people can simply come in and plug in their drives and not have to go

—CONTINUED ON PAGE 184

## SESSIONS & STUDIO NEWS

### NORTHWEST

Way up north at Rainstorm Studios (Bellevue, WA), the Tacoma-based band Room XIII began tracking their latest album with producer/engineer studio owner Paul Speer. Edmonton, Alberta's Painting Daisies were also in mixing a forthcoming release with Speer. Queensryche drummer Scott Rockenfield and Speer worked on a bonus track for the European

Murphy tapped engineer Barry Corliss to master the latest release by the Swedish band Yellow Fever in Stockholm...The Degenerate Art Ensemble finished mixing their latest recordings, *Rinko* and *Razor Stitch*, at Gravelvoice (Seattle). Black Cat Orchestra were also in mixing their soundtrack contribution to the Fritz Lang film *Spies*. Scott Colburn was in to engineer both sessions... Out on the island, producer/engineer Jonathan Fluevog finished up the latest release for Shack Records artist Jet 3 at Vogville Recording (Vancouver, BC)...New band



Inside Boo Studios: Roomful of Blues guitarist Chris Vachon (left) and studio engineer David Prout.

release of their latest album, *Hell's Canyon*, which is set for release on the Dutch imprint Bee Bee Records...At Jackpot! Recording (Portland, OR), the Pinehurst Kids and producer Larry Crane finished the bulk of the band's third album. King Black Acid were also in at Jackpot! working on a new album with engineer Jeff Saltzman...Out at Master Works (Seattle), producer R. Chris

Monovox took a jaunt across the Golden Gate to Studio D (Sausalito, CA) to lay down some basic tracks for Garageband.com. Jerry Harrison produced the effort with Karl Derfler engineering, and Steve Pierson was in to assist. Bay Area natives Huey Lewis and the News also spent some time at Studio D mixing some live tracks for an upcoming release with Joel

—CONTINUED ON PAGE 186

—FROM PAGE 178, L.A. GRAPEVINE

of life on the road. In 2000, when it came time to head back to the studio again, they put in a call to Saint-Germain (Saint, for short), whose credits include Sonic Youth, Soundgarden and Tool, among many others, as well as the single and video mix for Creed's monster hit "With Arms Wide Open."

"[Singer/guitarist] Nick Hexum sent me out some songs that he'd recorded here on his Studio Vision system," he recalls. "So I made a few notes for him. [Laughs.] Well, actually, they were pretty copious notes—about four pages. When I called Nick the next day, he asked, 'Did you listen?' and I said, 'Yeah, are you sitting down?'"

"I went on for half an hour, and he finally said, 'I didn't really realize that you got into a song so much; we miss that.' Because, when you have a successful band, a lot of people will come in and kiss their ass. Me, I'll say what's on my mind—like it or not. I expect an open dialog from everybody, because I've found if you speak your mind, everybody knows where you stand. They might not take your suggestion, but it may trigger another suggestion from them that, in turn, leads to a whole third opportunity that would never have happened without the dialog."

Songs continued to fly between coasts until Saint headed to Los Angeles in September for pre-production with the whole band. "The plan was during that time to try different things," he notes, "because that's the period to go all the way out. Once you get into the studio, you've got to have a good flight plan and know what you're going to accomplish. I don't slam the door on creativity and spontaneity, but you need to have a focus. You don't want to go in, then sit around and twiddle your thumbs at two grand a day."

New arrangements were recorded to Pro Tools, which even analog die-hard Saint-Germain admits is a convenience. "For trying out arrangements, Pro Tools is really valuable," he concedes. After pre-production, the band took the show on the road, adding the new songs to the set lists of a six-week tour. "We'd rehearse at soundcheck," continues Saint, "and it got to where they didn't feel like new songs. They didn't have to think about them, which was great. Because, like an actor can't really begin to act until he's off book—until he knows the words—you can't really play the music until you know the song. And that made all the difference, because when we went into the studio, in seven days



**At Burbank's Master Control, clockwise from left: second engineer Brad Winslow, engineer Jim Faraci and studio manager Ron Corbett.**

we did 18 songs."

Basics for the sessions, which were recorded at Sound City's Studio A, were cut to 16-track analog 2-inch at 15 ips. After tracking, 16-track safeties were made, along with 24-track analog and Pro Tools slaves. For overdubs, the swarm moved back to The Hive, where the antidigital Saint has been bypassing the two installed 02Rs, running mics direct into either the band's Telefunken mic pre's or into his own Neve units, then into the analog 24-track. Other tools he's been relying on include the Esoteric Audio Research 660 compressor. "I use it for vocals and basses. It's modeled after the Fairchild," he explains. "I love the Fairchild sound. Unfortunately, if you move them, they break, they're difficult to line up, and they're inconsistent from one to the next. This thing has the reliability and stability of today's technology, but design-wise it's virtually a copy of the Fairchild. Sonically, it's actually better."

Also in Saint's racks (works of art in their own right, by the way, and designed by Vince Gutman of Woodstock, N.Y.) and put to regular use on the project are Pultec EQP-1As, Motown equalizers and two different types of Neve mic pre's/EQs: 1073s and the broadcast-style 3104s. Saint is also a fan of his dbx 120XD's, which he uses to enhance subharmonics. "You have 20, 30, 40 and 50 Hz; it's just subs, period. I have two of these so that I can use them in stereo on the mix, feeding the bass or the kick into them to get that

live sub stuff."

Other cool gear includes a Moog 3-band parametric EQ, MXR phaser/flangers, a Lexicon 200 ("The forerunner to all of the Lexicon gear," he says.), Marshall Time Modulators, Cooper Time Cubes and a prized Datamix EQ, reportedly from a board used by Jimi Hendrix. "I've had it since '74—just knowing that his hands were on this makes it great!"

An April release is hoped for; expect a more classically aggressive rock sound from the band this time around, mixed with loops and elements from the dance world, such as jungle, trance and trip hop. "A lot of what attracted me to this band in the first place was that, at the time, they were a very unique hybrid of a lot of styles," states Saint. "They were groundbreakers for bands like Limp Bizkit and Korn. But 311 still encompasses a larger hybrid of music. Plus, they're all amazing musicians, really good players, which is a rarity these days."

"It feels like a great marriage this time," he concludes. "Everybody's really excited, happy to come to work and anxious to play. Even with the Pro Tools, we're still having fun, so I know it can be done."

Next stop: a few minutes away at Burbank's Master Control. Manager/co-owner Ron Corbett showed me around the SSL 4000 E-equipped facility, where a two-year redecorating process was recently completed. No longer the spare, concrete industrial space that I remem-

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bered from the past, the studio's original exposed brick walls and high ceilings have been enhanced with new textures and carpet in warm earth tones. A mixture of art now adorns the walls, including some collected by (co-owner) Larry "Shea" DeGasperin on his travels to China. Also new are a kitchen and a separate Pro Tools suite.

"We started redecorating at the end of '98," says Corbett with a laugh, "and I can definitely say that we're sick of remodeling. We've done it slowly, one piece at a time, because we're not the kind of business that can take out a big loan and slam it. We didn't want to have down time. Instead, we'd do a room or part of a room, working on weekends or at night and stopping when clients were working. That's why it took us almost two years."

Master Control is known as a reasonably priced place to both track and mix and in recent years has played host to long-term projects such as Toad the Wet Sprocket with producer Gavin MacKillop. In addition to the 52-input SSL, the studio provides a Neve 12-channel sidecar with 1063 EQ/mic pre's

and a good complement of outboard, including plenty of vintage pieces by Pultec, API and UREI, and some specialty items, such as two CBS Audimax II tube limiters, a Trident spring reverb and an Ursa Major Space Station. The spacious complex features both a large 22x20-foot control room and a massive 25x58-foot recording space. During the renovation, the recording space, which is graced by a Steinway Model C 7-foot grand piano and several very cool backlit drum kits, was made more sonically flexible with new flooring, carpet and an abundance of full-size baffles.

When Master Control was originally opened in 1984 by producer/engineer/musician John "Ace" Otten, it was equipped with a Trident Series 80 console. The SSL console was installed in 1986, and the first sessions booked on it were for Madonna's *True Blue* album. Now owned by three partners, Otten, DeGasperin and Corbett (who handles the day-to-day management), the facility plays host to projects that run the gamut of genres. Recently in have been pop-rockers SR-71 with producer/engineer Neal Avron, the Rounder Records'

Woody Guthrie children's series with Frank Fuchs producing and Static-X with producer/engineer Ulrich Wilde. On the day I stopped by, new artist Sled was mixing with producer Mark Kendall and engineer Jim Faraci.

"We're more of a by-the-project than a by-the-hour studio," comments Corbett. "I'd say our niche is high-end tracking and mid-level mixing. We get a lot of mixes because of the size of the control room. And now, with the Pro Tools room, it works out even better for our clients. They can be set up in a separate place, but if they need the system in the control room, they can have it there instead.

"Most of our projects come from the producer or engineer," he continues. "They call up and book the time themselves. We have a lot of regulars, so as long as our handful of clients is working, we're working. I like the sort of mid-level niche that we're in. Although we share a lot of the same clients with other studios, we're really not directly competing with anybody."

According to Corbett, the recording space is also a favorite with drummers,

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and he recalls a session with ex-Policeman Stewart Copeland. "When the session was over, he hung out for several hours just jamming by himself, because he liked how he sounded in the room so much."

A good number of Master Control's sessions are still analog. "Our 2-inch machines definitely still get used, and the biggest trend I see is the hybrid between analog and digital," he notes. "People use the technology in different ways for different projects."

About the finally completed renovation, Corbett notes: "Your day rate doesn't go up because you put in new doors or change the carpet. Recording budgets haven't gone up, and that can make it difficult for a studio to spend money on improvements. But you want to put things back into the business to let your clients know that you care about them, so you do what you can. Our goal was just to make it feel like someone's home and to make it a comfortable place for people to work."

"In the end, I couldn't tell you how to stay in business, we really just try and service the business that we have. You always have a certain number of new business each year, and you try to make them repeat clients. And, of course, you hope that your regular clients do well, because if they have work, so do you."

E-mail L.A. news to MsMDK@aol.com.

—FROM PAGE 178, NY METRO REPORT

front man Steve Wynn cut a solo project with producer/engineer John Agnello; and critic's favorite Ida made a self-produced record at the Magic Shop.

A studio owner who manages to find time to actually work in his facility, Rosenthal has recently produced independent albums by local singer/songwriter Pal Shazar, featuring Sara Lee on bass and Jules Shear on background vocals; Rounder folk/blues artist Stephan Smith and Von Em, a band referred to Rosenthal by Bottom Line Cabaret owner Allan Pepper. Rosenthal also engineered the forthcoming release by anti-folk artist Lach, which was produced by frequent Magic Shop client Richard Barone of Bongos fame.

The only recent project at the Magic Shop that does not fit into the international or local categories was the mixing of The Go-Go's upcoming Beyond Records project, which was done by the production team of Paul Kolderie and Sean Slade—Magic Shop regulars who

appreciate the studio's Neve console, its generous assortment of outboard gear and its homey vibe.

Despite the Magic Shop's analog history, 80% of its projects now involve Pro Tools, according to Rosenthal. Most sessions are now done exclusively in the digital workstation, but employ a hybrid of Pro Tools and analog tape—an M.O. that Rosenthal can easily accommodate thanks to a patchbay that allows him to route his 24 channels of Pro Tools to any input or output on the Neve or Trident.

While the studio's graceful conversion from analog to digital has enabled it to keep pace with its clients' demands, the real secret to the Magic Shop's success has been Rosenthal's immersion in the local music scene. Besides owning and operating the Magic Shop since its inception in 1989, Rosenthal is the co-owner of the Living Room, a haven for singers/songwriters that grew out of the Siné scene—best known for spawning the career of the late Jeff Buckley. "The Living Room keeps me in touch with the community of musicians that work and live in New York," says Rosenthal. "If your business is not based on Mariah Carey calling up, it's really important to be involved in the community you work in, and a lot of studio owners miss that in a big way. I've been really involved in it, to the point of giving away studio time."

If Rosenthal can afford to occasionally donate hours to cash-starved local artists, then it is because he gets enough referrals through his extensive network of contacts to keep the studio humming with commercially viable projects. A few years ago, however, he had his doubts as to whether or not the Magic Shop would survive the cutbacks in label budgets. "For me, the worst time was about three years ago, when the majors pulled the plug on alternative music, which was what my business was based on," says Rosenthal. "It was like they woke up one morning and said, 'That's the end of it.' So I had to go through a transition, which meant being open to new technology and to projects that don't necessarily come from an A&R representative at an American label."

Now, with a stylistically and geographically diverse clientele—and his roots firmly planted in the local scene—Rosenthal is doing better than ever, both creatively and commercially.

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CIRCLE #109 ON PRODUCT INFO CARD

—FROM PAGE 179, NASHVILLE SKYLINE

through a transfer process to get started working.”

Hard disk recording as a technology and a methodology is hitting Nashville the same way that two other major trends in pro audio—project studio-type equipment and the shift to producer-owned facilities—did over the last decade: late and hard. As recently as the mid-1990s, Pro Tools systems were relatively rare in Nashville, and their use on records for high-profile artists sometimes came close to requiring nondisclosure agreements, reflecting the sensitivity with which the country music industry felt about using technology—digital auto-tuning, especially—to tweak recordings that the industry preferred to have the world regard as almost totally organically created.

The rapid expansion of demand for hard disk recording capability in general, and Pro Tools in particular, has also underscored the lack of well-trained operators in Nashville. “Suddenly, we find that we have more Pro Tools [demand] than we have trained operators,” Rhodes states. Responding to that circumstance, Rhodes has become part of the board of directors assembled by David Frangioni, owner of Pro Tools dealer and studio design facility Audio One, which has offices in Nashville as well as Miami and Boston, for the Audio One Southeast Pro Tools Training Center, a Pro Tools-specific training facility opened in north Miami in January. That training facility will supply Sound Stage with Pro Tools operators and serve as a general resource for entry-level technical employees, Rhodes says. That move, in turn, is part of a larger agreement, pending at press time, for Audio One and Sound Stage’s maintenance and rental division, Interface Audio, to joint-venture a new maintenance and equipment rental start-up in the Miami area sometime later this year.

Woodland Woes: Woodland Studios, one of Nashville’s most venerable facilities that was nearly destroyed in the tornado that devastated the city in April 1998, is still in limbo. But there has been some movement. Studio owner Bob Solomon has moved the equipment, including the Neve 8088 and VR-60 consoles, out of the building and across the street, into a former bank building, which he purchased late last year as a hedge against the ongoing imbroglio with the owners of the building, which has been Woodland’s home since it

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World Radio History

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*Quiet Riot inside Studio B at Rumbo Recorders, L to R: Kevin DuBrow, producer/engineer John Rollo, assistant Posie Muliadi, Frankie Banali, Carlos Cavazo and Rudy Sarzo.*

opened in 1968.

Solomon says there are no immediate plans to convert the bank into a recording studio, but he stressed that it is his intention to get Woodland back up and running—somewhere, sometime. Much of that rests on how Solomon's litigation against his insurance company turns out—he is suing them for failing to provide promised coverage—and how his ongoing dispute with the owners of the original

building works out. Solomon, who bought Woodland in 1990, says the group of owners has not made necessary repairs to the building since the tornado. A limited number of sessions have managed to take place at the studio over the last three years, the last of which was blues guitarist Robert Cray's new album, before Solomon pulled the equipment, mostly he says to protect it from the elements coming in through a leaking roof and from a lack of heat and

air conditioning.

Solomon says he and engineer/producer Roger Moutenout, who had leased space in the back of the studio for his own equipment, have discussed the possibility of taking some of the equipment and setting it in the bank in what Solomon calls "Daniel Lanois-style—no control room, just a console and a microphone." But no decision has been reached on that, which Solomon says would be an interim move in any event. "I still want to bring the studio back," he says. "It has been unbelievably frustrating dealing with all of this." ■

*Send comments and information to Dan Daley at danwriter@aol.com.*

—FROM PAGE 179, *SESSIONS & STUDIO NEWS*  
Jaffe at the console.

#### **SOUTHERN CALIFORNIA**

A band named Goo: The Goo Goo Dolls saw no reason not to continue with a winning formula—the band recently returned to Ocean Way Recording (Hollywood) to work on their forthcoming Hollywood Records release with engineer/studio owner Allen Sides, producer Rob Cavallo and pro-

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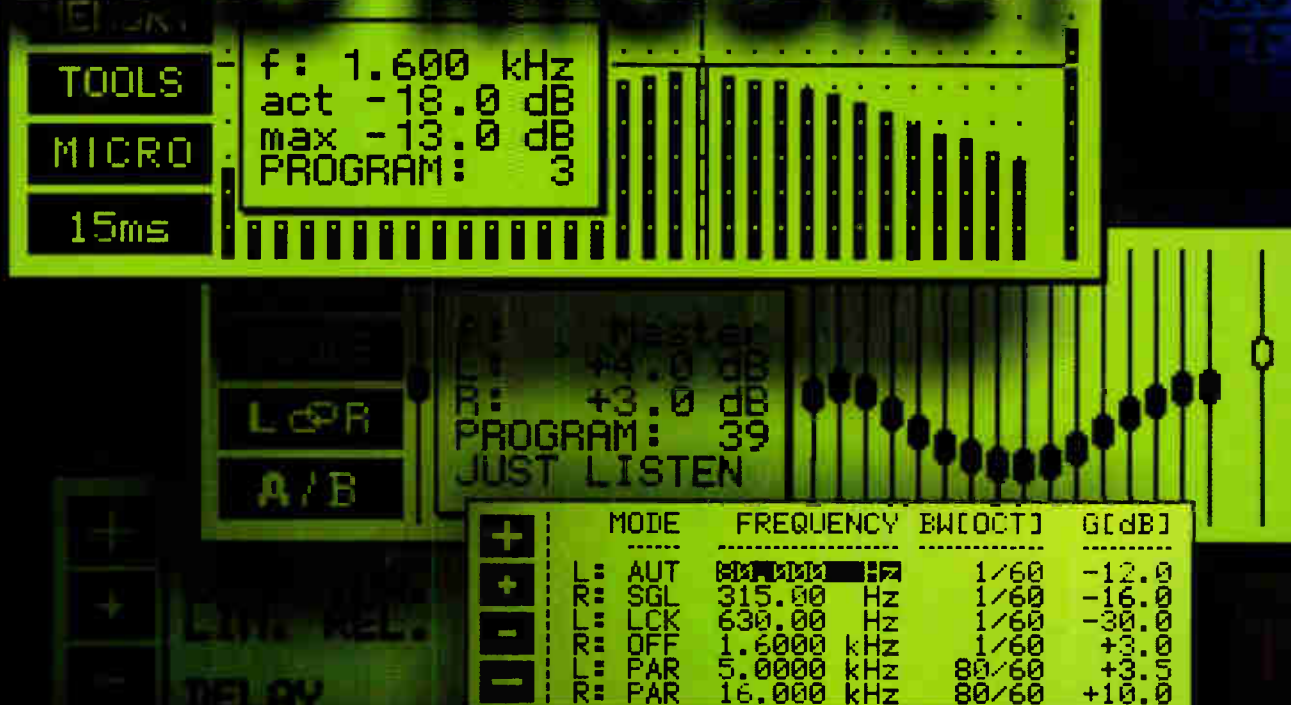
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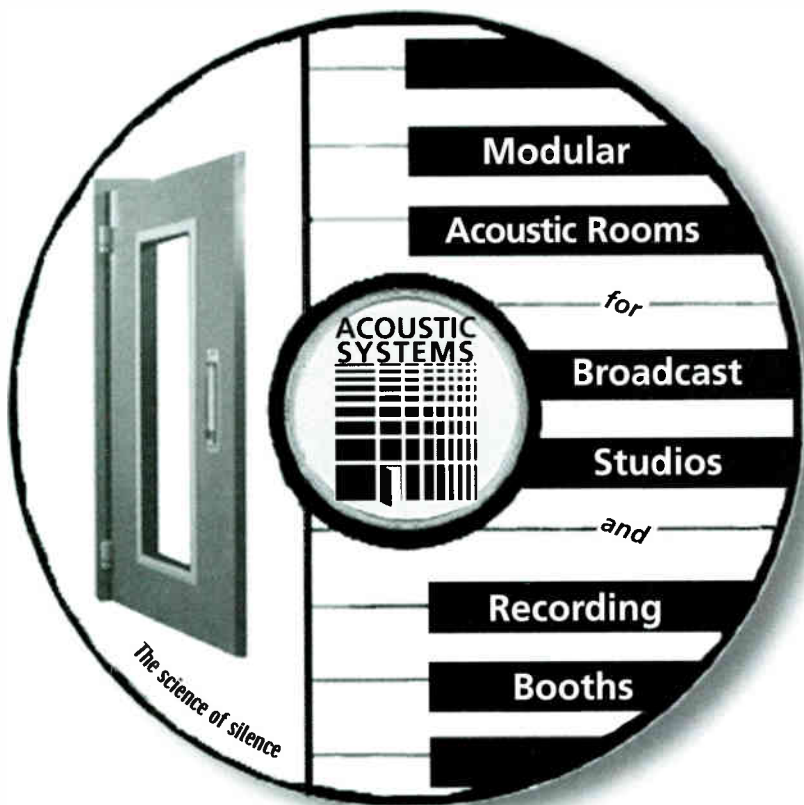
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CIRCLE #115 ON PRODUCT INFO CARD

grammer Tal Herzberg... Quiet Riot stepped into Rumbo Recorders (Canoga Park, CA) to track some new material with producer/engineer John Rollo and assistant Posie Muliadi... A busy fall at Skip Saylor Recording (Los Angeles): Sony Music artist Ginuwine and producer Raphael Saadiq were in tracking new material; Daniel Romero and Claudio Cueni engineered with Paul Smith and Regula Merz assisting. Artist Eric Benet and producer Ali Shaheed were tracking and mixing an upcoming Warner Bros. Records release; Cueni and Romero were again tapped to engineer with Smith, Merz and Ian Blanch assisting. Cueni and Merz also added some sheen to the forthcoming Tupac Shakur album for Interscope Records... Sound Image (Van Nuys, CA) saw producers/engineers Paul Q. Kolderie and Sean Slade stopping in at Studio A to work on the forthcoming The Go-Go's record for Beyond Records; Matt Lavella was in to assist. New band Anyone were working with producer Andrew "Mudrock" Murdock and assistant Aidan Flax-Clark on their debut effort for Roadrunner Records. Studio B saw Goodvibe Recordings artist Mystic and engineer Matt Lavella adding the finishing touches to her debut effort... MCA Records band Fenix TX has been in at Ocean Studios (Burbank) with producer Jerry Finn and engineer Sean O'Dwyer; Josh Lynch and Stacey Dodds were in to assist.

#### NORTHEAST

To the extreme he rocks a mic like a vandal: Vanilla Ice cruised into Avatar Recording (NYC) to mix some fresh cuts from his forthcoming album, *Skabz*, with mix engineer Jason Corsaro (Madonna, Moby, Ozzy Osbourne)... New Jersey natives Bouncing Souls recently bopped into Big Blue Meenie Studios (Jersey City, NJ) to work on the follow-up to the group's '99 release *Hopeless Romantic*. The band enlisted



The members of Bouncing Souls in Big Blue Meenie, Studio A, L to R: Bryan Kienlen, engineer/producer John Seymour, Pete Steinkept, Greg Attonitoi.

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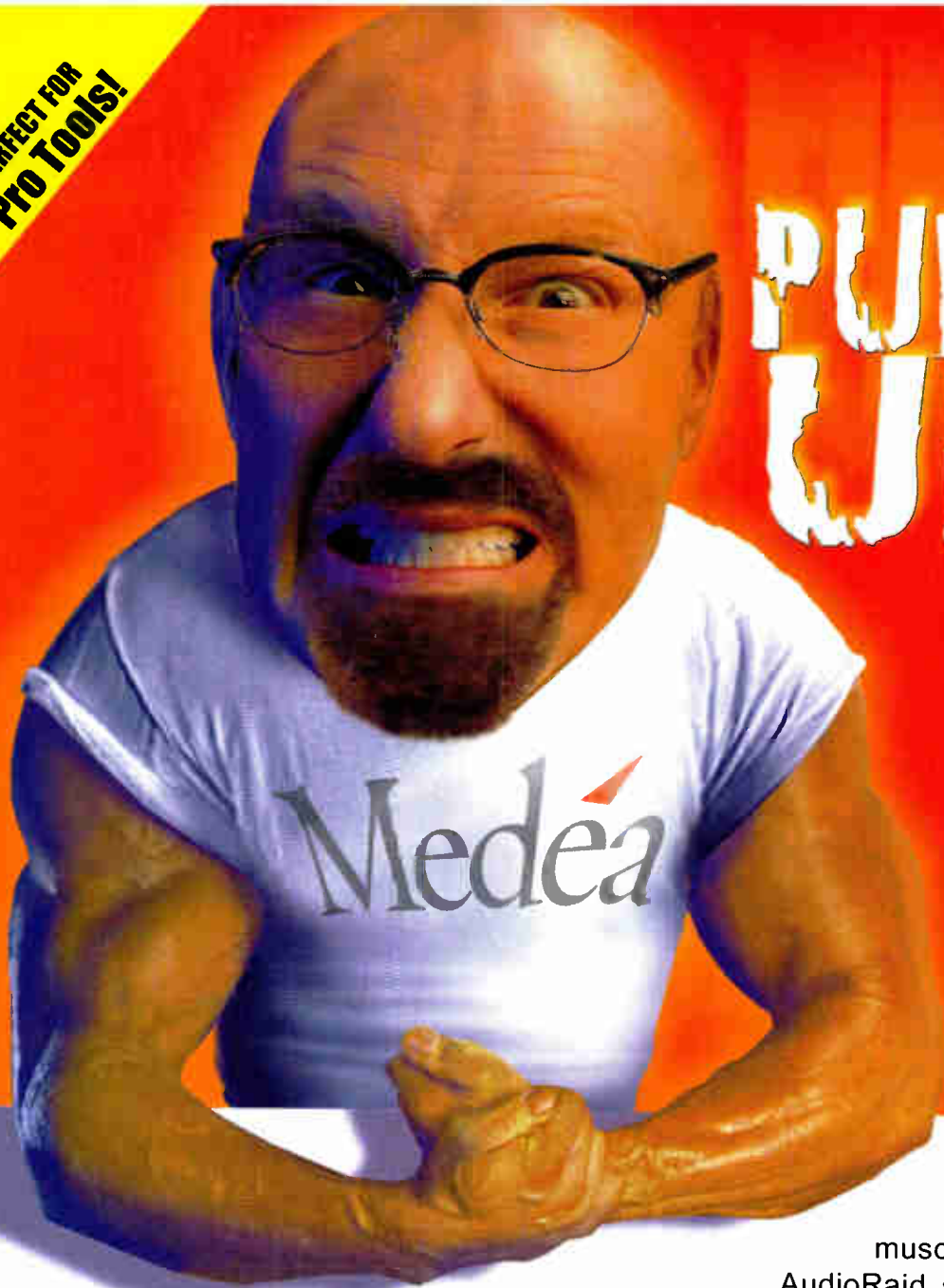
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the help of engineer/producer John Seymour to track and mix the new project...Vocalist Joe Henry was camped out at Sear Sound's (NYC) Studio C to work on an upcoming Hollywood Records release. Craig Street was in to produce the effort with engineer Husk Hoskolds; Todd Parker and Aaron Franz assisted... Producer Neil McLellan (Erasure, The Prodigy) and engineer Dave Bascombe (Depeche Mode) stopped by The Lodge (NYC) to master an upcoming release from Papillon/Chrysalis Records artist Terrorvision. Mastering engineer Emily Lazar hosted the boys from the UK at her studio for two days. Lazar also recently re-mastered two albums



The recently installed SSI SL 9000 J at Mirror Image Recorders with engineer/studio owner Tommy Uzzo (left) and studio manager Amy Serrago.

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from the Get Up Kids for Doghouse Records...Angels in the Architecture are working on their full-length debut for Law of Inertia Records at Austin 7 Studios (Buffalo, NY); Tom Robinson was picked to produce and engineer...53 Days are working on their new LP at Audio Magic (Buffalo, NY). Gary Mallaber was in to produce with Dave St. Onge engineering and Tom Robinson assisting. Also at Audio Magic, In From the Cold finished work on their debut with producers Mallaber and Jack Sherman with St. Onge engineering...Out at Boo Studios (Wakefield, RI), the band Roomful of Blues were in to work on a new album with engineer David Prout...Indre Studios (Philadelphia) saw none other than the legendary Patti LaBelle stop in for some pre-production work on an upcoming release. LaBelle brought a full band, which included musical directors Budd Ellison and Nathaniel "Crockett" Wilkie...Some recent mastering work at Trutone Inc. (Hackensack, NJ): Engineer Phil Austin put the final coat of gloss on the new Beastie Boys 7-inch single called "Buddy." Austin also mastered a full-length Beastie Boys side project entitled *BS-2000*, which is set for release on the group's Grand Royal imprint. A busy man, Austin also made some final tweaks to the new Gloria Gaynor track "Just Keep Thinking About You," a CD single for Logic Records...Producer/artist Puff Daddy stopped in at Sound On Sound Recording (NYC) to do some quick remix work for Jennifer Lopez. A number of artists on Puffy's Bad Boy Entertainment label were also camped out at Sound On Sound:

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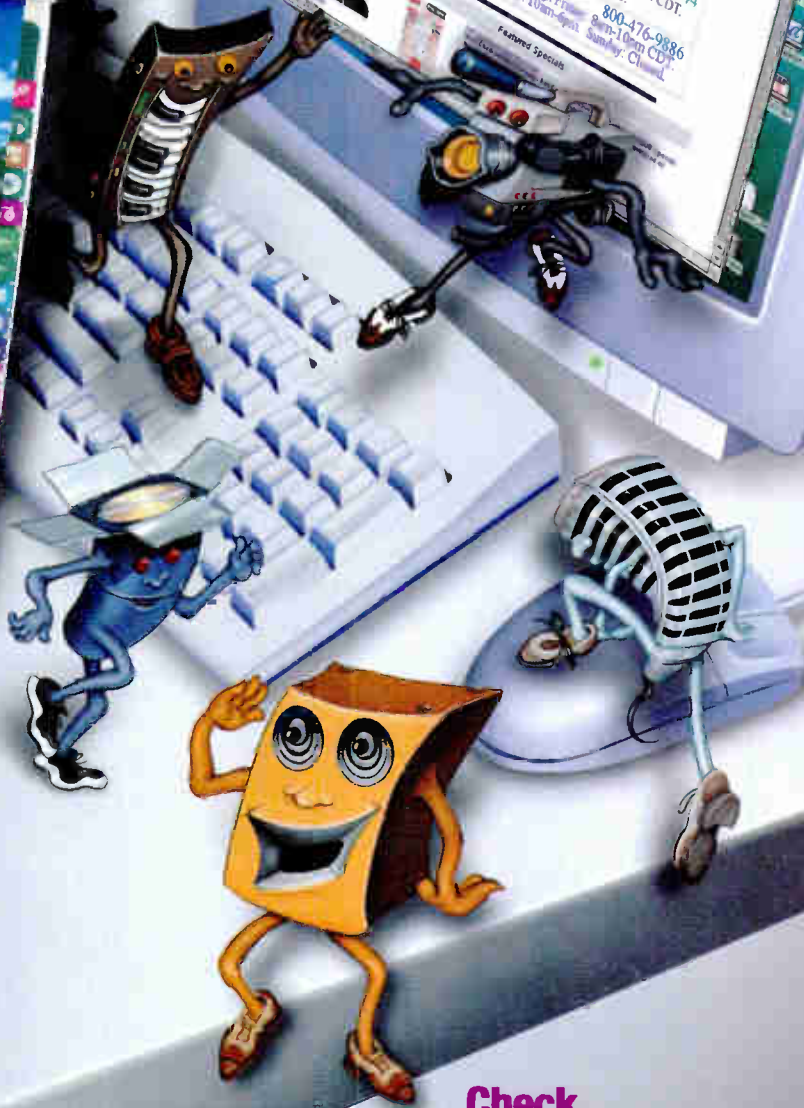
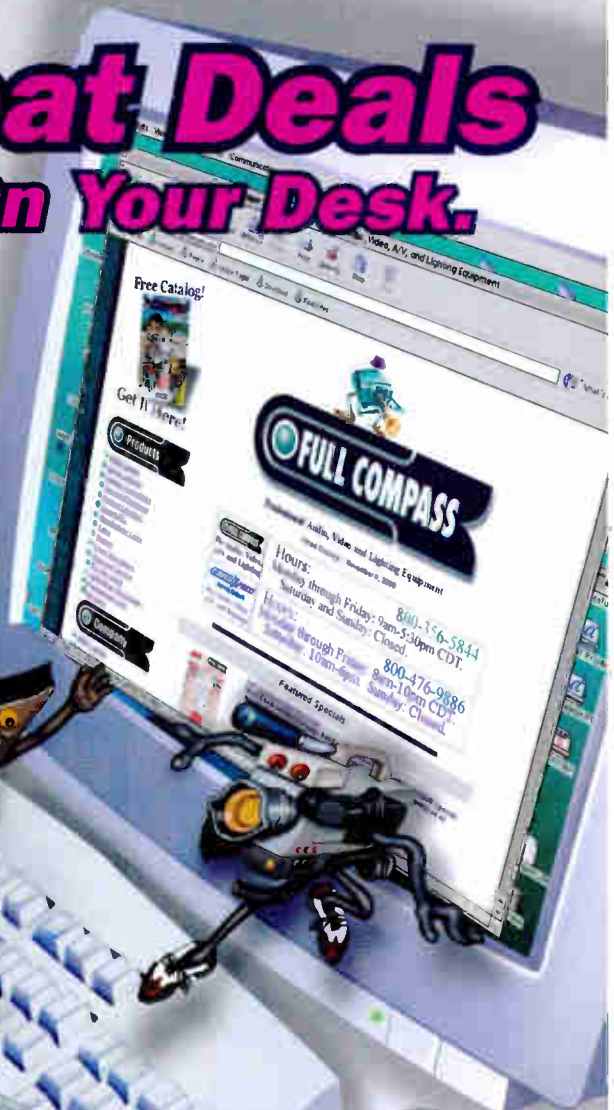
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The Goo Goo Dolls make a home at Ocean Way Recording, L to R: engineer/studio owner Allen Sides, Robby Takac, Johnny Rzeznik, producer Rob Cavallo and programmer Tal Herzberg.

Artists Shyne, Faith Evans, G-Dep, Carl Thomas, 112 and Sheri Dennis were all in mixing and tweaking forthcoming projects.

#### SOUTHWEST

At the Congress House Studio (Austin, TX), Maceo Parker stopped by to contribute to Ani DiFranco's new release for her Righteous Babe label. Andrew Gilchrist engineered and DiFranco produced the effort.

#### SOUTHEAST

The Faults (formerly The V-Roys) recorded their debut album at Stealth Studios (Knoxville, TN), which is owned by the group Superdrag. Kevin G. Crothers was in to engineer, and the band co-produced the project with Don Coffey Jr (Superdrag). John Davis and Sam Powers (also of Superdrag) contributed vocals and guitar to the sessions...Artist Eric Knight recently spent some time at Elysian Fields

(Boca Raton, FL) working on his sophomore release for 28 Records entitled *Fractured Fairytales*. Knight tapped Eric Rose to co-produce, Keith Rose to engineer and Chad Milosevich to assist...The good people at Oasis Recording (Atlanta) finished up an audio post project for the new Michael Valverde film *Losing Grace*. Engineers Bob Gillespie and Brent Busby handled the sound design, which included editing, mixing, Foley and ADR...Porch/Virgin recording artist Over the Rhine spent some time at East Iris Studios (Nashville) mixing their new release, *Films for Radio*, with engineer David Thoener...Tree Sound Studios (Nor-



Out at Sear Sound, NYC, L to R: studio owner Walter Sear, artist Joe Henry, assistant Todd Parker, assistant Aaron Franz, engineer Husk Haskolds and producer Craig Street.

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cross. GA) recently hosted a number of projects of note: **Destiny's Child** came in to work with producers **KB** and **Spec** on a new release for Columbia Records; **Mark Rains** engineered the sessions with **Adam Vincent** assisting. **UGK** stopped in with producer **Pimp C** to work on an upcoming release for Jive Records with **Brad Todd** assisting. **Elektra Records'** **Devyne** were cutting some new material with producer **Akon** and assistant engineer **Todd**... Producer/engineer **Jeff Powell** recently produced, engineered and mixed tracks at **Ardent Studios** and **Humongous Studios** (Memphis, TN) for folk/rock artist and Brooklyn native **Lizzie West**. Powell also spent some time tracking a new album by **Rob Jungklas** and a solo effort from **Susan Marshall** at **Humongous**.

#### MIDWEST

We're all stars now at **SR Audio** (Des Moines, IA): **Joey Jordison** (Slipknot) spent the month of February working on an extended remix of the current **Marilyn Manson** single "The Fight Song," which appears as a B-side on the single release... Out at **Hinge Studios** (Chicago), **Def Jam** artist **Jazz** (also of **Dru Hill**) was in cutting tracks with producer **Mechalie Jaminson** for his upcoming solo release; **Mat Prock** and **Steve Johnson** engineered the sessions. Atlantic artist **Brian Culbertson** stopped in to track and mix his sixth release with producer **Craig Bauer**. Singer/songwriter extraordinaire **Jackie Allen** also found her way to Hinge to track and mix her new CD with a cast of numerous local session gurus. **Steve Weeder** was brought in to engineer the sessions... The **Heaterasons** were camped out tracking and mixing their latest effort at **Pogo Studios** (Cham-



**Joey Jordison** (#1 of Slipknot) takes a break while remixing **Marilyn Manson's** current single off **Holy Wood**, "The Fight Song," at **SR Audio**.



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CIRCLE #136 ON PRODUCT INFO CARD



*Bassist Bunny Brunel (pictured) recently finished mixing his latest CD Cab2 at his home studio in Tarzana, Calif. Brunel produced and engineered the effort, which features guitarist Tony MacAlpine, drummer Dennis Chambers and keyboardist Brian Auger.*

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paign, IL). The band is sharing production responsibilities with chief engineer Mark Rubel ... Transmatic, who were recently picked up by Immortal/Virgin Records, have been tracking material for their debut at The Pop Machine (Indianapolis). The production was handled by twin bothers Eric Klee and Marc Johnson.

## STUDIO NEWS

Sonic Arts (Cincinnati) has reopened following a complete remodel. The new 3000-square-foot, Russ Berger-designed audio post facility boasts two Pro Tools-equipped control rooms, including a voice booth and a live room, 5.1 mixing and monitoring, extensive acoustic treatments, offices, conference rooms and a lounge. ... Mirror Image Recorders (NYC) have recently upgraded Studio D of their Times Square facility with the installation of a 64-channel SSL SL 9000 J. ... Extasy Recording (Hollywood) recently upgraded their mastering suite to accommodate 5.1 mastering for DVD releases. The upgrade included the installation of a Sonic Solutions Studio HD, db Technology converters, Manley EQs and compressors, TC Electronics System 6000 and a Genelec monitor array. ■

Send your Sessions and Studio News to [robert\\_hanson@intertec.com](mailto:robert_hanson@intertec.com).



*Queensryche drummer Scott Rockenfield and Paul Speer (guitarist) tracking at Rainstorm Studios.*

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## THE FAST LANE

—FROM PAGE 20, NIGHT BEFORE NAMMTIME

"Can't talk—soldering. Call ya later." Now, I know "later" means in two weeks, after NAMM.

"After NAMM"—certainly one of the most uttered phrases in the month preceding the show. "I'll see you after NAMM," "I'll get that fixed after NAMM," "I'm taking 10 weeks off for my family after NAMM," "I'll fix the server after NAMM," "Honey, can't you move your birthday to after NAMM?" and the industry standard: "That feature gets implemented right after NAMM."

Now you can bet that I tried, "Can't I send in my column after NAMM?" but to no avail. And then there's AES, NAB and the other shows that I do outside of the audio industry. All tech, and all the same. Why is that?

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know this is the  
time when enemies come  
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And here is where it really becomes significant. The manufacturers know this is the time when enemies come to duke it out in the pagan arenas, the so-called "convention centers." So they each look over their arsenals and choose their best weapons. Obviously,

But then they do something else. They look over all the enemies' weapons (products and features) and have one last listen to the throngs, the audience, the potential customers. Then they huddle together in the night around the warm, comforting glow of the burning server and discuss what they have now, what they are working on for the future, how it got so behind (again) and what they can do to get it ready by the show.

### FAST ATTACK, LATE RELEASE

Now that's all fine, but it doesn't stop there. Inevitably, some jerk always says, "Look, what would it take to add super-zoom-auto-waveform compresso-expansion like Squatting Heron has in their DigitalDeath DAW? Nine percent of our customers are asking for it." And then this comes: "Listen, how many of the features that we have slated for Version 3.5 can we move up to Version 3?" This, by the way, is always eventually followed by, "Uh, then which Version 3 features are we gonna have to leave out until Version 3.5?"

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"The pressure to kill the enemy is always there, as is the drive to show the world one's immutable superiority."—*Genghis Khan, nine days before Mongolia NAMM A.D. 1209.*

This extraordinary pressure produces short periods of condensed, high-yield development and advancement. There is often more product evolution in the two months before a major trade show than during the rest of the year. But this is not necessarily due to procrastination, as one might initially suspect. It is much more complicated than that.

#### CRASH TEST DUMMIES

The same way an animal needs night and day—two alternating cycles serving distinct needs—modern technology providers cycle between two states, each serving a purpose and each relying on the other. For most of the year, there is the "normal" state: Orders are solicited and shipped, and a linear program of updating and improving goes on. But a few times a year, all that becomes secondary, and the Big Crunch takes over. The focus switches to a crash program of development followed by a short three- or four-day period of intense exposure and comparison—the battle itself, on the arena floor.

The Normal mode is necessary, as this is when "daily" business is handled, campaigns planned, packaging designed, dealers visited and trained, and the plethora of details addressed. And it is usually structured to be a generally survivable daily schedule for the employees.

The Big Crunch mode is the sprint, the insane short-term competition that is simply far too valuable to pass up. The pace is *not* survivable; many quit or are fired during or directly after this period, and those who stay often need weeks of physical and mental therapy to survive. Try to reach your friend in a big MI Tech Co. the week after NAMM.

But this sprint sets up the next year. So, we do it.

And why, again, don't we get ready sooner so we don't get crunched? Well, there is a certain undeniable procrastination component. Daily business usually grows to fill our days, just like data will grow to fill *any* hard drive, but there is something else. The longer you wait to lock down what you show, the more advanced and competitive it can be. If you freeze your development six months before a show, then what you will have when you get there will probably be rock-solid, but it could also be way behind.

Let's say your dev team is working on a hyper-cool new feature that you just *know* everyone is going to die for, but it won't be ready until around show time in four months. What do you do? Freeze now, assuring sanity later at the cost of omission, or try to push a little and get it in, assuring insanity but huge potential success?

But wait! Now comes the most insidious reason of all: The longer you wait to freeze, the more of your competitor's new features you can match or beat. And there's more. We know that these very same competitors are doing this as well, so in the months before the show, security goes way up. We spend our time listening to our customers as they tell us what they love and hate about

**If you freeze your  
development six months  
before a show,  
then what you will have  
when you get there  
will probably be  
rock-solid, but it could  
also be way behind.**

the new House of Cards X2000 stereo compressor so that we can do better in ours. But we can't even let these customers know we are listening, because then our competition will know what we are working on. Some game.

So everybody shows the newest stuff they can, often loaded with wondrous surprise features and advancements. Good for the dealers and eventually the end-users; they can touch and compare all the toys in one place.

But, on the other hand, everybody shows the newest stuff they can, often loaded with wondrous surprise features and advancements. Bad in a way, as *every company* pushes as hard as they can, so a gap often develops between showing and shipping. A source of tension for all.

So is there a better way? One would think so, but it is how it is, and it got this way because, after all is said and done, it seems to work. Damn. NAMM. ■

*Gotta catch a plane...I'll iron my shirts at the hotel.*

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—FROM PAGE 18, WHO WILL FIX OUR STUFF?

it was working differently on different Macs, so they weren't sure if they had fixed anything. Now, they're asking me to bring in my own Mac so they can "synchronize" it properly. That means dismantling my whole SCSI—rat's-nest-infested, sound-deadened computer closet—and letting them screw around with my main machine for a couple of days, while I am office-less and offline. Plus two special trips out there. They're being very nice about the whole thing, but as I write, we're at an impasse, although they do have the upper hand, because they have both my \$165 and my monitor.

If you've ever tried to get an older piece of equipment, or even a newer one, repaired, then chances are good that you've had a similar experience. Old schematics and parts are hard to come by. Newer, proprietary parts, like VLSIs, are expensive and often scarce. Component-level repair has become almost a lost art, as service manuals increasingly show how to disconnect and remove the different sub-assemblies in our gear and decreasingly tell

us what's on them. With the price of technology constantly falling, manufacturers have taken the attitude that it's better to replace something—a logic board, a disk drive, a tape deck—than to fix it, and we, as consumers, are forced to agree. And the type of technical expertise that is capable of fixing our increasingly complex, planned-obsolescence-prone equipment is getting harder to find.

The pro audio service business is changing as is, in fact, the meaning of the word "maintenance." Where once we strove to keep our equipment functioning at its original performance level for the longest possible time, today's economic and technological climate requires that our equipment constantly be updated with new firmware or software, and the time to replace it is not when it no longer fulfills its function, but when its function no longer fulfills our changing needs.

"Things aren't built to be fixed the way they used to be," says Coleman Rogers, who is the head technician at Alactronics, one of New England's busiest pro audio service and installation shops. "We're no longer seeing consoles with ribbon-cable extenders

that let you take a module out and lay it on its side, or tape machines where you hit two buttons and the whole panel falls off and you can get to everything. Mackie started the trend by putting all eight channels on a single board. I recently worked with one processing unit that was impossible to take apart—I spent much more time trying to figure out how to get it apart than fixing it. Designers aren't thinking about repair, they're thinking about how pretty something looks." They're also thinking about cost—because the aforementioned Mackie consoles, of course, came out at a price point that was a fraction of what their immediate predecessors in the eight-bus field were charging.

Tom Courteau, owner of Aztech Electronics, another Boston-area repair shop, who has been in business since 1977, agrees. "It's the new emphasis on computer-aided design and manufacture. It means that you can get terrific capabilities at affordable prices, but the stuff just isn't made to be repaired. Even to do something as simple as cleaning the controls, which is still as important as ever, you have to take off all the knobs and take the whole thing apart,

—FROM PAGE 66, PAUL SIMON

When it came time to mix on the Oxford R3 (with GML software), the challenge, Smith says, was to keep it all clear because there is so much information. He cites "Look at That" as a tune that was particularly tricky to mix, "because the arrangement is so nontraditional and the ranges of the instruments are somewhat unusual. In the lower midrange, there's very little because it has a high string guitar and the high pedal steel part, bamboo flute...

"We rotated through songs to stay fresh," he continues. "We didn't sit down for a day and mix a song. We'd spend an hour on a song then go to the next song, because on the Sony Oxford it recalls so perfectly and so quickly, as soon as you get a little bored, you go to the next song and then it seems like each time when you load it up again later you'll hear something that sticks out, and you catch that first and then listen a couple of times, make some changes and then move on." Smith mixed to a Genex GX-8500 24/96 hard disk recorder and monitored with KRK E7s and E8s. "We only used two reverbs on the album," he notes, "the Lexicon 960 and the Sony DRE-777; a combination of those two units were the ambient room effects on everything." Smith also used delays in the console.

Though, predictably, things got a little crazed near the end of the project as the fall 2000 deadline loomed. The CD was completed on schedule, and Simon celebrated its release by playing a series of concerts in small theaters in select cities around the U.S. and in Europe. In the concert

## PAUL SIMON

The Making of "You're the One"

setting, with Simon's full band in perfect sync, the songs on *You're the One* really came alive, and tunes like "That's Where I Belong," "Darling Lorraine," "Old" and "Hurricane Eye" sat comfortably next to earlier Simon classics, many of which, as usual, had been thoughtfully rearranged to

breathe new life into them. The tour is scheduled to hit the road again this spring and summer, and I can't recommend the new show highly enough; it's an amazing journey—a great night of music.

Also on the horizon for Simon is another noteworthy project: Three years after the ignominious end of *The Capeman* run on Broadway, the original cast album, which includes many songs not on Simon's CD and features a talented group of singers, including current pop sensation Marc Anthony, is about to be released as a 40-song double-CD. The CD was cut at The Hit Factory (with Smith engineering) at the time the show was running but never came out. Simon rightly believes that the full score of the musical deserves to be heard.

So, there's something old, something new and tributes aplenty for Simon, too: This month, he is being inducted into the Rock and Roll Hall of Fame for the *second* time (he's already in as part of Simon & Garfunkel), and, in mid-February, he was honored as Person of the Year by the Grammy organization's MusiCares foundation for his remarkable career and his extensive philanthropic work. ■

Blair Jackson is Mix's executive editor.

since it's all built on one or two PC boards."

With the possible exception of power amplifiers and tube-based guitar amps, the days when you could put an oscilloscope onto a circuit and sort out the one component that had gone bad are also largely over. Especially in applications like high-end, D/A converters, component values are much more critical, and small changes in values that may cause performance problems might not be obvious to a technician with a voltmeter. "Components interact with each other so much that a problem can be very hard to pin down," says Rogers. "Most of the time, it's not worth it to component-level troubleshoot, since the cost of replacing the whole board is comparable to the cost of the time that would be involved. When we replace the board, at least we know it's fixed, which makes it a confidence thing as much as a cost thing."

Courteau goes one step further. "When I see something that needs board-level repair or an entire new assembly, I'll send the whole piece to the factory. That way, there's usually a re-

newed warranty of some kind. It's worth it to me and the customer."

Many times a problem will be intermittent—like my monitor—and so the unit will have to sit on the bench a long time and be constantly monitored until it starts to exhibit whatever weirdness it's in for. In addition, technical documents may not be as comprehensive or clear as they need to be—we all know (and I've written many words about) how bad user manuals can be, and ser-

ways be a problem," he says. "That's where the Fonzie technique comes in." Cables break, solder joints go bad, contacts oxidize. "On tape machines," he notes, "it's a particular problem, because you have microprocessors connected to the mechanism, so you've got an interface where two things can go wrong. It's like a transducer, trying to go from a mechanical sensor to something electronic, with each one telling the other to do something."

**Component-level repair has become almost a lost art, as service manuals increasingly show how to disconnect and remove the different sub-assemblies in our gear and decreasingly tell us what's on them.**

vice manuals are, for better or for worse, often written by the same people. So if you think it's hard to find where the menu is for selecting the frame rate and wordclock source on that digital disk recorder, then think about the poor bench tech who's trying to figure out what the waveform at pin 39 is supposed to look like.

Sometimes, products are just designed badly or without enough thought about how they will be used, and when they get out into the real world, they are simply bound to fail. Professional products that began life as consumer products are an obvious problem. The S-VHS transports that the original ADATs were based on, for example, were never designed to withstand the heavy high-speed use that professional studios put on them. But even the best professional gear can have problems from the beginning. Rogers cites a \$3,000 box from one high-end manufacturer he's working on that's one-rackspace high, but it's 15 inches deep. "That's never going to hold up in a rack," he says. "What were they thinking?" Courteau complains about potentiometers that are "getting cheaper, in every sense of the word. They're the key to controlling everything, but they wear out faster, and they can't take a hit. Unfortunately, people carry around the gear the same way they always did."

With the shift away from component-level repair, the most common hardware issues techs encounter is with interconnects, according to Rogers. "They will al-

Both shops are reluctant to take on musical instrument repairs. Rogers has a contract with Alesis (they work on literally hundreds of ADATs each year), so he will work on that company's synths, while Courteau says, "I avoid them. Occasionally, I'll be talked into taking some type of keyboard, especially if it's just a mechanical problem, but I'm not much of a computer guy, and that's what you need for those things." Rogers says, "The problem with MI gear is that no one wants to pay money to have it fixed. The average person who buys a keyboard is a mom who spent \$100 for her 16-year-old, and when I tell them it costs \$65 to fix, they say, 'Screw that.' An instrument is software-based and mechanically interfaces with a keyboard, so there's that problem, and there are so many after-market software updates that it's impossible to keep up with them. It's just not a financially viable business for us to be in."

Courteau, in fact, does have one specialty, which Rogers won't touch: guitar amps. "I went to technical school in 1972, and I haven't learned anything since," Courteau laughs. "Tube amps have always had the same problems, either bad solder joints or thermal failures or the tubes themselves. The problem with working on this stuff was, by the late '70s and early '80s, we entered a long period in which the quality of the tubes declined. The manufacturing all moved offshore, and it became a major headache to get good tubes. I would cringe, because I'd be fixing some guy's

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World Radio History

Marshall head, and even if I bench-test the tubes, I wouldn't know if they'd last the 90 days I was guaranteeing it. But in the last five years, they all started coming from Russia and China, and now you can get good ones without breaking the bank. We're the only industry still using tubes, but I don't think we'll ever get rid of them. But no one's learning about them anymore, so the fact that I know about them makes me a sought-after expert."

Except for specialties like Courteau's, Rogers sees the "repair" aspect of his field going away in the next few years. "In another four or five years, just about everyone will move away from analog and decide to go digital. The amount of time we're going to see a piece of equipment sitting in someone's rack will be much shorter. And the business is going to change. Training in system design and installation is going to be more important than component-level knowledge. Today, I'm on my way to a roller rink that had a guy come in and try to fix their system, but he couldn't. They called me, and I realized that they had a single graphic equalizer feeding three of the power amps, and it was fried. The owner wanted to know how much it would be to fix it, and I told him, so he asked how much is a new one, and it wasn't much more, so he went and bought a new one—and it's better than the one he had.

"There's a lot of work to be had in installation," Rogers continues. "People are changing over to 5.1, and that needs expertise. When people buy whole systems from a place like Guitar Center, most of them have no idea where the gazintas and gazoutas are and how grounds work. I've had people scratching their head for two years over a problem, and I come in and find one piece of gear is plugged in wrong."

And where are the people who are going to be doing this work in the future going to come from? Electrical engineering programs in colleges are teaching computers, not how to build, fix or install audio equipment. Another friend of mine teaches in a college with a highly respected electrical engineering department, where students are taught all of the elementals of electronics in class but never get a chance to use their basic electronics skills. When I asked my friend how many EE majors he thinks could breadboard a simple MIDI project, he said, "four or five."

Rogers, who has been teaching maintenance and repair at a college-based recording program for more than a decade, says, "There's a shortage of techs now. Given how busy I am, it's obvious people are having trouble finding somebody to do service. We have a one-semester repair and maintenance course, which is okay, but some students wish it were more. Syn-Aud-Con has one of the top programs, and it gives you both theoretical and hands-on work. But you always run into problems in the field, the exceptions that you'll never see in a classroom. There's only so much you can do watching somebody without doing it yourself. That's why we need internships and mentoring. Even the brightest student is initially going to make dumb mistakes until he gains real experience. It can be a slow process, doing the labor of soldering and grunt work of installation, while picking up the background material of why we're doing things this way.

"You have to have the hands of a surgeon and be good visually—read a schematic and know what you're supposed to be seeing by sticking an oscilloscope here or there. But you also have to know when to stop and maybe call somebody who might know more than you."

But being a good solder jockey is only part of the gig. The similarities between the processes of becoming a good service tech and becoming a good recording engineer—a course that Rogers also teaches—are reflected in the similarities of the skill sets, he says. "There's just as much customer handling and public relations as in studio engineering. That's almost as important as being able to read a schematic and wield a soldering iron."

And computers, of course, are going to continue to gain importance, so that those already in the field, according to Rogers, are going to have to retrain: "Instead of a transistor gone bad, we're going to be looking for software conflicts," he says. Fortunately, for me, that's something I know how to do already, at least in my own studio. But I would be very happy if I could find an old-fashioned technician who could just give me my monitor back, with all the colors working, please. ■

*Paul D. Lehrman is on the faculty of Tufts University, where he leaves the tech work to much more qualified people. Read about his various projects at [antheil.org](http://antheil.org).*

—FROM PAGE 126, TC HELICON

it that never move, and some things that open and close. It's very difficult to model that, but when you look at the human voice, with all the muscles and control and things that people use to create different sounds, the kinds of waveforms and spectral information that come out are varied and complex," says Gibson. "Also, people are very good at identifying when something sounds unnatural, because we use speech every day. If somebody plays a saxophone sound, a good sax player might say, 'That's not natural,' but it turns out that everybody is an expert at telling whether a voice sounds natural or not. Voice modeling is a very difficult task."

Deciding how to define the individual nuances that create a vocal characteristic is equally difficult. "The challenge here is trying to come up with things that make sense, while putting parameter control in the user's hands," says Gibson. "This includes describing parameters in the model that users can relate to if they want to make something sound a certain way, so it's easier than programming an FM synth."

In terms of expanded control, VoiceCraft definitely delivers. Most of us are used to tweaking reverb parameters—such as predelay, room reflections, room size, HF damping and so on—but VoiceCraft offers nuances such as resonance, growl, rasp, breathiness, inflection and vibrato, as well as scooping, glottal and warp effects. Most are adjustable in percentage (a parameter we can all relate to) and many offer creative possibilities beyond percentage sliders, such as scoop, which can be set to move up/down or fast/slow—in exponential or sinusoidal increments.

"We're looking into more sophisticated transformations in terms of making people sound different," Gibson adds. "VoiceCraft takes us well into that and allows for the creation of some interesting presets to craft, enhance or change a person's voice, without introducing unnatural artifacts. We're on the cusp of some new and interesting things. I think the future will be fun."

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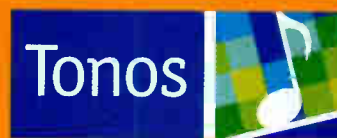
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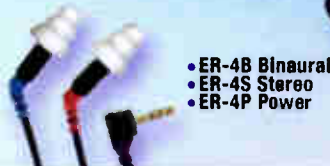
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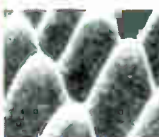
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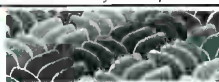
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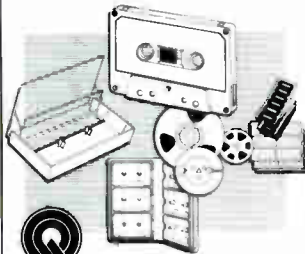
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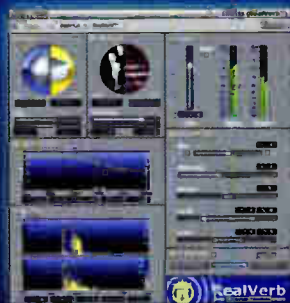
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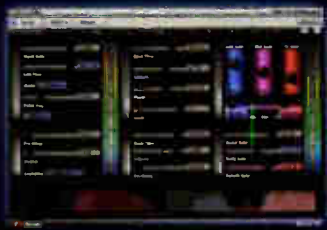
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# EMAGIC LOGIC AUDIO

## TIME-SAVING TIPS AND TECHNIQUES

Emagic's Logic Audio family of sequencer packages has evolved into a very powerful set of tools integrating MIDI and disk-based digital audio recording/editing. Here are some processes I've adapted to save time in various situations.

### TRANSFERRING PROJECTS BETWEEN APPLICATIONS

I often encounter clients who started projects on either Pro Tools or Logic Audio, and wish to complete work on the other app. Transferring projects between the two is a relatively simple process. Since Version 3.5, Logic Audio Platinum has been able to import and export time-stamped information via SDII regions. This simplifies the task of moving compositions between applications, because it allows you to easily restore the time position of a region.

This feature will work with any application that can read and write time stamps to SDII regions. As an example, here's how to move files from Logic Audio to Pro Tools.

In Logic:

1. From the Audio window, select the audio files you wish to export. (If you are moving all of the files and regions of a song, then simply use the Select All command.)

2. Inside the Audio window under File, select Export SDII Regions. Logic will time stamp the regions according to their position in the Arrange window.

*Note: If the same region is used multiple times in the song, then Logic will use the position of the first instance of the region. For this reason, you will generally want to make all regions in your song "individual regions" before starting this procedure. Use Logic's Convert Regions to Individual Regions menu option to perform this task.*

In Pro Tools:

1. Add the audio "regions" using the Import Audio option found in

the File or Region List menus.

2. Enable Spot mode and disable the Auto Spot function.

3. Drag the regions onto the desired tracks in the Edit window. When the Time Stamp window appears, load the original time stamp value into the Start Point window and hit "OK." The region will now be located at the same position that it has in Logic Audio.

### FROM PRO TOOLS TO LOGIC AUDIO

In Pro Tools:

1. Select all the regions in the Region bin that you wish to export.

2. Select "Export Region Definitions" from Region List menu.

In Logic:

1. Select File inside the Audio window and use the Add Audio File function to add the files that were exported from Pro Tools.

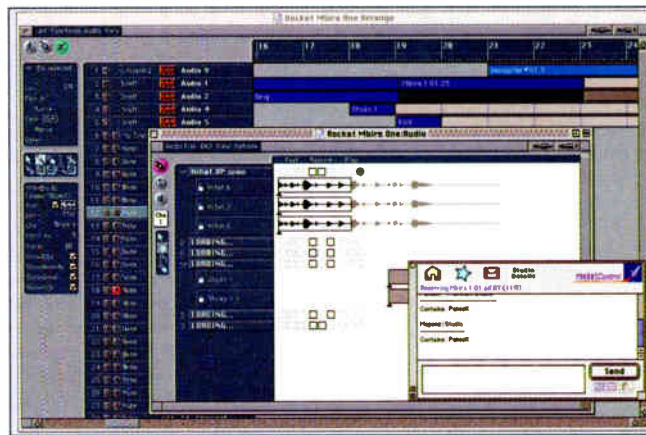
2. Select the files imported in the Audio window and select Import SDII Regions under File. The regions that now contain time-stamped info will show up with small clock icons to the left of their name.

3. Drag the regions into the Arrange window and place them on the desired tracks.

4. With the regions selected, choose the Functions and Regions to Original Record position.

### AUDIO FILES TO EXS 24

We recently bought and installed the EXS 24, Emagic's software-based sampler that works within Logic Audio. One feature of the EXS 24 is its ability to read Akai S1000- and S3000-formatted sampler CID-ROMs, copy all of the samples to your hard drive and



Logic Audio combines digital recording/editing with MIDI and more.

retain key mapping information—thus avoiding the tedium of manually importing the audio files and remapping key assignments.

However, when it comes to dealing with a sample CD made up of long audio files that contain assorted samples, the process typically involves extracting each sample manually via the Edit Region function in the Audio window—a time-consuming procedure. You can save a lot of time by using Strip Silence, found under the Options menu in the Audio window. By adjusting the threshold sensitivity, you can visually adjust start and end points within an audio file and subsequently divide the file into separate regions much faster than doing it manually. It's really helpful if, for example, you have a 60-second audio file made of 30 different samples. After using Strip Silence to define each sample as a separate region, save each region as a separate audio file using the "Save Region As" command under Audio File and import them into the EXS 24. ■

*Special thanks to Bob Hant and Clint Ward at Emagic for their input for this article. Composer/producer Walt Szalva owns Planet 3 Productions in San Francisco.*

BY WALT SZALVA



# “REASONS NOT TO BUY A MACKIE D8B...ZERO.”

—Roger Nichols, EQ Magazine

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