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VOLUME 13 • ISSUE 6

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ON THE COVER:
CHRIS FOGEL BY EDWARD COLVER

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EDITORIAL

Rewind

In the May issue, I revealed that I had recently relocated my studio and myself to Nashville. During the course of this move, I unearthed some old pieces of equipment and some archives of old productions I'd worked on. For me, doing this is sort of like looking at old photographs — I always end up with the "what were we thinking with those clothes back then" reaction. It can be good for a chuckle, but it also brings home just how far we've come.

Ten years ago, Alesis ADATs were still a new development. I had tracked a CD using one, but most of my work was done on an analog machine sync'ed up to an Atari 1040st for MIDI work. Mixdown was to a DAT machine when I could get one, otherwise, my trusty 1/4-inch two-track was the format of choice. CD recorders? Not even a dream. Likewise, hard disk recording had yet to rear its infant head in my studio world. Pro Tools, Digital Performer, Nuendo, Logic Audio, SONAR? Not even a glimmer in my gear-lust riddled brain. No plug-ins, digital audio editors, digital mixers, 5.1 surround; the list goes on and on. No Internet, either — although I managed to run my phone bill up to obscene levels lurking on PAN and other proto-online services. Even *EQ* magazine was only a year or two old.

Yeah, there are those who'll say that these various technological advances haven't all been for the better, but that's a topic for another editorial. For now, I think it's worthwhile to pause and reflect on just how far we've come — both technologically and in terms of the work we do.

Take a moment and dig out some of your old gear and recordings; if not literally, then remember back to the "old days." Maybe some of the stuff you come across will be better than what you have or do now. If so, great — learn from it!

In these difficult economic and political times, it's easy to take a dim view of the world we live and work in — I hear it from manufacturers, studio owners, engineers, and musicians every day. There certainly is a lot to be concerned about, but it also doesn't hurt to occasionally remember that we really do have it pretty good in so many ways....

—Mitch Gallagher

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"I HAVE NO PROBLEM WITH HARD DISK RECORDING, HOWEVER, I DO HAVE A PROBLEM WITH ARTICLES IMPLYING THAT ONE NO LONGER NEEDS TO LEARN ANALOG RECORDING."
—SHIVAUN O'BRIEN, SOUND CITY STUDIOS

HERE'S THE TAPE

One recent afternoon, as the studio was buzzing with energy and music from both control rooms, the mail arrived with *EQ*'s April issue. As usual, the clients and crew of the studio were eager to read the magazine, but we were a little shocked by Roger Nichols's article "Where's the Tape?"

Mr. Nichols was writing about his experiences and offering advice in working with hard disk recorders, but his first paragraph stated "all professional 24-track and 48-track machines have ceased production," and added, "So if you don't get used to hard disk recording soon, you probably won't be recording on anything." Sound City Studios tracks, overdubs, and mixes over 30 records a year, and 75% of those records include analog tape machines and Pro Tools in use together, the other 25% is all analog.

Our clientele of producers' ages range from mid-'20s to early '60s, and all their work is major releases with many success. I have no problem with hard disk recording, however, I do have a problem with articles implying that one no longer needs to learn and appreciate analog recording. I would never hire anyone who is not educated in all formats — if I can align a 24-track, you better know how to as well.

A blanket statement such as "So if you don't get used to hard disk recording soon, you won't be recording on anything" is irresponsible. We still align 24-track machines, print tones, and God forbid we even occasionally cut tape with a razor blade! We have been making records for over 30 years, achieving over 60 gold and platinum credits and embracing new technology along the way — even though some of that new technology did not remain around for long. We need to learn from the past and look to the future, but a closed mind will never be able to learn.

Shivaun O'Brien
Studio Manager
Sound City Studios

MESSAGE HEARD

Just wanted to say that I enjoyed Mitch Gallagher's editorial in the April issue of *EQ*. It is great to remind people of the importance of their hearing.

As someone who is a new subscriber and new to audio, I really enjoy the magazine and the info inside.

I currently am volunteering with our church in the broadcast audio area as well as FOH for some of the smaller youth services. I learned the lesson about ear plugs recently when I flew from Phoenix to Dallas. Had to change planes in San Antonio. I was arriving home just in time for soundcheck for our Saturday evening service and discovered that, due to flying for several hours, my hearing was in no shape for a quality soundcheck or service. The difference between the Saturday soundcheck/service and Sunday was very dramatic. Needless to say, Sunday was much better.

Robert Head
via Internet

CORRECTIONS

In the March 2002 issue, we implied that Digidesign's Soft SampleCell doesn't offer full-recall capabilities. In fact, if you're using Soft SampleCell in conjunction with a Pro Tools session, when you open the session, Soft SampleCell will automatically launch and load the necessary samples and programs.

In the April 2002 issue, we referred to Linda Ronstadt as "Linda Rondstadt." In the same issue, in the Marcus Miller article, a PZM microphone was inadvertently referred to as a "PCM" microphone — twice.

In the May 2002 cover story on BT, "aleatoric" is misspelled, and to clarify, is based on chance, rather than on randomization. Finally, Bartok didn't compose 12-tone music in the context referred to in the article, and wasn't involved with aleatoric composition or music.

Our apologies for any inconvenience these errors might have caused.

PASSINGS

The music industry recently lost two notable performers well before their time: Alice in Chains' Layne Staley and Lisa "Left Eye" Lopes from TLC.

Layne Staley's unique voice and haunting lyrics can be heard throughout the Alice in Chains (AIC) catalog, including the EPs *We Die Young, SAP,* and *Jar of Flies,* and the full-length albums *Facelift, Man in the Box, Dirt, Alice in Chains,* and *Unplugged.*

Coming out of the Seattle grunge scene, AIC differentiated themselves with a harder edge than their contemporaries, but disbanded in the mid-'90s due to Staley's well-publicized battle with addiction.

The 34-year-old Staley was found dead in his Seattle apartment on Friday, April 19, an apparent victim of a drug overdose. Staley and Alice in Chains' influence on modern music lives on in contemporary bands such as Creed and Godsmack.

Lisa "Left Eye" Lopes, who was killed at the age of 30 in an auto accident in Honduras on April 25, was one-third of the popular R&B group TLC. The group's first album was the multimillion-selling *Ooooooohhh...On the TLC Tip,* which was followed by the even more successful *CrazySexyCool,* featuring the chart-toppers "Waterfalls" and "Creep." In 1999, TLC released *Fanmail,* which featured the hit "No Scrubs," and joined the trio's other releases as a multiplatinum seller.

Lopes, who was the rapper of the group, completed her first solo album last summer, *Supernova,* which was not released in the U.S.

Lopes was vacationing in Honduras and volunteering at a child welfare center.

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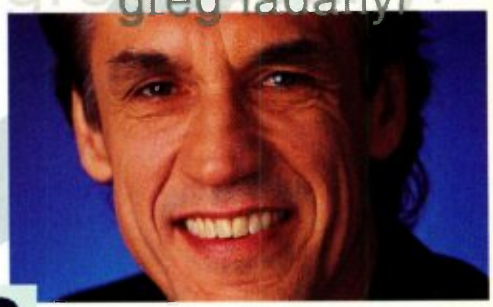

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PRO TOOLS FREE

How much does Pro Tools Free have in common with the latest version of Pro Tools? Are the files compatible, and is PT Free a good way to learn Pro Tools? Basically I'm trying to just learn Pro Tools so I can collaborate with some people who use it. I don't need MIDI outside of MIDI clock — just audio recording, editing, and arrangement of sample-based music.

—Nawledge, Santa Monica, CA

PT Free has the same basic interface as the other versions of Pro Tools (LE, TDM, HD). It's a good way to get some "Pro Tools Time" under your belt, and the price is certainly right.

Unfortunately, you sort of get what you pay for. I've had problems getting Pro Tools Free to work on some systems, and it's certainly less reliable than other versions. If you can get it working, chances are you'll have your share of crashes. There are still quite a few people who report problems with getting it to work well — but then, after installing something like PT LE (Digi 001 or Audiomedia III) on the same computer, the problems go away.

I look at PT Free as a "advertisement." Yes, you can probably get some work done with it, but, in my opinion, you can't really judge the overall "user experience" properly with PT Free — it's much better as you go up the Pro Tools ladder. Files are compatible, so you can take PT Free files and sessions and load them into a PT LE or TDM system. Remember though that you only have eight tracks maximum, and you're limited to only two channels of audio I/O.

The Pro Tools software is pretty easy to use, and it is one of the easiest audio editing programs to learn (and I've pretty much used them all). MIDI is rudimentary at best, but that's a non-issue for you.

PT Free is a large download (about 30 MB), so your only cost is the download time. Give it a try; if you like it, or need to collaborate with other PT users, I strongly recommend a Digi 001 Factory system. This bundle costs around $1,200, but includes about $2,000 worth of very cool plug-ins (the Bomb Factory stuff is, well, the bomb!). The regular Digi 001 (non-"Factory") is typically under $800. Compared to PT Free software, you get 18 I/Os, 24 audio tracks (instead of eight), 128 MIDI tracks (instead of 48), the ability to use all the RTAS plug ins (most of which you can't use on the PT Free software), etc.

—Phil O'Keefe, Riverside, CA

Pro Tools Free would not work worth a damn on my computer. Imported WAV files would not play back correctly and the latency was terrible. Not a very good advertisement for Pro Tools! I would never run PT on a PC.

—Wewus, BoFunk, NC

Those problems are not uncommon, so some people reach the conclusion that Pro Tools won't work on a PC. Actually, this is not the case. Running a self-built Athlon XP 1800 system, I'm able to get 24 tracks, plus 14 aux tracks, each with five plug-ins (the infamous "davec PT performance test"), and the thing *never* crashes. It's fast, stable, and solid as a rock, with latency of 2.9 ms. You'd never know it would be that way based on PT Free's performance.

—Phil O'Keefe, Riverside, CA

I've been using Pro Tools LE and am happy with it. It doesn't crash on an AMD 1.4 GHz with 512 MB RAM. With my background in live sound, computers, and Cool Edit Pro, I was able to dive in to Pro Tools very easily. I'd say that within two hours I was using it well; after a week now it's intuitive. I'm wondering how much better it might be if I read the manual!

—Rob, Montreal, Canada

Phil is exactly right. I started on PT Free — what a pain in the ass! But I was assured by enough people that it was just the free version. So I made the leap and bought a Digi001 system. Works flawlessly. No crashes...ever.

—Justin Sturm, Costa Mesa, CA

HEY COMPUTER — SHUT UP!

I want to build by own PCs and make them as quiet as possible. I have a feeling it's going to be much cheaper and way more efficient than buying packages that come with stuff I don't want or need.

It seems that the Seagate Softsonic Barracuda drives are the quietest on the planet. And I read somewhere that Molex has a thing called Silent Systems, which is like an enclosure for your internal hard drive that cuts noise by 90%. There are some fan replacements out there, too, which also seem to stop noise considerably. Anyone had much experience in building quiet PCs?

—BevvyB, London

I'd do this:

- Buy a rackmountable chassis and soundproof it (expensive, but it'll last a lifetime)
- Buy the best silent power supply you can buy (around 300W, depending on your needs)
- Enclose silent HDs (IBM liquid bearing)
- Choose a silent CPU cooler
- If necessary, put one or two silent case fans inside
- Don't buy a video card that has a fan

Assemble all this in a rugged, 4U rackmountable flightcase (or 6U if you add audio and MIDI interfaces) and pair it with a good TFT screen and some long screen/keyboard/mouse cables. *Voilà* — a powerful, silent, and *portable* DAW!

—Jindrich, Mallorca

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CONCERT 44 SERIES Never before have so many features been packed into such a rugged, easy to use, American made mixer. The best feature of the Concert 44 Series mixers is the sound. Sound that is pure and quiet enough for your digital recording studio! State-of-the-art low impedance, low noise balanced preamps are featured on every channel. The near theoretical limit on THD distortion is below .01% to guard the purity of your sound.

TRUE 4-BUS DESIGN The Concert 44 Series offers increased mixing flexibility over standard stereo consoles by letting you assign channels to one of the 4 SUB GROUPS or L/R. This allows you to mix the entire drum or choir section into one of the 4 sub group faders as a sub master.

TWO EFFECT SENDS / TWO 24-BIT EFFECT PROCESSORS Two built-in 24-Bit processors, each offering 256 stereo effects, is a first in a 4-bus mixing console. Each processor offers lush REVERBS, rich CHORUSES, thick textured FLANGING and pristine ECHOES. Everything is adjustable back into the monitor systems so each performer can hear exactly what the audience is hearing.

FOUR MONITOR SENDS Every channel can access any of the 4 MONITOR mixes while still having access to 2 EFFECTS. The MONITOR 4-ALT EFF2 level also sends to the EFF2 for two simultaneous effects per channel.

TWO 9 BAND EQUALIZERS Precision equalizers provide precise 1 octave adjustments to tune in your overall sound and control feedback. Two independent 9 BANDS offer total flexibility for use with the monitors or L/R mains

3 BAND EQ MID SWEEP The superb EQ system gives extended tone shaping. The LOW builds bass starting at 20 Hz through 80 Hz. The MID FREQ. range is 100 Hz to 5kHz for guitar and vocals. The 11.5k Hz HI treble adds sparkle to your top-end without adding harshness. The LO CUT switch eliminates stage rumble that would normally rob power from your woofers.

SWITCHING POWER SUPPLY Our exclusive 125k Hz switching power supply eliminates transformer noise. Like a laptop computer, go anywhere in the world and not worry about power because you can run on any voltage from 90 to 250VAC.

CHANNEL FEATURES Balanced XLR, LINE & INSERT (DIRECT) connectors, L/R PAN, L/R, SUB 1-4 ASSIGN switches, PFL (hear your channel) & MUTE switches, PEAK & SIGNAL led's, input GAIN control, 60mm FADERS and PHANTOM power. **MASTER FEATURES:** 4 SUB GROUP plus L/R faders, L/R & PFL assign switches, MONO control/output, stereo HEADPHONES tracks the L/R METER switches, 2 EFFECT SENDS, 4 RETURNS, RCA TAPE IN/OUT jacks. Effects 1-2 FOOT SWITCH jack. All 1/4" & XLR outputs are BALANCED.

ENGINEERED TO LAST At the heart of these USA made mixers are sealed controls and switches to guard against the outside elements. Heavy-duty jacks provide a positive connection to your cables. Fire retardant FR-4 military spec circuit cards feature double-sided copper to eliminate RF interference. These mixers are built to strict standards ensuring professional sound every time. Order one today on our money back guarantee and make a world of difference in your sound!

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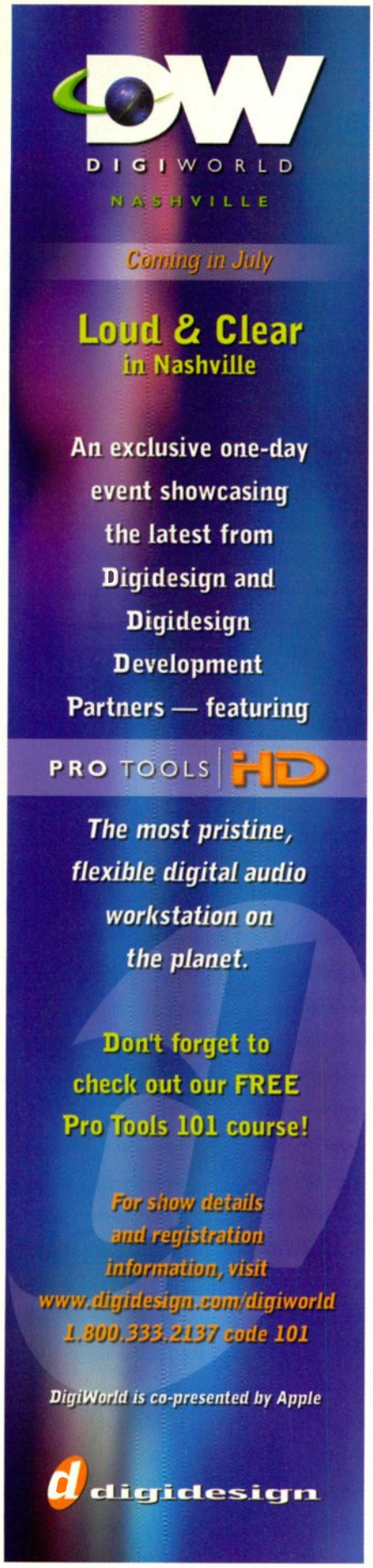

My PC is really noisy, but I don't care at all — I simply put it 30 feet away in another room. I had to invest in proper cables and a special inter-stage amp for the USB-bus (all in all, about $100), but I'll never have to worry about noisy PCs anymore.

The "loudest" thing in my (home) studio is the water running through the central heating, followed by the mechanical hum of my rack gear.

—Michael, Berlin, Germany

I'm running dual 21-inch CRT monitors using HD15-to-5BNC cables. I really don't see how or where I can find these in 30+ foot lengths — it's hard to find them at 10-foot lengths, and they cost about $40–$50 a pop. Also, for your basic keyboard and mouse cables, can you run those kinds of lengths? Any issues with signal loss? Are you doing all of this using USB devices/connections?

—Miroslav, Hudson Valley, NY

For my dual monitors I use BNC cables to split up the signals for RGB and Horizontal/Vertical sync. When I tried one 15-to-15-pin on one monitor and left the 15-to-BNC on the other, wow! I could not believe the difference. Everything is so crisp, it looks like it was cut with a razor blade. But, of course, not all monitors give the I/O option to choose VGA, S-VHS, or BNC connectors. These are Mitsubishi Diamondtron Plus 100e 21-inch monitors.

—NYC Drew, New York, NY

I've read the silent drives don't perform as well as the ordinary ones. Another issue is heat build-up in enclosed systems.

—MickeyBee, Timra, Sweden

I've investigated "silent" power supplies, and it would appear they all are simply stepped-down fan speed supplies, which run hot, and that doesn't fix the CPU cooler noise. I think mounting an external ducting system makes the most/cheapest sense, since you can move more air cheaply across a distance (using something like laundry dryer ducting), and it can be quiet — high volume/low velocity.

—Chip McDonald, Augusta, GA

For long runs, contact a professional audio-video installer/supplier in your area. I have done video installs with 200 feet of BNC with no problems. They make amps for this sort of thing, but you may not even need one for a 30-foot run. The cables are indeed not cheap, but if you just buy multicore video cable and make your own, it's not so bad.

—Steve Smith, Kansas City, MO

Regarding video cable length issues, for V/XGA systems, distribution amplifiers (DAs) are very common and inexpensive (under $100 for some). Any company that sells and installs video projectors will have them, and I'm sure you can also find them all over the 'net. Office supply-type places may even have them. I have driven 100-foot XGA data cables to video projectors with them — sharp image, no problems. If you get over about 10 feet of VGA cable without a DA, your image will suffer noticeably.

—ZekeSmith

There are maximum lengths for passive cables. Beyond that, you will need a proper inter-stage amp. Here are some examples of maximum reliable limits:

- Printer port: 12 feet
- USB: 15 feet
- Keyboard/mouse (PS2): 30 feet
- Monitor: depends on screen resolution. I personally run 1280 x 1024 at 75 Hz. There's no problem over 30 feet with high-quality cable. Note, though, that the risk of artifacts (such as mirroring) rises with your resolution/refresh rate.

I did not extend the cable between the PC and my hard disk recording sound card's breakout box. Instead, I use high-quality balanced audio wiring.

The biggest advantage of this solution is you'll be able to upgrade your computer hardware as often as you want *without* having to worry about noise, buying new cases, silent fans, etc.

—Michael, Berlin, Germany

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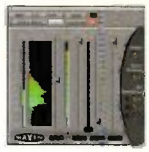

Maxim

Renaissance Reverberator

SansAmp

Renaissance Equalizer

MondoMod

Bruno

Renaissance Compressor

Compressor Bank

moogerfooger Lowpass Filter

Linear Phase EQ

DaD Valve

SoundReplacer

Sci-Fi

DaD Tape

Tel-Ray

SoundBlender

PitchDoctor

Oxford EQ

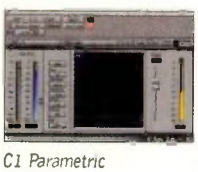
MetaFlanger

JOEMEEK C2 Compressor

PS22 Pseudostereo

Recti-Fi

Echo Farm


C1 Parametric Compander

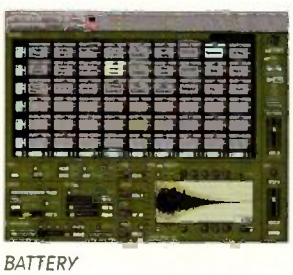
DeEsser

D-fx Flanger

moogerfooger Ring Modulator

Linear Phase Multiband

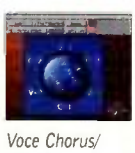
d3


BATTERY

Amplitube

DSPider

TruVerb Room Emulator


Voce Chorus/ Vibrato

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ChannelStrip

bombfactory LA-2A

GRM Tools Band Pass

PRO-52

Fairchild

Voce Spin

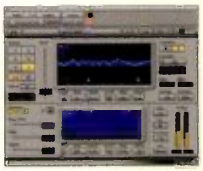
Virus

L2 Ultramaximizer

PurePitch

Microphone Modeler

Amp Farm


Enigma

C4 Multiband Parametric Processor

SynthSpyder

UltraPitch

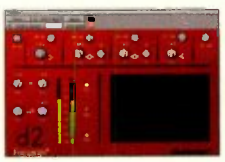
Audiotrack

PAZ Psychoacoustic Analyzer

Scratch

Speed

Pultec EQP-1A


d2

Analog Channel

SuperTap

moogerfooger 12-Stage Phaser

Q10 Paragraphic Equalizer

Auto-Tune

bombfactory 1176

Reverb One

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HARDWARE

Carvin's SRS6.5A active bi-amplified studio reference monitor, based on the passive SRS6.5, incorporates a built-in 100W RMS (75W low, 25W high) amp section. The 90–260V switching power supply is compatible with AC worldwide, and virtually eliminates unwanted hum. The drivers are magnetically shielded for use near computer screens. In addition to flat response, the SRS features a Contour switch that provides a more "hi-fi" mode for real-world comparisons. The front ported design allows placing the SRS monitors anywhere in the room, with minimum low-frequency side affects. **www.carvin.com**

Midiman's DMP3 mic/instrument preamp ($249.95) offers two identical channels with XLR and 1/4-inch TRS inputs, and 1/4-inch TRS balanced outputs. High and low gain controls accommodate a wide range of mic and instrument levels, offering up to 66 dB of gain and 20 Hz–100 kHz frequency response. Each channel also features a VU meter, phantom power, low-cut filter, clipping indicator, and phase switch. **www.midiman.net**

HHB's rack-mount **CDR830 BurnIT PLUS** builds on the original BurnIT by adding balanced XLR analog I/O with line/mic input gain switching, balanced XLR digital I/O, word clock input (enabling sync playback at 44.1k or 48k sample rates), and parallel remote input. It features 24-bit A/D converters, 24-bit multi-level Delta Sigma D/A converters, and an advanced laser assembly to promote consistent recordings that are compatible with a wide range of CD players. A facility for recording direct from dynamic microphones removes the need for additional preamplification equipment. **www.hhbusa.com**

The **Lynx L22 192 kHz PCI digital audio card** ($749) from **Lynx Studio Technology** supports 2 channels of 24-bit, 200 kHz A/D and D/A conversion, and AES/EBU and SPDIF I/O. The L22 can capture or generate signals beyond the audio bandwidth up to 100 kHz with extreme accuracy, and achieves a 115 dB dynamic range via comprehensive noise-rejection design techniques. The L22 also provides I/O expansion via its two LStream ports. Combined, these ports allow 16 channels of additional I/O from external ADAT, AES/EBU, or TDIF devices. The ports can also route data among, and synchronize to, other L22's or LynxTWO interface cards to create high-channel-count systems. **www.lynxstudio.com**

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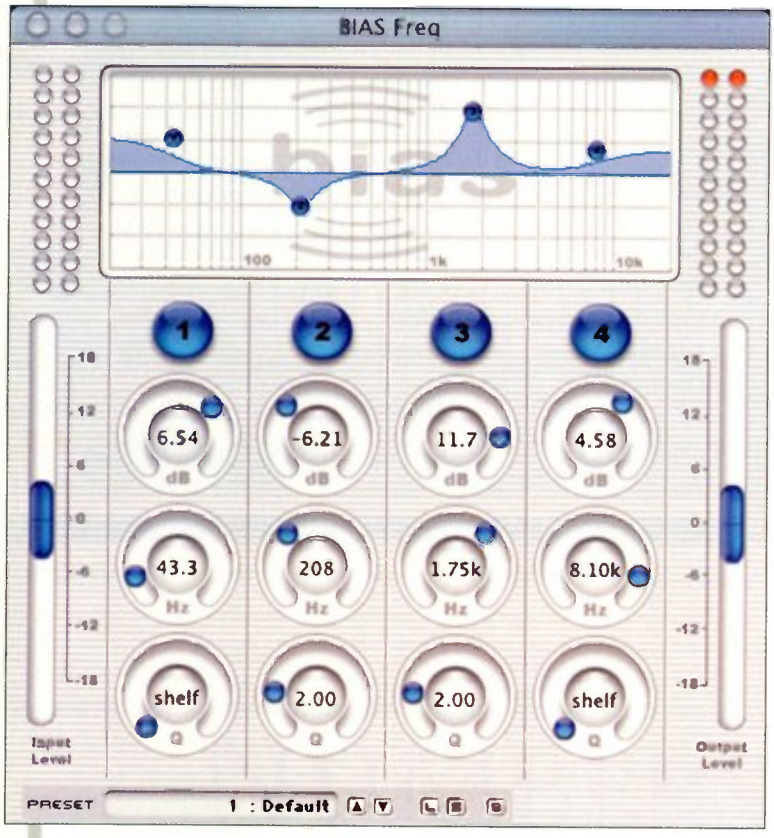

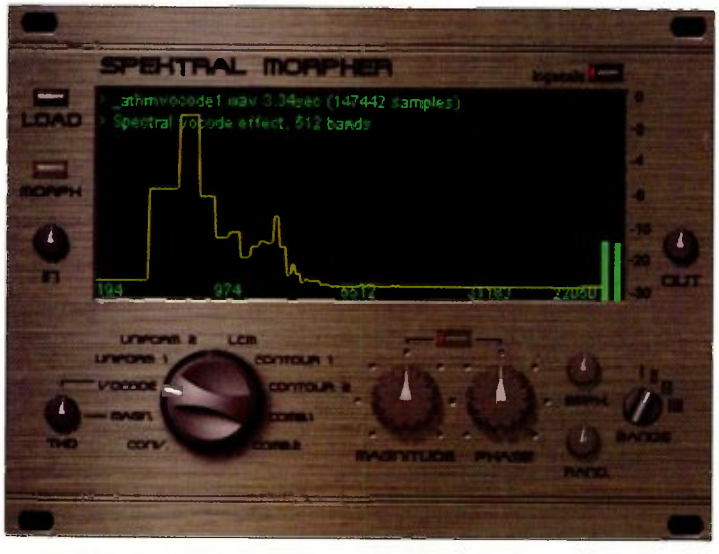

forms from www.sweetwater.com/ipodtools.

The **PSP MixPack, StereoPack, VintageMeter, and PianoVerb plug-ins** are now available in MAS and DX format in addition to Mac/Windows VST versions. Demo versions are available at www.pspaudioware.com

BIAS Deck 3.5 multitrack digital audio workstation for Macintosh offers native Mac OS X compatibility with CoreAudio and CoreMIDI support (for remote fader/transport control, MIDI file playback, and timecode with CoreMIDI-compatible SMPTE LTC-to-MTC converters). It also provides OMF import, OS9 compatibility, real-time surround mixing capabilities, and is both multi-processor aware and optimized for the PowerPC G4 with Velocity Engine. Also new: **Peak 3** (upgrades start at $99) is available for Mac OS X, yet also runs under Mac OS 8.x/9.x. New features include updated "Aqua" style interface, integrated Vbox SE (allows an unlimited number of plug-in editor windows to be open simultaneously for more control over effect parameters), VST plug-in snapshot automation, 4-band paragraphic EQ, dithering, MP3 encoding, and Core Audio support. www.bias-inc.com

The line of **Spektral plug-ins** ($55; for DirectX and PC VST, Windows 9x/NT/2000/XP) from **Delaydots.com** includes Spektral Shaper, an FFT-based 4096-band EQ that captures the frequency spectrum from a source wave file and applies it to a target sample; Spectral eXtractor, an adaptive, self-tuning bandpass filter that follows a signal's center frequency with controllable asymmetric band curve and shape; and Spektral Morpher, which allows altering one sample according to another with various transformation modes, including ten "morph" modes (convolution, vocode, nonlinear, etc.). A downloadable demo version is available. www.delaydots.com

Digidesign's Soft SampleCell version 3.1 ($345), a standalone, host-based version of the SampleCell II Plus PCI card available for Pro ToolsIHD, 24 MIX, and LE systems, now supports 192 kHz sample rates and 96-voice polyphony. A free update for registered Soft SampleCell owners is downloadable from Digi's Web site. Also new: The **Access Virus Indigo plug-in** for the Pro Tools environment now comes with over 1,000 sounds right out of the box. It features ultra-low MIDI-to-audio latency, and accepts MIDI parameter control signals from Digi's ProControl or Control24 via Ethernet, or from a hardware Virus unit or other controllers. www.digidesign.com

UPDATES

The **MT Version 6 software update** introduces automation and processing features to the **Solid State Logic** MT Plus and MT Production consoles. The main changes include new dynamics algorithms with more precise control than analog counterparts, and the ability to select between a moving/non-moving fader control surface. This allows the mixer to set a balance on a group of faders, assign those faders to a master, and then close that master, yet still see the balance that is "under" that master fader. **www.solid-state-logic.com**

Living Memory CellSynth 1.7 for Mac PPC (OS 8.6 or better) now supports ReWire, allowing a direct link with Digital Performer 3.0 Cubase VST, and EMagic Logic. It can stream stereo audio from up to 32 separate cells to sequencer tracks. CellSynth is shareware, and is available as a download from **www.cellsynth.co.uk**.

E-mu has released **V1.31 Software for their XL-7 and MP-7 Command Stations and Proteus 2500 Command Module.** The update adds E-mu's BEATs Mode to these instruments, offering users yet another groove tool in addition to the current sequencer and arpeggia-

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

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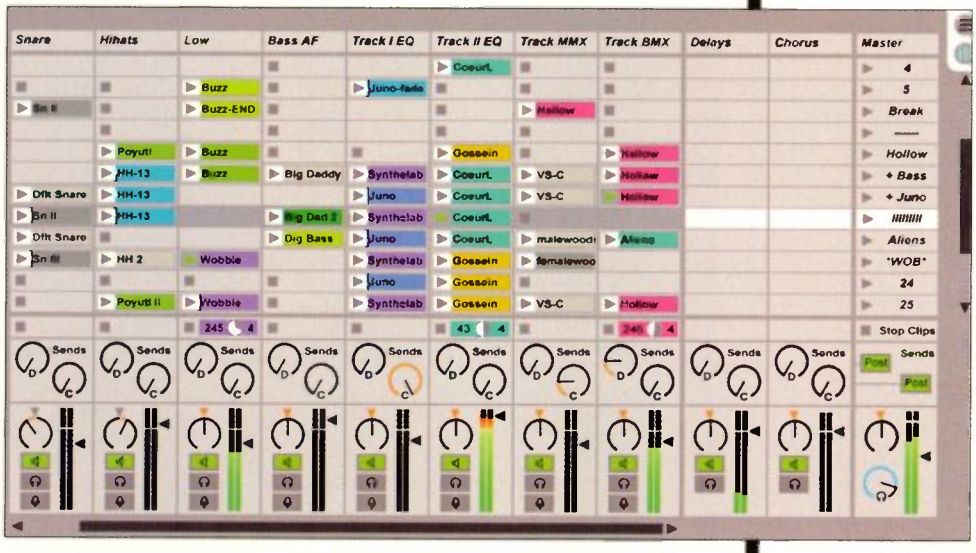
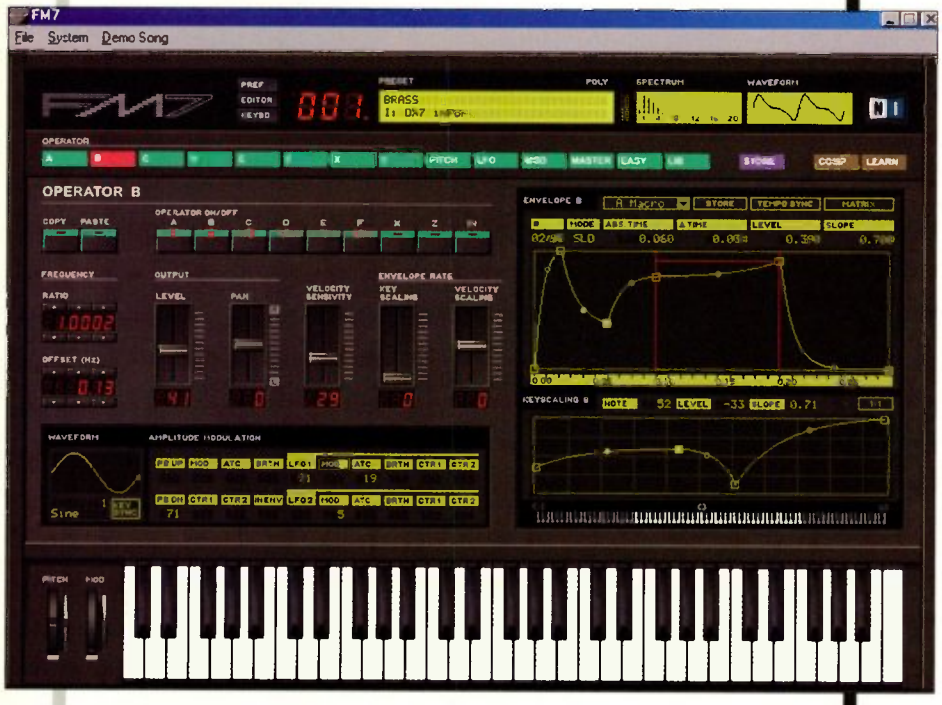
tors, as well as sequencer and sync upgrades. Also new: **E-Loader V1.1,** a tool that enables downloading/uploading SMF sequences via USB and MIDI, as well as a way to troubleshoot components in a MIDI setup. Both upgrades are free and downloadable from www.emu.com.



V1.5 of **Ableton's Live** ($299.95) for Mac OS X, OS 9, and Windows offers ReWire capability, Render-to-Disk function for quick file export into other audio programs, reverb processor, and reduced CPU loading. The upgrade is free for registered users. www.ableton.de

Native Instruments now ships the **FM7 and Absynth software synthesizers** as hybrid CDs containing both the Mac and the PC installer on one CD. Customers who have already purchased a non-hybrid version of FM7 or Absynth are able to download a free crossgrade from NI's Web site, or request an appropriate CD installer. www.native-instruments.com



Pro Tools 5.3.1 from **Digidesign** now provides cross-platform support of AVoptionIXL for Avid Picture integration, FilmFrame for direct 24P video playback, DigiTranslator 2.0 for OMF interchange, and Avid Unity MediaNet shared storage for the Pro ToolsIHD system. Pro ToolsIHD Macintosh users additionally benefit from support for all 1% and 4% pullup/pulldown combinations for interchangeability and delivery using 24P, NTSC and PAL standards with SYNC I/O; support for PostConform (EDL Import/Auto-Conform software that enables automated capture and spotting of audio elements to picture); and QuickTime DV movie playback via FireWire using Canopus's ADVC-100 DV transcoder for working with projects from Avid's Xpress DV. For Windows-based systems, in addition to introducing Avid interoperatibility to Pro Tools TDM and LE systems, Pro Tools 5.3.1 also adds support for QuickTime playback, DigiTranslator 2.0, and DirectConnect. www.digidesign.com

TASCAM DM-24:
The Affordable Luxury Console Is Here

Luxury usually comes with a hefty price tag. Not so with the new TASCAM **DM-24 32-Channel 8-Bus Digital Mixing Console**.

Two DM-24s can link together with optional Cascade modules to create a seamlessly integrated 64-channel super console. For larger studios operating on a budget, it's a no-compromise affordable solution for high-end digital mixing.

The DM-24's features are usually reserved for super high-end mixers. With 24-bit/up to 96kHz digital audio, the DM-24 blows away the standards in sonic quality for affordable consoles. With its internal automation, you'll get more power at your fingertips than you would from those huge consoles in commercial facilities. With some of the finest spatial and modeling processing from TC Works™ and Antares™, you can create fully polished productions without ever going to the rack. With incredibly flexible routing, fully parametric EQ, machine control capabilities, touch-sensitive motorized faders, and lots of audio interfaces, you can integrate the DM-24 into any studio environment.

The DM-24's rear panel includes AES/EBU digital I/O, S/PDIF digital I/O, MIDI In, Out and Thru jacks, ADAT Optical input and output, external footswitch connector, time code input, GPI port, word sync in, out/thru, DTRS remote port, RS-422 9-pin control port, 24-channel TDIF I/O and more. Shown here with standard interfaces. Not luxurious enough? Customize your DM-24 with two expansion ports for extra analog, TDIF, ADAT or AES/EBU modules.

Whether you're working with standalone hard disk recorders, DAW systems, MDMs or analog tape, the DM-24 is optimized to be the very best choice in consoles designed for 24-track recording. Ready to get everything you ever wanted (and more) in a digital console? Get the DM-24 today at your authorized TASCAM dealer.

DM-24 DIGITAL MIXING CONSOLE

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www.tascam.com

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SAMPLE CDS AND SOUNDS

BitHeadz' Unity Discrete Drums ($199) for the Unity Session and Unity DS-1 contains stereo/24-bit drum samples from the Discrete Drums sample series of played drum parts. The drum sets each have three different banks: Dry, just the natural drum set; Room, just the room track by themselves; and Mix, a bank that contains links to the other two banks (Dry & Room) and has several preset room level mixes. **www.bitheadz.com**

Sonic Stop/com's Remix Essentials ($29.95), featuring NYC remixer Doug Beck, is the first in a new series of Sonic Singles designed from a remixer's standpoint. Combining high-energy breakbeat, house, and tribal beats with construction kit elements, Remix Essentials is designed to offer essential tools for creative club remixing. Also new: **Atomic Synths** ($29.95) features the synth programming of Peace/Love Productions and offers synth basses, leads, FX, filter sweeps, and one-shots. Available sample formats include Reason Refill, Acidized Wave, Rex 2, and AIFF. **www.sonicemulations.com**

INDUSTRY NEWS

Until August 31, purchasers of the **Waves Y56K**

MultiMAX EX Multiformat Monitor Controller | **ForMAX** Surround Monitoring Formatter | **PanMAX** Automated Surround Panner | **MonitorMAX** Stereo Monitor Controller | **RecordistMAX** Recorder Monitor System | **VuMAX** Surround VU Meters

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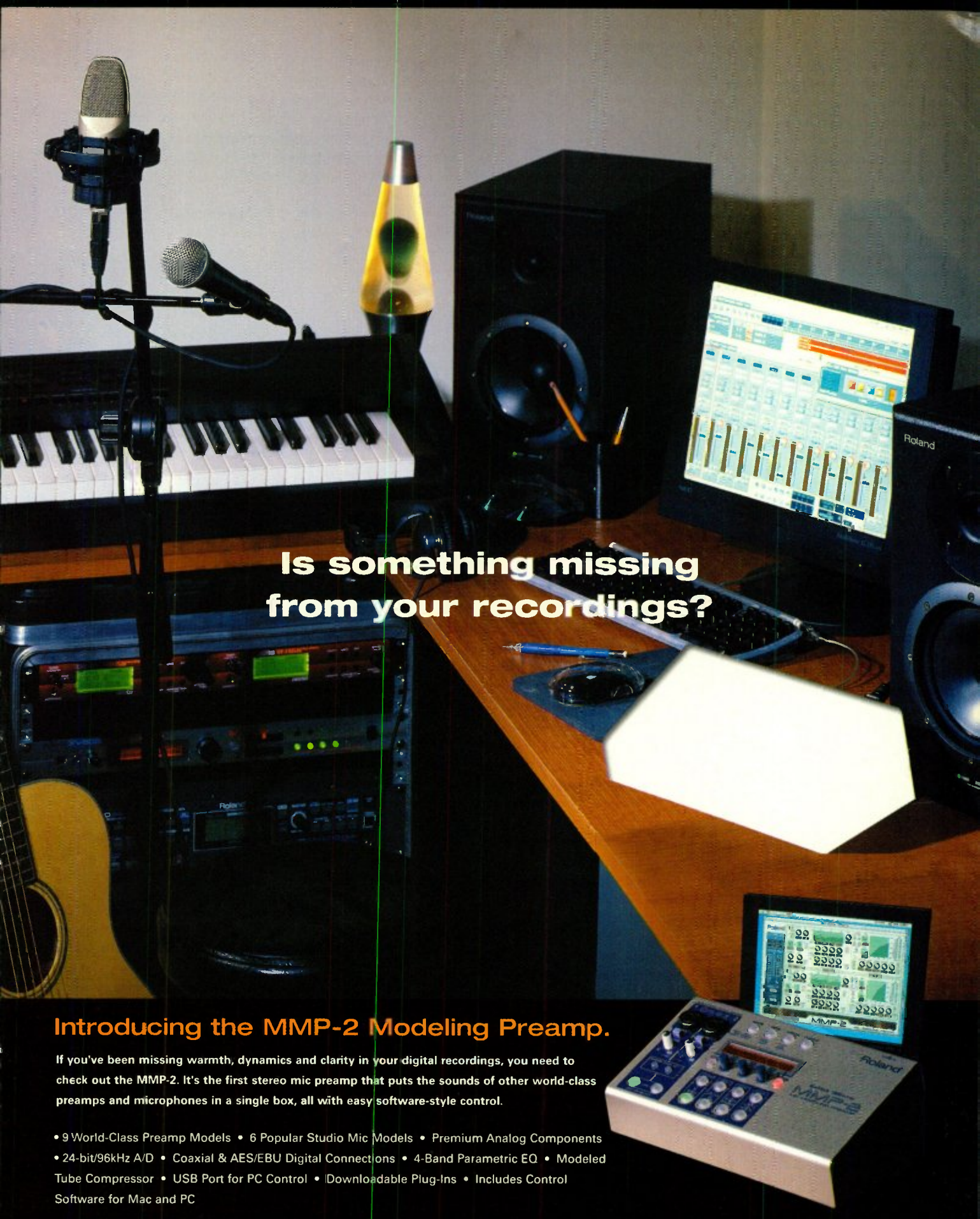

Introducing the MMP-2 Modeling Preamp.

If you've been missing warmth, dynamics and clarity in your digital recordings, you need to check out the MMP-2. It's the first stereo mic preamp that puts the sounds of other world-class preamps and microphones in a single box, all with easy software-style control.

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World Radio History

effects processor card (with five of Waves' most popular effects) for the Yamaha AW4416 or AW2816 can receive a $75 rebate. For more information, and to download a printable rebate form, go to **www.yamaha.com/proaudio**.

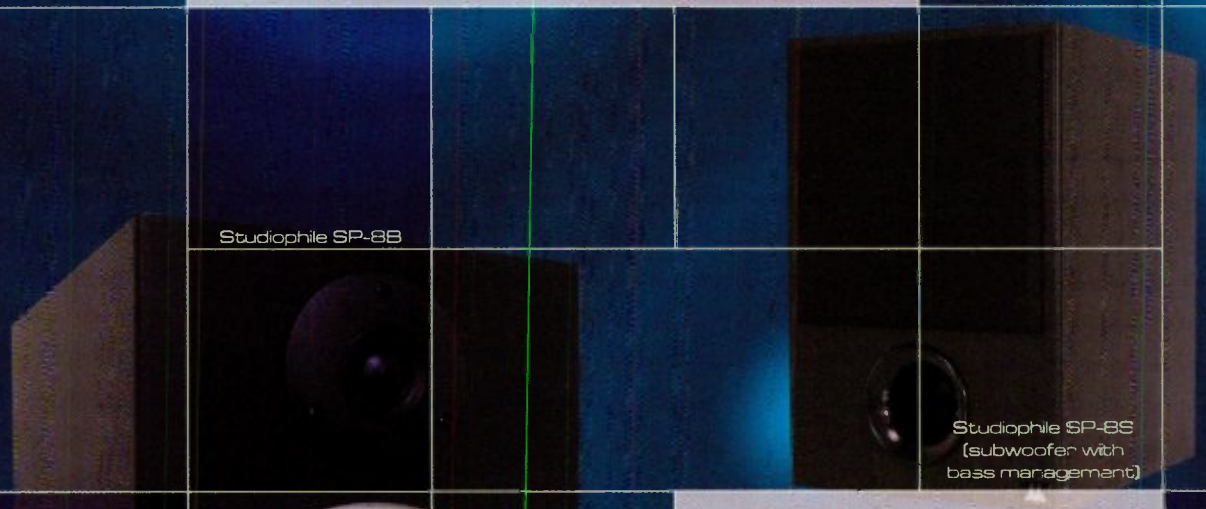
SAE, the world's largest educational institution for audio engineering, multimedia, and digital film, will be integrating various **Behringer** products in its schools, starting with several DDX3216 digital mixing consoles. The companies also plan to cooperate on other levels, including special workshops and seminars, student technical support, and even job placement. SAE also announced the grand opening of their latest location in Miami, Florida, the school's third U.S. facility. In other SAE news, renowned mastering engineer Glenn Meadows has joined the Studio 301 Group.

Downtown Chicago's **Fusion Sound Lab** specializes in the DJ-oriented, electronic dance music scene. Instead of finding guitar amps, drum kits, or grand pianos, there are racks of synthesizers, drum machines, workstations, computer software digital recording equipment, and a 3-turntable DJ station for putting down a live DJ mix. **www.fusionsoundlab.com**

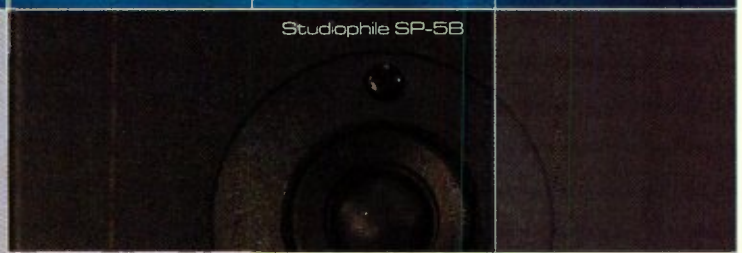
The **M-Powered artist CD series** offers Midiman artists a unique opportunity to promote their work. A preview of the multimedia portion of the M-Powered Artist CD is accessible at **http://m-powered.midiman.net**. The multimedia portion of the enhanced CD includes artist bios, links to their sites, photos, and lists of Midiman/M-Audio equipment used by each artist.

Blue Dove Music, an independent Internet mailing list made up of about 1,800 music/recording professionals worldwide who use Digital Performer and other MOTU products, has released a collaborative CD, *September Rising*. All proceeds will be donated to the NY Firefighters 9-11 Disaster Relief Fund. The members of Blue Dove donated compositional, graphic, and marketing efforts, while MOTU donated the funds to manufacture the CDs. **www.SeptemberRising.com**; CDs are available for purchase through **www.CDBaby.com**.

And you thought **M-Audio** only made the **world's best** digital audio cards.



Introducing the Studiophile Series

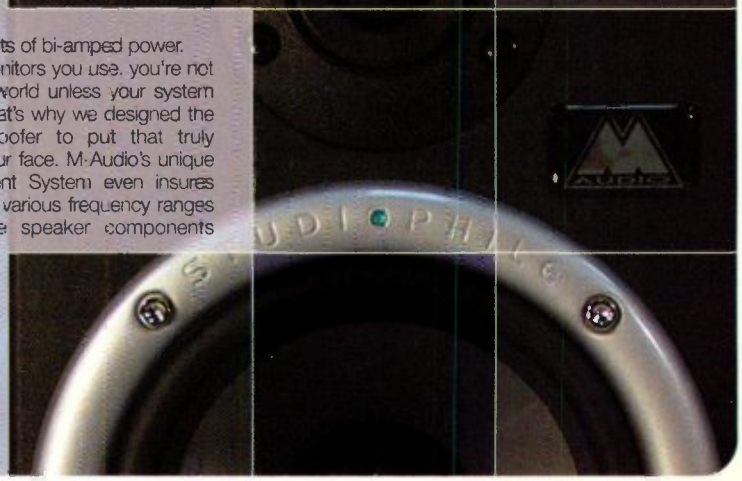


You can have all the best gear in the world and still turn out inferior mixes unless you have monitors that tell your ears what's really happening. With that in mind, our design team set out to prove that world-class reference monitors don't have to cost a fortune. The result is M-Audio's affordable new Studiophile line of active reference monitors, delivering exceptional quality at amazingly affordable prices. Choose from the SP-8B with 8-inch woofer and 100 watts of bi-amplification or the SP-5B with 5-inch woofer and 75 watts of bi-amped power.

Regardless of what monitors you use, you're not really mixing for today's world unless your system includes a subwoofer. That's why we designed the 120-watt SP-8S subwoofer to put that truly bone-shaking bass in your face. M-Audio's unique Stereo Bass Management System even insures optimal fidelity by routing various frequency ranges to only the appropriate speaker components throughout the system.

We'll leave all the geeky specs like mineral-filled polypropylene cones and swivel-mounted tweeters to the engineers. All you really need to know is that you won't find better-sounding monitors for anywhere close to the price... period.

Studiophile is the affordable new standard in studio reference monitoring.



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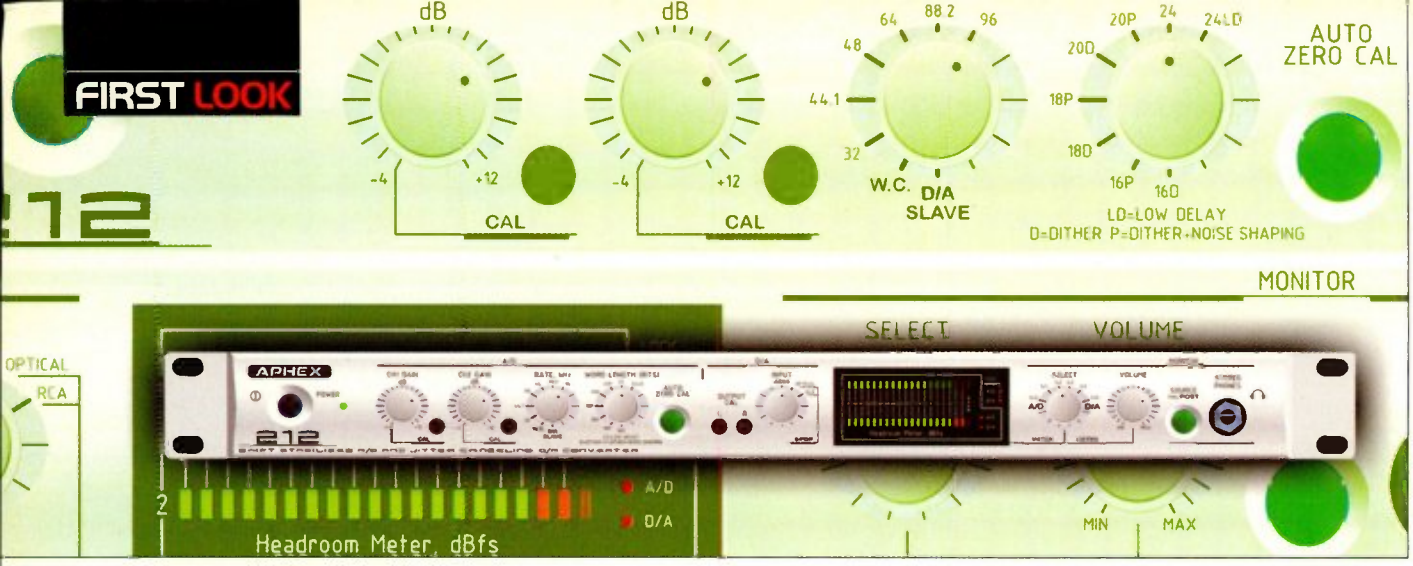

By Steve La Cerra

Aphex Systems 212

At the recent NAB Convention in Las Vegas, Aphex Systems announced the Model 212, a two-channel analog-to-digital and digital-to-analog converter. The Model 212 uses patented Aphex technology to provide high-quality yet cost-effective A/D/A conversion for DAWs, while allowing audio circuitry to be removed from the hostile RF environment generated by most computers. The Model 212 includes a variety of I/O options, enabling the unit to be easily integrated into any digital recording system.

At the heart of the Model 212 is Aphex's Drift Stabilized Analog To Digital Converter, which was specifically designed to overcome the DC drift inherent in all A/D converters.

To eliminate DC, most converters employ a high-pass filter in the digital domain after the conversion process. This approach eliminates DC, but also reduces the maximum input signal level. The Drift Stabilized Analog To Digital Converter removes DC prior to conversion, allowing a higher maximum input level, resulting in increased resolution. The Model 212's converters operate at sample rates of 32, 44.1, 48, 64, 88.2, or 96 kHz, with word lengths of 16, 18, 20, or 24 bits. A noise-shaping circuit is provided for maintaining maximum resolution at 16-, 18-, and 20-bit word lengths.

Analog audio is input to the Model 212 via servo-balanced XLR and 1/4-inch jacks with a maximum input level of +27 dBu. Input gain is controlled via separate front-panel pots (which lock out at fully counter-clockwise) with a gain range of –4 to +12 dB. When the pots are locked out, a set of precision, 10-turn trimmers are engaged, enabling precise calibration of the Model 212's input to the associated audio system. Analog audio outs are via balanced XLR and 1/4-inch TRS jacks with an additional set of 10-turn pots for output calibration over a range of ±6 dB. Maximum output level is +21 dBu, and rear-panel switches change the analog input and output reference levels from –10 dBV to 0 dBu.

A variety of digital I/O connections are provided on the Model 212's rear panel, including separate XLR outputs for AES3 stereo (channels 1/2), AES3 mono (channel 1/1), and AES3 mono (channel 2/2) signals. S/PDIF output is available from RCA and optical jacks. Input to the Model 212's D/A section — which features Aphex's unique jitter-canceling circuitry — may be taken via AES3 XLR, S/PDIF RCA, or S/PDIF optical jacks.

Front-panel features include a headphone output (with volume control) that may be switched to monitor pre- or post-converter signals for channel 1, channel 2, or channels 1 and 2 in stereo. A 19-segment LED meter indicates headroom from –47 dBFS to 0, and displays the signal selected for headphone monitoring. An Over indicator lights when five consecutive samples are above full scale in the A/D converter.

Additional features of the Aphex Model 212 include a low-jitter internal clock (less than 1 nanosecond at all sampling rates), external clock input with a range from 1 to 5 volts over 8k to 108 kHz, and a clock output that can deliver 1 volt at 75 ohms or 4 volts at 10 ohms. A low-noise, switched mode power supply operates on any input voltage from 90 to 256 volts at any frequency. The Model 212BNC substitutes unbalanced 75-ohm BNC jacks for all AES XLR connectors. ■

APHEX SYSTEMS 212

WHAT IS IT? A high-quality, two-channel A/D and D/A converter

WHO NEEDS IT? Anyone working with a digital recording system

WHY IS IT A BIG DEAL? The Model 212 uses patented Aphex technology to overcome DC drift, and features an ultra-stable internal clock for reduced jitter.

SHIPPING: July 2002

PRICE: $995

CONTACT: For more information, contact Aphex Systems at 818-767-2929 or visit www.aphex.com.

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PreSonus FireStation

By Craig Anderton

Computers have proven to be great adjuncts to audio recording and processing — but you have to get audio in and out of them. There are typically two elements involved: a physical interface, such as a sound card, and a protocol that expresses analog audio in a digital format.

Sound cards do the job, and USB interfaces are also effective. However, a new generation of FireWire interfaces are starting to appear. These have the advantages of USB, but with much faster operation.

There's still the matter of digital audio format. S/PDIF and AES/EBU accommodate only stereo. The ADAT lightpipe has become a *de facto* standard, but handles only eight channels at once, and doesn't do MIDI. There are also word clock considerations, as all audio has to exhibit sample-accurate sync.

mLAN, Yamaha's extended protocol for MIDI and audio transmission over FireWire, addresses these issues by allowing hundreds of channels of digital audio and MIDI to flow through a single network, along with a master clock control bus that obviates the need for word clock distribution. mLAN options have already appeared in synthesizers (*e.g.*, Korg Triton Studio) and several cards from Yamaha; now, the FireStation from PreSonus is a cross-platform, mLAN-compatible audio recording interface.

The FireStation has two dual-servo preamps usable with XLR mic or 1/4-inch instrument inputs. Each preamp offers a switchable tube circuit, concentric tube drive and gain controls, 48V phantom power, –10 dB pad, and LED meter (–30, +10, and clip). The preamps have balanced send jacks via 1/4-inch TRS connectors and use the same design and converters as the PreSonus DigiMax product line.

There's also an onboard mixer for zero-latency monitoring (monitoring through the mixer instead of through the computer) with four concentric pan/level controls for four stereo pairs of analog 1/4-inch TRS inputs (channels 7/8 can also control S/PDIF), concentric controls for mLAN return (channels 1/2 and 3/4), and eight analog 1/4-inch TRS line outs.

Digital connections includes MIDI and S/PDIF I/O, both of which appear on a DB-style connector and require a breakout cable. ADAT optical ports provide eight channels of I/O, allowing ADAT-compatible signals to appear over a mLAN network either as source signals or destinations.

Clocking offers several possibilities: there's word clock input and output on BNC connectors, and the ability to use internal word clock (32/44.1/48 kHz) or external clock (word clock, mLAN, or ADAT).

The output section has three switches for selecting ADAT, the mixer, and/or S/PDIF as signal sources. Additional switches send ADAT or S/PDIF signals to the mLAN bus. For analog monitoring, there are control room and headphone outputs whose levels are adjusted with concentric volume controls. As the rear panel has dual mLAN ports, multiple devices can be interconnected for up to 48 channels of I/O; finally, there's an external recording punch input.

When Yamaha introduced mLAN, it was recognized as having a lot of potential that would be fulfilled as more mLAN-compatible devices started to appear. That process is now in progress, and the FireStation is a good example of how mLAN can serve today's digitally-based studio. ■

PRESONUS FIRESTATION

WHAT IS IT? Cross-platform mLAN-compatible recording interface with dual switchable-tube preamps, zero-latency mixer, and a variety of analog and digital I/O.

WHO NEEDS IT? Those who require a no-fuss computer interface, and also want to take advantage of the mLAN protocol for digital audio/MIDI distribution.

WHY IS IT A BIG DEAL? FireWire interfaces are fast, and mLAN is a FireWire implementation that's optimized for studio work.

SHIPPING: July 2002

PRICE: $899.95

CONTACT: For more information, contact PreSonus at 800-750-0323 or **www.presonus.com**.

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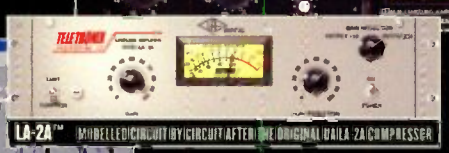

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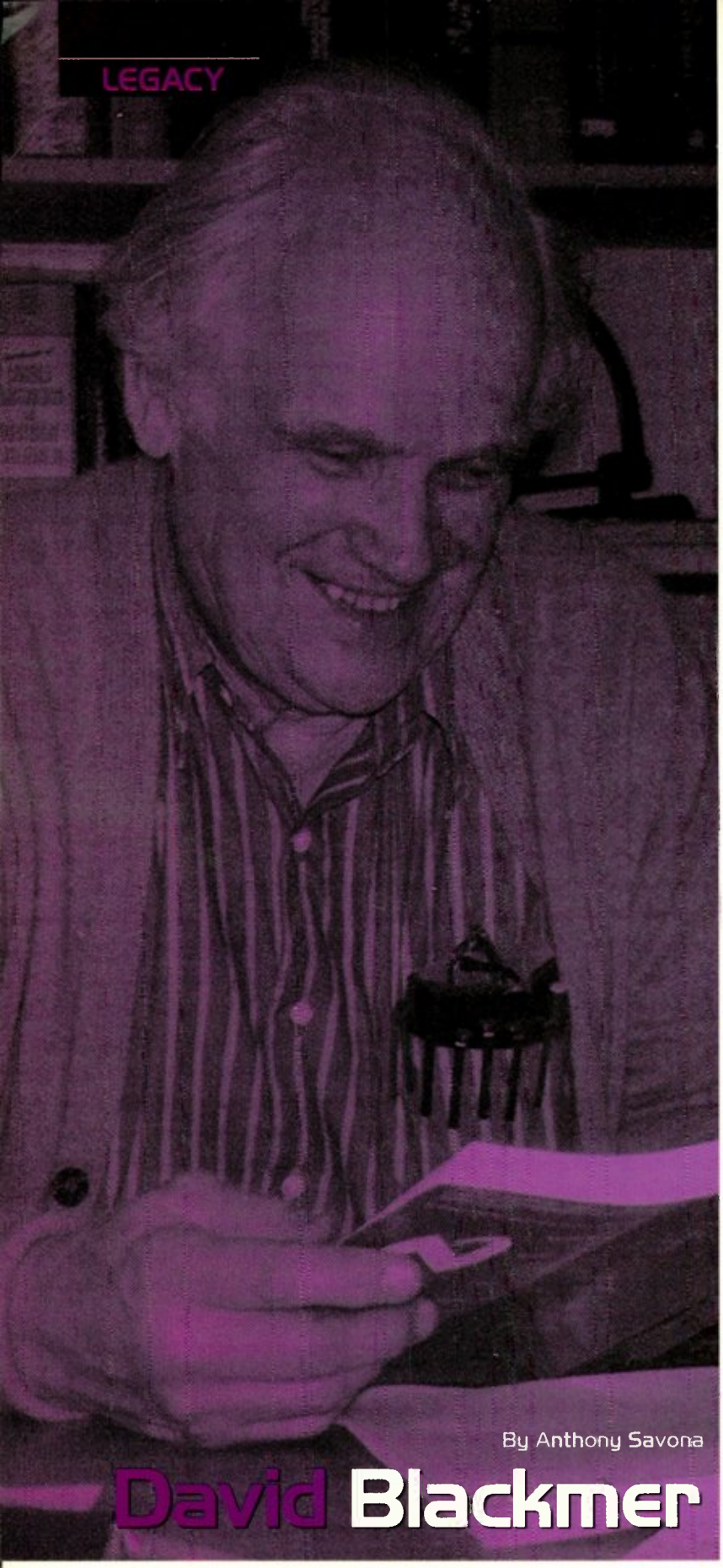

By Anthony Savona

David Blackmer

The industry mourns the passing of the innovative man who founded both dbx and Earthworks

David Blackmer had a pretty clear-cut vision — he wanted to make the recording process easier and the results sound better. As founder of both dbx and Earthworks, there's little doubt that David, who passed away March 21, 2002 at 75 years old, realized his dream.

David started his audio career at the bottom — as a stock boy at Lafayette Radio in the 1940s, where he used his ingenuity to quickly make a name for himself. "The story goes," states Eric Blackmer, David's son and director of sales and marketing for Earthworks, "that he fixed a pile of malfunctioning radios that nobody else could. He had been building radios since age 10. From a very young age he was a problem solver and an inventor. It was his life-long passion to improve the quality of audio equipment until it approached the sound of the original source."

David later joined the Navy, where he learned radar electronics. From there, his studies took him to Harvard and MIT. After college, he took jobs at Trans-Radio Recording Studio, Epsco, Hi-Con Eastern, and Raytheon, where he was involved in developing telemetry circuits that would be used in the Mercury space program.

In 1971, David founded dbx, the company, and invented dbx, the noise reduction system. His goal was to find something that would make music easier to record. His results changed audio production forever.

"The idea behind dbx was based on the idea of using decibel expansion to replace the peaks lost to the limited dynamic range of magnetic tape," continues Eric Blackmer. "It lead to much more. The Blackmer VCA and RMS detector changed the world of audio, yielding the dbx noise reduction system, dbx compressors, and the dbx subsonic synthesizer."

dbx's initial offering, the classic 160 compressor/limiter, quickly became a studio standard. Even today, many of the top studios use original 160's, while some variation of the original — the 165, the 160X, and the 160XT — live in racks throughout the world.

When he founded Earthworks, David's goal was to upgrade the entire audio chain to a new standard of sonic realism. Though the products produced by Earthworks are diverse — from microphones to preamps to monitors — they share a similar characteristic: they are all designed to be extremely accurate. According to Eric Blackmer, "In the last years of his life he developed a new model for human hearing that includes the importance of time-domain resolution. He strove to establish new standards of sonic realism."

There is no doubt that he has left an indelible mark on recorded sound. Eric Blackmer sums it up best by saying, "By example, David Blackmer encouraged many in the audio industry to aspire to a higher standard of excellence than anyone might have known was possible. He often derived the inverse of impossible to come up with elegant solutions that everyone else had missed, as he always pushed the envelope.

"He will be missed by many." ■

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World Radio History

By Steve La Cerra

Hi-Fi Music

From tragedy comes a new approach

STUDIO NAME: Hi-Fi Music
LOCATION: New York, NY
KEY CREW: Joel Goodman, David Bramfitt
CREDITS: In addition to the 2002 Academy Award-nominated film *Children Underground,* Joel Goodman's credits include *American Standoff, Interstate 84,* and *The Follow,* as well as feature films, television, and documentaries for Disney, Good Machine Productions, Anonymous Content, Trigger Street Films, Greenestreet Films, Double A Films, Maysles Films, PBS, Hybrid Films, Working Pictures, and Cypress Films.
MIXER: Mackie 1402VLZ Pro (for monitoring only)
RECORDERS: TASCAM DA-88, DA-40
MONITORS: Genelec 1029A, 1091A; Yamaha NS10M, Sennheiser HD580 headphones
AMPLIFIER: Hafler P3000
OUTBOARD GEAR: Lexicon PCM80
EFFECTS: various TDM Plug-Ins, Waves Gold 3.0, Line 6 POD
MICROPHONES: Neumann TLM103, Sennheiser MD421
KEYBOARDS/SAMPLERS/MIDI: Kurzweil K2600, Roland S-760 [3] with 1 GB drives for sample storage [2], JV-1080; Digidesign SampleCell II [5], Soft SampleCell; Native Instruments Absynth, B4; Korg Wavestation SR, M3R; Yamaha RMX1, MOTU MIDI Timepiece AV
DAW: Digidesign Pro Tools Mix+, 1622, 882I20
COMPUTER: Macintosh G4/733 MHz with 1 GB RAM, internal 60 GB hard drives [2], external 60 and 80 GB FireWire drives, external 18 GB Seagate Cheetah drives [2], Hitachi MC7515 19-inch video monitor, and SBS Technologies 13-slot PCI Expansion Unit
SOFTWARE: MOTU Digital Performer 3.01, Digidesign Pro Tools 5.1
INSTRUMENTS: Fender Stratocaster, G&L bass, Marc Campelone 6-string fretted and 5-string fretless basses.
STUDIO NOTES: "Like all Americans," reveals Joel Goodman, "I have been deeply affected by the events of September 11th. My studio is located just 12 blocks north of the World Trade Center, and I happened to be there early that day, around 8:30 AM — so I was an eyewitness. I watched with horror what I thought was impossible.

"At the time, I was in the middle of composing music for a documentary called *American Standoff* directed by Kristi Jacobson and produced by two-time Oscar winner Barbara Kopple. After spending the next four days at home, I was anxious to get back to work, but Tribeca (the area where my studio is located) was closed off by the police, state troopers, and

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The gear Joel Goodman grabbed when he was forced from his studio due to 9-11 made him look at his studio setup in a new way.

the Army. The only 'gear' I had at home was a grand piano, manuscript paper, and pencils. While this is sometimes a preferred method for creating, it wouldn't be sufficient if I wanted to make any serious headway on my current writing assignments. I needed to get my computer and some other gear from my studio and set it up at home.

"Prior to setting off for downtown Manhattan, I determined exactly what I would need. The bare essentials were my Mac G4, expansion chassis with Pro Tools and SampleCell cards, hard drives, two Roland S-760's, Roland JV-1080, and Korg Wavestation SR.

"My goal was to get all of the gear to fit into a 16-space rack but I was missing the key component: I needed a mixing console. My answer to this problem was to bring everything into the computer and use Digital Performer to route all the audio, thereby eliminating the need for my Yamaha 02R. At the time I had an ADAT Bridge as my Pro Tools interface, but I needed an interface with at least eight analog inputs, preferably more. On my way back from the studio — with all the gear in the car — I stopped at a Sam Ash Music store and purchased a Digidesign 1622 interface. (I had a friend stay in my car to watch the gear!) This interface has 16 analog inputs plus digital I/O, so I knew I'd be covered.

"For the next week, I composed at home, surprised at how much I could accomplish with such a streamlined setup: no mixer other than the one in Digital Performer, and no outboard effects other than my TDM plug-ins. I suppose if I was mixing more I wouldn't have liked it as much, but for composing it was great. I was always working with picture, and it was a pleasure to be able to effortlessly switch between the four films I had on the internal 60 GB hard drives. Finally, I was now sending my demos straight to the editor's Avid [video editing system] via my home cable modem.

"Later in the week, as I was packing up to bring everything back to my studio, it finally dawned on me that this minimalist setup I assembled was actually the way I should be working from now on. After some careful planning and conferring with a few friends, I decided to take the 'virtual' plunge. My next stop was eBay, where I posted and sold my 02R, ADAT Bridge, a spare DAT machine, a DA-88, and my TC Finalizer — all great products that had been replaced by software or computer-related hardware.

▶weblink

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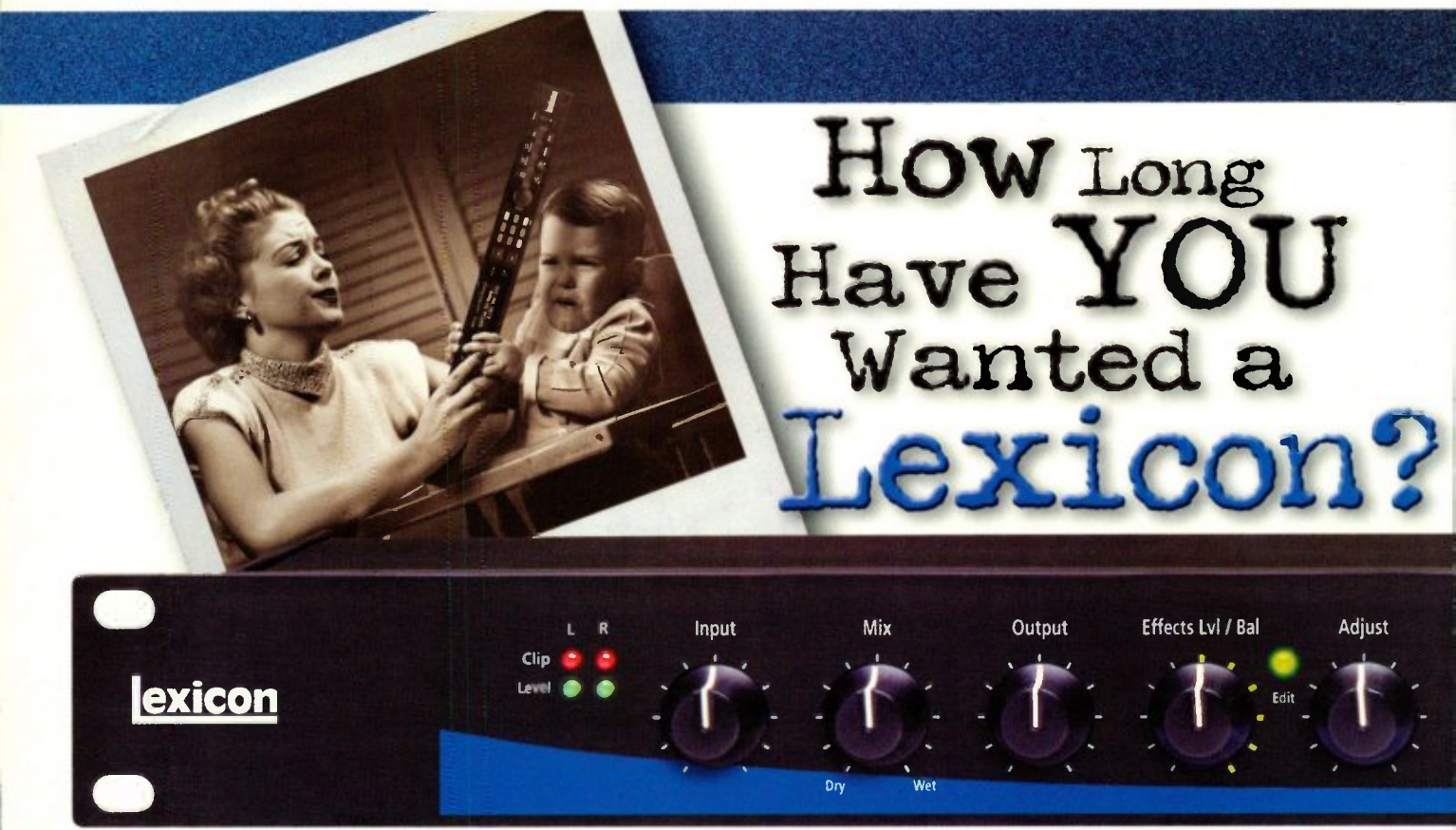

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"I then commissioned Paul Vazquez (who had built my 02R workstation) to build three racks for me. One would be an 'iso' rack to hold the computer chassis, hard drives, and anything else that was noisy. The 'iso' rack is really just a standard wood-construction rack. In the front there is a glass door that really works well at reducing noise. The rear panel of the enclosure has an exhaust fan at the top and an intake fan at the bottom. I decided to start working without foam inside the rack, and so far I haven't felt the need to add the foam. Originally I thought I might mount the G4 using rack ears, but I ended up standing it upright with the various hard drives stacked alongside the computer. The other two racks hold my samplers and synths, DA-88, DAT, CD player, etc."

EQUIPMENT NOTES: "I wired the system using a Whirlwind 48-point, 1/4-inch analog patchbay, and a digital S/PDIF patchbay. I did a very thorough job on both patchbays so that I could route any signal anywhere I needed. Since I did the wiring myself, it would be easy to troubleshoot in the event of a problem. That said, I haven't used the digital patchbay once since creating this setup, and I rarely use the analog bay. With good planning, you can set things up so you don't have to do a lot of patching. I don't have other clients coming in, and 90 percent of the time I'm writing music, not doing recording sessions. One of the nice things about the 1622 is that inputs 15 and 16 are on the front panel, providing very easy access.

"In addition to the three racks, I have a large desk that holds the Genelecs, computer and TV monitors, Kensington trackball, and the Mackie mixer. There's still room on the desk for writing music (a novel idea!), and mounted on a sliding draw below the desk is a Kurzweil 2600." ■

Some of the tools that Goodman describes as "the bare essentials."

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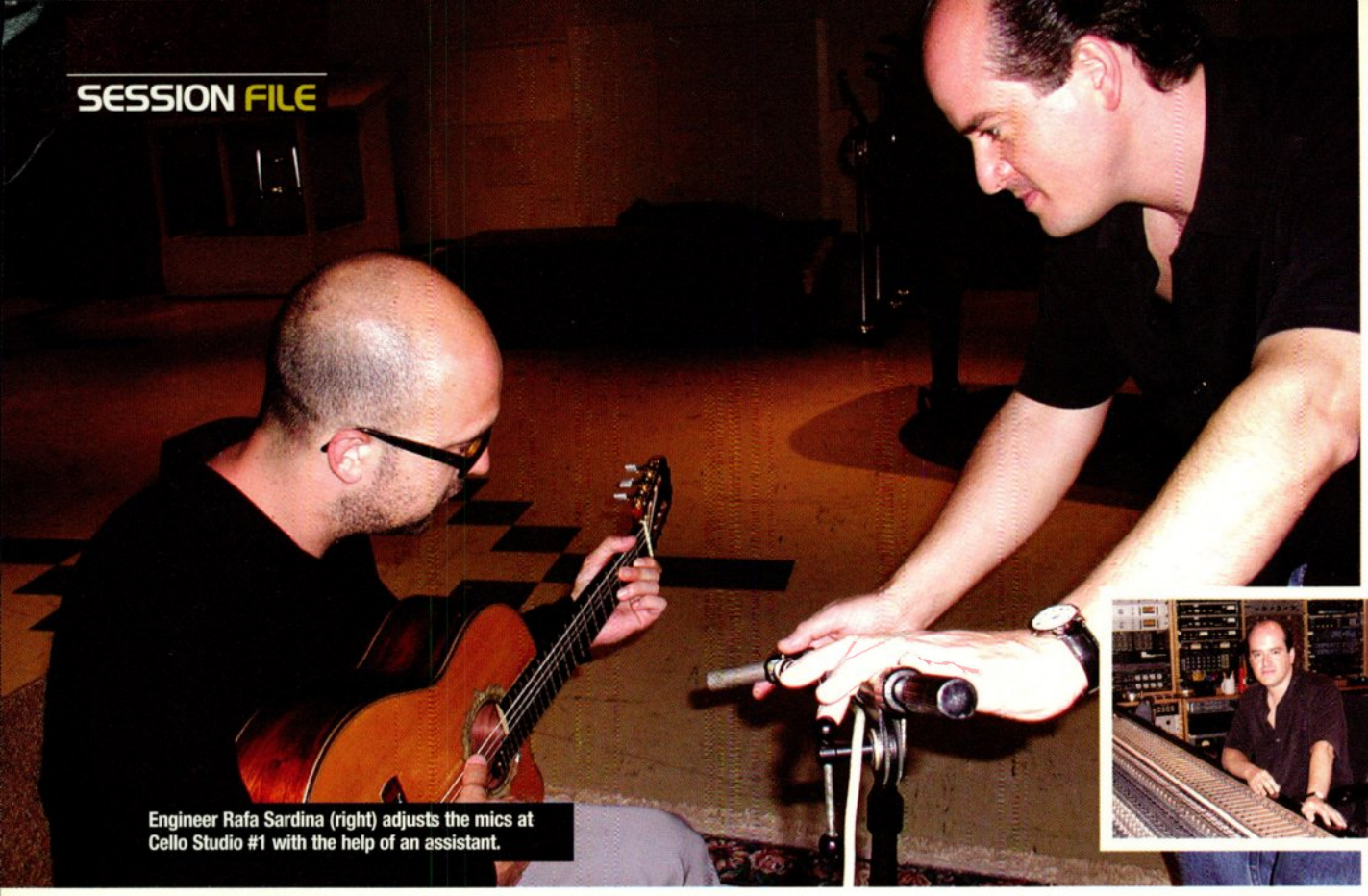

Engineer Rafa Sardina (right) adjusts the mics at Cello Studio #1 with the help of an assistant.

By Lisa Roy

Luis Miguel Latin Guitar

Getting the right string sounds for guitars and other traditional instruments

"For acoustic and nylon guitar recording, the whole approach depends on the style of music that is being recorded and by the final results that we want to attain," shares Rafa Sardina, referring to his recording techniques on Luis Miguel's *Mis Romances*. "For this album I had to record a few different styles of nylon guitar that range from traditional nylon to more ethnic variations of the instrument. Dean Parks played most of the tracks that featured the more traditional style. Recording Dean is always a pleasure since he is a definite master of the instrument. The main tracks that he played on called for very open and melodic nylon guitar solos. I recorded Dean at Cello Studio #1 [formerly Ocean Way Studio 1]. This room in particular, because of its large dimensions, has a very clear and open sound with a very well-defined ambience that highlights the high end of the instrument," compliments Sardina, who has earned two Grammy's for his work with Miguel.

DATE: July, 2001
STUDIO: Cello Studios — Studio #1
LOCATION: Hollywood, CA
ARTIST: Luis Miguel
PROJECT: *Mis Romances*
TRACK: Dean Parks playing acoustic nylon-string guitar on "El Tiempo Que Te Quede Libre," Ramon Stagnaro playing nylon guitar, *vihuela*, and *requinto* on "Amorcito Corazon."
PRODUCER: Luis Miguel
ENGINEER: Rafa Sardina
ASSISTANT ENGINEER: Darren Mora

SIGNAL PATH

"I recorded the guitars to analog, and simultaneously to [Digidesign] Pro Tools through Apogee AD-8000 Special Edition converters," reveals Sardina. "I used this recording strategy because we needed to do some edits on the fly in case any last-minute ideas pop up. It is always nice to be able to do edits without disturbing the flow of the session, and Pro Tools is an irreplaceable tool for that."

MIC POSITION

"Dean performed close to the center of the studio, slightly off to one side. For these tracks I tried a few different mics since trial and error is still the most effective engineering technique I have ever found," explains Sardina. "The mics I selected were some of my favorites for nylon guitar: a Neumann KM 54, an AKG C12, and a Neumann U 47. My final choice was a vintage Neumann KM 54 tube for most of the tracks — an all-time favorite! This is a microphone that represents the instrument very clearly with an amazing amount of definition; very tight bottom-end, very crisp high-end, and no harshness. You have to be very careful, though, because, with most KM 54's, being such an old tube mic, the sound variation between microphones can be very dramatic. The condition of the nickel capsule will fluctuate from mic to mic. So, it helps working at a nice studio that takes care of their mics and has a good selection of them.

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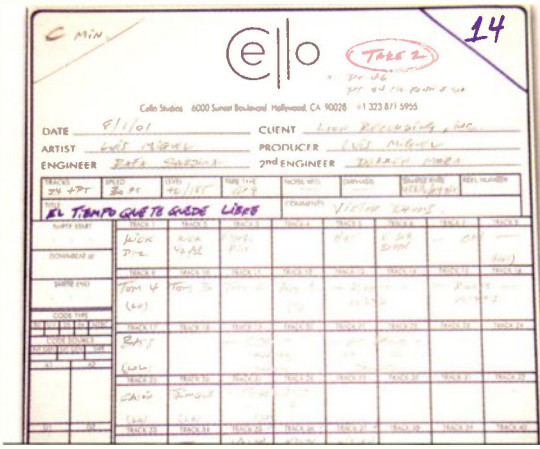

"I always experiment with the positioning of the microphone until I find the right spot for the adequate balance between fingering definition and low end. First I usually listen to the player while he plays the instrument, and then I listen through a pair of headphones. That way I can really fine-tune the positioning and very quickly find that magic spot.

"To capture the ambience of the room, I used a [Neumann] M149 at approximately 12 feet away from the source and about 10 feet high. Later on I used this particular track during mix down to add some extra ambience and dimension to the guitar. It worked quite well!"

PROCESSING

"As for mic preamps, I used a pair of Mastering Lab tube preamps that I really cherish," proclaims Sardina. "These are some of the most amazing preamps I have ever used, and I only regret not having more for big tracking dates. It's a shame they don't make them anymore. These preamps have a great high end and an amazingly defined low end that is not commonly found on most preamps — even high quality and expensive ones. After the preamps, the signal went to a stereo Avalon AD-2055 equalizer where I fine-tuned the signal a touch and went straight into the Ampex ATR-124 analog machines. I didn't use any compression at all.

"With such a great player and a really well-balanced room, I didn't need any further processing. To me, this has always been the best way to guarantee a great recording. If you are not getting the right sound you have to re-evaluate your approach and start with the source. Always build your sound from the source up, never the other way around. If you are reaching for the EQ or compression right away, there is no doubt that you are doing something wrong.

"As I mentioned earlier, when we tracked guitars with Dean we recorded several styles. For one of the songs, which was more of a rhythmic track, I ended up changing the mics. We decided to record the bass parts [fifth and sixth string parts] as a separate overdub to accomplish some fingering positions that were not technically possible in a single pass. I went for a tight sound and kept the KM 54 for the high parts. By tilting it and pointing it toward the neck, I lowered the amount of low end being picked up. For the low part I ended up using an AKG C12 that conveys very smooth lows and mids. When I was mixing this particular track at the Record Plant, I used the automation to level every note from the bass. Automation rides are still the best form of compression available."

TRACK NOTES

Sardina concludes, "One of the tracks on *Mis Romances* was a very traditional style of Mexican music called *mariachi,* a departure from the pop Latin sound Luis's albums are known for. This style of music calls for a very festive layered guitar sound. There were three very distinct types of guitars recorded for this song: nylon guitar, *vihuela,* and *requinto.* The foundation of the song was based on the two guitars and the *vihuela.* The nylon guitar went down first and I used a U 47 to record it. This style of playing can be quite busy, and I had to EQ slightly to shape the mid-lows so they wouldn't take an excessive amount of room. The guitar was doubled to get a nice stereo spread.

"Afterward I recorded the *vihuela,* which is a small guitar equivalent in shape and size to a mandolin. This instrument projects a considerable amount of high end transient material with a moderate amount of low end in its

▶ continued on page 120

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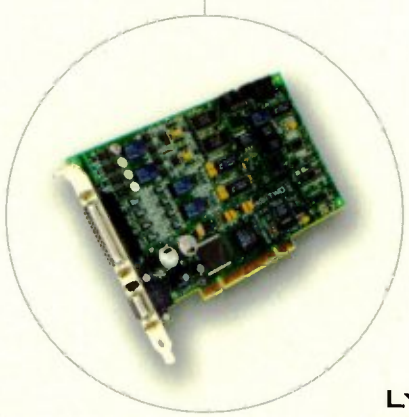
-Martin Walker
Sound on Sound Magazine, March 2002



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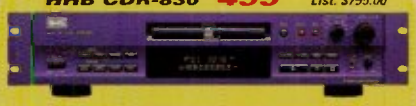

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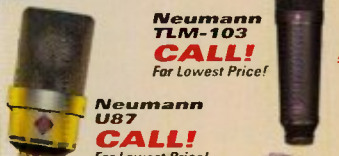

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World Radio History

From the basic to the esoteric, here are proven ways to enhance your vocal tracks

Recording/Processing Vocals

by Craig Anderton

It was late at night, at a live recording session in Germany. As several thousand fans waited anxiously, the vocalist walked onstage and picked up a set of headphones. I saw him plug them into the mixer, and figured he was going to make one final check of his vocal sound before the band kicked in. He then turned the preamp gain control up full...not too unusual, as mics don't have a lot of gain. But then he held the headphones up to his mouth and — started singing! He had plugged the headphones into the mic in, not the headphone out — and he had done it on purpose. Is this what recording vocals in the 21st century is about?

Well, the answer is yes...and no. No, in the sense that a well-recorded vocal through a high-end mic feeding a state-of-the-art preamp remains a supremely important part of the recording art. Yes, in the sense that it underscores a fundamental truth about recording today: anything goes.

The tools of the vocal trade have undergone as dramatic a transformation as the recording process itself. Microphones are better and cheaper; today's "budget" mics sometimes outperform the champions of yesteryear. Preamps, whether tube or solid state, have noise levels that are measurable only with the most sensitive test equipment. Processing gear ranges from "vocal strips" dedicated solely to vocals (fig. 1), to new technologies such as Antares's AutoTune (which can correct out-of-tune vocals) and mic modeling, which mimics the characteristics of particular "signature" mics. Compressors, reverbs, and even vocal booths have all enjoyed the results of technological progress.

So what's the best way to record vocals these days? The answer, of course, is that anything goes. Following are some of the possibilities.

RECORDING VOCALS

Few topics inspire more debate than the optimum vocal mic and preamp. But note that a mic and preamp combination that sounds great with one vocalist might not work with another. Case in point: Once while recording, my voice was recorded with a sub-$100 dynamic mic and a $995 condenser mic. The unanimous agreement was that the dynamic sounded better.

Was it because the *mic* was "better"? No. From any objective standpoint, it was inferior. But it had some response anomalies that flattered my voice. The condenser mic was accurate, but my voice didn't need accuracy: it needed a high-frequency lift and warmth from the proximity effect (*i.e.*, the tendency of a dynamic to produce more bass as you sing closer to it).

I sometimes wish that all mics looked the same, and had no labels on them. That would force engineers to take a fresh approach with every session. It's very easy to rely on using old favorites — the assumption is that the mic that worked great on the last session will be equally good on the current session, but that isn't always true. Furthermore, there's a matching issue between mics and preamps, so mic X might sound great with preamp A and not so great with preamp B.

Bottom line: Try every mic with a vocalist, record the results, then choose which one sounds most appropriate. I suggest comparing two mics at a time to prevent "option overload." Choose the best of each pair, then have a runoff among the winners.

CREATING THE BEST PERFORMANCE

What's far more important than the gear you use is the performance. While it may seem gear has little to do with this, gear can help create an environment that brings out the best in the vocalist. We're not talking about dimming the lights, but working in a way that fits the vocalist's style.

For example, loop recording is great for doing multiple takes, but some vocalists get nervous when the music never stops — they need some breathing space in between takes — while others just seem to build as the music keeps going around. Does the singer like having a long lead-in before the part to get psyched up, or prefer to jump right into it? Find the answers, and set up your gear accordingly.

FIGURE 1: The dbx ProVocal, one of the newer vocal processors, features mic and preamp modeling, gating, compression, de-esser, limiter, chorus, flanger, delay, and reverb. It also has a 24-bit S/PDIF output and MIDI control.

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MIC MODELING: SONIC SCAM OR HOLY GRAIL?

Different mics have different sonic "signatures." A lot of this involves the mic's distinctive frequency response, so mic modeling software or hardware analyzes a reference mic's response (along with other selected characteristics), and applies this signature to your mic (fig. 2). This process works best when the modeling software either analyzes your mic also, so it knows exactly what type of compensation to apply, or you have a mic type that is recommended as a signal source for the modeling device.

So can you really turn a Radio Shack mic into a vintage tube mic? No way. Granted, it may sound more like a tube mic than it did before, but no one's going to prefer it over the real thing. However, with a good source microphone, and if you don't stretch the model too far (for example, having one dynamic mic sound like a different dynamic mic will probably work out better than trying to make it sound like a small-diaphragm condenser type), mic modeling can be a very useful tool.

FIGURE 2: Antares's Mic Modeler is available as a rackmount processor, as part of their AVP-1 vocal strip, and as a plug-in (shown here).

The issues are the same as with modeled guitar amps. Clearly, plugging a guitar direct into a board through a modeling preamp is not going to feel the same as playing through a guitar amp and cabinet. That's not surprising; what *is* surprising is just how close you can come, and how, by the time the track plays back, few people can hear the difference between the real thing and the simulation.

Mic modeling isn't a replacement for a good collection of mics, but it can take a good collection of mics further. Even if simulating other mics isn't your main interest, the complex response curves created by applying mic modeling have uses in their own right.

RICHER VOCALS

One of the all-time proven techniques for creating thicker vocals is to have the vocalist double a line by singing along with the original take. The doubled take is usually mixed behind the main line at anywhere from –3 to –10 dB.

However, sometimes it isn't always possible to cut a doubled line — like when you're mixing and the vocalist is on tour somewhere. For these circumstances, here's a quick workaround.

1. Copy the vocal track you want to thicken so you now have two tracks of the same vocal.

2. Apply a pitch shift plug-in or hardware processor to one of the tracks.

USING COMPRESSION WITH VOCALS

Dynamics control is an essential part of recording vocals. The best dynamics control is someone who knows good mic technique, and plays the mic like a slide trombone — getting closer for more intimate sections and moving further away when singing more forcefully. Unfortunately, few vocalists are accomplished at mic technique, so you may need to use electronic dynamics control (compression) instead.

Compression has other uses, such as giving a vocal a more intimate feel by bringing up lower-level sounds. No matter what your application, though, don't squeeze the dynamics so much that you also squeeze the life out of the vocals. Here are some tips on optimum compression settings.

- Watch the gain reduction meter, which shows how much the input signal's level is being reduced at any given moment. You generally don't want more than 6 dB of reduction, and even that's stretching it. To reduce the amount of gain reduction, either raise the threshold parameter, or reduce the compression ratio.
- Adjust the gain control so that the output meter indicator comes as close to 0 dB as possible, but never hits or exceeds it.
- The most important controls are threshold and ratio. To clamp down on peaks while leaving the rest of the vocal dynamics more or less intact, choose a high ratio (10:1 or greater) and a relatively high threshold (around –1 to –6 dB).
- Lower compression ratios (1.5:1 to 3:1) give a more natural sound than higher ones.
- Zero attack time clamps peaks instantly, producing the most drastic compression action. If it's crucial that the signal never hit 0, yet you want high average levels, use zero attack time. But I think it's probably better to use an attack time of 5–20 ms to let through some peaks, even if it means a somewhat lower average signal level.
- Decay is not as critical as attack. Start in the 100–250 ms range.
- The knee parameter controls how rapidly compression kicks in. With soft knee, when the input exceeds the threshold, the compression ratio is less at first, then increases up to the specified ratio as the input increases. With hard knee response, as soon as the input signal crosses the threshold, it's subject to the full amount of compression. Using hard knee settings when controlling peaks is a priority; use soft knee curves for a less colored sound.
- Some compressors include a function that automatically adjusts attack and decay times according to the signal passing through the system. This is often the best choice if you're new to compression.

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3. Here's a good point of departure for the Pitch Shift parameter settings:

- *Pitch Shift = –20 to –30 cents*
- *Dry Mix = 0*
- *Wet Mix = 100 (you want only the pitch-shifted sound)*

If there's a feedback parameter, set it to 0. If delay time and modulation are available, try modulating pitch *very* slowly over a range of about 3 to 15 ms. This adds a bit of variety. Also, bring the doubled track down so it doesn't compete with, but instead complements, the lead vocal. Of course, these are just suggested settings that work well with my voice; adjust to taste.

For the thickest sound, pan the two vocal tracks to center. If you pan one vocal full right and one full left, you'll hear two individual vocals instead of a composite effect (which may be what you want).

Also try panning lead vocals slightly left and right (*e.g.*, left channel at 10 o'clock, right channel at 2 o'clock). This gives a somewhat fuller sound and wider stereo spread, which can also be useful.

FIXING A DOUBLED VOCAL

With doubled vocals, sometimes the two vocals work together perfectly except for an occasional word or two. Rather than recut or overdub the doubled vocal, a workaround is to copy the same section from the *original* (non-doubled) vocal. Paste it into the doubled track, but delay it by about 20–30 ms. As long as the segment is short enough, it will sound fine (longer segments will sound echoed, which may work, but destroys the sense of two individual parts).

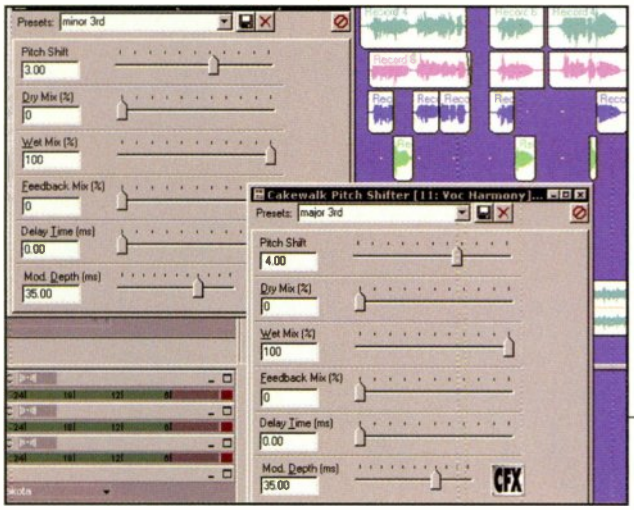

FIGURE 3: Creating synthetic harmonies in Sonar using pitch-shift plug-ins.

SYNTHESIZING VOCAL HARMONIES

Normally, I sing my own harmonies. But sometimes, pitch-shifters — because they're not perfect — add timbral and timing imperfections that actually sound better for some applications.

Here's an example of creating

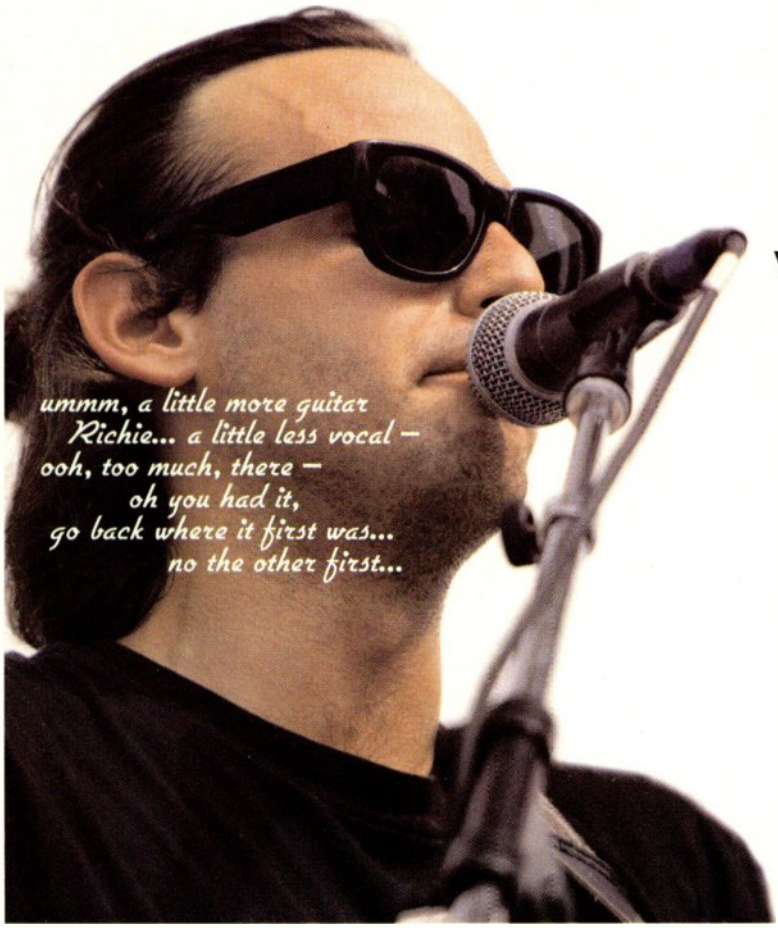

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FIGURE 4: Cubase makes it easy to see, audition, and edit the parts created with loop recording.

harmonies using Sonar's pitch-shifting plug-in (the principles are the same for other programs). Referring to fig. 3, there are four tracks of vocals: The teal one at the top is the original vocal. The violet one below that is a "cloned" version, which has been processed with the doubling technique mentioned previously.

The next track (blue) is also a cloned track, but it's being processed through the pitch shifter set to a major 3rd. However, note that some elements have been cut from this track and moved to the next track down, which is processed through the pitch shifter set to a minor 3rd. As Sonar doesn't know which notes should receive minor 3rd or major 3rd harmonization, you have to cut up the track appropriately and move the right phrases or notes to the right tracks. This may require zooming way in on the cloned track, so you can make cuts in the space between phrases.

The standard pitch-shifting caution applies: The further you stretch pitch, the less realistic the sound. Sonar's pitch-shifter doesn't preserve formants during shifts; however, when pitching up a major 3rd, the formant change adds a bit of voice-on-helium effect, which, when mixed behind the main vocal, can actually sound pretty cool.

COMPOSITE VOCAL TRACKS

Cutting and pasting has benefited vocals, as you can do multiple takes and splice the best parts together to make the perfect "composite" vocal. Some producers feel that stitching together vocals doesn't produce as natural a "feel" as a take that goes all

INCREASING INTELLIGIBILITY

Boosting EQ in the upper midrange (around 3–4 kHz) adds intelligibility and "snap" to vocals. Here's a variation that adds a bit more animation to the sound.

Parallel an envelope follower plug-in with the vocal track, set to cover the range of around 2.5 to 4 kHz, and adjust the envelope to follow the voice. Mix this *well* behind the voice, otherwise the effect will be too obvious.

As the vocal progresses, the shifting EQ frequency highlights the upper midrange, but in a dynamic, changing way. If you notice this change, the filter is mixed in too high — the effect should be very subtle, and noticeable only if you isolate the vocal track at relatively high volume. Try it — this trick can add a liveliness to vocals that's impossible to obtain otherwise.

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VOCAL REVERB TIPS

Nothing "gift wraps" a vocal better than some tasty reverb. My favorite reverb for voice is a natural acoustic space, but, as reverb rooms are an endangered species, you'll likely use a digital reverb. Reverb settings are a matter of taste, but two parameters are particularly important (fig. 5).

Diffusion: With vocals, I prefer low diffusion, where each reflection is more "separated." Low diffusion settings often sound terrible with percussion, as the individual echoes can have an effect like marbles bouncing on a steel plate. But with vocals, the sparser reflections prevent the voice from being overwhelmed by too "lush" a reverb sound.

Predelay: This works well in the 50–100 ms range. The delay allows the first part of the vocal to punch through without reverb, while the more sustained parts get the full benefit of the reverberated sound.

the way through from beginning to end, while others believe that being able to choose from multiple takes allows creating a vocal with more range than might occur with a single take. If you want to try composite vocals, here are the basic steps.

Record the Takes. Record enough takes so there's plenty of material to piece together a good performance (loop recording is particularly handy for doing vocals). While you're in a recording mood, record a little bit of the track without any input signal. This can be handy to have around for reasons described later.

Audition the Takes. Audition each take and isolate the good parts (by cutting out unwanted sections). I recommend setting loop points around very short phrases. Solo each take, one after the other (fig. 4). If you're not going to use a take, cut the phrase. If a take is a candidate for the final mix, keep it.

Pick the top three or four candidates and remove the equivalent sections from the rest of the tracks. Now repeat this procedure, phrase by phrase, until you've gone over the entire performance and found the best bits.

Next, listen to combinations of the various different phrases. Balance technical and artistic considerations; choose parts that flow well together as well as sound technically correct. Sometimes you might deliberately choose a less expressive rendition of a line if it comes just before an emotional high point, thus heightening the contrast.

Once you have the segments needed for a cohesive performance, erase the unused parts. If you want to archive everything "just in case," go for it. But if after putting the part together you think it could be better, you might be better off re-cutting it

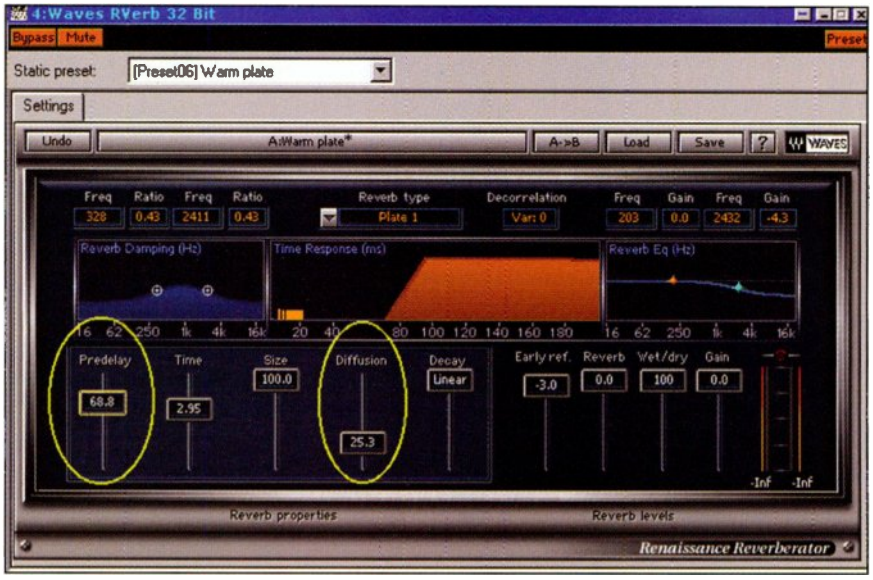


FIGURE 5: The reverb in the RVerb plug-in from Waves offers an exceptional amount of control. Note the diffusion and predelay parameters, which are circled in yellow.

World Radio History

than putting more hours into editing.

Bounce the Takes. This isn't absolutely necessary, but converting all the bits into a single track simplifies subsequent editing and processing.

Before bouncing, play the tune through from start to finish and match the segment levels as closely as possible. Also check the meters for any send bus or master bus the tracks are feeding, and adjust levels (if needed) so there's no distortion. Generally, the bounced track will be derived from a bus or master; if there's distortion, the bounced track will have distortion too.

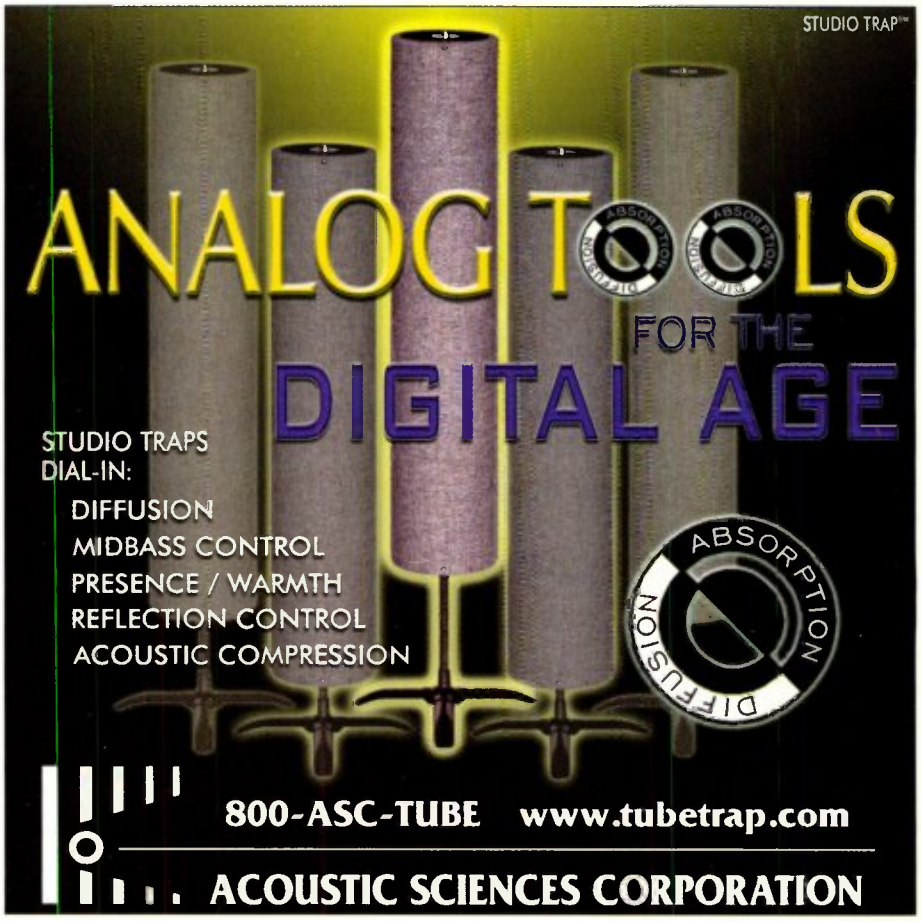
This is also where the recorded noise might come in handy. Sometimes I've had to do a quick fade on the end of one segment and a fade in on the beginning of another, leaving a dead silent gap between phrases. Layering in a bit of the noise signal gives better continuity, and keeps the part from sounding too "assembled."

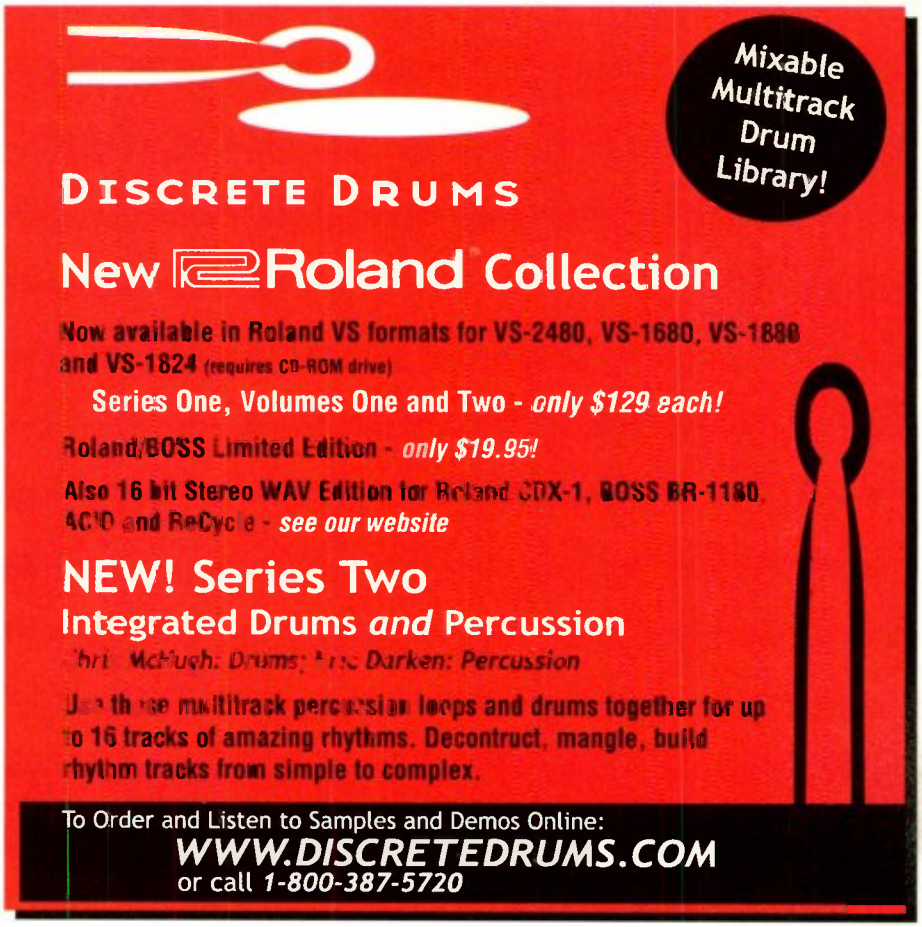
After everything's set, implement the program's bounce or mix to hard disk function. You can typically bounce to an empty track or "render" the audio to disk and bring it back into the project.

Edit the Composite Track. At this point, I bring the composite track into a digital audio editor for clean-up. Here are some typical processes:

- Phrase-by-phrase gain adjustments. If a phrase has mismatched levels, use the program's level change DSP or mix automation to fix the problem.
- Fix breath noises and inhales. There might be "flammed" inhales from combining two different takes, so cut one. However, don't eliminate all inhales and breath noises — they keep things "human."
- Add overall dynamics control, reverb, EQ, echo, etc. if needed. Don't add these while cutting individual takes; it will be much harder to match the effect and, in the case of reverb, tails might get cut off. Adding processing after optimizing the entire track will give the best results.

Tidy Up Your Hard Disk. After the vocals are done, check how your program deals with deleting unused segments, as this can reclaim significant space from your hard drive. ■





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How to record great rhythm section tracks

Better Bass and Drum Recordings

by Paul Abbott

As a mastering engineer, my job allows me to hear more final mixes than most people: from big budget to no budget, country to goth, analog to digital. I feel the disparity between professional- and amateur-sounding recordings isn't rooted in technology, but basic audio knowledge. The most glaring examples I consistently hear are poor recording of drums and bass, resulting in muddy, undefined low to low-mid sound.

Great recordings start with properly capturing a strong rhythm section performance. Following are a few rhythm section tracking tips that will go a long way toward producing better final mixes — and they don't even require purchasing any new gear!

DRUMS

The best drum kit sounds I've heard are done with three mics: a well-placed overhead stereo setup and one in the bass drum (if you're a Type A personality, go ahead and mic the snares). Then, to control transients, use a quick, transparent limiter for the overheads.

This setup offers a few key advantages over the "close-mic every drum" approach:

- It's the best way to capture the real sound of a kit, including overtones and room reflections.
- When done correctly, it eliminates the phase problems to which multi-miking is prone.
- It's much quicker to set up and record, leaving more time to mix the entire band.

It's ironic that in modern pop recordings — where *anything* is possible — it's rare to find instruments actually recorded in stereo. This is the most critical aspect for achieving a "big" sound, as true stereo gives a sense of depth and cues to spatial direction. The sonic characteristics created by a well-tuned drum kit in a good room can't be replicated with individual drum miking, panning, and reverb processing. In fact, everything that's applied to an audio signal slightly destroys its integrity. So, after you individually mic each drum, equalize it, and add reverb, you're down a few notches on the sonic evolutionary ladder and still don't have the depth and power of a stereo-tracked drum kit.

> "THE BEST DRUM KITS I'VE HEARD ARE DONE WITH THREE MICS: A WELL-PLACED OVERHEAD STEREO SETUP AND ONE IN THE BASS DRUM."

The key is perception. Think of the entire drum kit as one instrument. The goal is to capture its power and timbre. If you were recording an acoustic guitar, how would you do it? Simple: start with a mic (or a stereo mic setup) and add a pickup for a bit of effect (if required/preferred). Miking drums shouldn't be any different. To me, individually miking each drum in a kit is akin to isolating each string of an acoustic guitar to a separate track and then trying to re-create its sound by mixing, panning, and adding reverb to those strings. You lose the overtones and richness of the instrument's sound as it develops in an acoustic environment.

BASS

With bass, the goal is a sound that's consistent throughout the instrument's range, while controlling some of the runaway lower frequencies that can be problematic in a mix. For starters, it takes a player with a good touch, a quality instrument, and a decent preamp/amp. But even with that, the bass' sonic characteristics can be a bit unpredictable. One useful solution is to apply low-ratio compression (1.3 to 1.7:1) with a high threshold (–25 to –30 dB). This helps smooth out the sound and brings up the less audible frequencies slightly, without changing the instrument's basic timbre. The result is a tighter, more controlled bass (the degree of which can be manipulated using the compressor's ratio and threshold controls) that needs less tweaking and sits better in the mix. And it works whether you record using a direct signal, a miked cabinet, or a combination of both.

BUILDING A BETTER MOUSETRAP

When drums and bass are well recorded, you'll find they naturally sound clear and powerful throughout their entire range. If signal processing (light or heavy) is required for a specific flavor, it will be more effective after laying a strong foundation. And after the rhythm section is established, other instruments sit better in the mix, and sound more distinct due to less clutter occupying the sonic landscape. The end result is more sonic impact — and that's a good thing no matter what genre of music you record.

Paul Abbott owns and operates ZenMastering (www.zenmastering.com), a full-service audio mastering company located in San Diego, CA.

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A producer's primer to 12-inch vinyl

Max Wax for Club Play

by Kris Solem

Club play is vital when it comes to promoting dance and hip-hop tracks to the public, and one of the best ways to get a mix played in the clubs is to put out a good 12-inch vinyl single. Watch the Billboard dance charts for a couple of months and you'll see a pattern — songs that spend time on the club play chart (mostly vinyl) tend to show up later on the maxi-singles sales chart (vinyl and CD). Making a great sounding 12-inch single — one that the DJs will want to play — requires paying attention to the limitations of the vinyl medium.

First and foremost, try not to exceed 12 minutes of music per side. If you want your mixes to sound fat in the club, they need to be cut at a good full level. When you go over about 12 minutes, you start losing level at a rate of around 1/2 dB for each extra minute. (The exact rate depends on the music, but the more bangin' your mixes, the greater the loss.) Remember, squeezing that extra track on won't help your marketing plan when the DJs don't play your record because the levels are wimpy.

One trick I recommend to clients who are having difficulty with timings is to edit the instrumentals. Editing a 4:30 instrumental down to 3:00 can mean an extra dB of level. Another important consideration is the sequence of tracks. Since the sound quality on a vinyl record degrades toward the inside of the disc, put your biggest, most important tracks at the front of each side. If your single is going to include *a cappella* mixes, sequence them last, at the inside of the disc. Since these mixes have no drums, bass, etc., they will play well in this position.

A question I'm frequently asked is whether the same mixes are suitable for a 12-inch single and a CD. In most cases, the answer is yes. Problems arise when the mixes are very bright, or if there is a lot of stereo effect in the low-frequency range. To my ear, mixes that are too bright for vinyl are usually just too bright, and will make an unpleasant sounding CD as well. Just keep in mind that if your mixes are very bright, especially above the 8–10 kHz range, your mastering engineer will need to roll the top off with EQ and a de-esser to make it work on vinyl. You may or may not like the CDs done the same way. Also, stereo information in the bass frequencies is very difficult on vinyl, but works easily on CD. At Future Disc, I frequently master singles with the commercial CD in mind, knowing that when it goes in the cutting room we'll de-ess it and mono the bass just for the 12-inch.

Proper mastering for vinyl involves many tradeoffs. For club play, hot levels are good, but not if they come at the expense of distortion, skipping, and over-compression. Some mixes transfer to vinyl easily, and others can be very trying. Therefore, it's a good idea to reference your 12-inch before you press a bunch of copies. First, have the mastering engineer make you a "ref" copy. This is a lacquer disc directly off the cutting lathe. Sometimes referred to as "dub plates," they're good for only a few plays. Take it to a club. Most DJs will give it a spin because it has special status as a dub plate, and you'll hear first-hand how your 12-inch stacks up to the competition.

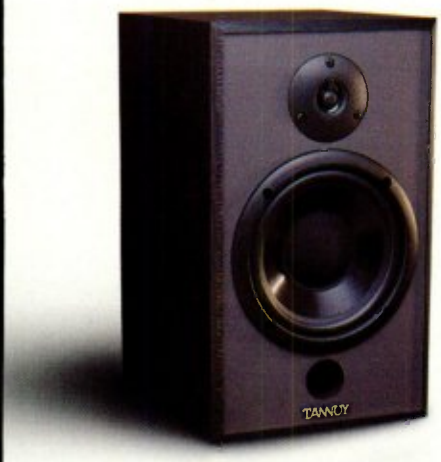
> "TO MY EAR, MIXES THAT ARE TOO BRIGHT FOR VINYL ARE USUALLY JUST TOO BRIGHT, AND WILL MAKE AN UNPLEASANT SOUNDING CD AS WELL."

Once the ref copy is approved, the mastering engineer cuts the actual lacquer master at the exact same settings. This "lacquer," as it's called, can't be played and goes to the pressing plant without delay because it has a short shelf life.

The final stage is a test pressing from a mold of the master lacquer. If you're in doubt about the quality of the test pressing, go back to the mastering engineer for a second opinion. If you're pushing the limits in terms of level, side length, top end, etc., expect to go through a few "refs" to get it right. Trust your ears and build a relationship with a mastering engineer who has experience with 12-inch vinyl to make the most of club mixes.

Kris Solem is a mastering engineer at Future Disc Systems, where 12-inch vinyl is one of his specialties. He also teaches mastering at UCLA Extension.

PERFECT MIX.



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BEHIND CONSOLE SAT

Chris Fogel and Rob Jacobs man the board for Alanis Morissette's third album, *Under Rug Swept*

World Radio History

PART ONE: MIX MASTER

By Bobby Owsinski

After much success mixing Alanis Morissette's two previous mega-hit records, mixer Chris Fogel is back at the helm again for Alanis's latest record, *Under Rug Swept*. Not one to follow convention, Chris uses a variety of tools and methods that have resulted in mixing stints with Robbie Robertson, U2, Aerosmith, and Seal, as well as a slew of film underscores such as *Charlie's Angels* and *KPAX*. *EQ* caught up with Chris at Glendale's Front Page Recorders Studio M (which features a Euphonix CS3000 — his favorite) just as he was finishing the mixes for Alanis.

EQ: Did you record the tracks for *Under Rug Swept?*

CHRIS FOGEL: Actually, I came in at the very end. The record was already mixed and mastered, but Alanis had three additional songs that she wanted me to have a shot at. After she took them home, she asked me to redo the whole album.

What format were the tracks recorded on?

Everything was initially recorded in [Digidesign] Pro Tools, then some things were transferred to [Sony] 3348, and there were some overdubs done on that format. Anything that was on the 3348 I transferred to Euphonix R-1. If I had any open tracks, I transferred the Pro Tools tracks over as well. Whatever was left ran through a Euphonix 727 format converter from my Pro Tools rig, which was 40-out at the time, but is 48-out now. Everything in the mix stage in L.A. had Euphonix converters on the output. There was anywhere from 40 to over 80 tracks, depending upon the song.

You did some mixes in New York, didn't you?

I mixed the three singles at Battery Studios in New York. I recalled them back in L.A. and did some tweaks on them. As a result, I think those three are the best on the record now.

What monitors do you use?

I use the NHT A-20's for everything I do now. I double-check on the "bigs" or some large ATC's that I just tried. In Alanis's case, I would start mixing at really low level on the big monitors to make sure that the bottom was good, then I would switch down to the NHT's and do all of my leveling, then do final vocal leveling on my little Fostex 6301's at

PHOTO BY EDWARD COLVER

CHRISFOGEL

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really low level. I used to mix really loud, but I mix quieter than most now. I think I get better mixes as a result.

How do you start your mix?

If I'm not familiar with the song, I usually just throw up all the faders and get a rough blend with the vocal in to get an idea of what the song is all about. Then I'll stop and I'll listen to some CDs of some things not related to what I'm doing for about an hour to sort of clear my head. I do this without fail on every song.

Then I'll get back to the mix and drop the vocal back to a barely audible level as a guide to where I'm at in the track. Then I'll start with the drums and bass and build from there. From there I'll add any melodies and back-up vocals and then put the lead vocal up to a usable position. It's generally a six- to eight-hour process.

Are you doing the drums or bass first?

Nine times out of 10 it's the drums first. Then I'll tailor the kick around what the bass is doing.

What are you using for outboard gear?

I use the typical reverbs like the (Lexicon) 480 and the Eventide DSP4000. After seven years I'm still a huge fan of the (Yamaha) SPX-990.

I use a dbx subharmonic synthesizer on the kick and bass and the bottoms of loops. What I like to do is put it on the big monitors loud, and as soon as I start feeling a change in the air, that's when I stop pushing the level. I don't like it when it gets into that "octave dividing" sound because it's not natural. But what I do like is that "forced air" feeling. In some cases I think I went over the top, but I'd rather have too much than too little bottom.

Are your effects the same from song to song? Do you always start with the same setup?

No, not really. One thing I do in just about everything is a Haas effect of 7 to 10 ms on guitars and wide instruments, so that will always be the same. Vocally speaking, Alanis always gets a small wood room or a plate on the 480. It changes from song to song. Sometimes she's bone dry.

The only thing that really stays the same from song to song is my mix setting on the GML EQ across the stereo bus just because I like to have some consistency that way. I use an SSL compressor for a drums and bass submix and return it to the board, then everything goes to the GML EQ across the stereo bus to both a 1/2-inch tape machine and [Alesis] Masterlink.

At what point during the mix do you insert it?

Sometimes I leave it in from the beginning only because I've forgotten that I had it in. [*Laughs.*] But most of the time I take it out when I start and put it in when I think the mix is in a good place. It's weird because I'll always think that it's in a good place until I pop the EQ in and then it's always in a much better place. But I try to wait until I'm about 3/4 of the way finished before I pop it in, usually when I'm doing my last bits of level changes on the lead vocal.

Do you have an effects setup that you always start from?

Yeah, I'm always going to use both sides of the 480 without fail, so that's always on sends 1 and 2. I always have at least four single path delays like [Roland] SDE-3000's or [TC Electronic] 2290's. I'd say that I'm more delay-heavy

WHAT RHYMES WITH ORANGE? Alanis the songwriter mulls things over at Scream Studios.

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than reverb-heavy.

Are you setting the delays up for time?

I'm going for a couple of things. I'm going for timed delays and also for widening delays, which are very short Haas effect kind of things.

What do you mix to?

Mostly 1/2-inch Emtec 900 at +5 and a Masterlink through an Apogee PS100SE. A few of the songs had a more detailed mid-range with the digital, but there was a consistently better bottom and lower mids on the 1/2-inch, so that's what we ended up using.

What was the hardest thing about doing this record?

It was me understanding that I actually had *carte blanche* to do what I wanted to do. Alanis had gone through the process once before and brought me in because I was a trusted ear. It took me until the fourth or fifth song to realize that she just wanted me to do what I do, and in all cases she was happy with that. At first I tried to maintain some of the integrity of the previous mixes, but at the end of the day it was better when I just used my own approach.

Then there's the real difficulty in getting her voice to sit in the track so that it's got the energy that she likes but yet not ripping your head off because she's so sibilant. That's kind of her thing. If there's a de-esser on it, she's going to notice, even if it's subtle and the meters are taped, so you can't de-ess.

So what do you do?

Her sibilance is real high, up at about 11 kHz, so I just use a real tight notch filter. It varies per song a little bit — on one song it was down about 9.3 and another it was up at 14. Notching that out helps, but the vocals are still pretty zingy.

Are you using the board EQ for that or something outboard?

I don't think I've used an outboard EQ on a mix, with the exception of the GML on the stereo bus, in two or three years. Actually, on some of the Seal stuff that I just did, I used an Avalon across his voice, but with Alanis from day one on the first record it's always been the on-board Euphonix EQ.

I like the on-board compressors, too, although I used a little bit of a [Empirical Labs] Distressor on her voice sometimes. Occasionally I'll do the snare or sidesticks or that kind of thing through a [dbx] 160X.

Were you squashing the drums very hard?

On the SSL compressor, I was doing anywhere between 4 and 8 dB of compression with a real slow attack and fast release — the typical kind of "Brit Squash" — and it worked really well in all cases.

How long did it take to mix the record?

We started in New York and mixed three songs over nine days there. It normally wouldn't take that long, but these songs needed a lot of arrangement help,

> "THAT WAS ALANIS'S VISION FROM THE START. SHE REALLY WANTED TO CAPTURE WHATEVER MAKES HER TICK AS FAR AS WHAT GETS HER OFF WHEN SHE HEARS A SONG THAT SHE WRITES. SHE DEFINITELY DIDN'T WANT TO OVER-PRODUCE IT, SO I THINK SHE HAD HER BOUNDARIES SET AS TO HOW FAR SHE WANTED TO GO."

so I was arranging while I mixed. Then we came back here and remixed everything for about another month.

I much prefer to mix things that I didn't record. I just like coming in with fresh ears and having a first take approach on it.

When you do that, do you find that you have to make a lot of arrangement changes?

No, not too often. In some cases I might have to make small drum and guitar decisions, but I never do it vocally unless it really needs it. Alanis's stuff needed it more than usual because there

was a lot of "kitchen sinking" going on. She inherently knew that we'd have to throw some things away eventually.

Did you do any Pro Tools fixes?

On yeah, I did a lot on this record from arrangement work to effects. I don't use Pro Tools as a mixing tool at all; I use it as a multitrack and occasionally as an effects box.

So you use plug-ins a lot then?

Sometimes. I like the [McDSP] Filterbank stuff a lot. I really like the more "effect-y" plug-ins from Waves. I like putting it as wide as it will go, then sending some pads through it. You know, stuff that when you put it in mono it completely goes away.

We're in the "stereo+" age, so I reference to the Coldplay record a lot. I really like what they're doing as far as not having much regard for mono. I like that the guitars are really wide and feel like they're not part of the speakers, so I went after that effect with this record too.

So you don't check in mono then?

Yeah, I do. I check in mono sometimes just to get a laugh. If something is going away, then good — that's the way I want it.

PART TWO: TRACK MASTER

By Lisa Roy

L.A.-based engineer/mixer Rob Jacobs has earned the unique privilege of gaining the trust of an impressive list of music royalty, including Don Henley, The Eagles, Sheryl Crow, Elton John, Stevie Nicks, and U2 to name a few. It comes as no surprise that he ended up playing an integral role in the sonic landscaping of Alanis Morissette's *Under Rug Swept.* Not long after his success with Don Henley's *Inside Job,* Alanis's manager, Scott Welsh, approached the sonic *wünderkind.* "He said that Alanis was going into the studio to produce her next record and they were looking for somebody who has worked with fairly big projects where the artist was the producer," confides Jacobs. "They wanted somebody to make sure it could be taken to the finish line with all the technical aspects. So we did a test run for a couple days and it worked out great, we had a great time. The next thing you know, we were working for seven months together." *EQ* caught up with Jacobs and he shared his technique on making it to the finish line.

EQ: Describe your first session with Alanis.

ROB JACOBS: It was amazing. It started out as working demos that she had cut in Canada, which were obviously working masters. She would go in the studio with her keyboard, her loops, guitar, and vocal mic, and noodle around, and we'd keep recording. She would construct some stuff, come in the control room, tell us what she liked about it, build the track, we'd put it together, and 20 minutes later she'd come out with vocals and do all the harmony. It was pretty great!

Did you guys do a lot of preproduction work, rehearse things thoroughly, or was there a framework that allowed for great things to happen in the studio?

I think a little of both. Initially most of the framework was done because she

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had done a lot of the vocals and tracks in Canada with Brad Nelson. The next level that we took was putting the band over the top of the demos, so to speak. They had gotten CDs of the roughs, and they came in with their parts and it was a tracking session from the get-go. These guys had a very tough job trying to beat what was there, but in most cases they played some great stuff and were able to play over the top of the track and create a whole other level of production to it.

Were you going analog or digital?

I'm definitely a digital guy. Once again it's another project that we couldn't have had the creativity and ability to keep "demo moments" and tweak them and have a lot of options. We did transfer to 3348 HR and bounced back and forth but, ultimately, everything ended up in Pro Tools.

The first single, "Hands Clean," is a great sounding record. It's got such a contemporary attitude, yet it could have easily been off of *Jagged Little Pill*. What did you bring to the party that allowed that to happen?

I think that was Alanis's vision from the start. She really wanted to capture whatever makes her tick as far as what gets her off when she hears a song that she writes. She definitely didn't want to over-produce it, so I think she had her boundaries set as to how far she wanted to go. Even when the band played over the top, she knew at what point to stop.

With the experience that I've had working with other artists, Don Henley, The Eagles, or whomever, those records are also in a way written in the studio. So I certainly feel that my work ethic and ability to capture things fairly fast and not get bogged down with the technical aspect is a bonus as far as somebody who likes to write in the studio. To get hung up on technical stuff these days is just a bummer. You've got to keep the ball moving. I also think instrumentally working with different musicians and working on a lot of different records, sonically I could relate to the guys in her band — and also to Alanis — what might work and might not. That seemed to work out pretty well. I was able to really be a part of it.

Your studio selection was very interesting. How did you decide where to record?

The first studio, The Dog House [Glen Fry's studio], was actually a trial. I felt it would be great to have Alanis work at a place that's a little more intimate. I certainly never expected that we would be tracking there because it's a pretty small studio. I initially felt we'd go there and do some overdubs, feel it out and see how we work together, and when it comes time to cut we'll go to a bigger room. The second day the whole band showed up with all their gear and I'm like, oh my God, where am I going to put these guys? It was going to be a one-by-one overdub; adding to the track, but it ended up everybody all at once. We figured it out. We put people in corners, hid amps in closets, and had everybody play at once. It worked out great. It actually helped us create a sound.

What ended up being your tracking setup?

I put Gary Novak's drums facing the door to the studio. We ended up leaving

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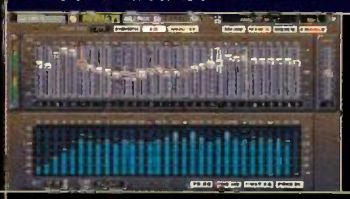

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ON TOP OF *UNDER RUG SWEPT*

Alanis Morissette seems to embody the credo "change is good." She completes two hugely successful studio records utilizing the production talents of mega-producer Glen Ballard. She then shares the production responsibilities with Grammy-winner Rob Cavallo on the powerful "Uninvited" from the *City of Angels* soundtrack. She unleashes her latest work, the self-produced *Under Rug Swept,* and tours fronting an entirely new band.

"Alanis is very musically gifted and quickly understands the elements of the song," says Cavallo. "She's great in the studio." Appearing comfortable and confident in her new chosen role, Morissette was recently quoted as saying, "The greatest producers I've ever worked with are experts at facilitating, creating an environment conducive to getting the very best out of whom he's working with. I tried to do that with this album."

EQ had the opportunity to chat with a few of Morissette's long-time bandmates while they were cutting tracks in Santa Monica's Dog House Studios. They give us a peek at the process of making *Under Rug Swept* with their newfound producer....

NICK LASHLEY

"I had to decide which musicians to use on which songs," Morissette was quoted as saying. "It's about listening to my intuition." She wound up inviting Red Hot Chili Peppers bassist, Flea, to play on "Narcissus"; Meshell Ndegeocello to contribute on "So Unsexy" and "You Owe Me Nothing," STP's Dean DeLeo to add guitar on "Precious Illusion," and Jane's Addiction's Eric Avery on guitar. In addition to relying on her bandmates Nick Lashley, Joel Shearer, Chris Chaney, and Gary Novak, she did some playing herself. "I played my new Strat the whole time," Morissette said about her guitar contributions in the studio. "And I used a Korg keyboard on 'Utopia.' I used all my Line 6 pedals. I play with some of the effects in the room and used loops off different discs. I'm not much of a gear-head, because I'm surrounded by gear-heads. That's not to say I won't turn into one. I just didn't need to be one in this instance." One of the "gear-heads" she's referring to is her guitarist since 1995, Nick Lashley.

EQ: After 6-1/2 years with Alanis you must have perfected your setup. What gear did you bring into the studio?

NICK LASHLEY: Mainly the two amps that are the sort of meat and potatoes of what I use to get my guitar sound. They are a 1965 Fender Bassman head going through a 2x12 Fender cabinet and a Matchless DC30 going through a 2x12 Matchless cabinet. Then I use a Marshall head, the late-'80s model, so that I can get a signature Marshall sound. Between those three amps it was kind of everything I needed. I also had a Vox AC30 that I would use occasionally. I mainly used a Paul Reed Smith McCarty model as well as my Don Grosh; it's a hollow Tele. I used my Line 6 pedals quite a lot for this record. Alanis and Rob liked the Fulltone Fulldrive pedal and the Bus compressor.

Describe how you were set up in the studio.

We were recording at Dog House. I got the smaller area and Joel got the bigger room. I don't mind being in a small room because it gets pretty loud. I like recording on headphones anyway. I don't mind cranking it up. You have to have the interaction between the guitar and the amp when you need it. I'm not a big fan of monitoring quietly in control rooms through [Yamaha] NS10's. I like feeling the amps in the room.

There were a few guitarists on this record. What was your approach with your parts?

Joel and I were the main guys in her band. Tim Thorney played some guitar on the demos in Canada, so sometimes his parts would stick as well. I think it was just whoever came up with the nice part for the song. Each song will have a few different guitar players on it. With the wonders of Pro Tools, Rob and Alanis would arrange the guitar parts for different moments in the song. I think my role was the same as any other guitarist on this record.

The new single, "Precious Illusions," has some great guitar riffs. What are you playing on that one?

I play some of the electric parts on that one. Although, I think it's a fairly dense mix of different guitar parts. My part is some of the picky kind of parts that you'll hear. It's nice to find a cool melody in a certain section of that song that really lifts the section. I'm always looking for that, and then just nice picking parts that are very melodic within the track. I wanted to have a certain pop sensibility to the part.

What was it like working with Alanis not just as an artist, but also as a producer?

It was really mellow in the sense that we were allowed to create our own parts. We weren't sort of dictated to. Alanis would take what we played and then expand on that. If you came up with an idea, she would welcome it. It was a new thing for her so she was feeling her way through the process, and I think it worked out really well!

GARY NOVAK

One of the main elements of conductivity between *Under Rug Swept,* "Uninvited," and *Supposed Former Infatuation...* can clearly be heard and felt with the presence of Gary Novak, a master drummer who has worked with Morissette since 1997.

EQ: I hear that you and Alanis came up with your own drum loops on this record. How did that happen?

GARY NOVAK: We were doing "Precious Illusions" and just listening to some of the beats on the hard drive. Rob and I wondered if we got some time before everybody else comes in to try our own sounds. I brought a few toys in — a toy drum set actually — and sat down in the room and started playing. We were totally joking around, yet it sounded really cool, and Rob said "Just leave it in there." The next thing I know, I've got headphones on and a cup of coffee and nobody's getting in the mood to start working yet, and there's a click in the cans. So we start recording little bits and pieces of me jamming along to this track. We did that a few times, it wasn't a very laborious process. Rob wanted to try different mic placements, but as far as any big secret voodoo, it was more like being inspired at the moment...just go mess around and play with your toys that are sitting in front of you. That's basically how we went about it. We'd layer some things, then put some kind of weird Cajun thing on top of it, then add a *djembe,* and then we'd cut all these loops into one thing. We now had six stereo loops to use for the whole song.

So where was Alanis when you were creating loops?

Basically Rob and I kind of started it and then Alanis walks in the room and of course she starts laughing and freaking out, seeing this guy who's six-foot playing this little toy drum set. She thought it was awesome. Alanis was pretty open-minded. She likes a lot of drumbeat-heavy kind of sounds, so she was open to hearing anything that would be in that vein. It was definitely a cool experience, and you can hear it on the intro of "Precious Illusions."

What was your "real" drum setup?

I have a couple DW drum sets that I used; one is almost like a prototype-style with different shelves and angles. I had a couple of old Ludwig black beauties. Fifty percent of the record was done on the prototype DW kit. It's a 12-, 14-, and 16-[inch toms]. Mostly vintage Zildjian cymbals that I've had for 20 years, a lot of old, dark, cracked and beat-up trashy cymbals. I used a couple of Gretsch drums on a couple of tracks, but for the most part it was just a mix-match of DW toms; whatever bass drums would sound good for the track. There also were a lot of toys. By toys, I'm talking about hand percussion, Brazilian drums, and stuff that I pick up from here and there.

Were there any happy accidents that made it to the record besides the toy drum kit?

I did a few tracks where I'm playing hand drums and a mallet on a percussion instrument, kind of real dark drum sounds. We did some crazy things, like taking a big 18-inch *djembe,* putting it inside the bass drum, and then miking the inside of the *djembe.* It gave us the biggest natural Roland 808 sound you could ever imagine. We were getting into some cool experiments, and Rob had the patience to do it. —*Lisa Roy*

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that door open and it had a hallway — I put a bunch of mics in there and just squashed them like mad and that became most of our drum sound. The main set up was a pair of [Neumann] U 67's for overheads, [Shure] Beta 56 and Beta 52 for the snare, [Neumann] U 47's on the toms, and a [Sennheiser] 421 on the kick. It was fairly simple drum miking a lot of the time. Sometimes I'd drop all the mics and use overheads, a kick, and a snare mic. I used the Line 6 Bass Pod, which helped create a lot of our room sounds.

One of Alanis's guitarists, Joel Shearer, brought in tons of pedals and wild effects, so I set him up in the piano room across from Gary. We just shoved the piano aside and put Joel in there. The bass player, Chris Chaney, was in the control room with his cabinet in the kitchen, which was behind us, in the little lobby. Nick Lashley [Alanis's other guitarist] was in the far iso booth.

Did Alanis sing with the tracks as you were laying them down?

No, her vocals were actually 90% finished. They were the only things that occasionally got changed due to a couple of lyric changes, but her vocals were real spontaneous. Most of them were done in Canada. I was lucky enough to record a couple in L.A. with some of the new tracks. We attempted to redo a couple of the tracks from Canada, but they have such a vibe, we thought it would be fun on a couple tracks, and so we said, "Aw, give it a shot — we have your vocal, let's see what happens." So her vocals are great!

So where was Alanis during the tracking process?

She was in the control room right next to me. Most of the time she'd go out in the studio and give the band their pep talk and explain to them what she was looking for.

"She chose her parts and players well," says engineer Rob Jacobs about working with Alanis the producer.

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What was your mic setup for the "occasional" vocals you recorded with Alanis?

She's got a certain sound with her mic, so we used the [AKG] C12-VR. We also used the [Audio-Technica] AT4060 occasionally on her lead vocals and backgrounds. I used Little Labs mic preamps and the Avalon mic preamps. I ran the C12-VR into the Little Labs mic preamp into my Avalon EQ, and we'd go straight into the 3348 HR. We were also matching some vocal sounds that they'd done in Canada, so sometimes we were just squashing like mad through a dbx 160 and, at times, two dbx 160's.

Describe your signal path for the drums and bass.

I've got a bunch of Avalon mic preamps, which I love. Gary [drums] was going through just about everything Avalon. EQs, compressors, and mic preamps, as well as the Little Labs mic pres.

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BEHIND CONSOLE SAT

On the kick and snare mic, I used Avalon's going through a Neve rack.

Chris [bass] had four real nice DIs, which we would bounce back and forth between. One of the chains I used was a Neve 1073 on one of the channels, [Urei] LA2A, and a Pultec. He had a bunch of different amps and basses. I mean, Chris has got so much gear, it's just crazy.

At what point did you bring Pro Tools into the project?

Pretty early on. Richard Davis was our Pro Tools guy, and he is awesome. He's super musical, has perfect pitch, and knows how to make Pro Tools pretty invisible. There was a lot of editing, and he made it so I could focus on the engineering. When we were tracking over the demos, we would do several takes, and it was fast and furious. We'd keep everything — we'd lay down a few more takes to try some different ideas. Once we felt we had the basic guitar track, Nick and Joel would do a few passes to overdub a couple cool parts, whether it was 12-string, electric, acoustic, lead lines, or sound effects, so we had a ton of information. Blade, Richard's nickname, was able to weed through the passes fast. Between Alanis, me, and the guys in the band, we all gave our input.

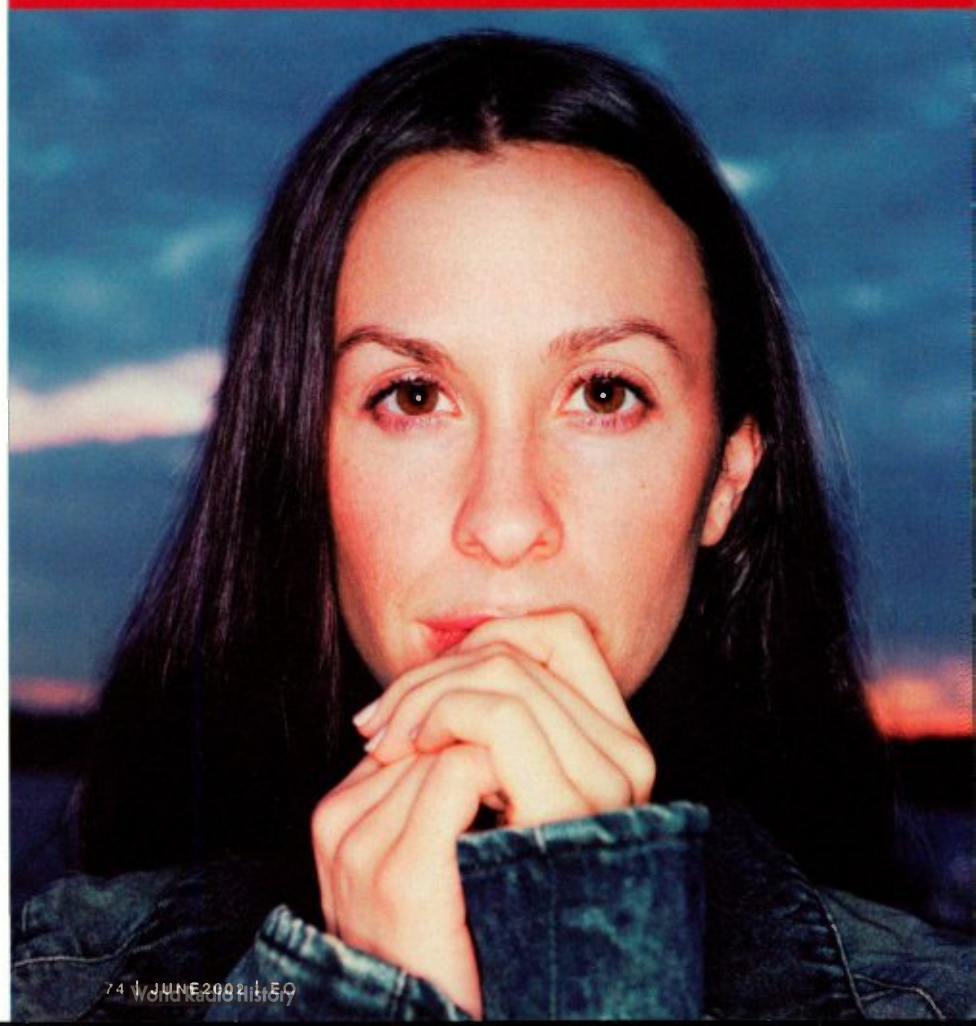
What other studios did you work at on this project?

We were at Scream Studio for about seven weeks, and I mixed "That Particular Time" at Henson Studios on their SSL 9000J in Studio A.

What was it like working with Alanis as a producer?

She was really fun. She had learned so much in her years of record making that her ideas were very smart; she was able to convey to the band what she needed. She had known these guys and worked with them for so long that she knew what they were capable of. She really chose her parts and players well; it was a smart way of doing it. ■

YOU LIVE, YOU LEARN: Morissette's recording carreer helped her as a producer in shaping the album



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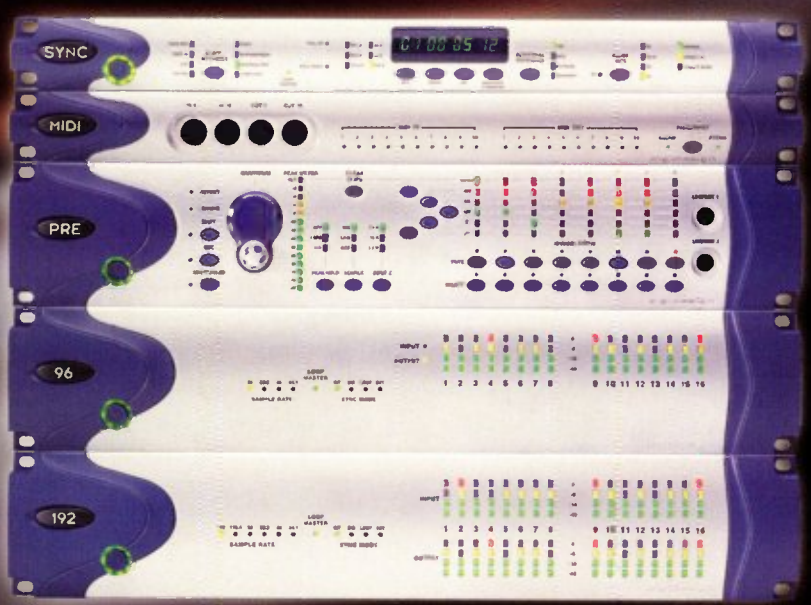

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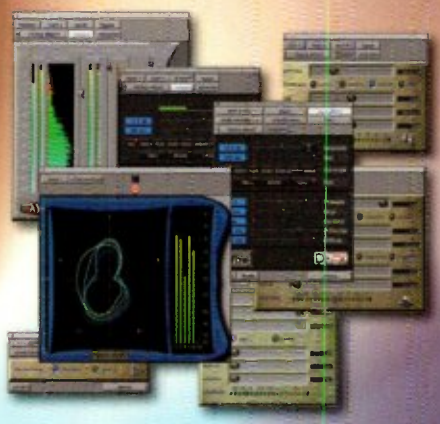

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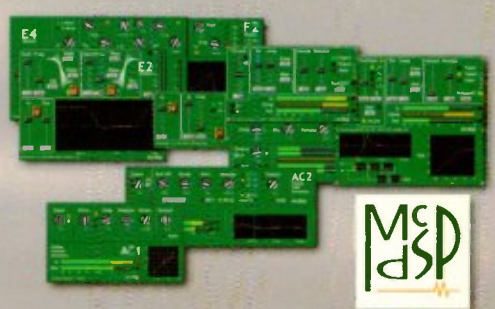

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HOW A PRO PICKS HIS TOOLS

BY MARK AVERY

CHOOSING MICROPHONES FOR VOICEOVERS

Considering the money and studio time spent on voiceovers (v.o.) for commercials, animation, movie trailers, network and station promos, ADR, etc., it's surprising no one has looked at mics solely from a voiceover, rather than a musical, standpoint. As a voiceover artist, though, that's precisely what I need to do to find the right mics for the right job.

Given the overwhelming number of mics suitable for voiceover applications, rather than try to cover everything in one article, I chose some representative mics with which I was familiar, and which could be compared in five categories crucial to typical v.o. sessions. (You can use these categories as a guide for evaluating mics in your own mic cabinet.) Note that all candidates are condenser, non-tube types with an MSRP under $1,500.

Each mic was tested using resonant male, midrange male, and light female vocals in several applications, with and without an external wind screen. (A "Popper Stopper" was used except for the AKG 414s , Neumann KMR81i, and Sennheiser MKH 416, which came with their own custom windscreens.) Each mic fed a Samson Mixpad with 48v phantom power to a Mac G3/266 using Pro Tools 4.3 (with no plug-ins or EQ active).

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THE MICS

AKG C414 B-TL II — This mic is packaged in a PVC case with foam insert for the mic, custom windscreen, and included secure twist-mount elastic shockmount (model H-100) with thread adapter.

The mic has a compact rectangular design with a black finish, brass front grille, and enough bells and whistles to work in just about any voiceover application. A four-way, front-mount switch offers cardioid, hypercardioid, omni, and figure-8 patterns. On the back is a three-position attenuation switch (0/–10/–20 dB) and three-way bass roll-off switch (flat/75/150 Hz).

Internally, a twin diaphragm system allows for the multiple polar patterns while a modified condenser capsule provides a frequency boost starting at 3 kHz, increasing the voice's presence. This capsule's special tuning imparts an intimate sound to v.o. performances. (transformerless design)

AKG C414 B-ULS — This mic is identical to the B-TL II except for a matte silver front grille and its basic 414 condenser capsule. The capsule tuning makes a big difference; while a fine mic, in my opinion the B-TL II is better for v.o. (transformer-coupled design)

Audio-Technica AT4047/SV — This mic comes in a vinyl-covered box with foam insert that doesn't allow for storing the mount (while the AT8449/SV shockmount was included, it came in its own styrofoam-protected box). If you use different mics for different situations this may be a minor inconvenience. The 4047 offered some of the best isolation, although the mount was the most difficult to work with, and I felt that repeated placement and removal of the mic from the mount could wear out the elastic bands that isolate the mic.

Both mic and mount are handsomely finished in matte silver. The AT4047/SV is relatively small, but a large grille and diaphragm silhouette make it an easy target for the talent. The symmetrical, acoustically open housing design allows for superior off-axis sound reproduction. This mic sports an 80 Hz high-pass filter switch and a –10 dB attenuator switch. Oddly, the AT4047/SV only has a fixed cardioid pattern, even though it incorporates a dual diaphragm configuration with ultra-thin two-micron vapor-deposited gold diaphragms that reproduces subtle sounds well, even in the high-frequency range. (transformer-coupled design)

Audio-Technica AT4047/SV

Audio-Technica AT4033a/SM — This mic shares the same measurements, housing design, switches, packaging, superior isolation, and shockmounting difficulties as the AT4047/SV. However, the fixed cardioid pattern is noticeably tighter for reduced, but still very good, off-axis response. Additionally, there's an internal open-cell windscreen between the grille and condenser element to protect against plosives (though an external windscreen is still recommended for close miking). The mic is also very good at picking up vocal subtleties. (transformerless design)

Audio-Technica AT4050/CM5 — While packaged identically to the other "40 series" mics (and it includes the AT8441 shockmount in a matching black matte finish), this mic is nearly one inch longer, partially to accommodate the three-way polar pattern switch (cardioid, omni, and figure-8) conveniently located in front.

The AT4050/CM5 utilizes a dual-diaphragm design with ultra-thin two-micron vapor-deposited gold diaphragms, and again offers superb off-axis response. Of the three AT mics examined, this seems the most versatile for v.o purposes due to its design and features. (transformerless design)

CAD E-350 — Packaged in a heavy-duty aluminum Anvil-type locking case that also holds the included ZM-1G elastic suspension shockmount, the mic itself is very large, with a rugged and

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MICROPHONE	CLARITY	PRESENCE	RICHNESS	VERSATILITY	VALUE	SCORE	MSRP	COMMENTS
AKG C414B-TL II	4	4	4	5	4	4.2	$1,225	versatile but pricey
AKG C414 B-ULS	4	4	3	5	3	3.8	$1,100	spend the extra for the BTL-II
Audio-Technica AT4047/SV	5	3	3	4	4	3.8	$695	nice detail, a bit tinny
Audio-Technica AT4033a/SM	5	4	3	4	4	4.0	$495	solid performance and value
Audio-Technica AT4050/CM5	5	4	4	5	4	4.4	$995	transparent, warm, and versatile
CAD E-350	5	5	5	5	5	5.0	$899	why isn't this mic in more studios?
CAD E-100	4	3	4	4	3	3.6	$469	good for working with Darth Vader
Marshall Electronics MXL-2003	4	4	4	4	5	4.2	$399	slightly bright, but a great value
Marshall Electronics MXL-2001	4	3	4	3	4	3.6	$199	large condenser sound, small dynamic price includes elastic shockmount
Marshall Electronics MXL V-67	4	4	4	3	4	3.8	$279	sound is more open than sibling
Neumann KMR81i	5	5	5	5	4	4.8	$1,575	MKH 416 with some user options
Neumann KMS105	4	3	3	2	3	3.00	$595	high rent utility mic
Neumann TLM 103	5	5	5	4	5	4.8	$995	only things missing are user options
Sennheiser MKH 416	5	5	5	4	4	4.6	$1,275	makes any studio sound good
Sennheiser E-602	3	3	4	2	3	3.0	$319	great for capturing low end
Shure KSM 44	5	4	5	5	4	4.6	$1,340	pricey, but versatile, detailed, and warm
Shure KSM 32/SL	5	4	4	4	4	4.2	$1,029	similar to 44 without pattern options

CATEGORY DESCRIPTIONS

CLARITY: Detail, accuracy, and lack of saturation

PRESENCE: Openness — does it stand out and sound "there"?

RICHNESS: Not coloration, but fullness, depth, and warmth

VERSATILITY: Flexibility across all v.o. applications and voice qualities

VALUE: Takes into account MSRP, versatility, and overall performance

OVERALL SCORE: Average of the mic's scores in each of the five categories; **5** — excellent, **4** — very good, **3** — average, **2** — sub-par, **1** — poor

MSRP: Manufacturer's suggested retail price in US dollars

expensive appearance. Both the mic and the shockmount have a beautiful metallic pewter finish.

The E-350's size allows housing the large 1.1-inch, three-micron, gold-sputtered dual diaphragms in an external bias condenser capsule, as well as its unique electronics. Thanks to the use of laser-trimmed, high-gain op amps, the resulting sound is remarkably open, clean, and uncolored. However, the tradeoff is additional power supplies to complement the 48V phantom supply (a pair of rechargeable NiMH 9-volt batteries, whose significant current reserve also allows remote use for up to six hours, even without phantom power). The batteries are automatically

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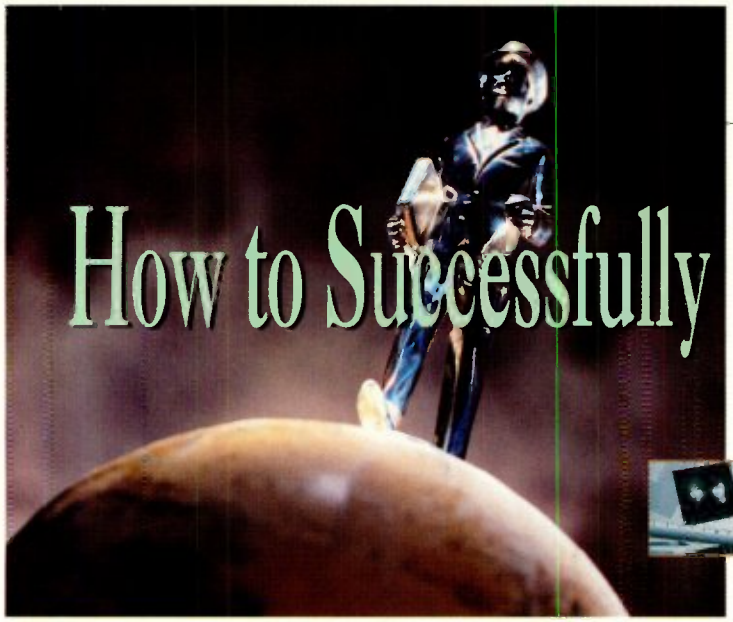

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recharged when the mic is connected to phantom power. This all leads to a hotter than normal output, so be careful when setting levels.

The E-350 also features a power on/off switch, three-position polar-pattern switch (omni, cardioid, and figure-8), and two-position high-pass filter (flat/80 Hz) and Pad (0 dB/–20 dB) switches.

CAD E-100 — While similar to the E-350, this rectangular-shaped mic is much smaller — only six inches high by 2.45 inches wide by 2.175 inches deep, and uses an electret condenser capsule. Yet it still has nice heft and a rock-solid feel. It's finished in durable black urethane with a brass plated front windscreen, and features a fixed supercardioid pattern.

The E-100 incorporates a swivel mount; there is no shockmount included, nor offered as an option. However, dual cantilevered capsule shock isolators do a better than expected job of isolation from vibration.

Marshall Electronics MXL-2003 — Although enclosed in a simple, heavy-duty cardboard box, the 2003 and the included MXL-56 shockmount are protected by a foam insert. But apparently, the money saved on packaging was put into intelligent design.

The ease with which this matte-black mic is securely placed into the tension clamp on the elastic-band, felt-insulated, color-matched shockmount is a true delight. The classic U 87-type shape makes it a familiar design for voice talent. A fixed, but open, cardioid pattern allows for decent off-axis pick up. There's also easy access to a rear roll-off/attenuation switch (–6 dB/octave at 150 Hz/–10 dB pad), although it would be nice if these options had separate switches.

Internally, the MXL2003 uses a large, 27-mm (1.06-inch), three-micron gold-sputtered diaphragm. The large capsule condenser is very sensitive to subtleties and is tuned to create a very intimate, warm sound. The capsule couples through an electromagnetic screen to a FET preamp with a wideband transformerless output.

Marshall Electronics MXL-2001 — This is a no-frills, but easy to work mic, with a pleasing black-matte finish. It's packaged in a heavy-duty cardboard box with a foam insert to keep the 2001 and the included swivel mount in — as well as a zippered carry pouch for traveling. The swivel mount holds the mic securely, but get the optional MXL-56 shockmount.

Compared to the MXL-2003, the MXL-2001 offers no pad or filter options and employs a slightly smaller one-inch diameter, six-micron gold-sputtered diaphragm. The capsule couples through an electromagnetic screen to a FET preamp with balanced transformer out. Despite the differences from its sibling, the 2001 still delivers a very detailed, natural sound.

Marshall Electronics MXL V-67 — This large diaphragm condenser mic has packaging and internal design identical to the MXL-2001, but with a vintage twist — a classic round-shaped grille and a gold double-screen design. These combine to produce an even frequency response and superior off-axis pick up.

The included swivel mount secures the microphone well, however the optional MXL-57 isolation shockmount is worth the investment. (transformer-coupled design)

Neumann KMR 81i — This mic comes with the WS 81 windscreen and a hard-leather carrying case — both quite desirable. Myriad options are also available for the KMR 81I; for v.o. purposes, consider the EA 2124 A elastic suspension mount.

This shotgun-type mic is reminiscent of the Sennheiser 416. Its unique design — a mic capsule inside an acoustically open, high-impedance interference tube — creates a sensitive, high output mic that really discriminates against peripheral sounds. The KMR 81 has a supercardioid/lobe-shaped fixed pattern. It sports bass roll-off (15 dB at 50 Hz) and attenuation switches (–10 dB), but accessing them requires removing the windscreen, then using the point of a paperclip to slide the miniature switches.

Neumann KMS 105 — The manufacturer suggested this mic for inclusion in this article, and it is indeed quite useful for certain applications. Available in nickel-matte or matte-black finishes, it comes standard with the tight-fitting SG 105 stand clamp and a polypropylene velcro-type sealed protective carrying case for both mic and clamp.

There are no adjustment switches on this mic; a high-pass filter (–3 dB @ 120 Hz at one meter) is internally installed, though its effects are minimal at close range. The KMS 105 has a fixed supercardioid pattern and is great for laying down scratch tracks, non-broadcast v.o., or sessions where proximal warmth and presence isn't crucial.

Shure KSM44

Neumann TLM 103 — This studio condenser mic with a fixed cardioid pattern comes with the SG 1 swivel mount in a nice wooden case. Available in satin-nickel or black-matte, it has a compact yet classic side-address design. The

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large grille and visible capsule silhouette make an easy to see target. The diaphragm, back electrode, and the entire capsule is based on the famous U 87 design. Impressive features are incredibly low self-noise, very high SPL handling, and extraordinary attenuation of sounds from the rear.

While the TLM 103 has an internal elastic suspension to isolate the capsule, it's worth upgrading to the EA 1 suspension mount. Surprisingly absent from a mic of this class are polar pattern, attenuation, or filter options, but the mic's superb performance makes such alternatives absent luxuries rather than missing necessities.

Sennheiser MKH 416 —The pa... for this mic is minimal; though the M... 415 foam windscreen is included, consider adding the MZS 20-1 shockmount. The MKH 416 is designed similarly to the Neumann KMR81i. However, there are no attenuation or filter options — conspicuous omissions on a mic in this price range. If these aren't crucial for your work, then this is a great choice for any ...

...e construction for instrum... ...ight voice coil combined with the traditional large-diaphragm capsule produces very low bass response (down to 20 Hz). When working with very deep voices, this mic could be a great option.

The design is compact and austere; there are no adjustment switches, a fixed cardioid pattern, and only a design-incorporated swivel mount (however, a zippered pouch is included). An internal shockmount helps quiet vibrations somewhat — but makes one appreciate a true external shockmount assembly. Make ... preamp gain is sufficiently hot ...

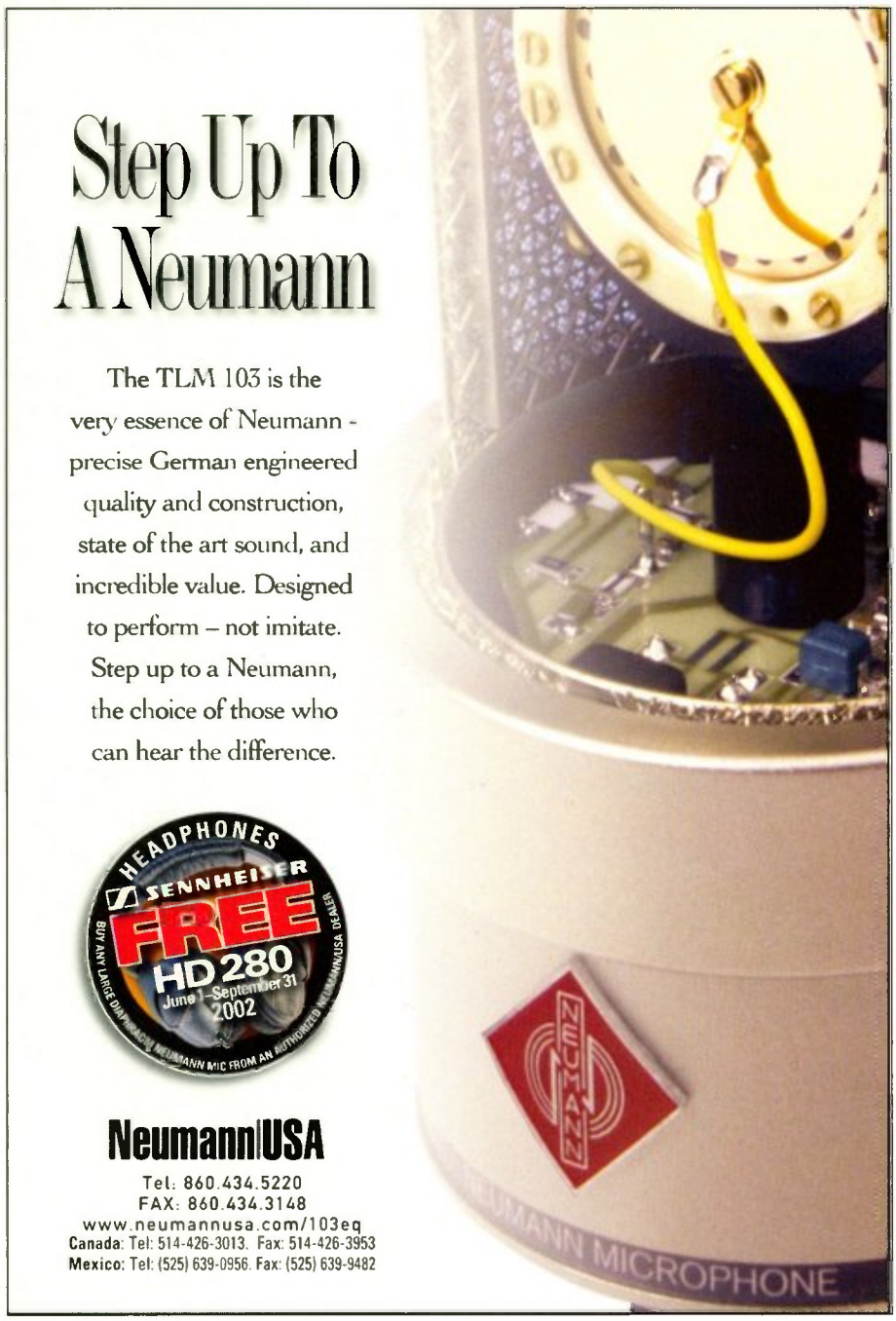
Shure K... ...e packaging for this mic is most ... a heavy-duty aluminum ... case that also holds the ... ckmount and swivel mount (... a place for the included ... ter). Additionally, the mic is ... by a velcro-sealed velveteen ...

A readily ... ssible front-located ... -position pattern switch offers cardioid, ... figure-8 patterns, while ... sports a three-way bass ... (flat/80/115 Hz) and a two-... (0/–15 dB) attenuation switch. The KSM44 is designed around dual one-inch, 2.5-micron diaphragms that provide superior transient response, and features class A, transformerless preamp circuitry.

Shure KSM32/SL — The packaging is virtually identical to the KSM44; however, the KSM32/SL has a fixed cardioid pattern, and a single 2.5-micron, gold-layered, low-mass mylar diaphragm.

THE SCORES

... shows the results. Remember



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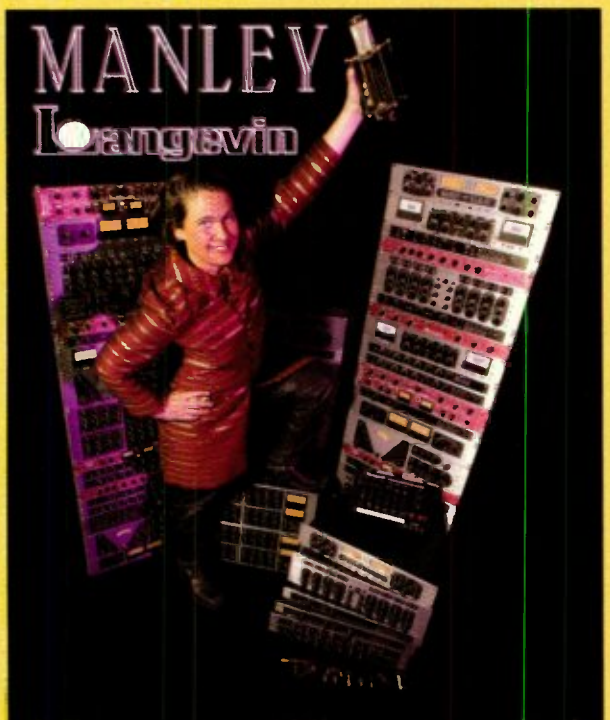

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that we're looking at these mics from a voiceover perspective, not as general studio mics. Some of these mics are more application-specific, so they won't score as well across all categories. If you seek an all-purpose mic, look for a high "versatility" score; mics for specific purposes might score higher in other categories. And don't dismiss a mic based solely on manufacturer's suggested retail price (MSRP) — sometimes you can get a great deal by shopping around.

TOP V.O. PICKS

While just about every mic examined here would make a fine addition to any studio, and all attain high levels of quality, some deserve special mention.

Budget Mic: For the price of a decent dynamic, Marshall's MXL 2003 large-diaphragm studio condenser offers exceptional detail, warmth, and features. Runner-up: Marshall MXL V-67

"Money's No Object" Mic: The Neumann's KMR81i's performance is on a par with the popular MKH 416, and offers some added features. It ain't cheap, but if you can afford it, buy it! Runner-up: Sennheiser MKH 416.

Biggest Surprise: Most people associate "Shure" with "dynamic mic," but the KSM 44 captures the detail and warmth of a performance extremely well and is quite versatile, with loads of options. Shop around for a better deal than the MSRP would suggest. Runner-up: Audio-Technica AT4050/CM5.

"Desert Island" Mic: The CAD E-350 is a standout. With sound, performance, design, packaging, and features that match or exceed those of mics two and three times its price, the E-350 is the next studio condenser star. Runner-up: Neumann TLM 103.

Mark Avery can be heard worldwide on television, radio, video, and industrial productions, and has been featured on Eminem's triple-platinum hit rap tune "Guilty Conscience." Hear his work at www.uhearme.com.

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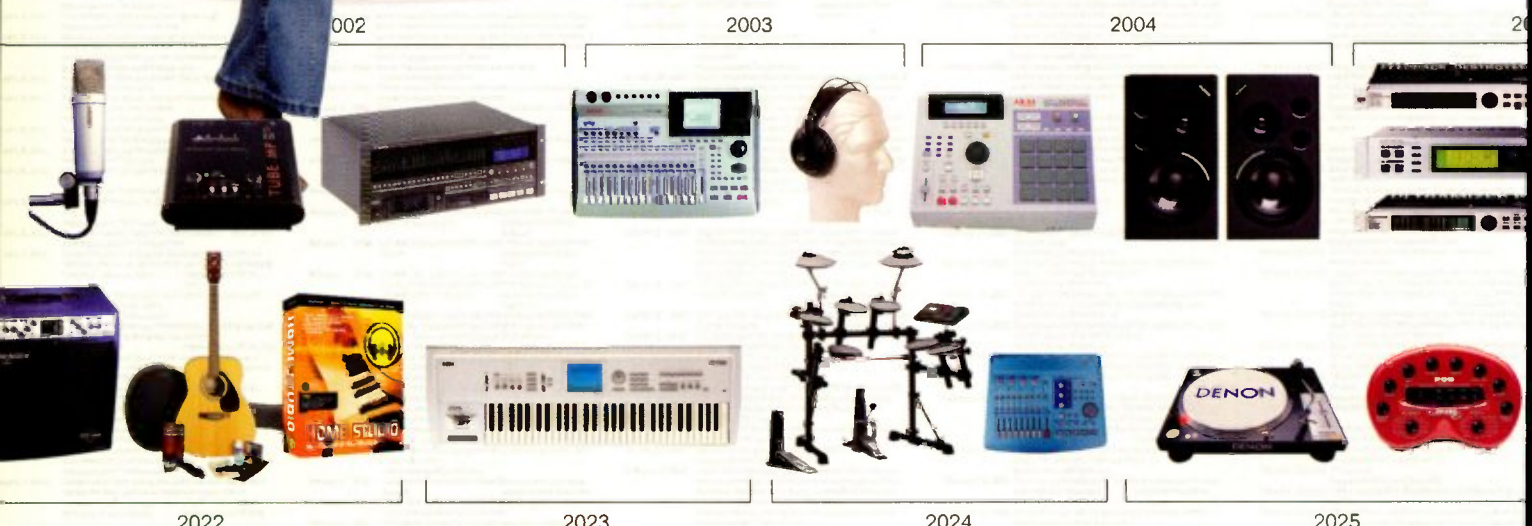

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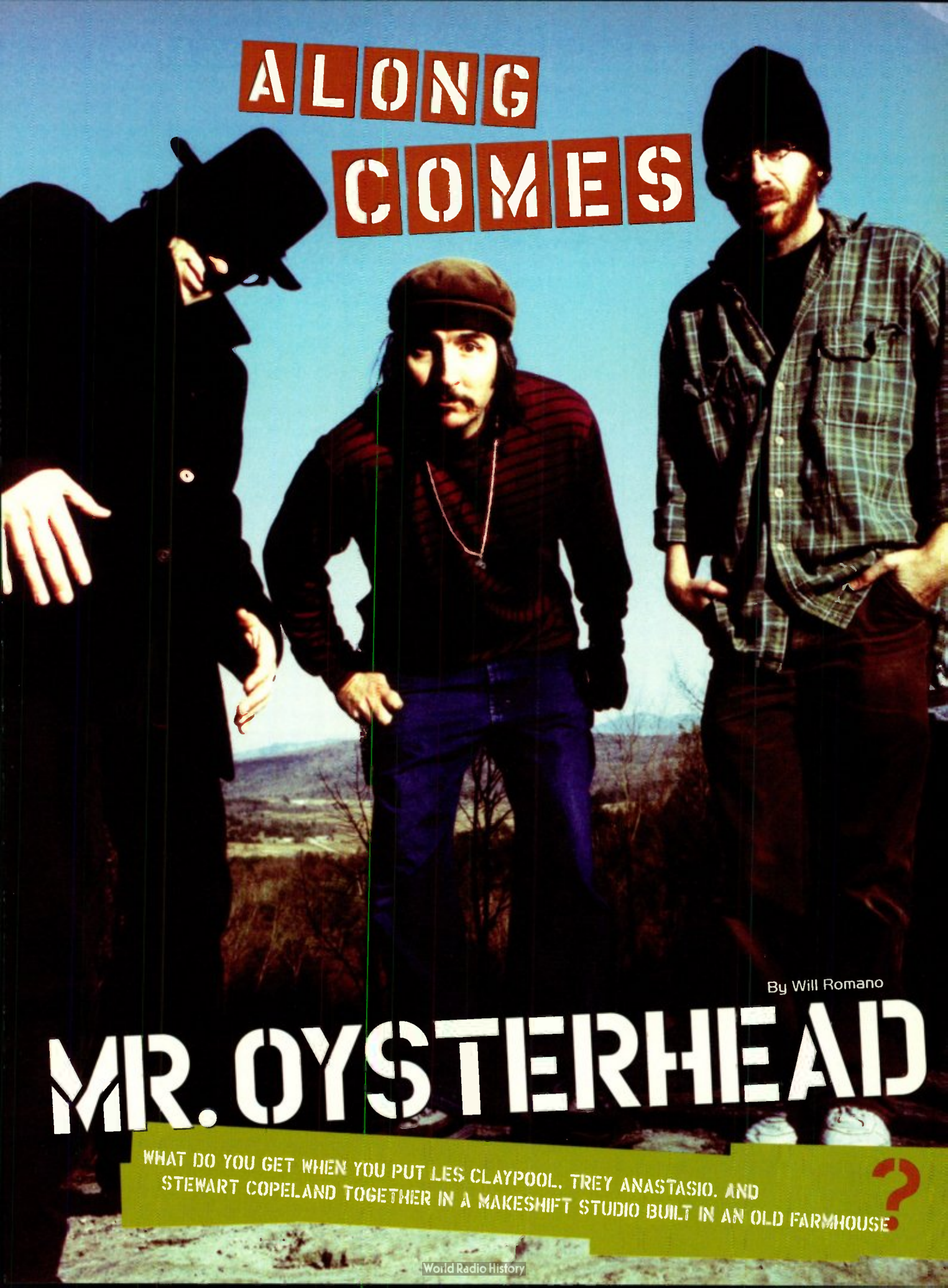

ALONG COMES MR. OYSTERHEAD

By Will Romano

WHAT DO YOU GET WHEN YOU PUT LES CLAYPOOL, TREY ANASTASIO, AND STEWART COPELAND TOGETHER IN A MAKESHIFT STUDIO BUILT IN AN OLD FARMHOUSE?

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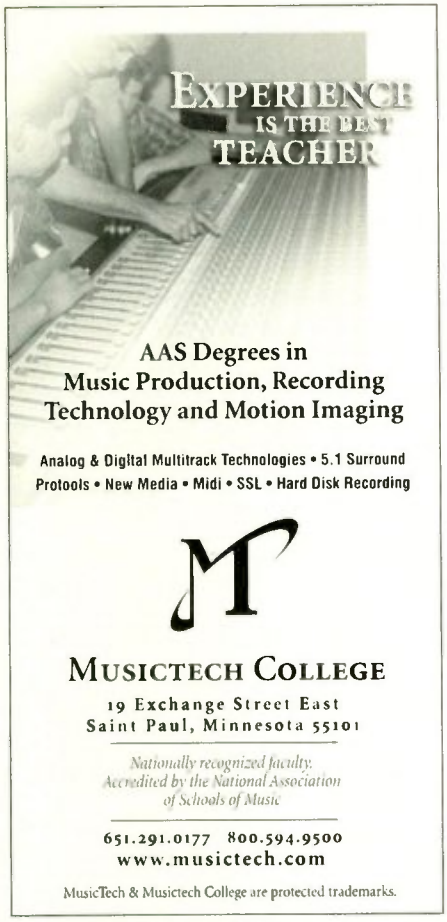


ALONG COMES

MR. OYSTERHEAD

In May 2000, Primus's Les Claypool, Phish's Trey Anastasio, and former Police drummer Stewart Copeland formed an impromptu jam band called "Oysterhead" for a show at New Orleans's Saenger Theater.

Copeland, who hadn't picked up the drum sticks in years prior to the rehearsals for the Big Easy concert, thought Oysterhead would be a one-off project. Trey and Les, however, had other ideas.

"They wanted to do a full-fledged record," Copeland tells *EQ*. "I remember The Police's recording process was a living hell. We were out to kill each other. Trey and Les are two of the most fun musicians I've ever played with. I didn't want to pop the bubble by going into the studio."

But upon listening to a taped performance of the concert, Copeland was convinced that they shared a special chemistry. After some prodding, he agreed, and, in April 2001, Oysterhead, now a *bona fide* supergroup, descended upon The Barn — Anastasio's new Vermont recording studio hideaway in Shelburne, outside Burlington — to record their debut, *The Grand Pecking Order*.

"It was the most fun I had making a record in twenty years," says Copeland.

GUINEA PIGS

Positioned on a crag overlooking a cliff near Mount Mansfield (the largest peak in Vermont), The Barn is essentially one farm house inside another. The outer shell, built only two years ago, houses an inner frame — a dark, two-centuries-old wooden structure with 10-inch thick wooden support beams.

"The sound dampens pretty quickly and the rough cut of the wood helps the sound decay quicker," says Barn manager Pete Carini.

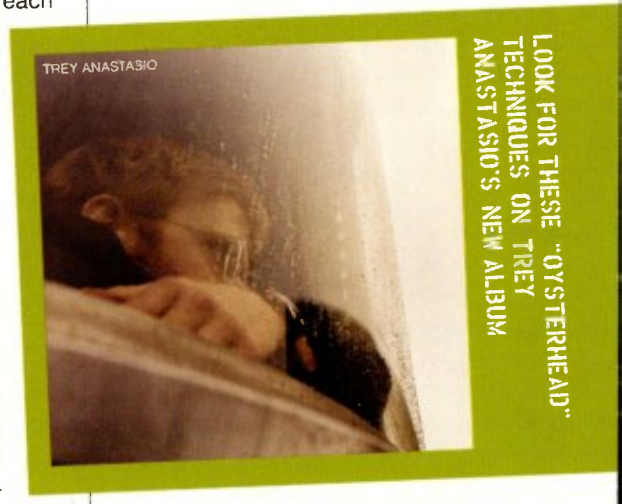
Secluded and acoustically hospitable, yes, but with hidden dangers. The Barn was originally just a rehearsal space where few records were cut.

"The day we arrived it was still being wired up and we ran into some problems with the wiring," says recording engineer Oz Fritz, who had worked with both Stewart and Les previously. "For instance, if some of the headphone mixers were connected but not turned on, there was noticeable distortion heard in the big studio monitors. Don't ask me how that was possible."

"We were guinea pigs," says Claypool.

OZ IS EVER FLOATING

Because the band wanted to record live, isolation was a big concern. They wanted to just jam on new ideas while analog tape (30 ips, no noise reduction) rolled. For Oz, it was a bit more complicated. No separation existed between the recording area and the musicians. In fact, there was no booth at The Barn. Getting things on tape became time-consuming.



"I was guessing at the sound, not really knowing what we had until playback," says Fritz. "I was experimenting with mic placement and mic selection."

"It was a bit old-fashioned," says Copeland. "We'd be blasting away, and then we'd have to stop playing so [Fritz] could hear what he was getting."

Trey needed the most isolation. Oz, who recorded Bill Laswell in a similar open setting, tried to impress upon the guitarist the value of separation, but Anastasio — lured, as he's been for most of his career, by live energy —

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World Radio History

wanted spontaneity.

"Originally, Trey was closer to Stewart, so we had to put his guitar amp in another room," explains Fritz. "That wasn't working because a big part of his sound is his amp communicating with guitar pickups."

"It was hard isolating things without ruining the vibe," contends Oysterhead guitar tech Brian Brown. "I remember we even built a little doghouse for his rig. That didn't work either."

Trey conceded, and 12-foot makeshift isolation walls were put up, but it took some getting used to. "We had to reposition Trey a couple of times so he could get a sound he was happy with," says Fritz. "He wound up being about 30 feet away from Stewart, who was located in the middle of the room."

Anastasio used his six-string hollow-body electric (built by Phish sound guru Paul Languedoc) to achieve a multitude of tones through a variety of small Fender Deluxe Reverb combos, different amp heads, a long chain of effects — including Ibanez DM-200 digital delay, Boomerang sampler (for loops), and Dunlop CryBaby wah — and a Leslie cabinet.

"I put the Leslie in a separate room," says Fritz. "I had the [Sennheiser] 409's aimed at the top and an [Electro-Voice] RE20 on the low end. On the [Fender] amps I used an AKG 421 condenser and a Neumann KM84 about one inch from the grille cloth aimed at the center of the speaker cone. I was going for a tight sound. Moving the mic back even one inch would increase the roominess.

For Trey's live loops, a direct line coming out from his Boomerang pedal board was used. Featured prominently throughout the disc, most notably in the track "Little Faces" (it's the bell-like noise heard at the beginning), the loops added excitement — not havoc — to the recording process.

"Trey would create a loop and he'd be adjusting volumes as he continued to add sonic layers," explains Brown. "He knows how to control his levels, and mixed them perfectly through his amp."

The bass was a breeze by comparison. Claypool had two direct lines: one straight off his four-string Carl Thompson bass guitar for the dry signal (using an Avalon DI/pre-amp) and another for his pedals and effects (including a dbx 120 subharmonic generator). Claypool was also coaxed into using a third line for his rig, which included an Ampeg tube amp and a 4x12 guitar speaker cabinet, which was miked about one inch away from the grille.

"Les likes his dbx compression, so that was on two channels," says Fritz. "I also ran my own compression, a GML, on the end of the dry direct to tape."

"There were so many channels because Oz had his idea of what the bass should sound like and I had mine," contends Claypool, who's engineered many of the Primus records.

Due to leakage concerns, the cabinet was baffled off and shoved into an equipment closet. "Les just tries to get his bass to be the loudest he can get it," says Brown.

Then, there were Copeland's studio monitors. "Trey and Les used Sony MDR7509 headphones, which had their own mixes through individual 16-channel mixers powered by Crown D75's," says Fritz. "Stewart insisted on having two [Yamaha] NS10's propped up at ear-level. I thought the bass would leak into his mics."

It could have been a horror show given the fact that Copeland's extensive kit was covered in a forest of mics [see sidebar]. It turns out it wasn't. "The drum heads were miked close," says Fritz.

Just when things appeared to be under control, a monkey wrench: Anastasio, after hearing Tom Waits's 1999 record *Mule Variations,* wanted to run his vocals through an amp, as Waits did.

"My concern was that, if you do that, you're committed to it," says Fritz.

Damning the consequences, the trio plugged their SM57 vocal mics (through a transformer) into a Magnatone amp, while Oz miked

COOKIN' UP COPELAND'S BURNIN' SOUND

Oz Fritz had the daunting task of ensuring that Stewart Copeland's drum tracks would be worthy additions to the legendary drummer's prior recordings. To do so, he went big.

"Stewart is such an articulate drummer — I knew I had to use a lot of mics. Every drum was close miked — some had multiple mics," says Fritz.

Copeland's vast rig included a new seven-piece Tama Star Classic kit (with his signature Stewart Copeland brass-shell snare), several Tama Octobons (rarely used — but miked), a gong drum (a huge timpani-style tom without a bottom), several Paiste cymbals, and his percussion "Table," which had an assortment of percussion instruments. Or as Copeland puts it, "Anything that went clank."

Oz used two Shure SM57's for the snare — top and bottom. For the toms, it was Sennheiser 421s. Three mics covered the bass drum: one Shure SM58 close up to the beater, an AKG D112 at the back head, and an AKG C414 condenser, placed about eight feet away, for low end response. It was compressed with a GML on the send to tape. The gong drum was miked with 421's top and bottom four inches away from the head, aimed at where the drum was struck. The "Table" had AKG 414's and Neumann KM 84's within close range. Copeland's hi-hats were assigned two Neumann U 87 overheads and an AKG C452, while his ride called for an AKG C451. A boom mic, a Neumann U 47, sat overhead facing the kit about 15 feet high as well.

"This definitely was the most extensive mic setup I've done for any drummer," claims Fritz.

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it with an AKG C12. The verdict? It works. On "Little Faces," Trey's nasally squawking conjures images of shrunken heads; Copeland's menacing spoken-word tirade befits his omnipresence in "Wield the Spade."

"Les took it one step further by singing through what looked like a toilet paper roll," says Fritz. "I added [Urei] LA2A compression on the channel, and the amp controls were tweaked to get a desired sound."

For capturing the room sound, Fritz employed two AKG C12 tubes for accurate, clear tones, positioned for maximum rejection from Copeland's monitors. Fritz was running Neve compressors inserted on their channels. And when he recorded one mic to a track, the line would go direct from the board channel to the tape machine, a Sony MCI running BASF 900 two-inch tape — which can perform at high levels. All the mics were coming into an API Legacy console.

"For every song there were a lot of inputs," says Fritz. "In some songs it got up over 30 total tracks, and that includes direct signals, too."

Fritz was choosy when it came to inserts. "I didn't use noise gates on the drums, but I left them on for the guitars," says Fritz. "The room mics used only board EQ. The distant room mics were compressed through a vintage Neve inserted on the channels, and the boom mics had Empirical Labs Distressors."

VARIABLE HEAD ROOM

As if Fritz didn't have enough to worry about, reaching the tape machine's boiling point became an issue.

"I was told that the I should align the levels to +9 — that was The Barn's standard," says Fritz. "I always felt that +9 was too hot for the tape recorder. Regardless of their standard, I backed off to +6. I aligned the tape to a reference level of +6 /185, so when my dBu came to 0, I was at a level of +6. That's where I thought it should be."

After the basic tracks were finished, the band recorded various overdubs — mainly vocals and guitars — to two-inch.

"Stewart was a fan of background hollerin' and hootin' noises, so we added those as well as some guitar tracks," says Claypool.

▶ continued on page 119

6TH ANNUAL

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- **Check or money order for $30.00 per song (U.S. currency only) payable to John Lennon Songwriting Contest. If paying by credit card, $30.00 per song will be charged to your account.**

Entries must be postmarked no later than September 28, 2002.

Please read all rules carefully, and then sign your name in the space provided. If entrant is under 18 years old, the signature of a parent or guardian is required.

1. Each song submitted must be contestant's original work. Songs may not exceed five (5) minutes in length. No song previously recorded and released through major national distribution in any country will be eligible. Songs may have multiple co-writers, but please designate one name only on the application. **Contestant may submit as many songs in as many categories as he/she wishes, but each entry requires a separate cassette, entry form, lyric sheet, and entrance fee. One check or money order for multiple entries/categories is permitted.** (Entrance fee is non-refundable. JLSC is not responsible for late, lost, damaged, misdirected, postage due, stolen, or misappropriated entries.)
2. Twelve (12) Grand Prize Winners will receive $2,000 in cash, $5,000 in Yamaha project studio equipment, a $5,000 advance from EMI Music Publishing, and a $99.95 tonosPRO Membership. One (1) Grand Prize Winner will receive $20,000 for the "Song of the Year" courtesy of Maxell. Thirty-six (36) Finalists will receive $1,000 and a $29.95 tonosPRO Membership. Seventy-two (72) Runners-up will receive $100 from Guitar Center Stores.
3. Contest is open to amateur and professional songwriters. Employees of JLSC, their families, subsidiaries, and affiliates are not eligible.
4. Winners will be chosen by a select panel of judges comprised of noted songwriters, producers and music industry professionals. Songs will be judged based upon melody, composition and lyrics (when applicable). **The quality of performance and production will not be considered.** Prizes will be awarded jointly to all authors of any song; division of prizes is responsibility of winners. Void where prohibited. All federal, state, and local laws and regulations apply.
5. Winners will be notified by mail and must sign and return an affidavit of eligibility/recording rights/publicity release within 14 days of notification date. The affidavit will state that winner's song is original work and he/she holds all rights to song. Failure to sign and return such affidavit within 14 days or provision of false/inaccurate information therein will result in immediate disqualification and an alternate winner will be selected. Affidavits of winners under 18 years of age at time of award must be countersigned by parent or legal guardian. Affidavits subject to verification by JLSC and its agents. Entry constitutes permission to use winners names, likenesses, and voices for future advertising and publicity purposes without additional compensation.
6. Winners will be determined by January 15, 2003, after which each entrant will receive a list of winners in the mail. CDs, Cassettes and lyrics will not be returned.

I have read and understand the rules of the John Lennon Songwriting Contest and I accept the terms and conditions of participation. (If entrant is under 18 years old, the signature of a parent or guardian is required.)

SIGNATURE DATE

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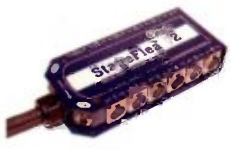

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102› Power Trips

POWER TRIPS

The EQ guide to buying and using a power amp

World Radio History

BY STEVE LA CERRA

VOCAL PROCESSING TECHNIQUES

On the road with Ben Folds and a pretty loud piano

Unless you're dealing with an instrumental group, there's no doubt that the most important aspect of a live mix is the lead vocal. EQ *spoke with front-of-house engineer Mark Chevalier as he was preparing for a tour with Ben Folds. Here's his take on processing Ben's lead vocal in a live mix.*

Since this particular tour is a solo tour, Chevalier will be dealing with a single vocal microphone and (acoustic) piano. "It's really kind of refreshing to be able to totally focus on one person's art during a live musical performance," says Marc. "We're using a Shure Beta 58 for Ben's vocal. While traveling, Ben and I have had hours of conversations about what we find inspiring in recorded music. The way people approach recording is as varied as can be, but we all tend to have methods and sounds that really grab us. It's been really fun working with Ben because we tend to be pretty passionate about the same types of sounds.

"Over the last few years I've tended to be more inspired by '60s production than anything terribly modern because of its honest energy combined with the brilliant, sonically-ahead-of-their-time valve devices that were being made for some really exciting recordings."

In an effort to bring those kind of production values to live shows, Marc is using "one channel of the Universal Audio 2-610 valve mic pre on the front end of Ben's vocal path. It's being used more with a studio-style approach than a typical sound reinforcement application. The signal from Ben's Beta 58 comes directly from stage into the UA 2-610 at front-of-house. It's really wide without sounding muddy, clear and airy without being at all clinical or thin. It brings a clarity and authority to the vocal that I've never encountered in any live console. I add a 1.5 dB boost at 10 kHz from the 2-610's built in EQ, and there's the sound.

"From the output of the 2-610 I patch directly into Universal Audio's new reissue of the Teletronix LA-2A, which is gorgeous. You have the nice added feature of a front-panel switch between limiting and compression settings, and I run it in compression mode. I usually get into about 5-7 dB of compression when Ben is really kicking ass. Beautiful. The signal is then sent directly to the tape machine and a transformer-isolated split that feeds the FOH console.

"At the console I use Lexicon PCM reverbs — 70's, 80's, 90's — whatever is around. They all sound really nice. I tend to run about 1.8 seconds of decay time with 35 milliseconds of predelay. I always roll the output off above 4 kHz, sometimes as low as 2.5 kHz. The only other 'effect' I use on this show is some delay for space and drama. I prefer the TC Electronic 2290. Bitchin' standard, this thing. I like the learn (tap) function as well. Again, I filter the high frequencies at the output.

> "USE CONSOLE EQ FOR SUBTLE CHANGES. I'LL FATTEN UP THE VOCAL DURING SOME PASSAGES, BUT OTHER TIMES IT MAY BE THE OPPOSITE."

"During the performance," Marc continues, "I use console EQ for subtle changes. Sometimes it's a challenge to sit the vocal on top of a big, complex, and (often) quite-aggressively played piano. I'll fatten up the vocal during some passages, but other times it may be the opposite — a tune may be more effective with a vocal that isn't so lumbering and in-your-face in the fundamentals, so I'll make it a bit more airy and distant."

Marc Chevalier may be reached via email at modularlife@earthlink.net.

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World Radio History

BY **STEVE LA CERRA**

POWER TRIPS

THE *EQ* GUIDE TO BUYING AND USING A POWER AMP

The job of a power amplifier is deceptively simple: make an audio signal strong enough to move a loudspeaker. Complicating this seemingly easy task are issues including loudspeaker impedance and power ratings, amplifier stress under less-than-optimum-loads, and heat. The manner in which an amplifier handles these variables impacts not only sonically, but also determines loudspeaker longevity under critical circumstances.

ABSOLUTE POWER

Most people base their decision on which amp to purchase based upon the watt-per-dollar ratio — which is not a bad place to start. It's tempting to sink a lot of money into drive components (*i.e.*, consoles and processing) and loudspeakers, and then skimp on the power amps. The reality is that you should be spending no less than half to roughly the same amount of money on your amp as you spent per pair of speakers. If you choose the wrong amp, you'll experience compromised audio quality from the rest of the signal chain, or you may even endanger the health of your loudspeakers.

A common question regarding power amps is, "How much power is enough?" I look at this question akin to, "How much money is enough?" There's no such thing as having too much power: it's better to have headroom and not use it than it is to run out of gas. It's rare that loudspeakers are blown because they have been fed too much clean power. They are more often blown due to being "underpowered" — driven by amps that are producing distorted audio from excessive input levels. Speakers don't like square waves, and when you overload your power amp's input, you are essentially sending the speaker a square wave. Get an amp that can produce double the power rating of the loudspeaker you intend to drive, so that you don't have to push the amp hard. The result will be long life for the amp and speakers, as well as increased clarity in the mix.

If you are concerned about pushing too much power into the speakers, look for an amp with level trim controls that can be used to reduce the sensitivity and reduce the maximum amount of power the amp can deliver. Since the amount of watts per channel doesn't tell the whole story, let's look at some other aspects that need to be considered when you're looking for an amp.

MATCH GAME

Amplifier output is rated in watts-per-channel (WPC) into a "load" such as 8 or 4 ohms. The "load" refers to some sort of device connected to the output terminals — usually a loudspeaker. Most manufacturers spec power ratings for several different loads. Often the power rating at 4 ohms will be double that at 8 ohms ("100 watts per channel into 8 ohms, 200 watts per channel into 4 ohms"). There may

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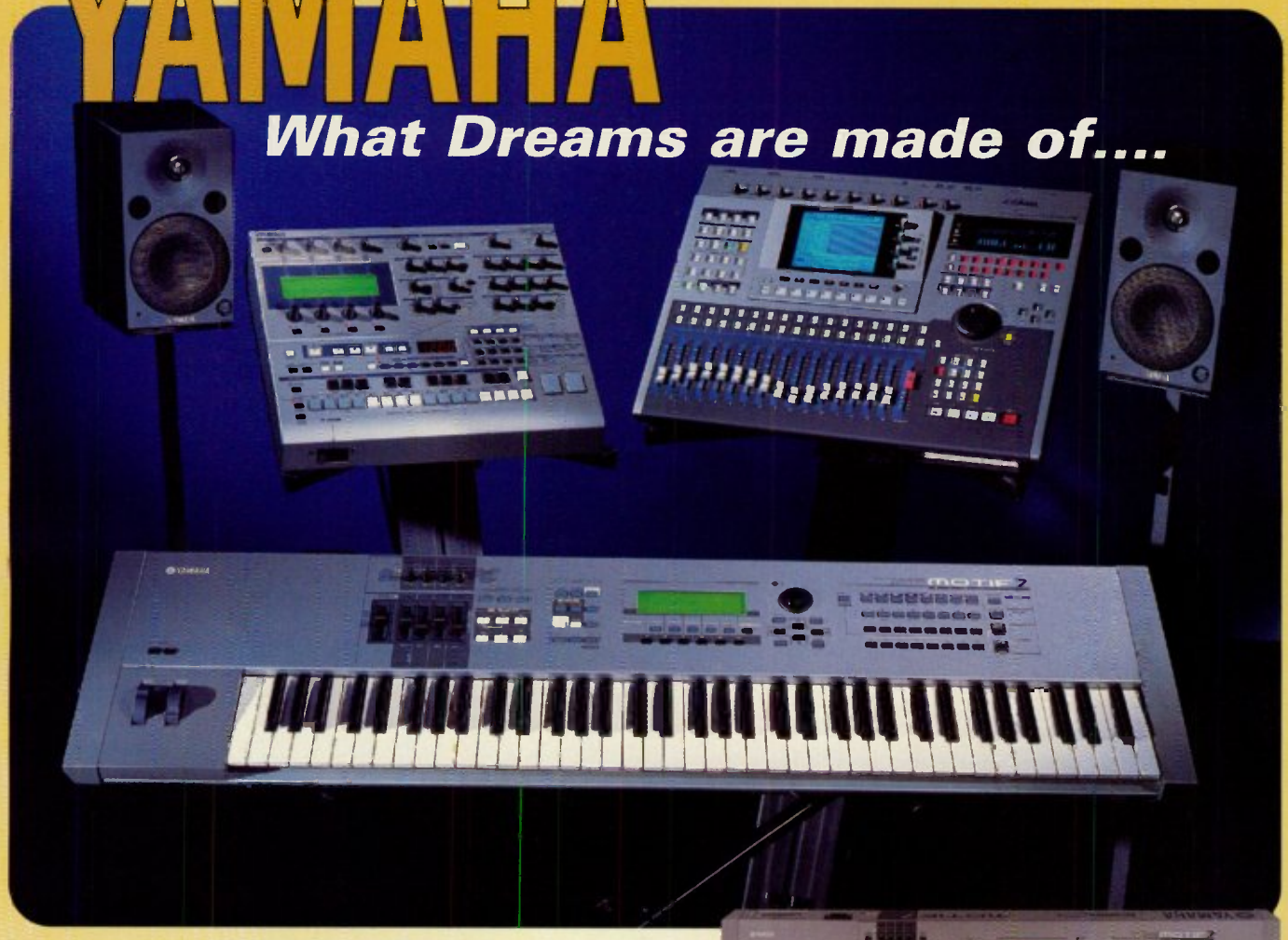

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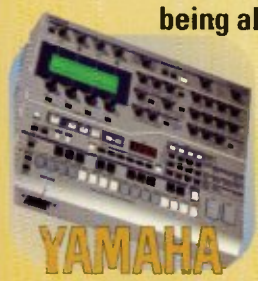

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also be a 2-ohm rating that is double the 4-ohm rating.

Since it appears that amplifier output increases as impedance drops, the temptation is to wire your speakers so the amp sees the lowest impedance possible. Sound systems are often designed so that a single amplifier channel powers multiple speaker drivers. If you parallel a pair of 8-ohm midrange drivers, your amp will "see" a load of 4 ohms and deliver twice as much power. Great. Free power! Now you figure that by adding another pair of 8-ohm mids you can get the 2-ohm power rating — which is probably twice that of the 4-ohm rating. That's wonderful, *providing* that the manufacturer rates the amp into a 2-ohm load. Be aware that as the impedance is reduced, the amplifier "sees" something that looks closer and closer to a dead short (0 ohms). Not all amplifiers are designed to handle such a load, and the result could be a blown amp and/or speakers.

An amplifier's ability to withstand difficult loads can be determined by checking the *output current* capability (and also by calling the manufacturer to see what their recommendations are for the load you intend to drive). As the load impedance drops, your amp will be required to deliver more current. When you run out of current, you hit the brick wall of distortion (or worse). For two amplifiers with equal power ratings, the one with the higher current-producing capability will be less stressed under difficult loads (if you really want to see how much balls an amp has, run a 60-cycle tone to the input and connect a small 'fridge to the speaker outputs).

Some amplifiers can be bridged for mono operation, yielding increased power output. Bridging is the process by which the two channels of an amplifier are electrically summed together, creating one channel with a higher output — at least double that of the two-channel output. Bridging is usually accomplished via a rear-panel switch. Do not attempt to bridge an amp that is not intended for bridging unless you need a great gag for a 4th of July gig. Once the amp is bridged, the channel 1 input is used (don't connect anything to channel 2) and the "hot" terminal from each channel is used to drive the speaker(s). Bridging comes in handy for driving subwoofers, which can easily eat up a huge amount of power.

In addition to bridge mode, another useful amp mode is parallel input. In this mode, a signal fed into channel 1 is automatically routed to channel 2 — which is a very helpful option when driving two speakers from a mono send such as for a drum fill monitor mix. Parallel mode also allows the signal from one amp to be daisy chained to the input of another amp, negating the need for Y-cables when feeding a signal to multiple amplifiers.

CRYPTIC SPECIFICATIONS

Distortion ratings are relatively easy to understand, but two other power amp specs tend to be misunderstood: damping factor and slew rate. Damping factor refers to an amplifier's ability to control the motion of a loudspeaker. Some guy named Newton once said that loudspeakers in motion tend to stay in motion (or something like that). When an audio signal is removed from a speaker, the cone continues to move due to inertia. Damping refers to the amp's ability to control this motion and is closely associated with tight bass response. Higher damping ratings indicate the amp has increased control over the speaker. A damping spec of about 20 or greater is more than sufficient, though you may see damping specifications listed in the hundreds.

Slew rate refers to how fast the amp can react to audio input. When an audio signal is applied to the amp's input, it takes a certain amount of time before the amp's circuitry kicks the signal up to a level that can drive the speaker. Hopefully this amount of time is very short — on the order of microseconds. A slew rate spec is typically quoted as a number of volts per microsecond, indicating how quickly the voltage changes with respect to time. The higher this value, the "faster" the amp, and the better its ability to react to transients such as snare drum hits.

EXPANDABILITY

In order to make multi-amp systems easier to set up and maintain, some amps accommodate internal processing. Crown's Macro-Tech Series of amps can be fitted with their PIP (Plug-In Processing) modules, enabling an amp to contain on-board processing for crossover, compression, overload protection, or even addition of a microphone-level input. Crest Audio's Octal modules allow crossover functions to be added to their Pro Series of amplifiers, while QSC's CX, DCA, and PowerLight2 Series of amps accept the DSP-3, an on-board digital signal processor with crossover, EQ, time delay, and subsonic filter functions.

"DO NOT ATTEMPT TO BRIDGE AN AMP THAT IS NOT INTENDED FOR BRIDGING UNLESS YOU NEED A GREAT GAG FOR A 4TH OF JULY GIG."

COMPUTER CONTROL

In a small PA system, front-panel LEDs can be very useful for keeping an eye on how hard the amps are being pushed. I have been in at least one small club system where the amps were installed at the stage facing the front-of-house mix position — a very clever way of enabling the engineer to see whether he is overloading the amps during the show. Larger systems for concert halls and theaters will require more advanced means of monitoring. Several companies have developed computer control/monitoring systems for their amps.

A perfect example comes from Crown, with their IQ system. By adding an IQ PIP module to a Crown Macro-Tech amplifier, an engineer can control and monitor basic functions of the amp remotely via PC. The IQ-P.I.P.-SMT

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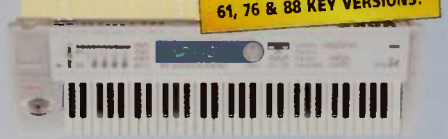

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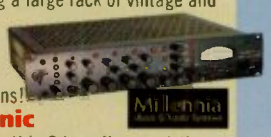

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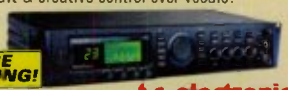

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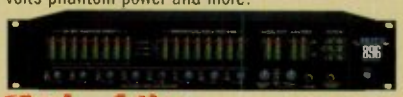

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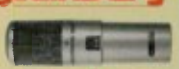

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POWER TRIPS

module "reports" to the PC various parameters such as amplifier clipping, excessive heat, or even a hardware failure within the amplifier. Crest Audio's NexSys and QSC's QSControl also allow amplifier control and monitoring via PC. QSC's RAVE (Routing Audio Via Ethernet) does exactly what the name says, allowing audio to be distributed to multiple amps in a venue via Ethernet ring, with control via any PC on the network.

NUTS AND BOLTS

Depending upon whether your amps are going to live on the road or in a fixed place, input and output connector requirements will be different. Input connectors are almost always either 1/4-inch or XLR, though sometimes terminal strips are provided. For fixed installations where no one is going to be mucking about the back panels, 1/4-inch connectors are fine, but XLRs (preferably the locking type) will prove more robust for systems that get taken apart and reassembled frequently.

Possibilities for output connectors include binding posts, 1/4-inch TRS, and Neutrik Speakon. By far the best of these is the Speakon connector due to the fact that they lock to the jack panel and the conductors are safely insulted. Binding posts are OK for fixed installs, but in mobile systems you'll find that the male banana connectors that mate with them quickly wear out, yielding reduced tension on the spring contacts. Quarter-inch speaker outputs are becoming more rare, and it's just as well — too many accidents have occurred from someone plugging a line input into the speaker output jack.

Other features to look for include protection from DC (which could save the amp and speaker from a nasty thump if someone pulls a cable out of the amp's input while the system is powered up) and some sort of overload protection. Harmful turn on/off thumps can be avoided with output muting, a valuable feature that silences the output when the amp is turned on or off.

Overload protection comes in a variety of flavors, ranging from "soft clip" — whereby the amp enters overload gradually — all the way to thermal shutdown if the amp's operating temperature exceeds a certain level. One key to successful gigging is that the amp does not completely shut down (as will your show) in the event of overload, instead either limiting itself until the hazard is removed, or reducing the output until the temperature cools to an acceptable level.

Whether the amps are going out on the road or are to be installed in a fixed location, an equipment rack is a smart idea. If at all possible, leave a blank space or a vent panel between each amp to reduce heat buildup. A blank space may present a support problem for heavier amps as they can sag in the rear, causing stress on the front panel. It's probably a good idea to use rear rails to secure the back of the amp. I've seen amps rip right off their front panels when the rack was dropped, and it ain't pretty.

If the amps absolutely must be housed in a sealed rack, install a fan towards the top of the rack and set it so that it sucks air out of the rack as opposed to blowing air in. This will reduce the amount of dust that collects inside. Speaking of dust, don't forget to vacuum the heat sinks periodically and clean any filters that may be gathering dust and becoming clogged.

Steve "Woody" La Cerra is on tour this summer mixing front-of-house for Blue Öyster Cult. He is constantly looking for more power. Steve may be reached at slacerra@uemedia.com

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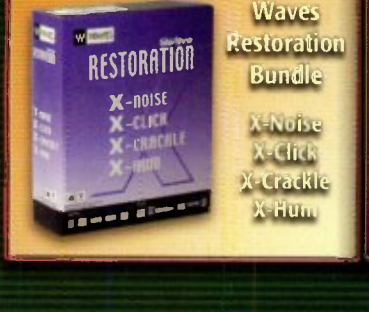

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By Mitch Gallagher • mgallagher@musicplayer.com

Audio-Technica AT4040 Large-Diaphragm Cardioid Condenser Microphone

Is the AT4040 another winner for Audio-Technica?

Comprising such models as the AT4033, AT4050, and AT4060, Audio-Technica's 40 Series microphones have found favor with many live sound and studio recording engineers since the line was introduced some years ago. The 40 Series mics are designed to deliver high-end performance at reasonable — some would say downright inexpensive — price points.

Audio-Technica's latest in the 40 Series, the recently announced AT4040, is a true condenser design, meaning that it requires external 48V phantom power to polarize its capsule, as opposed to an electret condenser, which uses a permanently polarized element. (An electret condenser still requires phantom power for its electronics, but not for element polarization.)

The AT4040 features an aged two-micron-thick vapor-deposited gold diaphragm, which the manufacturer says is designed to capture difficult sources without sacrificing high-frequency detail. Transformerless electronics are intended to eliminate low-frequency distortion and improve high-speed transient response. Frequency response ranges from 20 Hz to 20 kHz, and the mic can handle a maximum sound pressure level of 145 dB (155 dB with pad). Two switches are provided for tailoring the mic's response: the just-mentioned 10 dB pad and a high-pass filter that operates at 80 Hz with a 12 dB/octave slope.

AUDIO-TECHNICA AT4040

MANUFACTURER: Audio-Technica U.S., Inc., 1221 Commerce Drive, Stow, OH 44224-1760. Tel: 330-686-2600. Web: **www.audio-technica.com**.

SUMMARY: As the ongoing microphone bang-for-the-buck wars rage, Audio-Technica scores yet another victory. The AT4040 offers impressive versatile performance at an excellent price.

STRENGTHS: Full, solid sonic performance. Nicely detailed on top-end. Switchable 10 dB pad and 80 Hz high-pass filter. High sound pressure level handling. Low self noise. Includes secure, low-profile shock mount and carrying case. Excellent price/performance ratio.

LIMITATIONS: Sensitive to very close pops and air bursts.

PRICE: $495

IN USE

Over the course of several weeks, I had the opportunity to put a pair of AT4040's through their paces. In general, I'd categorize the mic as having a full, round response with great presence. There's nice detail on top without harshness or "spitty" sibilance.

For male vocals, the AT4040 worked very well. There's plenty of openness and top-end clarity, and the low mids and bass are solid and punchy without being muddy or overbearing. In some cases, I found the mic to be a bit "hard" sounding on certain voices, but when it came to mixdown, this sometimes served to improve the vocal presence in the mix. For voices and other sources that lack presence, this was a distinct benefit — a prime example of why it's necessary to match a mic to a source.

On electric guitars, the AT4040 was round and full, with strong, forward top-end and no harshness. The mic's detailed response helped to improve the definition of pick attacks on highly distorted guitar sounds. The mic can handle even the loudest sources.

On both nylon- and steel-string guitars, the AT4040 provided excellent results. I had great luck using the pair of review mics to capture lush stereo recordings. The mic is detailed enough to easily give the air and transient response required, while still giving the sound all the resonance and body needed for full, warm recordings.

The AT4040 is a cardioid-only design. While some might count this as a negative or a limitation, the fact is that the vast majority of multi-pattern mics are never switched out of their cardioid pattern setting. The AT4040's polar response provides excellent rejection from sides and rear; the response sounds sonically even as you circle the mic.

As with all non-omnidirectional microphones, proximity effect plays a part in the AT4040's response. However, its proximity effect is controlled; bass boost isn't super-strong until you get fairly close to the mic. I found that it really kicked in an inch or two away. But because the proximity effect does become strong when you get close to the mic, and perhaps because the mic housing is what the manufacturer calls an "open acoustical design," the diaphragm was very sensitive to

World Radio History

close-distance pops. If you're singing right up on the mic and a pop or air burst occurs, the mic can't handle it. If you're going for really breathy, intimate vocals, you'll definitely need a pop filter. As with all vocal mics, you'll likely want one anyway.

The microphone's 10 dB pad works as expected, reducing level without coloring the sound. However, with the AT4040's ability to handle high sound pressure level, you'll rarely need it. As mentioned earlier, the mic is spec'ed to top out at 145 dB, which is — forgive me while I state the obvious — exceedingly loud.

The AT4040's high-pass filter works well for cleaning up rumble and unwanted low-frequency garbage. At 80 Hz, it's high enough to remove the sonic junk without getting too far into the bass range of most sources. As with all such circuits, it's not totally transparent, but Audio-Technica has done a good job at keeping its effects minimal. If anything, the filter tightens up the bottom end of the mic a bit. I found this to be a nice benefit when layering harmony vocals.

SHOCKING DEVELOPMENT

In addition to the AT4040, Audio-Technica has also developed a new shock mount, the AT8449, which is included with the AT4040. The new shock mount is low profile and unobtrusive; just a ring that surrounds the microphone and is secured to it with elastic bands. But despite its compact design, I found the AT8449 to work quite well. The mic slips in easily and is held in place by two flat elastic bands. The mic then floats within the shock mount's body in a "web" of elastic cords.

SPECIFICATIONS

CAPSULE	True condensor, transformerless
POLAR PATTERN	Cardioid
FREQUENCY RESPONSE	20–20,000 Hz
IMPEDANCE	100 ohms
MAXIMUM INPUT SPL	145 dB, 1 kHz at 1% THD, 155 dB with 10 dB pad switched in
SELF NOISE	12 dB
DYNAMIC RANGE	133 dB, 1 kHz at max SPL
SIGNAL-TO-NOISE RATIO	82 dB, 1 kHz at 1 Pa
POWER REQUIREMENTS	External 48V DC
HIGH-PASS FILTER	Switchable, 12 dB/octave at 80 Hz
PAD	10 dB
ACCESSORIES	AT8449 shock mount, dust cover, carrying case

The AT8449 is effective at reducing rumble and isolating the mic from stand-borne low-frequency thumps. Best of all, you can still easily access the 10 dB pad and high-pass filter switches on the back of the mic without difficulty.

CONCLUSION

So does the world need another 40 Series microphone from Audio-Technica? I'd say the answer is yes. For fledgling studio owners and engineers who are looking for their first "good" mic, the AT4040 delivers solid large-diaphragm performance, excellent for vocal and all-around source-capturing applications.

For those who already have a selection of mics — perhaps even some other 40 Series models — the AT4040 offers another timbral option to work with, always a desirable thing. It provides versatile performance, working well on a variety of sources. Even better, at its reasonable list price of less than $500, adding the AT4040 to a mic collection won't break the bank. ■

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By Craig Anderton • canderton@musicplayer.com

LynxTWO Audio Interface

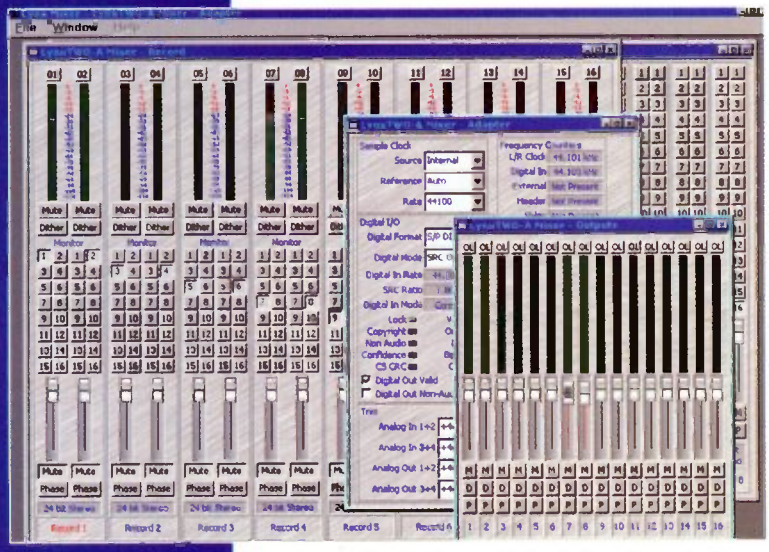
Audiophile performance in a sound card format

For years, I've recommended using all-digital audio interfaces with external converters. Computers are noisy environments, and analog electronics can't withstand that onslaught without high-quality multilayer PC board design, transformer-coupled digital I/O to minimize ground loops, low-jitter clock, precision tolerance components, and other sophisticated (and costly) measures.

Well, Lynx Studio Technology decided to take those measures on, and the result, the LynxONE, proved that a sound card can deliver quality audio. The LynxTWO is similar, but adds 192 kHz capabilities (a phase-locked loop-based sample clock supports high-resolution frequency adjustments for any sample rate from 8 to 200 kHz, including video pullup and pulldown rates), as well as hooks for useful expansion options slated for release later this year. A software mixer application manages input and output routing within the computer, as well as provides metering, digital level control, mute, phase reverse, etc. Note that bandwidth is not limited to the audio range; for example, sampling at 200 kHz provides an analog signal bandwidth of 92 kHz.

The package includes two high-quality breakout cables: an XLR male to RCA male S/PDIF adapter and an XLR female to RCA male S/PDIF adapter. Driver and application software is distributed via floppy.

The main components of interest on the half-size PCI card include AKM5394VS 24-bit A/D converters, Crystal Semiconductor CS4396-KS 24-bit D/A converters, and Analog Devices OP275 op amps. About 2/3 of the upper and lower surfaces of the board are ground planes to provide shielding, and there are miniature 1000 μF filter caps draped across the supply lines. Bottom line: Lynx didn't cheap out on the parts or construction. This type of attention to detail isn't just nice, it's essential to achieving quality results in a computer environment.



The mixer application has multiple windows for controlling various parameters.

▶LYNXTWO

MANUFACTURER: Lynx Studio Technology, 1048 Irvine Ave. #468, Newport Beach, CA 92660. Tel: 949-515-8265. Web: www.lynxstudio.com

SUMMARY: It isn't cheap, but you get what you pay for: a truly fine-sounding sound card that can more than hold its own against external converters.

STRENGTHS: Superb sound quality, design, and construction. Sample rates up to 200 kHz. Includes high-quality breakout cables. Solid sync options. Easily handles video work. Expansion options. Eliminating the need for a breakout box saves space and reduces costs.

LIMITATIONS: Breakout cables not as convenient as a rack-mount breakout box. No MIDI I/O.

PRICE: LynxTWO-A 4 in/4 out $1,095; LynxTWO-B 2 in/6 out $995; LynxTWO-C 6 out/2 in $1,195.

CONNECTIONS

The board has two main connectors:

The L2Audio Port is a 25-pin D-type connector; a 6-foot breakout cable provides XLR balanced analog ins and outs. The cable packed with the unit depends on which model you've ordered: 4 analog ins and outs ("A" model), 2 ins and 6 outs ("B" model), or 6 ins and 2 outs ("C" model). Nominal signal levels per audio pair are selectable for +4 or –10 dB operation within the mixer application (described later).

The L2Sync Port is a 15-pin D-type connector. Its breakout cable offers XLR digital I/O, Linear Timecode (LTC) in/out on BNC connectors (the LynxTWO has a SMPTE reader and generator), sync in, and word clock out (both BNC). The digital I/O can be either AES/EBU or S/PDIF, as selected in the mixer application. The 75-ohm sync in connection accepts TTL or Composite Video level signals.

There are three other connectors on the top edge of the board. A clock in and clock out port allow hooking multiple LynxONE, LynxTWO, or compatible video capture cards together. Of the

THE L22: LYNXTWO'S LITTLE BROTHER

For those who don't need video sync capabilities, LTC read/write or more than 2 ins and 2 outs of analog I/O, the Lynx L22 — which is otherwise very similar to the LynxTWO — lists for $749.

two LStream expansion ports, the first, LStream Port 1, is available from pins in the 15-pin D connector that are not used by the L2Sync cable. The 14-pin LStream Port 2 is the board's remaining top-edge connector. It connects to internal LStream interface modules and other LynxTWO's (or L22's) for routing data. Both ports may be used simultaneously, but operation is limited to 16 total LStream channels.

The maximum number of I/O channels on one LStream port varies with sample rate: 16 channels at rates up to 48 kHz, 8 channels at rates up to 96 kHz, and 4 channels at rates up to 200 kHz.

DRIVERS

With Windows machines, the boards are designed to work with a single interrupt in a multi-card setup, thus saving precious IRQs. However, this usually requires manually assigning the same interrupt to each card in the BIOS setup procedure. Otherwise, the computer may assign separate interrupts to the cards during bootup.

The board reviewed for this article shipped with MME and DirectSound drivers for Windows 98/ME/NT/2000, and ASIO 2.0 drivers for 98/ME. ASIO 2.0 drivers for NT/2000/XP were in late beta stages as this article was being written. Macintosh ASIO 2.0 drivers are under development (first for OS 9, then OS X), as are WDM drivers. Currently, no GSIF (Gigasampler) drivers have been announced.

Of course, this gives a bit of a work-in-progress feel, but, to be fair, most audio interface companies are having to go back to the "driver drawing boards" to deal with the changes thrown at us by OS X, Windows XP, WDM, CoreAudio, etc.

INSTALLATION

My favorite part about installation (aside from the fact that it was trouble-free) is that, after the process is done, a screen appears with a cork popping out of a champagne bottle. Maybe I'm easily amused....

Anyway, with Windows 98/ME, you install the software first, then plug in the board (the reverse is true with NT/2000). The process worked as advertised, and the card was recognized by every program I tried — Wavelab, Sonar, Acid, and Cubase. Latency was excellent with ASIO and Win98SE (6 ms with as much audio as I could throw at it), but using MME with Sonar — which is optimized for WDM drivers — required 90 ms for glitch-free

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REQUIREMENTS

- Windows 98/ME/NT4.0/2000/XP (supports dual processors for NT/2000/XP; Mac drivers are slated for release soon)
- PCI slot
- 32 MB RAM

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By Martin Davidson

Great River MP-2NV Mercenary Edition Vintage-Style Microphone Preamp

Classic Neve sound at an affordable price

When the Great River MP-2 microphone preamp was introduced in 1997, it gained immediate respect as a clean and accurate piece of equipment; a sonically neutral pre that simply amplified a signal without changing the character of that signal. But while transparency is a laudable design goal (and a preamp that achieves that goal is a marvelous thing), there are applications where a preamp with a certain amount of character is more appropriate. For those sorts of applications, Great River now offers a new preamp: the MP-2NV Mercenary Edition.

The MP-2NV is based on the circuitry of the classic Neve 1073 preamp and, like the 1073, uses multiple single-ended amplifiers as well as both input and output transformers. For typical use, one amplifier block is used along with the output amplifier. For high gain applications, a second amplifier block is added after the input.

The MP-2NV uses custom Sowter transformers, designed in consultation with Mercenary Audio. The design goal was to provide the richness of the original 1073 pre with more low-end focus than the original Neve pre. All switch contacts are gold-plated, and the output control is conductive plastic for long life and low contact distortion. On the rear panel are XLR connectors for balanced inputs and outputs, as well as an unbalanced –10 dBv output and a 1/4-inch TRS patch point for each channel. These patch points allow for the insertion of a compressor or EQ before the output amplifier. Both the balanced and unbalanced outputs are available simultaneously. Power to the unit is supplied via a standard IEC connection. The preamp can accept from 120 to 240 volts, at 50 or 60 Hz, and the voltage can be changed externally. On the front panel are 1/4-inch high impedance (approximately 2 megaohms) inputs for each channel. These inputs feed a buffer amplifier that connects to the mic input transformer when a plug is inserted into the jack.

Besides the jacks on the front on the preamp, each channel has a gain control (adjustable in 5-dB steps from five to 60 dB), and an output control that can be adjusted from –25 to +10 dB, giving the unit a maximum gain of 70 dB. In addition, there are switches for reversing polarity and phantom power on/off, as well as an input impedance selector and a loading control that switches a 600-ohm termination resistor in or out of the output transformer secondary circuit. The impedance selector allows the user to choose either 300 or 1,200 ohms input impedance. There are two 6-position LED meters for each channel; one connects to the second amplifier stage output and the other is connected to the output stage. Two meters allow the user to visually monitor the gain staging through the preamp.

▶GREAT RIVER MP-2NV

MANUFACTURER: Great River Electronics, 3056 East 65th Street, Inver Grove Heights, MN 55076. Tel: 651-455-1846.
Web: **www.greatriverelectronics.com**.

SUMMARY: Based on the vintage Neve 1073, the MP-2NV delivers a range of sounds from big and clean to over-the-top. Insert points, input impedance switching, and transformer loading add to its flexibility.

STRENGTHS: Classic sound with enhanced low-end clarity. Insert points. Input impedance switching. Transformer loading switch. Excellent-sounding DIs.

LIMITATIONS: None to speak of.

PRICE: $2,495

IN USE

Despite similarities in the model names, the Great River MP-2NV is a completely different animal than its predecessor, the MP-2. The design goals of the two units are completely different; where the original units were created to be transparent, the NV was designed for character — specifically, the character of the old 10xx-model Neve preamps. The NV has both a gain control and an output level, and this is one of the keys to controlling the amount of character added to the signal.

I found that with the output level turned all the way up and using the gain control to set level to tape gave me the cleanest sound. When I wanted to add a little more grunge, the approach was to reduce the output level and turn up the input gain. Of course, you can hit the point of diminishing returns — overdrive the input stage and the transformers on the NV beyond a certain point and signals get too dirty for my taste, at least as a preamp for recording lead vocal. But the Great River gave me all of the sonic qualities I associate with Neve preamps — a big warm, yet detailed sound. I compared the NV to a pair of racked 1073's, and, for the most part, didn't notice a difference. I say "for the most part" because the 1073 has a tendency to get muddy if you work the pre hard, while the Great River retained a bit more definition. My best guess is that this difference was due to the transformer design on the Great River.

But there are other neat features on the MP-2NV, such as switches on each channel to change the input impedance from 1,200 to 300 ohms. (This feature, by the way, is available on the back of the module on a vintage Neve preamp, but on the Great River it's handily available on the front of the unit.) The way it worked for me in practice is that some mics are more sensitive to impedance than others. For example, on a couple of old RCA ribbon microphones (a 77 and a 74B), the lower impedance made a substantial difference in the sound of the signal. The mic sounded clearer and more open with a 300-ohm impedance than with the 1,200-ohm load. But with some other mics, it didn't seem to make any audible difference.

There's also a Loading switch that will switch a 600-ohm resister into output of the output transformer's secondary circuit. According to designer Dan Kennedy, his reason for adding this switch was that most Neve modules that have been pulled out of consoles and used stand-alone aren't terminated (to 600 ohms), which gives them a slightly rising response. Modules installed in Neve consoles had the proper 600-ohm termination provided by the switching networks after the channel amps. The Loading switch is on the front panel to

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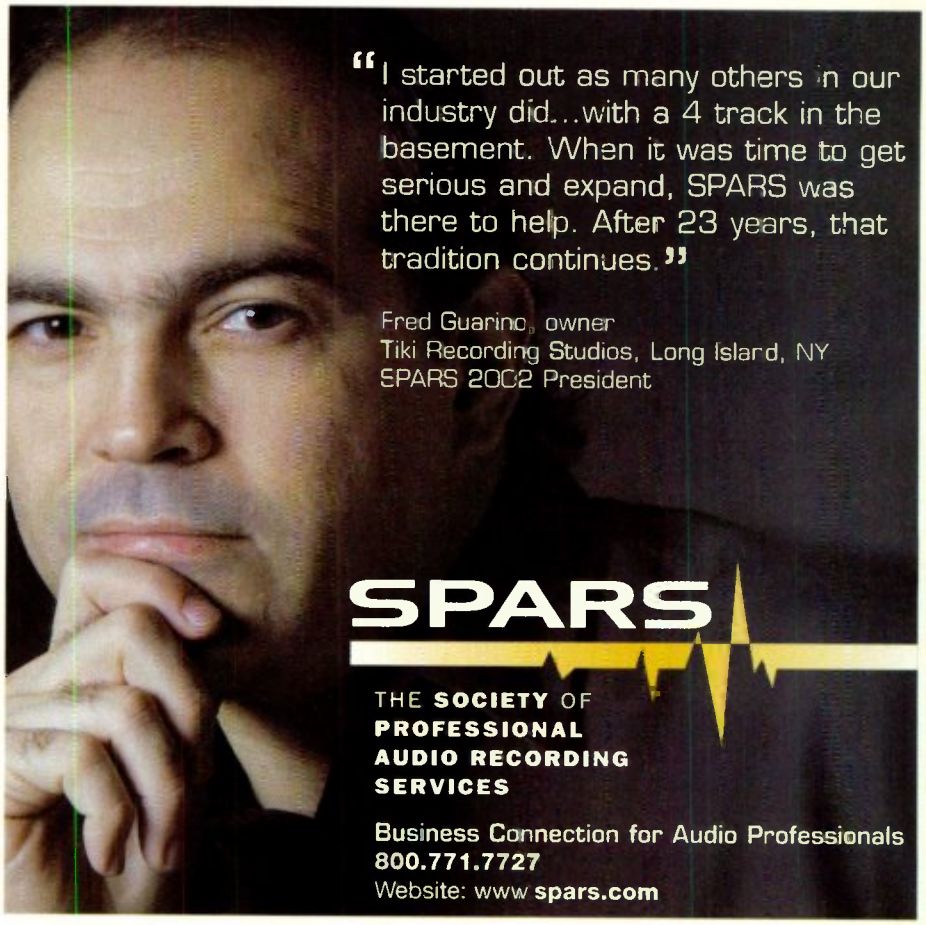

World Radio History

By Jon Chappell

CEDAR Audio DNS1000 Dynamic Noise Suppressor

Magic box or audio voodoo?

CEDAR Audio is a respected manufacturer known for making high-end audio restoration products. Their DNS1000 Dynamic Noise Suppressor is a stand-alone device that is designed to drastically reduce or eliminate noise from dialog tracks, including stage rumble, air conditioning hum, tape hiss, traffic, and other ambient annoyances. Through an ingenious use of adaptive filtering, the DNS1000 provides strikingly successful results.

Engineered for primarily treating dialog and human speech, the all-digital (AES/EBU or S/PDIF, 24-bit) DNS1000 will have limited appeal to engineers and producers trafficking in more musical pursuits. But if you have anything to do with recording dialog in the form of voice-overs, stage patter between songs in live concerts, or any sort of remote recording of voices in documentaries or other productions, take a serious look at this unassuming laptop-sized box.

OVERVIEW

The DNS1000 is compactly built in a housing that looks a little like a small mixer. It has one master level fader, which determines how much overall noise suppression is applied to the signal, plus six faders whose functions change depending on which of the six ranges (low, low+mid, mid, mid+high, high, full range) you want the faders to work within. The faders don't simply control a specific frequency band, but each have several filters under their control. So although a fader will have center frequency assigned to it, moving the fader may not have any effect on that frequency if the DNS1000 determines that no noise is present in that band. This is what makes it dynamic: it's making judgments about the program material.

Operation is straightforward and simple: patch your mixer or recorder digital output into the DNS1000's input and then route its output into your master mixdown deck or mixer. A 24-bit transparent bypass is provided, which allows for real-time comparison of the original and processed signals.

Manipulating the audio is done strictly by ear. You choose your settings based on where you hear problems, and move the faders up and down to taste. I found it very intuitive to get the desired results. The only downside was the feel of the faders: they're loose.

IN USE

I had on hand several live recordings, both audio and video, of my country-rock band, Appaloosa, when we toured one summer throughout the Midwest and Southeastern U.S. In terms of throwing problematic audio at the DNS1000, these live tapes provided no end of eligible material. Our charismatic lead singer used to engage in charming, if rambling, introductions to our songs, but the audiences of Southern Illinois didn't seem to mind (or were too polite to let it show). Of course, the noise from all manner of passing trucks, overhead airplanes, and nearby gas generators would come in and out during these monologues, rendering the usability of these segues a dubious prospect.

The DNS not only reduced the background noise, but improved the intelligibility of the

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▶CEDAR AUDIO DNS1000

MANUFACTURER: CEDAR Audio USA, 43 Deerfield Road, Portland, ME 04101-1805. Tel: 207-828-0024. Web: **www.cedaraudio.com**.

SUMMARY: A simple and intuitive fader-operated box that can clean up noise and improve intelligibility of dialog tracks through adaptive filtering.

STRENGTHS: Superb sound. Simple and intuitive operation.

LIMITATIONS: Expensive.

PRICE: $5,895

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By Steve La Cerra • slacerra@uemedia.com

Drawmer DS501 Power Gate
Dual Mono or Stereo Noise Gate

Peak Punch takes this gate to the next level

Noise gates are the Rodney Dangerfields of audio processors. They get no respect. You don't think you need a high-quality gate until you're stuck using one that clicks and pops every time it opens and closes, or (worse) doesn't open for the desired signal. Drawmer's gates — notably the DS201 — have practically become permanent fixtures in touring (and studio) racks because they're a *de facto* standard on band riders. The company's latest gate is the DS501 Power Gate, which offers some interesting features and capabilities.

▶DRAWMER DS501

MANUFACTURER: Drawmer Electronics Ltd., dist. in the U.S. by Transamerica Audio Group, 4760 West Dewey, Suite 129, Las Vegas, NV 89118. Tel: 702-365-5155. Web: www.drawmer.com or www.transaudiogroup.com.

SUMMARY: Two-channel noise gate with Peak Punch for dual mono or true stereo operation.

STRENGTHS: Quiet operation. Peak Punch feature allows modification of a sound's envelope.

LIMITATIONS: Can't be used with "off-the-shelf" 1/4-inch insert cables.

PRICE: $900

OVERVIEW

The DS501's front panel is split in half, with identical controls for each of the unit's two channels. On the far left is a filter section, with high- and low-pass filters plus a "key source" switch, allowing the gate to be triggered from either the audio input or an alternate, external source fed into a rear-panel key input jack. These filters affect only the signal keying the gate, not the audio output. The next group of knobs adjust gate functions: threshold, attack time, hold time, release time, and range. Two switches complete this section: one toggles the unit between gating and ducking functions, and the other selects what you'll hear at the audio output: You can bypass the unit, listen to the gated signal, or listen to the key signal. This last option is very useful when setting the filters, as it allows you to hear their effect on the signal triggering the gate.

It's the last set of controls that make the DS501 unique. The Peak Punch section provides two rotary knobs and a three-position switch for modifying a sound's envelope by adding up to 12 dB of gain to the attack for a duration of roughly 10 milliseconds. The Punch factor may be tuned from 75 Hz to 16 kHz using one knob; the other knob sets the amount of transient boost on an arbitrary scale of 1 through 10. It'd be nice to have a calibrated dB scale for this control.

The DS501's remaining controls are the Stereo Link switch — which causes channel two to follow the gating characteristics of channel one — and a power switch.

On the rear of the DS501 are three jacks per channel: balanced XLR I/O, plus a 1/4-inch unbalanced jack for an external trigger signal. Semi-pro users may gripe over the fact that the audio I/Os are XLRs because they won't be able to use garden-variety 1/4-inch insert cables. Pro users who rack their road gear with a patchbay will appreciate the XLRs. (One improvement would be a locking XLR female connector.) A detachable IEC power cable completes the rear panel.

IN USE

I carted the DS501 around for a couple of months in a three-space Anvil road rack (non-shock). To facilitate connection to the PA *de jour*, I made short XLR-to-1/4-inch cables, and wired the DS501 to a 1/4-inch Furman patchbay. At least once, the whole rack was obviously mishandled by a disgruntled airline baggage worker, as evidenced by the bends in the front panels of all the units in the rack. The DS501 didn't seem to mind the rough handling, and continued working happily.

My first and foremost requirement for a gate is that it actually does what it's supposed to do: Cut out the ambient crap and let the signal through. Next is that the unit does not click when opening or chatter when closing. I'm generally appalled at the number of expensive gates that make undesired noises upon opening and closing. Fortunately, the DS501 passes these tests with flying colors. I never heard any artifacts when patching a signal through the unit, whether it was kick, snare, toms, or even a spoken vocal. This was true even when gating a kick drum very tightly.

The DS501's filters come in very handy for

ensuring accurate triggering. By setting the DS501's output to "key listen," you'll hear the results of filter adjustment. The low-pass can help filter out cymbals (*e.g.*, hi-hat) while the high-pass helps filter out low-frequency rumble so that extraneous sounds have a minimal effect on triggering. Once you're done listening to the filters, switch back to "gate" to hear the gated sound.

Certainly the most interesting feature of the DS501 is Peak Punch, the effect of which is more noticeable when the unit's attack time is set to faster values. Peak Punch can be used to change the fundamental characteristics of a sound, as well as maintaining apparent loudness of a sound within a mix. When Peak Punch is set to "full band," the frequency control has no effect — only the boost control is active, and it does indeed add punch to the sound. However, I found Peak Punch to be much more useful when set to "tune." For example, I used a boost of "3" at about 4 kHz to brighten up a snare without increasing the apparent leakage from cymbals. In a more severe use, a setting between 4 kHz and 8 kHz with a boost of "4" made the snare much more aggressive sounding, as if the drummer was hitting rim shots every time (he wasn't). When tuned to a value near 200 Hz, Peak Punch added "whump" to the snare drum, fattening it up considerably.

Similar settings were useful when gating a snare or kick very tightly — which can clip off a bit of the drum's attack, making it sound softer in the mix. Restoring the kick's attack with Peak Punch has the effect of increasing system headroom due to the fact that the average level of the drum need not be increased in order to help it cut through the mix (though this would be difficult to quantify). On at least one occasion, Peak Punch saved a mix where the snare drum started getting lost late in the night (perhaps the head was shot). Rather than bringing the snare

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SPECIFICATIONS

Maximum Input Level	+17 dB
Maximum Output Level	+17 dB
Frequency Range	23 Hz to 31 kHz, –1 dB
Distortion	Less than 0.025%
Noise Level	–95 dB
	(A-weighted, RMS, unity gain)

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Artists With Ears — Take 2

Paul du Gre' Discovered That Solid Silver Cables Really Do Make A Difference...

Tracking in analog is truly an art and Paul du Gre' is considered one of the masters. He has recorded Bad Religion, Los Lobos, Rosie Flores, Dave Alvin and the seminal guitarist Leo Kottke. Having recently added DB digital conversion in his studio to archive & master 24 tracks at 96K, **he knows what he hears—what works and what doesn't.**

Currently, Paul is tracking Leo Kottke and Mike Gordon of Phish on their duet CD. The entire front end in Paul's studio uses Zaolla Microphone, Instrument, S/PDIF and Clock cables. Leo, has added the G Series Silverline cable to his live rig because "**...[Leo] no longer has to EQ the highs of his 12 string and can't wait to take this cable on the road.**"

Paul knows Zaolla Silverline cables outperform what he considered to be the best copper cables around and believe it, he simply is not easily impressed. "**I like the completely open sound, without coloration of the highs and more definition in the bass and mids, these cables articulate the sounds I record, as I actually hear them.**"

ZAOLLA SILVERLINE

ZAOLLA, 6920 HERMOSA CIRCLE, BUENA PARK, CA 90620,
PHONE 714-736-9270 FAX 714-522-4540 Website: www.zaolla.com

Craig Anderton • canderton@musicplayer.com

Sample CD Reviews

VIRTUAL SWEET REGGAE BAND

PrimeSounds
(www.primesounds.com)

PrimeSounds sells samples online on a subscription basis. For $10/month (with a 1-year subscription), you can download 30 MB per day; other plans are available, too. You aren't restricted to a particular genre, and can use the site's search engine to browse, audition, and download individual samples, or "SamplePacks" of related samples. These vary between 5 and 30 MB in size, and files are generally available in AIFF, WAV, and MP3 format. Some files use other formats — REX, SoundFont, HALion, etc.

I checked out 78 samples from the "Virtual Sweet Reggae Band" SamplePacks. These are basically song fragments, where individual instruments are broken out and suitable for looping. The style is roots (classic) reggae, not dance hall or other offshoots. The sounds were recorded live, and include bass, drums, guitar, several kinds of percussion, and clavinet. All have an authentic vibe (for all I know the musicians are Norwegian teenagers, but, whoever it is, they know their reggae), and are cut either dry or with basic room acoustics (no artificial reverbs or big ambiences).

PrimeSounds makes it easy to navigate the site and audition samples (in RealMedia format), which takes the guesswork out of purchasing. Of course, convenience only matters if there's something worth downloading — but based on these and other samples, there certainly is.

PURRRFECT DRUMS

Studio Cat (www.studiocat.com)

This double-CD set of acoustic drum sounds for HALion (there's also an eight-CD version for GigaSampler) is stunning. You'll need about 2.5 GB of disk space (extracted from the compressed data on CD), but the superior recording and 16 velocity-switched samples per drum are worth it. Samples are 16-bit stereo; 24 bits would have been nice, but these samples take up enough resources as is and sound excellent anyway.

Several kits are included. QuickStart kits are plug-and-play, with L&R kits (separate snare hits for left and right hands), 32 kits (optimized for drum triggers), and MegaTrig kits for use with drum pads that send MIDI controller data. Full Kits, which have a major jones for RAM (don't even think about less than half a Gig), are banks that load kicks, snare, toms, and cymbals on separate MIDI channels. Drum kits include country, jazz, rock, vintage, etc. — 10 in all, with a GM set thrown in for the L&R kits.

The reward for this wanton computer exploitation is absolute killer acoustic drums. Sure, there are lots of good drum CDs, but the stream-from-disk technology gives a major advantage, as does the recording technique. If you aren't impressed by at least the rock toms and cymbals, then let me know what *you're* using. [$249] ■

OYSTERHEAD

▶ continued from page 96

The tracks were transferred to Digidesign Pro Tools (through the recorder outputs) and edited by Copeland and Claypool. "We had a Pro Tools setup there, and Stewart was one of the main composers," says Fritz. "There was a Pro Tools engineer on-site, and Stewart would tell him to put markers on certain spots. There was a long process of finding the parts they liked, arranging the basic tracks, and fleshing it out with overdubs."

When the tracks were transferred back to tape, a small problem arose. "This was where The Barn was technically challenged," says Fritz. "When I would bounce the bass and drums back to tape, the levels would be radically different. It was about 6 dB too hot. We compensated by bringing the channel levels down in the Pro Tools mixer."

BLAST OF ENERGY, REPEATED

Oysterhead creates through tiny explosions. Copeland had even referred to the band's recording sessions as "a blast of energy in Vermont." It was fitting that they'd fire it up again for a frenzied week of editing, overdubbing, and rewriting at The Plant in Sausalito under the auspices of mixer Toby Wright in May 2001.

"It was crazy," says Claypool. "We laid down new stuff as we were mixing and Toby would take the stuff, dump it on a tape, and mix off the tape. We were bouncing sh*t all over the place."

"Trey would play his ass off — he had this little amp," says Wright. "We did some direct work and miked amps."

There was plenty to choose from. Wright initially took the drums, bass, and percussion and transferred the Pro Tools files to two-inch — everything else was taken out of Pro Tools.

"Oz, Mr. Anti-Digital, would've liked nothing more than to record on tape and do the mix off that," says Wright. "Though some stuff did come in on two-inch, most was stored in Pro Tools. However, the mix was done to — and mastered off — the two-inch. I haven't heard a mix done totally in Pro Tools that I'm satisfied with."

"I have to hand it Oz," explains Copeland. "I'm a digital kind of guy, but [Fritz] stuck to his guns and made sure we got some beautiful music on tape."

However, Pro Tools played a big part in reshuffling tracks and enhancing overdubs — thanks to plug-ins such as EchoFarm. "It was like, "Hey we need a delay here." If it lived in Pro Tools we'd just use that."

After a month of careful surgery and serious shrinkage, these tracks were up to speed. Full of spur-of-the-moment live performances and chancy production maneuvers, the music is as distinct as the people who made it. Les spews juicy-bouncy bass lines. Trey's spindly-metallic, wah-inflected riffs take control without being overbearing. And Stewart's spirited performances simply sizzle with every ping of his ride and crack of his snare.

Given its song variety, *The Grand Pecking Order* is many records in one. At points it's hard-driving ("Psuedo Suicide"), faux reggae-Police ("Oz Is Ever Floating"), unsettling ("Shadow Of A Man"), soothing ("Birthday Boys"), and freakish (title cut) in a Dr. Seuss-Meets-"Lucy In The Sky With Diamonds" sort of way.

"I think music can speak for itself when it's played with fervor. I tried to bring the best out to the listener," says Wright. ■

LYNXTWO REVIEW

▶ continued from page

multitrack audio. (Note: The company reports that the ASIO drivers for Windows XP/NT/2000 offer a dramatic improvement in efficiency, due to support for bus mastering. This exploits the LynxTWO's optimized DMA controller and ASIO-specific hardware to yield real-world latencies under 2 ms with multichannel audio.)

THE SOFT MIXER

The 32-channel/32-bit mixer is basically a software use interface for the hardware-based mix engine. It has four windows: Record (assigns ins to the host app), Outputs (shows the card outs), Play (assigns logical outs to physical outs), and Adapter (card setup). All of this is a bit overwhelming until you start inputting and outputting signals, at which point it all becomes obvious as you route signals and watch the meters move. Some of the Adapter parameters are fairly esoteric, but, fortunately, the printed documentation does a reasonably good job of describing them.

The mixer's ability to support 16 inputs and 16 outputs is not just for multiple card systems, but to allow routing and mixing audio signals in hardware to/from the two LStream ports and the analog and digital I/O. For example, the LynxTWO with an LS-ADAT module can serve as a "stand-alone" 4-channel 192 kHz A/D to ADAT converter. In this case, the analog input signals feed the LStream outputs.

PRO FEATURES

The LynxTWO card provides some options you're simply not going to find on many other sound cards. The digital input does automatic sample rate conversion, and can sync to word clock, 256X word clock, 13.5 MHz, or 27 MHz clock sync. There are three different dither types (as well as none, of course), composite video genlock, and non-audio digital I/O support for Dolby Digital and HDCD (in other words, these can be routed through the card). Throw in the SMPTE time-code reader/generator (with the usual 24, 25, 29.97, and 30 fps rates), and you have a card that would be very happy in broadcast and video as well as audio.

YOU GET WHAT YOU PAY FOR

The LynxTWO is an impressive card. It would be overkill for some applications; a lot of smaller studios are not going to be cutting at 192 kHz, synching to video, or in need of 117 dB of dynamic range when they're squashing the hell out of everything anyway. For audio connoisseurs, though, it's a different story. First, the audio performance is exemplary. And, second, the cost is reasonable compared to top-of-the-line stand-alone converter boxes — and believe me, the comparison is apt — because using breakout cables is less expensive than a rack box and associated packaging.

Well, it looks like my recommendation that people keep audio out of the computer needs updating — the LynxTWO proves it can be done. What's more, it does it well. ■

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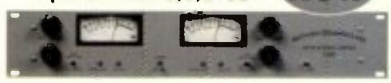

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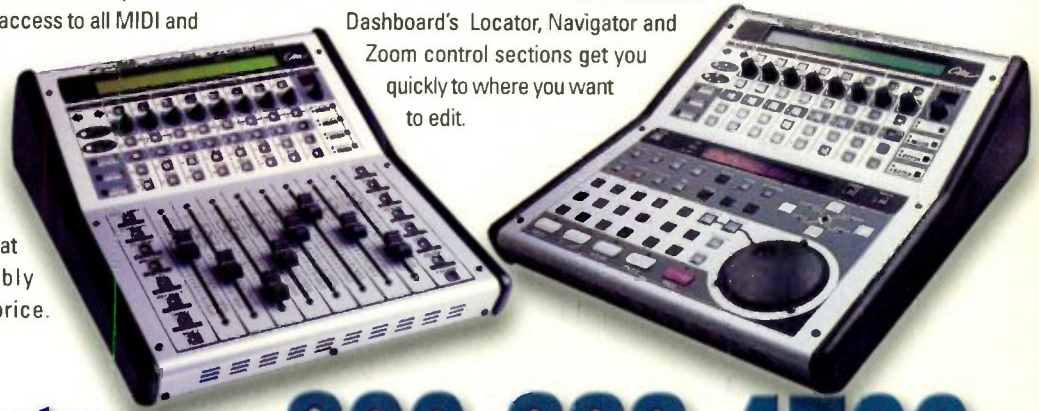

CM Labs

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MOTU FireWire Audio

96kHz FireWire audio is the future. Build your customized state-of-the art MOTU system today.

TLA-50 Tube leveler, Soft Knee Compressor

Add the warm sound of classic Summit Audio compression to your Digital Performer recordings with the TLA-50 Tube Leveling Amplifier, the newest offering from the first name in vacuum tube processing. This single channel tube leveling amp will warm your signals like nothing else. Add the warmth of Summit Audio Inc.® that classic Summit Audio tube sound to your MOTU 896 at an unreal price.

TD-100 Instrument pre-amp and Tube Direct Box

The new TD-100 instrument preamp and tube direct box features a hybrid signal path utilizing both a discrete solid state output device and a 12AX7A/ECC83 vacuum tube to give your musical instruments the clarity of class A sound with the richness and warmth of vacuum tubes all in a half rack space. Perfect for both live and studio use, connects easily to your MOTU 896 or other I/O and instantly gives your audio recordings that Summit Audio warmth and quality.

"A little Summit for everyone."

3-YEAR WARRANTY

Peak™ 3.0

Advanced waveform editing and mastering

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.

bias sound creative

Built for Mac OS X

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.

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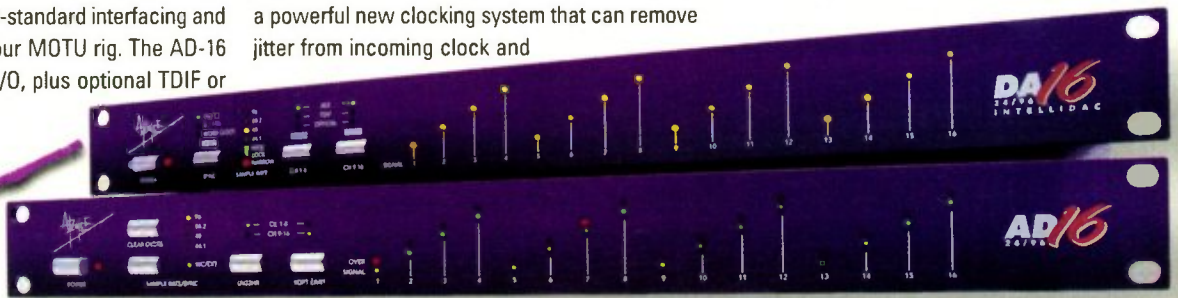
TEC NOMINEE

AD-16 and DA-16

16-channel analog-to-digital and digital-to-analog converters

Apogee's AD-16 A/D and DA-16 D/A each offer 16 channels of the highest quality digital audio conversion that only Apogee can provide - including 24-bit resolution at sample rates up to 96 kHz. Both converters offer industry-standard interfacing and simple connection to your MOTU rig. The AD-16 includes ADAT optical I/O, plus optional TDIF or AES/EBU cards. The DA-16 includes ADAT optical, TDIF and AES/EBU built-in. The AD-16 includes Apogee's unique Soft Limit process for maximum digital level without overs, while the DA-16 employs a powerful new clocking system that can remove jitter from incoming clock and data for a pure, pristine, analog out for mixing or monitoring. Call Sweetwater today and ask about Apogee's AD-16 and DA-16, the ultimate high-end solution for your MOTU system.



APOGEE

Call the MOTU experts now: Sweetwater®

music technology direct™

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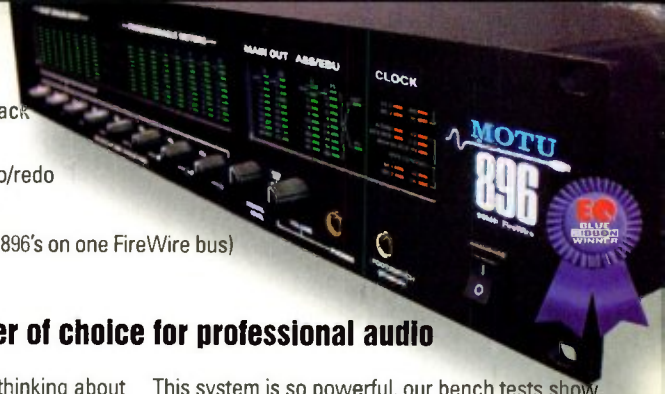
1-Gigahertz Dual-processor "QuickSilver" G4 Desktop
Supports 128 Digital Performer tracks with 8-band EQ and dynamics on every track

MOTU DP3 audio workstation software
Now with full surround production up to 10.2, REX2 file import and unlimited undo/redo

MOTU 896 96kHz FireWire audio interface
Provides 18 simultaneous channels of I/O expandable to 72 channels (up to four 896's on one FireWire bus)



Apple Macintosh G4

The computer of choice for professional audio

You are looking at the most powerful native audio workstation on the planet, bar none. The staggering performance of Apple's 1-gigahertz dual-processor G4 desktop turbo-charges your Digital Performer studio with processing bandwidth of super-computing proportions. Even more staggering is how affordable it is. If you've been thinking about upgrading your system, consider this: if you currently have a G3/500 Power Mac, the dual 1-gig G4 will quadruple the size and capability of your Digital performer virtual studio, thanks to Digital Performer's fully symmetrical dual-processor support. This system is so powerful, our bench tests show that it can run 120 tracks of audio, each with 8 bands of fully parametric EQ and dynamics processing on every track—all processed in immaculate 32-bit floating point glory. Imagine what it would feel like to have that kind of power at your fingertips...

SAC-2K controller

Precision touch-sensitive automated worksurface

With the most complete support for Digital Performer currently available, 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), window sets, transport control with jog/shuttle, input/output routing, voice assignments, solos, mutes, track-arming... it's all just one touch away. The SAC-2K will make you feel like you're sitting in front of a fully automated large-format mixing console, but without the bloated size and massive price tag. The SAC-2K is your all-access pass to the world of Digital Performer-based recording, editing, arranging, mixing, processing and mastering.

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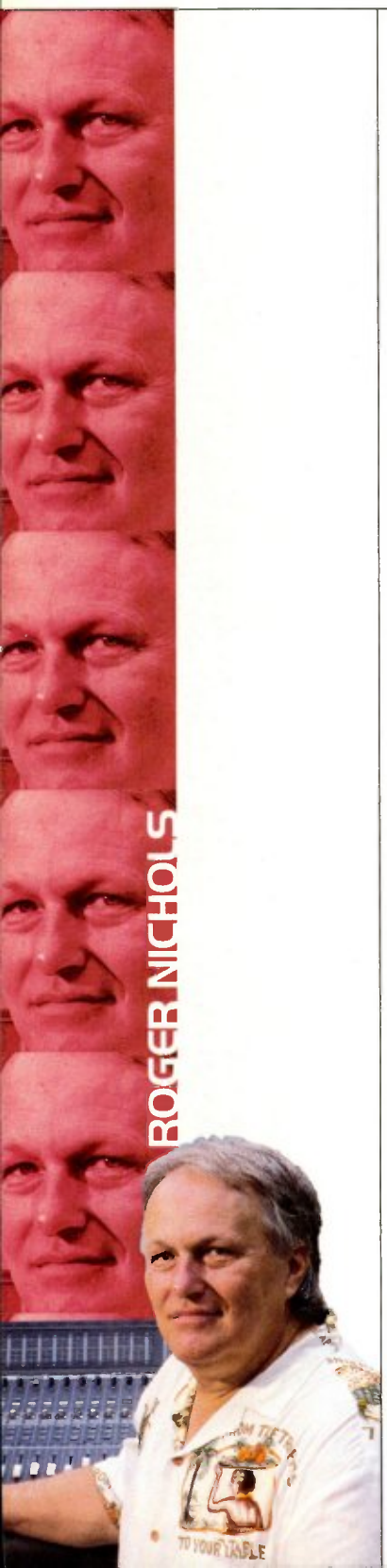
A Week in Hell

Sink-o-de Mayo



My last week has been Hell. I was ready to start mixing a new project on May 5th. The client came over with a hot-swap tray fitted with a 72-GB SCSI drive filled with the Pro Tools files and sessions. I slipped the drive into the chassis, turned the key, and mounted the drive on my Mac's desktop. I then double-clicked on the hard disk icon to open the drive and start transferring the files over to one of my drives. That's when it started.

As if I was in one of the slow motion scenes from *The Matrix,* I watched all five of my disk icons change to folder icons, and then all of the icons on my screen disappeared. The Finder had quit and the computer was dead. When I re-booted the computer said, "Rebuilding desktop folder." I knew I was in big trouble. After the computer finished booting, none of the hard disks mounted on the desktop. I located my ATTO folder and tried to mount the volumes. The physical drives showed up in ATTO, but I could not get them to show up on the desktop. "Uh-oh" was the mildest of my utterances. The client looked on with apprehension, contemplating the condition of his files. The computer froze up. I threw the mouse against the target I have painted on one wall. I went to the drawer where I keep spare mouses. The drawer was getting empty. I must remember to re-stock.

This event was the start of a very long week. Today is the seventh day, and I am not all the way back to normal yet. Maybe writing this column will get my mind off the tragedy. Wait, I'm writing about the tragedy. But I have a lady who comes on Fridays to do my irony.

I decided it would not be good to try to boot from the system disk again, as there were important files on that drive that I had not yet backed up. This stuff only happens to other people, and I laugh when they tell me their story. I pulled out the 60-GB IBM DeskStar system drive and replaced it with a spare 72-GB IBM DeskStar that I had readied for such an occasion. I keep the spare drives right near the spare mouses. I figured that, if I were prepared, it would never happen. The spare drive already had a system 9.2.2 on it. (I can't upgrade to OS X until Pro Tools upgrades to system X.) I installed the new system drive and configured the old boot drive as the slave. I booted the computer and the lunchmeat old system drive would not even mount.

Time for Norton Utilities! I have been a Norton user since 1984. I still use Norton Commander on my PCs. Anyway, Norton attempted to recover my system disk. After a couple of hours searching, Norton reported, "49,631 files found. Would you like me to rebuild the directory?" I clicked

> "I WATCHED ALL FIVE OF MY DISK ICONS CHANGE TO FOLDER ICONS, AND THEN ALL OF THE ICONS ON MY SCREEN DISAPPEARED."

"Yes" and Norton churned for five minutes and then..."Error while rebuilding directory. You now have zero files." After four more attempts with the same results, I headed to my friendly Apple Store. They recommended Disk Warrior, so I bought three copies and ran back to my studio. Disk Warrior churned and churned for two hours and then said, "A preview of what Disk Warrior recovered is mounted on your desktop. Open it to check your files and then click OK to rebuild your disk directory." I open up the preview folder and...and...and...*it was empty*! I threw the other two copies of Disk Warrior against the wall. The pile under the target zone was starting to shape up pretty well.

I decided to take a break and check my e-mail. My Netscape browser home page is

▶ continued on page 121

Introducing *Laminar Spiral Enclosure*™ Technology: The new Genelec 7000 Series LSE Active Subwoofers.

The Truth - in black and white: a revolutionary, proprietary technology [*and shape*] that will forever change your expectations of what an accurate, multi-channel professional surround-sound monitoring environment should sound like. The new Genelec **7000 Series** consists of four (4) active subwoofers – painstakingly engineered to enhance the entire range of our active monitoring systems – from the award-winning **1029**'s right up to the formidable **1039**'s.

These new subwoofers look different for a very good reason: *Laminar Spiral Enclosure* technology. **LSE**™ is evident in the unique circular shape of the enclosures, identical in execution for the 8", 10", 12" & dual-driver 12" models. This radical design departure dramatically alters how high-level, low-frequency acoustic energy is delivered to virtually any critical-listening acoustic space.

The main benefit? The compromises inherent in traditional ported enclosures are now things of the past; the unrestricted *laminar flow* of low-frequency energy emanating from the rigid, tuned enclosures of the **7000 Series** is truly an extraordinary listening experience. When combined with the latest 6.1 electronic bass-management technology, Genelec *Laminar Spiral Enclosures* not only turn things around, they give the professional a whole new perspective on the meaning of superior performance.

Model 7070A Active Multichannel Subwoofer *– 12" dual voicecoil driver, 19Hz to 120Hz, 114dB with 6.1 Bass Management feature set. There are two smaller models (**7050A & 7060A**) and one larger system (**7071A**).*

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Digital Performer on Network TV

John Flansburgh and John Linell
They Might Be Giants
2002 Grammy Award winners for 'Boss of Me'
Theme for 'Malcolm in the Middle' (FOX)

Photo © Taylor Cothren

"They Might Be Giants has been relying on the power of Performer since Version 1.0. Now, as our work branches out into film, television and beyond, Digital Performer has become even more integral to our creative output. From MIDI sketches, all the way to locking to picture in studio sessions, Digital Performer is rock solid, fast and easy. Its versatility seems boundless, and the interface is elegant. We just received our first GRAMMY for 'Boss of Me'. The whole track was put together on Digital Performer. I can't even tell you how much we owe to MOTU, because I'm afraid they're going to want a piece of it." — *John Flansburgh*

Learn more at www.motu.com

MOTU

They Might Be Giants image Susan Anderson Courtesy of Alison Zero @ www.girlieaction.com

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