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SURROUND N' ROSES

ROY THOMAS BAKER: HOW TO PRODUCE GUNS N' ROSES AND REMIX QUEEN FOR 5.1

> THE STUDIO-IN-A-BOX REVOLUTION, PART II

ISSUE TWELVE
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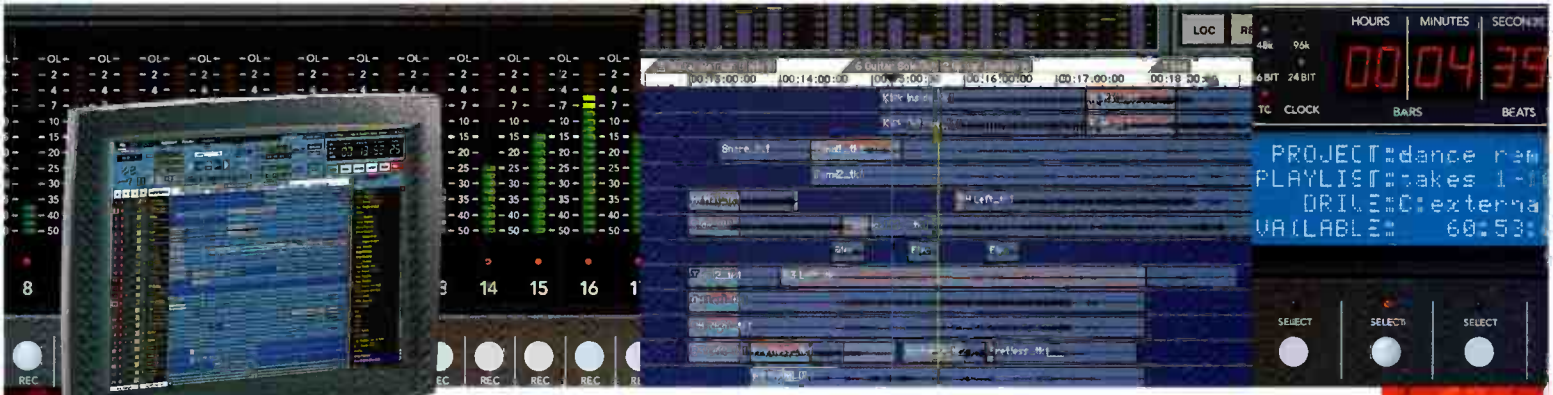
World Radio History



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

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VOLUME 12 • ISSUE 12

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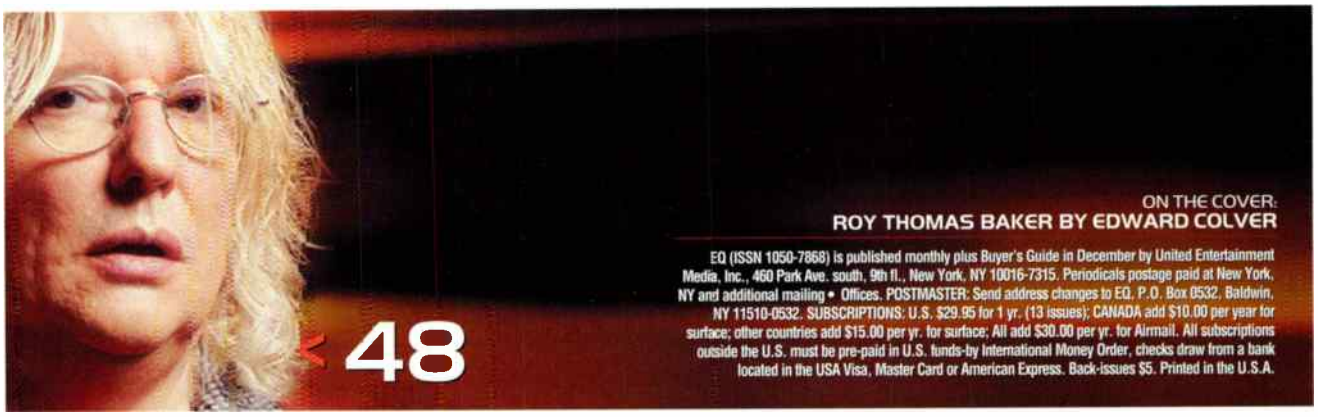

ON THE COVER:
ROY THOMAS BAKER BY EDWARD COLVER

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EDITOR

EDITORIAL

What a Year

2001 nears completion. The world has changed in more ways than can be counted. We've seen the economy take its biggest dip in a number of years, the political climate has shifted (and shifted and shifted...), and we've been subjected to atrocities of an unprecedented magnitude.

But through it all, at least two positive things remain constant: We continue to make music, and technology inexorably marches on.

I was struck by this fact as I unwrapped my shiny new Apple iPod. For a few hundred dollars, you've got a box the size of a deck of cards that can hold 1,000 songs accessible by playlist, artist, album, or song, stored on a 5 GB drive with 20 minutes (yes, *minutes*) of anti-skip protection. It not only connects by FireWire to a Mac (meaning 1,000 songs can be transferred in about 10 minutes), but recharges its battery (which lasts 10 hours) via FireWire. Plus, it can serve as an ultra-portable FireWire hard drive — perfect for transferring audio projects from computer to computer or location to location.

Now, this isn't intended as an ad for Apple's new toy (although I'm having trouble not raving about how cool this thing is), but rather to point out that, even during what seem like dark times, in some areas life keeps getting better and better. Take a look around your studio at the gear you have at your disposal. How much of it was available five years ago? Heck, *one* year ago? How much more can you accomplish now with the tools you have? Yes, there are those who complain that certain "advances" have been fraught with evils, but that's not the technology's fault; it's up to the user to make the best and most artistic use of each new tool. Here's hoping that, as we approach 2002, we'll do our best to make the world a better place by applying all this wonderful technology toward creating beautiful, meaningful music.

Although I'm writing this in mid-November, this *is* the December issue, so on behalf of the entire *EQ* staff, let me offer our best wishes for a joyous, safe, and peaceful holiday season for you and yours. May your New Year be blessed with such success that you can afford to purchase every audio toy you desire (and may you have room to store them all)!

—Mitch Gallagher
mgallagher@musicplayer.com

EQ

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VOCAL AIR/PRESENCE

How do you give a vocal more air/presence? Is there a plug-in or hardware that can help a thin vocal? —Imagine

You might try a gentle boost at 10 kHz, maybe a bit higher depending on the voice. That should give you the "air."

I don't know if both your questions are about the same vocal, because it seems like a thin vocal would hopefully at least have some high end. To my ear, boosting the "air" or "presence" of a vocal wouldn't help to thicken up the sound — it might even tend to thin it out.

I might try using a windscreen and getting this vocalist a bit closer to the mic. That might thicken things up and also boost presence. If you have a tube compressor, you could use it gently and it might get you closer to the sound you're looking for. And, of course, the mic you're using will make a huge difference. *—Philter*

To gain presence and "air," I would suggest a large-diaphragm condenser microphone, set to a cardioid pattern. Use a compressor, such as a LA2A or 1176, with gentle compression. Add a parametric EQ with a high shelf at 10 kHz at +2 to +4 dB, depending on the EQ and singer. Adjust to taste. *—jcloutier7*

I imagine "presence" as 2–8 kHz components, and "air" as 8 kHz and above. Also, a "thin" vocal I would imagine already has too much "presence" and, perhaps, "air."

To enhance "air," you need to do one of two things to get the highs up, the object being to enhance components above sibilances, grit, and vocal "edge." You need to either use as high a shelf as you can (above the brittle stuff), or a high parametric peak tuned rather sharp (maybe a Q of 2 to 4), and centered up around 15–18 kHz (or even higher). Then, you may need to counter this with a parametric dip at the brittle frequencies, which are very often accentuated by common peaks in condenser microphones. Then, to use as little of that as is required to keep it from sounding unnatural, you may then process through a HF-sensitive limiter (a three-bander, leaning more heavily on the high band) or a peak in a sidechain EQ on a compressor. *—George Massenburg*

MONITORS IN CORNERS

It seems I don't have an option other than to keep my monitors in the corner of my mixing area. This produces a distorted sense of the bass — I know.

I have some four-inch foam behind them covering about 60% of the wall in front of the mix station, but no bass traps. I don't have enough room in the studio to move them a foot or more (maybe six inches is all) from the wall, and the room is narrow enough that I can't really pull them in from the sides, either. The room is about 16x12 and I have the monitors against one of the 12-foot sides.

Would putting bass traps directly behind or immediately above or below the monitors help significantly? I always seem to have too much low-mid stuff in my mixes. —Larry W.

I'm a bit confused here. Seems like you'd have bass *lacking* in your mixes, because, as you already know, putting speakers into the corners is going to give you more apparent bass in the room. Most people would tend to think there was more bass in the mix than there actually is and attenuate it, resulting in "bass shy" mixes. Maybe it's just because your monitors of choice don't have good bass response to begin with, and that's throwing you off.

You can get some inexpensive foam bass traps and put those into the corners and experiment with that, or re-arrange your room to the other side and get more "width" for the "front" of your room, and therefore get those monitors out of the corners. It would be a compromise in terms of room depth (put up some diffusers in the back to help with this), but, in my opinion, you *need* to get those monitors out of the corners. Sure, you get *more* bass with them in the corners, but it's not "accurate" bass. And if there's one thing you want/need, it's an accurate monitoring environment. *—Phil O.*

I completely empathize with your situation, as many of my clients have had to deal with the "space versus sound issue." It's a tough one to solve without being there, but I can recommend that you try everything that you "think" might work until you find better sound in your room.

It's hit or miss unless proper measurement tools are used. But you can try using very simple tools, such as the Alan Parsons test disc. It's coarse by "exacting" standards, however, it's better than solely going by ear.

I have found that a combination of measured, analytical feedback (from a test instrument) coupled with source material (CD, LP, DAT, etc.) that you know inside and out is the best way to "tune" a room. *—David Frangioni*

▶web link

Have a question you'd like answered? Visit Roger Nichols, George Massenburg, and David Frangioni online at

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THE PRODUCT: Cakewalk Vsampler DXi
THE BASICS: Synth/sampler software
THE DETAILS: Cakewalk's new VSampler DXi soft synth/sampler, developed by Speedsoft, is now available on the Cakewalk Web site. It's a multiformat, 24-bit/96-kHz software sampler and synthesizer that functions as a DXi plug-in (in Sonar and other DXi-compatible Windows applications). It features 64 stereo voices, real-time controls for modulation wheel, assignable controllers, and pitch bend, as well as real-time effects such reverb, chorus, and delays.

Cakewalk is also offering a free 1.3 update for the Sonar Digital Multitrack Recording System featuring new editing and mixing enhancements.
CONTACT: Cakewalk at www.cakewalk.com. Circle *EQ* free lit. #105.

THE PRODUCT: Equi=Tech rack system upgrade
THE BASICS: Improved power products
THE DETAILS: Equi=Tech Corporation has announced a general upgrade of all their professional rack system products that are now in production and being shipped. The company's new transformers have a reduced line impedance offering improved current delivery and "brighter, cleaner sound quality." Other new features include a three-digit LED voltmeter on the front panel and a fail-safe non-GFCI twist-locking feature for live sound applications.
CONTACT: Equi=Tech at www.equitech.com. Circle *EQ* free lit. #106.

THE PRODUCT: Peavey StudioPro M1 and M2
THE BASICS: Studio recording microphones
THE DETAILS: Peavey Electronics has announced two new StudioPro microphones, the StudioPro M1 (cardioid pattern only), and the M2 (a condenser mic with a dual large-diaphragm capsule with three directional patterns: omnidirectional, cardioid, and figure eight).
CONTACT: Peavey Electronics at www.peavey.com. Circle *EQ* free lit. #107.

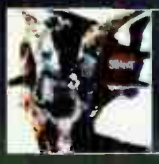
World Radio History

SO POWERFUL IT'S FRIGHTENING

PHOTO: STEVE SESKIS © 2001

CRAIG (#5) > SLIPKNOT

Don't let that nice smile fool you. Craig is one tough customer. Producing multitrack projects, original loops, sonic textures, sequences and samples for his band Slipknot is a demanding task. And doing it while on the road can be brutal. He needs a digital multitrack studio that can take a beating. That's why Craig uses SONAR™, the professional's choice for music production on the PC.



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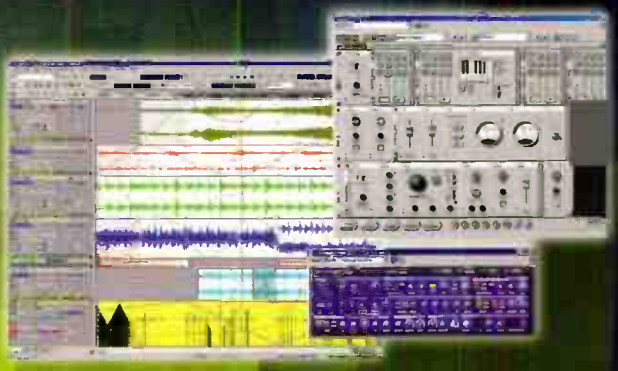

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DXi

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CIRCLE 71 ON INFO CARD

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THE PRODUCT: Yamaha DMS 2000
THE BASICS: 24-bit/96-kHz production console
THE DETAILS: Yamaha has announced the launch of the DM2000 digital console. It's the "first true 24-bit/96 kHz production console" and provides 96 input channels, extensive surround production features, integrated digital audio workstation, Pro Tools control, and more than nine times the processing power of the Yamaha 02R. Also, for those large sessions, there is no loss of inputs or outputs while in 96k mode.
CONTACT: Yamaha at **www.yamaha.com/proaudio**. Circle *EQ* free lit. #108.

THE PRODUCT: Sennheiser HD 280 Pro headphones
THE BASICS: Professional headphones
THE DETAILS: Sennheiser is introducing the HD 280 Pro headphones. They are designed to "deliver exceptional isolation from ambient noise with precise and linear sound reproduction at high SPLs." The unit's foldup design and single-sided coiled cable gives users extra flexibility in use.
CONTACT: Sennheiser at **www.sennheiserusa.com**. Circle *EQ* free lit. #109.

THE PRODUCT: Syntrillium Cool Edit Pro 2.0
THE BASICS: Digital editing software
THE DETAILS: Syntrillium's Cool Edit Pro 2.0, the largest upgrade in the product's history, offers a number of new features such as real-time effects and track EQ, disk-at-once CD burning, MIDI and video support, MTC master generation, six new DSP effects, loop-based music composition, and a compressed loop file format.
CONTACT: Syntrillium at **www.syntrillium.com**. Circle *EQ* free lit. #110.

THE PRODUCT: Egosys 192 Series
THE BASICS: PCI-based multichannel audio interfaces
THE DETAILS: Egosys Inc. is announcing their 192 Series of PCI-based multichannel audio interfaces. The 192 Series stresses affordability along with 24-bit/192 kHz performance. There is the Waveterminal 192L (a two-in/six-out design with 20-bit/96 kHz A/D converters and 24-bit/192 kHz D/A converter), the Waveterminal 192X (with stereo inputs and six outputs on PCI cards), and the WaMi Rack 192X (with four-ins/eight-outs).
CONTACT: Egosystems at **www.egosys.net**. Circle *EQ* free lit. #111.

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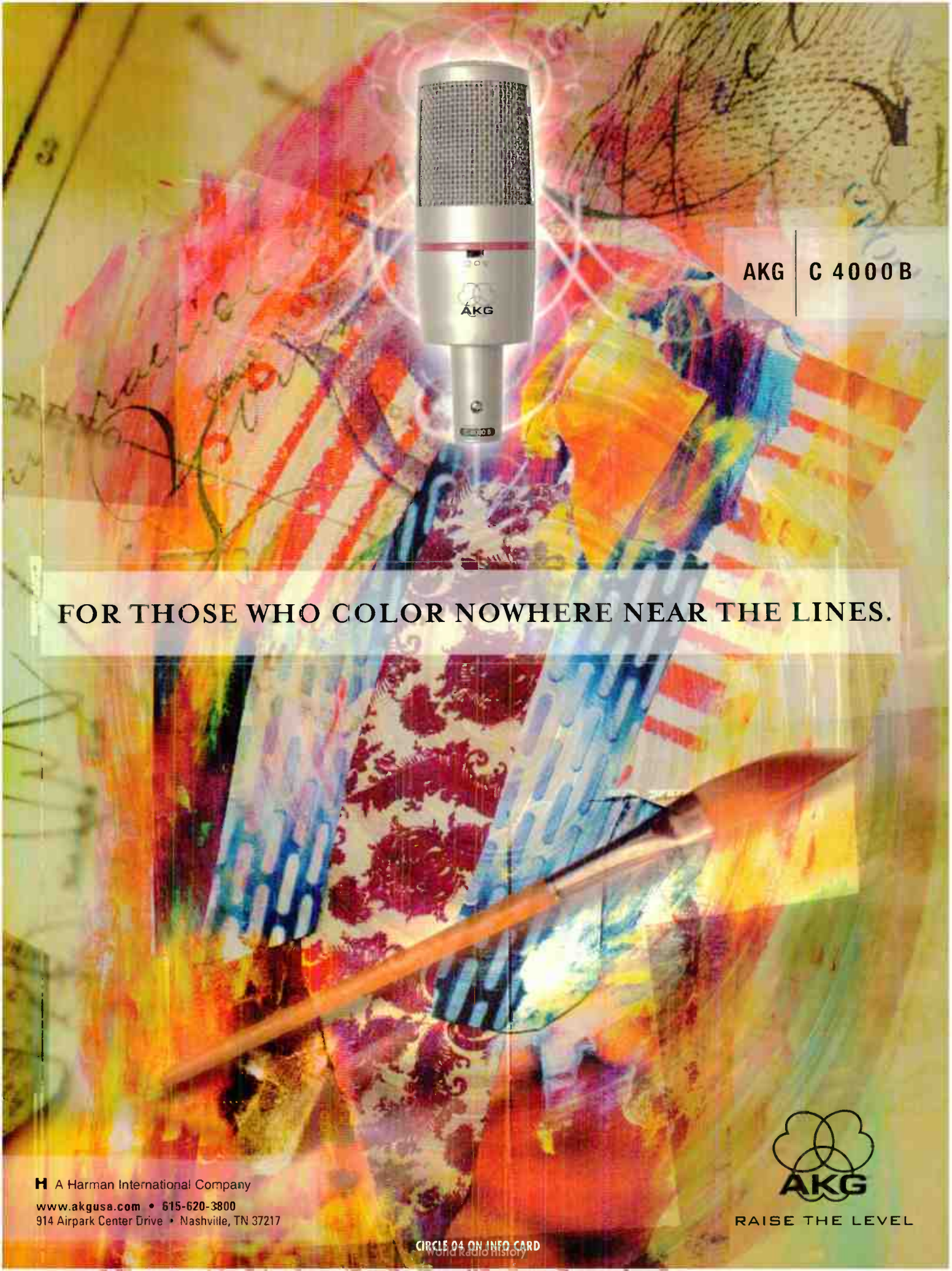

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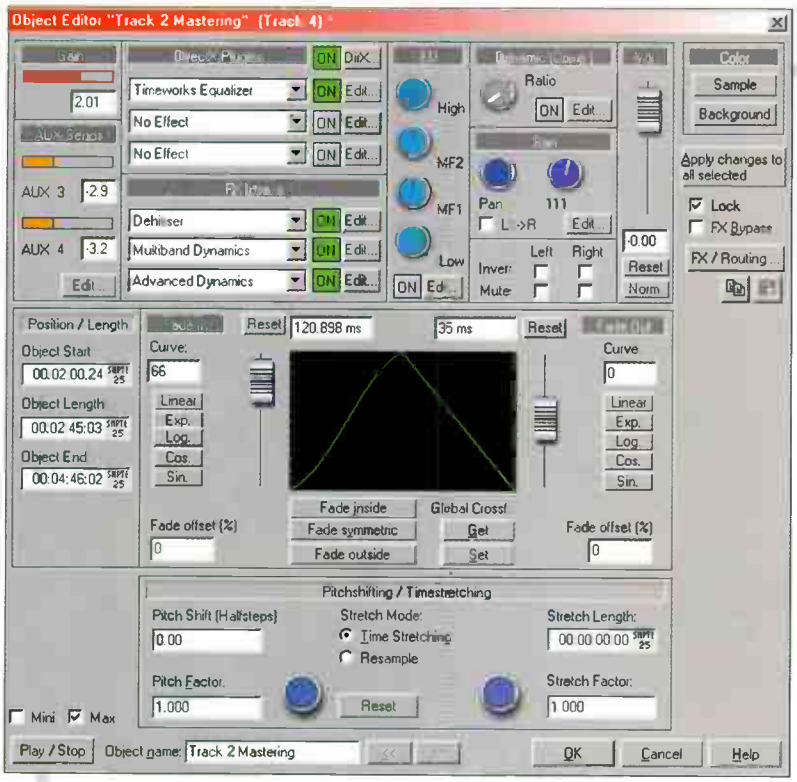

THE PRODUCT: Magix Samplitude 6.0

THE BASICS: Three new versions of the updated software

THE DETAILS: The new Magix Samplitude 6.0 is offered in three forms: Producer 2496 (used for multitrack recording, editing, and high-end CD mastering functions), Samplitude Studio (for multitrack recording and editing), and Samplitude Master (used for wave editing and CD-production). New features of Samplitude 6.0 include a more intuitive interface, a multimedia authoring tool through Personal Rich Media, increased DSP power, more flexible recordings into multiple formats, extended mixer with integrated effects such as equalizers and reverb, and increased wave-editing power and choices.

CONTACT: Magix at www.magix.com. Circle *EQ* free lit. #112.

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AEG Auto Envelope GENERATOR

SKD Smart Knee DETECTOR

EFR Enhanced Frequency RECOVERY

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THE PRODUCT: Propellerheads Strings Refill for Reason
THE BASICS: A Refill sound library
THE DETAILS: Propellerheads Strings Refill for Reason is a collection of Dr. Rex string phrases and NN19 sampler patches. All included string phrases have been edited in Propellerheads ReCycle program. This allows changes for each loop to be made in both tempo and pitch. Also included are 42 patches for Reason's NN19 sampler.
Contact: Propellerheads at www.propellerheads.se. Circle *EQ* free lit. #113.

THE PRODUCT: Shure KSM27 studio microphone
THE BASICS: Side-address cardioid mic
THE DETAILS: The Shure KSM27 is a large-diaphragm, side-address cardioid microphone with an extended frequency response of 20 Hz–20 kHz. This new addition to the KSM Series microphones offers an internal shock mount for keeping self-noise low (14 dB A-weighted). It is also outfitted with a one-inch, ultra-thin Mylar diaphragm.
CONTACT: Shure at www.shure.com. Circle *EQ* free lit. #114.

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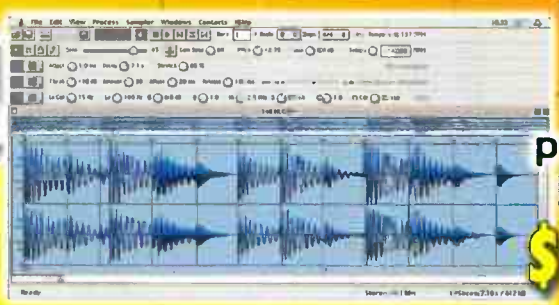

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CIRCLE 57 ON INFO CARD

World Radio History

By Steve La Cerra

Earthworks Sigma 6.2
Time Coherent Reference Monitor

Under the direction of pro audio guru David Blackmer, Earthworks has built quite a reputation for producing extremely accurate microphones and mic preamps. In addition to wide, flat frequency response, Earthworks has stressed the need for coherence in the time domain as an important component in the sonic accuracy of their products. With the introduction of the Sigma 6.2, Earthworks has addressed these concerns in a reference monitor.

The Sigma 6.2 is a compact, passive, two-way loudspeaker that is designed for accuracy in both the frequency and time domains. Its unusual cabinet design is a classic case of form following function. The tweeter is mounted on a moveable plate, allowing Earthworks engineers to tweak the position of the tweeter so that its acoustic center is precisely aligned with that of the woofer, reducing phase distortion across the audio range.

Earthworks has taken great care to ensure that the Sigma 6.2's cabinet doesn't "spill" unwanted acoustic energy behind or to the sides of the cabinet through use of extremely rigid cabinet construction, as well as careful location of the low-frequency port. The Sigma 6.2's cabinet is designed for a subtle low-frequency resonance; its acoustic vent is located at the top-rear of the cabinet, allowing low-frequency audio generated by the port to be radiated into the room with correct phase relationship relative to the low- and high-frequency drivers. This characteristic makes placement of the Sigma 6.2's less problematic than that of many other monitors — particularly those ported in the rear. Unlike conventional ported cabinets, low-frequency response of the Sigma 6.2 rolls off gently (down 6 dB at 30 Hz) and maintains phase accuracy. The port also doubles as a handle.

All components used in the Sigma 6.2 are custom-selected for use in pairs before the loudspeakers are hand-assembled. Transducers are manufactured by Vifa and include a 6.5-inch, die-cast aluminum frame woofer, as well as a rather unusual tweeter. The tweeter's radiating area is approximately 1.5 inches with a phase plug in the center. Its voice coil drives the middle of a two-sided, curved surface, resulting in a large radiating area. Crossovers employ point-to-point construction with oxygen-free copper wire and audiophile-grade components such as Solen polypropylene capacitors and air-core inductors. Crossover components are custom-tuned through the construction process of each Sigma 6.2 pair to ensure accurate matching of the two loudspeakers — a process measured through use of MLSSA as well as the human ear. Such precise matching allows a pair of Sigma 6.2's to produce extremely stable imaging.

Other features of the Sigma 6.2 include gold-plated WBT binding posts, as well as Speakon connectors with gold-plated contacts and full magnetic shielding. Frequency response of the Sigma 6.2 is rated at 40 Hz to 40,000 Hz with a ±2 dB tolerance on-axis. Nominal impedance is stated as 8 ohms; Earthworks emphasizes the fact that — since its impedance is extremely stable across the audio band — the Sigma 6.2 will be an easy load for any amplifier to drive. Earthworks also emphasizes the fact that less than 0.0001% Premium Snake Oil was used in the manufacture of the Sigma 6.2! ■

EARTHWORKS SIGMA 6.2

WHAT IS IT? A compact studio monitor designed for accuracy in both the frequency and time domains.

WHO NEEDS IT? Tracking, mixing, and mastering engineers.

WHY IS IT A BIG DEAL? The Sigma 6.2's frequency response extends out to 40,000 Hz, and the high frequencies are properly correlated with the low frequencies.

PRICE: $2,995 per pair

CONTACT: For more information, contact Earthworks at 603-654-6427 or visit www.earthworksaudio.com. Circle *EQ* free lit. #115.

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CIRCLE 05 ON INFO CARD

World Radio History

By Steve La Cerra

Fostex DV-40

DVD-RAM Master Recorder

The DV-40 from Fostex is a multi-mode, digital master recorder designed to record and play up to four audio tracks directly to and from DVD-RAM media. Intended as an alternative mixdown/mastering format to SMPTE time-code-based DAT technology (for which Fostex has been an industry leader), the DV-40 formats DVD-RAM disks using the Universal Disk Format, or "UDF." This allows discs to be mounted and read by both Mac and PC platforms without the need for time-consuming format transfers. The DV-40 includes a full-featured timecode generator and can synchronize with external word clock as well as video sync — including the new 23.9 frames-per-second HD camera protocol.

The DV-40 operates in mono, stereo, or four-track modes, all with built-in error correction. Supported sample rates include 44.1, 48, 88.2, 96, 176.4, and 192.2 kHz, with optional pull up or pull down by 0.1%. Audio files may be stored with 16- or 24-bit resolution, in either SDII or BWF (broadcast WAV) audio file formats. A DVD-RAM disk from the DV-40 may be directly loaded into (for example) a Digidesign Pro Tools workstation — without need for file format conversion. The DV-40 provides internal file conversion from four-track or stereo files to multitrack mono files.

The DV-40 features two basic recording modes. In "Tape" mode, the DV-40 behaves just like a linear recorder such as a DAT or analog two-track machine. Regardless of the number of cues that have been recorded, audio is stored as one continuous file. Punch-ins are destructive, and there is no undo function available in this mode.

"Normal" recording mode allows the DV-40 to behave like a digital workstation: every time Record is engaged, a new file is created with a unique time and date stamp. Editing is nondestructive, providing functions such as cut, copy, paste, and undo. Normal mode also includes an Insert feature for punch-in or appending the original file without creating a new one. For back up and archiving purposes, a disk duplicate mode is available by installing an optional hard drive. One of the DV-40's most valuable features is a data security scheme that is designed to safeguard recordings from accidental power interruption. Data index information is preserved up to the point of power failure, so that all audio on the disk may be retrieved.

The DV-40's user interface provides cue point store and recall functions. Direct locating to internal memory points is possible, as are functions such as accessing Last Rec Start or End points and Last Play Start point. A precision-tracking jog/shuttle wheel allows the DV-40 to perform extremely accurate, analog-style audio scrubbing without the "stuttering" typical of digital recorders.

Keyboard and mouse ports (PS/2) are accessible from the front panel of the DV-40. With installation of an optional VGA interface card, the DV-40 will offer file management and waveform editing on a standard VGA monitor. A 100BaseT Ethernet port is built into the DV-40 for FTP use on an audio editing network — simultaneously serving Mac- and PC-based workstations. ■

FOSTEX DV-40

WHAT IS IT? A multi-mode digital master recorder that stores up to four-track high-resolution audio to DVD-RAM disk.

WHO NEEDS IT? Music studios, postproduction houses, mastering facilities.

WHY IS IT A BIG DEAL? Four-track high-resolution DVD record/playback. The DV-40 formats discs in Universal Disk Format, allowing DVD-RAM media to be read by Mac- or PC-based audio workstations without file format conversion

SHIPPING: January 2002

PRICE: Approximately $6,000

CONTACT: For more information, contact Fostex America at 562-921-1112 or visit www.fostex.com.

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Yamaha is a registered trademark of Yamaha Corporation. All rights reserved. *Estimated street price **Dual stereo returns feature EQ but no dynamics

CIRCLE 65 ON INFO CARD

World Radio History

SESSION FILE

By Lisa Roy

Jennifer Lopez Percussion

J. Lo gets percussive

DATE: August 25, 2001
STUDIO: Record Plant, Studio SSL 4
LOCATION: Hollywood, CA
ARTIST: Jennifer Lopez, a.k.a. J. Lo
PROJECT: Untitled
TRACK: Oskar Cartaya and Eguie Castrillo playing percussion on "Plenarriquea"
PRODUCER: Oskar Cartaya
ENGINEER: Dan Garcia
ASSISTANT ENGINEER: Franny Graham

SIGNAL PATH

Dan Garcia explains, "I went a pretty simple route with all of this. We were only doing two players at a time, Oskar and Eguie. On the congas I used a pair of [Shure SM]57's and then a pair of [Telefunken] 251's in the room. I ran that into the Neve 1073 preamps, and there was no EQ. I went insert-in on the SSL so I bypassed the front-end of the console and mixed that to a pair of busses, and went straight to [Digidesign] Pro Tools. This was a relatively simple setup. We had congas that were doing the main groove. Then we did a *timbale* pass, a pass of a *gonza*, a pass of a *guido*, and then a couple passes of cowbell."

MIC POSITION

"When recording percussion, I think most of it boils down to mic selection and mic positioning," explains Garcia. "Because this was a very up-tempo Puerto Rican kind of salsa song, I tended to use a little bit more dynamic than condenser mics. I also tended to get a little closer so that they were a little more present and snappy than I would sometimes do percussion.

"I didn't use any EQ on this because I can get a better sound with picking the right mic and the right mic preamp. I usually mic congas with a pair of 251's, placed a good three feet off. I feel I get a much cleaner and a more balanced sound of the whole instrument. It's got sounds coming not just from the hands and skin, but the whole body of the instrument is bouncing off the floor. I positioned both mics so they're pointing in toward the center about 110 degrees and about three feet from each other.

"Cowbell seems like such an easy instrument to record, but it can be one of the hardest. With a song like this, you'll hear all the other percussion playing these polyrhythmic patterns, and the cowbell is playing the backbeat — that's what drives the tune straight through. That's the one thing that's going to be pulsing through for the dance. I'll put a [Sennheiser MD]421 up close, about six inches, and about two to three feet from the floor. Oskar was playing these old funky cowbells with gaffers tape on them with a broken stick, and that's the sound they wanted. It's more of a honk than a clean percussive thing. If I want a cleaner sound, I'll sometimes do a fake mic set up where I'll leave the 421 and stick up another mic, either a Coles or a Royer, a good four to six feet out and record the ribbon mic only.

"We also had an instrument called a

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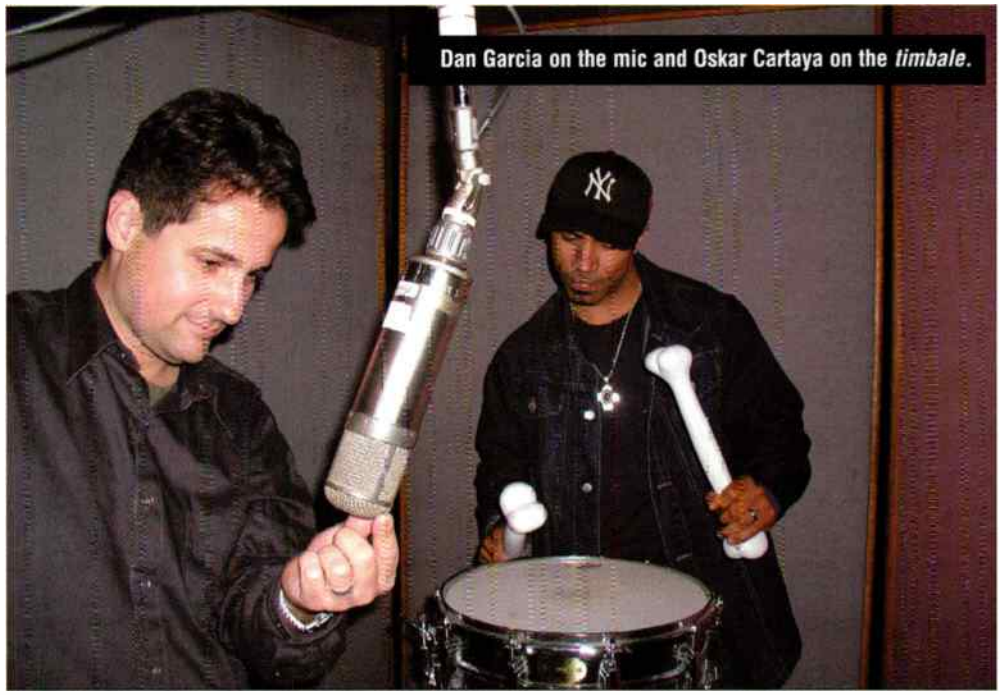

Dan Garcia on the mic and Oskar Cartaya on the *timbale*.

guido — which is like the swish sound in 'Cisco Kid' — that was also a big part of this song. For that, I recorded Oskar and Eguie at the same time. Eguie was playing the *guido* and Oskar the *ganza*. Instead of isolating them, I positioned them close. I put up two 251's straight into the Neve pres with no EQ, straight to two tracks of Pro Tools. I let their mics act like room mics for each other, so I didn't baffle them off at all. I had them facing each other a few feet apart and placed the mics as a stereo pair about six feet apart.

"The *gonza*, which is a big floppy shaker, can also be a deceiving instrument to record. It's a very percussive instrument, and you have to watch not to get too close with the mic on it, because they can distort all the way down the block. I tend to like a 251 or a [AKG] C12 for this. I'll often do a fake mic setup if I'm afraid the player's going to want to crowd the mic. I put the [real] mic three to four feet back."

PROCESSING

"On this J. Lo track, we probably had about a dozen passes of percussion," says Garcia. "There was no processing necessary as far as compression. I didn't do much EQ on anything except a little on the bells. I EQ'd them about 3 dB at 10k shelving. That was it. On the hand drums, I wanted to get a little bit of the bottom end, so I put 2 or 3 dB of 100 Hz shelving, and that was just to contour the sound a little bit."

TRACK NOTES

Garcia concludes, "When I'm in the studio, moving the mics around as they're warming up, I'm listening, and I'll think, 'This sounds like a pretty cool spot right here,' and I'll throw a mic right where I was standing. I run back into the control room, and hit Record. A lot of this kind of thing goes on, especially on the J. Lo sessions. I also have a little bit of a bright/dark trick, which I used on this track. When I'm doing instruments really quick, like this session, I'll lean toward a darker mic for any of the bright instruments, and a brighter mic for any of the darker instruments.

"On this track, they came in with a demo on Pro Tools that the songwriter had done. We were basically re-recording all of the fake percussion with real percussion. Then we recorded all the real horns, the real *quarto*, real backgrounds, and then J. Lo did the vocal. But we did this all in one morning.

"Jennifer had been practicing to the demo, and it was good; it felt good, but it felt very much like a demo. So when she came in and heard the track with the real percussion, it just took her away. She said, 'Oh wow, this is the same deal!' It had really developed. She was great, a total gas to work with. A total pro!" ■

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CIRCLE 79 ON INFO CARD

worldradiohistory

By Steve La Cerra

John Vestman Mastering

Mastering with an audiophile edge

STUDIO NAME: John Vestman Mastering, Orange County, CA
KEY CREW: John Vestman
CREDITS: Juice Newton, Hole, The Muffs, Billy Davis Jr./Marilyn McCoo, Lester Chambers, KK Martin, Sweetwater, Santana, War, El Chicano, Stacy Q, Exposé, Half Pint, Dr. John Gray, Chris Gentry, Cover Girls, Eartha Kitt, Florescein, Monsieur Leroc, Destiny's Child f/Master P, Tamia, Xscape, Kompozur
MONITORING CONSOLE: Inward Connection Discrete Matrix System
MONITORS: Mirage M-3Si
AMPLIFIERS: Rotel R-991
RECORDERS: Ampex ATR 102, MCI JH-110B, TASCAM DA-45 HR DAT, Alesis MasterLink ML-9600, Panasonic SV3800, Nakamichi MR1, Sony 920 CD-RW
EFFECTS: Lexicon reverb
OUTBOARD GEAR: Prism Audio MLA-2 compressor, MEA-2 mastering EQ, DA-2, AD-2, ADA-8; dbx Quantum, Apogee PSX-100, Z-Systems Digital Detangler
COMPUTER: Apple G4/733 MHz with 384 MB RAM, 40-MB drive, 17-inch Apple Studio Monitor
DAW EQUIPMENT: Sonic Solutions
STUDIO NOTES: "The studio is about 18 x 21 feet with a diffusion panel system and bass trapping for acoustic treatment," reveals John Vestman. "The walls are about 10 inches thick, with four layers of plywood, concrete board, and drywall on the studio side. This kind of density helps maintain a solid bass image in the room. If you don't have that mass, an amount of bass will bleed into the next room and will disappear, versus being an aspect of the image."
EQUIPMENT NOTES: "I process in both digital and analog domains, but I always go through the analog chain. I'll go into the Prism DA-2 D/A converter to EQ in the analog domain, primarily using the Prism MEA-2 mastering EQ (sometimes I use an additional EQ). After the Prism MEA-2, I go into the Prism MLA-2 mastering compressor, then to the Prism AD-2 (A/D converter). The Prism units are of such high-resolution and so accurate that once I heard them, I couldn't live without them! I may also use the dbx Quantum mastering processor for some extra surgical EQ, multi-band compression, de-essing, or ambiance enhancement. From the Prism A/D, I may route the signal to the Waves L2 Compressor, and then into Sonic Solutions. Sonic has a seven-band EQ and presence enhancement that I occasionally use for further touch-up. For the first few years of my mastering career, I was using only the Sonic EQ, so I became very familiar with it. It's transparent and very powerful. Occasionally I'll use an Inward Connection Tube EQ or — depending upon the situation — I might bring in other outboard pieces."
PRODUCTION NOTES: "When I was a studio engineer, I worked with a tech who was an audiophile, so I got an interesting glimpse at how my monitors compared to audiophile stereo systems. There was always a vast difference between them. I could hear everything imaginable in great detail on an audiophile system, as opposed to what I'd hear at the studio — which

▶ continued on page 112

▶weblink

Visit John Vestman's Web site at www.johnvestman.com, where he offers over 40 pages of recording information.

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CIRCLE 62 ON INFO CARD

PHOTO BY EDWARD COLVER

Astatic G-77

FROM THE COLLECTION OF Dan Tracey Castonguay, 3C Innovations

YEAR OF MANUFACTURE: Circa 1960

PRICE WHEN NEW: $97.45 (see notes)

TYPE OF MIC: Dynamic

DIAPHRAGM MATERIAL: Mylar

MAGNET MATERIAL: Alnico

POLAR PATTERN: Cardioid

FREQUENCY RESPONSE: 30 to 15,000 Hz

FRONT TO REAR REJECTION RATIO: 18 dB

IMPEDANCE: Low, medium, or high (see notes)

DIMENSIONS: 8 high x 2.19 wide x 2.75 deep (inches)

WEIGHT: 23 ounces

MIC NOTES: Astatic manufactured three variations of the Model 77 microphone. Shown here is the G-77, which combined the 77 head with Astatic's G-stand for desktop use. The Model 77 included a swivel mount, locking on/off switch, and a 5/8-inch, 27 thread for stand mounting, The 77L included the mic head only. All models in the 77 range were constructed from pressure-cast zinc. List price for the 77 was $82.50, while the 77L list price was $72.50. For an additional $10, the 77 and 77L were available with a brushed gold finish. All three models included a switch that could be used to adjust the output impedance to one of three settings: "L" (30 to 50 ohms), "M" (150 to 250 ohms), and "H" (for 40,000-ohm operation). One of the Model 77's strengths was its ability to reject unwanted sound entering from the rear of the mic. The Model 77 employed Astatic's exclusive "sintered bronze" method of acoustic phase shifting to create its directionality. Its 18-dB front-to-rear rejection ratio was one of the industry's best at the time. The 77 was furnished with a detachable, 20-foot, two-conductor cable. ■

World Radio History

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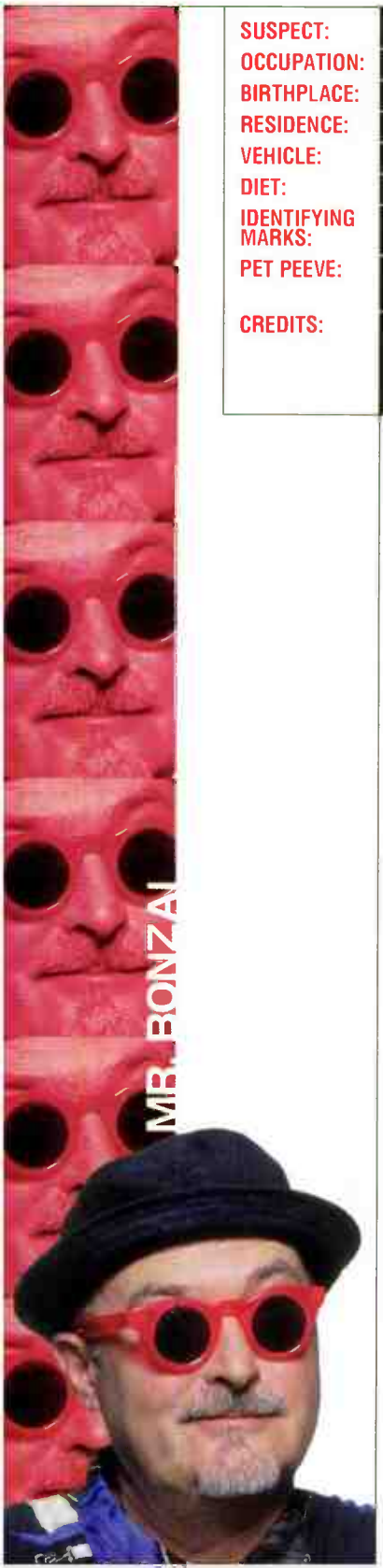
CIRCLE 83 ON INFO CARD

JBC/ROD2954Beq

Making the journey from Trinidad to Beverly Hills

Dexter Simmons



SUSPECT:	Dexter Simmons
OCCUPATION:	Mixer
BIRTHPLACE:	Trinidad
RESIDENCE:	Beverly Hills, CA
VEHICLE:	Lamborghini Diablo Roadster
DIET:	The Zone
IDENTIFYING MARKS:	Scar on right forearm
PET PEEVE:	Drivers talking on their cell phones and not paying attention
CREDITS:	Brandy, Britney Spears, Toni Braxton, Eden's Crush, Maxwell, Destiny's Child, and Michael Jackson's new *Invincible*.

BONZAI: Why did you leave your homeland?

SIMMONS: I left because an education in the music business didn't exist there.

What was your first job in the studios?

My first job was as a general assistant.

Who were your teachers?

I attended SAE (School of Audio Engineering), and had several. My true teachers, however, were the recordings and mixes I picked up at the local record store.

What was your first big break?

My first big break was just getting a job in a studio.

What was your first hit?

I guess it was "Don't Wanna Be A Player" by Joe.

What distinguishes your work from everyone else's?

I wish I knew. I've been told it's the way the vocals sit in the mix, while others insist that it's the drums. Either way, I try to make sure the mix is balanced between left and right.

What do you carry in your racks?

A bunch of dynamic gear and effects processors. Dynamic stuff includes gear from Manley, Neve, Avalon, Amek, Empirical Labs, TC Electronic, and Drawmer, to name a few. The effects gear I use is from Lexicon, Sony, TC, Eventide, Yamaha, and Desper. I should add that I did have some input and output stages replaced for quieter operation.

What kind of compression do you use?

Very light. I think it sucks the life out of music. I am a huge fan, though, of sidechain compression, and I like using the technique to fix problematic frequencies.

How do you use digital and how do you use analog?

Digital has revolutionized the way we mix. Now it's not strange to have 128 tracks playing out of two Pro Tools rigs. It's easy to change an arrangement or even individual instruments. Therefore, I prefer to mix from a digital multitrack like Pro Tools through an analog console such as the SSL 9000J.

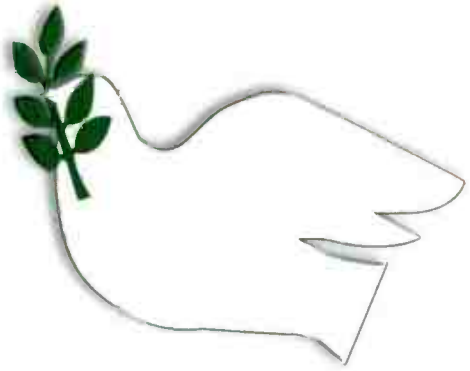
Of all the work you've done, what is your favorite?

I would say an album done by Rodney Jerkins for his group at the time called *One Accord* — four incredible singers.

Can you briefly run down the sequence from when you get the material to when you finish?

I do a quick rough [mix] and play it down a couple of times to somewhat feel the vibe. After I'm satisfied, I start working on the vocals. This is where I make decisions as to which EQ or compressor is needed. Should I take the tube path, solid state or a mixture of both? I'll also search out vox lines that need to be EQ'd differently because they may have been recorded on a different day or with a different mic. Consistency in the vocal performance is very important to me.

World Radio History



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After this stage, I start working on instruments. I like moving things out a bit so that they don't mask the center position. For this, I'll use the Spatializer. This box is excellent for such applications. I also start applying effects at this point. When the instruments are sitting well in the mix, I move on to the rhythm section.

Drum technique depends on the song. I don't compress individual drums because it only makes them smaller. Instead, I'll set up busses to various filters. For example, I'll bus a kick drum to an API 560 EQ with 30 Hz boosted and returned on a channel. [I'll add] another kick drum bus to a Pultec EQ for high-mid returned on another channel. Now I have three faders with main, low, and high-mid frequencies for the kick drum uncompressed. These three faders are then bussed to a compressor and returned on a channel. All four kick faders are then layered to fit the song. After I get the kick and bass to work, I'll start playing with drum reverbs.

I try to make all the elements work together before I go into the automation. That way I really have little to do. At this point, I'm concerned with the transfer of energy between sections. I'll make sure the transitions are smooth and special. I'll also spend a lot a time on swells and crescendos.

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CIRCLE 60 ON INFO CARD

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The mix is done for me when it feels good. I'll print various vocal passes and even some stems back to Pro Tools.

Do you ever get lost in the mix?

Lost is a strong word. I certainly have changed direction in the middle of a mix because I thought it was better for the song.

What's wrong with the music industry?

Nothing is wrong with the music industry. It is constantly evolving, and we, as professionals, should embrace the technology and use it to preserve the music's integrity.

What do you listen to while you're driving?

Well, I take cabs so I listen to whatever the driver plays.

What is the first music you remember hearing?

Calypso.

What did you learn from Dave Pensado?

How to keep a level head even when you may have an extremely difficult task ahead of you.

What was your most ridiculous experience in a recording studio?

Working on a project knowing that someone else was getting the engineering credit.

Who is the most amazing artist you've worked with?

Michael Jackson.

What makes a great producer?

A great producer captures the essence of an artist. A great producer knows when less is more. A great producer does what's best for the song.

Do you believe in miracles?

Yes I do. My mom was kidnapped on her way to a wedding by two guys. She was in the front passenger seat with a knife held to her throat while the other was driving. The car was traveling at probably 60 to 70 mph. She jumped and survived. I was studying chemistry in college when this happened, and it changed my life. I decided to follow my heart and go for a life in music.

What is the biggest mistake of your life?

Not getting into the music business sooner.

Any advice for getting a good start in the mix business?

You have to love it. Get a job at a studio doing the music you want to do. Study the mixes you like and try to find out why you like them. Practice, practice, practice. ■

CIRCLE 15 ON INFO CARD

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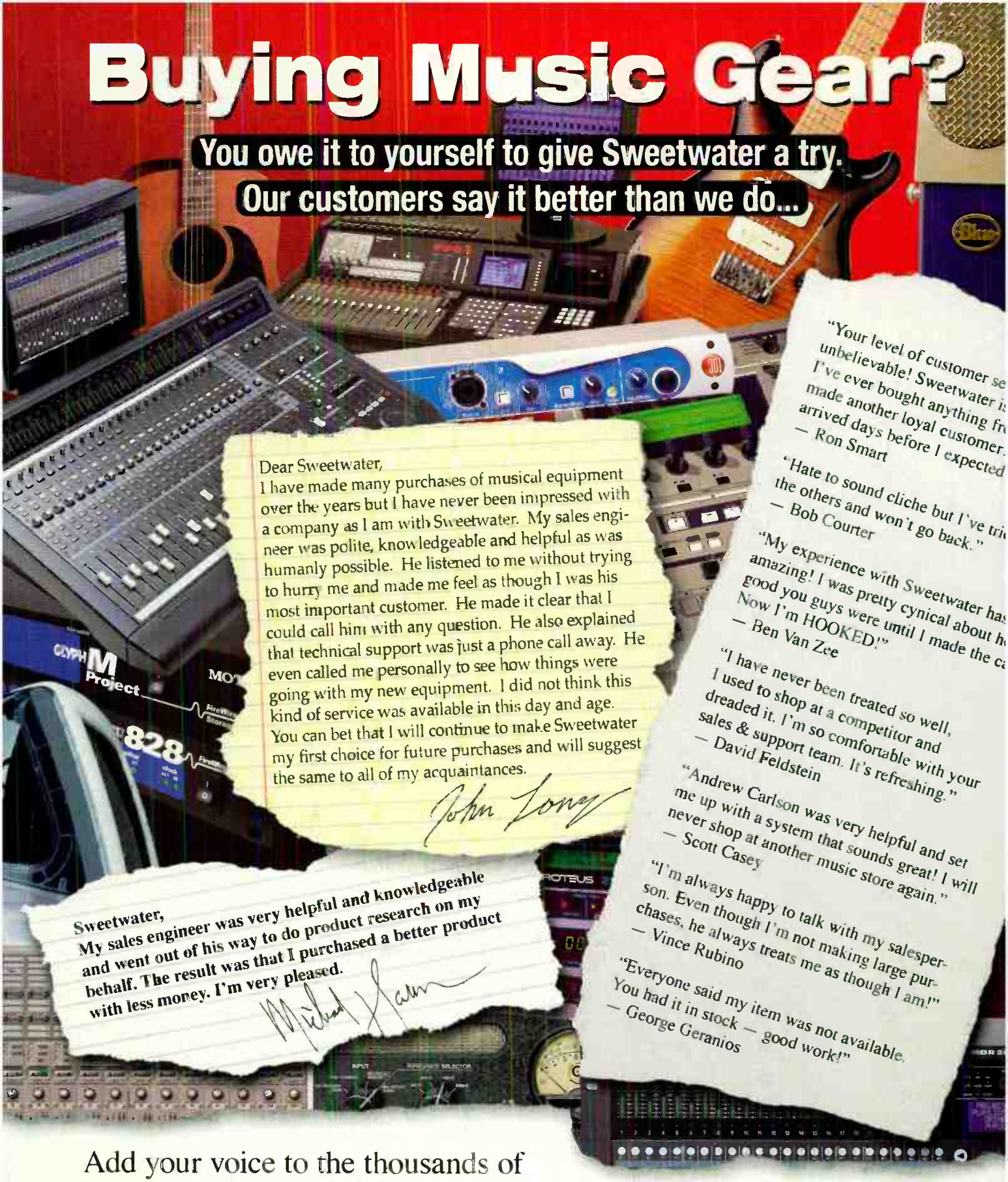

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CIRCLE 80 ON INFO CARD

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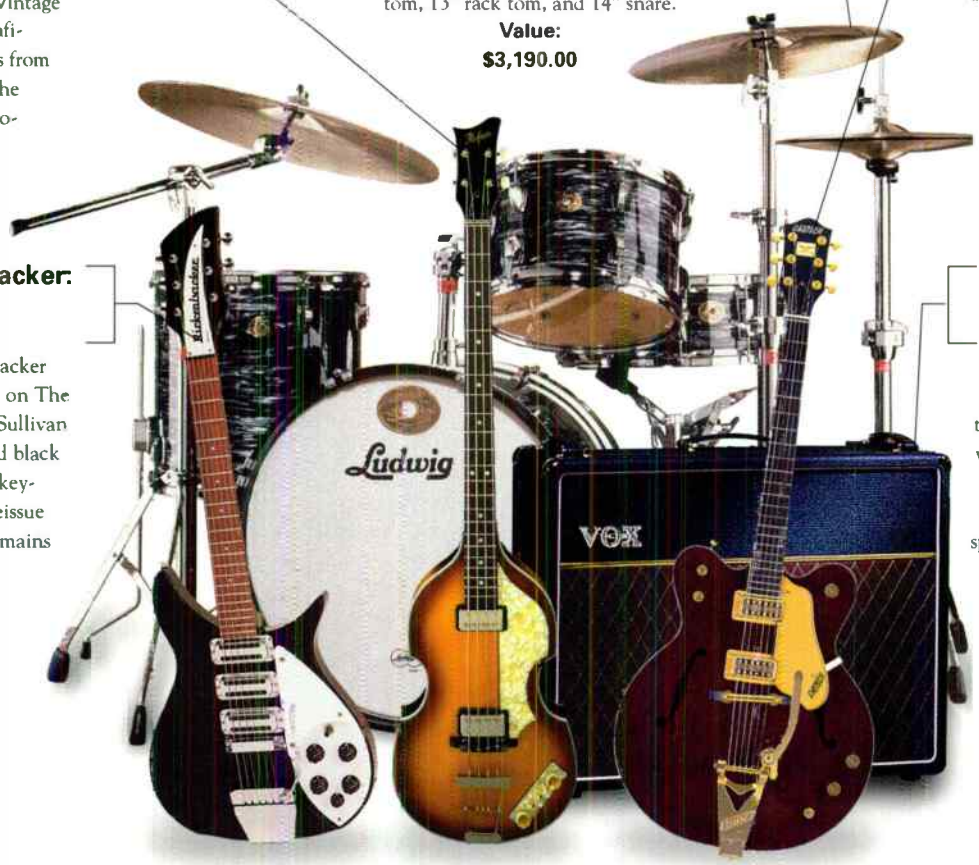

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World Radio History

Ensuring day-to-day audio consistency

Consistent Miking of Acoustic Instruments

by Jon Chappell

If you haven't had much experience miking acoustic instruments — and dealing with the performers who play them — here are some tips that will help you not only get excellent results in the quality department, but achieve those results consistently. Consistency is a big issue in acoustic recording, and can sometimes overshadow quality in importance. For example, if you're recording independent but closely spaced solo cello cues for a film score, and the ambience is slightly different from cue to cue, the effect can be distracting — and render the cues unusable — even though both treatments, unto themselves, are excellent.

Obviously, in overdubbing situations, consistency is paramount. If you recorded an okay-sounding guitar track last Tuesday, no one will care that Thursday's track is excellent sounding. They'll want you to dumb it down (quality-wise) to match Tuesday's. Any time you have an open mic, it catches not only the character of the instrument, but the unique character of the environment — the ambience, the humidity, the alignment of stars — anything to conspire against your getting the same exact sound the next day. It's like Murphy's Recording Law: anything that can sound different, will.

But you can take several steps in your miking routine to ensure consistent results, day in, day out. Here are four that I use every time I have to mic an instrumentalist.

1. THE SCIENTIFIC PROCESS. Producing may be an art, but engineering is a science. And scientists measure. Note and record (as in write down) the position of the mic to the instrument, and not just in distances. Take into account the height of the mic from the floor and the attitude of the diaphragm. When making adjustments, rotate and tilt the mic in its mount or clip, in addition to moving the mic toward and away from the source. Use the mic's logo and its position in the mount as an easy reference.

2. TWO HEADS ARE BETTER THAN ONE. Whenever possible, use another person to help you initially mic an instrument. Even if you're sitting four feet away from the performer, it's great to have an assistant position the mic, while you, the engineer, concentrate on just the sound. Sometimes when you act as your own positioner (using headphones), you tend to be prejudiced by the look of the angles, because you can see them. For example, you might see that you've now got the diaphragm parallel with the soundboard of the acoustic guitar, and that might reinforce the notion that that's the best position to get those big low-end waves to smack broadside into your diaphragm. But when you *can't* see that, and you're using your ears, you'll wait for the ideal sound, not judge on what your eyes tell you. If you must act as positioner and engineer, use your ear first to listen to the instrument, then don

FIGURE 1: This layered photo effect shows the tape marks of the mic stand, stool, and the instrument itself.

World Radio History

headphones and listen through the mic.

3. PRESERVING THE ENVIRONMENT. Try to keep the character of the room exactly the same with respect to furniture, carpeting, wall material, distance of your setup to the room's perimeter, etc. If you're performing in an environment with wide humidity swings (which can happen if you record over time, in untreated rooms, and in different parts of the country), make sure you note the humidity with an inexpensive hygrometer. Humidity can especially affect tube mics.

4. ROLL TAPE. No, I'm not talking about the magnetic kind, I'm referring to the sticky kind. Use colored, low-tack masking tape to mark off the legs of the chair, the placement of the stand, and even the shoes of the performer and the position of the instrument. I once hung a plum line (a string with a weight at the bottom that uses gravity to produce a perfectly straight line) from the end pin of a guitar to mark its exact position. By putting a tape mark right below the end of the line, the performer could place the guitar in the exact position, and could also tell when he moved off axis to the mic. This had the added benefit of helping the performer restrict his movements (see fig. 1). You can use tape to actually mark the contact area where the feet of conga or a vibraphone stand meets the floor, and you can place the dip of a tenor sax bell to hover inches above a tape mark.

Miking instruments for consistent sound gets easier with practice, and you'll find you don't have to be so regimented every time. In the beginning, follow the above procedures until your instinct and memory help speed up the process. When you begin a new project, you should always mic anew, because every instrument, every performer, every piece of music, and every day is unique in some way. Once you start working, you need to ask yourself, "Okay, now that I've found *the* sound for this instrument in this project, do I need to be consistent in all aspects of the sonic and acoustic treatment?" If the answer is yes, then you need to say to yourself, in your best sportscaster's voice, "Let's go to the adhesive tape!"

Jon Chappell can clearly hear the differences among music recorded on analog, digital, and adhesive tape.

CIRCLE 29 ON INFO CARD

CIRCLE 19 ON INFO CARD

World Radio History

How to determine the right price for your services

How Much Do I Charge?

By Jim Bordner

In the time I've been serving as your humble Guest Room Warrior, I've received a lot of mail from readers, most of it asking questions about what to do in a specific business situation. The most commonly asked question is also the hardest to answer: How much should I charge?

Obviously, if you're just recording audio and not providing creative services, the equation is simple. You're selling time, and you decide what an hour of that time is worth based on the usual cost accounting methods, taking into account what your local market will bear. If your competition is charging $50 for an hour of time, you have to be somewhere in the ballpark to succeed. If your studio adds value to the sale — you have better gear, your chief engineer gets better results, your space has a cooler, more creative vibe — you may be able to charge more. If you don't add value, you may have to charge less to attract business.

But if what you're doing is creating intellectual property (commercial music, jingles, soundtracks, and so on), the question of what to charge gets a bit fuzzier on the edges. Let's try to break the value of a piece of commercial music down into its components.

1. STUDIO CHARGES: If you're doing the tracking and mixing in your own studio, then you charge your own hourly rate for straight time. If you do it in another studio, you charge that studio's rate + 15%. (You *always* mark up outside costs to pay for your time in dealing with the supplier and for providing your client the convenience of not having to line all this stuff up themselves.) Materials such as tape should get marked up as well, at a higher percentage. Dupes (cassette, DAT, CD-R) that get made along the life of a project should be priced so as to reflect the cost of the materials, wear and tear on your machines, and your time spent making the dupe.

2. TALENT: This includes singers, musicians, VO people, orchestrators or arrangers, synth programmers — basically anyone who does work for you that's project specific. Mark up their cost 15%. A side note: pay them promptly. You'll find that when you need their help dealing with a tight deadline or a tough budget, they'll be more likely to help when they think of you as a sure source. When budgets are really tight and you want the project, you can cut your markup as well.

> "CLIENTS TEND TO SEE LICENSING AS PURE VAPORWARE, BUT CREATIVE TIME IS SOMETHING THEY'RE USED TO PAYING FOR, AND IT SEEMS TO THEM A HARD ITEM, NO MORE NEGOTIABLE THAN STUDIO TIME."

3. LICENSING: Everything thus far has been pretty straightforward, but here's where you head into the gray. Much of the negotiated value of a piece of commercial music is based on how many people will hear it and for how long. Is it running on three radio stations in Nowhere, Illinois for four months? That's worth a whole lot less than something that's running on spot TV in the top ten media markets for a year. Licensing is always negotiated and negotiable. For that very reason, I also build into my budgets....

4. CREATIVE FEES: Because you'll frequently deal with clients who want to negotiate your licensing fees to nothing, I like to protect part of my profit by including a line item called "creative fees." This is a charge for the time spent creating the music or song. It covers meetings and client service time, time spent composing and writing lyrics, etc. The advantage is that the client tends to see licensing as pure vaporware, but creative time is something they're used to paying for, and it seems to them a hard item, no more negotiable than studio time. So even when they try to cut your licensing fee to nothing, they *won't* haggle on creative.

Add it all up, and that's what your piece is worth. If it's *way* higher than other people are charging in your market, take a good, hard look at what you're providing. I'm not saying you should automatically cut your estimates if they don't match your competitors. Maybe your work is worth the premium price — you just have to be able to justify the higher cost.

As you develop your pricing, remember the wise words a friend of mine told me as I got ready to open Gravity Music. She had been freelancing for a couple of years, and was growing like crazy. I asked her if she had any advice for me, and, without hesitation, she said, "Don't get greedy." Don't work cheap, but price yourself fairly, and your clients will come back for more.

Want to know more? Email Jim Bordner at jim@gravitymusic.com.

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CIRCLE 26 ON INFO CARD

How to get word clock routed around your studio

Word Clock Distribution Made Easy

by David Frangioni

Getting word clock routed correctly around your studio to the various devices that need it is essential to properly set up a studio. Let's cover distributing word clock to more than a few devices, as well as throughout an entire facility.

TABLE 1

Device	BNC Outputs, 1x rate	XLR Out/Thru	Other (Superclock etc.)
Aardvark Sync DA	5 or 6* (W/C 75-ohm)	1 (AES)	1*
Lucid CLKx6	6* (W/C 75-ohm)	0	6*
Rosendahl Nanosyncs	6 (W/C 75-ohm)	1 (AES)	6•
Mutec Distributor WS	8* (W/C 75-ohm)	0	8^

** Switchable to word or Super clock*

• Outputs 1–3 individually configurable as FSx1 or FSx2; outputs 4-6 individually configurable as word or Super clock

^ Outputs can be word or Super clock, switchable in pairs

DOING YOUR MATH

First, count the number of devices that need to receive word clock, but also plan ahead for inevitable growth — if you have five devices, plan for at least seven or eight.

Second, determine the distance over which the word clock signal needs to travel. Short cable runs can use unbalanced, 75-ohm cables with BNC connectors. Cable runs over 25–30 feet should use balanced 110-ohm AES digital cable. Monster Cable, Mogami, and Apogee all make high-quality AES cable in single-, dual-, quad-, and eight-pair varieties.

SCENARIO #1: LOCAL CONTROL

One scenario has multiple devices receiving word clock, with all devices located locally (*i.e.*, the devices are in the same room or general vicinity, and the cable runs are under 30 feet). The proper way to distribute the master clock signal to each device is with a word clock distribution unit. This is preferable to daisy-chaining or "T-ing" off of an input because the box introduces no additional delay or signal loss, and retains the integrity of the word clock signal — which, after all, is one of the main reasons for using a master clock generator in the first place!

There are several suitable distribution boxes on the market; each of the units in Table 1 offers multiple word clock outputs, and can accept either unbalanced or balanced word clock signals. If there are more devices than one unit can handle, you will need to patch multiple distribution boxes together.

SCENARIO #2: THE LONG RUN

If word clock needs to be distributed throughout an entire facility, then you will need to use AES as the digital format for distributing the word clock. AES carries the same clock information as the originating master, with the added benefit of being a balanced interconnect format that enables cable runs of up to 250 feet (80 meters).

These types of long cable runs require an AES distribution amplifier. This not only distributes the AES clock signal, but also buffers the output and optimizes its level. Table 2 shows some typical AES distribution amplifiers.

Any of the units listed in Table 2 provide enough amplitude to properly route word clock from one building to another.

TABLE 2

Device	AES Outputs, 1x rate	XLR Thru	Input
Aardvark Aard DDA	6 (AES 110-ohm)	0	1 (AES 110-ohm)
Lucid AESx4	4 (AES 110-ohm)	0	1 (AES 110-ohm), 1 (W/C 75-ohm)
Mutec Distributor AE	6 (AES 110-ohm)	0	1 (AES 110-ohm)

SUMMING UP

Always remember to plan out your needs for both the number of word clock "slave" devices and the distance over which the word clock needs to travel. Good luck, and drop by the Studio Tech forum on **www. eqmag.com** with any word clock questions — new information is being discussed daily.

David Frangioni, studio tech to the stars, has recently finished studios for Mike Shipley, Journey, Aerosmith, and NBC. Email him at dfmusicplayer@aol.com.

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CIRCLE 03 ON INFO CARD
World Radio History

Sometimes less is more, but, with guitar tracks, more is more!

Dualing Guitar Processors

by Craig Anderton

Guitarists know that feeding two amps can not only deliver great tone, but also ear-bending stereo effects. The same concept holds true for using two guitar-recording interfaces (Line 6 Pod, Johnson J-Station, DigiTech Genesis 3, Yamaha DG-20, Behringer V-Amp, etc.).

However, there are issues with patching two processors into your system. Using a "Y" connector to drive two inputs simultaneously may load down guitars with standard (non-active) pickups. The formula for determining the input impedance of two paralleled devices is:

Combined impedance = (Z1 x Z2)/(Z1 + Z2)

...where Z1 = device 1's input impedance and Z2 = device 2's input impedance. Therefore, the combined impedance for two processors with 500k input impedances is 250k, which will probably not load your guitar appreciably. Impedances below 250k will likely cause a slight level/high-frequency drop.

To test if the loading from two effects is acceptable:

1. Power-up both effects.
2. Set effect #1 to a clean patch (*e.g.*, "acoustic guitar" model). Effect #2's setting doesn't matter.
3. Patch your guitar into a Y-adapter, and send one side to effect #1.
4. Patch effect #1's output into your mixer.
5. Turn the guitar's volume and tone controls to maximum.
6. Play for a while; note the overall level and high-frequency content.
7. Now patch the other side of the Y into effect #2. (Leave effect #2's outputs unconnected.)
8. Continue playing, and listen for any significant dulling or lack of level.

If there isn't any signal degradation, use the Y-cord, plug effect #2's outputs into your mixer, and go. If there is a problem, here are possible solutions:

- If one of the processors has a direct out or buffered out, plug your guitar into this effect, then use the direct/buffered output to drive the second effect.
- Add a buffer board or preamp between the guitar and the Y-cord. This isolates the guitar from any loading.
- If your mixer has a "guitar input" (often found on all-in-one studios) and channel insert jacks, plug your guitar into the guitar input and split the insert send with a Y-cord into your two processors. Bring one processor back into the insert return, and the other into a second channel. If both processors are stereo and you have enough inputs, consider dedicating two channels to each effect.

Now that the effects are set up, here are some of my favorite applications:

- **THE *HUUUUGE* AMP:** Choose patches on the two effects that model the same amp type. They won't sound exactly the same, but that's fine. Bring the stereo outs to four separate channels and set the pans and levels as shown in fig. 1. This creates a massive stereo spread — check out the audio example in the version of this article posted on www.musicplayer.com (*EQ* channel).
- **SUPER STEREO:** This works well even with mono outs, so try it if you're running short of inputs. Choose different patches on the two units, and use the mono outs (typically, using only the left jack provides a mono signal, but check your manual). Pan one output left and one right. This approximates the sound of driving two amps.
- **MEGAFEX:** I discovered this while working with a Pod (which has some cool "in your face" models, but limited effects) and a J-Station, which has great effects but smoother models. I panned the Pod to center, and set the J-Station for the smoothest possible sound with its outs spread full left and right. The stereo effects give width, while the smoothness fills in some of the Pod's spikiness — sort of Albert King meets Def Leppard.

Yes, sometimes less is more...but in this case, more is definitely *more!* ■

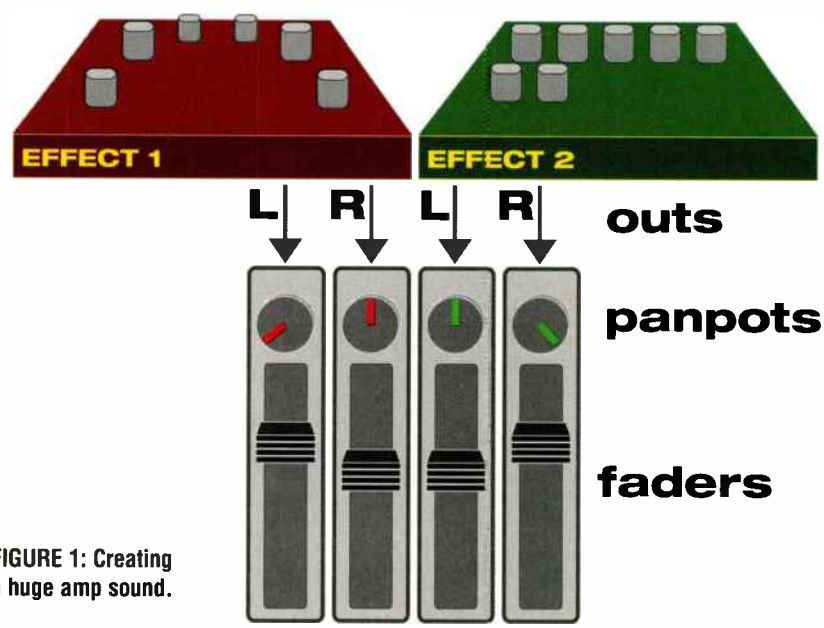

FIGURE 1: Creating a huge amp sound.

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"Intelligent" Vocal Harmonies With Acid

by Craig Anderton

Although Sonic Foundry's Acid doesn't have any intelligent vocal harmonizing features, it does do pitch shifting — so if you supply the intelligence, it will do the harmonization. Here are the details on generating vocal harmonies; this assumes that your main vocal is recorded at Acid's specified tempo, and not imported from a tune with a different tempo. (Note that this technique will also work with other programs or plug-ins that support transposing audio tracks.)

1. Right-click on the track to be harmonized, and select *Duplicate Track*.

2. Right-click again on the track to be harmonized and select *Duplicate Track*. You now have two copies of the original track.

3. Right-click on the first copy and select *Pitch Shift* > *+4* (fig. 1), a major 3rd harmony. Check the *Stretch from Tempo* box (otherwise, shifting pitch will change the tempo).

4. Right-click on the second copy and select *Pitch Shift* > *+3,* a minor 3rd harmony. Check the *Stretch from Tempo* box.

5. Solo the original track and the major 3rd harmony track. Note which parts sound good together; cut away those pieces of the harmony track that clash with the main vocal. The easiest way to cut out sections is to position the cursor at the beginning of the range to be cut, then type *S* (for Split). Next, position the cursor at the end of the range to be cut, then type *S*. Click on the segment between the two splits, then hit the *Delete* key.

6. Solo the original track and the minor 3rd harmony track. Again, cut out the harmony parts that clash.

7. Continue editing, and keep as much or as little harmonization from each track as you like.

Observe the following cautions when using this technique:

• The harmonies do not track formant changes, so the greater the amount of pitch shifting, the more unrealistic the sound. You'll probably want to mix the harmonies in the background and apply some reverb. The example in the online version of this article at www.musicplayer.com (*EQ* channel) includes two tracks of harmonies (fig. 2), both of which are processed through the Ultrafunk Sonitus Reverb plug-in.

• You'll need to cut the phrases with a fair amount of precision, as you want to cut in the spaces between words. Zoom in as far as necessary; it will probably help to turn off Snap. To do this, right-click on any empty space in a track, and uncheck *Enable Snap To*.

This method will never replace doing harmonies with "real" voices, but for quick harmonies — or for those cases where the synthesized harmonies add a nice special effect — this is a very useful technique. ■

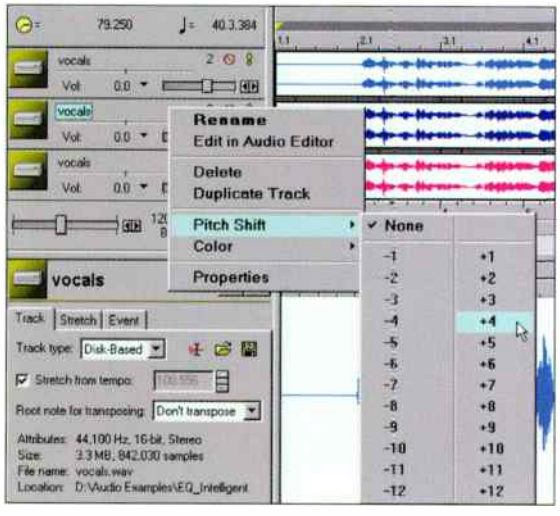

FIGURE 1: Choosing the amount of track pitch shift.

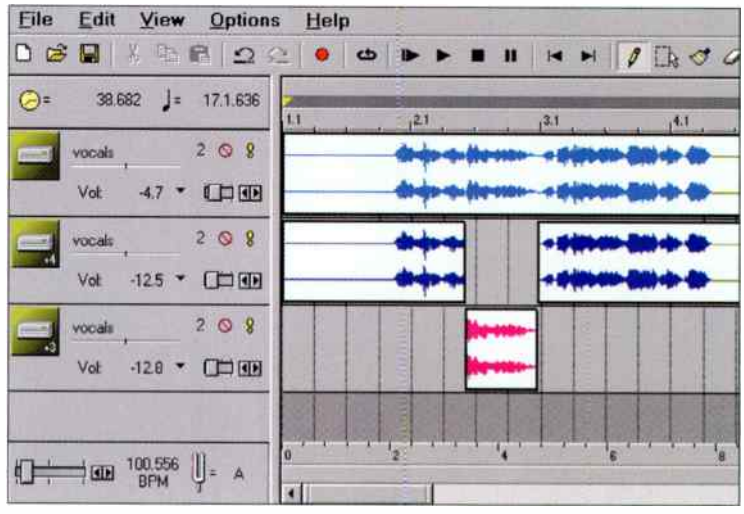

FIGURE 2: The two harmony tracks (major 3rd is dark blue, minor 3rd is red).

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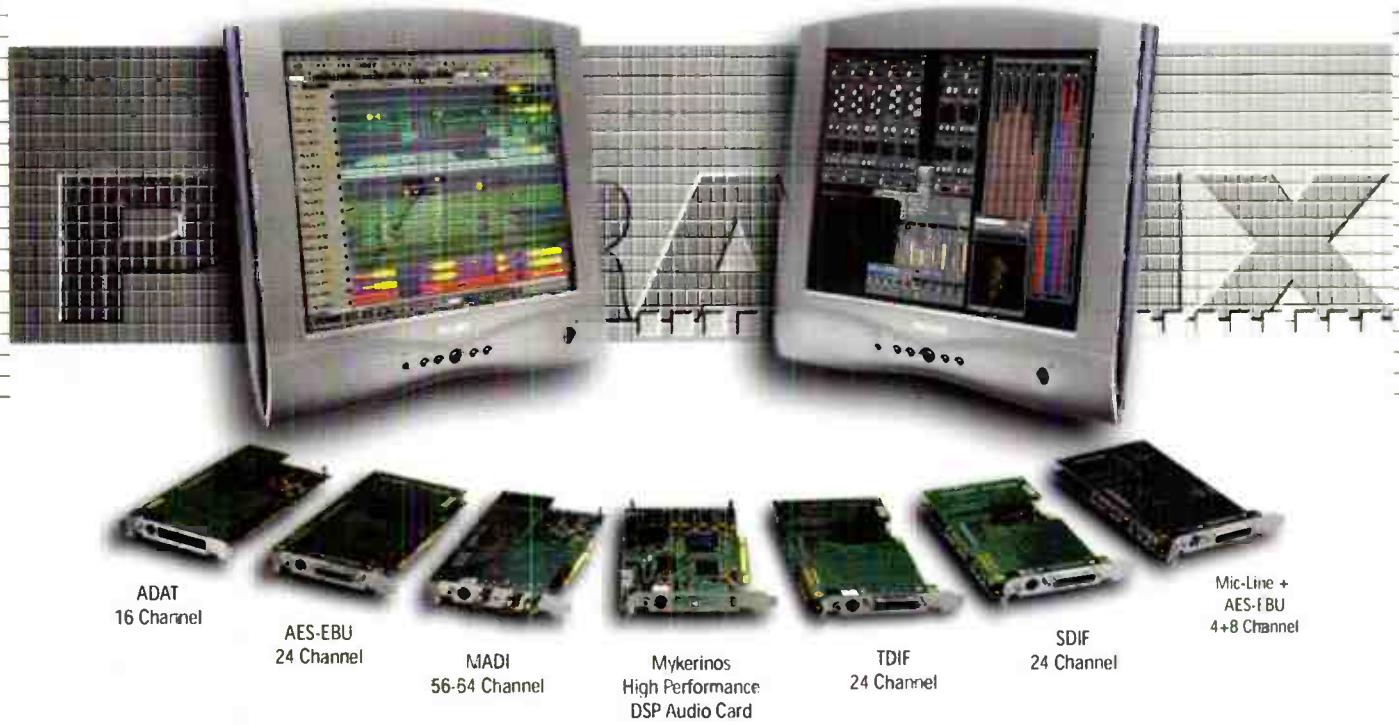

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CIRCLE 49 ON INFO CARD

World Radio History

Legendary producer **Roy Thomas Baker** talkes on a Queen classic and a GN'R classic-to-be

World Radio History

SURROUND N' roses

The license plate on the Rolls Royce in the parking lot at this West L.A. studio simply reads: RTB. The car itself is sleek, powerful, majestic, unique and rare...just like its owner, Roy Thomas Baker.

Baker is currently holed up in the studio producing what will undoubtedly become yet another hit record on his already unparalleled discography — the next offering from Guns N' Roses. Once behind the green door of this famed L.A. studio, I run into multi-Grammy-winner Frank Filipetti, who is recording Korn in the studio next to Baker's. "Roy really raised the bar and pioneered so many new concepts in the art of multi-tracking," shares this obvious RTB fan. "There's no question that his work with Queen was a high point in the art of layering tracks and mixing. And his work with The Cars redefined rock 'n' roll production. Much of what he pioneered is still valid today, and I wouldn't be surprised if he still has a few more tricks up his very talented sleeves."

For a man who has introduced the world to electronic music via Devo, and had his name become synonymous with the words "power ballad" through his musical moldings of bands such as Foreigner and Journey, Baker is remarkably humble about his wide-reaching achievements. One might think it's because he has had the better part of three decades to get used to his status as a living legend in the producing circles. While still in his teens, Roy Thomas Baker embarked upon a project that would usher in his producing career with thundering applause. While most kids were getting their drivers licenses, Baker was working with a little-known band in London called Queen, and eventually they recorded their fourth album together, *A Night At the Opera*. It went on to sell millions and launch the band into the stratosphere of rock stardom. Behind them the entire way was Baker with his clear-cut vision for the band, his uncompromising integrity for the music, and his unwavering resolve to provide new ideas. The band is, of course, no more after the tragic loss of lead singer Freddie Mercury, but on November 20th, *A Night At the Opera* was re-released in surround sound — more than 25 years after it initially astounded audiences around the world. To truly appreciate this redo, it is imperative to revisit the making of the original.

by Lisa Roy

PHOTO BY EDWARD COLVER

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CIRCLE 25 ON INFO CARD

GALILEO! GALILEO!

As noted, Roy Thomas Baker was extremely young when he began working with Queen, but he was fearless and full of ideas. He recalls of the early days of production on "Bohemian Rhapsody," "Freddie came to me and he was actually playing the first part of 'Bohemian Rhapsody', and he stopped and said 'this is where the opera section comes in, dear.' And that was it...it was the classic phrase and we all just burst out laughing and went out and had dinner," he continues. "Then I thought, what I'm best at is taking a basic idea and making it work. You can throw me the most off-the-wall ideas and I will eventually find a way to make it work." He did just that with Mercury's operatic notion. Brian May, guitarist for Queen recalls, "The song was really Freddie's baby from the beginning, but the task of realizing his ideas fell on Roy."

The over-the-top operatic middle section of Queen's signature song was originally intended to be only a brief interlude, but, as Baker reports, it quickly began to take on a life of its own. Sessions for the song stretched to more than three weeks, with the opera section alone taking seven days to complete. The band members sang their parts for a reported ten to twelve hours a day. This resulted in an unheard of 200 separate overdubs. Baker explains that, even back then, before the advent of 5.1 technology, the recording of this particular piece lent itself to surround sound. "When we did the original recordings for *Night at the Opera,* we were thinking in terms of a surround system," he explains. "We did it in stereo and we had things bouncing back and forward in stereo, moving around all over the place. Luckily, with 5.1 (especially since we're using DTS), we managed to discretely

Tracking With Roy

"I have Caram Costanzo engineering and Eric Caudieux on Pro Tools working with me on the Guns N' Roses project. So I've got two of the best engineers in the business," brags Roy Thomas Baker. When *EQ* got Costanzo on the phone, he was about to start guitar overdubs, but he took a break to chat about a few of the techniques he's learned from the Master.

"We usually use Roy's Neve 1073 sidecars. The console in this instance is the new Neve 88R. It has a real nice top-end sheen to it, and everything's crystal clear. Everything shines through with the transients. We use Neve 1073's for individual drum tracks and guitar.

"We usually use about 30 different lines for the drums — that's miking top and bottom toms. On the top of the toms, we use [AKG C]414's, and for the bottom we use [Shure SM]57's. All the bottom mics are [switched] out of phase. On the kick drum, we usually use a U 47 FET Neumann and [Yamaha] NS10 speakers, just a raw speaker as a transducer microphone. It gives you incredible bottom end, like a low thud that you really can't get from basic mics. We usually track the drums to [Quantegy] GP9 or BASF 900 [analog tape], then we bounce everything over to [Digidesign] Pro Tools and overdub in that.

"I also use a lot of Roy's Summit gear and his [Empirical Labs] Distressors with a British modification, which we usually use on overhead drums as well as on guitars.

"I'd have to say Roy taught me a lot about the way he uses amplifiers. He's a multi-microphone producer. He really attacks, especially guitar sounds. We always use at least two or three amps. We like to incorporate DIs for the big sounds, with large and small amps; either it's 4x12 cabinets or whatever. We always incorporate so many different cabinets to get one sound that you could never get out of just one amp. We usually use Diesel heads for guitars, Mesa Boogie Duel Rectifiers, and old Marshalls.

"Roy's a true legend, and it's an honor to be in the same studio with him. It's very humbling to work with him because he is so multi-faceted. He really just attacks each track and makes it the best it can be."

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CIRCLE 58 ON INFO CARD

do things this time around I wasn't able to do the first time. Back then, the system that was being used by the record company, Elektra Records, was part of the Warner Pioneer System, which is a totally discrete system of quadraphonic, but we didn't actually do any of the mixing ourselves. They actually experimented on *Queen II*, where they took the tapes and did a quadraphonic mix. That wasn't a particularly good mix as it happened. Not for technical reasons, but purely for artistic reasons. They never quite got the nuances and the movements, things like that. So it wasn't actually that successful, but it then panned out with the idea that we're going to make it as discrete as possible even for the stereo listeners, because people's perception of stereo can be very odd.

"Basically, if you were to record a brilliant stereo piano, people don't see that as stereo, they think that's mono. Now if you have a mono signal coming out the left channel and then something's coming out the right channel, that's two mono

How Rory Got Roy to Surround Queen

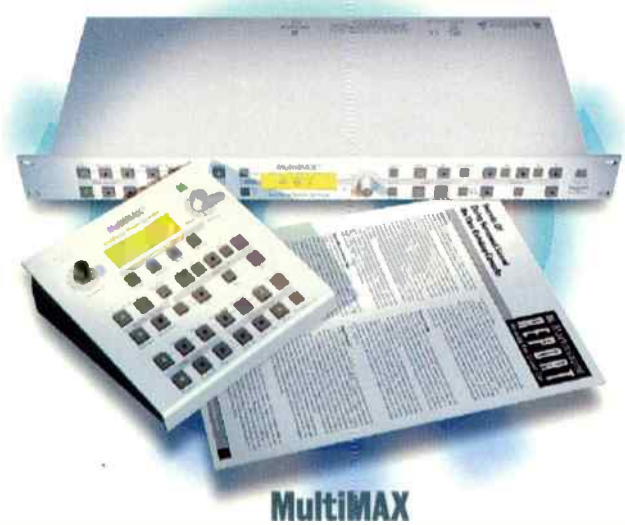
DTS Entertainment's executive producer/artist relations head, Rory Kaplan, had a wish list of records he'd like to have remixed in 5.1 surround. Queen's *Night At the Opera*, produced by Roy Thomas Baker, was at the top of that list. Kaplan explains the process of taking these classic tracks and preparing them for a 5.1-channel DVD-Audio remix.

"With the assistance of Jim Beech, Queen's manager, I contacted Roy Thomas Baker and invited him and his wife Tere down to DTS for a demonstration. He thought it would be incredible to go back and do the mixes the way he always wanted to hear it — in surround. Then we brought in Elliot Scheiner to work with Roy. They got along great, and it was just a matter of their schedules.

"The tapes were in England and were very well-organized by Justin Shirley Smith, Queen's librarian and keeper of the elements. We sent Rob Hill from Steinberg North America to engineer the transfers using a fully loaded Nuendo surround sound workstation in 24/96 at Abbey Road Studios. As it turns out, the analog tapes started shedding. Ampex recommended a new process that involved baking the tapes at 130° for 96 hours. It worked, and the transfers went well. The hard drives were Fed Ex'd to Doghouse Studios in Santa Monica, where Elliot and Roy began the 5.1 remixes.

"As executive producer of this project, it was a big thrill for me to work with Elliot and Roy and watch them get creative with these remixes. I must admit, Roy became a god to me — a 'producer's god.' He's not afraid to do things like take the master levels and pin the needles to +12 for a second to get the response he wants. He's done things that producers now aren't even doing; he was way ahead of his time. I learned a lot on this session from these guys."

Secrets of Doing Surround Sound



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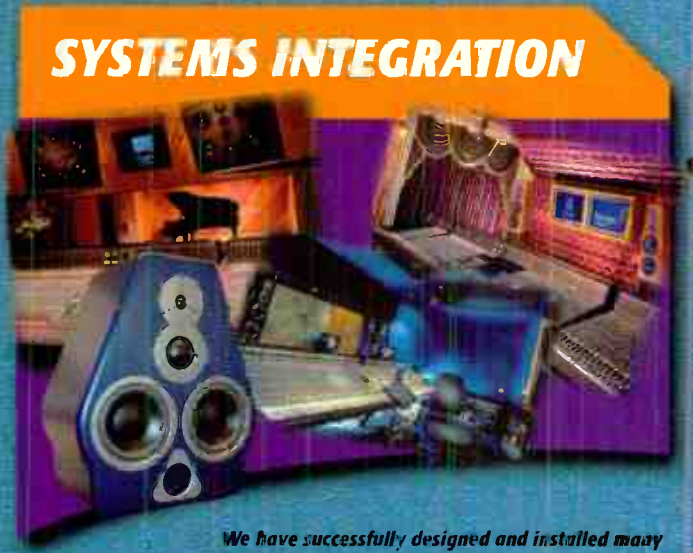

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signals, but they think that's stereo because they hear stuff discrete. They like the two monos — mono out here, mono out there, you know, move it back and forth. So, we recorded the record to do a lot of that, so moving onto a surround system was the next extension of that."

Baker further confides that, although this was his first foray into surround mixing, it came naturally to him. "We sub-mixed everything internally on 24 tracks back then. A vocal track would go along, and then a guitar solo would appear on the vocal track, then we would split that off because we kept running out of tracks. For the DTS remixes, we split some of that off into the Nuendo System into different audio files. Some of it we just left on the same audio file and then stuck it up on different channels on the board — some turned off and some turned on. This is a common thing that we always used to have to do anyway," he says matter-of-factly. "When you think 'Bohemian Rhapsody' had over 200 tracks of vocals, it was obviously mixed and submixed down and then moved around — but we were still thinking audio imagery, where the placement was going to be in stereo and eventually in a surround system." He concludes, "But we were thinking of that 20 years ago."

ADVICE FROM THE MASTERS

Starting his career at such an early age allowed Baker the freedom to learn from some of the best in the business during the hey-day of British rock. He began as an intern/runner at Decca Studios in north London working with incredible engineers such as Bill Price (The Sex Pistols) and Gus Dudgeon (Elton John). Although Baker admits that this was an incredible training ground for engineering, his heart and truest talents lay squarely in production. "I always wanted to be in record production, and engineering was a pretty good route, although, at that time, it was actually far more difficult, especially in England. Now it seems like a natural step — you become an engineer and then you become a producer, but it doesn't always work out," says Baker. "A lot of engineers can get really good sounds, but it's their rapport with artists that is the thing that is

World Radio History

Queen's Sonic Surround Guru

"This was the first time we worked together, and it truly was a trip for me," admits Elliot Scheiner about Roy Thomas Baker. "I've always loved the records that he made, so having the opportunity to work with Roy was a treat." And so it began at Doghouse Studios for a couple of weeks with Roy, Elliot, and DTS's Rory Kaplan. Then the Queen team moved onto Capitol Studios where assistant engineer Matt Scheiner joined them for the completion. Elliot explains the process of taking this classic into surround.

"We wanted the highest resolution possible, so we used the [Steinberg] Nuendo system, which is 24-bit/96k. This system also allowed me to move things around and clean things up. So, by the time I got to the mix, it was perfect.

"When I first put up the faders, it was obvious what an amazing recording and what geniuses these guys were. They had 24 channels, and they made maximum use of all those channels. With 'Bohemian Rhapsody' and 'The Prophet's Song,' there were at least three or four things on every track. What they were able to accomplish with 24 channels is what most people do today with 96 channels.

"Roy and I wanted to be true to the original record and match the EQ. We used the gear that Roy used in terms of compression, which was a lot of Universal Audio 1176's.

"As far as dealing with the surrounds, the bass and drums were up front. We put Freddie [Mercury] up front, too. Depending on the song, the guitars were up front, and sometimes in the rear. Very minimal keyboards, and they were in the rear most of the time. In 'Bohemian Rhapsody,' we'd slide things back and forth from section to section. With the keyboards, when it starts *a capella* and then the piano comes in, it enters in the rear speakers. By the time it hits rhythm, you feel and hear the piano moving from rear to front. Some of the vocals move around. They were amazing sounding, and there were many tracks of background vocals, which we put front and rear — wherever it felt best. I approach surround mixes with 'what's going to punch my button.' As far as placement, when things startle me, I like that. I really don't do too much. I very seldom do panning back and forth; we did it on only a few songs with certain effects and the piano, but not much.

"On Nuendo, we lined up the original stereo mixes so that we could have the ability to A/B. We used the Studio Technologies box that allowed us to go from 5.1 to stereo. We printed the mixes in multiple formats. They were done back to Nuendo, and were also recorded analog two-inch eight-track at 15 ips/+3 with Dolby SR.

"I get such a kick out of playing this for people to see their reaction. I'm very proud of the mixes we did."

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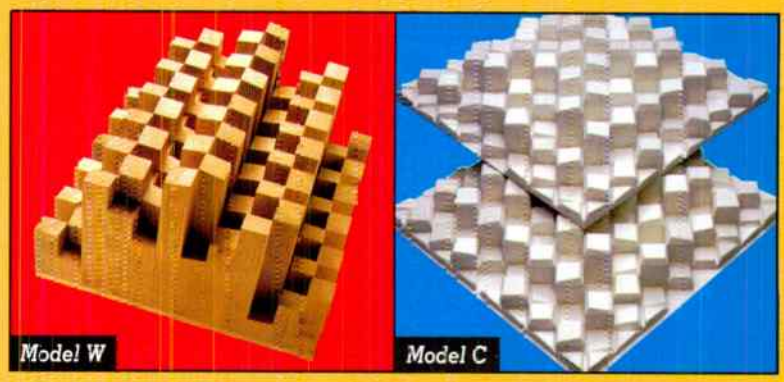

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most important. Getting pretty sounds means that sometimes you end up with a great sounding flop. I'd sooner have a bad sounding hit."

Although Baker never had any formal training, he encourages young engineers and producers to attend engineering schools, but cautions them to never stop relying on their instincts. (Roy is currently toying with the idea of starting, or collaborating with, a recording school.) "Go to engineer school, that's really good. The only thing about engineer schools is they teach you *how* to turn the knobs but they don't teach you *when* to turn the knobs, and that's the big difference. It's knowing when to turn a given knob, that's where the skill and your instincts have to take over, and you have to allow that. You can't spend the whole time looking at books and saying, 'I know that so-and-so did this to the snare so I'm going to do that,' because it won't necessarily always work out. I know that using a certain mic on a singer was good. It doesn't always translate to a different singer. That's life."

It is Baker's finely tuned instincts that have led to some of his greatest successes in the studios. Lets just say he certainly doesn't subscribe to the "less is more" theory. A drum kit is an interesting quagmire of miking specialties. Per Baker's request, engineer Caram Costanzo has close to 30 mics on the drums alone — using four on the snare and two on each tom. Baker emphasizes that something like this is simply un-teachable in print or in a classroom, but must be learned through trial and error, which is how he learned the bulk of his skills. "I was self-taught as an engineer. When I was an intern and a second assistant, I was doing classical music. I was working under all the great classical engineers at Decca. I had the broadest possible upbringing when it came down to learning to be an engineer, and I also took some of those things over to my production ideas. That is why I didn't even flinch when Freddie Mercury wanted an opera in the middle of the single, because I'd already worked with the D'oylycart Opera Company, so I knew the opera."

Baker looks for that flexibility and desire to experiment in not only his engineers, but also in the artists he chooses to work with. He believes that some of the best artists are the ones who are not only intellectually talented, but technically as well. This creates a greater line-of-communication for him as the producer. "I think a producer like myself also has to be a great listener. Every record I do tends to sound different, and that's because I take the artist's perspective — I take their point of view, and I take their talent, and then I align myself with the artists in such a way as to get them to start thinking for themselves. It's a bit like meditation in terms of you try to get the artists to delve inside themselves for something that's in there that they might not even know exists. The artists I have the most amount of success with are both intellectually and technically intelligent, so they know intellectually that they can reach for their own artistic aspirations

▶ continued on page 112

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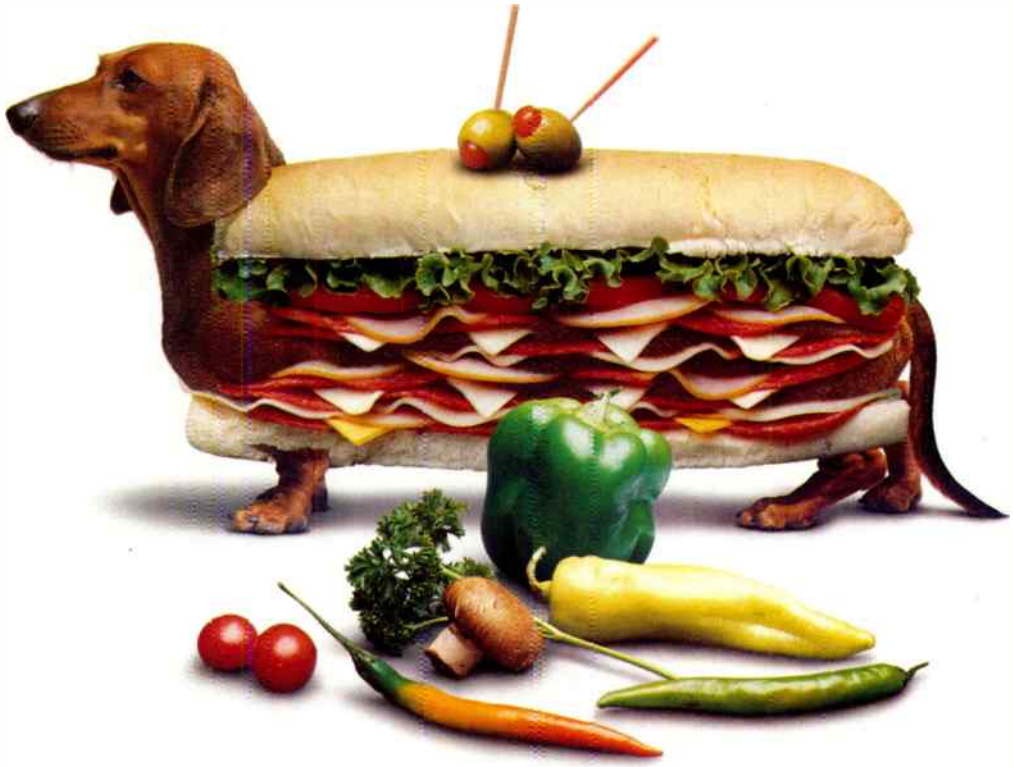

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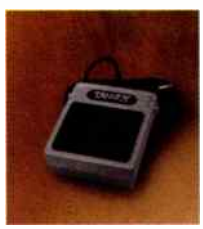

We could (and should) go on about the other extra's in our new gourmet offering, but the proof of the pudding is in the eating, and the PS350B is most definitely-Hmmm...Yum.

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CIRCLE 38 ON INFO CARD

the studio-in-a-box revolution part II

In the April issue of *EQ*, we reported on a burgeoning trend in the audio production trenches: The use of all-in-one "studio-in-a-box" products by professionals, under professional circumstances, to create commercially released productions.

A "studio-in-a-box," by our definition, is a self-contained unit comprising the necessary components for recording, editing, processing, and mixing — and, increasingly, burning master CDs — for an entire audio production. These all-in-one products continue to evolve, offering ever-greater power and capability. It truly has gotten to the point where, in many cases, you can use one to replace an entire room full of gear, without compromising the quality of the audio you produce — plus they're much more portable than a room full of gear!

Since the April issue, we've come across a number of additional pros that are using studio-in-a-box products either as their primary recording solution, or as a supplement to a traditional studio rig. Whether they're songwriting, recording music for CDs, or performing other tasks, these pros have found that a studio-in-a-box offers a very viable solution for audio production.

—Mitch Gallagher

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Get A Grip On It

After numerous critically acclaimed albums, honors that include being voted Best Acoustic Fingerstyle Guitarist (four times) by the readers of *Guitar Player*, and Guitarist of the Decade by *Guitarist Magazine*, tours with artists such as Eric Johnson and Steve Vai, and other endeavors ranging from photography to multimedia to National Public Radio commentator, British fretboard phenom Adrian Legg is adding "engineer/producer" to his creative palette. His new axe of choice? The TASCAM 788.

Legg is busy recording *Coolnasnaghta and Other Stories*, the working title for an album slated to hit the shelves early next year. A relative newbie to audio engineering, he initially set out with two Apple G3 PowerBook laptops. "The Macs opened up several possibilities," says Legg, "but all proved to be complicated." He then switched to the 788 because of its price and ease of use. "It's a doddle, which is the whole point, really. I'm supposed to be a musician, not a tech-head. I haven't learned it fully — I found I was getting what I wanted quite quickly — and I can't find the manual anyway. If I get stuck, I'll just have to clear the room out.

"Right now, I'm trying everything myself. On the last few albums, [producer] Bobby Cochran was a priceless discipline. I've always been a live player and a bluffer, so ears that could catch me out were invaluable."

Legg's Ovation guitar is sent to the 788 via its built-in piezo pickup through an L.R. Baggs Para Acoustic DI. He also employs an Alesis NanoSynth, Roland JV-880 and R-8M, and a Roland GR-33 that he takes on the road, but hasn't recorded yet.

On the effects front, he has a Roland SRV-3030D reverb, Alesis NanoVerb, and "a *big* junk box full of elderly and interesting toys, mostly stomp boxes I use on the guitar." However, Legg makes good use of the 788's internal processing. "I use the reverb — it's fine — and I use the EQ quite a lot on the guitar, trying to get away from the basic piezo tone and fatten it up a bit. I've found myself dipping 4k and lifting at 800 Hz, and it might become a habit." Legg says he's happy with the sound he gets from the 788. "I don't have any problems with coloration from it, and have plenty of time to experiment without running up a vast, unpayable bill."

The beautiful guitar tracks are made more impressive when Legg explains he records only at 16-bit resolution. "I come from the days of steam and analog. I have no intention of editing waveforms or buying more and even bigger-capacity drives."

"I tend not to use the virtual tracks," continues Legg, "I've found that stitching and repairing can take so much time and often produces such phoney results that it's actually better to take a day off and simply come back and play it right."

In addition, the artist uses what could kindly be described as a grassroots monitoring strategy. "My monitoring is a mess at the moment, so I do a lot of test mixes to CD or DAT to cross-check stuff on the lounge hi-fi. It's a Goodmans MaxAmp with Maxim 2 speakers...mercilessly clear, and the speakers are bolted to the wall on either side of the fireplace."

Legg mixes from the 788 into an Apple G3 PowerBook digitally via a Digigram VXpocket interface, and uses Felt Tip Software's Sound Studio to create the final AIFF.

When asked how the 788 has influenced the way he writes and approaches his music, Legg responds, "I don't think it's changed a lot. Before I headed off to the studio prior to getting [the 788], I had most of what I was going to do in my head already. I still go for a walk with a metronome plugged into my ear to work out choruses/turnarounds and so on. Before the metronome, I used to get home with a new bit in the wrong tempo. What a bummer."

For more on Adrian Legg's music, as well as photos, tech advice, and other curiosities, pay a visit to www.adrianlegg.com.

—Marvin Sanders

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CIRCLE 61 ON INFO CARD

'Shedding In The Digital Age

It's a warm summer evening in Nashville and strains of Merle Haggard, Lynyrd Skynyrd, and George Jones drift from an otherwise unremarkable self-storage lot. It could be the night watchman passing time with old favorites, but, more likely, you're hearing the members of SaddleTramp kick up a fresh blend of original southern rock and 100-proof country in their converted 20- x 20-foot shed. A TASCAM 788 dutifully captures every bend, growl, and backbeat for the band.

SaddleTramp features Mike Sutterfield on vocals and guitars, brothers Brent and Wes McBride on guitars (sons of famed songwriter Jim McBride), Jeff Matthews on drums, and Darrell Young on bass, who's also the group's designated 788 guru and engineer.

You might wonder, in a town with studios on every corner, why does the group track and mix on a digital Portastudio? "I mainly got it because I wanted something better than a little cassette four-track — or the pain I was going through with computers — to demo songs," says Young. "Man, within a month, I was amazed at not only the learning curve being so small, but also at how this thing sounds."

The band's rent-a-shack may not have all the amenities and state-of-the-art equipment of your typical Studio A, but it's a cost-effective alternative to leasing rehearsal space at a pro facility or bouncing around from house to house. The added advantage is they can leave their gear set up and ready to record.

SaddleTramp's first experiments with the 788 were completely live except for vocals, with drums miked and submixed to stereo, three miked guitar amps, and a miked bass cabinet filling up the 788's six analog inputs. Young recalls, "The first song we did, a cover of 'Driving My Life Away,' was done that way. But it's a 20 x 20 room with aluminum doors, and you can't get a really big live sound out of there. After that we recorded and submixed the drums directly on the 788 then tracked everything else, and you can definitely hear a difference."

Young uses either an AKG D112 or uncapped Shure SM58 on the kick, Shure SM57's on the snare and toms, and a Røde NT1 and Audio-Technica ATM33a for overheads. Though he's done his share of miking the guitarists' various Marshall and Fender amps, a lot of the electric tracks are now taken straight through a Line 6 Pod into the 788. Acoustic guitars are miked with the Røde and A-T condensers run through ART Tube MP's, and Young's bass sound is a combination of miking his Ampeg cabinet and taking a direct out from his Dave Eden Traveler rig. He also uses the Røde and A-T mics through the Tube MP for vocals.

All recording is done at 24-bit resolution, and Young finds the 788's built-in EQ, compression, and other effects provide everything he needs for mixing. Though having only eight playback tracks could be seen by some as limiting, Darrel makes good use of the unit's 250 virtual tracks to submix. He sees his "studio in a box" as a huge step up from what he had been using previously. "The difference between the 788 and the old analog four-tracks is you can record, record, record to your heart's content and you don't start distorting." Sessions are backed up and archived to a TASCAM CD-R drive.

When it comes to editing or comping takes together, Young is a purist. "Whether we're doing vocals or a guitar part or whatever, I try to just get it all on one track. To me, doing two or three tracks of the same thing and then trying to pick the best one would be way too much work for the benefit." And when it comes to using MIDI automation, Darrel is equally purist, preferring to perform his mixes using the tried and true "hands on" approach. "Ever since I got the 788, I've completely weaned myself off computer stuff. I'd rather sit here and move faders, and if I mess up just start over."

To learn more about SaddleTramp and their music, pay a visit to www.saddletramp.net.

—Marvin Sanders

World Radio History

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CIRCLE 16 ON INFO CARD

CIRCLE 12 ON INFO CARD

A Mouth At The Office

Following his attendance at the Yamaha Songwriter's Technology Forum in July of 2001, award-winning singer/songwriter/comedian Gary Chapman received a Yamaha AW4416 hard disk recorder. Soon after returning to Nashville, Chapman opened the box in the office of his home. He then confesses to have rarely left the room for a month — frantically writing, recording, and mixing an entire album on just the AW4416.

Now, Chapman's fans are rapidly purchasing the prerelease *Circles and Seasons* on www.garychapman.com (the in-store release is slated for February). After a whirlwind of creative activity, this acclaimed veteran of the country and contemporary Christian music charts still has a grin on his face.

EQ: What kind of rig were you using before you came to the Yamaha AW4416?

Gary Chapman: Well, actually, I have a great studio 100 yards from my house. I just finished a record, and I never walked in the studio until I was ready to mix. I did the entire record in my office. It will be on Planet 24-7, which is a new label that I've started that's distributed by Sony. I had some ideas that I wanted to get down. I hate to own things that I can't operate — it drives me nuts. So, I figured I'd kill a few birds with one manual. [*Laughs.*]

What kind of outboard gear did you use?

In the actual recording, nothing. It does not sound by any stretch of the imagination like I sat here in this office and recorded every single note.

How about guitar processing?

For processing the guitar, I used the internal stuff. I tell you what, there are some great amp simulators in there. There is some stuff that chomps.

What kind of microphone(s) did you use?

On my voice there is a [Milab] VIP50.

Did you have any trouble learning to use the recorder?

Absolutely none whatsoever. I am not really illiterate, but I have always hired an engineer, and just kind of sat back and observed. I have not, in a solo sense, put my hands on the knobs all that much.

You mixed on the AW4416, and then mastered in a studio?

Yes...you can master on this thing, but, because it was a commercially released project, I'm pretty comfortable with Hank down at MasterMix (Hank Williams — not the singer — the great mastering engineer). I just took the machine down [to him]. I literally stuck the machine in the back of my Yukon and walked in with it, plugged it in, and it was golden.

What are some of the main benefits of the AW4416?

I think that the biggest one for me is the ease-of-use. I think that the auto-mix function is great — the scene memory and the ability to easily get from one place to another. That's what usually makes me hate a piece of gear — if I can't get from A to L pretty quickly; I am like, "Ah, forget it." I'll move on to another thought. That is just not the case here. You can quickly get from one point to another.

How many gigs does your AW4416 have?

Mine has 12, which involved a considerable amount of optimizing along the way. I would defrag occasionally. It would tend to slow down because it remembers so many of the redo's and undo's and a lot of big things are chunking up memory in large bites. You have to defrag it with some regularity, but you just make that the last thing that you do, and you're done. Wake up and hit it again.

Do you wish that you had an AW4416 earlier in your career?

Oh my gosh, [*laughs*] I could have owned this town if I had one of these things ten years ago.

—Britt Strickland

World Radio History

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CIRCLE 10 ON INFO CARD

Getting In The Spirit

What is it they say about the best-laid plans of mice and men? Michael McDonald's recent release, *In The Spirit: A Christmas Album,* may have started life as a two-inch analog recording, but when a Yamaha AW4416 arrived at producer Mark Harris's studio, everything changed.

"The timing of the UPS truck was perfect," laughs Harris, "because we had just begun to run out of space to do overdubs and additional tracking. Our first thought was to use the 4416 to just do safeties. But then, after playing the safeties back and doing careful A/B listening comparisons, we found that we didn't really lose anything in going from analog tape to digital. By actually recording in analog first, then going to digital, that gave us a cool little medium. So, as opposed to doing all these transfers and making slaves, we said, 'You know what, let's just go ahead and start recording in the 4416.'"

Clearly the gamble paid off. "The quality of sound was so rich," Harris enthuses, "we decided to use it to do overdubs, including some of Michael's lead vocals." McDonald's leads were recorded with an Audio-Technica 4060 microphone running through Amek/Neve 1063 and 9098 preamps routed directly to the 4416.

The AW4416 was also utilized to record backing vocals (including a duet sung by McDonald and guest artist James Ingram) and keyboard parts (played by Harris), as well as percussion overdubs by ace player Crystal Taliefero (Billy Joel, Bruce Springsteen). Onboard compression was used during recording, as were the built-in reverb algorithms. "This record recalls the Michael McDonald of the Doobie Brothers era," Harris explains, "so I was going for that classic sound."

As Harris points out, it's the audio quality of any recording device that's paramount. "I've got to commend Yamaha and their staff of design engineers for really spending the time on getting the sound of the 4416 right. There are a lot of really great machines out now that sound cool, so much so that it can be tough to make decisions — not only between analog and digital, but even between the array of machines that are out there.

"I'm not from the '70s — I was a kid back then," he continues. "But you learn to appreciate the warmth that analog gives, and in listening back to the transfers we did to the 4416, we didn't lose that warmth or any of the elements of the tape sound coming back — it was really impressive. My personal opinion is that it was just as good as the two-inch analog; I certainly wouldn't choose one over the other."

Given his background with Yamaha products, Harris found the AW4416 to be exceptionally user-friendly. "If you pull up any Yamaha keyboard and hit an Edit button, you know that, following this edit feature, is usually going to be that choice. You're going to find that same thought process in their outboard gear, so I had no problems getting around the 4416. Basically, if you get used to one piece of equipment, you kind of know the mindset of the engineers."

Another role played by the AW4416 was to allow McDonald and Harris to listen to reference playbacks and rehearse mix moves. "I love the automation feature and the recall," Harris says. "You always have the ability to store your mixes internally — it's so quick, and you don't lose anything."

Since a Pro Tools technician had already been contracted prior to the arrival of the 4416, final mixes of *In The Spirit* were done inside the Digidesign DAW, with all transfers of data from the 4416 made in the digital domain. "But I'll tell you what — at the end of the session, I found the 4416 to be so cool that I wish we had two. If we had, we would have recorded — and possibly even mixed — that whole record on them!"

—Howard Massey

World Radio History

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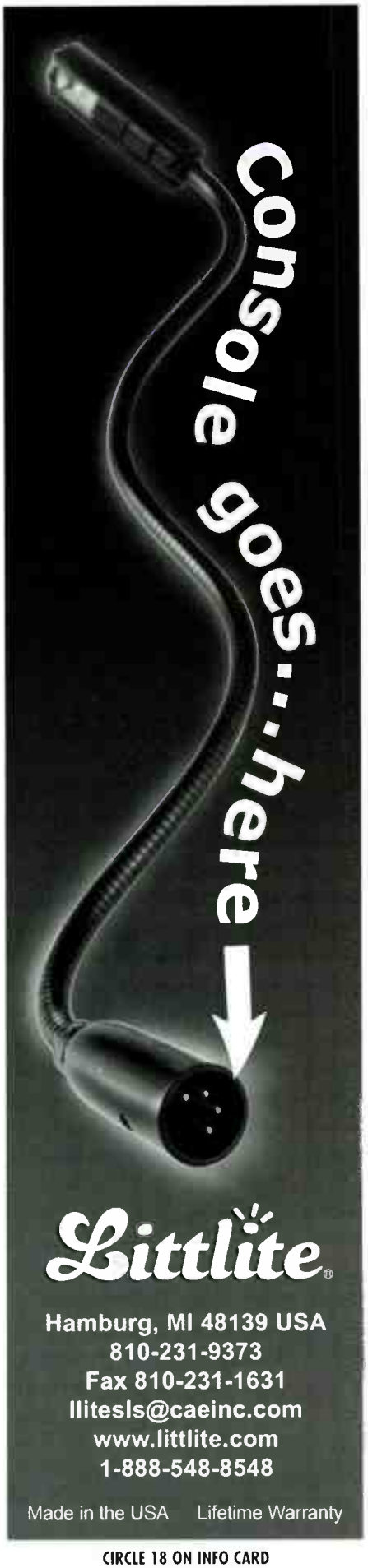


CIRCLE 18 ON INFO CARD

John Entwistle Going Mobile

John Entwistle, the celebrated bass player, composer, and sometime vocalist with The Who and the John Entwistle Band, spent many years trying to find the right technology to meet his songwriting, as well as mobile recording, needs. Steve Luongo, drummer in the John Entwistle Band and Entwistle's business partner, suggested the Korg D1600 as a solution.

EQ: How did your use of the Korg D1600 begin?

Steve Luongo: John rang me up because we needed to do some songwriting together, and he needed to do some on his own. We were going to set out on the *Abbey Road* summer tour. So he was looking for the best way to get thoughts down and store them. We did like 31 shows in 35 days. We found a studio that we could take out with us, a full-blown studio. Basically, it's the unit, a couple of wires, and a set of headphones, and you are in big business. We fit it perfectly with the packing of the box in a three-suiter Halliburton suitcase.

Any challenges in jumping into recording with the D1600?

John: No, not really. I find that if I have a few weeks with a recording tool, I am okay. But if I have to read 20 different manuals for 20 different machines, that can drive you crazy.

How did you record your bass tracks?

John: Basically, I plug straight in. You go direct for the bottom end and you plug in some kind of processor for the top end.

Steve: When I started recording on it, my natural instinct was to use a harmonizer and use this and that, until I got to the part of the manual covering assignable effects. There are all kinds of amp modeling and other stuff in there. You get an idea down as fast as possible.

John: The whole thing about writing is you have to write fast, otherwise you lose the actual fervor of the idea.

How did you find the storage space on the D1600, were the 20 GB sufficient?

Steve: We never ran it out. With the CD, I think that is the most important to us, and it is why we are so anxious to get the unit in England — to be able to go back and forth with just the information on CD. It used to be two-inch tapes, and then it was DATs — those were horrible to bring things back and forth. Now, this is pretty cool because you can make as many backup copies as you want.

What do think is the best benefit of using the D1600?

John: Portability and the fact that it's self-contained. That's very important. If you get the same effect out of a light plane, why get a jumbo jet? Korg and I have always got on well with one another, and they seem to be the best one to use.

How about limitations with the unit?

Steve: From a design standpoint, I might like to see some bussing for extra headphones and that kind of stuff. That is really about the only limitation as a writing tool.

Do you think that you might use some of the tracks on an album, or possibly port takes over to your studio for further editing?

John: If there is something on the demo that you don't think you are going to be able to re-create, then you can use the track from the demo because of the high recording quality. I am all in favor of that. You get magic sounds; sometimes something happens that you are never going to get again.

Steve: So you want the best possible medium so that you can capture it as clean as possible.

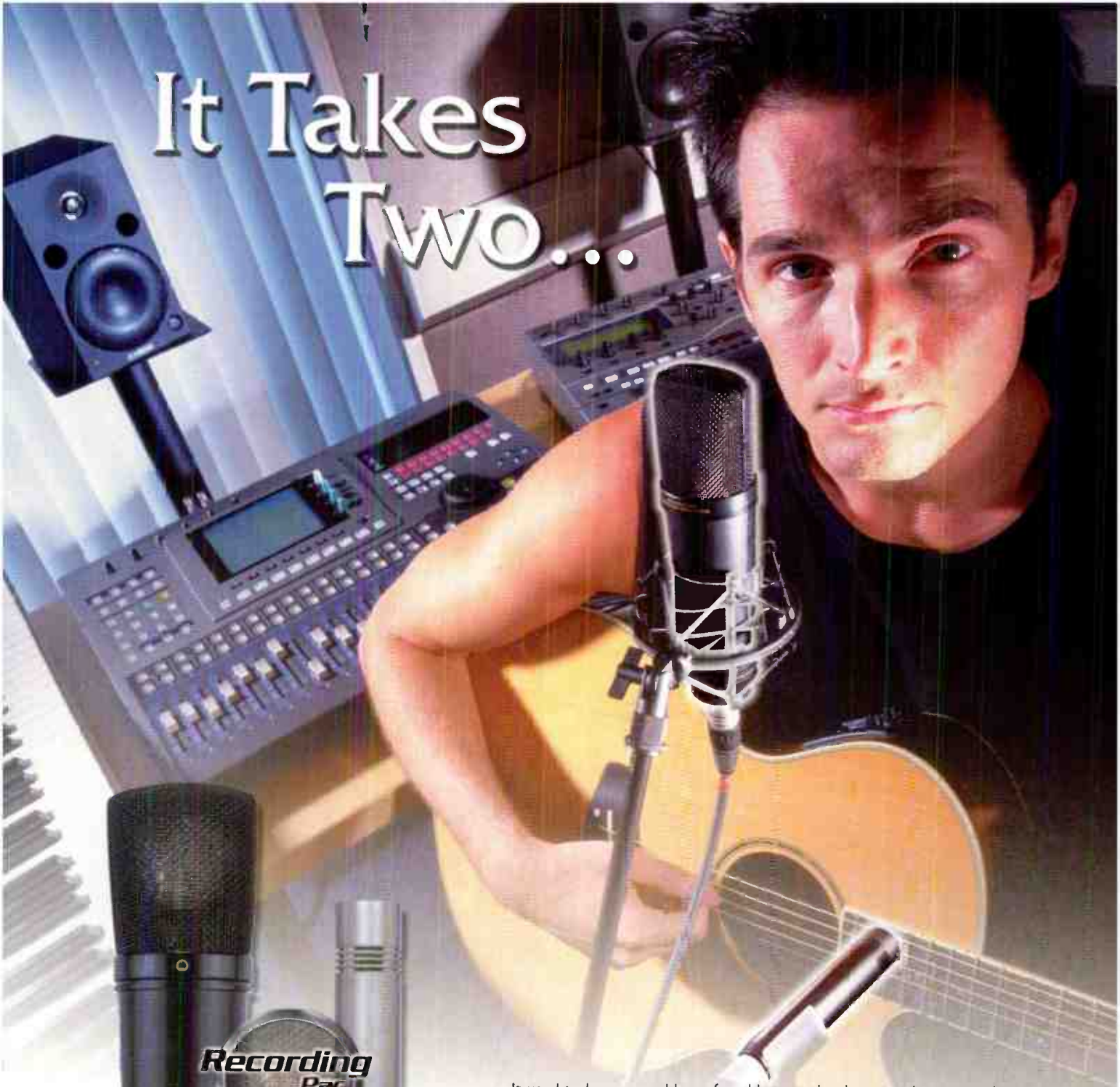
Any thoughts on where the material being written on the D1600 will be used?

John: I am thinking about having my sofa covered in it. [*Laughs.*] It goes in all directions — if it's suitable for the Who, suitable for us, if it's suitable for somebody else, that's where it will wind up.

—Britt Strickland

World Radio History

It Takes Two...



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The Tools They Use

In the previous pages, you've learned how five industry professionals are putting their self-contained studios to work on their audio productions. Here's a brief look at the Studio-In-A-Box units they're using. ***—Mitch Gallagher***

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MODEL: D1600
TRACKS: 128 (16 x 8 virtual)
BUILT-IN EFFECTS: 8 insert, 2 master, 1 final
MIXER INPUTS: 24
CD BURNING: optional internal CD-R/CD-RW, external SCSI
PRICE: $2,000
CONTACT: www.korg.com

MANUFACTURER: TASCAM
MODEL: 788
TRACKS: 8, 250 virtual
BUILT-IN EFFECTS: 2 assignable processors
MIXER INPUTS: 18
CD BURNING: external SCSI
PRICE: $1,149
CONTACT: www.tascam.com

MANUFACTURER: Yamaha
MODEL: AW4416
TRACKS: 130 (16 x 8 virtual + stereo)
BUILT-IN EFFECTS: 2 assignable processors
MIXER INPUTS: 44
CD BURNING: internal CD-RW, external SCSI
PRICE: $3,799
CONTACT: www.yamaha.com/proaudio or www.aw4416.com

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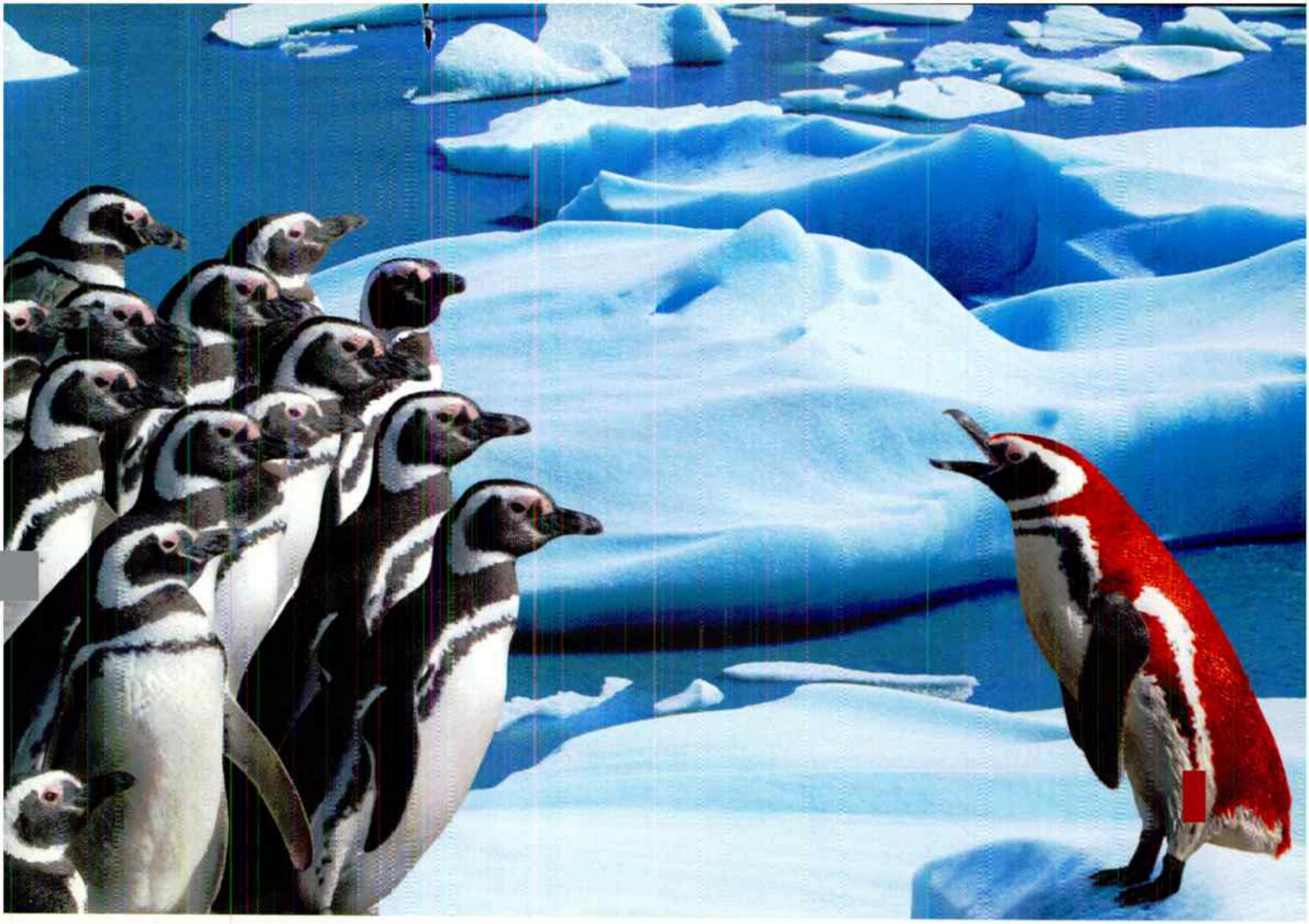

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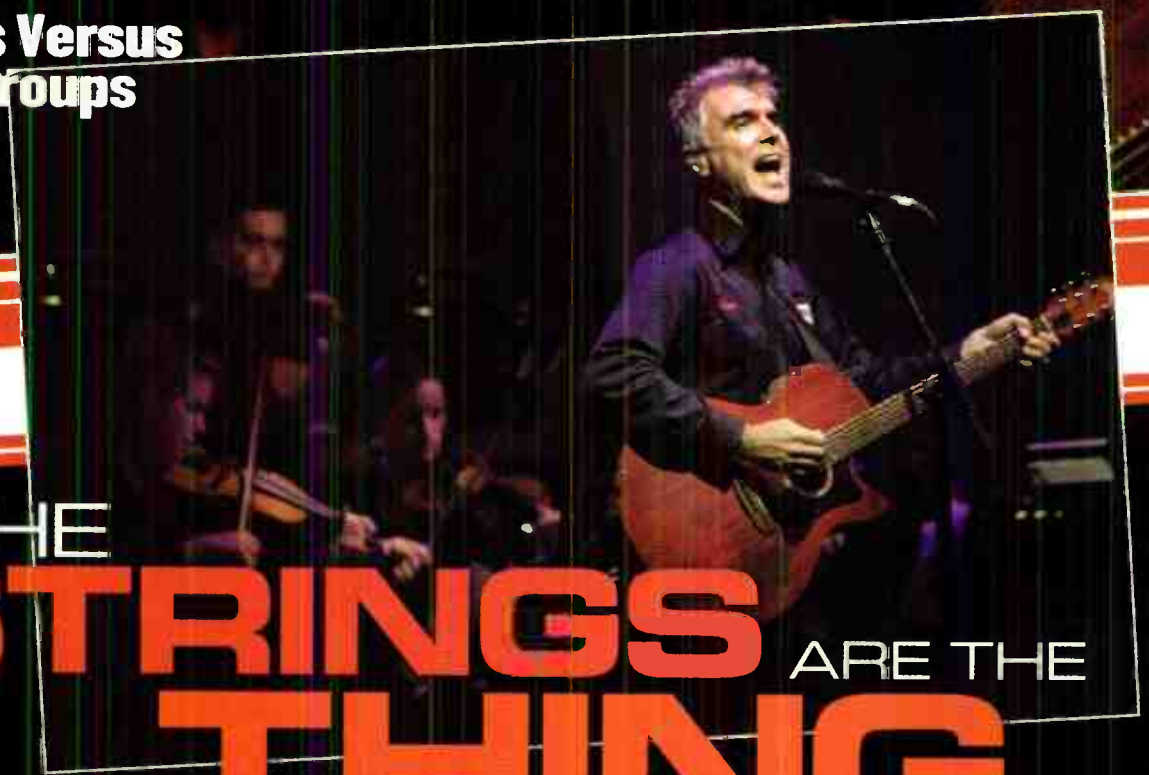

THE STRINGS ARE THE THING

David Byrne's engineer faces challenges touring with an unconventional ensemble

World Radio History

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THE BASICS: Digital processor

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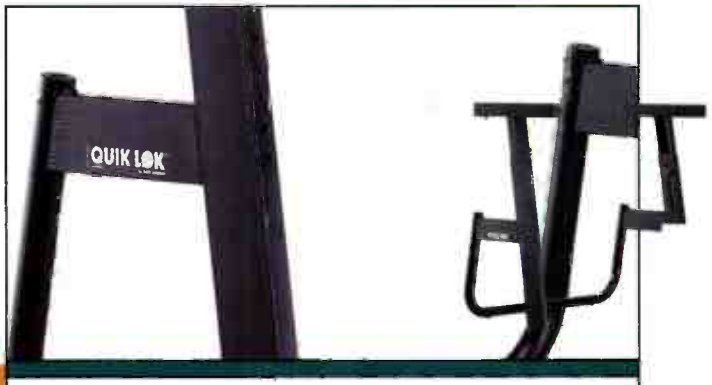
CONTACT: QSC Audio at **www.qscaudio.com**. Circle *EQ* free lit. #116.



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THE BASICS: Keyboard stands

THE DETAILS: It's never easy to mix the sound of a keyboardist's rig falling off of its flimsy stand. With this in mind, the new Quik-Lok M-91 Monolith Keyboard Structure should give the keyboard on the stage stability with its "blend of form, functionality, and lightweight portability." The M-91 is designed to handle up to 200 pounds of pressure.

CONTACT: Quik-Lok Systems at **www.quiklok.com**. Circle *EQ* free lit. #117.

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THE BASICS: The world's smallest bodypack transmitter

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THE BASICS: Four-bus mixers

THE DETAILS: Peavey is expanding their RQ series of mixers with the new RQ 4324C and RQ 4332C. Both of these four-bus units (with 24 channels for the 4324C and 32 channels for the 4332C) offer sweepable mid-frequency as well as assignable subgroups, six auxiliary sends, and two fully assignable stereo returns. Users can assign each channel to left, right, or a separate mono bus.

CONTACT: Peavey Electronics at **www.peavey.com**. Circle *EQ* free lit. #119.

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World Radio History

CIRCLE 20 ON INFO CARD

BY **STEVE LA CERRA**

SHURE ULX SERIES

Shure's ULX Series is a new line of UHF wireless transmitters and receivers with a twist. In addition to being tunable, the ULX Series features Automatic Frequency Selection — the ability to identify the open channels that are most suitable for trouble-free operation in any given location. Initial introductions include the ULX Standard and ULX Professional receivers. Both can be rack-mounted and feature Shure's proprietary Predictive Diversity for avoiding transmission dropouts. ULX systems operate in the UHF band between 556 and 865 MHz with up to 1,440 possible frequencies in 36 groups.

ULX receivers provide two scanning modes initiated from the front panel. Useful in situations where few wireless systems are being employed, channel scan searches for a single, clear frequency. Group scan (available on the ULX Professional receiver) is intended for situations where multiple ULX systems are simultaneously in use. During group scan, the receiver searches 10 different frequency groups, determines how many channels are available in each group, and then shows this information on the front panel, allowing the operator to select a group with the requisite number of clear channels. Shure has preprogrammed the groups with compatible frequencies for multi-system operation, providing simultaneous use of up to 40 ULX systems when both U.S. frequency bands are employed.

A front-panel, back-lit LCD shows signal strength, group and channel (with a reference to local TV channel number in the U.S.), and a "fuel" gauge for remote indication of transmitter battery life. LED meters show audio transmission strength and (on the ULX Professional) RF reception strength. Rear-panel features include dual antenna receptacles, a locking connector for the DC power supply, and balanced XLR and unbalanced 1/4-inch audio outputs. The ULX Professional receiver provides a security lockout for channel select or volume adjust.

ULX systems may be purchased with a variety of transmitters. The ULX2 handheld transmitter is available with Shure SM58, SM87, Beta 58A, Beta 87A, and Beta 87C transducers; an optional sleeve covers all operating controls, keeping them safe from curious fingers. The ULX1 bodypack transmitter features a miniature four-pin audio connector, enabling use with a variety of input devices including the WA302 instrument cable for guitar or bass, Beta 98H/C clip-on cardioid horn mic, the new Beta 53 head-worn, and WL51 cardioid lavalier or WL50 omnidirectional lavalier mics. Transmission range for both transmitters is conservatively estimated at 300 feet under normal conditions.

Several new accessories from Shure are available to enhance ULX operation, including the UA844 antenna/power distribution amplifier, which enables up to four ULX systems to be used with a single pair of antennae. Also available are the new wide-band UA870WB active directional antenna and the UA830WB in-line antenna amplifier, both of which operate across the entire 500 to 900 MHz range. ■

SHURE ULX SERIES	FIRST LOOK
□ **WHAT IS IT?**	A tunable wireless system that's smart enough to figure out which channels are clear in a given geographic location.
□ **WHO NEEDS IT?**	Touring sound companies and musicians, houses of worship, conference venues.
□ **WHY IS IT A BIG DEAL?**	ULX Series receivers feature Automatic Frequency Scan, allowing them to analyze the RF activity in an area and identify channels that may be used without interference.
□ **SHIPPING:**	First quarter of 2002
□ **PRICE:**	$1,000 to $3,000, depending on configuration
□ **CONTACT:**	For more information, contact Shure Incorporated at 847-866-2200 or visit www.shure.com. Circle *EQ* free lit. #120.

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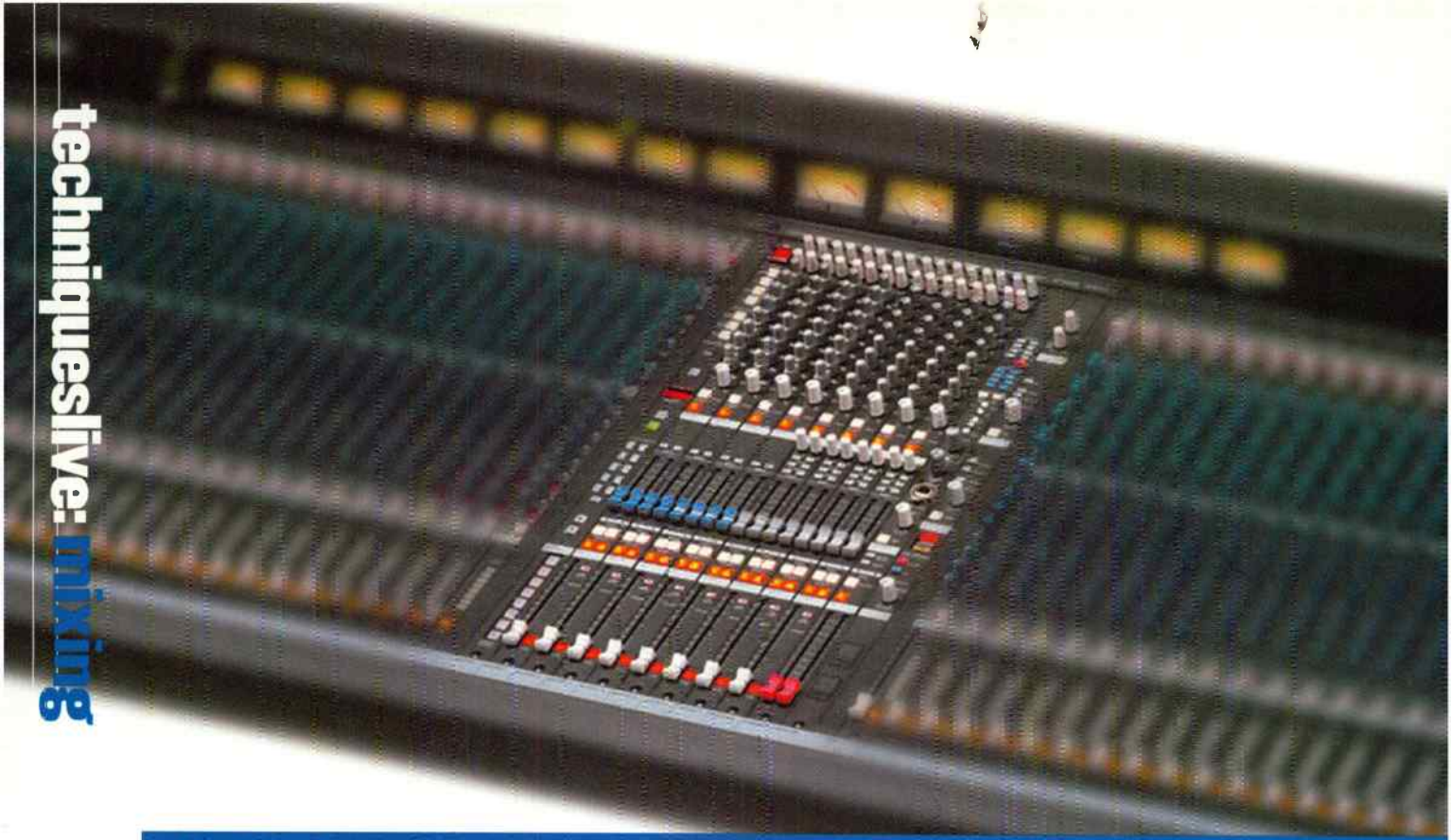

BY STEVE LA CERRA

GROUP THERAPY

VCA's versus audio groups

Audio subgroup and VCA group faders on live mixing consoles seem to be a constant source of confusion for many engineers. Let's take a look at the differences and applications of each.

AUDIO SUBGROUPS

Audio subgroup faders provide an audio path for an input channel to the L/R mix bus. Usually, a channel gets to the mix bus by use of an assign button labeled (oddly enough) "L/R." You hit the assign button, and the channel is dumped straight into the L/R mix. We've all mixed this way and run into the same problem: When you want to make a group of channels louder or softer, you have to move a bunch of faders while attempting to keep them precisely balanced to each other. Not an easy thing to do.

Audio subgroups alleviate this problem. In addition to the "L/R" assign button on each input channel, many consoles provide additional assign buttons for "1/2," "3/4," etc., as well as a set of corresponding group faders. When you press "1/2" on a channel, that channel is routed to audio subgroups 1 and 2 (the channel pan knob moves the signal between them). By assigning all channels from a big drum kit to an audio subgroup, you can make the entire kit louder or softer while maintaining the balance between the various mics.

Usually a subgroup fader will have a pan control, a L/R assign button, a mute switch, and an insert patch. You *must* assign the subgroup to L/R or you won't hear any of the channels in that group. Subgroups are pan-able, just like a channel, so you'll almost always need two subgroups to create a stereo group. (There are a few consoles that provide a single fader for a stereo subgroup, but they're rare.) Of course, you can assign an entire drum kit to one subgroup, in which case the drums will be heard in mono. A single subgroup would probably be more appropriate for a multichannel bass signal.

Creating a series of subgroups for drums, bass, guitars, keyboards, vocals, and effects enables control over more signals with less fingers; it also facilitates muting of many channels with minimal button pushes (effects for example). Keep in mind that a channel can be routed into a subgroup and the L/R mix at the same time. This is something to watch out for because it diminishes the effectiveness of subgrouping.

I'M RUNNING OUT OF COMPRESSORS...

Audio subgroups come in handy when you have limited outboard gear: What if you have four background vocal channels, and one compressor? Assign all of the backing vocals to a single audio subgroup, and patch the compressor on

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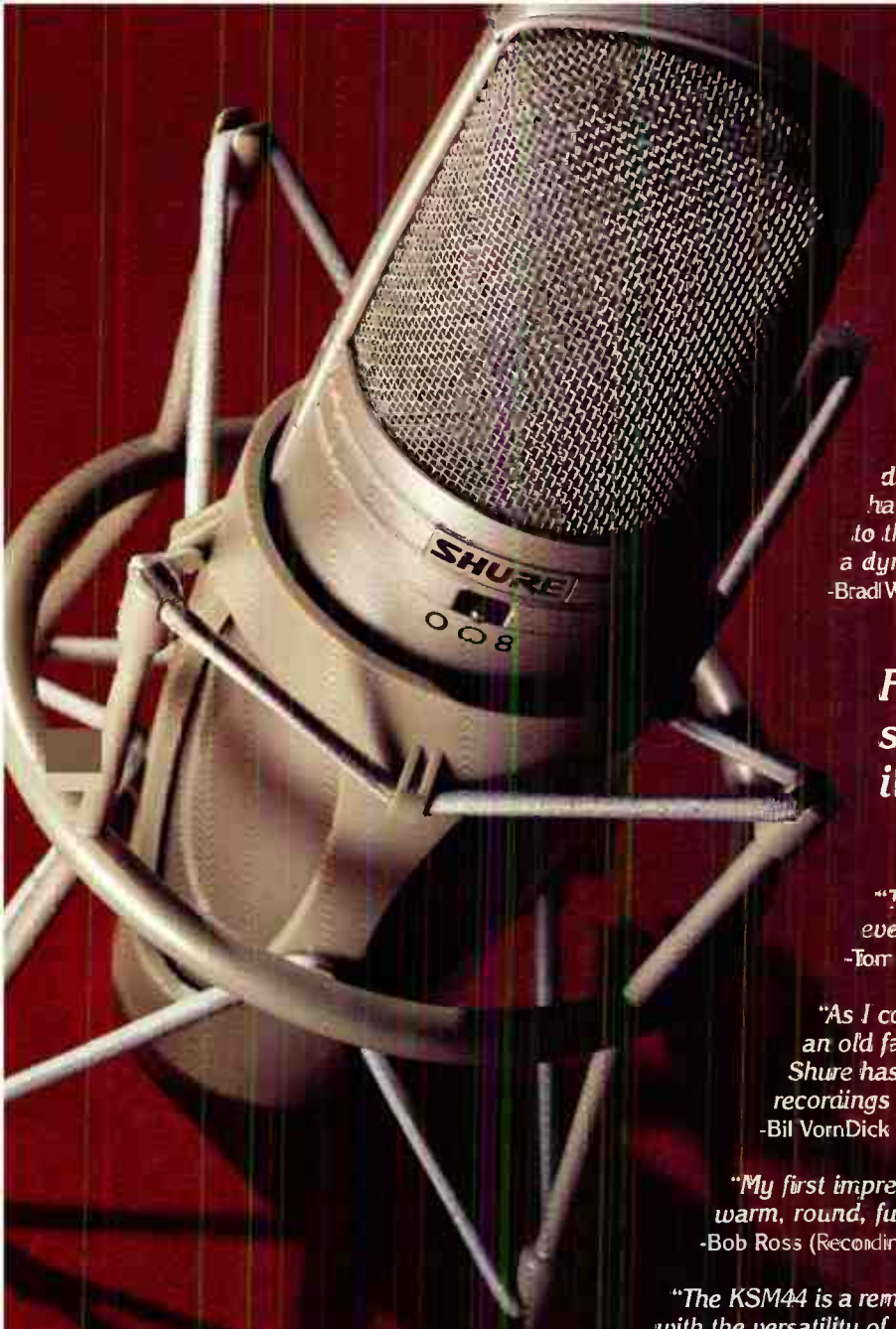

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-Eddie Kramer (Jimi Hendrix, Led Zeppelin, Kiss, the Beatles, ...)

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-Brad Wood (Smashing Pumpkins, Liz Phair, Better Than Ezra, ...)

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"My first impressions of the KSM44 were warm, round, full – dare I say it? Fat!"
-Bob Ross (Recording Magazine)

"The KSM44 is a remarkable achievement. I am especially impressed with the versatility of this microphone and have yet to find its limits."
-Steve Albini (Nirvana, Page and Plant, PJ Harvey, ...)

"I was given the KSM44 prototype early-on, not knowing its intended purpose - so I tried it on everything. Guess what, it worked on everything!"
-Chuck Ainlay (Trisha Yearwood, Mark Knopfler, George Strait, ...)

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World Radio History

GROUP HERAPY

the insert of the audio subgroup. All of the backing vocal mics are now compressed and under the control of a single fader (not a bad deal). Some engineers do this when there are a lot of tom mics and not enough gates. Assign the toms to a pair of audio subgroups for stereo, and insert gates on the subgroups. Now all the toms are gated using two channels of gate — but be careful of how you set the gates so as not to chop off any tom hits from the smaller drums.

VCA GROUPS

A VCA group fader does *not* provide an audio path to the mix; it is literally a remote control over a channel fader (this is the biggest source of confusion regarding VCAs). Consoles with VCAs usually provide two independent sets of assign buttons per channel: one set selects the audio path and the other selects the VCA for remote control. After you assign a channel to a VCA, you still must assign it to an audio path or you will not hear anything. VCA group faders don't have a pan knob because you can't pan a VCA — you pan *the channel controlled by the VCA.*

"A VCA group fader does *not* provide an audio path to the mix; it is literally a remote control over a channel fader"

Although most live consoles feature rear-panel output jacks for each audio subgroup (for, say, patching into a multitrack recorder), you will *not* find outputs for each VCA group.

VCAs allow you to reduce the mix to an even smaller number of faders. That 10-channel drum kit can be controlled in stereo with one VCA fader. Ditto for a multichannel stereo keyboard rig. Complex "remote control" of input channels becomes possible with multiple VCAs (ineffective on audio subgroups). For example, some engineers create separate VCA groups for drums, bass, guitar, and keys, and then also assign all of these channels to an additional VCA fader; this additional VCA serves as an overall level control for the entire band minus the vocals. VCAs operate with sort of a "lowest common denominator" approach — so if you have the "band" VCA fader turned off or pulled all the way down — you will hear nothing regardless of where the other VCA faders are set.

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CIRCLE 63 ON INFO CARD

World Radio History

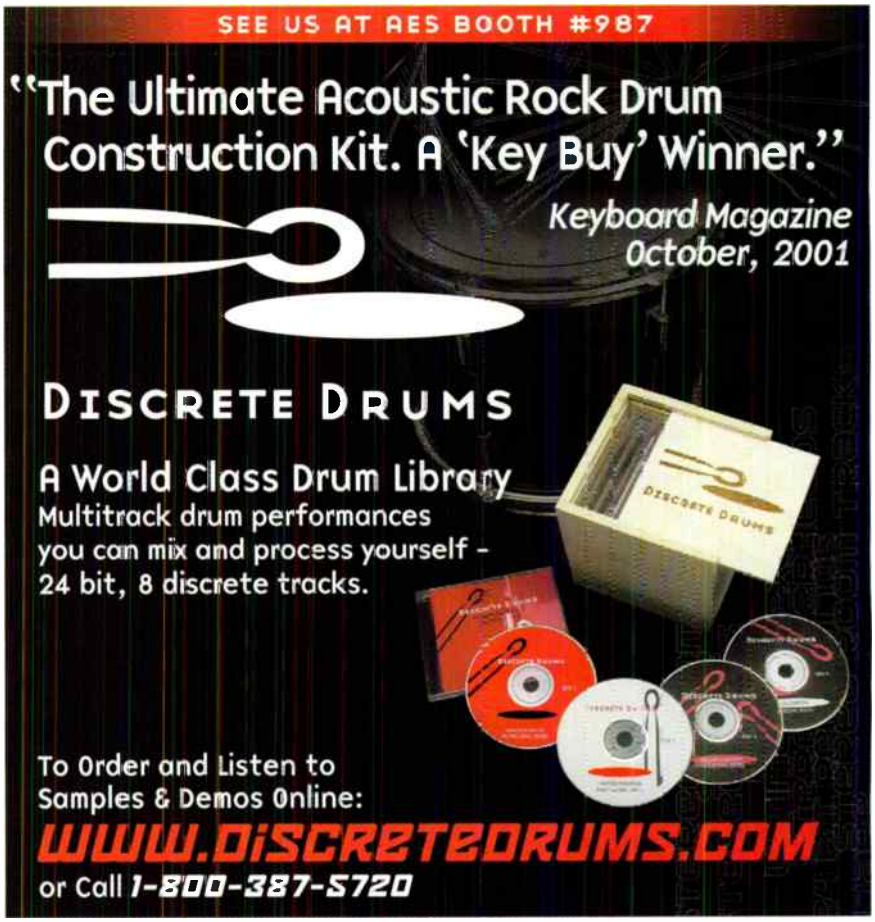
I'M LOSING MY BALANCE

There are times when audio subgroups just don't do the trick. Let's say you have separate audio subgroups for vocals and for vocal effects. Let's also assume that the effect sends are postfader. When you ride a vocal channel fader up or down, the level of the vocal reverb changes with the fader — maintaining the balance between the dry vocal and the reverb. Fine. But if you bring the vocal *group* up or down, the level of the reverb will *not* change — disturbing the balance between dry vocals and reverb. Even when you mute the vocal subgroup, you will still hear the reverb. You can assign the vocals and effects to the same subgroup, but then you have no easy way to mute the effects in-between songs when the lead singer does his/her schtick.

The solution here is a VCA group. When you assign a vocal channel to a VCA and move the VCA up or down, you are remote-controlling the channel fader — so aux send levels on the channel also change. If your vocal channels are assigned to a VCA group, moving the VCA fader up and down changes the level of the backing vocals and — due to the remote-control effect — also simultaneously changes the levels of background vocal effect sends. Now you are controlling several vocal channels plus their effects through a single fader.

A neat trick to try is assigning the drum channels to audio subgroups 1 and 2, and patching a stereo compressor across the group inserts. Assign the kick and snare channels to VCA 1, and the remainder of the kit to VCA 2. Moving VCA 1 and VCA 2 balances kick/snare against the rest of the kit. Raising or lowering subgroup faders 1 and 2 will simply make the entire kit louder or softer. But the cool thing is that — as you raise the VCA faders — you hit the compressor harder because the channel levels to audio subgroups 1 and 2 are being remote-controlled by the VCAs. And changing those levels causes your compressor to react differently. You can dial in the amount of compression you need using the VCAs and then adjust the overall level of the kit using the audio subgroup faders.

Steve La Cerra is currently attending group therapy. He can be reached via email at slacerra@cemedia.com.



CIRCLE 52 ON INFO CARD

CIRCLE 32 ON INFO CARD

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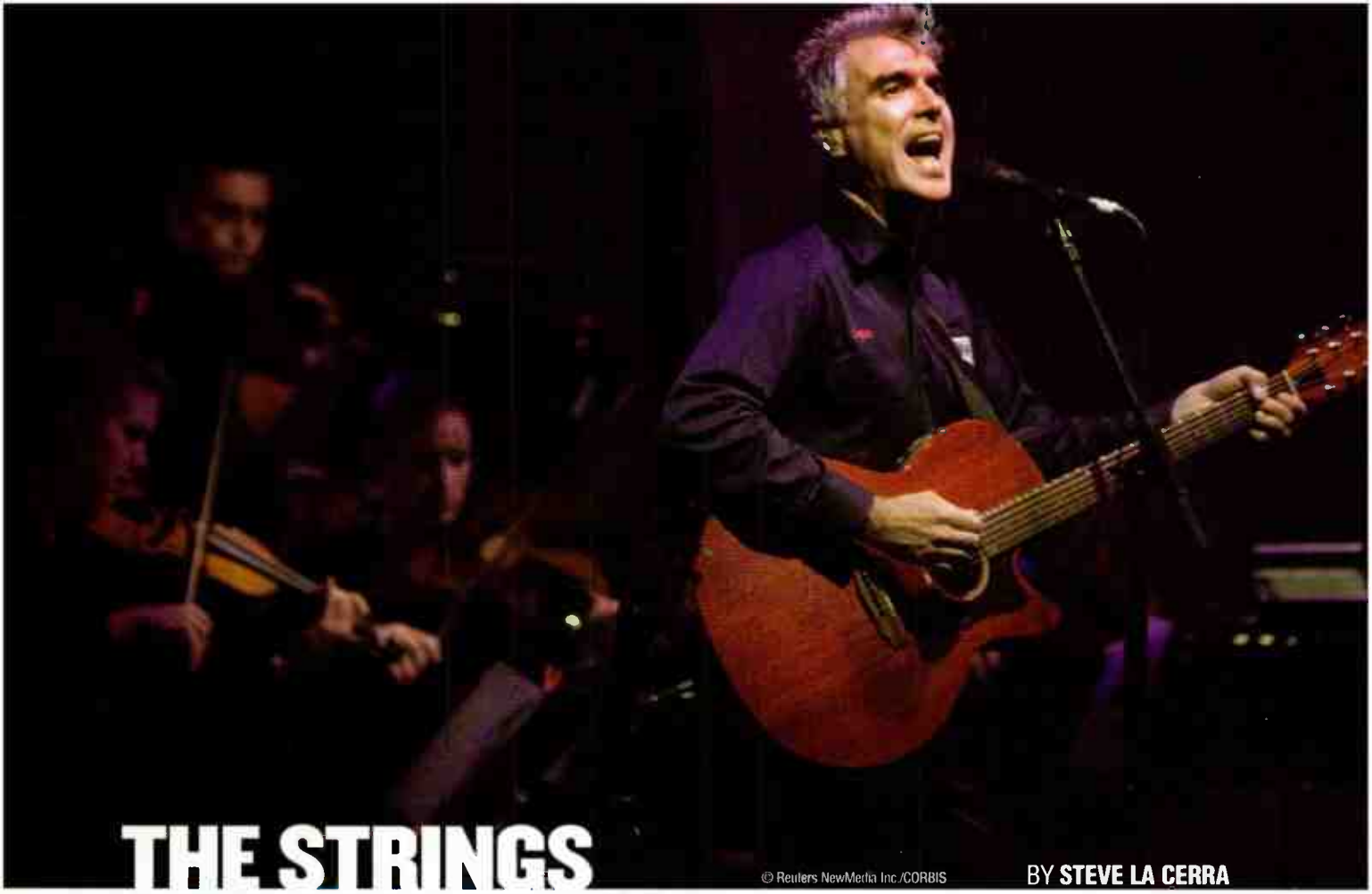

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THE STRINGS ARE THE THING

DAVID BYRNE'S ENGINEER FACES CHALLENGES TOURING WITH AN UNCONVENTIONAL ENSEMBLE

BY **STEVE LA CERRA**

On his most recent tour in support of the CD *Look Into The Eyeball* (EMD/Virgin), David Byrne's band included a string section supplementing the traditional rhythm section — a configuration that presented front-of-house engineer Terry Pearson with some interesting technical issues. Terry describes the tour as a "new format for me because I hadn't worked with acoustic strings before. The challenge was to get those strings up to rock volumes." Byrne's string section included three violins, a viola, and two celli. Each instrument was close-miked, initially with Shure MX185's for the European leg of the tour. "When we were in Europe," Pearson continues, "we had three different string sections for different regions in Europe. I was using Meyer Sound CP-10, five-band, stereo parametric EQs for outboard EQ: one unit for cello (one channel per cello), plus one side of a Klark-Teknik DN360 third-octave graphic for the group of three violins, and the other channel of the DN360 for the viola. Since we weren't carrying production, this gave me a lot more to work with for EQ'ing the sounds against feedback. When we came to the States, we employed a string section from Austin, TX, and the players carried their own mics. They used the AKG C418, a clip-on mic with a small arm that can be used to position the mic. From that point onward, it was much easier for me to deal with the strings because we had the consistency of the same string section, as well as the same microphones."

Generally, the C418's were mounted on the bridges of the instruments and pointed into the f-holes. Terry says that the degree of isolation from other instruments "varied depending upon the size of the stage. Eventually we placed a large piece of Plexiglas (about 6 x 5 feet) on the stage-left side of the drum riser where the strings were situated. Since the drums were the biggest offender in terms of leaking into the string mics, that one piece of Plexi helped quite a bit. We had a very strong drummer and I noticed that when he went after the hi-hat it would get a lot more splashy sounding than normal due to reflections off the Plexi. But, as far as the strings go, I couldn't hear any reflections."

Each of the C418's went to a separate channel on Terry's FOH console. Initially he tried "grouping the strings and patching compression across the group,

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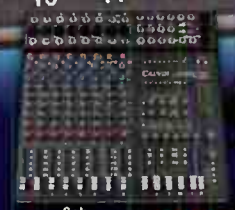

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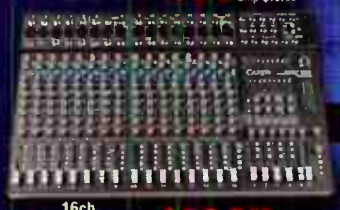

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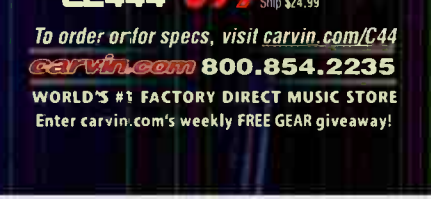

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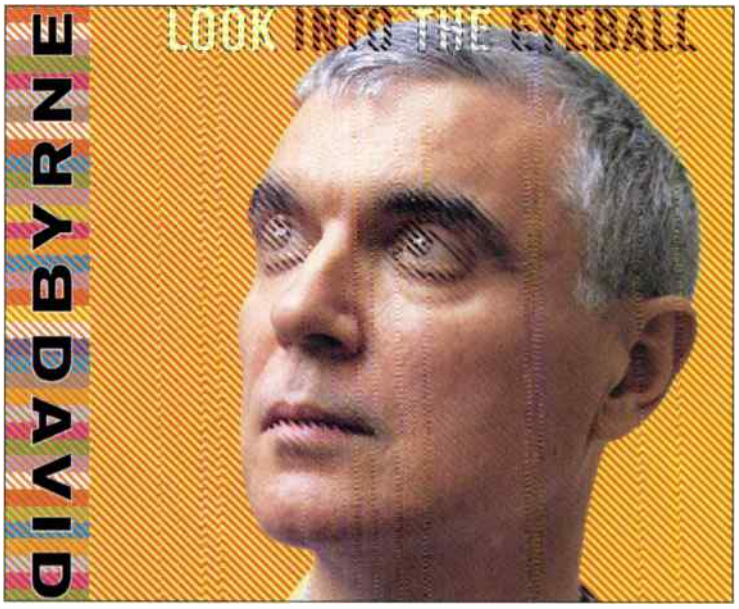
CIRCLE 72 ON INFO CARD

World Radio History

HE S RINGS ARE THE THING

but each of the players attacked his/her instrument differently — not to mention that each instrument was at a different volume — so the threshold varied greatly. I got the best results with separate compressors patched on the channel insert for each string mic. Most of the gear was provided in-house, and sometimes I'd get a [dbx] 166x or 1066 comp with a gate on it. I discovered that if I set the gate very lightly, then it would almost work as a ducker, catching the ends of notes and keeping everything solid and stable.

"EQ'ing the instruments was an area that constantly needed attention. Everyday I would flatten my outboard EQs to work with the room. I generally would high-pass the violins between 200 and 250 Hz, but the filtering didn't isolate that frequency area completely because 250 Hz was very resonant. In the upper mids, I'd have to get in around 3.5 kHz to 4 kHz to smooth out a bit of the brightness, especially with the violins. Obviously, the newer line arrays are lot smoother through the high end, so my EQ would varying depending upon the type of loudspeakers and upon how ambient and reflective the room was. A horn-loaded PA with a two-inch high-frequency driver can sound harsh, so I might cut a bit more in 3.5 to 4 kHz to get the warmth. On the U.S. tour, I got to know each of the instruments so — even though I'd be on a different console everyday — from day to day I could make small adjustments on the channel strips by sight and be close to the right sound.



David Byrne is touring to support his latest release, *Look Into The Eyeball*.

"There were several sections in the song arrangements where one of the violinists would not be playing and would lower the instrument below her waist. In some of the rooms we played, that would start a good roll in the area between 400 or 500 Hz. It happened a few times until I finally asked the player to keep the violin above the waist to prevent feedback. Another thing that was real helpful against feedback was phase reverse. In certain situations, I might put one cello out of phase with the other, or put the cello out of phase with the violins. And that would help me get more volume before feedback."

Although tight EQ'ing of the string mics allowed Terry to get the volume he needed, another problem came along with the deal. "Once I got the volume," he explains, "any kind of wind noise was clearly audible. Sometimes I'd hear the breath of the player coming through the microphone, so I'd have to re-orient the mic position to reduce the breath noise. Windscreens helped, but sometimes I couldn't eliminate it completely.

"There were a few sold out shows in smaller rooms where, once the room filled up, the temperature and humidity would go way up. I could definitely hear the difference in tonality. I find that, in that kind of heat and humidity, the high end is dampened a bit. Also, tuning was difficult because the strings would stretch more in the heat, and we

▶ continued on page 115

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Terry Pearson can be reached at Pearls7758@aol.com.

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Selects Sony Oxford

"We needed a console that is engineered for the future," states Dave Amlen, owner of Manhattan-based Sound on Sound Recording. To meet that need Amlen has installed a Sony Oxford digital console in Studio C.

L-R: Engineer Mark Partis, assistant engineer Bart Migal, recording artist David Clayton-Thomas, studio manager Chris Bubacz and producer Steve Guttman.

"Record labels are beginning to see the viability of surround sound and the Oxford is geared for 5.1 mixing," Amlen said. "It's a growing business for us, and we want to better serve our clients' needs. The Oxford sounds incredible. Sony really stands behind its products with impressively strong tech and sales support."

"We are pleased that a studio with Sound on Sound's pedigree has joined the expanding Oxford client family," comments Paul Foschino, marketing manager of professional audio products at Sony Electronics' Broadcast and Professional Company. "Dave Amlen is one of the industry's most respected studio owners. His choice of the Oxford speaks volumes for the console."

The OXF-R3 is a highly flexible, easy-to-operate digital recording console capable of delivering vast processing power. Oxfords are being used for a wide range of audio production applications including music production, film scoring, DVD soundtrack production and live broadcasts. Sony works closely with every Oxford client to optimize (and customize) individual console configurations.

Dreamhire Adds
Sony DMX-R100 and PCM-3348HR

Dreamhire, one of the world's largest professional audio rental companies, has purchased a Sony DMX-R100 digital console and a second PCM-3348HR digital audio multitrack recorder. The R100 will provide clients with a sophisticated and cost-effective mobile and/or studio recording console option. Both units were purchased to accommodate growing client demand reported Dreamhire vice president/general manager Chris Dunn.

"We are very committed to high-end Sony products," states Dunn. "The DMX-R100 has quickly built a reputation as an excellent board with a wonderful sound. As the first east coast rental operation to take delivery of the board, we plan to make it available in both our New York and Nashville locations. Our first DMX-R100 client is engineer Frank Filipetti, who is currently working on an upcoming album from hard-rockers Korn."

Dreamhire's second Sony PCM-3348HR will be based at their Nashville location. "It's a popular request, and at the moment, there is no unit available for rent in the area," Dunn explains. "Our New York unit is always busy – mostly for music recording projects, but also for occasional post-production jobs. We have a high-profile repeat customer for that unit because of its 24-bit high-resolution recording capability. Other Dreamhire clients include David Bowie, Bjork, Christina Aguilera, Electric Lady Studios, Virgin Records, ABC TV and Coca-Cola."

Dreamhire's Chris Dunn (right) with Kathryn Dean and the Sony DMX-R100

World Radio History

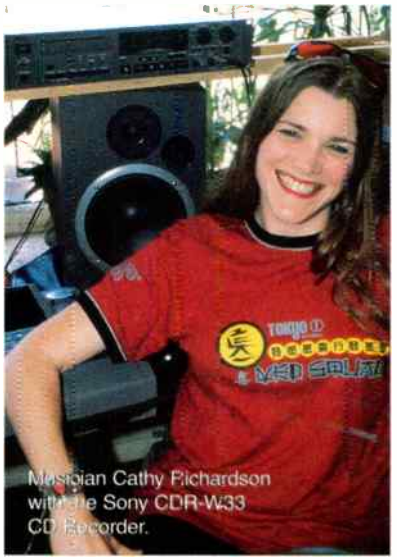
Cathy Richardson Picks Sony CDR-W33 Compact Disc Recorder

Currently starring in the off-Broadway hit musical "Love, Janis," singer/songwriter/musician/producer Cathy Richardson released five independent CDs prior to being cast in the role of Janis Joplin. She's recorded dozens of self-penned songs with the wildly popular Chicago-based Cathy Richardson Band and she's burned hundreds of CDs on a variety of CD-Rs. This summer Cathy began working with Sony's CDR-W33 compact disc recorder.

"My first experience with the W33 was right out of the box," she says. "I had a chance to perform the National Anthem acapella at Madison Square Garden and needed a good demo immediately. I cut a track on my hard disk recorder, burned a CD on the W33 without even cracking open the manual, sent it off and got the gig.

"Programming a fade on my hard disk recorder is a somewhat time consuming and complicated process. With the W33 you just push a button and it fades out perfectly, exactly where you want it to. I'd experienced compatibility problems with other CD recorders, but the CDs I've made with the W33 have worked with everything from my boom box to a five disc-changer on my stereo to my computer."

Cathy has also been experimenting with the W33's Super Bit Mapping, onboard equalization and limiting features. "I burned three different versions of a demo I did at home on my hard disk recorder," she explains. "One, straight from digital to digital, a second with only Super Bit Mapping, the third with EQ and limiting. The digital-to-digital CD sounded exactly like the original. I used the analog inputs for the Super Bit Mapping and it sounded as good as the digital. With most CD-Rs the levels are never as hot as commercially released CDs. I've spent a lot of money in mastering houses just to get my demos to volume levels that people are used to hearing on CD. The W33 has already paid for itself with the money I've saved mastering my demos at home.



Musician Cathy Richardson with the Sony CDR-W33 CD Recorder.

"Being a big Sony MiniDisc user, I'm already familiar with the AMS controls," she concludes. "Text labeling is one of the things I've always loved about MiniDisc, and with the W33 I can now text label my CD-Rs. This box rocks."

Hit Factory's Jason Groucott: "The Oxford Gets You Excited"

"The Oxford gets you excited. It's easy to work on, everything is accessible, and you sit in one place most of the time since the board actually moves around you," says Hit Factory engineer Jason Groucott. Groucott began working as an assistant on the 120-channel Oxford when it was first installed in 1997. Apprenticing under the talented hands and ears of such mixers as Mick Guzauski and Joel Moss, he has evolved into a first-call engineer. With an extensive knowledge of the console, acquired during the course of countless high-end sessions, Groucott has matured into the principal Hit Factory Oxford engineer.

Hit Factory's Jason Groucott at the Sony Oxford console.

Well grounded in both analog tape machines and consoles, Groucott demonstrated an instinctive understanding of the power and flexibility of the cutting-edge Oxford digital board. "A regular analog console may have its channels spread out, say from one to 120," he says. "With a traditional inline desk, you've got EQ, compressors, and sends on that narrow strip of console, and that's what you have to work with. On the Oxford, the entire desk becomes that channel or fader. It's just so much more comprehensive a process."

The Hit Factory affords Groucott the opportunity to work on many high-profile projects for artists such as Ricky Martin, 'N Sync and Gloria Estefan. Recalling a Mick Guzauski mix he engineered recently, he was able to follow the entire process through from final output to airplay. "Listening to that mix on the radio, knowing that it was done in the Oxford room and being there from start to wrap, made me appreciate why it sounded the way it did," he says. "While you're working on these songs in the studio they obviously sound great. You're on an Oxford and you're mixing with one of the great engineers. However, a song you've been a part of comes on the radio, you can really pick up on the finer details of the Oxford influence."

"When you mix records, you're aware of the muscle that you can flex with this board," says Groucott. "The automation remembers everything that you've done. The desk is always there with you; you're never waking it up to get it into automation mode. If there is something you want to hear or do—EQ, a pan, a send, a reverb trail—you just think of it, do it, and the desk remembers it. That's the beauty of it."

World Radio History

George Massenburg Speaks His Mind

Those who know George Massenburg realize that he is never afraid to speak his mind. When your work has won the respect of musicians, stars, peers and manufacturers alike, your words and actions tend to speak for themselves. His stellar multichannel and stereo recordings with Bonnie Raitt, Little Feat, Linda Ronstadt and Lyle Lovett, complemented by his development of the acclaimed GML line of equalizers and compressors, confirm his position as a true visionary. With a track record like that, Massenburg can work with any console he likes. His choice? The Sony Oxford. In this interview he shares some insights behind his commitment to the Oxford.

Regarding the Sony Oxford... "I have been doing all of my projects on this console."

— George Massenburg

What recent projects have you been working on with your Oxford?

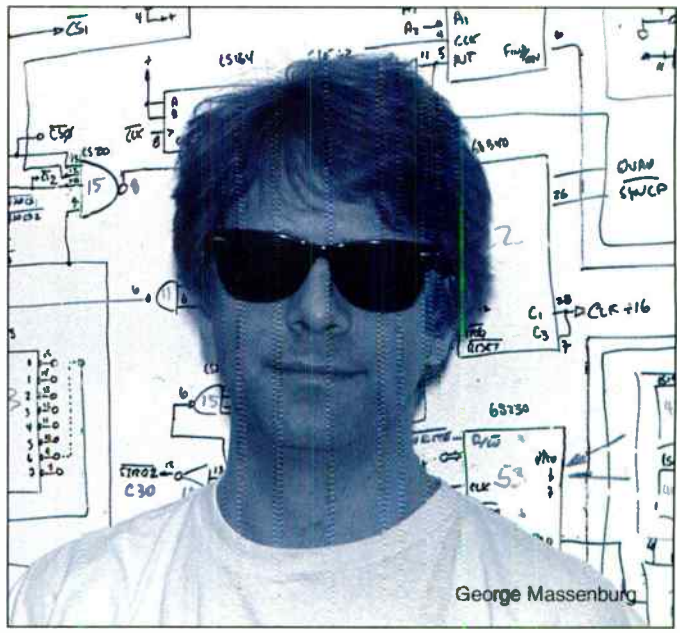
I have been doing all my projects on this console. In the past few weeks I've done a 5.1 mix for a DVD-Video, which was taken from a Sessions on West 54th Show. It looks and sounds great, and it's all John with no overdubs. I'm continuing a Robin English project for Sony Nashville which I'm co-producing with Kyle Lenning. I'm also doing an Amanda Marshall record produced by Peter Asher and Billy Mann for Sony Music Canada; this is definitely a smash. Linda Ronstadt and I just finished a 5.1 DVD mix of a collection of standards she did with Nelson Riddle for Elektra, in 1982. I'm also finishing some mixes on the new Jennifer Warren Sin-Drome CD.

You've had your console for how long?

We've had it since last December.

What attracted you to the board?

Well, that's kind of a long story. I go back to 1987 with the Oxford Group, when Roger Lagadec invited me to take a look at it. I have been tracking the development of this board ever since, watching the progress and contributing occasionally in small bits and pieces (they might call it 'interfering'). Recently, Paul Frindle and I have done GML dynamics and EQ for it. I feel right at home working on it. The compressor expands what Paul did with the basic Oxford processors, and is significantly better than anything else you find out there. And, the EQ feels and sounds great. I listened to these at great length against an analog chain and they're pretty honest. That being said, there are just a lot of things in the console that are extraordinarily well thought out...from essential processing (like dither throughout the console) to just plain good ideas. Eventually I feel all consoles will feel and look like this. Many of these internal processing ideas are way ahead of their time. That has been difficult for the Oxford



Group up until recently. By now, people seem ready for something new. Now that they're working on ProTools and other DAWs and having to mix digitally anyway. The urban contemporary community (a.k.a. the market segment that's still selling a lot of records) has embraced the Oxford because it makes louder, bigger, fatter mixes than any other analog or digital console. People now accept the emerging reality that there is a high end in digital processing – that all digital processors are not created equal – and that this console is crafting hits like other consoles simply cannot.

What makes you feel that it is that superior to other consoles?

The only thing that recommends a console in this business is crafting hits, and this console makes hits. Quickly and efficiently. Period.

What are your thoughts on the automation?

It's utterly and completely reliable. Sessions come back exactly as they are saved. I can't say that for any other consoles.

How about the processing and depth of research behind this board?

The dithering algorithm that the guys came up with is fundamental, original and unbeatable. The quality of the conversion and signal handling is not apparent until you hear how much better a mix done on another console sounds when redone on an Oxford. I just redid Jennifer Warren mixes done on another console and it makes that older mix sound like @##%%!.

How do you feel about Paul Frindle's converter designs compared to others currently on the market?

Brilliant.

Can you detect an improvement from the microphone to final output of the Oxford in comparison to other boards?

Absolutely. Warmth...clarity...presence...loudness.

What makes the Oxford great for multichannel work?

Support. Everything that you need is built into the monitor section under Version 3.0.

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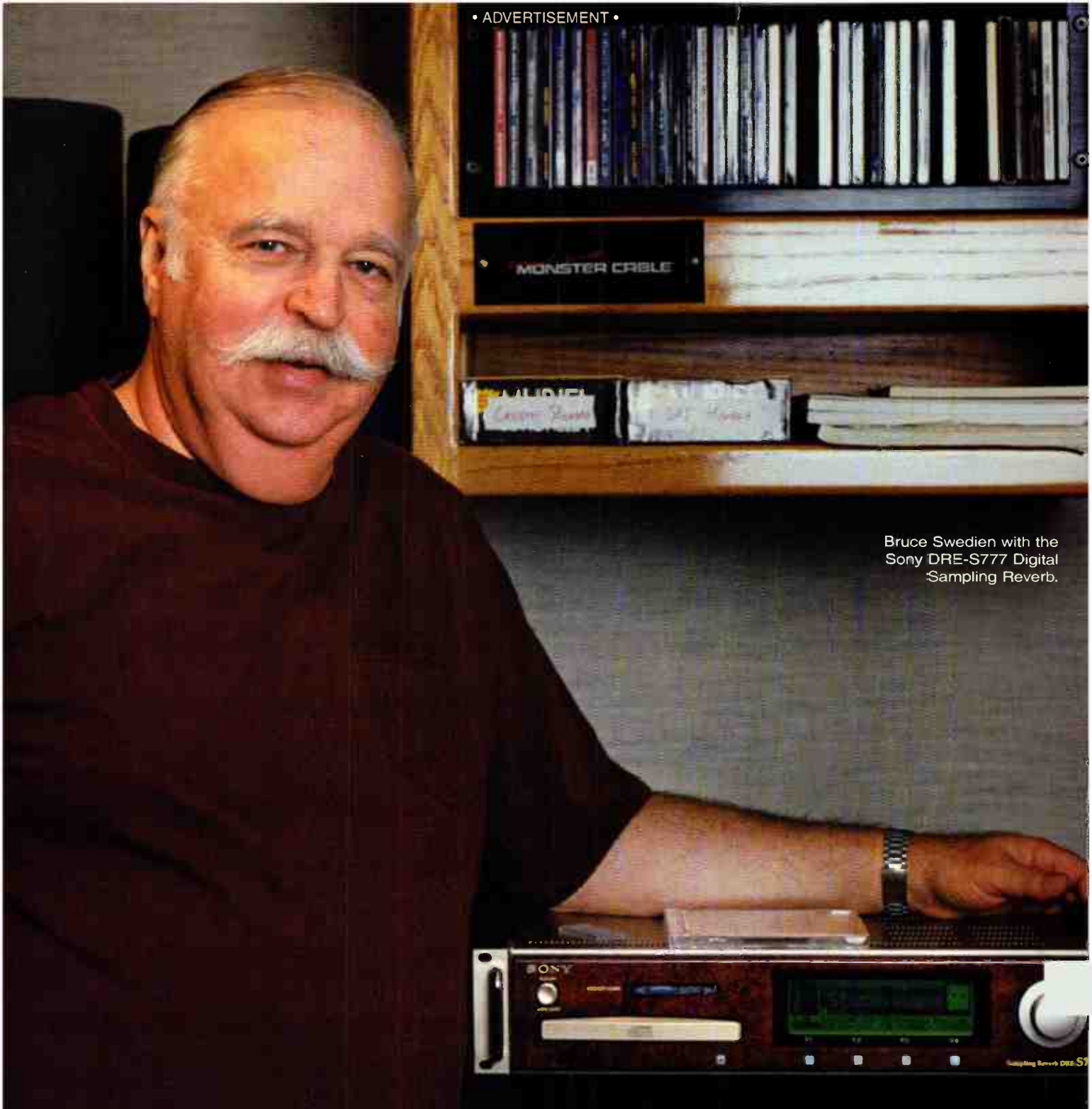

Bruce Swedien with the Sony DRE-S777 Digital Sampling Reverb.

Bruce Swedien

Photo by Dave King

World Radio History

Hot Picks: AES 2001

OXFORD VERSION 3.0

Sony Electronics has unveiled the next generation Oxford OXF-R3 digital audio console, version 3.0.

A key 3.0 feature is a new monitor panel that supports convenient monitoring of stereo, LCRS, 5.1 and 7.1 formats. An innovative "fold-down" capability allows users to execute quick down mixes from one program format to another, or to check for compatibility.

Version 3.0 also features the addition of Super Send Groups that allow for flexible grouping into mono, stereo, LCRS, 5.1, and 7.1. Each group send can have its own independent fader and joystick to facilitate simultaneous 5.1, 7.1, LCRS, and stereo mixes. The Super Send Groups supplement the existing 24 auxiliary sends on each channel.

Sony Oxford console

Reinforcing the Oxford's flexibility and assignability, the board has a comprehensive internal digital patch bay that allows input and output signals to be easily assigned to the processing channels as needed. On a session-by-session basis, this routing can be called up instantaneously.

The Oxford also comes standard with features such as four types of 5-band EQ per channel; a comprehensive dynamics section, including three types of compressors on every channel; 1.2 seconds of programmable delay per channel; multi-stem recording and monitoring; and 48 multi-track busses.

"Virtually everything about an Oxford — all routing and every setting for every channel — gets recalled in a quarter-of-a-second," says Paul Foschino, marketing manager of professional audio products at Sony Electronics' Broadcast and Professional Company. "In a live television broadcast setting, for example, the entire setup for a guest band could be recalled instantly with the engineers ready and waiting for the commercial break to end."

Foschino says that Sony works closely with every Oxford client to optimize (and customize) their individual console configurations. The I/O racks that house the interface cards for these consoles allow each facility to load in their unique A/D, D/A and AES/EBU requirements.

There are two control panel options. Facilities seeking to keep the console size to a minimum could use the smaller control surface, which offers 24 addressable channel faders and 17 master section faders, all in a compact package. The larger configurations all feature 48 addressable channel faders in conjunction with the master section.

DMX-R100 2.0 SOFTWARE

Sony Electronics is introducing version 2.0 software for the popular DMX-R100 digital console.

Foschino said that DMX-R100 V2.0 software will enable surround sound processing at double sample rates (88.2 and 96kHz); and will feature enhancement such as sub level control on each channel in conjunction with five-channel panning. New dynamic automation functions include enhanced Trim and Audition modes.

Additional primary features include:

- Fader naming on Channel GUI; Equalizer and Dynamic library function
- Access follow solo function; Dither mode for PGM output
- DOS compatible floppy disk automation storage

DMBK-R109 MADI CARD

Sony is also introducing a forthcoming DMX-R100 MADI card. This new hardware expansion option will greatly increase the number of audio channels that can be connected to the mixer. The card supports 48 input and 48 output channels of audio I/O, providing an ideal method of directly interfacing the console with MADI-capable recorders such as the Sony PCM-3348HR DASH recorder. The MADI option board will also incorporate the ability to link or 'cascade' dual mixers (both boards will require MADI cards to be fitted).

SRP-X700P DIGITAL POWERED MIXER

Sony Professional Audio is previewing the SRP-X700P digital powered mixer at the 111th AES Convention. The SRP-X700P (pictured below) is designed for a wide range of multimedia applications for sophisticated boardrooms, conference rooms, and houses of worship. The versatile unit combines a flexible mixer/router and a stereo digital power amp, with a wireless tuner frame and antenna divider (for two optional wireless mic systems), and an RGB/S-Video/composite video switcher. This 'Boardroom-in-a-Box' is easy to use and offers high-end audio and video quality in a lightweight and compact (3U-size) unit with a simple front panel layout.

The digital mixer section provides powerful DSP functions including feedback reducer, parametric EQ, low-cut filter, compressor/limiter, delay, automatic mixing, flexible signal routing, and scene memory.

The SRP-X700P features a built-in 6x1 A/V switcher including: three-RGB/component, and three-composite/S-Video inputs, and outputs to either RGB/component, composite, or S-Video. Audio inputs which follow the video source are also provided, including four stereo and two 5.1 inputs. The switcher can handle high-resolution component video signals such as 480p or 1080i, and RGB signals with bandwidths up to 150 MHz.

Additional key features are:

- Digital power amplifier with 200W+200W(4Ω), 150W+150W(8Ω), Max. 150W(70V Line)
- PC-based GUI-interface software (for setup/operation) is supplied
- Mounting slots built for two Sony Wireless Microphone tuners
- Inputs include: four microphone (with 48 V phantom power), two microphone/line, and one stereo line, plus four stereo and two 5.1 surround sound inputs linked to the video switcher

SRP-X700P

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Mannheim Steamroller Christmas Album Uses DRE-S777

Listeners to the forthcoming Mannheim Steamroller *Christmas Extraordinaire* CD may recognize the rich, resonant and inspirational sound of New York City-based Cathedral of St. John the Divine. Musician, composer and producer Chip Davis and American Gramaphone put their new Sony DRE-S777 sampling digital reverb to good use throughout production of the CD. The Mannheim Steamroller *Christmas Extraordinaire* is the label's first Christmas project recorded in 24-bit surround sound, reports Brian Ackley, director of production and chief engineer at American Gramaphone.

"Our goal here is to keep the technology bar as high as possible," Ackley says. "We wanted a reverb unit capable of handling 24-bit/96kHz. The S777 was a perfect fit for us. The sampling reverb CD-ROM library of European, American and Japanese acoustic spaces offered us a tremendous amount of flexibility, and the pre-sampled rooms, spaces and environments are amazing."

Another sampled space used on the production of the new Mannheim Steamroller CD is Austria's renowned Vienna Grosser Musikvereinssaal.

"With both stereo and multi-channel surround sound capabilities, the DRE-S777 is a world-class production tool for use in high-end music studios, film, television, and post-production facilities," says Paul Foschino, marketing manager of professional audio products at Sony Electronics' Broadcast and Professional Company. "Mannheim Steamroller CDs are a staple of American culture, and we are delighted that the S777 could contribute to such a high-profile project."

Mannheim Steamroller *Christmas Extraordinaire* features a combination of holiday arrangements of Handel's Hallelujah Chorus and Tchaikovsky's Dance of the Sugar Plum Fairies along with traditional favorites such as White Christmas, Winter Wonderland and Silver Bells. A "double hub" CD/5.1 DVD-Audio/DVD Video package will be available exclusively through a network of high-end home entertainment dealers around the country.

"We travel the world to work with various musicians, and the opportunity to accurately sample our own spaces is incredible," adds Ackley who is assisted by second engineer Dave Cwirko on Mannheim Steamroller projects. "The S777 is now our primary reverb unit. The sound quality is natural and clean. We're looking forward to using it in the future."

Plus Four Marketing 2000 Rep Of The Year

Sony Electronics recently presented Jim Matthews (center), principal of Plus Four Marketing, a Northern California rep firm, with Sony Pro Audio's "Rep of the Year" award for 2000. "Plus Four Marketing has done a great job growing Sony Pro Audio's business," says Paul Foschino (right), marketing manager. Also pictured, Jeremy Stappard, regional audio manager, West Coast.

Dave Christenson Western Regional Audio Mgr.

Sony Electronics has named Dave Christenson (pictured) western regional audio manager for the professional audio division of its Broadcast and Professional Company. Christenson is responsible for sales and support of Sony Pro Audio high-end audio products, including the Oxford and DMX-R100 digital recording consoles, and the DRE-S777 digital reverb.

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SoundByte
Winner
1998 MERCURY AWARD
1999 BIG APPLE AWARD

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BEFORE YOU BUY A CD RECORDER

CHECK ITS PROFESSIONAL CREDENTIALS

CDR-W33
CDR-W66

DSP
SBM, EQ and Limiter

PC keyboard input for text entry

Even among professional CD recorders, the Sony CDR-W33 and CDR-W66 stand apart. Three DSP functions fine-tune your sources.* There's a limiter with adjustable ratio. A 3-band EQ. And Super Bit Mapping® circuitry that captures near 20-bit quality on industry-standard 16-bit compact discs. Conveniences include wired or wireless remote operation and even a PC keyboard input for CD TEXT™ entry. Sony's 24-bit A/D and D/A converters help maintain resolution.

The CDR-W33 uses standard unbalanced analog audio, SPDIF and optical digital I/O.

The CDR-W66 (not shown) adds balanced XLR analog and AES/EBU digital I/O plus 2X speed duplication with a second CDR-W66.

The Sony CDR-W33 and CDR-W66 deliver the design and operational capabilities that professional applications require. And you get every last bit of performance without spending your every last dime. To find out more, call 1-800-472-SONY, ext. CDR.

*Analog sources only on CDR-W33.

SONY

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SONY

"What a great machine!"
– ROGER NICHOLS, Grammy Award Winning Engineer/Producer, www.eqmag.com

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

HOW DO YOU EVALUATE A DIGITAL MIXER?

LISTEN.

"Sony clearly broke the mold with the DMX-R100. A dramatic improvement over other small digital consoles."
– JOHN NEWTON, Grammy-nominated engineer and owner of Soundmirror, Inc.

"We loved it... sonically beautiful and clean...the best small-format console ever... outstanding performance, execution and design."
– ROBERT MARGOULEFF and BRANT S. BILES, Proprietors of MI Casa Multimedia Inc.

"This is the first digital console of this size that sounds this good. What goes in comes out. The R100 is right on the money."
– TOM LAZARUS, Engineer and owner of Classic Sound, NYC

"...pretty fantastic...rave reviews...incredible sonic integrity...and incredibly easy to learn and operate...a new generation of digital console."
– OENNY PURCELL, Award-winning mastering engineer, President – Georgetown Masters

"Sounds great, reliable and easy-to-use." – ALLEN SMITH, Chief Engineer, Soundtrack Boston

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 monitoring; and a high resolution touch screen that becomes an extension of your hands. The next thing to do is go out and hear one for yourself. In the meantime call today and we'll send you a brochure and tutorial CD-ROM.

DMX-R100

1-800-472-SONY ext. DMX

www.sony.com/proaudio

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World Radio History

By Jon Chappell • jchappell@musicplayer.com

Aphex 204 Aural Exciter and Big Bottom

The magic continues in this dual-channel, balanced version of a classic processor

When Aphex first released their Aural Exciter, over 25 years ago, it was the stuff of legend. You couldn't even buy one; you had to rent it — by the minute, no less. Many engineers were so enchanted with this new form of audio voodoo that they often kept it discreetly out of sight, invoking it surreptitiously when a bit of magic was needed. But it wasn't a gimmick or a sound *du-jour*. The Aphex Aural Exciter really worked, and deservedly won immortality when it was used to mix classic albums by Linda Ronstadt, James Taylor, and Jackson Browne. It has stood the test of time, too. Smart producers have been using it ever since, and *really* smart producers have been keeping quiet about it.

Now the Aphex Aural Exciter is well-known and available to everyone, and at a list price for less than $400, how could you afford not to own one? You can't. After more than 25 years doing just one thing — making mixes sparkle and tightening up the low end — the Aural Exciter is still doing what it did in 1975, but with improved circuitry, better sound, and many more musical opportunities to use it. If you're a sound designer seeking to improve intelligibility in vocals, if you need to tighten up, focus, or better pronounce your low end without increasing the level (something EQs can't do), or if you want to add sparkle to a dull mix, the Aphex Aural Exciter 204 demands serious consideration. It will not only save a mix or two, it might earn you the title of Sorcerer of Sweetening or the Magician of Mixdowns.

▶APHEX 204

MANUFACTURER: Aphex Systems Ltd., 11068 Randall St., Sun Valley, CA 91352, Tel: 818-767-2929. Web: www.aphex.com.

SUMMARY: Imperative for audio restoration, and for brightening a mix and bolstering bass; a rival approach to any EQ or compressor.

STRENGTHS: Great sound. Inexpensive. Solidly built. Balanced I/O. Processing doesn't compromise headroom.

WEAKNESSES: No headphone or footswitch jack.

PRICE: $399

***EQ* FREE LIT. #:** 121

OVERVIEW

The 204 is a dual-channel balanced processor with a thick, brushed-chrome faceplate, sturdy housing, and solid-feeling controls. The 204 actually sports two functions: the original Aural Exciter harmonics generator and the equally useful Big Bottom low-end-enhancing system. The originally named Big Bottom — the patented circuitry for adding low-end density without increasing the dB count — has become Optical Big Bottom in this incarnation, owing to an optical coupler in its works. But the basic operation and sound-processing architecture remain the same. So if you're already familiar with the Aural Exciter line, this is just mo' better.

The 204's two channels are completely independent. In addition to providing 1/4-inch TRS and XLR jacks for both ins and outs, the back panel offers twin operating-level switches (–10 dBV, +4 dBu) — one per channel. Since there's no "stereo link" function, you could conceivably run two mono sources through the 204, one using, say, balanced 1/4-inch jacks at –10 dBV and another signal on the XLR jacks at +4 dBu. In practice, this doesn't come up very much, because the 204 is best suited to treating entire mixes — which invariably come in stereo. But it's nice to know you have two completely independent channels with their own level switches, all the same. For stereo processing, as long as you have the controls set for subtle usage, you shouldn't experience any imaging problems between the left and right channels. To have the two channels talk to each other would have required some extra circuitry — a DAC, DC voltage to track the pots, or some other solution — which would certainly have driven up the price. In careful listening, I found no phase coherence or imaging problems.

On the front panel, each channel has six controls: three for Big Bottom (Drive, Tune, and

World Radio History

Mix) and three for Aural Exciter (Tune, Harmonics, and Mix). Those who remember the venerable 104, a.k.a. Type C2, will notice that "Girth" and "Overhang" are gone, replaced by "more serious-named" controls. Two other improvements over the 104 are separate bypass switches for each channel (previously, you could only bring both channels in and out of bypass simultaneously with a single switch) and the addition of a tunable high-harmonics control instead of a single, fixed switch. Last but not least, it's got a built-in power supply, another touch of professionalism over the 104's wall-wart solution.

DEFINING THE DOUBLE-ENTENDRES

Before we set up and start dialing away, it's good to know what we can expect from a unit that doesn't fit comfortably into the orthodoxy of staple processors such as gates, compressors, EQs, and time-based effects. The Aphex Aural Exciter re-creates and restores missing harmonics to a signal. Unlike an EQ, which can only increase the presence of existing frequencies through selective application of gain, the Aural Exciter is amplitude neutral. It will not increase the actual loudness, only the perception of loudness. The result is an increased brightness, clarity, and presence. It will not add harmonics to material with no inherent harmonic content (like sinusoidal signals), so you don't have to worry about distortion.

Although it's not an EQ or a compressor, the 204 shares properties with those effects and is ideally used in like fashion. For example, it's best to run the 204 inline, like a dynamics processor, rather than in a send-and-return configuration, where you'd mix the effected signal in with the original. You can of course, run the 204 on the insert points of the stereo bus as well.

The process also features the patented Transient Discriminate Harmonics Generator, which means it can supply missing harmonics in a transient, lending intelligibility (consonants, by definition, have a leading-edge transient), and fill out the amplitude envelope of a signal without changing its shape (in other words, without increasing the gain). This should raise the eyebrows of anyone in broadcast, where levels are tightly regulated, and optimizing definition and clarity in program material is a constant pursuit.

DIALING IN EXCITEMENT

Setting up the 204 couldn't be simpler: Plug your mixer's left and right outputs into the 204's back-panel inputs, and then plug the 204's outputs into your mixdown recorder or monitor system. As mentioned, you could always hook up the 204 through your mixer's stereo inserts. If you decide to track with it (which is reasonable if you're recording, say, vocals with a bad mic), simply hook it through a channel's insert point.

The manual recommends you use the three controls on the Big Bottom and the Aural Exciter circuitry to tune by ear. Though the manual details the frequency ranges you're operating in, providing you with some clue, you really find your sound simply by tweaking the knobs. Except for referring to the knobs' ranges (which are not on the faceplate), I never had to use the manual. Operation is straightforward and simple.

IN USE

I discovered that it was better to tackle any bass issues before turning my attentions to the Aural Exciter portion of the 204. For really exposed, well-recorded music (like an acoustic trio of steel-string guitar, double bass, and hand percussion), a little bass management was all that was needed. After you've wrangled the low end (if necessary), you can turn to the Aural Exciter's controls, which are Drive, Tune, and Mix. Even when maxing out any single control, I still found the results musical. It was only on an A/B comparison that I found the cranked-knob strategy too much, but this was on relatively healthy mixes. In subtler applications, mixes came alive, hidden midrange material — like a stereo-processed rhythm guitar that I'd never heard before — came to the forefront.

I was most impressed with the 204 on program material that was otherwise suffering from a deficiency. For example, on a rhythm track where the acoustic bass was unpredictable — loud on the low notes and too soft on the upper notes — the 204 evened out the bass, brought it forward in the mix (where it had been buried before), and tightened it up in the lowest regions. In other words, it made all the right moves.

On the Aural Exciter side, it increased the sparkle of reels of 7.5-inch tape that had suffered from age and not-so-great analog technology to begin with. The 204 gave me the perfect excuse to dust off the old Revox, load up the reels, and transfer this musically viable but sonically dubious material once and for all to hard disk.

One benefit of the 204 that might not be obvious is that you can use it on background material instead of just sizzling up foreground tracks. Because the Aural Exciter generally tightens up a mix — filling out the midrange, propping up and evening out bass response, vitalizing the treble content — it's no longer necessary to keep going to the backing tracks to fix your mix. By leaving the levels alone and simply enhancing definition, you enjoy increased dimensionality in your music — instruments retain their own sense of space, and each component is distinguishable.

CONCLUSIONS

If you're a sound designer or mixing engineer who works in the real world, and deals with real-world problems, the recommendation is easy: Go get an Aphex Aural Exciter 204 — today. The 204's benefits for audio restoration are numerous, and its talents prodigious in this regard. Bass tightening, presence boosting, vocal intelligibility, and dull-to-bright conversions are all hallmarks of the 204. The newer, improved, and more-professional 204 should find its way into your short rack, especially if a wide variety of mixdown material crosses your console.

If you're dealing with newer music, recorded well and in high-resolution digital audio, the benefits might not seem so obvious, but here the 204 works well, too. Often, I simply went to the 204 first, before engaging in a complex chess game of EQ, especially with regard to undefined bass and muddy mids. Since the 204 is dynamic (program dependent), it will "ride" your signal, where an EQ is static. I found it transparent in this regard, and A/B comparisons throughout

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World Radio History

By Mitch Gallagher • mgallagher@musicplayer.com

Auralex GRAMMA Acoustic Isolation Platform

Give your speakers — and your sound — a lift

Most guitar players will tell you that their amps sound better when they get them up off the floor — part of the reason is because the speaker is closer to the player's ear, but it's also because the speakers are de-coupled from the floor, reducing resonances. Other types of speakers, such as stage and studio monitors, can also benefit from being isolated from the room's structure; a subwoofer is another likely candidate for isolation. Now, Auralex, purveyor of a wide variety of acoustic control products, has created the GRAMMA — Gig and Recording Amplifier and Monitor Modulation Attenuator — an inexpensive portable isolation platform suitable for stage or studio use.

The GRAMMA consists of a 23-x15-inch carpet-covered slab of MDF mounted on top of two 2-x4-inch rails of dense foam. A piece of Auralex wedge foam is mounted between the foam rails for further resonance control, and one end of the platform features a handy carrying handle. The unit is spec'd to support up to 300 lbs.

There's no manual included with the GRAMMA, but that's because the platform is dead easy to "operate." Put it on the floor, foam side down, and set your amp, speaker, or monitor on top of it. That's it. All audio equipment should be so simple to use.

I grabbed one of my guitar amps and wound it up to a moderate level with a heaping helping of low end dialed in. My office went nuts, with everything in the room vibrating, rattling, and resonating.

▶AURALEX GRAMMA

MANUFACTURER: Auralex Acoustics, 8851 Hague Rd., Indianapolis, IN 46256. Tel: 317-842-2600. Web: www.auralex.com.

SUMMARY: Effective acoustic isolation for the stage and studio.

STRENGTHS: It works.

WEAKNESSES: None, it works.

PRICE: $59.95

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After moving the amp on top of the GRAMMA, the room "noise" was literally cut to a tiny fraction of its former volume. But that's not all; the amp's low end tightened up significantly, and the overall tone became punchier and more solid — with less boomy "woof" and more bass "drive" and "thrust." (Okay, does this sound like a guitar magazine yet?) The tonal difference carried over when a mic was in front of the amp as well.

With this shining success still ringing in my ears (literally), I moved on to the Event 20/20/12 powered subwoofer I'd received for review (see page 102). The 20/20/12 fit perfectly on the GRAMMA platform — you'd think they were made to go together. Once again, the results were clearly noticeable. While the subwoofer was still capable of pants-leg-flapping low end, when seated on the GRAMMA it didn't turn the room into a resonance fest. Again, the difference went beyond calming room and floor vibrations; the lows became tighter and more "focused."

If you own a studio or play music on a stage, you can probably find a use for one or more GRAMMA's. Put your monitors and subs on them. Use them when recording guitar and bass amps. Get a couple and float a drum platform. Set mic stands on them to prevent rumble and stage ring from picking up. The list goes on....

The idea behind the GRAMMA is simple — maybe even obvious — but it works. What more could you ask? ■

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- PRO AUDIO REVIEW, MAY 2001

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World Radio History

By Mitch Gallagher • mgallagher@musicplayer.com

Event 20/20/12 Subwoofer with Bass Management

High-end, solid-state, two-channel mic preamp

Back in the July 2000 issue of *EQ*, I reviewed the Event 20/20/15 powered subwoofer — a 15-inch, 250-watt behemoth. I liked it so much that I bought the company. Okay, not the company (on my salary?), but I did buy the subwoofer, and have been using it as part of my 5.1 mixing rig ever since. Shortly thereafter, the company announced a more compact sibling, the 20/20/12. The newer unit appears very similar to its big brother, albeit shorter (18-3/4 inches versus 29 inches tall), lighter (65 lbs. versus 100 lbs.), and featuring a 12-inch long-throw driver instead of a 15-inch. The amp and front-end in both models is the same, offering 250 watts of power, six input/through connections (left, right, center, right rear, left rear, and LFE), and variable control over subwoofer/monitor levels, crossover frequency, and phase delay. In addition to variable phase delay, a switch allows you to flip the overall polarity of the unit. Acoustically, the 20/20/12 doesn't go quite as low (30 Hz versus 28 Hz) and gives up a small amount of level (114 dB versus 117 dB) compared to the 20/20/15.

But the differences are far less significant than the similarities between the two models, both spec-wise and sonically. The 15-incher seems to "boom" just a bit more, the 12 is a bit tighter, and, yeah, you have to turn up the 12 just a bit more to get equivalent level out of it as compared to the big dog. However, with its smaller size and lighter weight, the 20/20/12 is easier to deal with than the 15. In my smallish studio, for example, there's really only one place the 20/20/15 can go — fortunately, that location works well. With its more compact form, the 20/20/12 slipped easily into a number of other locations that sounded equally fine, but were easier for me to deal with physically.

The 20/20/12's front-end control is exemplary for a subwoofer. The variable phase delay and polarity switch allow for compensating for the placement of the subwoofer in relation to the satellite monitors, and the variable crossover frequency control (30–80 Hz) allows you to match the sub's response to your monitors'. You're also given control over the LFE level and the relative level of the monitors when using bass management to route low end to the subwoofer, effectively extending the frequency response of your monitors. Unfortunately, while the manual (the same one that comes with the 20/20/15) does contain a discussion of how to place the sub in relation to the monitors, it doesn't even *mention* how to set the LFE or sub levels in comparison to the monitors. This is an oversight that should be rectified.

Assuming you can figure out how to set the levels (and it's really not that difficult), the 20/20/12 works like a charm. In fact, when comparing them side-by-side, I was hard-pressed to justify the $300 price difference between them. The 12 keeps up with the 15 admirably. It's not quite as loud or as boomy, but every bit as solid and effective. If I had it all to do over again, which would I choose? Given the size of my room, I'd go with the 20/20/12. The marginal sonic sacrifice is an easy trade-off for the more compact size and lower price. In a larger room, I'd probably stick with the 20/20/15. In either case you can't go wrong. ■

▶EVENT 20/20/12

MANUFACTURER: Event Electronics, P.O. Box 4189, Santa Barbara, CA 93140. Tel: 805-566-7777. Web: www.event1.com.

SUMMARY: Solid low end in a reasonably compact package; inclusion of bass management sweetens the deal.

STRENGTHS: Plenty of power. Solid construction. Capable built-in bass management system. Easy to place due to smaller physical size.

WEAKNESSES: Skimpy manual.

PRICE: $899

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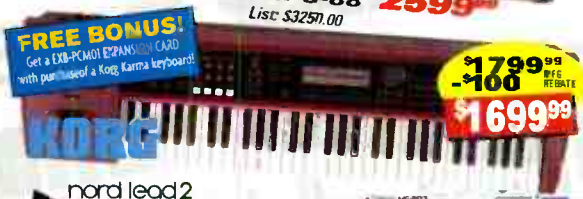

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By Emile Menasche • emenasche@musicplayer.com

Radial JDI Mk3 and JDI Duplex

Radial juices up direct recording with two new direct boxes

Direct boxes may not be the glamourpusses of the studio world, but they sure are necessary. Even in home and project studios, which are becoming increasingly balanced — at least as far as their interconnections are concerned — the quality of your direct box can make or break a track. As the saying goes: "Garbage in…garbage out."

Canada's Radial Engineering has been making top-shelf direct boxes for years. The JDI Mk3 and JDI Duplex phase-coherent passive direct boxes may offer a bit of a price drop compared to other Radial DI units, but, with high-quality components and solid construction, they're anything but cut-rate.

FEATURES

The steel chassis looks as though it could withstand Armageddon without so much as introducing a crackle into your signal. Each device has a solid, clearly marked case that resembles a hardcover book. Connections and controls are housed where the pages would be, somewhat recessed behind flanges (the "book cover"). It's a nice design. The PC board sits on an internal chassis that sits inside the covers, relieving potential torque that occurs in real-world situations. The controls are accessible when you need them, but they're also protected from harm. A non-slip pad on the bottom keeps the unit in place while protecting it and your other gear from scratches.

Both units boast almost identical circuitry (the Duplex is essentially two independent Mk3's mounted in one chassis). The centerpiece is a Jensen JT-DBE (which carries a *20-year* warranty). The use of Jensen transformers does add to the cost of the boxes, but also offers outstanding performance.

Operating a direct box is a straightforward affair, but the Radials have a couple of enhanced features that are worth noting. The Mk3 has two 1/4-inch jacks: Input (for connecting an unbalanced instrument, such as a guitar, bass, keyboard, etc.) and Thru (for routing that source on to a stage amplifier or preamp). But the Thru jack has another function: You can plug a second source into its jack and use the Merge switch to sum both inputs to a mono output at the XLR. This feature is especially cool on the Duplex model because you can use it to merge two stereo sources while retaining their imaging — send both left channels to Channel A and both right channels to Channel B. The Mk3's dual-input capability also comes in handy on sources that have parallel mono outputs, such as a hybrid electric guitar that sends magnetic and piezo pickups signals to separate jacks.

Other controls include Polarity Reverse (which switches the XLR from pin-2 to pin-3 hot), ground lift, and two pad controls — a standard –15 dB for taming hot instruments and the –30 dB speaker pad that lets you use the JDI to interface an amplifier's speaker output. (Note: Radial requires that you use a parallel speaker out from the amp or from the speaker cabinet and maintain the amp's speaker load.)

▶RADIAL JDI MK3 AND JDI DUPLEX

MANUFACTURER: Radial Engineering, #114-1585 Broadway, Port Coquitlam, BC, Canada, VC3 2M7. Tel: 604-942-1001. Web: www.radialeng.com.

SUMMARY: Solid construction, transparent sound, Jensen transformers, and a flexible set of features set the Radial JDI Mk3 and JDI Duplex direct boxes apart from the crowd.

STRENGTHS: Excellent sound. Quality construction. Flexible feature set.

WEAKNESSES: We're thinking…

PRICE: JDI Mk3, $200; JDI Duplex, $350

***EQ* FREE LIT. #:** 107

PERFORMANCE

Generally, the best thing you can say about a direct box is that you forget it's there. The JDIs are transparent and noise free, but they're not forgettable.

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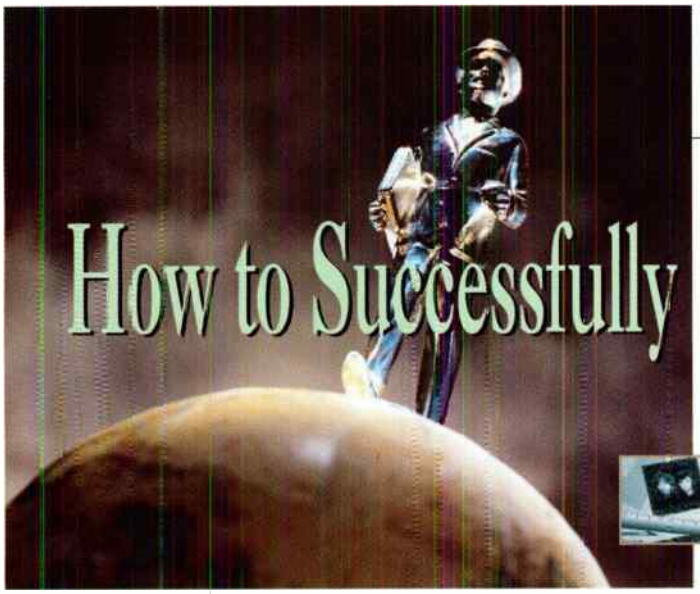

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World Radio History

They performed very well on every source I fed them, including electric and acoustic guitar and bass. Even in an environment that's occasionally prone to grounding problems and noise from computers and monitors, the signal was ultra clean.

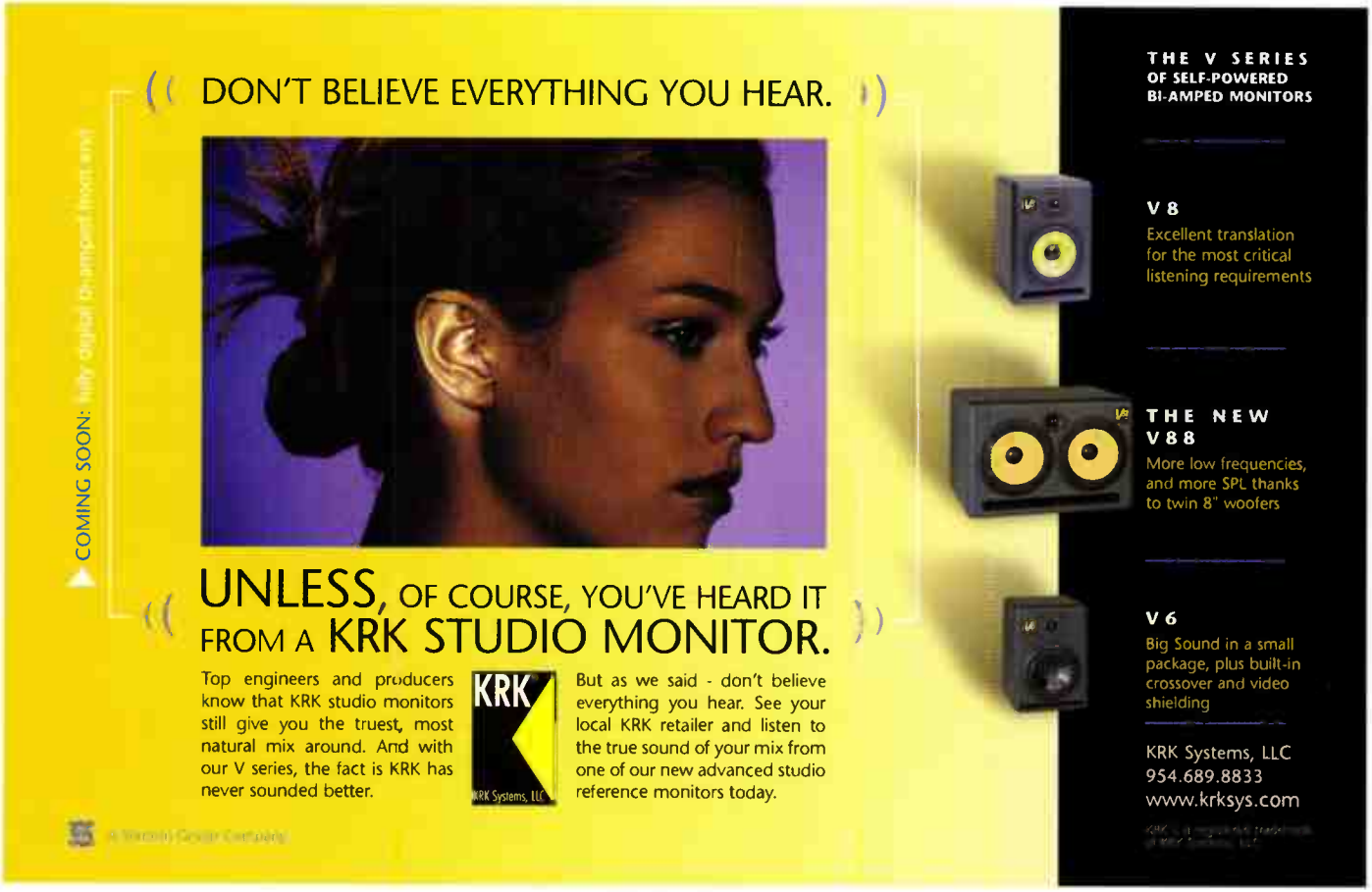
The polarity switch may be designed to reduce phasing problems between combined direct and miked signals, but engaging it can also color a mono signal in a pleasant way — especially nice on a Stratocaster or a Fishman Blender-equipped Taylor acoustic. Using the Pad and Speaker switches, the JDI also handled output from a tube amp quite well — the signal, without the coloration of the amp's speaker, was a little bright with distorted settings, but didn't have that papery rasp that can happen when going direct. With a little processing, it sounded huge. The amp's clean settings sparkled, a nice alternative to the more muted clean sound you'd get from miking a speaker. The amp's speaker-compensated line out also sounded good (for this, the JDI's pads were disengaged). The Duplex box, with its pair of independent ins and outs, allows you to mix both speaker and line-level signals for one huge stereo sound. You can also use the JDIs in reverse as a re-amping tool to take a balanced input from your mixer or recorder and feed a high-impedance unbalanced out to your amp.

SPECS AND FEATURES

	JDI MK3	JDI DUPLEX
CHANNELS	1	2
CONNECTIONS	1/4-inch high-impedance input; 1/4-inch high-impedance thru; XLR output	2 - 1/4-inch high-impedance input; 2 - 1/4-inch high-impedance thru; 2 - XLR output
FREQUENCY RESPONSE	10 Hz to 80 kHz ±3 dB	10 Hz to 80 kHz ±3 dB
SIGNAL TO NOISE	122 dBu full bandwidth	122 dBu full bandwidth
DISTORTION	Less than 0.05% @ 20 Hz	Less than 0.05% @ 20 Hz
PHASE DEVIATION	Less than 3° from 40 Hz to 10 kHz	Less than 3° from 40 Hz to 10 kHz
INPUT IMPEDANCE	130 kohms	130 kohms
OUTPUT IMPEDANCE	150 ohms	150 ohms
CONTROLS	Pad –15 dB; Speaker (–30 dB); Merge (sums Input and Thru signals to Mono); Polarity Reverse; Ground Lift	2 - Pad –15 dB; 2 - Speaker (–30 dB); 2 - Merge (sums Input and Thru signals to Mono); 2 - Polarity Reverse; 2 - Ground Lift
CHASSIS	14 gauge steel construction	14 gauge steel construction

DIRECT CONCLUSION

A quality tool, no matter how simple, is a joy to own. With bulletproof construction, a versatile feature set, and transparent sound, the Radial JDI Mk3 and JDI Duplex would acquit themselves well in any pro, live, or studio rig. ■



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CIRCLE 28 ON INFO CARD

World Radio History

By Jim Bordner • jim@gravitymusic.com

Discrete Drums Series One Multitrack Drum Loop Library

You're in the driver's seat with these multitrack drum loops

There are hundreds of products for the drummer-impaired project recorder, but only a handful of approaches to working with them: triggering samples, slicing and dicing drum performances, chaining together drum loops, or programming a drum machine. If you're using one or all of these and still aren't happy with your drum tracks, here's a product that may get you to where you want to be.

Discrete Drums works like a loop library with a twist. Instead of the standard stereo drum loops, Discrete Drums recorded a real drummer in a great sounding studio with eight microphones: a kick, a snare, a pair of toms, a pair of overheads, and a pair of room mics. You get all eight tracks on the CD-ROMs; once loaded into your DAW, you have complete control over levels, EQ, and effects for each track, just as if you had recorded them yourself.

I had the 12-CD 24-bit Professional set for this review. The full set consists of 31 different rock drum patterns that Discrete Drums calls "songs." Each song is broken down into verses, chorus, alternative beats, fills, and intros (although the titles are for labeling purposes only — an intro may make a great fill, and so on). In the Pro version, nine of the CDs (packed in a nifty wooden box) contain the songs, with separate 24-bit WAV files for each of the eight tracks. Two audio CDs contain stereo mixes of all 31 songs (for auditioning or for quick 'n' dirty looping work) and individual drum hits, and one CD contains both 16- and 24-bit AIFF samples of individual hits from the instruments used in the songs. (Just in case you need to flesh things out with a bit of MIDI after all.) The LE version consists of four CDs that contain 15 of the songs as 16-bit WAVs; the single audio CD version contains stereo mixes of the same 15 songs.

▶DISCRETE DRUMS SERIES ONE

MANUFACTURER: Discrete Drums, www.discretedrums.com.

SUMMARY: Excellent rock drum loops in eight mixable tracks — keep your fingers crossed for other musical styles.

STRENGTHS: Expertly played. Great sound quality. Pro and LE versions provide terrific mixing flexibility. Easy to use. Inspiring to jam with.

WEAKNESSES: None to speak of.

PRICE: $299 (Pro version, 12 CDs); $179 (LE version, 4 CDs); $99 (1 CD with mixed stereo tracks only).

***EQ* FREE LIT. #:** 102

IN USE

There's little documentation with Discrete Drums, but you don't really need it. Just load the sections of the song you want to work with into your DAW, and get ready to rock. I started with a song called "Unrelenting," a straight-ahead rock groove with a punchy kick at a brisk 300 BPM (that's an eighth-note count, by the way…you might express it as 150, depending on how you feel the phrase). Digital Performer (my DAW of choice) can't load

▶continued on page 113

World Radio History

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World Radio History

JOHN VESTMAN

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had a masking 'tone' to everything. I'd listen to different records and hear huge sonic differences on the audiophile system, but, in the studio, I'd hear only minor differences. So I knew there was something getting in the way of the accurate picture. I switched over to an audiophile speaker system early in my career, which was sonically very revealing: biamped Dahlquist DQ10's with stereo subwoofers. It was unconventional, but I had phenomenal success mixing and tracking on that system. The theory in the old days was that if you could mix well on a cheap system, it'll sound amazing on a good system. But cheap systems are inaccurate and don't reveal details (like phase, imaging, full-range low end) as well. If the sound is covered or 'unified,' you'll be less likely to be able to hear the compression, the image, and how the frequencies of individual instruments are interacting within the mix." ■

CIRCLE 13 ON INFO CARD

ROY THOMAS BAKER

▶ continued from page 56

inside themselves to get out what they're trying to express, even if it means they didn't actually know that was in there. And then they've got to technically be able to get that through to their fingers if they're playing an instrument, or through to their voices if they're singing."

TECHNICAL ROYALITY

Baker believes that technology is the greatest vehicle for making music come alive. In this day and age of constantly changing technology, it's common to find producers shying away from the latest toys and gadgetry. Baker, on the other hand, embraces them. "We utilize every piece of technology to make everything sound really good, to bring everything up to really high technical standards, to be able to give us the tools to be able to manipulate the music, to do things that we couldn't do before. We had to do everything by cutting tape; we don't have to cut tape anymore. We used to do everything by building gadgets; now we don't need to. It's all there, but now we can use all that technology to go to the next level and keep pushing it forward."

Like every other aspect of his production, he's flexible on the analog-versus-digital question. He uses both mediums to their fullest potential, often recording straight to [Digidesign] Pro Tools, but preferring to record analog and bounce back and forth to get elements of both in the sound.

Baker's own studio is set up with what he refers to as "the greatest analog machine ever built," the Stevens 40-track analog machine, built by John Stevens. "He manages to get a lot of high frequency on tape," enthuses Baker, "higher than what you can hear, and that modulates the lower frequencies. So, for example, if you put a 1k tone on a piece of tape, you can hear the 1k. If you put 20k or 25k tone, you won't be able to hear it, but it will modulate that 1k just by going off a little bit, so I'm getting modulations on tape and part of it is the tape saturation, and that way the machine works. I run the machine 30 ips with Dolby SR to keep the noise down, except for the drum tracks — we keep the signal-to-noise pretty low. I've got it bolted into my console."

Baker's console is as unique as the man who owns it. As he describes it, it's part Neve, part TLA, and, basically, a console made up of different consoles. In addition, he owns a couple of Neve 1073 sidecars, and his preference in monitoring lies with Tannoy and JBL. He jokes that, although he embraces Pro Tools, he isn't willing to purchase his own rig due to the "life expectancy" of the software. "I just let the rental companies bring me a new one all the time and let them worry about upgrading." Other than that, his only concern with the technology Pro Tools offers is that he feels some users have let it lower the standard of musicianship. "Somebody who before the days of Pro Tools would've actually had to put extra effort into playing in time and tune, now they don't have to bother because they know there's a little plug-in to salvage their indiscretions. So then, where is the skill with being a musician anymore? There is no skill. I'm hearing horror stories about all sorts of huge name bands where they actually spend three months making the drums in time."

You will never hear of that happening on a Roy Thomas Baker album. The musicians he works with are the cream-of-the-crop, and he pushes them to the limits with or without Pro Tools. He has nothing but the strongest praise for Axl Rose and Guns N' Roses, which includes Robin Finch (originally of Nine Inch Nails) and Buckethead on guitars, and Brain on drums (Primus). Also onboard are Dizzy Reed and Paul Tobias, who are long-time members of Guns N' Roses, as well as Chris Pitman on keyboards and Tommy Stinson on bass (originally with The Replacements). "This is not like the old band. This is a major progression from the old band. I loved the old band; I've always been a fan of Axl and Guns N' Roses. When I think of 'November Rain' off the second set of albums, and 'Welcome to the Jungle' and stuff on the first album, these are tracks that go down in history. These are tracks that you remember exactly where you were when you first heard them. That's very, very rare that you ever get into that situation where you can actually remember what you were doing the first time you heard something." ■

World Radio History

DISCRETE DRUMS

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WAV files, so it took a minute or two for me to convert all eight tracks to SDII files. Before I even began tracking other instruments, I was mightily impressed with the quality of both the recordings and the performances. Small wonder: Discrete Drums was recorded by session drummer Greg Morrow, who has whacked studio skins for a bunch of platinum artists — Belinda Carlisle, .38 Special, Dixie Chicks, Bad Company, and many more. His touch and tone are spot on, and the room sounds great.

I tracked bass, piano, and a bunch of guitar tracks, and got down to mixing. Here's where the Discrete Drums approach really comes alive. Finally, you can get the bass drum seated with the bass guitar without slamming the snare through the roof. You can go from studio clean to John-Bonham-trash by simply bringing up the faders for the stereo room mics. For maximum realism, the bleed between mics isn't gated out, and the tracks sound lively, rocking, and *real*.

Morrow's timing is ultra-tight, and his stroke on crash cymbals is very consistent, so cutting and pasting sections is no problem. Time-stretching and -compression give you even more tempo options.

Okay, so the 31 "songs" are all rock or alterna-rock patterns...no funk, no jazz, and no Latin (which I'm hoping will be the focus of future editions of Discrete Drums). But no loop library does everything, and Series One is a remarkable value for the price. Could I hire Greg Morrow to play on my next jingle date? Probably — for about 10 times the price of this package.

I really like Discrete Drums. It's easy and inspiring to use, and it gives you real mixing control over real drums with the speed and ease of use you get from loop libraries. It won't replace a real player in every situation, but the 31 styles cover a lot of rock 'n' roll ground, and the resulting production sounds like I made a trip to Nashville. Can't wait for Series 2!

Jim Bordner makes music, records audio, and studies the twisted anthropology of studio customers at Gravity Music.

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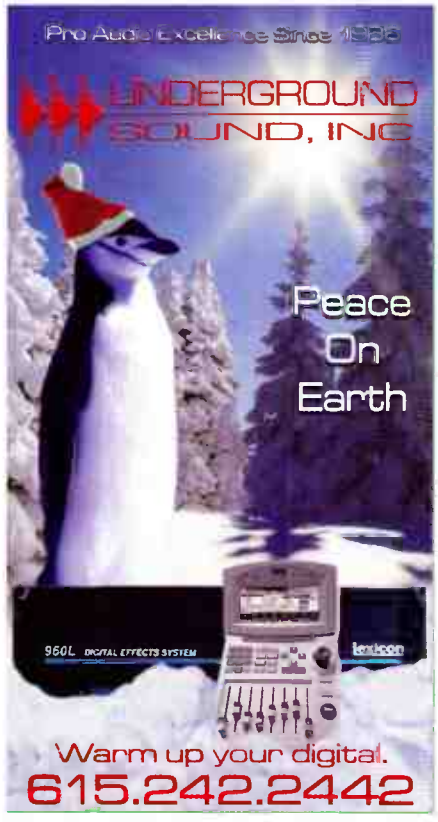

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CIRCLE 46 ON INFO CARD

World Radio History

APHEX 204 REVIEW

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the mix always had me favoring the 204-processed signal.

The manual is excellent, too — thoughtful, well written, and supplied with plenty of real-world uses for the Big Bottom and Aural Exciter circuitry. It's rich with graphs and frequency charts, so that you know just how the circuitry is acting on your program material. The manual also devotes an inordinate, but welcome, amount of space to explaining balanced versus unbalanced lines, and how to rewire cable connectors. Bravo.

Detractors in the past may have taken issue with the "candy coated" aspects of former incarnations of the Aural Exciter, but with the 204, those criticisms are inapplicable. The 204 is inexpensive, magical, and musical. And it stands alone as a unique approach to signal processing.

Jon Chappell's latest book is *Rock Guitar for Dummies* (Hungry Minds), which includes a CD that he recorded using only techniques he learned from the pages of *EQ*.

DAVID BYRNE

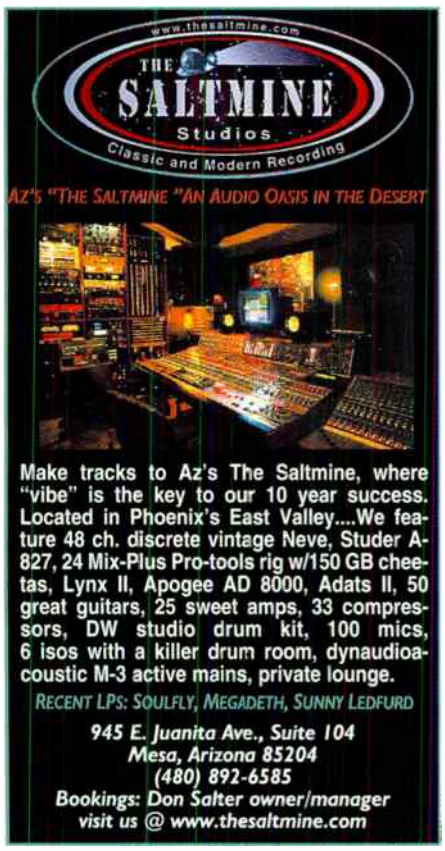
▶ continued from page 84

had strings break from time to time — which almost never happens under normal circumstances for a string player."

MR. COMPRESSOR DOES HIS JOB

In addition to the EQs used for the string section, Terry carried DIs and a processing rack for David's vocal. "Initially we used whatever DIs were provided in the house, but then we checked out the Avalon U5 Class A DIs. I first tried them on bass and David's two acoustic guitars. Then one day we did an A/B test with the U5 and another DI on the outputs of our AKAI MPC. The U5 had a much wider frequency response and the clarity was more pronounced — so I ended up carrying five U5's.

"Due to the fact that I wasn't carrying a console, David and I decided that a good mic pre would be a smart investment — so we bought an AMEK/Neve System 9098 Equalizer (with mic pre) for consistency. I'd take the snake feed from the mic straight into the 9098, out of the 9098 into a BSS DPR-901 frequency-selective compressor, then into an Aphex 661 compressor, and then back to the return on the channel — bypassing the mic pre on the console's input channel. The DPR-901 is a wonderful tool and I love it, but not so much as an overall compressor. It has frequency select and bandwidth to catch certain frequencies, so it does a great job at maintaining consistent tone, but I find that, by routing the signal into another compressor, I can have better overall compression. So I use the '901 sparingly to hit at a certain threshold for a particular frequency I want to catch, and then let the Aphex 661 work as overall compression. That combination really helped keep David's voice sounding smooth. With any vocalist you have to pay close attention to the performance. David is a strong vocalist, and his songwriting varies widely from full-on rock to more subtle things like the ethnic styles he does. The dynamics are extreme, so you learn the show and ride the fader. Then for the loud stuff you let Mr. Compressor do his job!" ■



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- 2 XLR mic/1/4" line inputs with 26 dB gain, 48v phantom power, gain knob, and HP filter at 50Hz
- 5 1/4" TRS balanced/unbalanced line ins w/ software controlled gain
- +4dB balanced 1/4 inch Main outputs and balanced 1/4" monitor outs with front panel gain knobs
- 1/4 inch unbalanced line outputs channels 3-8
- Headphone output with indepe dent gain control knob
- 2 channel S/PDIF stereo digital I/O and 8 channel ADAT optical I/O (switchable to 2 channel S/PDIF)
- Includes Pro Tools LE software based on Digidesign's world renowned ProTools software, supports 24 tracks of 16 or 24 bit audio and 128 MIDI tracks
- Supports both RealTime AudioSuite (RTAS) and AudioSuite effects Plug-Ins — Bundled RTAS plug-ins include: 1 and 4 band EQ, Dynamics II (compressor, limiter, gate and expander/gate, Mod Delay (short slap, medium, and long delays with modulation capabilities for chorus or flange effects and dither. AudioSuite plug-ins include Time Compression/Expansion, Pitch Shift, Normalize, Reverse
- All mixing parameters including effects processing can be fully automated

MOTU Digital Performer 3

Digital Audio - MIDI Sequencer For Mac

- Complete virtual recording studio with fully automatable mixing, effects and EQ • Unlimited audio tracks • Sample-accurate waveform editing
- 32 bit realtime effects • 64 bit MasterWorks Limiter and Multiband Compressor • PCI-AR window • Interactive audio loop recording

New in DP 3 —

- Redesigned user interface based on Apple's OS-X
- Apple G4 Multi-processor support • Pro Tools import/export via DigiTranslator and DAE with all tracks, regions, crossfades and plug-ins in tact • Open architecture promotes compatibility with support for mono, stereo, quad, LCRS, 5.1, 6.1, 7.1 and 10.2 surround formats
- Vis Align ADR (Automatic Dialog Replacement) support

cakewalk Sonar

Digital Multitrack Recording System

- Unlimited digital audio and MIDI tracks
- 24 bit/96 kHz audio • 32-bit real-time effects
- Multi-processor and dual monitor support
- **Audio loop construction** and editing comes with automatic beat matching and full support for importing ACID loops • **DXi (DirectX Instruments)** software synthesizer plug-ins
- Fully-automatable DirectX 8 audio effects Plug-Ins from Power Technology • Includes FX-compatible soft synths from Roland, Applied Acoustic Systems, Live Update, and Audio Simulation • Optimized for Windows 2000/ME/98 SE systems
- Compatible with Microsoft's WDM low latency audio driver technology

emagic Logic Audio Platinum

Music Production Software For Mac & PC

- Unlimited MIDI tracks • Up to 64 audio tracks (128 with multiple hardware) • Supports 16-bit/44kHz audio resolution • Support for up to 64 audio instruments • Includes all native effect algorithms • 32 effects busses • Up to 8 effects inserts per track or bus • Plug-In support for VST (Win and Mac) and ReWire
- Arranges and edits MIDI and audio tracks with a comprehensive set of tools • Drag controller data directly into the arrangement with HyperDraw
- Instantly switch between 99 Screensets to maintain customized window configurations • Built-in Stereo Sample Editor • Supports all currently available Surround formats • Hardware support for AMS, TC Aux mkII, PreTools TDM (Mac), DIGI001, Yamaha DSP Factory and more

CM Labs MotorMix

Desktop Motorized Fader Worksurface

- Eight 100mm long-life motion sensing motorized faders with dedicated Mute, Solo & Rec/Rdy switches • Eight high quality rotary pots with display for control of Pan, Aux Sends, EQ, and Plug-ins • 40 x 2.0 Backlit LCD display with track labels, pans, send levels and plug ins • Control sends, mutes and plug in parameters in real-time
- Automate fader moves and mutes in your sequencer • Bank select switches and the LCD display let you control an unlimited number of channels and many plug-ins in each channel • Create a custom console tailored to the way you work • Pro Tools supports up to 4 Motor Mixes for 32 channel banks • Play, Stop, Fast Forward, Rewind transport keys

G-CEPH X-Project Firewire

30GB Firewire Hard Drive

- 7 200 rpm 30GB drive optimized for digital A/V
- IEEE 1394 (FireWire) interface - drive automatically mounts drives on your desktop
- Record, mix & edit 144 minutes of 24 track audio at 24 bit, 48kHz
- Tabletop or rack-mountable configuration
- Hot-pluggable dynamic reconfiguration allows re-cabling peripheral devices without re-booting
- Includes Rack ears, feet, firewire cable, power cord

LOUD RealVerb

Reverb Plug-In For TDM & MAS

- Uses complex spatial and spectral processing technology to accurately model an acoustic space
- Choose from a graphic menu of Room Shapes and Sizes, from 0.5 meters to 99 meters, as well as Materials with adjustable thickness
- Two different room shapes/sizes & materials can be blended and even morphed in real-time
- Control Absorption and timing of early reflections and late field development
- Intuitive graphic controls over Resonance (Q), timing and diffusion patterns
- Stereo Soundfield Panning uses psychoacoustic principals to allow spread and control of the signal between stereo speakers creating an impact out of center and width

TC WORKS PowerCore

The DSP-Turbo For Your Native Audio Workstation

- Cross-platform PCI card with 5 internal DSPs (2800 MHZ WORTH OF DSP POWER!)
- World class Reverb, Modulation FX and EQ right out of the box
- 24-96 compatible • Works with any VST/MAS-compatible application
- Works with all sound cards supported by the host software • Includes: **TC TOOLS/96 PLUG-INS — TC MegaReverb, TC Chorus/Delay, TC EQ SAT**
- Also includes **SPARK LE** Mastering Software • One complete set of TC TOOLS Plug-Ins (MegaReverb, Chorus/Delay and EQ) only requires one DSP to run • Optional TC MASTER X 3+5 multiband mastering processor
- Open processing platform allows future Plug-In compatibility by 3rd party developers

WAVES Version 3.0

Native & TDM Plug-In Bundles

Waves Bundles feature some of the hottest software processing plugins for tracking, mixing, remixing, mastering and sound design. Choose from the precision, dynamics and spatial processing capabilities of the **Native Power Pack**, **TDM Bundle** for ProTools, the vintage processing characteristics of the **Renaissance Collection** and the complete sound shaping capabilities of the **Pro-FX Plus Bundle**. Also available is the **C4 Multiband Parametric Processor** which provides 4 discrete bands of dynamics and EQ. The **Waves Gold Bundle** features all of Waves processors in one affordable package.

M-AUDIO USB Audiosport Quattro

4-in/4-out Audio Interface w/ USB and MIDI

- 24-bit/96kHz compatible • Multitrack recording and mixing without PC card installation • Zero-latency direct monitoring
- Balanced 1/4" TRS connectors
- Selectable input and output levels provide compatibility with both pro and consumer equipment • 1x1 USB MIDI interface
- Ships with ASIO drivers for Mac & PC — more drivers are on the way
- Add even more professional connectivity with the optional **Omni I/O** which provides 2 mic preamps with phantom power and independent gain and pad, 8 additional inputs, 2 headphones sends, an FX send and return, dedicated monitor and record outputs, and more

Serato Pitch 'n Time 2

Time-stretcher & Pitch-Shifter (AudioSuite)

- ProTools compatible Time Stretching/Pitch shifting AudioSuite plug-in for Macintosh PC
- Performs a sophisticated auditory scene analysis based on the human auditory system and uses a patented mathematical algorithm to speed up or slow down music without artifacts - works on solo instruments, voice and complete mixes
- Preserves sample accurate timing
- Works with all bit depths, and sample rates
- Multi-channel phase accurate processing works with 5.1 and 7.1 surround stems without loss to the surround image

ANTARES Auto-Tune 3

Pitch Correction Plug-In

- Real-time pitch correction without distortion or artifacts • Preserves all of the expressive nuance of the original performance.

New features in Auto-Tune 3

- Source Specific pitch detection and correction algorithms including Soprano, Voice, Instrument, Bass instrument, and more
- Phase-coherent pitch correction of stereo tracks • Bass Mode lowers the lowest detectable frequency to 25Hz • Set target pitches in real-time via MIDI from a keyboard or sequencer track • Move Scale Front MIDI function allows you construct a custom scale from a MIDI keyboard or sequencer
- Sample rates of 88.2kHz and 96kHz are now supported • Available for TDM, RTAS, MAS, VST and most/a compatible digital audio applications

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TASCAM 788
8-Track Hard Disk Recording System

- 8-track simultaneous record • 160 virtual tracks • 24-bit A/D-D/A converters
- 14-channel mixer • 3-band EQ
- Dual effects processors • 10 scene memories per song • S/PDIF digital I/O • (4) 1/4" TRS monitor ins • RCA track and monitor outs
- (2) 1/4" aux sends and returns
- 1/4" headphone output • MIDI in/out • Optional CD burning kit
- **Non-destructive editing** with 999 levels of undo
- Jog/scrubbing and Shuttle with rapid wind • Dedicated locate and editing buttons • Wave form display • Title edit functions
- ±6% pitch control • Built-in metronome

KORG D-12
12-Track Hard Disk Recording System

- 12 tracks of simultaneous 16-bit playback or 6 tracks at 24-bit • 16 track mixer with 3 bands of EQ per channel
- Comprehensive auditioning and DSP functions with 99 levels of undo • 20-bit A/D-D/A converters • 4 analog inputs including dedicated guitar input • 24-bit optical S/PDIF I/O • 106 REMS effects types
- 11 simultaneous real-time effects — 8 insert, 2 master and 1 master bus effects • Powerful scene memory and real-time automation capabilities
- Internal 5GB hard drive allows up to 18.6 hours of 16 bit recording
- Optional internal CD-RW drive • 50-pin SCSI-2 connector
- Built-in auto-chromatic tuner and metronome

KORG D-1600
16-Track Hard Disk Recording System

- Hard disk recorder, mixer, and digital multi-effects processor in one integrated unit
- 16 tracks of 16-bit recording at 44.1kHz sampling rate
- 24-bit mixer • 3-band EQ with a sweepable mid per channel
- 24-bit A/D-D/A converters • 8 analog inputs including a dedicated guitar input
- 24-bit optical S/PDIF I/O
- 100 REMS effects • 11 simultaneous real-time effects — 8 insert, 2 master and 1 master bus effects • Massive 20GB internal hard drive provides 37 hours of 16-bit/44.1 kHz • Optional internal CD-RW drive
- 50-pin SCSI-2 connector • Editing functions are controllable using the D-1600's front panel controls or computer display

AKAI DPS-16
16-Track Hard Disk Music Production System

- True 24-bit internal recording capability on inputs up to 144db dynamic range
- Record up to 16 tracks simultaneously
- Coaxial S/PDIF Digital I/O
- 56 bit internal processing
- 8 analog inputs including 2 XLR mic inputs with phantom power • 13GB IDE internal hard drive • 16 track faders with pan, 3-band EQ, 4 aux sends and mute per channel • Optional EB4M 4 bus FX card can assigned to any of the 4 aux sends or inserted on any channel • Large flip-up graphic display and user friendly interface makes editing and navigation a breeze • Built-in scene memory as well as dynamic automation capabilities via MIDI

YAMAHA AW4416HDCD
16-Track Digital Audio Workstation

- Record, edit, mix and master to CD all in one machine • 16 tracks of 16 or 24-bit recording with 8 stereo tracks each
- 32-bit internal signal processing
- 24 input mixer with 20 mix buses
- 15 motorized faders and full mix automation • 4-band fully parametric EQ and dynamics per channel
- 2 dual effects processors • Optional I/O interface cards provide connectivity with 8 types of digital and analog gear • 8 sampling pads provide real-time playback of samples • Internal 10GB IDE hard drive • Built-in CD-RW drive for creating audio CDs and archiving • Word Clock I/O

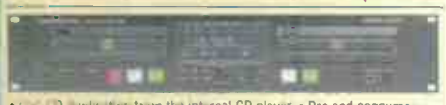
E-MU XL7 Command Station
Tabletop Groove Station

- Combines the synth engine of E-mu's Proteus 2000 and XL-1 sound modules with a web multi-track sequencer • Designed for Electronic/High Energy Dance artists • Equipped with a one octave velocity sensitive key pad with aftertouch, a touch strip along with numerous knobs, buttons and switches • Easily expandable with 3 additional ROM slots • Easily rack mounted into a 4-space rack • 512 presets, 128 voices and 128 Factory Sequences with hundreds of user locations • Dual effects processor • Compatible with external MIDI devices via its Sequencer, Arpeggiators, Control for Knobs, Trigger buttons and X-Y Pad

SONY CD-RW66
Standalone CD Recorder

- Supports Standard CD-R, CD-RW & consumer audio discs • **Built-In 32kHz - 96kHz sample rate converter** • On-board DSP functions Parametric EQ, Limiter & Super Bit Mapping which provides near 20-bit dynamics • 24-bit A/D/A converters • CD-Text support (up to 23 characters per name) • AES/EBU input, optical & coaxial digital I/O and RCA analog I/O • Word Clock input
- 2x faster • 1x duplication with 2 CD-RW66s
- Full status display and display • Includes wireless/wired remote

marantz CDR 500
Standalone CD Recorder / Duplicator



- Digital CD duplication from the internal CD player • Pro and consumer CD-R and CD-RW compatible • CD-TEXT editing • Memory buffer
- Alerts selectable SCMS copy protection • Digital and analog record level/source control • XLR-Balanced and RCA unbalanced analog ins
- Coaxial and Optical digital ins • Unbalanced (RCA) analog and Coaxial digital outs including Coaxial loop-out for unprocessed connection to other digital equipment • IR remote control included

MICROBOARDS Technology Inc. DSR-1600 Series
CD Duplicators

- 16X record speed
- Compact footprint
- One touch operation
- Disc to disc, disc to multiple disc for higher volume requirements
- Caching image files to store on-the-fly, to multiple writers simultaneously
- LED error detection prevents bad disc duplication
- **Available With One To Eight Recorders**
- Supported Formats: CD-ROM Mode 1 and 2, Form 1 and 2, CD-DA (Red Book Audio), CD-I, Mix Mode, Applications & Video CD

Panasonic WR-DA7 MKII
24-Bit Digital Mixer

Streamlined Version 2.5 operating system with more than 70 new or improved features including new shortcut control features, advanced MIDI faders, new panels for LCD and LED areas, and enhanced software features, such as improved visuals and navigational controls.

FEATURES-
- 32 fully balanced inputs and 8 auxiliary send returns
- 8 buses (sub-groups) can be digitally routed using a built-in patchbay for a total of 24 digital and analog I/O's
- 32-bit internal processing and 24 bit A/D-D/A converters yield acoustic range 110 db
- 21 100mm Motorized Faders, Jog-Dial, Cursor keys and 10 key Keypad
- Moving fader automation and scene automation with instantaneous recall
- Multi-layer fader layout for controlling input channels, Aux sends and returns and buses as well as a fourth layer that allows user-assignable MIDI faders
- Built in 16-bit dithering to 20 outputs

Connectivity
- 16 balanced XLR and 1/4" TRS Mic/line analog inputs with 15 pre A/D analog inserts
- AES/EBU/SPDIF (2 ch.) digital I/O, Word Clock In/Out, MIDI In/Out/Thru, MIDI Machine Control, MMC, RS-422/485 standard
- Expandable with up to (3) 8-ch I/O cards
- Optional SMPTE/video-sync card
- Optional Tandem card allows dual-console operation providing a total of 76 inputs

EQ & Dynamics-
- Four true parametric bands of EQ on every channel and 2 bands of parametric EQ on the Aux returns
- 42 full function Compressor/Gate/Limiter or Expanders
- Delays up to 300 ms on every channel

Automation and Control-
- 50 independent I/O, dynamics and channel libraries plus 99 snapshots of the entire console can be stored for instant recall
- Four up/down/left/right cursor keys can output MIDI Machine Control commands to MDMs, sequencers and DAWs
- Dedicated undo/redo button and a built-in Talk Back mic
- Large backlit LCD screen displays all channel parameters
- **Optional** High resolution Meter Bridge and Automation software for Mac and PC

Built-in Surround Mixing-
- Equipped to mix 5.1 surround through its buses (doesn't tie up buses) with full dynamic control of panning

OPTIONS-
- **WR-ADAT** 8-channel ADAT digital I/O card
- **WR-TDIF** 9-channel TDIF digital I/O card
- **WR-AESS** 8-channel AES/EBU and S/PDIF digital I/O card
- **WR-ADDA** 8-channel A-to-D, D-to-A card
- **WR-TNDM** Tandem (dual-console) connection card
- **WR-SMPT** SMPTE and V-sync card
- **WR-MTBR** Meter Bridge (included)
- **WR-WRRC** Remote control software

TASCAM MX-2424
24-Track Hard Disk Recorder

- Records 24 tracks of 24-bit audio @ 44.1 or 48 kHz, or 12 tracks at 88.2 or 96 kHz • Up to 24 tracks can be recorded simultaneously using any combination of digital and analog I/O • 999 virtual tracks per project
- Includes proprietary 9GB hard drive • Wide LVD compatible SCSI port on the back and a front 5.25" bay available supports an additional drive, or an approved DVD-RAM drive for back-up • Record to Mac (SDII) or PC (WAV) formatted files • Open TL format allows compatible software to recognize virtual tracks without having to load, reposition and trim each disk file • Jog/shuttle wheel • MIDI In, Out, and Thru for MMC & MTC
- Built-in editing capabilities include cut, copy, paste, split and ripple or overwrite • 100 levels of undo • Supports destructive loop recording and non-destructive loop recording which continuously records new takes without erasing the previous version • TBUS protocol can sample accurately lock up to 32 machines together • Can generate or chase SMPTE timecode or MTC • Word Clock In, Out, and Thru ports
- Includes Viewfast and Fastcal Graphic User Interface software

I/O Options-
- Optional analog and digital cards provide 24 channels of I/O each. There is one option slot and one digital.
- IF-TD24- T/DIF module
- IF-AD24- ADAT Lightpipe module
- IF-AE24- AES/EBU module
- IF- AN24- A-D, D-A I/O module with DB-25 connectors

B&H PAGE 3 ALL ITEMS ARE COMPLETE WITH ALL ACCESSORIES AS SUPPLIED BY MANUFACTURER

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PROCESSORS, MICS & MONITORS

PreSonus DIGIMAX
8-Channel Mic Preamp With Digital Outs

- 8 Dual Servo Mic Preamps with UltraWide dynamic range and very low noise operating levels • Dual Domain limiter on every channel
- EQ enhance, Pad and Phase on Power on every channel
- Insert inputs on channels 1 & 2 • Phase reverse on channels 1 & 2
- Eight 24 bit ADC converters • 24-bit Light Pipe and S/PDIF digital outputs • AES/EBU digital outputs are available as an option
- External clock sync input and Master clock output
- 1 U rack mount aluminum panel with blue anodized knobs

AVALON AD2022
Dual Mono Pure Class A Preamplifier

- 4th generation fully discrete, symmetrical Pure Class A mic preamp
- Mic and hi-Z instrument inputs • Selectable mic source loading for optimized passive mic matching • Gain switched in 4dB steps with a Soft Step output trim • Regulated +48v phantom power supply • Phase reverse
- Variable passive HPF • 20dB pad • Large illuminated analog VU meters and fast peak LEDs • High headroom +24dB input before overload
- Fully discrete Class A regulated audio power supplies • Teflon/silver wiring and shielded power supply boards for superior low level signal transfer

Focusrite ISA 110
Channel Strip

- Release of a single channel strip from the legendary Focusrite Studio Series recording console
- Ultra high-end transformer-coupled Class A mic line preamplification and EQ circuitry design originated by Rupert Neve, provides a warm yet transparent sound
- Line input included in preamp section with +/-18dB gain control
- High and Low shelving and two midrange bands of parametric EQ
- High and Low pass filters remove unwanted high or low frequency content

Lexicon MPX-200
24-Bit True Stereo Dual Effects Processor

- Powered by Lexicon's proprietary LexiChip • 24-bit A/D-D/A converters
- 1/4" analog I/O • S/PDIF digital inputs and outputs • A newly designed digital compressor is built in to all presets • 18 new, 1U high presets
- 24 reverb and 24 new locations with classic Lexicon reverb programs including Ambience, Plate, Chamber and Reverse joined by Tremolo Room, Chorus Flange, Pitch Delays, 2.5 second Delay and Echo
- Dual-channel processing provides two independent effects in a variety of configurations — Dual Stereo (Parallel), Cascade, Mono Split and Dual Mono • Up to 6 adjustable parameters are available in each program
- Full programmable over MIDI • Delay times and modulation rates can lock to Tap tempo or MIDI Clock

ANTARES ATR-1a
Auto-Tune Intonation Processor

- Automatically corrects pitch in real-time while preserving the integrity of the original performance
- Includes factory programmed chromatic and standard diatonic scales and has the ability to create custom scales
- Auto Mode detects pitch down to 25Hz
- Midi Scale Mode (MIDI function) allows you to construct a custom scale using a MIDI keyboard or sequencer
- 20-bit data path, 56-bit internal processing and balanced I/O

TC-HELICON Voice Prism
Vocal Formant / Pitch Processor

- Built-in mic preamp with 48V phantom power • 24-bit digital converters
- 4 voice backing vocal harmony with independent gender and humanizing controls • Lead vocal doubling • Complete vocal processing including Compressor, EQ, Delay, Tube Drive, Chorus, Flange and Reverb with Presets • Ultra easy interface • ELR mic input, 1/4" unbalanced TRS balanced, TO and S/PDIF stereo digital outs
- Optional Voice Craft card adds human voice modeling DSP algorithms as well as AES/EBU and S/PDIF digital I/O

audio technica AT3035
Cardioid Condenser Microphone

- Large diaphragm provides exceptional detail
- 144dB max SPL
- 19dB dynamic range @ max SPL
- 15 - 22kHz frequency response @ 80kHz
- 10 dB pad
- Requires 11 - 52v phantom power
- Custom shock mount provides superior isolation
- **20Hz - 20kHz frequency response**
- Includes shock mount and protective pouch

RØDE NT1000
Cardioid Condenser Microphone

- Externally polarized 1" pressure gradient condenser
- Ultra low noise transformerless circuitry
- > 134dB Dynamic Range
- < 14dB SPL Max SPL
- Requires 35 - 52v phantom power
- Internally shock mounted capsule
- **20Hz - 20kHz frequency response ±6dB**
- Includes zippered pouch, M2 Stand Mount, 3/8" - 5/8" Thread Adaptor
- Optional SM2 shockmount

SHURE KSM-44SL
Multi-Pattern Condenser Mic

Premium Vocal And Instrument Microphone Built Without Compromise

- Dual 1-inch gold sputtered Mylar diaphragms
- Class A discrete transformerless preamplifier
- Cardioid, omni and bidirectional polar patterns
- Includes Shure low profile suspension shock mount and swivel mount, protective pouch and locking aluminum carrying case
- **20 Hz - 20 kHz frequency response**

Hafler TRM-6 & TRM-10
Complete 5.1 Surround Monitoring Solution

TRM-6 Bi-Amplified Studio Monitors

Offering honest, consistent sound from top to bottom, the TRM-6 bi-amplified studio monitors are the ideal reference monitors for any recording environment whether tracking, mixing and mastering. Supported by Hafler's legendary amplifier technology providing a more accurate sound field in width, height and also depth.

- 1" Tweeter, 6" Woofer
- Bi-amplified (50 W R.F. 33 W Hi) w/Crossover
- 54Hz - 21kHz frequency response
- Electronically and Acoustically Matched
- Magnetically shielded

TRM-10s Active Subwoofer

Combining Hafler's legendary amplifier technology with a proprietary woofer design, the TRM10 active subwoofer provides superb bass definition required in today's studio and surround sound environments.

- 10" high-efficiency die-cast bass driver long excursion
- 250 watt low frequency amplifier
- 35Hz to 110Hz frequency response ±2dB
- 24dB/octave Linkwitz-Riley crossover variable (40Hz to 110Hz)

JBL LSR Series
Linear Spatial Reference Monitors

Ideal For Surround Sound Applications

LSR28P Near-Field Monitors

- Bi-amplified design — 250 watts for the low frequency and 120 watts for high frequency
- 8" woofer and 1" tweeter
- XLR/TRS combo input connectors can accommodate balanced and unbalanced signals
- **50 Hz - 20 kHz frequency response**

LSR25P Near-Field Monitors

- Bi-amplified design — 100 watts for the low frequency and 50 watts for high frequency
- 5.25" woofer and 1" tweeter • Shielded
- XLR balanced and RCA unbalanced inputs
- Front Panel Volume and Power Controls
- Built-in 80 Hz HPF for use with optional subwoofer
- **70 Hz - 20 kHz frequency response**

LSR12P Powered Subwoofer

- Incorporates the 2520 low-frequency transducer and the LSR12P amplifier which provides 250 watts of continuous power
- Designed to be connected to both the LSR28P (self-powered) speaker system
- Multichannel compatibility with Dolby AC-3, DTS and other surround audio systems

YAMAHA MSP-10
Bi-Amplified Monitor Speakers

- 40 - 40k Hz frequency response (-10dB)
- 120-watt power amplifier for the woofer driver and a 60-watt power amplifier for the tweeter
- 6" woofer and 1" dome-shaped tweeter
- Balanced XLR inputs
- Magnetically shielded enclosures
- Green power on and red clipping LEDs
- Master volume control for each speaker
- 3-position low and high trim switches
- Switchable low-cut filter optimizes unit response when used in a subwoofer system
- Available in Black (MSP10) and Maple Cherry (MSP10M)
- **SW10 powered sub-woofer also available**

HR-824
Bi-Amplified Studio Monitors

- 150W LF amp, 150W HF amp
- 8.75" balanced-field polypropylene cone woofer
- 1" aluminum dome tweeter with sensitive coated voice coil
- Every set is a "true" matched pair with a signed certificate from Mackie designs to prove it
- Full space, half space and quarter space placement compensation
- 39Hz to 22kHz frequency response (-10 Hz)
- Broad "sweet spot"
- 1/4" and balanced XLR inputs

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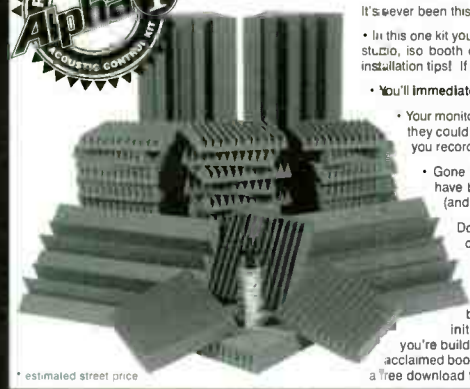
ACOUSTICAL PRODUCTS

BIG STUDIO SOUND: $299*

With the new Roominators™ Alpha1™ Acoustical Control Kit, it's easy to make your place sound great!

Big-name artists, networks, motion picture companies & studios know it: good gear in a bad room sounds no better than bad gear, so they tame their acoustics with goodies from Auralex. Now we've shrunk that big-studio sound down into the handy "take home" sized **Alpha1**!



It's never been this **easy & affordable** to make your room sound better!

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ROGER NICHOLS

▶ continued from page 130

crossfades. Default crossfade time: 10 msec. If you were able to highlight discontiguous regions, it would look like this (they would be waveforms in Pro Tools):

COMP: I love you so much I could puke
TRK # 1: **I** love you **so** much I could puke
TRK # 2: I love you so **much** I **could** puke
TRK # 3: I love **you** so much I could puke
TRK # 4: I love you so much **I** could puke
TRK # 5: I **love** you so much I could **puke**

Playback or "Loop" pointers would be set before and after the line. All tracks are assigned to the same output. Each track would use another voice so they could crossfade.

When you hit the space bar, playback would start from the play pointer (or would loop between the pointers if Loop Playback was enabled), and only the highlighted areas in the group would be heard — sort of what happens when you have multiple tracks assigned to one voice. In this case, you would hear "I" from track 1, "love" from track 5, "you" from track 3, and so on. The default crossfades would be performed at each switch.

Basically, each track would be muted except where highlighted. The highlighted section would start fading up at the crossfade time before the highlighted area, and fade out by the crossfade time after the highlighted area.

If you moved the highlighted area on track 2 earlier, it would force the highlighted area preceding it on another track to move earlier, like the region trimmer. If you used the option key (or whatever), you could drag the highlighted area of one track without changing the highlighted area of another track, thus allowing overlaps or blank spaces between the selections. There would be a key command to make one region snap to the position of the previous region boundary, or the position of the next region boundary, in effect eliminating the space or overlap.

If you drag a highlighted area vertically, only the highlight moves, not the region. The highlight would be restricted from moving in the horizontal domain when being dragged vertically, just like region drags. Playing a vocal comp like this would be a simple matter.

When you're done with one section, you simply move the play pointers to a new section. You should be able to add tracks to a comp group without disturbing the existing highlights. The newly added tracks would have no highlights until you put them there, so they would be just like tracks that were already part of the comp group that were never used for anything.

You could add an empty audio track to the top of a comp group. When the comp section is done, or when the whole track is complete, you could *Comp* the highlighted regions to the empty track. Each highlighted area would be copied as a region up to the empty comp track with the appropriate crossfades, producing a normal audio track. The highlighted areas would remain in the original positions on the comp source tracks in case you wanted to change anything later. When you make a change and *Comp* the group again, it would erase the regions in the top track and do the whole comp again.

Since the new comp track is a normal track, it could be used as one of the sources for a subsequent comp group, or you could bounce to disk to get rid of all of the regions that you wanted to.

Now, let's see which method would be faster. ■

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BIAS Peak 3.0 for Mac OS 9 and X, is the ultimate editing, processing, and mastering companion for Digital Performer! Peak gives you lightning fast, nondestructive waveform editing with support for audio files up to 32 bits and 10 MHz, including 24-bit/96kHz files. Unlimited Undo/Redo gives you the freedom to work creatively. Select an audio region in DP, choose the "Use External Waveform Editor" command, and instantly switch into Peak! Peak's sophisticated options for on-the-fly marker, region and loop creation are simply unparalleled. Advanced DSP and looping tools include Convolve, Repair clicks, Loop Tuner™, Loop Surfer™, Loop It™ and Guess Tempo™ and more. Process thousands of files, or just a few, using Peak's batch processor. Peak directly supports all MOTU audio interfaces and includes Roxio Toast™ Lite CD for burning your own redbook audio CDs directly from Peak's powerful playlists. Create web or multimedia content for export with multiple file formats, including Apple's QuickTime.

finalist macworld eddy

2000 EDITORS' CHOICE

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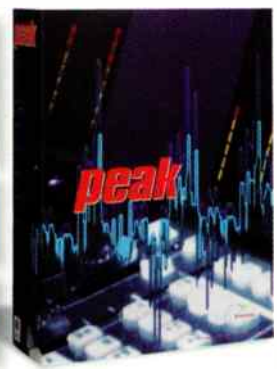


Aardvark Aard Sync II™

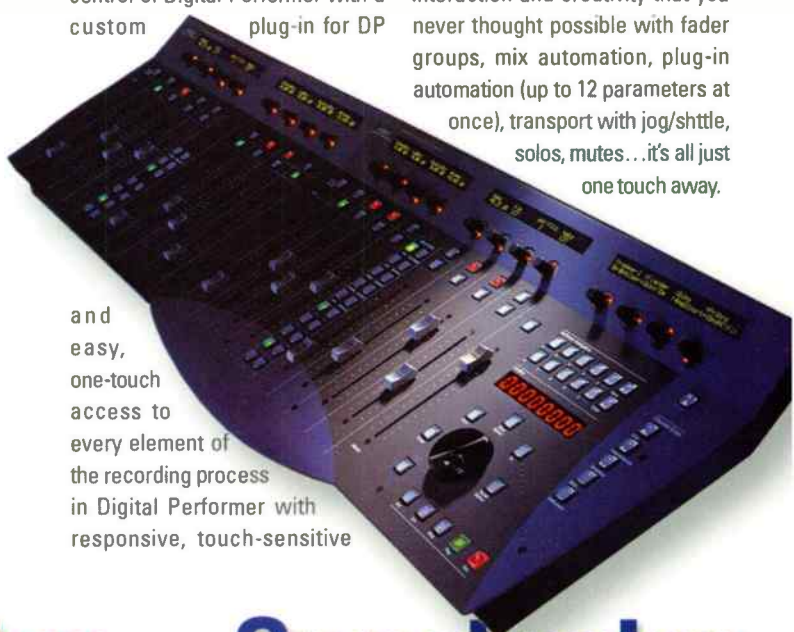
Ultra-low jitter master clock for your MOTU studio

The problem? Multiple word clock devices that you need to sync perfectly with your MOTU system. The Solution? The AardSync II Master Clock from Aardvark. The Aard Sync II will make everything in your studio slave together smoothly. With four industry standard word clock outputs and ultra low-jitter performance, you can set the Aard Sync II to generate any digital audio sample rate desired—not only 44.1 and 48 kHz, but also the pull-up and pull-down rates required for film and video applications. The AES/EBU outputs are low-jitter approved and make any converter sound more accurate. No clicks, no pops, no falling out of sync! Slaves to video blackburst in both NTSC and PAL/SECAM format. If you've got multiple digital audio devices in your MOTU studio that need to stay in sync, Aard Sync II is the wonder box you've been looking for. Call Sweetwater today to find out more.

RADIKAL TECHNOLOGIES SAC-2K™ controller

Precision touch-sensitive automated worksurface

The Radikal Technologies SAC-2K sets a new standard for hands-on control of Digital Performer with a custom plug-in for DP and easy, one-touch access to every element of the recording process in Digital Performer with responsive, touch-sensitive automated controls. Within minutes, you'll achieve a whole new level of interaction and creativity that you never thought possible with fader groups, mix automation, plug-in automation (up to 12 parameters at once), transport with jog/shttle, solos, mutes…it's all just one touch away.



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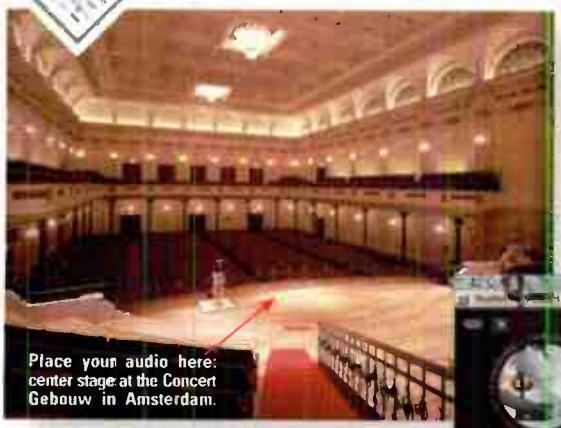
Or a dual-processor G4 desktop for maximum horsepower

MOTU DP3 audio workstation software
Now with full surround production up to 10.2

MOTU 828 FireWire audio interface
Or a MOTU PCI interface like the 2408mkII or 1296

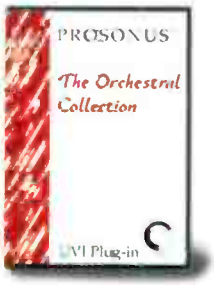
Altiverb™ Add real acoustic spaces to your mix with the first and only sampled reverb plug-in



Pictured here is the Concert Gebouw, a world-famous concert hall in Amsterdam with superb acoustics. Altiverb, the first (and only) real-time sampled acoustics plug-in, delivers the sound of this hall to your Digital Performer virtual studio — along with dozens of other sampled acoustic spaces. Altiverb is an astonishing breakthrough in reverb technology because it fully reproduces the acoustic qualities of real spaces, rather than synthesizing an approximation with artificial algorithms. Only a few very expensive ($10K+) hardware processors offer sampled acoustics processing, but Altiverb gives you this unsurpassed level of realism for less than $500, thanks to the amazing "Velocity Engine" Altivec processor in all G4 Power Macs. Provides dozens of real spaces, from concert halls to closets, or sample your own! Now shipping exclusively for Digital Performer. VST version coming soon.

bigfish audio™ UVI Plug-ins™ Universal Virtual Instrument plug-ins for Digital Performer and MAS

The UVI Plug-in will revolutionize your Digital Performer system. It's a playback sampler that opens as a plug-in right inside your Digital Performer project. With nine brand new titles to choose from, you can have a different sound library with hundreds of samples at your fingertips. What makes this plug-in so unique? Instead of trying to cram an entire sound collection into a ridiculously small amount of RAM, these libraries serve as a virtual sound module right inside DP. No more wasted time loading CD-ROMs, waiting, listening, loading again, waiting some more... With UVI plug-ins, the patches are loaded in seconds and are available directly inside Digital Performer. There's nothing quite like this! London Orchestral Percussion, Prosonus Orchestral Collection, Prosonus Grand Piano, Six PlugSound Volumes: 1-Keyboards, 2-Frets, 3-Drums, 4-Hip Hop Toolkit, 5-Synth Collection, 6-Global and more titles on the way.



U V I Plug-in™

Cool School Interactus™ Vol. 6 — Interactive Training for Digital Performer 3

From the newbie to the guru, there's no better way to get more out of Digital Performer than CSi-Volume 6. It's like having a DP product specialist looking over your shoulder, with click-for-click tutorials, a massive glossary of DAW-related terms and over 40 movie tutorials. Includes our new "AutoPlayer" mode: just sit back and soak up the info!

SweetCare™ 24-hour support from the MOTU system specialists!

Nobody knows MOTU-based systems better than Sweetwater. So we've developed SweetCare, one of the most comprehensive approaches to technical support in the music industry. On the web or in person, our commitment to helping our customers is our passion. Our 23 years of experience with advanced music technology products from companies like MOTU is at your disposal 24/7 via our online 24-Hour SweetCare Support Center or in person six days a week with new extended hours on Saturdays. SweetCare includes on-line services beyond just Q&A, such as in-depth articles, live media, online forums, and the most complete knowledge base of musical and technical information available anywhere. Visit www.sweetwater.com/support for complete details.

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Avalon VT-737 SP™ Tube preamplifier / opto-compressor / Class A equalizer for your MOTU interface

The VT-737SP brings that magic Avalon sound to your MOTU workstation. Run your dullest, most sterile mic through the VT-737 SP and you'll be amazed at how warm and sweet it sounds. This 2U space combo brings a new standard to high-end audio, taking your sound to places you never thought possible and giving you precise creative control. With vacuum tube and discrete design, the VT-737SP provides a wide range of tube tone and control: Avalon sound with maximum flexibility.

AVALON DESIGN

PURE CLASS A MUSIC RECORDING SYSTEMS

PreSonus DigiMax™ Pristine 8-channel mic pre-amplification for the MOTU 2408 audio interface

Why is the PreSonus DigiMax perfect for your MOTU rig? Because it's the purest path to digital. DigiMax combines 8 channels of award winning 24-bit mic pre-amplification with our unique simultaneous RMS/peak detection limiting and EQ enhancement, giving you maximum gain before clipping while maintaining the musical transparency of a compressor. The result? Fast, natural and versatile limiting on every channel. And DigiMax connects all 8 channels via ADAT optical to your MOTU 2408 system in pristine, 24-bit digital glory. And you can expand: add up to 3 DigiMax's to your 2408.

CM Labs MotorMix™

Hands-on automated mixing for Digital Performer

With its new, custom software written specially for Digital Performer, MotorMix becomes a seamless, tactile extension of your MOTU software recording environment. Put your hands on eight 100mm motorized faders and rotary encoders to tweak your mixes in record time. Gain instant easy access to all MIDI and audio tracks with control banks. You'll never even think about mixing with a mouse again. Imagine having tactile control over most of Digital Performer's features with MotorMix's intuitive layout and easy operation. MotorMix gives you all the advantages of a professional mixing board, at an incredibly affordable price. Bring motorized mixing to your MOTU desktop today. For more info, visit cmlabs.net or contact your Sweetwater sales engineer today to enter the future of mixing.

CM Labs DashBoard™

Editing worksurface for Digital Performer

In the beginning, there was only magnetic tape and razor blades, but editors could still make over 200 edits per hour! Dashboard restores speed and finesse to editing with DP3 and eliminates fatigue caused by point-and-click editing. Dashboard will bring you the same level of control to Digital Performer as the very popular Motor Mix. Dashboard can operate as a stand-alone worksurface, or it can be fitted to one or more Motor Mixes. Dashboard's Locator, Navigator and Zoom control sections get you qickly to where you want to edit, and the Clipboard section makes your actual edits. You can arm and record tracks remotely with Dashboard just like machine control. The mixer section provides access to Digital Performer's mixer and plug-ins.

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WAVES Gold Native™ Version 3.2

Optimized perfomance and complete automation

Check out the new Restoration Bundle — download the demos at www.waves.com

Waves Native Gold gives you the complete line of legendary "must-have" Waves processing, including C4 MultiBand and Renaissance Reverb. Version 3.2 introduces cutting edge performance optimizations and complete MAS automation. What does this mean for you? Apply more Waves processing to your mixes than ever before possible. Automate your Waves plug-ins with pristine, sample accurate precision and 32-bit floating point processing. You get everything you need to track, sweeten, sound design and master. Get Native Gold now and join the top industry pros who rely on Waves to make their mixes Gold everyday.

Smart Code Pro™

Surround Encoder Plug-ins For DP3

KIND OF LOUD

SmartCode Pro is the first and only surround encoder plug-in for Digital Performer. It allows you to deliver fully encoded surround mixes to your clients. Burn CDs or DVDs that you can preview using any consumer DVD player that supports Dolby Digital™ or DTS™ — a crucial final step in producing professional quality surround mixes. By encoding with Smart Code Pro directly within DP3, you avoid having to invest in expensive dedicated hardware encoders (that cost thousands), which saves you both time and money.

SmartCode Pro is available in two versions to accommodate the two most widely used surround formats: Dolby Digital and DTS. Both versions allow you to preview your 5.1 surround mixes in real time 5.1, then encode and decode the mix to create a 6-channel surround master. Smart Code Pro is a must-have for serious surround production with DP3

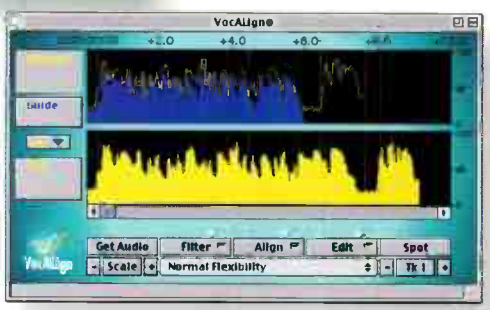
GLYPH TECHNOLOGIES, INC. M Project™

High-performance FireWire hard drive storage

M Project is the new FireWire hard drive for your MOTU hard disk recording system from Glyph Technologies. M Project adds up to 75 GB of audio storage to your MOTU rig in seconds, backed by Glyph's lengendary service and support. M Project is the only MOTU-approved FireWire drive for the 828 and all MOTU PCI-324-based systems, including the 2408mkII, 1296, 1224 or 24i. M Project easily shares the FireWire bus with the 828, and even allows you to connect multiple 828s to your computer. And M Project is the ideal alternative to SCSI drives because it frees up a PCI slot. So call Sweetwater today and ask about M Project, the ultimate storage solution for MOTU hard disk recording.

SYNCHRO ARTS VocALign™ Project

Unique automated audio alignment software



Still spending hours re-recording dialog or vocals? There is another way! Because of its unique ability to align two signals, VocALign can be used creatively to take guide or even live tracks and create performances with perfectly aligned overdubs. VocALign also gives the producer the ability to choose the rhythm and pace for a specific vocal, or even lay down the required tempo pattern for the artist. VocALign gives you perfectly aligned double-tracked vocals, tight backing vocals, easy re-grooving of recorded vocals for remixing and shorter overdub sessions. For post-production, VocALign is designed to take a line of replacement dialog and precisely align it with the dialog recorded with picture. And VocALign Project™ integrates seamlessly with Digital Performer 3. At only $299 list, can you afford to be without it?

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Suggestions for DAW manufacturers for winning the vocal-comp race

Vocal Comps

One of the most time-consuming operations performed on many recording projects is vocal comping. With 48 and more audio tracks available these days, it's common to record 10 or more tracks of a vocal performance and then gather together the best parts to produce the final vocal track.

As much as I've tried to do comps in Pro Tools, it's still 10 times faster on the Sony 3348 48-track digital machine. First, let me explain how it's done on the 48-track, and then I'll share my ideas for how to do the same thing in Pro Tools. I'm not particularly picking on Pro Tools; it just happens to be the system I've used most of the time for the last 10 years.

3348 VERSION

Let's say that we have five or six tracks of vocals that we've been working with. We listen to all of them, pick the best parts of each, and bounce them into a comp track. Let's say that the first time we do this comp; all of the selections are easy, with no tight punches.

On the 48-track, you select the source and destination track, and record on the destination track. When you get to the spot where you need to use a different source track, you select the new source track, punch into record, and continue. Pretty straightforward. Here's where it starts getting tricky.

You now have a comp track, and you record another five or so tracks of vocals. You listen to them and think that some of the phrases from the new tracks might sound good in the comp track. You can either punch the new stuff into the existing comp track, or you can make a copy of the comp track in case you change your mind or make a mistake and want to get back to where you were.

Since you're now just replacing small parts of the destination comp track, you set up the source and destination and punch in and out of record using *Rehearse* mode. You now hear how the new part sounds in the comp. You sometimes change the in or out points and listen to the pre-roll, auto-punch, and post-roll while still in Rehearse, just to make sure that everything is okay. If the punch is good, then you do it for real with Rehearse turned off. The Sony 3348 has a built-in crossfade during the punch-in and punch-out. It's usually set to 10 msec, but there's a front-panel switch that you can change to try different crossfade times from 0.1 to 250 msec. If the timing between the two vocal tracks is off, or you have to punch in the middle of a sustained note, changing the crossfade time sometimes cleans it up.

This method of comping works well, and is very fast.

PRO TOOLS VERSION

In Pro Tools, you select regions in a source track and drag them up to the comp track. If you're performing a simple comp without lots of trials to get the feel right, this is fine.

Let's say that the vocal line you're working with is "I love you so much I could puke." The banter in the control room is as follows:

"Lets try replacing 'so much' with track 2."

"Naw, try it from track 5."

"The 'much' is ok, but let me hear the 'so' from track 2."

"The phrasing is early, but I like that 'so much,' try the 'you so' from track 2 and the 'much' from track 3."

"No, that doesn't work; try the punch in the middle of 'you' with a longer crossfade."

"Great, now let's see if we can find a better 'ch' on the end of 'much' cause it sounds like I was spitting out my teeth."

With the 48-track, you can perform all of the permutations about as fast as you can say them. Just try it in Pro Tools.

If the edit stayed simple, like just trying the "so much" from various tracks, you would make a group out of all the vocal tracks, separate a region, then copy the region from each track into the comp and listen. But as soon as you start sliding stuff around and trying to get new regions, you are dead. And besides, no auto-crossfades.

HEADS UP, MANUFACTURERS

Here's a possible solution that Digidesign or another DAW manufacturer could implement: Let's say we have five vocal tracks. In the Group dialog, we make these tracks a "Comp Group." This would assign a DSP for

▶ continued on page 125

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Digital Performer In The Mix

Ken Jordan and Scott Kirkland
The Crystal Method

Ken: "We use Digital Performer for our entire creative process, from a song's initial conception, to loop and phrase development, to MIDI sequencing, to audio tracking, to automated mixing, to final mixdown. For 'Tweekend' we stayed 24-bit the whole way, until dithering to 16 bits during final mastering."

Scott: "And when we compared Tweekend to Vegas, we were blown away by how big and deep Tweekend sounded." And mixing native inside DP? "We mixed 9 of 11 tracks entirely inside Digital Performer. We were maxed out on plug-ins and automation on almost every track on a G4/500. It's just so easy to drag, stretch and draw in DP — very intuitive." And as a creative tool? "Digital Performer has always delivered. It's just that simple."

Learn more at www.motu.com

MOTU

'Tough Guy' Digital Performer project courtesy of Ken Jordan and The Crystal Method. From the 2001 release *Tweekend* (Geffen).

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