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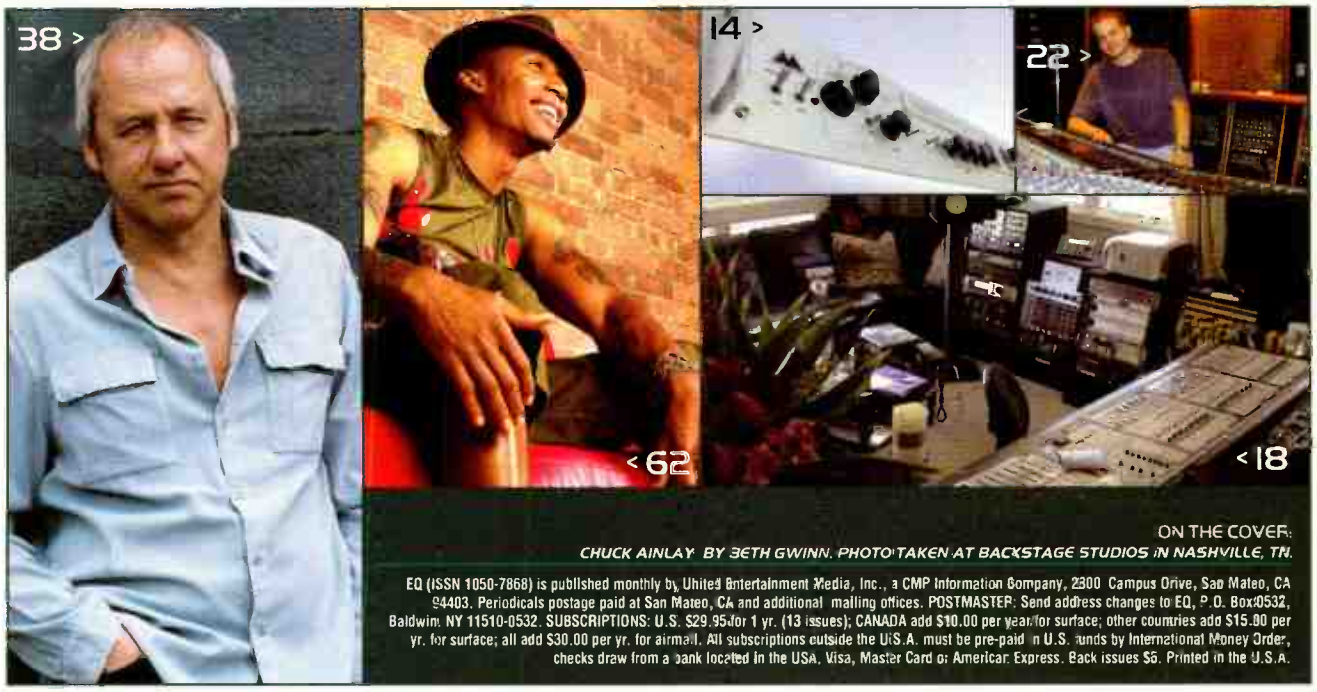

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CHUCK AINLAY. BY BETH GWINN. PHOTO TAKEN AT BACKSTAGE STUDIOS IN NASHVILLE, TN.

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EDITORIAL

EQ
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NOVEMBER 2002

Getting In Tune

The other evening I made one of my pilgrimages to the local CD supermart. I try to drop in there occasionally to keep up with what's going on — at least in the mainstream music marketplace. Several things jumped out at me: A new, surprisingly large section dedicated to SACD, DVD-Audio, and DTS-encoded CDs — sadly mislabeled the "High End Audio" section, which is sure to turn off the general populace. The depressing ongoing erosion of the classical and jazz music sections continues, with the space now devoted to DVDs, magazines, and miscellaneous junk. Happily, the bluegrass and folk sections have expanded, no doubt in keeping with the current *Oh Brother*-generated interest in those genres.

But one thing caught my eye: A CD in the New Release rack sported a sticker stating, "No vocal tuning or pitch correction was used in the making of this CD." Shades of the '80s and '90s: "No synthesizers were used in making this album"; "No samples were used on this record"; "No drum machines were used in the recording of this music."

It's interesting how there can be a backlash against these kinds of things. Granted, we're all aware that pitch correction can be (and too frequently is) abused — too often, when a tool like this is introduced, it's overused. When the tool is used to compensate for lack of talent or ability, then the art will surely suffer.

But it's important to keep in mind that vocal tuning and pitch correction — just like synthesizers, sampling, and drum machines in the past — isn't bad, *per se*. After all, we're simply talking about a tool. It's how the tool is used (or overused) that can make it "bad" or "good."

Personally, I don't have a problem using pitch correction if the drill is to save an otherwise perfect take — to me there's not much difference between doing that and comping takes together to make a better track. And I'm a fan of it when someone takes it beyond what it was designed for and uses it as a creative device — overplayed Cher songs not withstanding.

In time the whole pitch-correction thing will fall into context and the tool will become accepted for what it is, just as drum machines, samplers, synths, and many other seemingly "questionable" tools did in the past. In the meantime, it's up to us to use it creatively and above all artistically to enhance the music, not as a talent substitute.

—Mitch Gallagher
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HARDWARE & HARDWARE UPDATES

Alera Technologies. The **CD Copy Tower 40** family (**1:3 CD Copy,** $799; **1:7 Copy Tower,** $1,299) consists of two 40x multi-drive CD duplicators that offer stand-alone CD duplication in two different recorder tower configurations. These all-in-one units contain a duplicator controller with over 40 control functions, and can write on-the-fly simultaneously to either three or seven 40x CD-Recorders without needing a hard disk drive. **www.aleratec.com**

Digidesign. The **DigiDrive MediaDock** line (MediaDock Shuttle136, MediaDock Shuttle173, MediaDock II chassis, and MediaDock II+ chassis) provide a solution for data recording, exchange, and backup. They can be easily swapped between DigiDrive and Avid MediaDock chassis without rebooting the computer (although Pro Tools must be relaunched), and up to eight shuttles per channel can be daisy-chained. MediaDock Shuttles offer a less expensive alternative to standalone, equal-capacity hard drives, and can be easily added should more storage become necessary. **www.digidesign.com**

RealTraps. A pair of broadband bass traps that greatly reduce low frequency standing waves form the centerpiece of a line of affordable acoustic treatment based on wood panel membrane absorbers. Angled front panels serve as diffusers to minimize flutter echoes and ringing. The bass traps are complemented by absorbers based on rigid fiberglass that tame midrange and high frequencies. All traps are offered in two different heights: **Models LB7** and **HB7** are 2 feet by 7.5 feet, and together absorb the bass range starting below 20 Hz. **Models LB6** and **HB6** are six feet high and operate down to 24 Hz. Pricing starts at under $3,000 per room. **www.realtraps.com**

Primera Technology. The **Bravo** CD/DVD production system ($1,995) is an all-in-one, desktop duplicator that copies and labels up to 25 discs in one continuous automated process. The duplicator recognizes almost all industry standard formats including those for music, video, photos, and data. **www.primeratechnology.com**

Mackie Designs. The **Serial•9** card ($299) allows the Mackie HDR24/96 to be controlled by various transport and timecode controllers via the Sony 9-Pin device protocol...The **OPT•24** digital I/O card ($349) provides 24 channels of digital I/O for interfacing optical and analog/AES-formatted signal in tandem with other I/O cards...The **V1.3 OS upgrade** (free download) for the HDR24/96 and MDR24/96 provides Broadcast WAV compatibility, a new playlist management system, and also makes them compatible with the SDR24/96, allowing easy integration of an SDR24/96 into an HDR or MDR-based studio. Projects created on the HDR or MDR are transportable among any hard disk recorder in the Mackie family. **www.mackie.com**

TASCAM. The **V2.01 operating system update** (free download) for the DM-24 digital mixer adds HUI emulation (allows the DM-24 to serve as a control surface for Pro Tools, Digital Performer, and Nuendo), improved internal signal routing, new footswitch control capabilities, 5.1 surround mixing features, internal MTC generator, a post A/D converter direct out for live recording situations, transport lock, tape return capabilities to channels 25 thru 32, and pre-aux muting function. **www.tascam.com**

Buzz Feiten Design. The Buzz Feiten Tuning System is a tempered tuning format that corrects the inherent intonation problems of the guitar and other fretted, stringed instruments by repositioning the nut and adjusting the bridge saddles. Now, the **Buzz Feiten Tuning System Authorized Retrofitter Training Kit** will be distributed through several luthiery supply houses. The kit teaches guitar repair techs and luthiers how to retrofit guitars and includes a video training course, branded shelf nut, encrypted CD-ROM containing proprietary intonation offsets, and a certificate of authorization. Guitars with the Feiten System are not changed in the way they look or play. **www.buzzfeiten.com**

Behringer. The **Pro-XL** series of dynamics processors includes the **Autocom** ($109.99; two-channel expander/gate/compressor/peak limiter with integrated dynamic enhancer, de-esser and low contour filter), **Composer** ($139.99; interactive two-channel expander/gate/compressor/peak limiter with integrated dynamic enhancer, de-esser, tube simulation and low contour filter), and **Multicom** ($159.99; four-channel expander/gate/compressor/peak limiter with dynamic enhancer and low contour filter). All use THAT VCAs, 4580 low noise op

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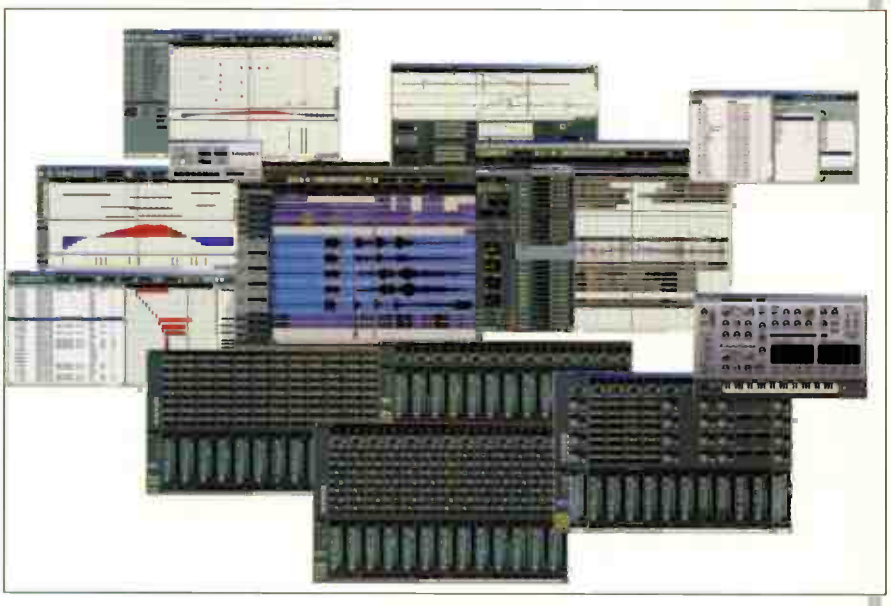
amps, Alps faders, and feature dual-stage peak-limiting circuitry that combines a clipper and a program limiter...The **UB 41 Series** of mixers consists of 10 models, from the **UB502** ($59.99; five input, two-bus) to the **UB2442FX-Pro** ($439.99; 24-in, four-bus with integrated effects). All feature mic preamps (with response from 5 Hz to 100 kHz) and Alps faders; the FX Pro models offer 24-bit digital signal processing (based on Behringer's Virtualizer technology) with 99 stereo effects, and all Pro models include an internal autoranging switch-mode power supply. **www.behringer.com**

M-Audio. The **Studiophile BX8** are biamped (130W total), nearfield reference monitors ($599.95). An Acoustic Space control section allows optimizing the monitors' performance for various placements (stands, bookshelf, corners, etc.). High-frequency and presence controls are also included, as well as a variable low-frequency roll-off to optimize response at crossover points when adding a subwoofer. Speakers include a 1" high-frequency driver with ferrofluid cooling and 8" low-frequency driver...The *Record Now* series of free guidebooks is designed to help musicians make informed choices about music technology, as well as provide tips and techniques on how to get the most out of today's gear. It is available from M-Audio dealers and can also be downloaded in PDF format from **www.mic-guide.com**. **www.m-audio.com**

SOFTWARE

Blue Shock. The **Tsunami** VST synthesizer plug-in for Windows (Mac soon; also works standalone) features polyphony up to 64 voices, three oscillators and a noise generator, 24 dB/octave low-pass resonant filter, dual envelope generators (amp and filter), ring modulator, and delay. **www.blueshock.com**



Bitheadz. **Phrazer 2.0** ($299), a loop-based sequencing program, includes support for Mac OS 10.1 or higher, the option to import MP3s, a "Save As Project" feature that saves a Phrazer sequence and related sample files into a single project folder, the ability to audition samples with current tempo and pitch, customizable user interface, integration with standard sequencers (*e.g.,* Digital Performer, Logic, Cubase, and ProTools), and the amount of content has been nearly doubled to 900 MB...**Phrazer LE** ($99) is a "lite" version of the full Phrazer program with over 500 MB of content, but has an eight-track limit, and doesn't allow sequencer plug-ins. Demos are available. **www.bitheadz.com**

CreamWare. The **Modular III** synthesizer ($249, upgrade from Modular II $98) for CreamWare DSP systems (Luna, PowerSampler, Pulsar, or SCOPE/SP) offers over 220 modules, along with more than 100 synth patches that cover a range of sounds including FM, analog, additive wavetable, and sample-based synthesis. A Modular Remote Control allows even complex Modular patches to be operated as easily as a mini-synthesizer. New modules include a wavetable oscillator with Prophet VS waveforms, 25-mode filter, single-sideband modulation, vocoder, and various modules created according to the specifications of CreamWare user Hans Zimmer. **www.creamware.com**

Microsoft. PacketVideo will support **Microsoft Windows Media 9** Series technology in the PacketVideo pv3 Mobilemedia System, which allows wireless operators to access Windows Media content on the Web. This agreement assists content companies using Windows Media (music labels, etc.), as

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it expands the reach of their content to potentially millions of wireless devices. www.microsoft.com

Steinberg. The **Nuendo 2.0 Media Production System** emphasizes surround, with multichannel architecture through the entire signal path. Every input, audio track, effect, group and output now offers up to 12 discrete channels, ready for 5.1, 7.1, or even 10.2 productions. The 32-bit floating point mixer has been completely re-engineered, and now features multiple multichannel input and output busses. www.steinberg.net

Ohm Force. The plug-ins **PredatOhm, HematOhm, MobilOhm,** and **OhmBoyz** will be available in RTAS format for Pro Tools. The first RTAS plug-in, **Frohmage,** is available now as a free download. www.ohmforce.com

Universal Audio. V2.3 Mac software (free download) for the **UAD-1 Powered Plug-Ins** (dist. by Mackie) provides dual processor mode support for the MAS format used by Mark of the Unicorn and the VST format used by Steinberg and others. www.mackie.com and www.uaudio.com

TC Works. Native Bundle 3.0 ($499, upgrade from previous version $39), a collection of high-end processing tools for VST and MAS (compatible with Mac OS Classic, Mac OS X, and Windows) features two new plug-ins. The **Native Reverb Plus** offers an enhanced algorithm, new user interface with additional parameters, and more than 100 new presets. **Filtrator,** an envelope follower-based filter effect, also allows LFO modulation to sync to MIDI clock, and includes 12, 18, and 24

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www.tcworks.de

Sonic Foundry. **CD Architect 5.0** is a stand-alone Red Book audio CD-burning application for Windows that accepts DirectX plug-ins (and includes 20 of them), supports multiple CD drives including USB and FireWire types, accommodates dual monitors, and performs resampling and dithering. www.sonicfoundry.com

OTHER NEWS

MindPrint. The company has announced an **online community** of musicians, engineers, studios, bands, and anyone who is recording music with MindPrint products. A discussion board provides contacts and information; a guestbook allows commenting on MindPrint products, and provides a way to promote yourself, your Web site, and your music.
www.mindprint.com/english/guestbook/index.htm

Cool Breeze Systems. **Pro Tools Power** ($29.95) is a book that covers Pro Tools|HD and 24|Mix, Digi 001, Mbox, and Pro Tools Free systems. It explains system configuration and optimization, practical recording and mixing techniques, signal routing, sync, interfacing, and more.
www.coolbreezesys.com

SYPHA. A free online **DAW Buyers Guide** covers over 240 different DAW products for applications such as semi-pro/project studio work, multitrack recording, editing, mixing and playback, postproduction for TV, video, and film, radio production, field and location recording, editing and mastering for CD/DVD/SACD, and multimedia/Web content creation. Products covered include systems, audio cards/units, software packages, disk-based multitracks and portable tapeless recorders.
http://SYPHAonline.com

Propellerhead Software. A two-week workshop for DJs and producers at the **Red Bull Music Academy** in Sao Paolo, Brazil is being sponsored by Propellerhead Software, creators of programs such as Reason, Recycle!, and ReBirth. The Red Bull Academy encompasses music history, technology, production, and business skills, and provides a platform for the exchange of musical knowledge and ideas. www.propellerheads.se, www.redbullacademy.com ■

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World Radio History

M-Audio TAMPA

By Craig Anderton

M-Audio has been making some aggressive moves into studio gear lately; after acquiring the famed GT line of mics for distribution, they clearly needed a high-end mic preamp to round out their product offerings. TAMPA is their answer, but it brings something new to the party — Temporal Harmonic Alignment, M-Audio's name for a process that claims to emulate tube characteristics.

The process is based on a study of natural phenomena. According to M-Audio, acoustic sound sources generate harmonics that are in-phase with the fundamental. Tubes apparently share this characteristic, particularly in the midrange, when harmonics are generated via distortion (subtle or noticeable). However, the harmonics generated by solid state gear are not in-phase with the source, which creates an effect that listeners often perceive as unnatural or harsh. Note that, unlike tubes, TAMPA aligns the harmonics with the fundamental across the full audio spectrum. Because it accomplishes this effect with solid state electronics, the premium price of tube electronics is not a factor.

In addition to the single channel, Class A preamp section, there's a dual optical servo compressor. Optical devices, being passive, have inherently less noise than VCAs, but at the expense of increased gradient distortion. M-Audio states that their circuit design minimizes distortion, while retaining the standard optical advantages of lower noise and sonic transparency.

Preamp highlights include phantom power for the XLR mic input, with variable impedance (300/600/1,200/2,400 ohms) to optimize matching with a variety of mic types. The instrument input uses a 1/4-inch balanced TRS phone jack with a 200k input impedance (100k in unbalanced operation — a bare minimum, but still acceptable, impedance value for passive guitar pickups). In addition to a knob offering 34 dB of continuously variable gain, a 20 dB gain switch provides an instant boost for low-output mics. Added to the base gain of 12 dB, the total available system gain is 66 dB. A low-cut switch (–12 dB/octave below 80 Hz) helps reduce popping, rumble, and other low-frequency artifacts.

The analog outs have an output impedance of 600 ohms, and provide a maximum output at soft clip of +30 dBu (balanced) and +24 dBu (unbalanced). Digital outputs provide S/PDIF and AES/EBU mono signals, with 24-bit resolution at sampling rates of 44.1, 48, 88.2, and 96 kHz. Digital clipping occurs at +30.5 dBu, and a -20 dB pad is available when feeding mixer mic inputs. A switch allows inverting the preamp phase.

The quoted specs are solid — frequency response of 20 Hz to 40 kHz (±0.25 dB), an A-weighted signal-to-noise ratio of 110 dB (minimum gain), and EIA noise rating of -127 dBm at 600 ohms (maximum gain). The bypassable compressor offers at least 20 dB of gain reduction, with threshold variable from –20 to +20 dBu. The compression ratio goes from 1.1:1 to 10:1 — not quite limiting, but enough for serious squashing. Attack time is variable from 1 to 11 ms, and release from 250 ms to five seconds; there's 30 dB headroom (20 dB gain switch on) or 24 dB (gain switch off).

The indicators are sexy — real analog meters with pointers that monitor the amount of compressor gain reduction and output. There's also an LED clip indicator.

Mic/instrument preamps are the latest "hot product" category; now that people have their recording systems under control, they want a front end to match. It's a crowded field with a bewildering number of options and price points, but TAMPA has set out to create its own niche. ■

M-AUDIO TAMPA

WHAT IS IT? A single-channel, Class A mic preamp/compressor with analog ins and analog/digital I/O.

WHO NEEDS IT? Those looking for a mic preamp with compression and sonic characteristics that mimic tubes.

WHY IS IT A BIG DEAL? TAMPA's Temporal Harmonic Alignment process is claimed to deliver the same kind of sonic sweetness obtained with tubes, but at solid-state prices.

SHIPPING: October 2002

PRICE: $799.95

CONTACT: For more information, contact M-Audio at 626-445-2842 or visit www.m-audio.com.

World Radio History

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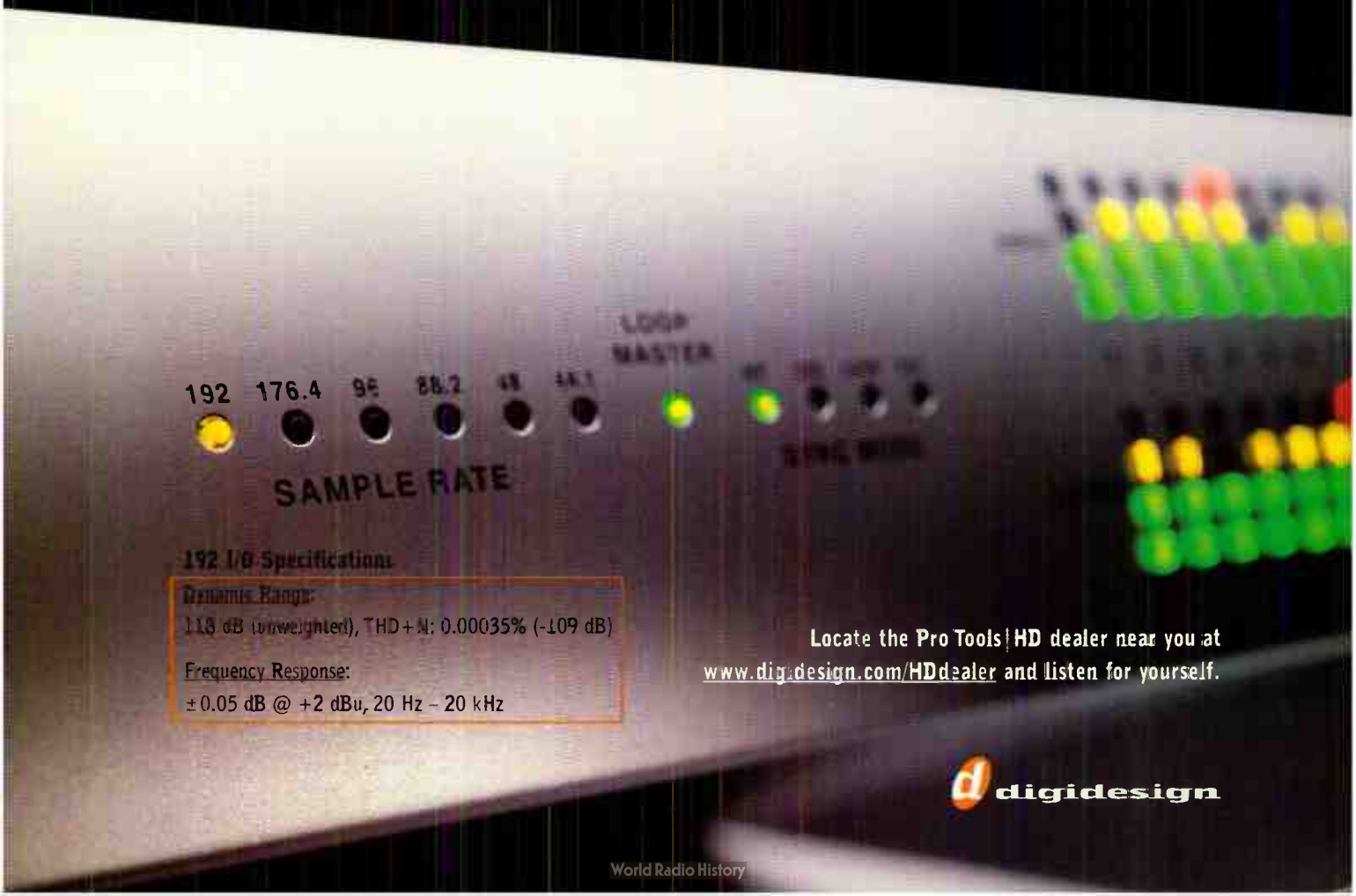

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World Radio History

iZotope Ozone 2.0

By Craig Anderton

iZotope's audio division came out of nowhere with a free vinyl plug-in. Okay, good enough...but then came Ozone (reviewed January 2002 issue), a DirectX mastering suite plug-in. Featuring a paragraphic EQ, mastering reverb, loudness maximizer, multiband harmonic exciter, multiband dynamics processor, and multiband stereo imaging — along with a cool look and a list of $199 — Ozone ended up being installed on a lot of computers, with a reputation spread mostly by word of mouth.

Now Ozone 2 is out, with several significant improvements (and one omission: it no longer runs on Windows 95 or NT, only 98SE/ME/2000/XP). One of the most important is dithering, accessed on the Loudness Maximizer page (where you'll also find a DC offset filter). There are two dithering types, four different shapes, and bit reduction to 8, 12, 16, 20, and 24 bits (Ozone handles 32-bit files with 64-bit internal processing). Metering shows the DC offset and word length — very handy.

The EQ can now have sharper slopes, but the spectrum analyzer has major enhancements. In addition to the original linear "oscilloscope" type display, you can show a 1/3-octave display with selectable averaging times — up to infinite — to see the average spectrum over an entire tune. And, you can have note calibrations (C1, C2, etc.) as well as calibrations in Hz.

Ozone 2 features an internal preset system, so it's no longer dependent on the host program for creating, storing, and loading presets. Thus, if you have a favorite preset for mastering in, say, Wavelab, you can call up that preset in Sound Forge, Sonar, Cubase, etc. Presets can also be sorted according to several criteria, including date last used. Better yet, you can load individual modules from particular presets — for example, replace just the EQ or dynamics in an existing preset. Sixty presets come with the program, and more are slated to be posted on the iZotope web site.

With the original Ozone, each band's setting in the multiband modules required manual editing. Now you can copy settings from one band to another — a real time-saver with the multiband processors, where you often want the same general settings for each band, but with a few tweaks where needed. It's also possible enable fewer than four bands, which saves CPU power.

Multiband dynamics have been enhanced with the ability to set higher ratios, release times, and attack times, as well as a global gain control that increases or decreases the levels of all bands simultaneously. This is in addition to the level controls for individual bands.

There are numerous other improvements: meters can now read peak, real-time PPM, or real-time RMS and "zoom in" on a smaller range; input and output gain is adjustable in 0.1 dB increments with a wheel mouse or the keyboard; an autonormalize function insures peaks don't go over a specified level; and, perhaps most significantly, over 140 parameters are automatable using DirectX automation. There's more, but by now you probably get the idea: This is a very cool plug-in at a truly righteous price. ■

IZOTOPE OZONE 2.0

WHAT IS IT? A DirectX-compatible mastering suite plug-in with multiple processors and extensive metering.

WHO NEEDS IT? Anyone who wants to master stereo program material on a Windows machine, although it's also useful as a track or bus insert effect.

WHY IS IT A BIG DEAL? The price is astonishingly low for something with this kind of feature set and sound quality.

SHIPPING: October 2002

PRICE: $199 (download), $229 (download program, then get sent an additional CD with 50 audio test files and spectrum snapshots for testing and analysis), $49 upgrade from Ozone. Free demo from web site.

CONTACT: For more information, contact iZotope at 617-332-4049 or visit www.izotope.com.

World Radio History

NUENDO

frank filipetti

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To capture the sound of their new release ***Untouchables***, heavy-hitting band ***Korn*** turned to digital recording pioneer Frank Filipetti and producer Michael Beinhorn. After painstaking comparisons, the group was unhappy with the way their tracks sounded using other popular DAWs, and found that they could edit and process tracks to their heart's content in NUENDO with absolutely no decrease in fidelity

"I knew going in that the band was going to be especially vigilant about the sound of their instruments. That's why it was so important for me to find the right digital gear. Nowadays, everyone is accustomed to the manipulations we can perform on a digital platform. But the feature set has to be secondary to the fidelity set. And on that score we found NUENDO second to none."

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World Radio History

Avalon Studio

Another day in paradise

By Steve La Cerra

STUDIO NAME: Avalon Studio
LOCATION: Kauai, HI
KEY CREW: David Tickle
CREDITS: 4 Non Blondes, Adam Ant, Blondie, Divinyls, Peter Gabriel, Police, Prince, Split Enz, Sting, U2
MIXING CONSOLE: Digidesign ProControl
MONITORS: Westlake BBSM15, Yamaha NS10M, M&K Subwoofer, Tannoy 15
AMPLIFIERS: Bryston 4B [2], Yamaha M2002 [5]
RECORDERS: Genex 8500 MO, HHB CDR800, TASCAM 122 Mk III, DA-45 DAT, DA-88 [2]
OUTBOARD: API 560 EQ [10], Pultec MEQ-5, EQH-2; Teletronix LA-2A, dbx 160, Urei LA-3A [2], Universal Audio 1176LN, Neve 2254a, The Juicer Compressor ("my own creation, essentially two talkback compressors from an SSL console")
EFFECTS: TC Electronic M6000, M3000; Eventide Orville, Delta Lab Acoustic Computer, Yamaha D5000, Lexicon MPX 100
MICROPHONES: Neumann: M 49, U 47; Sennheiser MD421, AKG C12 [2], Shure SM57 [2]
MIC PREAMPS: Neve 1066 [8], Avalon 737 [2]
KEYBOARDS/SAMPLERS/MIDI: Schimmel 7-foot Grand Piano, Kurzweil K2500X, Roland JP-8000, Super Jupiter, SP-808, 505 Groove Box; Waldorf Wave XTC, E-mu E4X Sampler, Yamaha RM1X, Akai MPC2000
DAW: Digidesign Pro Tools HD, Steinberg Nuendo, Apogee AD-8000
COMPUTERS: Apple G4/830 MHz w/1 GB RAM, 30 GB internal drive, Sharp V9000 DLP and 21-inch Mitsubishi Diamondtron monitors, Glyph 72 GB drives [2], Trip rack w/UW SCSI, CDR and AIT3 backup
SOFTWARE: Digidesign Pro Tools 5.3.1, Emagic Logic Audio Platinum, Mackie UAD-1 Powered Plug-Ins, plug-ins from Lexicon, Focusrite, TC Works, Wave Mechanics, Line 6, Waves
POWER CONDITIONING/BACKUP: 220-volt AC, split into two 110-volt circuits with capacitor conditioning
STUDIO NOTES: "I chose this island location because of its easy access to Los Angeles and the quality of life," says David Tickle. "Artists work here without being worn down by the environment; in fact it's quite the opposite. While they're here, they swim, hike, relax — and create."
EQUIPMENT NOTES: Tickle likes the open feel and color of classic vintage compressors, applying them judiciously to his mixes. "When mixing, I tend to use my 'real' 1176's and LA2A on important instruments that are going to be really upfront and need to be special. I send vocals through the LA-2A and guitars through the 1176's. In addition to the normal color and compression that an LA-2A or 1176 typically adds, these particular units (which I cherry-picked) have an extra little bite and presence that is fantastic and actually makes the sound three-dimensional."

Tickle often finds that he'd like to apply the tone, color, and the pumping sound of an 1176 or LA2A to many elements in a mix. "I only have one LA2A because I've never been able to find another to match, but quite often I need

▶ continued on page 114

WEBLINK
Visit David Tickle online at www.davidtickle.com.

World Radio History

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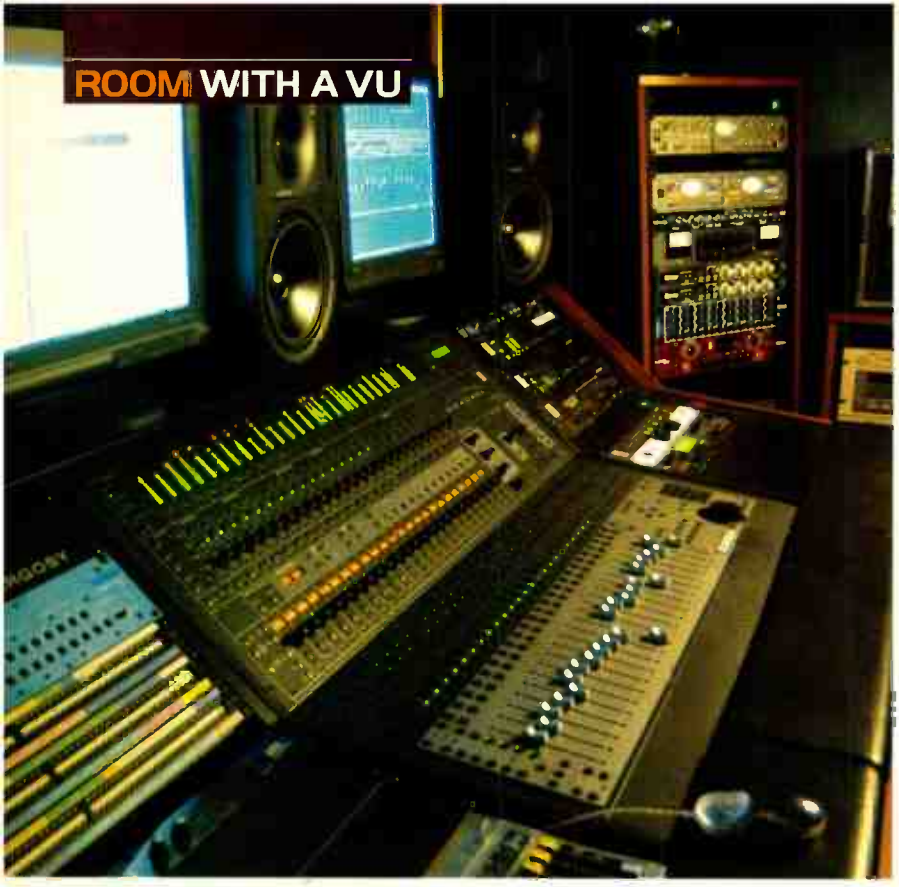

True North Productions

Go north, young man

By Steve La Cerra

STUDIO NAME: True North Productions
LOCATION: Greensboro, NC
KEY CREW: Tim Snider (owner, engineer), Bobby Kelly, Todd Sutton (engineers)
MIXING CONSOLE: Digidesign Control 24, Roland VM-7200 Digital Mixing System
MONITORS: Genelec 1031A [5], 7070A; Dynaudio BM5, Headphones: AKG K240 [4], K270 [3]
AMPLIFIERS: Alesis RA-300 [2]
RECORDERS: TASCAM DA-88 [1], DA-38 [2], DA-45HR, DA-30 Mk2, MD-700 Minidisc, CD-700, CD-RW5000, CD-D4000 CD duplicator, CD-A500, 202 Mk2, 35-2 two track; Alesis ADAT XT [2]
OUTBOARD: Manley Laboratories Vari-Mu, Empirical Labs Distressor [2], dbx 160x [2], Presonus ACP-8 [2], ACP-88; TC Electronic M•One, Behringer Composer
EFFECTS: Ensoniq DP/2, Yamaha REV500, Line 6 Pod Pro
MICROPHONES: Neumann U87 [2], Audio-Technica AT4033, Pro35, Pro37R; RCA 77 [4], Sony ECM-999, Rode NTK [2], NT4; AKG C414B-ULS [2], C3000 [4], C1000 [2], D112; Sennheiser MD421 [3], Shure SM57 [16], SM58 [4], Beta87A [3], Beta91; Octava MC012 [2], Stedman N-90, Electro-Voice N/D408 [4], N/D869
MIC PREAMPS: Avalon 737SP, AD2022; PreSonus DigiMAX [3], VXP Vocal Processor, Blue Tube
SAMPLERS/KEYBOARDS/MIDI: Ensoniq KT-88, Korg M1, Roland XV-5080, JV-1080, RD-500; Young Chang 7-foot grand piano
DAW: Digidesign 888|24 [2], 1622, ADAT Bridge; Z-Sys Digital Detangler, Aardvark AardSync II
COMPUTERS: Mac G4/533 MHz w/640 MB RAM, 18 GB internal drive; 18 GB Digidesign Quiet Drives [2], 18 GB Glyph drive [2]; NEC 19-inch monitors [2], AIT2 backup
SOFTWARE: Digidesign Pro Tools 5.1.3, Masterlist CD, SoundReplacer; Propellerheads Reason 2.0, Sonic Foundry Acid 3.0, Lexicon Lexiverb. Plug-ins: Waves Gold Bundle, Drawmer, Bomb Factory, Focusrite EQ, Antares AutoTune 3, TC Electronic MasterX, McDSP Filterbank
POWER CONDITIONING/BACKUP: Equi=Tech 10W 100-amp subpanel, Furman PS-Pro, APC 650 UPS
ACOUSTIC TREATMENT: Auralex Studiofoam Metro, Pyramid, Wedge, LENRD Traps
STUDIO NOTES: "We built the studio from the ground up," begins Tim Snider, "so several things were done to isolate the room while creating a great sound. All rooms are decoupled from the outer brick structure. Auralex sheet block was used between two layers of drywall in all walls and ceilings. The ceiling is floated on resilient channel, and each hardwood floor is floated and detached from the adjacent room. Due to the location and county code restrictions we had only 20 feet of width, so we made the studio as long as possible: about 51 feet. The 25-foot long tracking room has an 18-foot ceiling, and has almost no parallel surfaces. Due to the excellent diffusion and volume of the room, we've been able to get great drum, piano, and vocal sounds. The separate drum room has a 14-foot ceiling and doubles as an iso room for

▶ continued on page 114

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World Radio History

By Lisa Roy

Nelly — Synth Funk Bass

The bottom-end for one of the year's biggest albums.

"I've been working with The Neptunes for a couple years now," states New York engineer Brian Garten. "We did a song with Usher "U Don't Have To Call," as well as work with Britney Spears, N'Sync, Mary J. Blige, and Busta Rhymes, to mention a few. That's not to say I'm their only guy because they have a great engineer in Virginia who does the other half of their stuff, too." Garten's quick to give credit where credit is due. When contacted for this article he humbly stated that he felt he hadn't done anything — despite the fact that he tracked two of the hottest singles of the year for *Nellyville*, the album that held the number one spot on 10 different Billboard charts the week it was released.

When the superstar hip-hop producers filed into Right Track to begin tracking, they relied on Garten to document their signature bass sounds. "Chad Hugo plays keyboards, sax, and guitar and Pharrell plays drums and keyboards. But most of the time it's all keyboards, that's their funk bass sound. It's coming out of their keyboards," confides Garten. "They have managed to be able to do something few producers have been able to do, which is to have huge hits in rap, R&B, and pop music."

DATE: March 14 & 15, 2002
STUDIO: Right Track, Studio A
LOCATION: New York, NY
ARTIST: Nelly
PROJECT: *Nellyville*
TRACK: Chad Hugo playing synth funk bass on "Hot In Herre"
PRODUCER: The Neptunes (aka Pharrell Williams & Chad Hugo)
ENGINEER: Brian Garten
ASSISTANT ENGINEER: Paul Gregory

SIGNAL PATH

"The great thing about Studio A at Right Track is the 48 Neve 1081 modules, which makes synth funk bass tracking even easier than usual," notes Garten. "All the synth outputs go directly into the 1081's and then to the Neve VX for monitoring (never a ground-related hum or buzz). When it's time to record, the signal would either be bussed from the console or patched directly into Pro Tools Mix Plus. Usually, with The Neptunes anyway, they like their beat to sound the way it sounds coming out of the keyboards. So unless there is a sound that is particularly harsh or muddy it is what it is. The bass is no exception. We also decide whether or not to record the sounds with the synth's built-in FX. Many times the decision is to record with them and if there is doubt I'll do a pass with and without. The bass is no exception. There was nothing special, just a good sound from one of their synth modules, which leads me to...

"The process of working on hip-hop records with no live elements is completely different than working on a traditional live band record. The time allocated to tracking the music is at the most one hour and as little as 15 minutes. Most of the time in the studio is spent writing and recording vocals or making new tracks."

"Obviously for this particular song there were no mics needed for tracking the synth bass," Garten frankly states. " However, we have worked with live bass and are starting to do a little more of that now. When we did a track on No Doubt the bass player had his SVT bass cabinet. We took an Avalon DI and miked the bass cabinet with a Neumann U47 FET. We ran that through some of the nice Neve mic pre's they have at Record Plant where we were cutting the track.

"Because you already have the direct sound from the Avalon DI, I set the U47 FET about a foot or two away from the cabinet to capture the low end. The combination sounded great. There's definitely a difference but they're both applicable to the situation. When it was time to record, the drummer and bass

World Radio History

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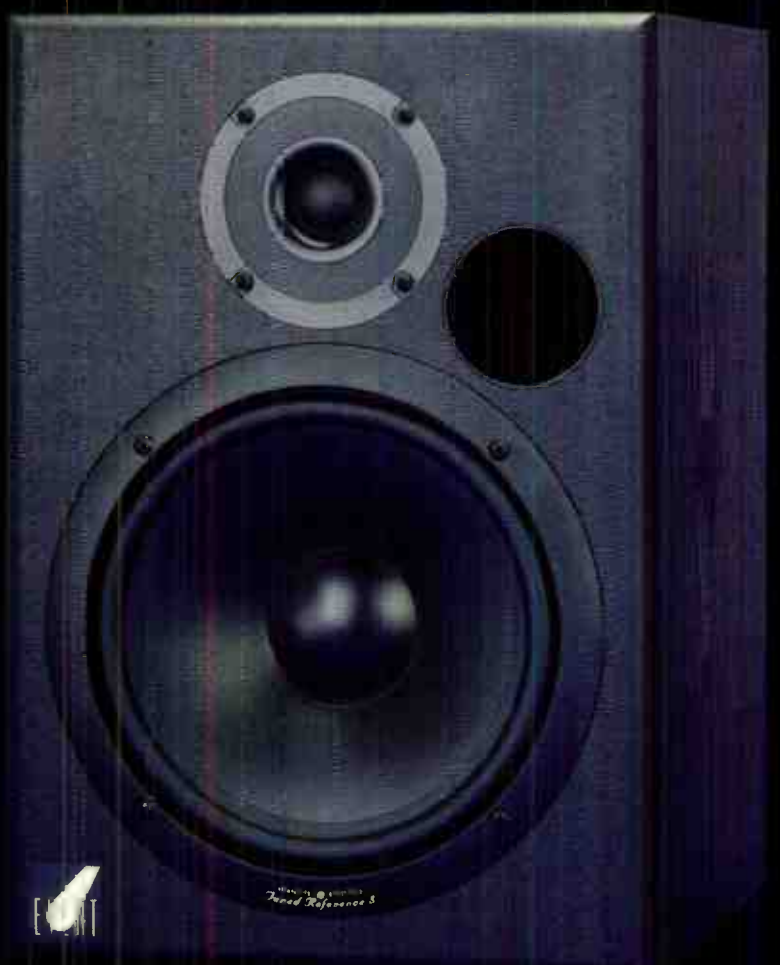

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World Radio History

Vintage Neve preamps were used to capture *Nellyville*'s fat low-end.

player put down their parts together. You get a different feel that way, than when someone is playing keyboards making a beat. At the end the final result is they're both great sounds, depending on the style of the song.

"It's so ironic that most of the people that have the budget to work in these studios are the people who don't use live players. Many people who need the studios with good live rooms are the ones who don't have the budgets. It's an unfortunate situation."

PROCESSING

"The Neptunes have their arsenal of sounds in their keyboards whether it's their Korg Triton or Ensoniq ASR-10 or Roland JV-2080," says Garten. "The way it sounds before we record the bass is pretty much how they want it to sound after it's recorded. Unless something's really not right, it pretty much gets recorded straight. It's a feel and capture it! The only thing I ran it through was the Neve 1081's line input quite possibly with no EQ."

TRACK NOTES

Garten sums up the pre-production/tracking vibe: "Pre-production, discussion? Ha! This is a hip-hop session ya know. I haven't touched a tape machine in over two years and see no reason to look back. Everyone has their own opinion but a hit record is a hit record whether it's recorded to Pro Tools or two-inch analog.

"When tracking I always set up the tempo in Pro Tools and have the Pro Tools MIDI clock run the sequencer. That way you have a perfect tempo map and can fly things around very quickly in grid mode. Usually we don't even track the whole song, we track the sections and then do the arrangement in Pro Tools. In some cases the entire song may be four bars of music. In which case I record eight bars and loop it. This method saves a lot of disk space, which is important because we frequently send Pro Tools sessions over the Internet.

"Bottom line: Working on this record was a good working atmosphere because The Neptunes go to the studio to have fun and it always shows in the record. Everyone wanted to be there, everyone's happy to be there, and you get a good record — and bass sound — at the end!" ■

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World Radio History

Processing Sounds

By Tal Herzberg

Recording and mixing audio almost always involves sound-shaping processors and various special effects, for several reasons:

- Imperfections of sound sources (instruments, voices, samples, and sound effects)
- Microphone, DI, preamp, and A/D-D/A converter limitations
- The need to reshape the frequencies and dynamic behavior of multiple sound sources so they can be successfully blended together
- The artistic element — using special effects to "color" sounds so they can stand out

Using DAWs and compatible DSP plug-ins (digital signal processing software) allows users to experiment with sound-shaping tools that were previously not available. Hundreds of different plug-ins from dozens of manufacturers are available for your DAW of choice, and many of them are of the highest professional grade.

This article examines some of the more common types of processors and basic usage methods, as well as interfacing with external analog and digital sound processors.

TYPES OF PROCESSORS

Equalizers: When auditioning sounds for recording or mixing, we often use terminology not traditionally related to sound production: "thin," "fat," "muddy," "crispy," "cloudy," "harsh," "honky," "hollow," "bright," and "dark" are some of the expressions that describe a sound's timbral quality. EQs are the most suitable processors for shaping a sound's spectral response and tone.

Dynamics Processors: The difference between loud and soft sections in a performance determines a sound's dynamic range. Too wide of a dynamic range can exceed that of the capture or playback medium, and the way to restrict the range is with dynamics control processors such as a compressor or peak limiter.

Increasing the input control in either a compressor or limiter will allow a sound's softer moments to come up in level, while not allowing the louder parts to get even louder, thus narrowing the sound's dynamic range. Gates (which mute a channel in the absence of a signal) and expanders (which expand, rather than compress, dynamic range) are also dynamics processors. Frequency-dependent compressors, such as de-essers, narrow the dynamic range of selected frequencies only.

Space and Ambience Simulators: Every sound we hear is a combination of the sound source itself and the way it interacts with the acoustic environment in which it is being recorded or monitored. Some sounds lack this interaction, such as artificial sounds generated by synthesizers and sounds recorded using DI (direct interfacing or direct injection) techniques. Others are recorded in rooms that are too small and baffled to produce any reflections, thus sounding "dry." Reverb processors simulate the reflections and echoes that occur from sounds interacting with an acoustic environment. Reverberated sounds will be a bit more natural and live ("wet"), while processing multiple sounds with the same reverb (unifying their ambience) will give them a more cohesive sound when mixed together.

Special Effects: This final family of processors "colors" sounds in a unique way, rather than correcting or solving problems they may have. The most commonly used effects are:

ANALOG TAPE AS REALTIME PROCESSOR

Although not as convenient to work with as DAWs, there are still some distinct qualities associated with the sound of analog tape and tape machines. Even if a project was produced entirely using a DAW, it's still possible to process some or all of a session's tracks with an analog tape during mixdown. This doesn't involve transferring the audio to an analog tape reel for mixing, but rather uses the tape machine as a real-time effect processor.

Place a reel of tape on any analog machine (the more tracks it has, the more processing you can do at once), set up the tape speed (slower will make the tape last longer, faster may improve sound quality), and arm all tracks. Route the outputs from your DAW to the tape machine, and the machine's outputs back to the inputs of your DAW. It's now possible to send some or all of a DAW session's tracks through the tape machine. Switch the machine to "repro" mode, which places both the record and playback heads on the tape at the same time, and start recording. Sounds are recorded onto the tape, and, after a few dozen milliseconds, play back from the tape via the repro (playback) head (tape is rolling free in record the whole time). The reason for this delay is the physical distance between the record and playback heads on the analog machine. (The record head is located before the playback head.) The tape machine's output can then be sent back into the DAW for mixing or to be recorded to new tracks.

Once you've figured out the delay time between the record and playback heads, shift each track you're sending to tape to start earlier by as many milliseconds as the delay time, making them play back in time with other DAW tracks not affected by the analog tape process.

As the tape is functioning only as a real-time sound processor, you can stop and start the DAW playback whenever you want, loop sections, and keep editing as you go. When the tape runs out, don't rewind it — just flip it over and start rolling again. This method works beautifully, and is an elegant way of incorporating some real analog qualities into digital audio, without losing any of the benefits offered by a DAW.

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delay (echo), chorus, flanger, phaser, envelope filter, pitch shifter, distortion, auto-panner, ring modulator, spatial placement, tremolo, and vibrato. Each effect alters the sound in a unique way, sometimes beyond recognition (especially when used in combinations), and it's fun to explore the options.

BASIC USAGE METHODS

Inserts: EQ, dynamics processors, and most special effects are traditionally inserted directly on the channels they treat, exclusively affecting the corresponding sounds, and no other sounds in the session. Most DAW software has insert points on each audio track/channel where software plug-ins can be inserted, but note that external processors can also connect to the DAW's outputs and inputs, and be used via inserts.

Sends and Returns: Reverbs and delays are traditionally inserted on auxiliary tracks, which are not individual audio tracks, but rather bussing channels that can have audio routed through them. For example, if you think that the snare sound is too "dry," let it play out of the main mix bus as is, but also send some of the signal to an aux bus, which feeds a reverb input. The reverb output returns to the console, usually to the master bus, or perhaps to an input fader. The "dry" signal doesn't change, but the signal send to the reverb unit is reverberated and combined with the dry sound, creating a "dry/wet" combo of both signals. Other instruments can also be sent to the same reverb aux. Always make sure that the reverb or delay's mix control (which controls the amount of dry and wet signals) is set to 100% wet, as the channel itself provides the dry sound. Also, playing the dry sound through the processor may cause phase problems.

Using External Processors: It is possible to use external processors in conjunction with a DAW. Connection is a breeze if the external processor sports digital I/O (most digital boxes do). To do this, create a digital in/out loop between the DAW and the external device, and then either insert the device on an audio track, or on an aux channel. If the processor is analog (such as tube gear or guitar pedals), use the system's A/D-D/A converters to create an I/O loop between the DAW and the processor, and then insert it on either audio or aux tracks.

DSP and A/D-D/A Cause Delayed Signals: It's important to remember that A/D-D/A conversions and DSP functions do cause a slight signal delay. Although usually minimal, this delay can potentially cause problems, mostly related to phase and timing of sounds. Analyze the delay each software plug-in and external processor introduces, then compensate for it by shifting audio tracks ahead in time.

Templates and Presets Libraries: While working on different projects,

▶ continued on page 114

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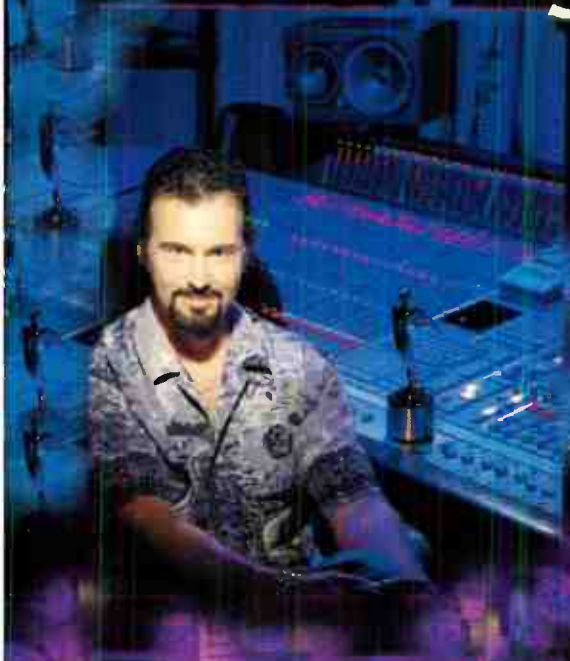

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audiophile-caliber monitoring system, but the coolest thing he has is the CLM Expounder, which is a dynamic equalizer that does tremendously good things to the bass track.

Joe Barresi must have every stomp box ever manufactured, but I particularly like the way he "re-amplifies" the bass through an amp head and a speaker simulator straight back to the console or to tape.

Nathaniel Kunkel is always the first one on the block with the newest piece of gear. I remember him using the Empirical Labs Distressor way back in '97.

Brian Scheuble seemed to be fond of stomp boxes like the Electro-Harmonix Memory Man, DOD Gonkulator, and tubing of various sizes for special effect miking.

What did you learn from working with Don Was?

That the beauty is in the human element. I've worked with a lot of guys who are after the "perfect take" when the one with the slight flaw probably has the magic.

Can you share some insights about Ed Cherney?

Ed Cherney is like a big brother to me. I think I've been on more projects with Ed than I have with anyone else. I've learned a lot about balance from listening and watching Ed mix. I like the way he carves with EQ and boosts only when necessary. Ed is truly an artist behind the board.

What was it like working with Eddie Kramer on the Jimi Hendrix projects? What did you hear from the originals, and what was done to bring them up to today's release standards?

Eddie Kramer brings into the studio an old-school sense of discipline. Just like any engineer, he deserves and expects top-notch performance, but

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RONNIE RIVERA'S GOLDEN RULES

1. Roll tape.
2. Make sure it's getting to tape.
3. Keep your ears and eyes open. There's always a better and/or different way.
4. It's not about you.
5. Document more than you think you or anyone else will ever need.
6. Be prepared. If not informed, take the initiative to get the info you need to make the session run smoothly.
7. Make your studio a joy to work at.
8. It's your job to make the engineer/mixer/producer that you are working with look as good as possible. If they look good, you look good.
9. Labeling should be complete, concise, and reflect the effort that went into the project.
10. If you don't know, know who does.
11. Feel the flow of the session. Don't be too on top if the session is laid back, but never lag behind.
12. Anticipate.
13. Keep a sense of humor.
14. When the going gets rough, remember, this too will pass.

World Radio History

Eddie seems to raise the bar just a little higher, and at the end of the day you're a better engineer for it.

Working on the Jimi Hendrix projects is usually a multi-format session. I believe we had two-inch 16-track, one-inch 8-track, and 1/2-inch 4-track. The tapes were in remarkably good condition. I remember the two-inch 16-track reel of Jimi Hendrix and Buddy Miles just jamming while the tape was rolling. I heard several identifiable guitar licks that were soon to become classic songs. That was a very cool experience. Nothing out of the ordinary was needed to bring the music up to today's release standards. Just good level and some tasty compression.

What did you learn from Bill Dooley, former director of recording at Extasy?

Music wants to flow down the wire.

Who were your engineer heroes when you were getting started?

I've worked with a lot of great engineers, the best in the business. It's hard to choose between them because I've been taught by all of them.

Do you have any interesting studio business advice?

In this business your personal skills are just as important as your technical skills. Do what you say and say what you mean.

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

It's tough to choose. I've been fortunate to work with so many great talents, but the Brian Wilson/Van Dyke Parks sessions for *Orange Crate Art* were pretty magical. Tracy Chapman probably has the best ears of any artist I've encountered. Being in the room with Poncho Sanchez was like witnessing Thor playing thunder.

What makes a great producer?

The ability to bring out the best in the music and the musicians.

Any advice for getting a good start in the business?

Know good sound, know how to get good sound, know that there are no guarantees. ■

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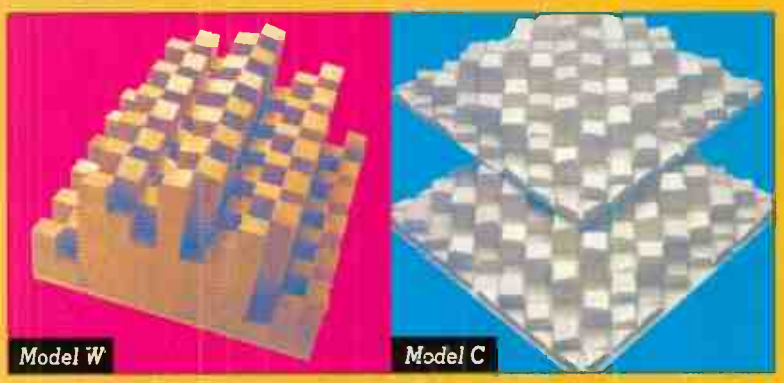

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Tweak your way to a black-belt Sonar experience

Sonar Secrets

By Craig Anderton

It's time to teach Cakewalk Sonar some new tricks — so grab your mouse, boot up your computer, and let's go.

SNAPPIER GRAPHICS

If a Project uses a lot (and I mean *a lot*) of digital audio Clips, particularly Groove Clips, the program can bog down when moving/editing Clips. To fix this, increase Sonar's picture buffer cache size.

1. **With Sonar closed, use Notepad to open the AUD.INI file (normally in the Program Files > Cakewalk > Sonar 2 directory).**
2. **Locate the [Aud] section. Underneath it is the PicCacheMB parameter. Change it from 20 to 200.**
3. **Save the AUD.INI file.**

SAMPLE-ACCURATE CLIP LENGTHS

You can trim clip lengths with single-sample accuracy — very handy when using Sonar to create loops that must be an exact number of beats.

1. **Right-click on the Clip and choose Split (fig. 1).**
2. **Select *Samples* in the Time Format field.**
3. **Enter the length in samples in the Split at Time field.**
4. **Click on OK. The Clip splits at the specified point.**

FIGURE 1: The Split Clips command offers many useful options, including sample-accurate splitting..

PREVENT (AUDIO) ENGINE SHUTDOWN

If occasional CPU spikes shut down the audio engine, requiring you to click on the Engine icon to wake it up again, try this.

1. **Open the AUD.INI file in Notepad (see previous tip).**
2. **Locate the [Wave] section.**
3. **Change the *StopIfStarved* parameter from 1 to 0.**

REWIRE TWEAK

While using ReWire, switching between Sonar and the ReWire-compatible application can mute Sonar's outputs if the two programs' drivers are shared. A workaround is to shift the focus back to Sonar or initiate playback on the ReWire slave or master, but here's an easy fix.

1. **Go to the *Options* > *Audio* > *Advanced* tab.**
2. **Locate the Playback and Recording section.**
3. **Uncheck *Share Drivers with Other Programs.***

RETROGRADE GROOVE CLIPS

This procedure, from Cakewalk's Carl Jacobson, reverses the order of the slices within a Groove Clip, thus creating a variation on the loop. This works best with staccato loops with sharp attacks; breaking up continuous sounds can cause clicks to occur at the splices.

1. **Select an acidized WAV file or clip that has been converted into a Groove Clip using Sonar's Loop Construction window.**
2. **Go *Process* > *Audio* > *Reverse*.**
3. **Disable Groove Clip looping for the file (click on it and type Ctrl-L).**
4. **After converting the file into a standard audio clip, again go *Process* > *Audio* > *Reverse*.**
5. **Re-enable Groove Clip Looping.**
6. **Press Play, and enjoy the retrograde fruits of your labor.**

THE LOOP EXPLORER GOES MULTITRACK

You can audition multiple loops simultaneously in the Loop Explorer, but note two constraints:

- The loops must all be in the same folder.
- Unless the loops are "acidized" or Groove Clip loops, they'll need to be at the same tempo and key to play together.

Multiple file auditioning is particularly useful with samples from "construction kit" sample CDs (*e.g.*, those that break loops down into individual parts), as you can hear how the parts work together.

1. **Go *View* > *Loop Explorer* window.**
2. **Enable Auto-Preview so as soon as you select a loop you'll hear it play with the others.**
3. **Click on the first loop to select it.**
4. **Click on the Loop Explorer's Play button.**
5. **To add a loop, Ctrl-click on another loop in the Loop Explorer's list of files.**
6. **To de-select an already-selected loop, Ctrl-click on it again.**

If you've selected loops you want to use, dragging the entire group over to the Track View pane loads them into the project.

GIVE EDITING THE SLIP

Slip-editing, where you drag a Clip's start or end to change length, is non-destructive. To remove the hidden audio permanently:

1. **Select the clip**
2. **Go *Edit* > *Apply Trimming*.**

Note: Doing this with a Groove Clip will convert it back to a standard Clip.■

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This changes everything.

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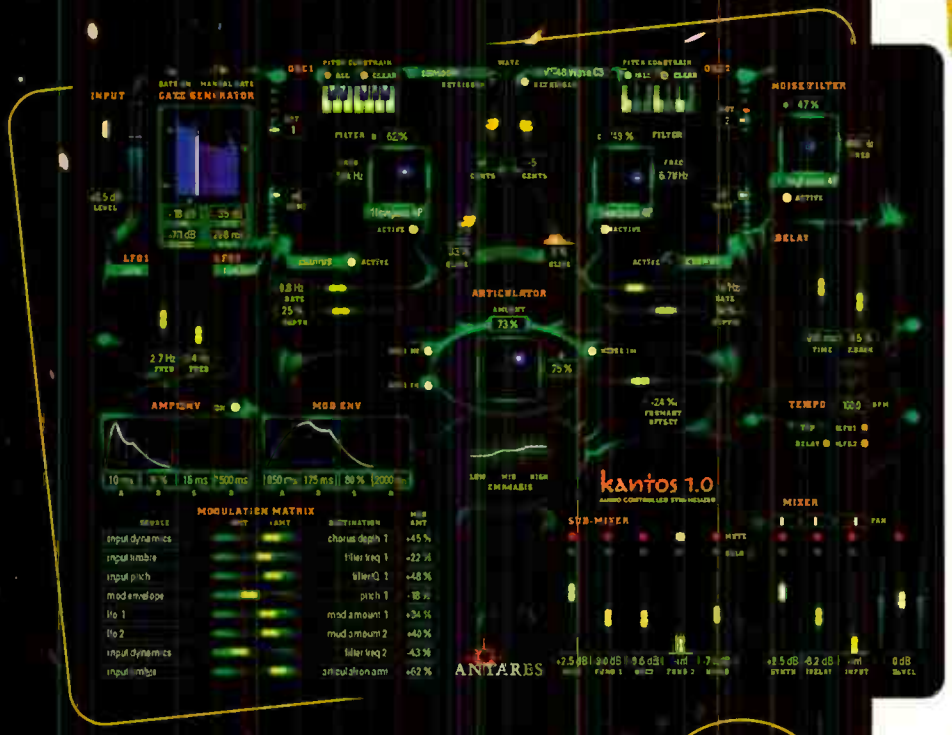
AUDIO CONTROLLED SYNTHESIZER



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To learn more about kantos 1.0, visit our website at www.antarestech.com for audio demos, guided tours and more. Whether you are looking for an alternative to traditional controllers, or are looking to produce electronic music with a level of sonic innovation and dynamic expression that's simply not otherwise possible, kantos 1.0 will, quite literally, change the way you make music.

*Actually, kantos 1.0 can also respond to unpitched or polyphonic input. While the output isn't always predictable, it's rarely less than interesting. And particularly with rhythmic input, you can get extremely dynamic (and sometimes downright surprising) results.

KANTOS 1.0 WILL INITIALLY BE AVAILABLE IN MAS, RTAS (MAC) AND VST (MAC) FORMATS. t WITH DIRECTX FOLLOWING NOT TOO FAR BEHIND. CHECK OUR WEBSITE FOR DETAILS.

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World Radio History

mark knopfler

chuck ainlay

World Radio History

CHUCK AINLAY PHOTO BY BETH GWINN

the guitar picker's dream

Mark Knopfler and producer/ engineer Chuck Ainlay return with *The Ragpicker's Dream*

Story by Lisa Roy • Studio Photos by Guy Fletcher

It was the 1999 AES (Audio Engineering Society) Convention in New York…Chet Atkins would be presented with the AES Honorary Member Award for his many technical contributions in the studio as well as creating the "Nashville Sound." Guitar statesman Mark Knopfler would fly in from England to present the legendary guitarist, producer, and record-man with the award. To a standing-room-only crowd, Knopfler humbly credited Atkins with inspiring his trademark style. A rock star in his own right, Knopfler was visibly moved when Atkins took the stage and told the crowd, "The first time I heard one of his records I said who is that — he sounds like me?" Atkins went on to say, "I knew I had to meet this guy, and he has since become a great friend."

After the ceremony, we met up in the dinning room of the Warwick Hotel, Atkins favorite haunt for many years. Having the opportunity to sit with the British guitar whiz and the Country-Gent guitar genius is a moment marked forever in my memory.

Knopfler would return to Nashville to visit his dear friend and to record the 3.5-million selling *Sailing To Philadelphia,* which he co-produced with his multi-talented engineer Chuck Ainlay. Since then, Knopfler's great mentor, Chet Atkins has passed away. Earlier this year Knopfler reunited in Nashville with Ainlay to co-produce his third solo album, *The Ragpicker's Dream,* an ultimate expression of Knopfler's tasteful, provocative, and hypnotic guitar playing and songwriting. *EQ* caught up with Knopfler's co-producer/engineer and "very good buddy" Ainlay who shared a few of his secrets for recording the guitar great.

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THE GUITAR PICKER'S DREAM ENGINEER

"Chuck is a lovely guy and a talented and experienced engineer who has the respect of all the musicians," praises Knopfler. "He is the seventh member of my band, or the eighth if I've got someone like Paul Franklin [pedal steel] in the room for the recording. It was Paul who first recommended Chuck to me.

"Chucks is always there when I get a guitar and first sing the song to the players," Knopfler explains. "He's there to get a setup going he thinks will work best for the song. He'll give us feedback on takes, sometimes trying to do a number of things at once, plugging stuff in and coming in and out of the room making adjustments. He stays out of things when he feels we're doing fine and on our own and going somewhere, and gets involved when he feels he's got something to contribute, which he invariably has. People will be getting comfortable with their parts and Chucks will always be there to help them feel they're going to be delivering the best possible performance.

"I can't say enough about Chucks. Like the other guys, he's a joy to work with." This relationship has lead the two on a musical journey of hits that started with the last Dire Straits album and continued on to three solo efforts and several movie soundtracks.

When asked about the new sonic direction on *The Ragpicker's Dream,* Knopfler shares, "I wanted a drier sound than I'd been getting that was more controllable, certainly in terms of the drums. Also I didn't want many mix moves. I was hoping to let the players' dynamics speak for themselves as much as possible."

THE GUITAR PICKER'S DREAM COLLABORATIONS

"I love working with Mark! When we first start a session Mark comes in the studio and opens his notebook and says (with an English accent that is oh-so-chic), 'I've got a lot of songs here and I'm just hoping that you'll like one or two of them.' We all laugh because, of course, they're all great," shares Ainlay.

"He'll pick up his acoustic guitar, strum out a song, and he's saying take note of this or that and I'd like

Top Left: Miking Knopfler's vintage Marshall amps with Shure SM57 and Royer R-121 mics. Top Right: How the drums were miked to capture an open sound. Bottom Left: The beloved Studers. Bottom Right: Mark Knopfler and band strikes a pose with Emmylou Harris.

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the guitar picker's dream

this to be a musical event here — it's really spontaneous. Everybody sits around the couch listening to what's coming out of Mark's voice and guitar and listening to the words...and I can look at Chad Cromwell [drums] not having to say anything really and we both know we're going to pull down the DW's and put up the Ludwig drum kit for this song. We know we're going to change the miking from real tight to very ambient miking." Ainlay concludes, "This is the type of great band communication that's going on in this album."

EQ: **How did you manage to satisfy Mark's request for "drier drums" without compromising the overall sonics of the record?**

CHUCK AINLAY: On this album we decided to stay at one of the studios we had tracked at. We tracked at numerous studios on the last album, and on this one we decided to do everything in one go at Emerald's Tracking Room [Nashville]. They have all these different isolation rooms and yet the rooms were big enough to really house a sound and not be a dead booth. Instead of putting the drums out in the big room and getting this big bashing sound that has to be loud in the mix, we put the drums in one of the bigger iso booths and isolated the drums so that we could have everybody else out in the studio.

By putting the drums in a smaller room there was a bit more compression to the sound acoustically and the drums didn't have this big wide, open-up sound as much.

We actually put Mark behind gobos, but he was out in the same room with the bass player, the keyboard players, and the additional guitar player so they could communicate. In fact, some of the time they wouldn't even wear headphones to record because they could hear each other well enough.

Was that a decision made for the band's communication benefit or was there a sonic goal you were going for?

I think the communication was more of a benefit from trying to limit the size of the drums sonically. By putting the drums in a smaller room there was a bit more compression to the sound acoustically and the drums

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the guitar picker's dream

didn't have this big wide, open-up sound as much. In reality, the way I miked the drums they still have a large sound, but they're just not out of control. They more easily sit in the mix rather than being up in your face like the loudest thing on the record.

I noticed you started the recording process on a Studer two-inch 16-track.

Yeah, Mark actually got his hands on the last two A800 16-track head stacks that Studer made. Mark's in the process of building his own studio — a state-of-the-art facility in London that should be finished in a year.

Is this a home studio?

No, this is going to be the type of facility that is capable of competing with any studio in London or anywhere in the world really. It's going to combine some of the things we really like about the different studios we tend to work in.

Which leads us back to the Studer 16-track...something Mark came across in his search for equipment for his own facility?

Yeah — the first album we recorded with a 16-track locked to a 24-track with Dolby SR. On the second album we still needed the tracks, but I didn't like dealing with SR so that's why we went with a 24-track analog locked to a 48-track digital. On the third album (this one) we kept saying the 16-track machine really sounded good, what if we locked two together and got the additional tracks by locking up at 96k with [Steinberg] Nuendo. These heads hadn't had anything but an alignment tape run across them. They're pristine head stacks that we put on a pair of Studer A800's here in Nashville. So we ended up with 28 tracks of analog for tracking the band to; things like ambient mics and Mark's vocals and guitars we did straight to Nuendo. Mark's vocals and guitars were done straight to digital. I knew I'd be doing additional takes of Mark's tracks after we got a take to comp together, and I didn't want to have a difference in sound from the tracking. We always end up with a lot of tracking vocal and guitar used in the final comp.

Mark Knopfler's third solo release is called *The Ragpicker's Dream.*

We tracked on a SSL J9000 at the Tracking Room, but so much of what I do when I'm tracking is going straight from either Neve modules or my preamps and all, straight to tape. So in reality there's not much that goes through the console other than it's mostly just used for monitoring. I had been to AES in New York just prior to the tracking dates and was able to get some really amazing gear to try out — like these Sequerra mic pres, the Martech pres, and all these great ribbon mics from Royer and AEA. Calerec sent me their SoundField mic and Audio-Technica loaned us a bunch of mics that I used all over the place. I hated to give some of them back, and my wife doesn't know about the ones I bought.

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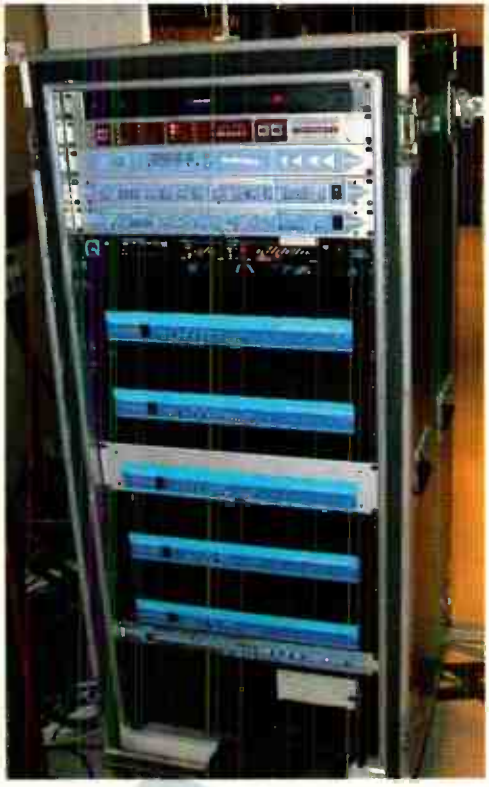

LEFT: The Mytek rack. Right: Mark Knopfler gets down to business.

Let's talk about Mark's amazing guitar sound. What's your secret to capturing his signature tone?

For Mark's electrics, in general we used a Shure SM57 near to the speaker alongside a Royer 121. We also used a Neumann U 67 more distant, a few feet away from the cabinet. All the amplifiers on this album are vintage. We either used a vintage tweed Fender Twin or a Bassman amp or vintage Marshall amps. The only modern amps used were a Crate on one song and a Soldano amp on another. That would have gone through a vintage Marshall cabinet, though.

But, to begin with, Mark's amazing guitar sound really starts with Mark's amazing guitar technique, none of the microphones and preamps mean sh*t really. We can talk all the tech talk you want and obviously it's my job and I think it's somewhat important in the whole — there's some degree of importance there — but really it starts with Mark. And Mark's style of playing is unlike anybody else. He doesn't use a pick, it's all in his fingers, but even Mark will choose an amplifier or a guitar because it has a certain sound. The way this album just turned

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out was that all the amps and all the guitars were vintage, so it's just part of what this album was about.

Why the Shure SM57 and the Royer 121 combination on the amp?

I'm just trying to capture different elements of the amplifier. The '57 has a real close sort of present sound, whereas the Royer's a bit warmer and has more dynamic character. The combination of the two just gave me this great sound that I couldn't have achieved with just one of the microphones. I then ran them through the Neve 1081 pre amp EQs and then to UREI 1176 compressors. I usually set that at a 4:1 ratio with a slow attack and fast release. I'm setting them so it sounds good [*laughs*] — just by ear. I'll turn the knob until it sounds good, but it wasn't any extreme compression on the guitars, the sort of slam thing that 1176's can do where you push all the buttons in. I didn't do any of that. In fact, sometimes with Mark, because his playing is so much about his touch, I would take the compressors off because it just didn't help. It just turned things down. Mark usually uses a volume pedal between the guitar and the amp, so if you squeeze things and get things sounding really loud, he just back things off and then you're just defeating the purpose. You have to be very sensitive because Mark's got such amazing ears. You can't just process something beyond what he's trying to achieve. In the mix maybe I come back and do a little bit more processing, but for tracking sometimes I don't.

To begin with, a lot of this album is acoustic guitar. Mark has a signature series Martin guitar and it ended up on the entire album with the exception of maybe one song. This new Martin guitar they designed for him sounds stunning. It's an amazing guitar. I used an Audio-Technica AT4051. I placed it where the neck joins the body, sort of pointed in toward the hole. Inside the guitar I put one of those wonderful little Audio-Technica AT8532 mics because I knew I'd be trying to capture the track vocal and would be worried about leakage when we were doing comps and such. So the acoustic sound was a combination of the leakage on the vocal mic, the AT4051, and the AT8532 inside the guitar.

What did you run that through?

The two acoustic guitar mics went through GML preamps and GML compressors that were linked to the vocal mic, which was also going through a GML compressor. I set the guitar mics at about a 1.8:1 ratio with about 4 dB of limiting at most.

Mark's vocal mic was a Telefunken 251. He loved it so much he wanted to buy it from the studio. That wasn't possible, so we rented it for a while. In the end we found a wonderful solution, the new Soundelux 251, which is an amazing sounding microphone.

How did you go about achieving the drum sound on this record?

There were so many different approaches on this album and that was really dictated by the song. About the only thing that didn't change was the Shure SM57 on the top of the snare drum. Everything else was subject to change, including the drums themselves. We had three different kits, two old vintage Ludwig kits, and a new one-of-a-kind DW kit that was made especially for Chad Cromwell.

For the single "Why Aye Man," I used a more modern recording technique and we used the DW kit with a Ludwig Black Beauty snare, set up in the iso booth. It's about a 30x30 foot room with no parallel walls. If needed, it has curtains that we could pull over the wood or we'd set up foam baffles in there to deaden the room more.

I put an AKG 112 inside the bass drum slightly to one side and off center from the beater, pointing in at the

Chuck Ainlay also worked on Knopfler's previous solo efforts.

World Radio History

beater. That's with a partial head with a hole cut out. I set a Neumann U 47 FET outside the head about nine inches away. I put a chair in front of the bass drum and lay a packing blanket over that to make a tunnel out from the bass drum. The snare was a Shure SM57 on top and an Audio-Technica AT4051 on the bottom. On the hi-hat it would vary between an AKG 452 and a Neumann KM 184. The toms were Audio-Technica ATM25's. The overheads on all but one song was a Royer stereo SF12 that I positioned right over the drummer's head. The SF12 ended up being a large part of the drum sound. I also had a Royer 121 mono mic out front; what I call a "mid-mic." It's about three to four feet away from the drums off center, sort of more out between the kick and hi-hat about four feet off the ground. I positioned it to pick up the overall drum sound with the room breathing in and out when I heavily squeeze it with an 1176. That was always mixed in underneath to give the drums more impact.

All microphones went to the Neve 1081 modules then straight to the analog machine using EMTEC 900 tape at +5/250.

We can talk all the tech talk you want and obviously it's my job and I think it's somewhat important in the whole — there's some degree of importance there — but really it starts with Mark. And Mark's style of playing is unlike anybody else.

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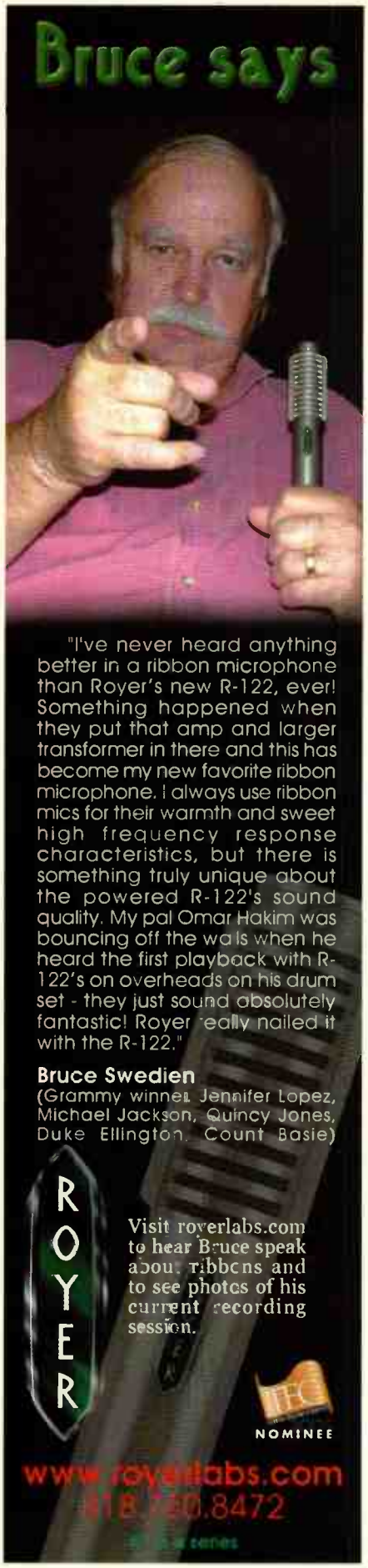

the guitar picker's dream

Was there any point in the recording process where you switch entirely into Nuendo?

There is only one song we recorded entirety into Nuendo, while we were in London, "Marbletown." It's just Mark and an acoustic guitar and it sounds amazing.

Did you mix strictly in Nuendo?

I didn't mix strictly in Nuendo. During tracking, we either got a take or multiple takes that were transferred into Nuendo and then edited to create a final take. We then would overdub more vocals and guitars from Mark and any ideas from the other guys. So, essentially, when we got back to England there was very little that needed to be additionally overdubbed other than some background vocals and keyboard parts and Mark's solos. So everything was transferred to Nuendo, and, since it was at 96k/24-bit, that only allowed for 24 outputs from Nuendo although many times

► continued on page 114

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SONG 1: PRESET 4 -
MY VOCALS, MORE LD GUITAR,
AND LESS DRUMS

SONG 2-4: PRESET 10 -
MY VOCALS, MORE OF MY
GUITAR, BG VOCALS AND DRUMS

SONG 5: PRESET 6 -
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TURBULENT DRUM PROCESSING

BY CRAIG ANDERTON

I like music with a distinctly electronic edge, but also want a human "feel." Trying to resolve these seemingly contradictory ideals has led to some fun experimentation, but one of the more recent "happy accidents" was finding out what happens when you apply heavy signal processing to multitracked drums played by a human drummer. I ended up with a sound that slid into electronic tracks as easily as a credit card slides into an ATM machine, yet with a totally human feel.

This came about because Discrete Drums, who make rock-oriented sample libraries of multitracked drums (tracks are kick, snare, stereo toms, stereo room mic tracks, and stereo room ambience), received requests for a more extreme library for hip-hop/dance music. I had already started using their CDs for this purpose, and when I played some examples of loops I had done, they asked whether I'd like to do a remixed sample CD with stereo loops. Thus, the *Turbulent Filth Monsters* project was born.

Although I used the Discrete Drums CDs and computer-based plug-ins, the following techniques also apply to hardware processors used in conjunction with drum machines that have individual outs, or multitracked drums recorded on a multitrack machine (or sample CD tracks bounced over to a multitrack). Multitracked drum libraries are also available from Wizoo, East West, and Reel Drums, among others. Try some of these techniques, and you'll create drum sounds that are as

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TURBULENT DRUM PROCESSING

unique as a fingerprint — even if they came from a sample CD.

THE TOOLS: PROBLEMS AND SOLUTIONS

When using hardware, you'll likely be using signal processors in conjunction with a mixer, either as track or insert effects. If all your processors are analog, no problem. But if some are digital and some analog, going through any digital effect adds a processing delay, typically between 1 and 2 ms. Mixing this signal with those processed via analog processors can create annoying (or cool, depending on your outlook) comb filtering effects.

One solution is to use a digital mixer with individual delays on each channel — delay the channels with analog effects until they line up with the digital ones. However, using a digital mixer adds another problem when using digital effects with an analog bus out (not all digital effects have digital I/O). Not only is there conversion delay going through the processor, but also, a conversion delay from going out of the digital mixer to analog, then back again. Again, per-channel delay can compensate.

What if you don't have a digital mixer (see, you should have listened when I told you they were useful), and use both analog and digital effects? Consider the comb filtering a feature, not a bug...or patch in some delay lines.

EFFECTS AUTOMATION & REAL-TIME CONTROL

Editing parameters in real-time lets you "play" an effect along with the beat. This is a good thing. However, it's unlikely that you'll be able to vary several parameters at once while mixing the track down to a loop, so you'll want to record these changes as automation.

Hardware signal processors can often accept MIDI controllers for automation. In this case you can sync a sequencer up to whatever is playing the tracks (if using a drum machine with multiple outs, you can probably use its MIDI out). Then, deploy a MIDI control surface such as the Peavey PC-1600X or the MIDI layer from a suitably equipped digital mixer (*e.g.*, Panasonic DA7, several Yamaha models) to record control data into the sequencer. The sequencer need not lock to the drum tempo, because you're recording controller movements, not notes. Once in the sequencer, the controller data can be edited if needed.

If the processor can't accept control signals, then you'll need to make these changes in real time. If you can do this as you mix, fine. Otherwise, bounce the processed signal to another track so it contains the changes you want.

Software plug-ins for digital audio + MIDI programs are a whole other matter, as there are several possible automation scenarios:

- Use a MIDI control surface to alter parameters, while recording the data to a MIDI track (hopefully this will drive the effect on playback)
- Twiddle the plug-in's virtual knobs in real time, and record those changes within the host program
- Use non-real-time automation envelopes
- Record data that takes the form of envelopes, which you can then edit
- No automation at all. In this case, you send the output through a mixer and bounce it to another track while varying the parameter. This can require a little after-the-fact trimming to compensate for latency issues.

PARALLEL EFFECTS

In many cases, you want any effects to be in parallel with the main drum sound. For example, if you put ring modulation or wah-wah on a kick drum, you'll lose the essential "thud" that fills out the bottom. With a hard disk recorder, parallel effects are a piece of cake: copy the track and add the effects to the copy. With a mixer, it's also not hard: split the channel to be processed into two mixer inputs, and insert the effect into one of the input channel strips.

THESE ARE A FEW OF MY FAVORITE FX

Okay, we're set up for real-time control and are playing back some drum tracks. Here are some of my favorite turbulent drum processors.

Ring Modulator: A ring modulator has two inputs, for a carrier and modulator. The output provides the sum and difference of the two signals while suppressing the originals. For example, if you feed in a 400 Hz carrier and 1 kHz modulator, the output will consist of a 600 Hz and 1.4 kHz tone mixed together. Most plug-in ring modulators dedicate the carrier input to an oscillator that's part of the plug-in, with the track providing the modulator input. A hardware ring modulator — if you can find one — may include a built-in carrier waveform, or have two "open" inputs where you can plug in anything you want.

The ring modulator produces a "clangorous," metallic, enharmonic sound (sounds good already, eh?). I like to use it mostly as a parallel effect on toms and kick; a snare signal, or room sounds, are complex enough that adding further complexity usually doesn't help. Having a steady carrier tone can get pretty annoying (although it has its uses for electro-type music), so I like to vary the

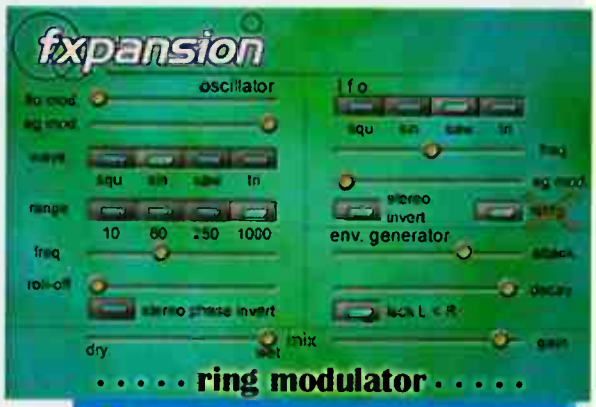

FIG 1. *Fxpansion Ring Modulator, with built-in oscillator, envelope follower, and LFO.*

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frequency in real time. Envelope followers and LFOs — particularly tempo-synched LFOs — are good choices, although you can always tweak the frequency manually. With higher frequencies, the sound becomes kind of toy-like; lower frequencies can give more power if you zero in on the right frequency range.

Ring modulator plug-ins are fairly easy to find. Mda makes a nice freebie, and the Fxpansion Series 1 bundle has a cool ring modulator with LFO or envelope control, and multiple waveforms (Fig. 1). I don't know of any current hardware ring modulators, although solderheads are welcome to try Project 9 in my book *Electronic Projects for Musicians* (AMSCO).

Envelope-Controlled Filter: This is another favorite for individual drum sounds. Again, you'll probably want to run this in parallel unless you want a thinner sound. High resonance settings make the sound more "dinky," whereas low resonance can give more "thud" and depth.

For hardware, you'll likely need a stomp box, where envelope-controlled filters are plentiful (the Boss stomp boxes remain a favorite, although if you can find an old Mutron III or Funk Machine, those work too). For plug-ins, again Fxpansion and Mda make suitable products. A freebie plug-in, the Prosoniq North Pole, isn't supported by the company (and is a little squirrely) but gives some great effects. I also love using the wah effect in IK Multimedia's AmpliTube guitar amp plug-in, which is also great for....

FIG.2. *UAD's Nigel is packed with useful effects for altering drum sounds.*

Distortion: This effect is incredibly flexible; adding a little bit of grit to a kick drum can make it punch through a track. But I've also added heavy distortion to the room mic sound while keeping the rest of the drums clean. This "muddies up" the sound in an extremely rude way, yet the clean sounds running in parallel keep it from becoming a hopeless mess. Distortion doesn't do much for snares, which are already pretty dirty anyway. But it can increase the snare's apparent decay by bringing up the low-level ring at the end.

Guitar amp distortion seems particularly useful because of the reduced high end, which keeps the sound from getting too "buzzy," and low-end rolloff, which avoids muddiness. Guitar amp plug-ins really shine here as well. My favorite distortion plug-in is the Quadrafuzz (not surprising — it's my concept). It's available both as a hardware box from PAIA Electronics and as a

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Joe Chiccarelli

Producer/mixer/engineer, Joe Chiccarelli loves the Natural Sound of the Martech MSS-10 mic preamp; *"I'm totally blown away by the realism and detail."* His recent use includes sessions with Elton John (vocals), Kronos Quartet (strings), Tim Easton (vocals, acoustic and electric guitars), and Tracy Bonham (drums).

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TURBULENT DRUM PROCESSING

FIG.3. *Ohm Force's Predatohm s feedback option is simply amazing, especially when automated.*

stand-alone plug-in from Steinberg, but is also included in Cubase SX. This is a four-band distortion unit, so you can go heavy on, say, lower midrange distortion, while sprinkling only a tiny bit of dirt on the high end. It's also good for mixed loops because multiband operation prevents excessive intermodulation distortion. Guitar amp plug-ins I've used in addition to AmpliTube and Quadrafuzz are UAD's Nigel (Fig. 2), Alien Connections' ReValver, and Steinberg's Warp VST.

Feedback: And you thought this was just for guitarists...actually, there are a couple ways to make drums feed back. For hardware, one technique is to send an aux bus out to a graphic equalizer, then bring the graphic EQ back into the channel, and turn up the channel's aux send so some signal goes back into the EQ. Playing with individual sliders can cause feedback in the selected frequency range, but this requires a really light touch — it's easy to get speaker-busting runaway feedback. Adding a limiter in series with the EQ is a good idea.

My favorite feedback technique uses the Ohm Force Predatohm plug-in (Fig. 3). This is a multiband distortion/compression plug-in with feedback frequency and amount controls. But the killer feature is that all parameters are automatable. You can tweak the amount control rhythmically to give a taste of feedback before it retreats. Similarly, you can alter the frequency with amount set fairly high. As the frequency sweeps through a range where there's lots of audio energy, feedback will kick in — but as it sweeps past this point, the feedback disappears. When Discrete Drums announced the *Turbulent Filth Monsters* CD at the Nashville NAMM show, they always made sure one of the loops with feedback was playing...it sure got people's attention.

LET'S NOT FORGET THE TRULY WEIRD....

A vocoder (Fig. 4) is a great processor for drums, as there are several possible ways to use it. One is to use the room ambience as the carrier, and a submix of the kick, snare, and toms as the modulator. As the drums hit, they bring in sections of the ambience, which if you've been paying attention so far, is probably being run through some weird effect of its own. Another trick I did was bring in an ambience track from a different drum part and modulate that instead. You can also use the drums to "drumcode" something like a bunch of sawtooth waves, a guitar power chord, whatever.

FIG.4. *Cubase SX includes a vocoder as part of its roster of effects.*

These sounds then lose their identities and become an extension of the drums. Both hardware and software vocoders are fairly common.

Generally the most whacked-out processors come in plug-in form, and they were a major part of the sample CD. The GRM Tools series (Fig. 5) can always be counted on for out of the ordinary effects, as can the entire Ohm Force line (their Hematohm frequency shifter, reviewed in this issue, is awesome with drums). Waves has some tasty modulation effects, such as Enigma (Fig. 6) and MondoMod, but their L1 Ultramaximizer+ is wonderful for squashing the living daylights out of room ambience signals, and Maxxbass can really kick up the low end (I use their "normal" effects too, the REQ two-band

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TURBULENT DRUM PROCESSING

FIG.5. *GRM Reson creates sophisticated, animated filtering effects.*

EQ being a favorite). As the Mda series effects are free, you might as well download the series — RePsycho is fabulous for drum processing.

PSP's Vintage Warmer (Fig. 7) is a superb general-purpose distortion device, and their PCM-42 delay provides some truly bizarre sounds when you sweep the delay control. Come to think of it, just about time-based effect does weird things when you sweep the delay control...PSP also makes the "Pianoverb," a freebie plug-in that produces strangely resonant reverberant sounds.

Delay Dots specializes in out of the ordinary plug-ins. The Multiband Pitch Shifter from their Producer's Pack is a real honey — it's one of my staple effects — although their Spectral series is also cool, even if they draw so much CPU power that my computer occasionally throws a tantrum when I instantiate too many of them. Delay Dots offers a free pitch shifter on their site.

Check out Web sites that specialize in public domain plug-ins. Some of these are of questionable quality and may be prone to crashing, but sometimes you'll strike gold. For example, the Makunouchi Bento (from Big Tick), combines ring modulation, feedback, and what appears to be a primitive form of time-travel. It was custom-made for some Romanian experimental music group and is so seriously disturbed that I just had to use it in a few select places. Operation is completely unpredictable, but everything's automatable, so at least you can do repeatable unpredictability. Yes!

Also, let's not forget some of those old friends that can learn new tricks, such as flanger, chorus, pitch shifters, and delay. As I did most of the sample development in Sonar (Fig. 8 shows one of the drum remixing projects; I also used Cubase), it was fortunate that the program comes with automatable versions of these effects. Extreme amounts of modulation or swept delays

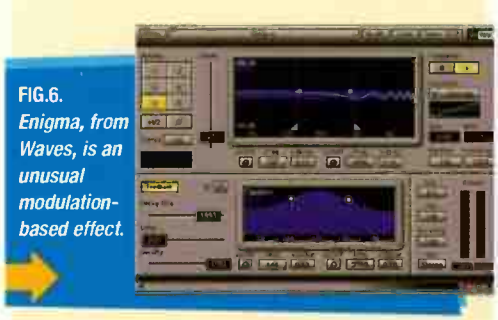
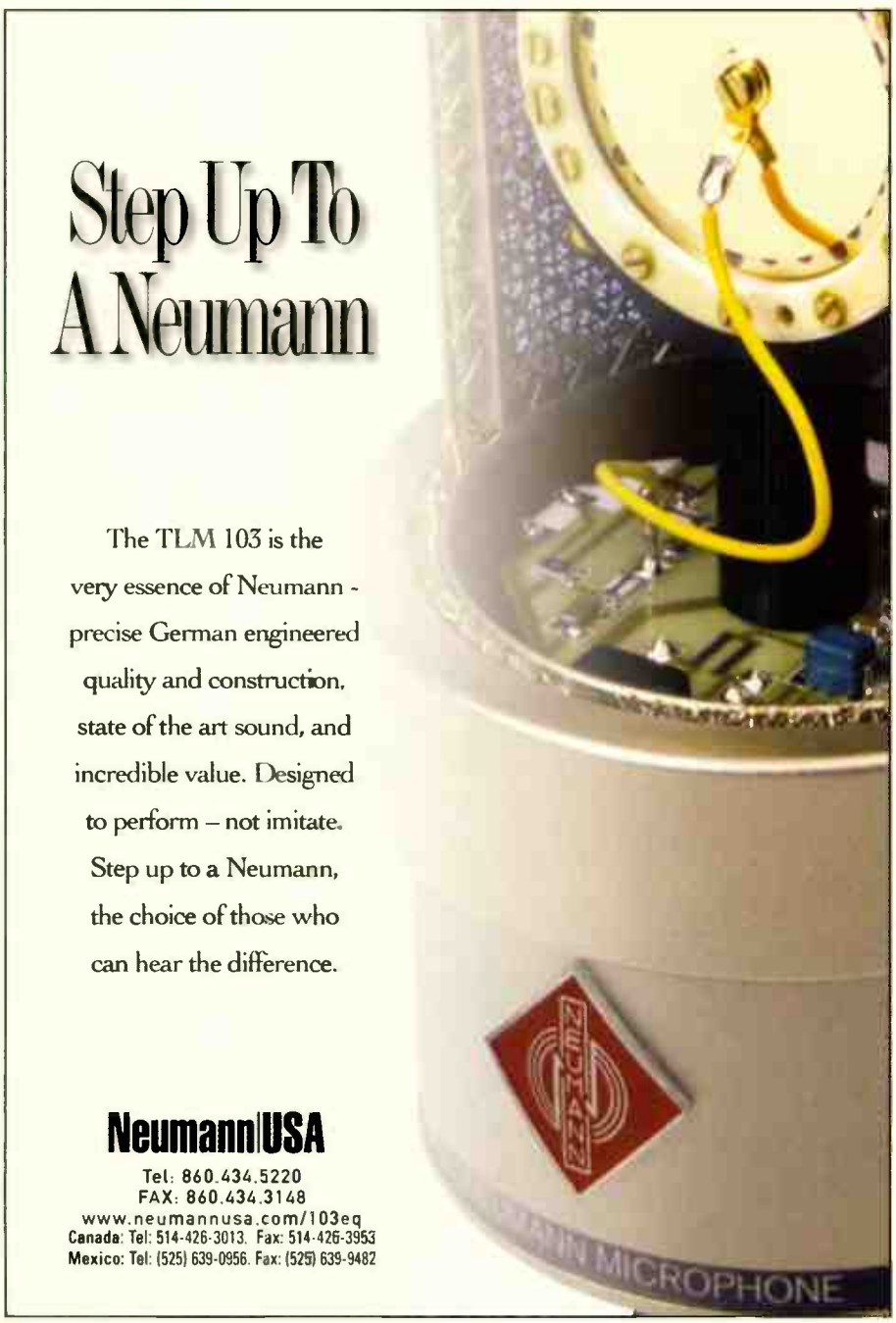


FIG.6. *Enigma, from Waves, is an unusual modulation-based effect.*



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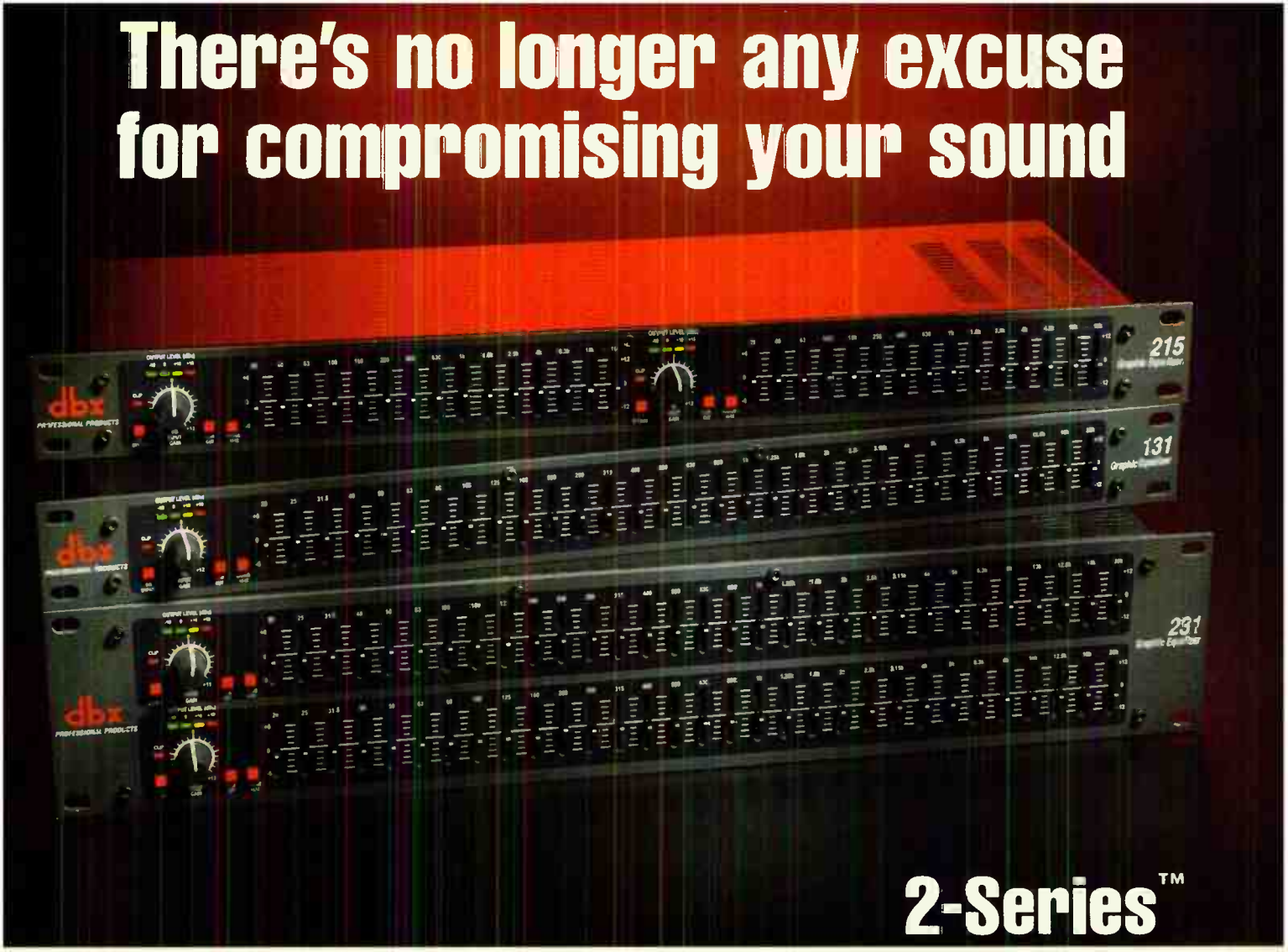

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TURBULENT DRUM PROCESSING

FIG.7. *PSP's Vintage Warmer is great for giving a sound tons o' punch.*

strings of effects. The possibilities they open up are so mind-boggling I get tingly all over just thinking about it.

SO WHAT'S THE PAYOFF?

The fact that the drums were played by a superb human drummer, with all those wonderful little timing nuances that are the reason drum machines have not taken over the world, gives my tracks a "feel" that I've never been able to get with drum machines. Yet the sounds are so electronified that they fit in perfectly with the synths, highly processed vocals, and technoid guitar effects of which I'm fond.

So, get creative — you'll have a good time doing it, and your recordings won't sound like a million others. What good are all these great toys if you don't exploit them? ■

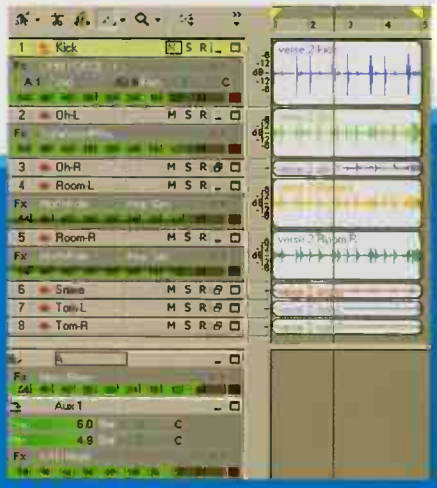

FIG.8. *This Sonar project, used to develop some of the TFM loops, is processing the various Discrete Drum tracks through a variety of twisted plug-ins.*

can go beyond their stereotyped functions. Emagic's Logic is also nch in plug-ins, many of which can be subverted into creating filthy effects.

Finally, there are now plug-in routing programs such as TC Works Spark FX Machine and BIAS Vbox. These are the ideal way to create series, parallel, and series/parallel

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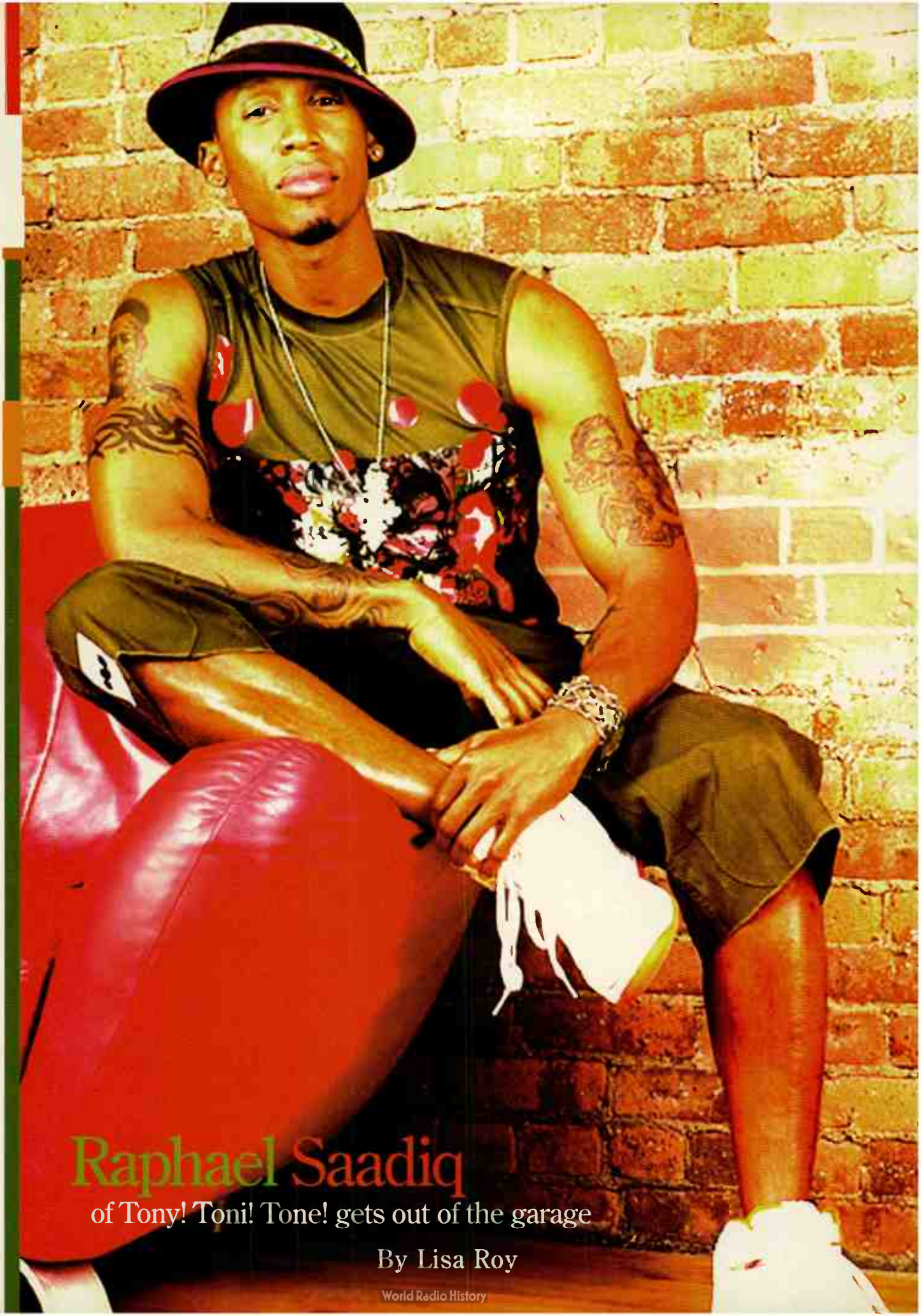


Raphael Saadiq

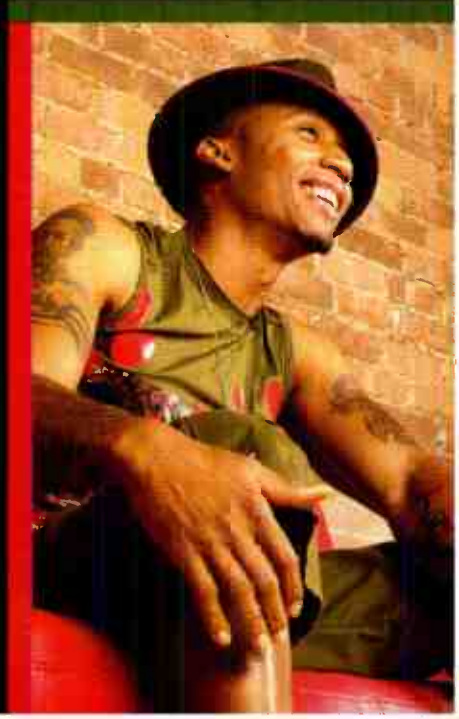
of Tony! Toni! Tone! gets out of the garage

By Lisa Roy

World Radio History

instant vintage

"I recorded D'Angelo in my garage studio as well as part of Tony! Toni! Tone!'s records. Macy Gray did vocals there, too. It wasn't up to par at all. I know a lot of people have better home studios than I did. So now I've got a big closet here with an SSL, Pro Tools, wires running everywhere and it's like wow — I respect it. Now that I have it, I respect it because I didn't always have it. I know what it means to people who love gear. Some days I wake up wondering if I'm still dreaming!" admits the former member of the mega-hit group Tony! Toni! Tone!, Raphael Saadiq, whose titles include musician, producer, engineer, and a new incarnation — studio owner.



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Entering Saadiq's new lair, music flows through the air with big fat beats, penetrating bass lines, and a laid back feel that just makes you want to plug in and play.

***EQ:* Tell us a little about your first home studio...where you did some pretty impressive projects.**

RAPHAEL SAADIQ: I did a lot of projects in my home studio, though the sound we got in the studio was not the sound we got in the car. We didn't mix there, but I recorded a lot there. Basically I had about six or seven microphones, a Neve rack, a Pro Tools rig and analog tape machine, a Sapphire board, and a Yamaha 02R,

Analog meets digital at Blakeslee Recording Co. As Saadiq says, "It's best to be equipped with everything it takes to record music.

Photos by Lisa Roy

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which I only used one or twice. That was my setup in my garage.

Before that, I had a studio set up at my mother's house with just a [Korg] T3 and an Akai MPC3000. You don't need a lot of gear to make a great song. Sometimes the less you have, the better. I tell everybody, you know maybe we should just take eight tracks and make this song in eight tracks. You'd have to bounce things around, but you're not going to add too much because you know you've got to get it done. So everything unnecessary doesn't get on there. You can't make it this tool to be famous; you've got to keep music fun.

What made you decide to take it out of your home and into a commercial facility?

I just said, "Step it up and get busy. Start working more as a producer and think about creating different music."

Photos by Lisa Roy

Blakeslee Recording Co. is well-stocked with a variety of vintage and modern compressors, preamps, and effects processors.

Now I don't have to think about being on the clock in a big studio. I'm a visionary, and I know how I want it to sound and be mixed. Now I can create more, do some engineering, and start jumping in making new sounds.

You engineered most of your own vocals on *Instant Vintage*.

It's more like you're not looking for somebody else's opinion. Marvin

The Blakeslee Studio Cats

"I first met Gerry Brown when he was mixing our second Tony! Toni! Tone! record. I really didn't know anything about a studio then. Everybody sat around him while he was mixing. I sat there, never saying a word the whole time," confides Raphael Saadiq about one of his current engineers. "I didn't know what to say, but I felt I should just listen. The mix was banging, and I looked at him and said, 'It's a good mix!' I did know that."

Fast forward a few years and Saadiq has become a master knob twister himself. He continues to surround himself with great engineers who, as he puts it, "are great Pro Tools cats and know how to work everything." The Blakeslee Studio cats — Brown, Danny Romero, and John Tanksley — shared a few of their secrets on engineering in a musician's dream studio.

How do you manage to share the engineering chores without getting in one another's way?

GERRY BROWN: First, you can't have an ego about what you're doing. We didn't have an ego going into this; it's not an engineer war. John's a great engineer and is in charge of Pro Tools and Danny had been working with Raphael in Oakland when I came back into the picture. We just figured out how to fit into the puzzle, how to contribute something, and a good way to do it.

DANNY ROMERO: With anything, there's always something you're going to hear that you'd do differently, but that's never a problem. The main challenge really was that, before Blakeslee, we were working in so many different studios. That was the hardest thing. It's good to have a home base now so we can develop our sound a lot easier.

Tell us about the "sound" you guys have developed here at Blakeslee Studio.

ROMERO: We're recording a lot into Pro Tools. We have a 24-channel Pro Tools Mix Plus system with two Digidesign 888 interfaces, along with an Apogee AD8000 A/D-D/A and a 933 MHz G4 with an Expansion Chassis with a total of five cards, which gives us extra DSP power when we run three interfaces, and also allows for easy expansion of our system for more channels. Glen ["Jake" Standridge] brought in his 24-channel Pro Control, so we've got that set up as well.

JOHN TANKSLEY: We use both vintage analog gear and digital gear. Typically, for tracking, we tend to use analog outboard gear, such as running vocals through an LA-2A or a Tube-Tech CL-1B compressor. We like to run bass and guitars through API EQs with maybe a LA-2A or an 1176 in front of it. For tracking drums, Gerry and I use something we call the "area-sonic process," which involves using a combination of analog outboard gear and an analog two-inch tape machine in conjunction with our Pro Tools rig to achieve the depth and definition in the drums that we're looking for.

With plug-ins, we like Echo Farm and use it frequently for almost anything. We also use Amp Farm — and not just on guitars; it works great on keys, strings, and sometimes as an effect for vocals. We also love the Waves series of plug-ins. They're great creative tools, but at the end of the day, they are just that, tools. As long as it sounds great, that's what is important.

We don't use the TASCAM DA-88's very often anymore. We still use them for making stems when we're mixing (as a back up to the stems that are being recorded into Pro Tools). We use them for back up for live recording as well, but that's about all the action they see these days. We do like to use the Neve BCM-10 sidecar. Basically, working for Raphael at Blakeslee is the kind of job most engineers dream about.

BROWN: This is a great studio Raphael bought. I love the gear here. The SSL 4056 E/G series is my favorite piece. He's also got a lot of nice retro gear. I love the Empirical Labs EL-8 Distressor, which I use a lot on drums. I put the lowpass detector on it where it doesn't really see the bass, and it's just being triggered by the mids and highs of the snare and kick.

We also have an EMT-140 Echo Plate here, which sounds great. My settings change depending on the length, but always with a pre delay. I always delay the send so I can adjust the length of the delay to suit the song. I'll put two API 550a EQs on the returns because what you miss in reverb is the mid- and lower midrange. Frankly, this is one of the best tracking rooms I've been in. I did strings here for TLC, and it was great. I just feel like the luckiest man right now.

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instant vintage

Photo by Lisa Roy

(Left to right) Glen "Jake" Standridge, Danny Romero, Gerry Brown, John Tanksley, and, seated on the SSL 4056 E/G with G Series automation TC, Raphael Saadiq.

Gaye did his vocals himself. You know what kind of magic you want, and you don't want to see the reflection of somebody else's face across the tracking room. You may like that take, but you see the engineer's face who may not like it...so it's just, you never can lie to yourself.

I've got great engineers; Gerry Brown and Danny Romero. They set up the Pro Tools in the control room for me and I've got about eight or nine tracks to play around with. My favorite vocal mic is a Shure SM7. I used to really like the way a Neumann U 87 sounded on me, but I guess my voice changed a little so I'm back on the SM7. It has a richer, fuller sound for me.

What techniques did you use to get your signature bass sound on *Instant Vintage*?

I used my '62 Fender Precision as well as my Ransom 5-string Flag Bass, my '80s Ibanez Musician, and my '90s Fender Jazz, depending on the track. I usually plug into an Ampeg SVT or my SWR Silverado Special combo. My signal path is usually a direct box or the Avalon U5 preamp into Pro Tools. Sometimes we ran it through a Teletronix LA-2A limiter, too. It's really more my fingers than it is any amp.

Describe your tracking process.

I like having a band set up the old-fashioned way, but I also like the one-man band approach. I play guitar, then I'll jump on the bass, and sometimes I'll hop on the keyboards. I like the Nord Lead keyboard, and the [Ensoniq] ASR is a bit dirty and a little funky. I also use the [Sequential Circuits] Prophet 5 and Oberheims. Sometimes I have Calvin Wooten jump on keys, I'll be on bass, and Bobby ["Phatman" Ozuna] and Glen ["Jake" Standridge] jump on drum machines, start programming a sound, find the sounds, sample the sounds, making new sounds, you know. Everybody's working. Glen and Bobby are part of my production team,

World Radio History

a.k.a., Jake & the Phatman. But then anything goes from there. Sometimes it might be bass, but it was more guitars starting it off first and then keyboards.

Here at Blakeslee Recording Co. you have the best of all worlds as far as recording formats go. You have Pro Tools Mix Plus, Studer A827 24-track, and TASCAM DA-88...are you an analog or digital guy, or does it even matter?

It's best to be equipped with everything it takes to record music. That's what we try to have — every format it takes to make a record. You might feel like you want it to be analog and not digital for some reason. It may make the song be a little different — not the sound of it, because a lot of people can't tell if it's analog or digital. Do they even care? They don't care. It's about how you feel when you start to record your song. It may trigger off something all together different if you say I'm going on analog, doing it a different way. That's my thing, I just really believe in whatever makes you jump. ■

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Audio Electronics

Presonus FIREstation

Presonus' 8-channel FIREstation interface is designed to be the heart of your digital recording studio. Any mLAN compatible keyboard such as the Yamaha Motif or Korg Triton Studio can be seamlessly patched into the FireWire ports of the FIREstation to send audio and MIDI information to your computer. You can plug microphones, instruments and external preamps into the analog inputs while monitoring them in realtime without latency. Need more inputs? Just daisy-chain multiple FIREstations for up to 40 channels of I/O. There's even a built-in 1x1 MIDI port for interfacing with MIDI devices.

Yamaha Motif

Yamaha's MOTIF master synthesizer sets a new standard for sonic performance and creative freedom. It offers a whopping 85MB of Yamaha's finest sounds and the revolutionary Integrated Sampling Sequencer, a 16-track sequencer that lets you easily add vocals, guitars and drum loops to MIDI sequences.

While these workstation powerhouses can stand alone as complete music production systems, imagine the creative potential when combined with other devices in an integrated intelligent FIREstation/mLAN studio.

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Yamaha O2R96

YAMAHA

Along with a feature set more advanced than any other digital mixer in its class, the 02R96 offers multiple channels of pristine 24-bit, 96 kHz audio, surround sound capabilities, DAW compatibility, and much more! Connect your 02R96 via the FireStation to a standalone recorder or to a computer-based system like ProTools or Nuendo for powerful and flexible audio production.

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Apple iMac

You can drive your whole mLAN system with a top-of-the-line iMac. Thanks to mLAN, the latest iMacs are as adept at providing pro-level audio/MIDI communication as the expensive PCI-based desktops of the past. The new iMacs feature an 800 Mhz PowerPC G4 with Velocity Engine, the ferociously fast NVIDIA GeForce4 MX graphics processing unit, and the Super Drive — a combination DVD-R/CD-RW — that lets you burn your own CDs and DVDs. The striking 17-inch flat panel widescreen LCD display gives you more space for viewing all your windows and toolbars.

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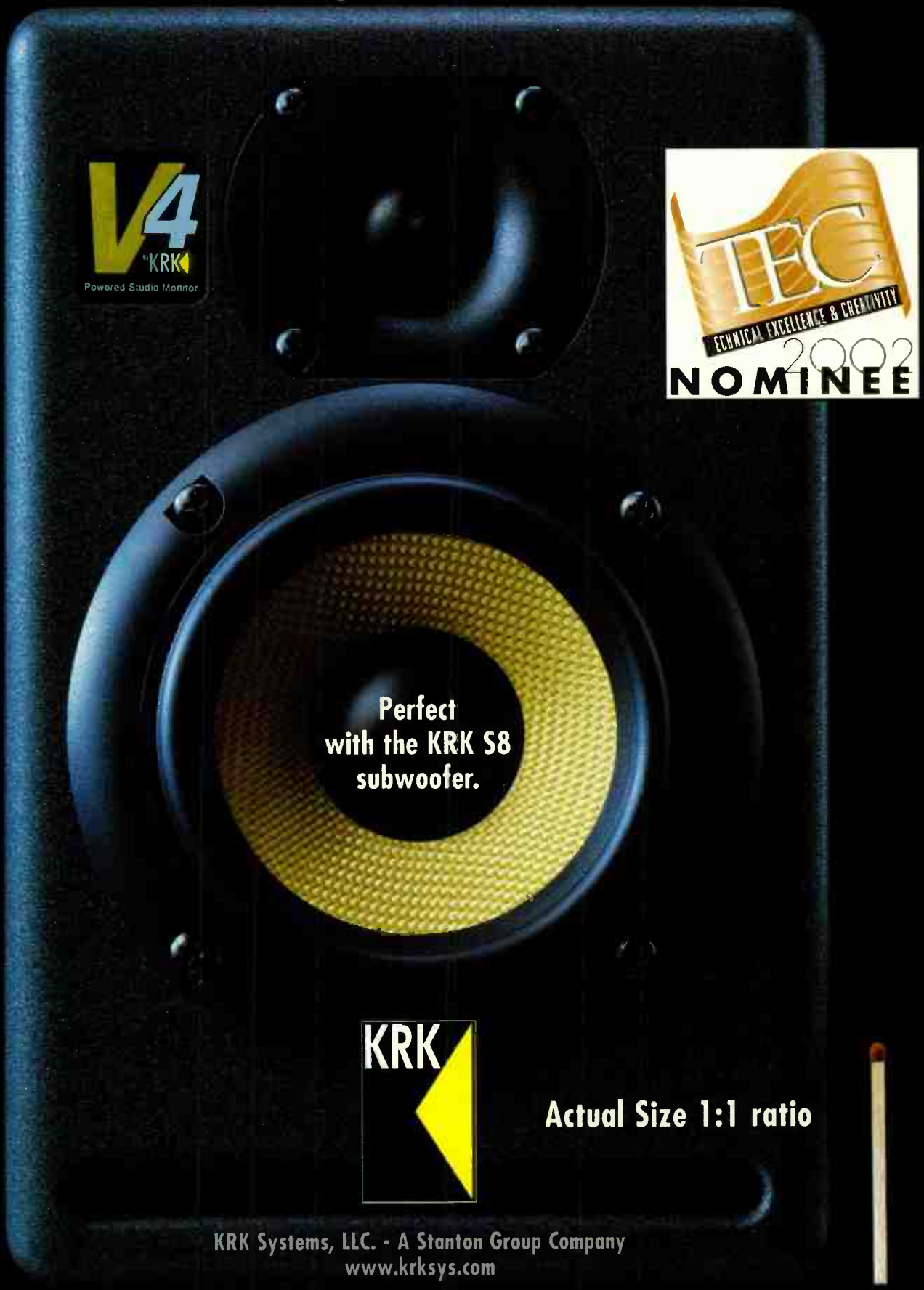

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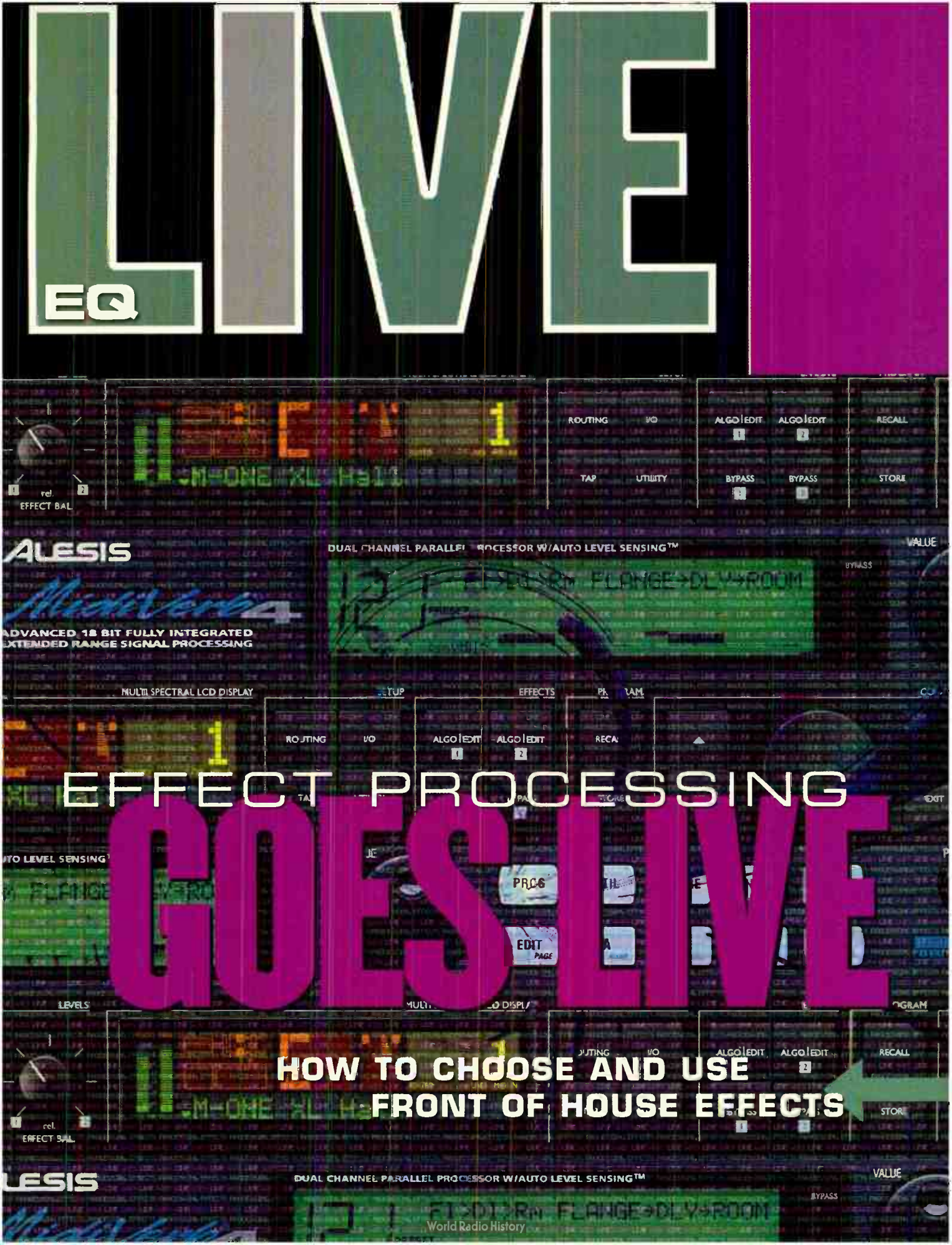

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JBL Professional

The **Application Engineered (AE) Series** of installation range loudspeakers consists of 33 models; the AC segment of the AE Series provides lower-powered, compact two-way speaker systems. The **AC2215** models are compact 15-inch, two-way loudspeakers that are biamp/passive switchable and available in three coverage patterns: 90° x 50°, 60° x 40°, and 100° x 100°. Three **AC2212** models, which provide the same coverage patterns, are compact 12-inch, two-way loudspeakers that are also switchable between biamp and passive modes. These new models incorporate JBL's PT Series Progressive Transition Waveguides, Speakon and CE-approved barrier strips, and U-brackets.

www.jblpro.com

Rane

The **AC-24** stereo or dual mono three- or four-way crossover combines digital signal processing capabilities with conventional analog controls. Special features of the AC-24 include automatic phase compensation for the crossover filters, alignment delay for each output, independent limiter for each output, high-mid and high EQs, invert switch for each filter output, stereo link, stereo or mono low out, and summed output. A 24 dB per octave Linkwitz-Riley design is used. www.rane.com

Peavey

The popular **XR Series** of Peavey powered mixers has been expanded with three new models: the **XR 684F** (400 watts program into 4 ohms), **XR 696F** (1,200 watts RMS program into 4 ohms), and **XR 800F+** (500 watts RMS per channel into 4 ohms). The XR 684F and XR 696F offer eight channels outfitted for 1/4-inch and XLR jacks, insert points on channels 1 and 2, nine-band stereo main graphic EQ, assignable nine-band mono graphic EQ, Feedback Ferret digital feedback elimination. Recall 48-bit digital effects processing provides reverb and delay simultaneously or reverb, delay, and chorus separately, four user-preset locations and two user adjustable parameters. The XR 800F+ powered mixer features eight mic preamps, three-band EQ and EFX send on channels 1-8, plus 1/4-inch and XLR inputs on channels 1-8 and stereo line inputs on channels 7-9. Other features include two nine-band graphic EQs, Peavey's patented Feedback Locating System, and built-in internal DSP stereo reverb and effects with two-parameter controls.

www.peavey.com

Mackie

The **SWA1801** high-output 18-inch active subwoofer provides 900 watts RMS of built-in power and is designed for portable and live sound applications as well as for permanent install. Its newly designed RCF Precision transducer features a unique four-inch inside/outside wound voice coil with composite polyamide former construction for improved power handling capabilities. The unique horn-loaded port dramatically improves the way the pressure inside the subwoofer "matches up" with the room. This helps the SWA1801 achieve high output while reducing distortion and distortion artifacts. The input panel accepts line-level signals and has loop out connectors for signal routing to other devices. A polarity selection switch and a recessed level control are also provided. www.mackie.com ■

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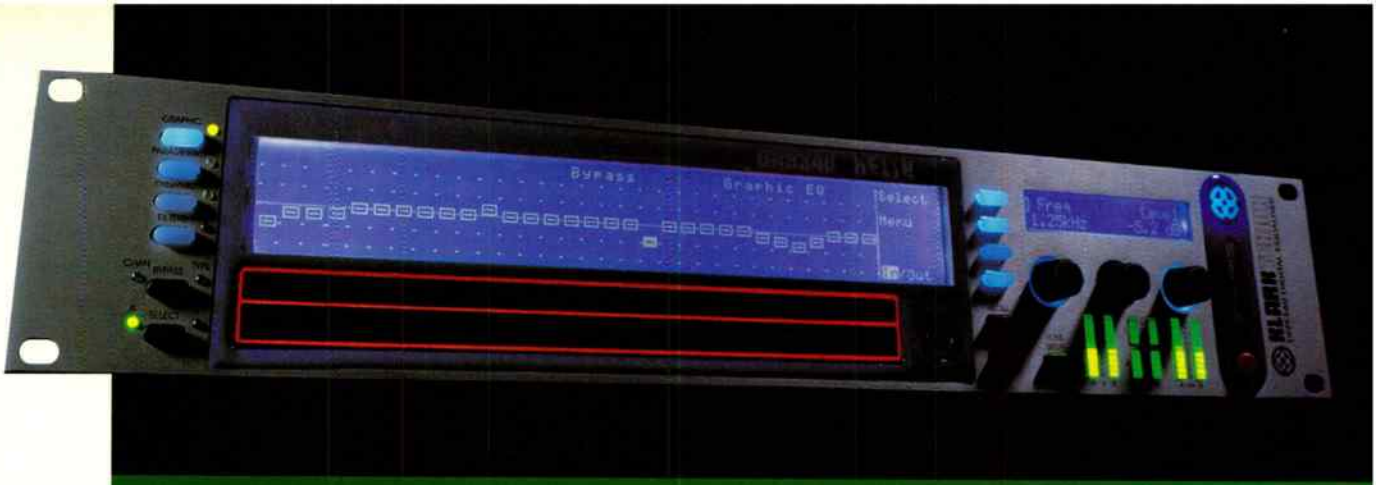

KLARK TEKNIK
HELIX DN9340 AND DN9344

By Steve La Cerra

The latest additions to the Klark Teknik line are anything *but* traditional EQ processors. The Helix DN9340 is a two-channel digital processor providing a 31-band digital EQ, signal delay (up to one second), four configurable filters, and a 12-band parametric EQ for each channel. The single-space Helix DN9344 is a four-channel "slave" unit that performs the same audio functions as the DN9340, but lacks the controls and fluorescent display — you'll need at least one Helix DN9340 or a PC to act as a "master" in a Helix system. Rear-panel ports allow up to 64 channels of Helix processing to be chained together using standard XLR cables.

Unlike most graphic EQs, the Helix DN9340 lacks sliders for frequency adjustment, replacing them with a front-panel touchstrip. To access a frequency, simply press your finger on the touchstrip and then either hold or tap the strip repeatedly to adjust gain. If your finger is above the red line, gain will be boosted, below the red line, gain is reduced. As you access various frequencies, the graphic fluorescent display indicates the band you're accessing, as well as position of the 31 virtual faders. The display can be toggled to show the resultant EQ curve at the output of the currently selected channel. Augmenting the fluorescent display is an alphanumeric readout showing frequency (in Hz), amount of boost or cut (in dB), and the number of the filter being accessed. Rotary encoders below the alphanumeric display may also be used for parameter adjustment.

One of the unique things facilitated by the DN9340's touchstrip is that a band of frequencies may be grouped simply by pressing two fingers on the strip at the ends of the desired bands. Then the group can be controlled using a single finger. Try that with an analog graphic!

Bandwidth of the Helix graphic EQ may be modified for different responses. One response emulates the action of the Klark Teknik DN27 analog EQ: as the amount of boost or cut is increased, bandwidth narrows, allowing a small boost/cut to be used as a broad shaping tool. At a large boost/cut value, bandwidth narrows, facilitating corrective EQ without disturbing neighboring bands. Four filters may be configured as high- or low-pass, high- or low-shelf, or notch.

In addition to the aforementioned processing (all of which may be used simultaneously), Helix provide two bands of T-DEQ (Threshold Dependent Equalization) per channel. T-DEQ allows you to set a threshold at which an EQ kicks in. Let's suppose you're working on a PA that gets harsh at loud SPLs. You can program a T-DEQ to automatically apply a cut at 3.5 kHz when the signal level reaches a certain threshold; you can also adjust the attack and release characteristics of this EQ for smooth transitions.

Helix provides several levels of bypass. The entire unit can be bypassed at the home page, while a single function can be bypassed at the function pages. You could (for example) bypass the T-DEQ while leaving the time delay on, or even bypass an individual fader on the graphic EQ.

The kicker to the Helix system comes when it's interfaced with a Midas Heritage or Legend console. Via RS-232, the solo function of the console can be linked to the EQ. For instance, if you solo a monitor bus output on the desk, then the respective Helix channel automatically comes to the master DN9430 for instant control — eliminating a search for the correct Helix channel under "battle" conditions. ■

KLARK TEKNIK HELIX DN9340 AND DN9344

WHAT ARE THEY? Digital graphic equalizers with touchstrip control, multiple parametric filters, and signal delay.

WHO NEEDS THEM? Touring bands, sound companies, venues with installed PA.

WHY ARE THEY A BIG DEAL? The Helix DN9304 and DN9344 feature accurate emulation of the Klark Teknik DN27 and DN360 bandwidth response and provide Threshold Dependent Equalization.

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EFFECT PROCESSING GOES LIVE

HOW TO CHOOSE AND USE FRONT OF HOUSE EFFECTS

BY STEVE LA CERRA

Effect processing has come a long way in the past few years, not only in improved quality of effects but also the sheer processing horsepower available at reasonable prices. Here're some tips on how to choose an effect processor, as well as how to get the most out of what you already own.

DEDICATED OR MULTI?

The term "multi-effect" has become blurred and can refer to two distinctly different types of devices. On the one hand are processors that simultaneously generate a variety of effects (such as reverb, delay, chorus, flange, etc.) and string them together into a chain. You can usually choose the sequence of these effects in the chain, for example routing the output of a delay into a reverb or placing the EQ at the beginning or end of the chain. One example of such a multi-effect unit is the Alesis MidiVerb 4, which creates up to three simultaneous effects including reverb, chorus, flange, delay, or pitch change. A multi-effect processor can be useful in a guitar or keyboard rig where several effects are used at the same time to create a lead or rhythm sound for a specific song.

It's easy to confuse a multi-effects processor with a dual-engine processor such as the DMV Pro from ART, or the TC Electronic M3000. These devices feature two (sometimes more) independent effect "engines." Each engine is a discrete processor capable of generating its own stereo effect, and each engine can be fed from a separate input. This arrangement comes in handy for situations where one aux send is patched to the left input feeding engine 1 (*e.g.*, reverb), while a second aux send is patched to the right input feeding engine 2 (*e.g.*, delay). Generally the engines operate independently and run only one effect at a time. Most manufacturers provide routing options to change the configuration, allowing you (for example) to dump the output of the first engine to the input of the second engine for series processing. Multi-engine processors are very useful for situations where you need a lot of processing in minimal rack space.

THE GOLDEN RULE

You can get single- or multi-effect processors priced at anywhere from around $200 up to $15,000, and you'll find that lower priced units often have much of the processing muscle that the blue-chip units possess. *Sonically speaking*, of course, you're gonna get what you pay for: extra cash yields cleaner effects — especially when it comes to

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reverb (which requires a lot of processing power). Take for example, a dedicated reverb unit. Such units do their job extremely well, but if you're looking for a box that simultaneously generates reverb, delay, chorus, and makes coffee...well you'll have to look elsewhere. If your show requirements include reverb, delay, chorus, flange, and pitch-shift effects on a per-song basis, you might be better off with a unit that covers the gamut of effect types.

An important concern is *what* you plan to process with the unit. A stereo reverb should be sufficient for processing drum sounds — but look for one that allows you to apply some sort of EQ or filtering either pre- or post-reverb because you can get a lot of mileage out of a drum 'verb with some judicious EQ. If you need an all-around vocal effect box, look for something that produces at least reverb and delay such as the TC Electronic M•One XL. This dual-engine processor can run two stereo effects at once, allowing you to create programs where the left input feeds a stereo delay, and the right input feeds a stereo reverb. As with most multi-engine devices, audio from the two engines is combined to a single pair of output jacks, which is fine for most applications. There are multi-engine processors that feature separate outputs for each engine (the TC Electronic System 6000 and Lexicon 960L come to mind), but beware that these will put you into a considerably higher price range.

CARD SLOTS

Many rackmount units have front-panel card slots for storing and loading programs, a great feature for tours where you don't have the luxury of taking the processor along with you. For example, you'll find the Yamaha SPX990 in FOH rental racks across the world. If you own one of those processors, you can write programs at home, dump them to a memory card, and take the card to the gig. When you arrive, you put the card into the rented unit, dump your programs, and with very little effort your own programs are in the rental machine. You can also accomplish the task via MIDI if you carry a laptop, MIDI cable, and compact MIDI interface. The drag about this is that you'll

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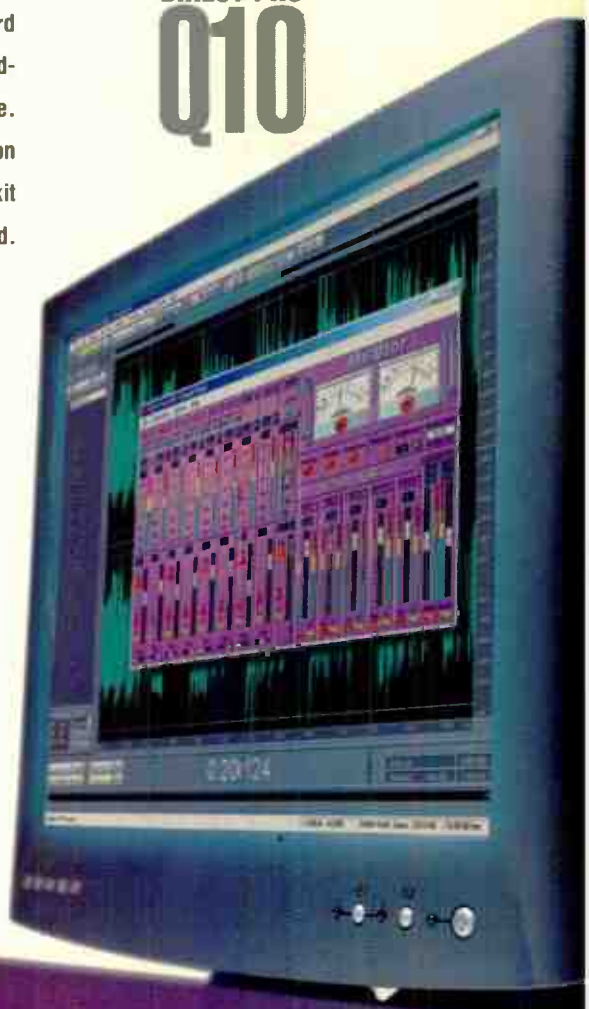

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need the aforementioned three items (though you may already carry a laptop for other purposes). The good news is that — since just about *every* effect device built these days has MIDI I/O and can load and dump via sys ex — you can easily carry programs for many different effect processors.

SETTING UP YOUR EFFECTS

When using digital effects, proper gain structure can make the difference between a quiet and noisy mix. It's amazing how often I run into an audio system where the input level control on the effect is cranked way up (adding noise) because the aux send knobs on the desk are too low (or vice-versa). For starters, make sure I/O level switches on all outboard processors match the I/O levels of the console. As an example: If the aux sends and effect returns operate at +4, then set the effect I/O level switches to +4. This is *extremely* important when dealing with compressors because if a comp is inserted at the wrong operating level, you'll have all sorts of problems such as lack of headroom, distortion, or inability to return the signal to a channel at a sufficient level.

When there aren't switches for I/O level on the processor, you can set proper gain structure using the console's test oscillator. Be sure to turn down the master L/R faders *before* turning on the oscillator or your ears could be in for a rude surprise (you could even pop a driver). Set the tone to 1 kHz, bus it to the aux outs, and adjust the level of the aux out master so that the aux out meter reads zero. If the console doesn't have dedicated metering for the aux outputs, use the AFL switch to view the aux out level. With the aux out level at 0, look at the input meter on the effect unit. It should also read 0. If not, adjust the input level knob on the effect until the meter reads 0. Keep in mind that if the console has VU meters and the effect device is displaying dB below full scale (dBFS) then 0 VU can equal anywhere from –18 to –12 dBFS (check the manual).

Next look at the level of the effect returning to the console. Some effect units don't have an output level control - and of the ones that do, even fewer are calibrated. I usually set the output level control to the maximum, and set the wet/dry mix control to 100% wet. With the 1 kHz tone routed to the unit, PFL the effect return (or channel if you're returning the device to an input channel) and adjust input gain so that the PFL is at 0. Once gain structure is set in this manner, you can be sure that — when you adjust the aux knob on a channel to feed a sound into an effect device with a proper input level — the rest of the chain will maintain a high S/N ratio and minimum distortion.

When using a desk that doesn't have an onboard oscillator, you can use a test CD. Plug the CD player into an input channel, set the channel fader to 0, and bring the aux send level to 0. Raise the aux master until the aux output meter shows 0, then look at the effect unit's input meter. It should read 0; if it doesn't then proceed as above. I always carry a test CD with a series of tones as well as a snare drum hit to help with this process. In their REV500, Yamaha has smartly addressed this issue by providing a snare drum sample that can be triggered by a front-panel button for auditioning an effect.

TERMS OF ENDEARMENT

Here are some of the terms you're likely to encounter when you dig into an effect processor.

DAMPING: The amount by which high frequencies are attenuated. Higher damping generally means less high-frequency content.

DECAY TIME: The amount of "sustain" time for reverb.

DEPTH: Applies to delay, flange, and chorus. This is how intensely modulation affects the signal. Higher depth means the "wobble" is more severe. Less depth results in a gentler sweeping sound.

FEEDBACK: Typically adjusts the number/intensity of repeats in a delay program, except in delays where there is a separate parameter for number of repeats.

HF CUTOFF: A low-pass filter is usually found in delay and reverb programs. Some devices have separate filters for the effect and for the dry signal. Don't be afraid to crank the cutoff down to values as low as 2 kHz. Though we've been trained to believe that a broad frequency response results in better fidelity, that rule doesn't necessarily apply to reverb and delay. Many reverb programs sound warmer and more realistic when the high frequencies are cut way down, and as a bonus you'll get a reduction in noise.

MODULATION: This is a change in the delay time. Generally it sounds like the delay is wobbling, depending upon the Rate and Depth.

PREDELAY: The length of time before reverb starts. Longer pre-delays simulate larger spaces. To get a larger reverb sound in the old days, engineers would run an aux send into a delay (or tape machine), and then run the output of the delay into a reverb chamber.

RATE: The speed of change in a delay. Let's suppose you have a delay of 200 milliseconds. Modulation varies that value, so the delay will sweep from (for example) 190 milliseconds to 210 milliseconds. Rate sets how fast this change happens. When used on slower delays from 5 to 25 milliseconds, it determines how fast a chorus or flange will sweep.

SHIFT (UP OR DOWN IN CENTS): Applies to a pitch-shift program. Shift and similar parameters determine the amount of detuning created by the pitch shift program. One hundred cents = 1 semitone or half-step. For background vocal doubling in a stereo pitch-shift program, try +5 cents on the left and -5 cents on the right.

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MIX TIPS

• Set up a mute group for the effects so you can kill vocal effects between songs, which will make the front-person more intelligible. If the console doesn't have assignable mute groups, bus the effects to a stereo audio subgroup and manually mute the subgroup faders during the show. As an option you can assign the effect channels to a VCA group and control all effects via VCA. Some consoles (Crest comes to mind) have an aux send mute switch that kills all of the aux sends with a single button. Use it!

• It generally makes more sense to run effect sends post-fader so that as you adjust a channel fader, the effect remains in proportion to the dry signal.

• Return the effects to spare channels (if available) rather than so-called effect returns. On most desks the effect returns have minimal EQ, and often cannot be assigned to audio, VCA, or mute groups.

• Dedicate a separate reverb to the drums, and pre-program short and long presets. Try a 30 millisecond predelay with a decay time of 1.3 seconds for the short program, and 45 millisecond predelay with a 2.5 second decay for the long program (this comes in handy for ballads)

• Flange or chorus programs may actually sound fatter when returned in mono.

• Beware of digital delays that require feedback to output a delay. This is not logical but is often true: if you don't have any feedback ("0%") on the delay, certain older processors will output *only* a dry signal without any delay.

• On tours where you're carrying processing but not production, be sure to have cables with both XLR and TRS at the console end. Don't cheap out and use adapters. They'll aggravate you.

• Have fun!

Steve La Cerra is up to his neck with effects mixing Blue Oyster Cult. Check out their new live CD and DVD *A Long Day's Night*. He can be reached via email at slacerra@uemedia.com

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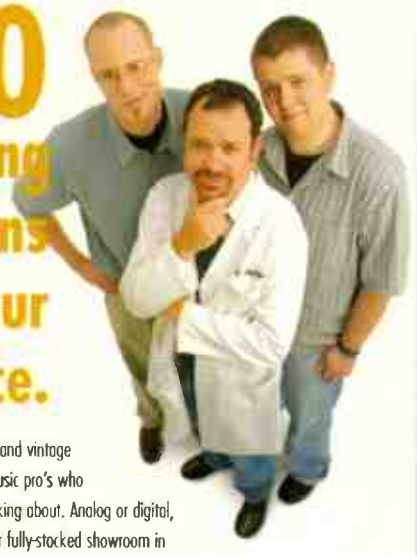

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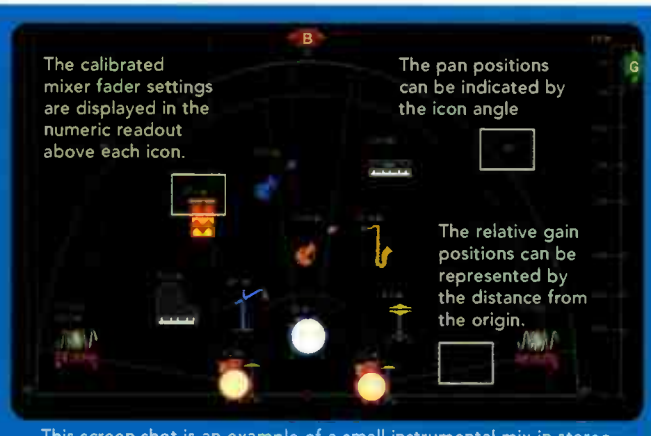

This screen shot is an example of a small instrumental mix in stereo.

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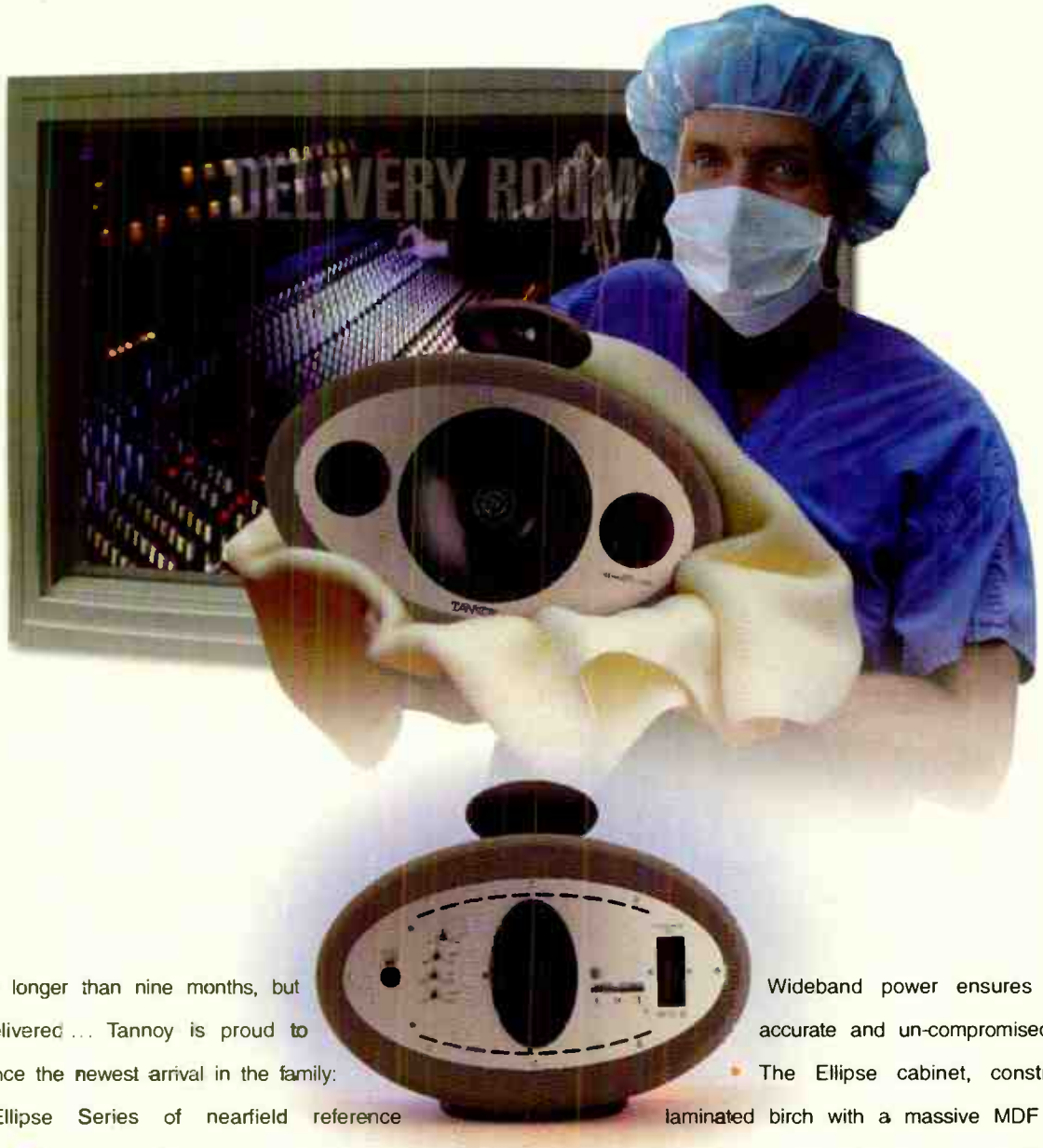

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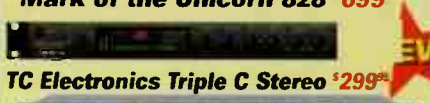

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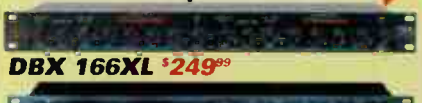

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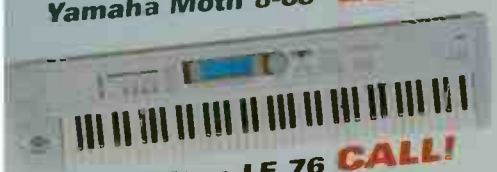

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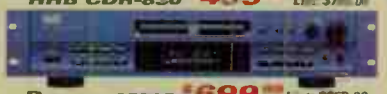

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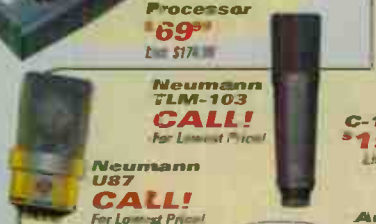

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By Mitch Gallagher • mgallagher@musicplayer.com

East West Joey Kramer Drum Loops and Samples

Here's your chance to jam with the drummer from Aerosmith

The boys from Aerosmith are busy these days. Not only do they maintain a full schedule of recording new albums and touring the world, but they've also got side ventures. Guitarist Joe Perry, for example, has his own brand of hot sauce (no, I'm not kidding). Not to be outdone, drummer Joey Kramer has teamed with sample purveyors East West to create a library of drum loops and samples.

But this isn't your normal run-of-the-mill sample and loop collection. The loops are available as ready-to-load multitrack Pro Tools sessions, or as multitrack WAV files, with the drums split out so you can mix them as you please. The library is also available in Akai sampler format and as audio discs (both contain two CDs).

EAST WEST JOEY KRAMER

MANUFACTURER: East West, 9000 Sunset Boulevard, Suite 1550, West Hollywood, CA 90069. Tel: 800-969-9449. Web: www.soundsonline.com.

SUMMARY: All the rock 'n' roll groove and vibe you expect from a world-class veteran drummer.

STRENGTHS: Well recorded. Great groove and feel. Variety of tempos. Multitrack versions allow extensive customizing of the loops, as well as ability to mix, EQ, and process drums separately.

LIMITATIONS: Amount of bleed between mics can make editing loops difficult in some instances. Drums used in fill samples may not be the same ones used in the loops.

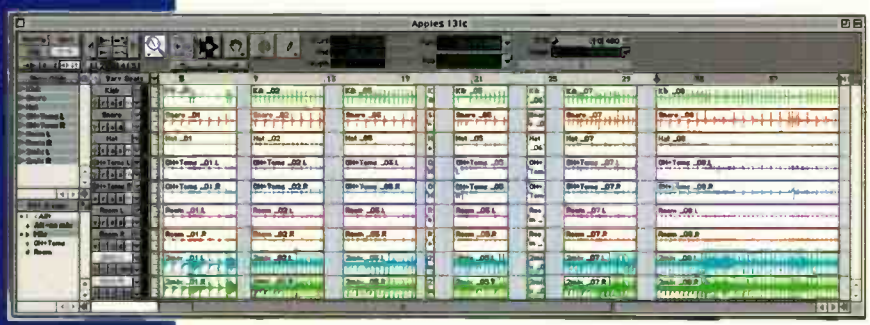
PRICE: Pro Tools (10 CDs, multitrack), $333; WAV (10 CDs, multitrack), $333; Akai (2 CD), $199.95; Audio (2 CD), $99.95.

A GROOVE THING

The Joey Kramer library consists of 34 different groove types; each of these types contains multiple variations and fills — the number varies from three loops in "Big Foot" to 13 loops in "Front Room." In addition, individual drum samples and fills are included that you can add to customize the loops. Each groove type is presented at one tempo — ranging from 71 to 148 BPM. To get the loops to other tempos you'll have to time-stretch or compress the loops to the speed you want.

The audio and Akai libraries consist of two CDs, one containing dry stereo loops, fills, and samples, the other with the same source material presented "wet," with room sound added in. The loops in these libraries are used in the same way as "traditional" drum sample or loop libraries. You audition the loops to find what you want, load and trim them, then put them to work in your songs.

The WAV and Pro Tools versions consist of 10 CDs; two of these are the audio dry and wet discs just described, which you can use for



Top: Here's what a session looks like when you open it in Pro Tools. The loop variations and fills are arranged so that you can step through them. The bottom two tracks are a mastered stereo mix of the drum tracks for auditioning purposes.

Bottom: It's a piece of cake to grab the various loops and arrange them into a song. The loops are all cleanly edited; just butt them together and you're groovin'.

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Boston Audio History

auditioning loops; they also contain the various drum hit and fill samples. The other eight discs contain almost 3 GB of multitrack files; in the case of the Pro Tools version, these are arranged into actual Pro Tools sessions, with the loops all neatly laid out and trimmed to the proper length for easy song construction.

THE MAN BEHIND THE STICKS

From back in the early 1970s with hits such as "Dream On" to modern-day classics such as "Jaded," Joey Kramer has been pounding the skins behind Aerosmith. Here's what Joey had to say about his drum loop CD.

"I feel that there are three things that separate this CD from other loop/sample CD sets. One is the way in which it was recorded. We (myself, producer Marti Frederiksen, and engineer Richard Chycki) recorded it at Rumbo Recorders (CA) the same way as if we were recording an Aerosmith CD — the sounds are kick-ass, rock 'n' roll drum sounds, ready to go on an album. If people want to use them on their project, they have their choice of the wet CD with the ambient room sound or the dry CD with no room or reverb. We purposely did not master the CD so that when people use these sounds, they're consistent with the rest of the sounds on their record, and they get mastered along with the rest of the recording.

"Next, on most loop CDs you get a bar or maybe two to loop. Because my playing is about the emotional aspect and the feel, I put enough on the CD for every single loop. Sometimes it's two bars or four bars, sometimes six or seven, but in every case there's a really good feel established. The thing that I am most psyched up about is the fact that we have a multitrack version of the CD."

When asked what drums and cymbals he was playing, Kramer replies, "I have always used Zildjian cymbals, and we used an old Ludwig jazz kit from the late 1960s. It was a 20-inch kick, 8x12 and 14x14 toms, and I'd say eight or 10 different snare drums, all of which are sampled and included. I usually use a 22-inch kick, but this 20-inch sounded great, so we went with it. The kick and toms stayed the same for the project, though the tuning changed a bit (I used white, coated Remo Weather King heads). I had some vintage Ludwig snare drums, but the majority of the drums were newer. I used a couple of DW snares, a floating-lug Pearl, a Premier snare I had from an old kit...we didn't break it down to labeling which specific drum is making which sound, because I didn't think it was important to hook a sound to a drum. When you're looking for an appropriate sound, who cares what drum it is that's making the sound?

"In the studio, I'd play eight to 10 hours per day, and we did this for three or four days. I'd sit down to play, and once I hit on something we liked, I'd play variations. There are a couple of loops on the CD that have two or three variations. They might have the same kick and snare pattern with a different hi-hat, or a ride cymbal and then a bell. If you wanted to, you could use the same figure for a verse, and later for a chorus.

"I think we hit just about every tempo from around 80 to 130 BPM. If I hit a particular tempo that was comfortable, we'd do six, eight, or 10 things at that tempo and then move on to a different tempo. I played to a straight click because there were parts I played where I needed to hear straight time. When I started with a click years ago, all we really had was a straight click, so from the get-go I learned how to make it breathe inside the click itself. Of course, once you have the loop in Pro Tools you can change the tempo. My main concern was making it feel really good while it was on a grid to a click, and making sure everything would butt up together perfectly on the grid.

"There are parts from around 25 different Aerosmith songs, and the rest (which is the majority) is material that came out of my head during the sessions, or that has been stirring around in my head for years. [*Laughs.*] There are some Aerosmith things I did not include, for instance, the groove to 'Walk This Way' or the end of 'Sweet Emotion.' Those are trademarks of mine, and I didn't want to totally give it all away! We recorded anything that we thought might be useful, but then I sat with the material for quite a while deciding what I did and didn't want to put on the CD.

"In addition to the loops, there are fills, and the fills aren't necessarily tied to specific grooves. If a Pro Tools operator is savvy, he/she can take one fill and make different things out of it, or use the samples of individual drums to create new parts. I left a lot to the imagination."

Joey concludes by explaining that he views this CD as "my little contribution to all that I have taken from the world of music. Maybe I can give a little something back and create a useful tool for songwriters. Maybe down the line I'll hear myself playing on a McDonald's commercial, or a hit single by Cher! Who knows? I made sure that everything has the human feel — me playing — so it's going to enhance your project instead of having a drum machine with no soul." —Steve La Cerra

World Radio History

(Note that Pro Tools isn't mandatory; the loops are Sound Designer II files, and can be used in any compatible audio application.) Two of the tracks contain a stereo mix of the loops for auditioning purposes; these are substantially louder than the raw multitrack loops, and seem to have been processed with compression/limiting and a bit of EQ. Most of the grooves have seven additional tracks that contain raw kick, snare, hi-hat, stereo overheads/toms, and stereo room mics — a few contain an eighth track with cowbell.

The drums are all expertly miked, and sound great. The tracks especially come to life when you add in some of the room tracks; without the room, the remaining tracks are a bit thinner and less bombastic (as you'd expect). The sounds are all clean, but there is a large amount of bleed from one mic to another — not just into the room and overhead mics, but from kick to

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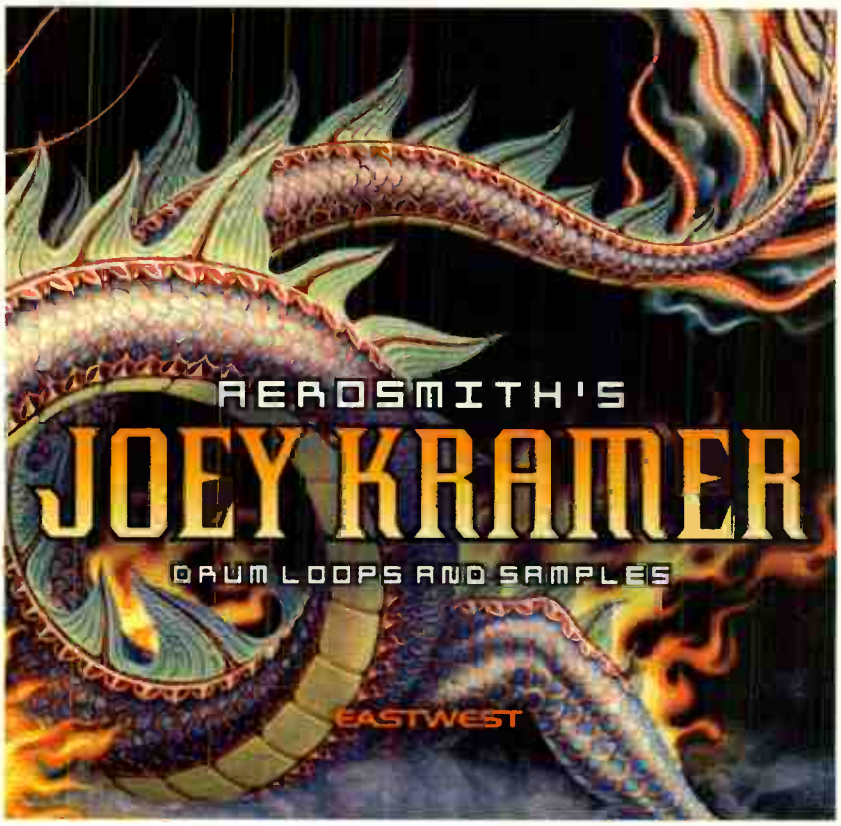

World Radio History

By Mitch Gallagher • mgallagher@musicplayer.com

GRM Tools ST Audio Processing Plug-Ins (Mac RTAS)

Four mind-bending plug-ins take sonic experimentation to new places

GRM TOOLS ST

MANUFACTURER: INA-GRM, dist. by the Electronic Music Foundation, 116 North Lake Ave., Albany, NY 12206. Tel: 888-749-9998. Web: www.grmtools.org.

SUMMARY: Powerful sound-wrenching plug-ins for Mac Pro Tools users capable of taking sound design to new heights. If you're after the unusual, check these out, especially FreqWarp.

STRENGTHS: Super Slider. Sixteen front-panel presets. Amazing unique effects. Tons of parameter control. Full parameter automation.

LIMITATIONS: Pricey. Can put a heavy load on your computer's CPU.

PRICE: Bundle of four plug-ins, $549; Contrast, $249; Equalize $249; FreqWarp, $249; Shift, $249

INA-GRM (*Groupe de Recherches Musicales de l'Institut National de l'Audiovisuel*) was founded in 1958 by a group of experimental composers, including *musique concrète* specialist Pierre Schaeffer, twentieth century music icon Iannis Xenakis, and others. The tradition of research and experimentation that led to the creation of the group continues today; the group has created and continues to develop a line of unusual signal processing plug-ins, including the venerable GRM Tools.

Now the company/group has released GRM Tools ST, a suite of four RTAS plug-ins for Mac-based Pro Tools LE, Pro Tools Free, and Pro Tools TDM systems. The new GRM Tools ST (Spectral Transform) bundle is based around FFT technology, and consists of four plug-ins: Contrast (amplitude and frequency dependent gain change), Equalize (31-band mono or stereo equalizer), Shift (frequency scaling/shifting), and FreqWarp (re-arranges frequency components in the source signal). GRM Tools ST features many of the user interface niceties first introduced with GRM Tools, including 16 "front-panel" preset buttons for storing parameters and the very powerful "Super Slider," which allows you to continuously interpolate or morph among eight of the front-panel presets.

CONTRAST

Contrast is said to use a "compression/expansion" processing technique, but it's like no compresser or expander you've heard. The plug-in analyzes the input signal, then divides the various frequencies into groups of "weak," "medium," and "strong" amplitude. You're given slider control over the gain of each group, as well as "LineDelimiters" that define the ranges of the sound to be processed. Other controls include Smooth, which evens out the loudness and timbral changes, and Bands, which determines how the group gain controls affect the input — one band applies the gain change to all the frequency components in a group as a group, more bands splits the group up by frequency and applies the change to the frequencies separately. There are also Output Gain and Mix controls.

As with all GRM plug-ins, you can store parameter settings into 16 presets (the overall plug-in state, including the 16 presets, can also be stored as a plug-in preset). Eight of the 16 presets can be loaded into the Super Slider, where they can be interpolated and morphed.

So, having said all that, what does it do? Basically, it splits the frequencies into three groups: those that are soft, those that are medium, and those that are loud. You're given gain control over each group. An example of what you might do is turn all the loud frequencies down while turning up all the soft frequencies, without changing the level of the medium volume frequencies. The result can vary from an EQ-like effect, to fuzzy warping of the sound, to something completely new, especially when you roll in the Smooth control, which seems to focus and make the gain changes more intense. It's unlike any filter, EQ, or multi-band compressor that you've ever used.

Contrast lets you independently change the gain of low, medium, and high volume frequencies that comprises a signal.

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EQUALIZE

Equalize is the most "conventional" of the GRM Tools ST plug-ins. On the surface it's a mono or stereo 31-band EQ. Where Equalize is different is in the amount and type of control you have. You can grab a slider with a mouse (okay, that's not all that unusual...), you can group sliders (adjacent or non-adjacent sliders can be grouped), and you can grab an EQ curve and move the whole thing horizontally across the sliders, which is pretty wild. In stereo you can link channels or copy EQ curves from one channel to the other, and so on.

While you might be tempted to use Equalize as a simple equalizer, you can do much more with it. Store preset curves and morph between them with the Super Slider. Grab a curve and

▶ continued on page 116

Equalize is much more than just a standard 31-band EQ.

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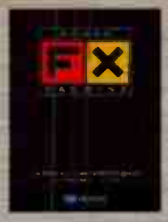

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World Radio History

by Craig Anderton • canderton@musicplayer.com

FMR Audio RNP8380 Two-Channel Microphone Preamp

The nice compressor guys are back....

A few years ago, the FMR Audio RNC (Really Nice Compressor) appeared with an under $200 list, and was shockingly good for the price. Now the two-channel RNP (Really Nice Preamp) is here, and also provides serious value for money. Here's why.

INS & OUTS

On the diminutive 1/3-rack case's back panel, each channel has XLR in, 1/4-inch balanced/unbalanced phone jack out, and 1/4-inch TRS insert jack (which FMR suggests you use for — surprise! — inserting the RNC). The front panel has a high-impedance (1 Meg) input jack that works gangbusters with passive guitar pickups. (Note: you can rack-mount the RNP with suitable rack shelves from Mid-Atlantic, Raxxess, Funklogic, etc.)

Controls for each channel are minimal: invert button, +48V phantom button, LEDs for signal, +18, and clip, and a 6 dB/step stepped gain control.

THE DETAILS

The +48V supply ramps up slowly to minimize damage to non-phantom powered mics that get connected accidentally, and the output mutes when changing inputs. The RNP can tolerate AC or DC wall-wart voltages from 9-12V, and the front-panel LEDs flash if the supplied current isn't enough. (The Class A circuitry draws quite a bit of current. You can't fry eggs on the case, but cats will probably curl up on it in the winter.)

Interestingly, despite the analog signal path, the RNP also includes a microprocessor for process and control functions. According to the company, the circuit uses a "full Class A self-biasing-fully-differential-DC-servoed-trans-impedance-100 MHz GBP-instrumentation amp with an input impedance of 5K." (*EQ* is currently arranging to airlift emergency commas to Austin to help with their apparently severe punctuation shortage.) Translation: fast slew rate, low distortion, high bandwidth.

FMR AUDIO RNP8380

MANUFACTURER: FMR Audio. Tel: 512-280-6557. Web: www.fmraudio.com.

SUMMARY: Provides an accurate sound at a reasonable price.

STRENGTHS: Accurate, full high end. Smooth overall sound. One-meg instrument input doesn't load down guitar, bass, etc. Insert jack for adding dynamics processors or other effects.

LIMITATIONS: No internal power supply (uses wall-wart). Gain variable only in 6 dB steps.

PRICE: $499

> "COMPARED TO MY OTHER PREAMPS, THE HIGH-FREQUENCY PERFORMANCE STOOD OUT, PARTICULARLY WITH DYNAMIC MICS."

The stepped control is a bit of a limitation. For example, suppose a signal just clips the RNP by half a dB. So you reduce the control to the next click, throwing away 5 dB or headroom, or nearly one bit of resolution when feeding a digital system. Is this important? In the days of 16-bit digital audio, I'd say maybe. But these days, with 24-bit converters, I typically

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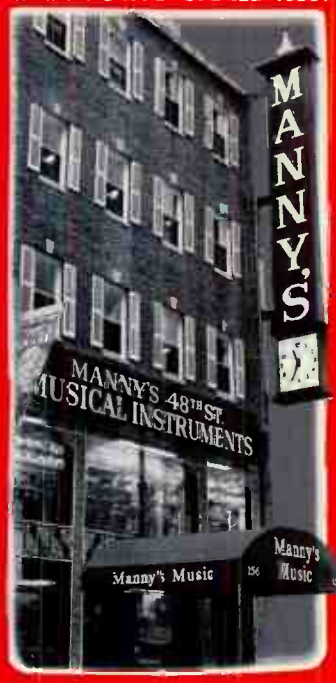

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Craig Anderton • canderton@musicplayer.com

Sonic Foundry Acid 4.0 Loop-based DAW (Windows)

The original loop-based program strikes back with a major update

Acid has always been one of those programs that made my jaw drop. But as the years went by, its inability to work with MIDI, soft synths, and effects automation made it look more and more antiquated.

Well, surprise! Acid 4.0 is a significant overhaul. But we're not just talking features — the philosophy of the program itself has broadened, without losing what made it appealing in the first place.

SONIC FOUNDRY ACID 4.0

MANUFACTURER: Sonic Foundry, 1617 Sherman Ave., Madison, WI 53704. Tel: 608-204-7703. Web: www.sonicfoundry.com.

SUMMARY: Acid is still the best program for creating loop-based music, and acquires a more production-oriented vibe with the addition of 5.1 surround mixing and enhanced video options.

STRENGTHS: Efficient use of audio resources and improved sound quality when time-stretching. ASIO support for low latency. MIDI and VSTi support, though a little rough, adds to the program. Supported by libraries of Acidized audio files from numerous manufacturers. Good video functions. Allows envelopes for effects automation and includes three automatable effects. Does 5.1 surround mixing. Companion content CD has over 500 MB of material.

LIMITATIONS: No response to external MIDI controller boxes. Limited MIDI editing options. Stability issues in current rev. No multiple outputs or automation for VSTi devices. No low-latency WDM driver support.

PRICE: $499 (upgrade from 3.0, $149.95). Downloadable version, $349.97.

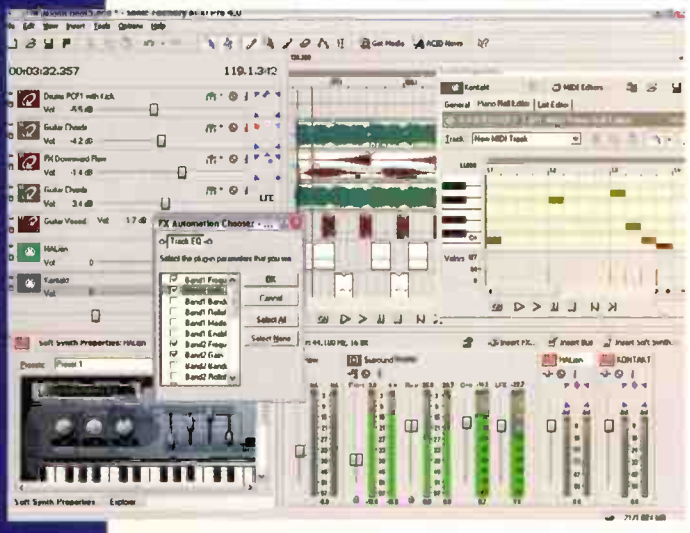
THE "PRODUCTION" VIBE

Although Acid is known as a groove music tool, I've also found it invaluable for video work (where tempos have to be "fudged" to fit with video hits), commercials, and even sample library development. I must not have been the only one, because 4.0 seems designed to take Acid out of the groove niche, turning it into a full-fledged production tool.

Start with surround: Set up a project in 5.1 surround mode (or change to it), and a surround panner appears in each track. Acid doesn't yet include authoring tools to encode compressed 5.1 audio (see the sidebar); you end up with discrete, mono tracks, which can then be encoded. The video and export options are also enhanced, with new MPEG1 and MPEG2 (for DVD) rendering options joining AVI, RealMedia, QuickTime, Windows Media, and other formats. You can also "float" just the video window to a second monitor.

Video editing is limited (trim and move on a time line), but the point is adding sound to existing videos, then being able to save in web-friendly (as well as other) formats. Toward this end, there are other video goodies: support for multiple pixel aspect ratios, video frame rate re-sampling, and de-interlacing when rendering interlaced video formats to progressive scan.

Another production-oriented feature is bussing. With the larger track counts made possible by today's computers, being able to bus groups of tracks is most welcome.



Note the surround panners in the track strips, the dockable soft synth window, piano roll editor for MIDI data, extra buses for surround, and the soft synth buses. The front window shows the EQ parameters to be chosen for automation.

AUTOMATION

Acid 4.0 adds automation envelopes for automatable effects. Three such effects are included (resonant filter, track EQ, and flange/wah/phase), but I was also able to automate parameters in other effects, even many VST plug-ins running through fxpansion's VST-DX "wrapper."

Using envelopes is simple. Envelope nodes can conform to the current snap value, and an Automation Chooser window allows selecting the parameters you want to automate for various effects. The envelopes show up on the track, but you can display just one selected envelope, all envelopes, or hide them.

THE INTERFACE

Over the years, Sonic Foundry has created an interface that transcends individual programs. As an avid Vegas Video 3.0 user, I felt right at home with the "new" Acid look and functionality. Part of why Acid is considered so easy to learn is not just its elegance, but the interface's accessibility and conformance to standard Windows interface design.

DRIVERS

Acid now speaks ASIO — I could get about 5 ms

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latency with a MOTU 2408 — plenty tight. Although WDM drivers are supported, it's through a "wrapper" that emulates classic WAV drivers, not the faster kernel streaming method employed by Sonar. With the classic WAV drivers option selected, my system latency had to exceed 60 ms to maintain reliable audio operation. Bottom line: use ASIO.

MIDI

This is the first major application I've seen of Yamaha's OPT plug-in format. The plug-ins are Piano Roll Editor, List Editor, and General Characteristics (event filter, which events to chase, pitch transposition, etc.). MIDI has a sort of tacked-on feel — you enter through the Track's properties page — but the editors are useful, albeit basic. For example, you can quantize start times or note durations — no groove quantize, quantize strength, swing, etc. In the event list, there's no mass editing of notes; you couldn't, for example, increase velocities of a group of notes by a particular amount or percentage.

However, in the piano roll, you can select a group of notes and set velocity to maximum, minimum, or a particular value, or edit velocities by drawing in the Controller Strip toward the bottom (this handles velocity only; for controllers, you must use the list editor). Obviously, MIDI editing isn't nearly as comprehensive or deep as veteran sequencing programs, but as this is a plug-in technology, who knows what future revs will bring. In any event, the MIDI essentials are there: cut, paste, copy, transpose, add program changes, etc.

Unfortunately, there is no support for external control surfaces — even for the track or mixer faders. Any automation tweaking for the automatable effects and track mix/panning/sends requires using envelopes.

VST INSTRUMENTS

Inserting a soft synth adds a channel to the mixer (the same one where the buses show up; this is independent of the channel faders). Each synth channel has a fader, solo, mute, fx insert, etc. You then select the instrument as a MIDI track output — simple. Double-clicking on a synth icon in the mixer opens it up for editing. Like most Acid views, the synth can be docked or hidden.

Recording a MIDI synth part requires the usual process of making sure that you have the right thru selected for monitoring and the like, but it's no bigger a deal than for other programs.

There were some MIDI/VSTi reliability problems in version 4.0, and while the 4.0b update has tightened up performance, there are still some general stability issues. If I pushed the program hard — twiddled instrument knobs, went into the editors, added instruments, etc. — the program would often crash. Fortunately, if after re-loading the program I went back to the auto-saved version, usually everything came back okay. Overall, having soft synth capabilities is a beautiful thing, and Sonic Foundry has a good history of ironing out any wrinkles with timely bug fixes.

I tried recording automation data from the instruments and using multiple outputs, but these capabilities aren't available. You also can't embed instrument automation within Acid's MIDI tracks.

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ON THE HORIZON

Next up for Acid: a 5.1 Surround Plug-In Pack ($399) that pushes the program even further into being a production tool for a variety of media, not just audio. The pack will include a way to encode Acid-generated surround mixes into Digital Dolby AC3 format (5.1 surround or stereo), as well as a utility for burning 5.1 or stereo AC-3 files created and encoded in Acid to DVD-R, DVD+R, DVD-RW, and DVD+RW. Customizable options include data rate, sample rate, coding mode, bitstream mode, dialog normalization, center and surround mix levels, input filtering, channel processing, RF over-modulation protection, and dynamic range compression.

Incidentally, if you don't have any VSTi devices, no sweat. Acid comes with a DLS Soft Synth that includes a full General MIDI sound set.

OTHER NICETIES

Acid now supports time signatures other than 4/4, with 1-99 beats per measure at values from whole notes to 32nd notes. And while the Chopper window isn't new, if you haven't revisited Acid lately it's a great feature. You can load in loops, or any audio or MIDI data for that matter, and designate pieces for insertion into the main track view ("loop cloning") or export as individual loops. As someone who has spent hours cutting up loops and pasting little pieces all over the place, the Chopper is a major time-saver.

In addition to surround panning there are also five panning options, including three different balance types and constant power panning. And, the individual track envelopes now have five fade shapers, including S-shaped fades as well as the standard log/antilog/linear types.

Furthermore, the time-stretching sounds better. It's not just that there seem to be fewer artifacts, but the sounds have more presence. Sonic Foundry doesn't make a big deal of this, yet I think that this alone is sufficient reason to upgrade.

Finally, there are hot key commands to track mute and solo: the Explorer window allows selecting multiple loops so you can hear how loops work together, and a separate content CD (available for a shipping/handling fee to those who download the program) contains loops from the extensive Sonic Foundry loop library (thus also serving as a product overview), along with several representative projects.

THE ACID FLASHBACK

Acid remains a unique program, now more production-oriented than ever, that's still tops for loop-oriented music. The addition of MIDI/soft synth features doesn't strike me as designed to compete with products such as Cubase SX and Sonar — the feature set simply isn't anywhere near as deep — but rather, to make an even more complete looping-oriented package.

If you're an Acid fan, you may or may not have found the 2.0 and 3.0 updates compelling enough to merit an upgrade...but 4.0 is a must-have. Simply stated, no other program does loop-based music as effortlessly as Acid 4.0. ■

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Craig Anderton • canderton@musicplayer.com

Frontier Design Apache Optical patchbay

Banish optical cable re-patching

Sometimes the breaks go your way. I was migrating from an old computer to a new computer, and both have ADAT-compatible sound cards to communicate with my digital mixer and ADATs. Because I had to work on both computers during the transition, I was going nuts patching and re-patching optical cables when I got the call: "Want to review Apache, Frontier Design's optical patch bay?" Yeah!

MAKING LIGHT WORK OF PATCHING

The 1U Apache does for optical ("light pipe") cables what old school patch bays did for patch cords: route signal from an input to an output. But Apache goes beyond the basics in several ways.

The 12 input and 12 output ports yield a total of 144 crosspoints. Each in or out handles two channels of TOSLINK or eight channels of ADAT I/O (note there's no translation between the two — for example, S/PDIF sent to ADAT doesn't show up in two ADAT channels). In addition to sending any in to any out, an in can feed any number of outs — very handy when sending a source to multiple destinations. (Of course, multiple ins can't go to a single out; this isn't a mixer.)

Apache also stores 12 presets, but you can store more in a computer if desired. And it handles clocking issues transparently: the input clock signal is re-clocked and transmitted to all outputs to which it connects. Also note that Apache transmits whatever's encoded in the signal, so if the ADAT data contains non-standard information (*e.g.*, PAQRAT format), it doesn't matter — it shows up at the output.

THE USER INTERFACE

Limited numbers of buttons are scary, but in this case, you hit Patch to route an input to output or vice-versa, Status to see I/O connections, Store to save the collection of presets as a patch, and Recall to...you get the idea. It's Homer Simpson-friendly.

For those who like blinky lights, a scan mode scans through the inputs and for each input, shows which outs are connected. Nice. An input LED shows signal activity, and a separate LED indicates if the signal is an ADAT signal.

MIDI

MIDI in and out let you store presets to your computer, remote-control all front panel buttons via sys ex (yes, store the patch in your sequencer and have it magically recalled when you press Play), and cascade multiple Apaches if 12 ports isn't enough. I didn't get a chance to try out cascading - I received one Apache for review, and frankly, don't have enough light pipe gizmos anyway — but based on the well-written manual, it seems like a pretty obvious process.

SO DO YOU NEED IT?

I have a CD player, DAT machine, synthesizer, two sound cards, and a DA7 mixer with optical connectors. Apache has definitely simplified my life. Send the CD to the DAT? Sure. To the sound card's SPDIF optical in? Sure. Send the mixer out to two different sets of sound cards? Sure.

Obviously, not all studios have a lot of light pipe cables, and, for them, Apache is overkill. But if you find yourself plugging and unplugging optical cables often, Apache is worth the bucks. The fact that it does its job so well makes it that much more useful. ■

FRONTIER DESIGN APACHE

MANUFACTURER: Frontier Design, 199 Heater Rd., Lebanon, NH 03766. Tel: 603-448-6283. Web: www.frontierdesign.com.

SUMMARY: If you have a lot of devices with optical interfaces, Apache will simplify your life and workflow.

STRENGTHS: Handles TOSLINK and ADAT protocols. Twelve presets store specific routings. Presets can be recalled from the front panel or via MIDI sys ex. It's easy to see which ins go to which outs, and vice-versa. Multiple Apaches can be cascaded. Good user interface.

LIMITATIONS: Nothing significant.

PRICE: $799

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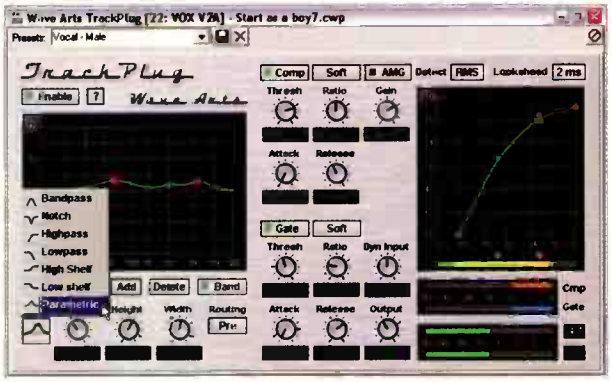

WAVE ARTS TRACKPLUG (MAC VST, WINDOWS DX/VST, $129.95)

TrackPlug is a channel strip processor with up to 10 bands of EQ, compressor, and gate. Each stage of EQ can have any one of seven responses (including parametric), and the EQ as a whole can go pre- or post-compressor. Controls are pretty much standard, although there's a useful "band" control that disables a band without deleting — good for comparing how different bands affect the sound.

The compressor is also straightforward, but complete, with parameters for knee, makeup gain on/off, attack, release, peak or RMS detection, and look-ahead on/off and time (1, 2, or 5 ms). The superb metering keeps you apprised of input signal level, the amount of compression and gating being applied, and the output peak and average levels.

Installation is simple; you can download a time-limited demo version, which creates a machine ID number. To buy the plug-in, go to the web site, provide the ID, submit your form of payment, and a serial number comes back to unlock full operation.

TrackPlug is efficient, transparent-sounding, clean, and a real workhorse for vocals, bass, guitar, drums — you name it. It comes with 47 useful presets, but you'll have no trouble creating your own, as the interface is quite intuitive. Read the manual anyway, as there are some useful shortcuts and tricks.

If you use Cubase SX or other programs that already have decent channel strips, you don't really need TrackPlug, but with programs such as Sonar, Vegas Video, Acid, etc., TrackPlug is a welcome, cost-effective addition. The more I use it, the more I like it — and I'm using it a lot. Check out the demo at **www.wavearts.com**.

ANWIDA SOFT CX1V COMPRESSOR (WINDOWS VST, $69)

There are many different types of compressors, from those that add "character" and "coloration" to the sound, to those that try to leave no distinguishing marks other than reduced dynamic range. The CX1V falls in the latter category. Even at fairly extreme settings, a lot of times you don't know for sure that it's working — until you bypass it.

Controls are the usual: threshold (with a light that indicates signal above threshold), attack, release, compression ratio (variable in small steps from 0.8:1 to 20:1), output gain (there's no auto makeup gain function), hard/soft knee, and look-ahead on/off. Metering consists of an input level and output level meter; to the right of this is a display that shows the value of the currently selected parameter. It's an obvious, simple interface.

For best results, you want to hit the CX1V hard enough so that the input signal reaches the full dynamic range. The look-ahead function means you can set attack times of 0 ms to catch transients without any nasty pops. Although there's no limiter function per se, I came pretty close by choosing 20:1 compression, look-ahead on, 0 ms attack, and a threshold set high enough to just catch the hottest peaks. This brought up the low-level sounds in a satisfying way, while holding the peaks well under control.

What's most impressive about the CX1V is the transparency. This is not a compressor that encourages "squashing"-type special effects, but you can easily restrict the dynamic range of everything from individual instruments to program material while retaining a very natural sound.

Like their reverb (reviewed January 2002), the CX1V is unpretentious and clean. It won't win any awards for bells and whistles, but if you crave a quality compressor, check out the demo of this fine plug-in. **www.anwida.com**

FXPANSION VST-DX ADAPTER 4.0 (WINDOWS, $60)

VST-DX Adapter was the first "wrapper" that allowed VST devices to work with DirectX only programs.

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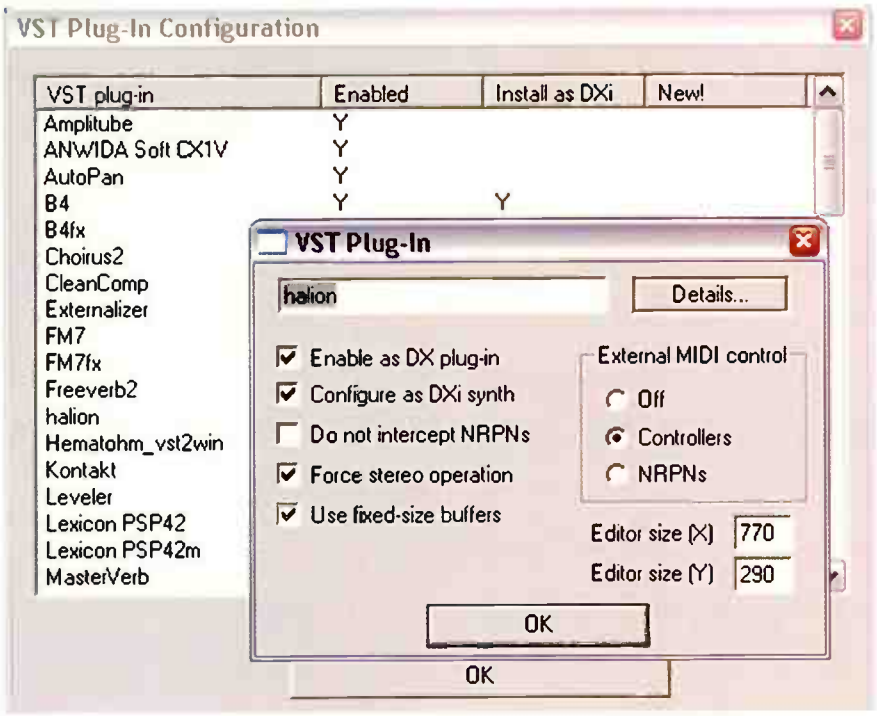

Version 4.0 allows VST instruments to show up as DXi2 devices in Cakewalk, including multiple outputs and the ability to "grab" the project tempo for tempo-synched functions. Other new functions allow external MIDI automation of effects parameters, improved operation with the Mackie UAD-1 and TC PowerCore DSP cards, and support for DX8 envelope automation. (Note: A $30 "Lite" version is available that doesn't support instruments or automation.)

The download is mercifully short — around 160K. Installation involves running the VSTConfig program, which searches your VST plug-ins folder (or folders) and "registers" the various instruments and processors. There are some options, mostly involving how to display the plug-ins in DirectX applications and handling of NRPN parameter automation. All of this is explained in the brief, helpful documentation file.

After configuring, you can further modify the plug-in's properties. The screen shot shows the setup for HALion: Note that it allows external MIDI control from standard controllers, and specifies a fixed editor screen size so that even if HALion opens up in the smaller Macro screen, you can switch over to the other, larger screens without having them limited to the initial screen size.

Compared to DirectiXer (reviewed September 2002), VST-DX costs about $10 more, but feels more solid with soft synths. The user interface isn't as unified as DirectiXer, but with either program, once it's set up you pretty much forget about it until you add more plug-ins. Fortunately, both programs offer demos so you can evaluate how they work with your system and particular set of plug-ins.

I've used VST-DX since v3.0, and its transparency to the system has always amazed me; I can't detect added latency, and reliability has been outstanding (except for the occasional buggy plug, which isn't Fxpansion's fault). It's also updated frequently to insure compatibility with the latest plugs. If you have a DirectX-only program, you're crazy not to take advantage of the VST world too. Find out more at www.fxpansion.com.

OHM FORCE HEMATOHM I.I (WINDOWS/MAC/BEOS VST, DX, $59)

Ohm Force makes truly great, truly twisted plug-ins; they've been my "secret weapon" on sample CDs when I want to elicit a "how did you get that sound?" reaction. Hematohm is built around a frequency shifter, which offsets frequencies in a mono or stereo signal by a certain number of Hz. This wreaks havoc with the harmonic structure, producing sounds that recall ring modulation.

The amount of offset can be fixed, modulated with a multi-waveform LFO and/or envelope follower, and processed with tempo-synched delay (with feedback, of course). But what really sets it apart is the automation and external MIDI control, which allow "playing" the plug-in expressively.

This isn't a plug-in for everyone, and even those with a penchant for weirdness won't use it all the time. Still, it's a fantastic tool to have in your sonic arsenal — especially if you're into sound effects, remixing, sample library creation, warping voices into alien life forms, and the like. Nothing else sounds quite like it. Even a sampled guitar string becomes out of the ordinary when run through Hematohm.

The pricing is confusing. $59 (Expert) gets you any one plug-in version; $149 (Pro Pack) has versions for all platforms on one CD; $9.95 (Standard) has 16- instead of 32-bit resolution, no MIDI I/O, and is not licensed for commercial use. Like Expert, Standard is download only. And to buy, you'll need to navigate the annoyingly slow, flash/image-laden web site. But it's worth it; Ohm Force plug-ins are way-cool for those who want a paranormal plug-in experience. (You should visit the web site anyway so you can download the free Frohmage plug-in, which would still be cool even if they charged for it.) www.ohmforce.com

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By Steve La Cerra • slacerra@uemedia.com

Bag End TA6000-R Compact Two-Way Loudspeaker

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BAG END TA6000-R

MANUFACTURER: Bag End Loudspeakers, 22272 Pepper Road, Barrington, IL 60010. Tel: 847-382-4550. Web: www.bagend.com.

SUMMARY: Compact, portable loudspeaker for speech and music sound reinforcement.

STRENGTHS: Excellent clarity. Accurate transient response. Horn can be rotated for horizontal configuration.

LIMITATIONS: Limited bass response.

PRICE: TA6000-R, $690; TA6000-I, $620

The TA6000-R from Bag End is a compact two-way loudspeaker designed primarily for sound reinforcement purposes. Housing a pair of 6.5-inch cone woofers and a 1-inch-exit compression driver mounted on a radial horn, TA6000-R applications include small club PA, home theater, A/V presentation, under-balcony fill, and house-of-worship use. Bag End informed us that TA6000-R's are also being employed successfully for studio monitoring. Through use of the E.M. Long Time-Align® design, the TA6000-R optimizes driver placement, driver delay, and crossover parameters to ensure that sounds produced by the individual drivers arrive at the listener simultaneously, resulting in increased clarity and reduced phase distortion. Since the TA6000-R's horn can be removed and rotated, it's possible to install the cabinet vertically or horizontally with either 80-x60- or 60-x80-degree dispersion. The TA6000-R's low-frequency response has a 3 dB-down point of 95 Hz. Bag End suggests addition of one of their ELF subwoofers to complement the TA6000-R for use in situations requiring high SPLs or increased low frequency extension.

The TA6000-R's cabinet is constructed from birch plywood coated with a textured black polyurethane finish. A perforated steel grille over the front panel protects the drivers. On the bottom panel is a stand adapter that allows the cabinet to be mounted on any speaker stand with a 35-millimeter post. Attachment points are provided for use with rigging hardware from Bag End or other manufacturers. Weighing in at only 27 pounds, a TA6000-R can easily be lifted with a single hand.

The first thing I noticed about the TA6000-R was that the input panel provides *five* connectors: one dual-banana, two Speakon, and two 1/4-inch TS (a variation on the design — the TA6000-I — provides a barrier strip terminal input and does not include the stand adapter). The Speakon and 1/4-inch jacks are paralleled for daisy-chaining additional speakers, assuming your amp can handle the load. The Speakon connectors are wired with only the pin 2 pair feeding the TA6000-R's crossover. The pin 1 pair loops through to the other Speakon jack, allowing a single four-conductor cable to be used in daisy-chaining the TA6000-R with a subwoofer for biamping purposes.

I used the TA6000-R's on a series of small

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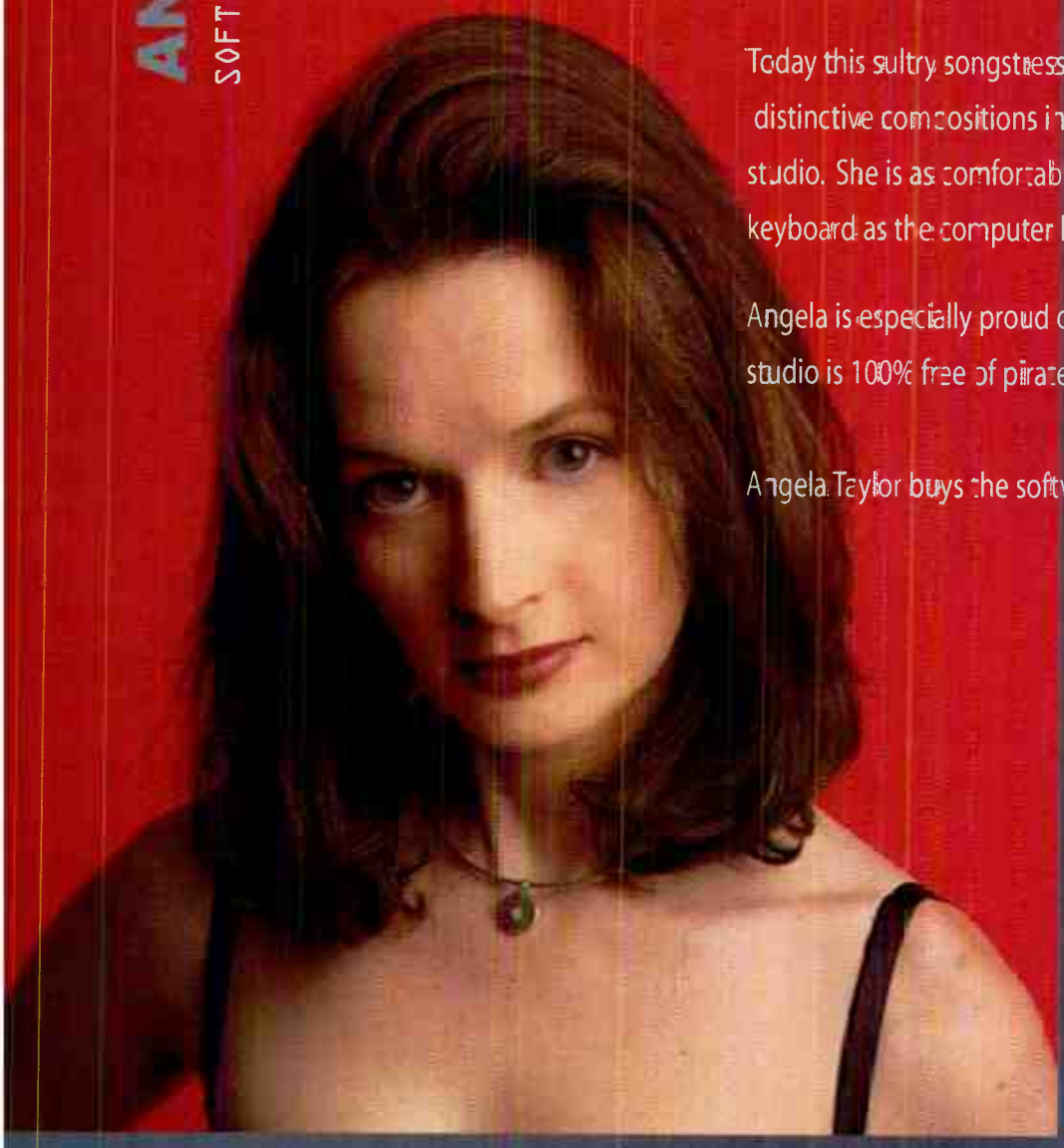
ANGELA TAYLOR

SOFTWARE USER, SOFTWARE BUYER



Angela has been making music as long as she can remember.

She has memories (at age 3) of standing on top of the furniture with any available "microphone" in hand, singing at the top of her lungs.

She also started to play the piano at this tender age, at first preferring her own twelve-tone compositions to the works of the masters.

Today this sultry songstress records her earthy, distinctive compositions in her basement project studio. She is as comfortable in front of the piano keyboard as the computer keyboard.

Angela is especially proud of the fact that her home studio is 100% free of pirated software.

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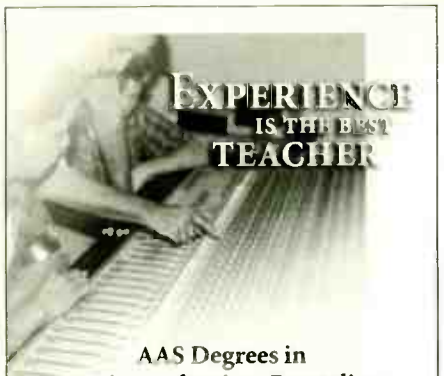

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club gigs along with a QSC PLX3002 power amp, Mackie CR1604, and Soundcraft Spirit M8 mixers. Since the TA6000-R accepts such a variety of connectors, set up with the PLX3002 was quick and easy. The TA6000 excels in the midrange — its reproduction of vocals is great. There's a distinct sense of presence and intimacy with voice, but the speaker doesn't sound hyped or produce the tizzy, sibilant high-mid peaks characteristic of many HF horns. This quality makes the TA6000-R a natural for corporate meetings where a PA is required to amplify the voice of someone who is addressing a large conference room.

The TA6000-R's also make excellent sidefill stage monitors in situations where monitor requirements are mainly vocals plus guitar and/or keyboards. Their clean, "immediate" vocal range allows performers to easily hear their own voices without the high-end hype that makes listening to some speakers a tiring experience. I experimented with using the TA-6000-R's as floor wedges, but the angle of the cabinet sides is not sufficient to direct the drivers upward toward the performer's ears. They were much more effective when placed on stands at either downstage corner with the HF horn just below ear height.

For music purposes, the TA6000-R isn't going to "rock" your world, but I wouldn't expect any speaker of this size to do so. The speaker essentially rolls off at around 80 Hz, but, more importantly, the TA6000-R doesn't bump up the lower-midrange in an effort to make you think it's producing a lot of low end. That lack of coloration is no doubt one of the reasons that the TA6000-R can be successfully used as a studio monitor.

A pair of TA6000's could be used as a small, (very) hi-fi PA for a lounge or cocktail-hour gig where a soloist or duo require amplification (electronic piano and voice, for example), or for DJ use under similar circumstances. I'd hesitate to put a whole band mix through a pair of TA6000-R's alone, though adding a Bag End ELF sub or two would certainly make this possible.

> THE TA6000 EXCELS IN THE MIDRANGE — ITS REPRODUCTION OF VOCALS IS GREAT. THERE'S A DISTINCT SENSE OF PRESENCE AND INTIMACY WITH VOICE.

In spite of their small size the TA6000-R's can pump out high SPL's. On program material the TA6000-R's continuously put out more than 110 dB (A-weighted at 1 meter) without any evidence of strain. With the addition of a pair of ELF subs, two TA6000-R's could serve as a great compact DJ or live sound rig — one that could be moved by a single person yet still get yer booty shakin' in a small room. For situations where quality and articulation are key concerns, the Bag End TA6000-R is a winner. ■

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TRUE NORTH PRODUCTIONS

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guitar amps, horns, vocalists, or other instruments that need both isolation and a room sound."

PRODUCTION NOTES: "We just completed a jazz project with piano, upright bass, drums, and sax. The piano was put dead center in the main tracking room and test-miked. After trying several combinations, AKG C1000's inside the lid and a Rode NT4 stereo mic in the room provided the percussive, tinkly sound the pianist was looking for. The upright bass was in the vocal booth where we used a U87 (near the f-hole) into an Avalon mic-pre, as well as a direct feed. In the drum room we used additional padding to achieve a drier, controlled sound for later addition of ambience. The horn player was in a storage room with additional padding (blankets) and a '421 close to the bell."

EQUIPMENT NOTES: "Our most called-upon gear is a combination of outboard and plug-ins. You just can't beat the Avalon 737SP for vocals and direct instruments such as bass. It's an incredibly clean, crisp sound. Likewise the Avalon 2022 is called upon for similar applications, but due to its stereo nature is often used for keyboard direct feeds. We use the Manley Vari-Mu compressor/limiter for final compression because of its warmth and sweetness. The Empirical Labs Distressors are used often in a vocal signal chain for color and vintage compressor emulation. The Bomb Factory classic plug-ins such as the LA-2A, Urei 1176, and Pultec EQP1-A are favorites, as are the Waves plug-ins such as the gate, Renaissance EQ's, and C4 multiband parametric compressor." ■

PROCESSING SOUNDS

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many people use the same plug-ins and external devices over and over again as part of their "sound." If you find yourself doing this, create "template" sessions where effects and processors are already inserted on designated tracks that are ready to host incoming instruments, voices, etc. Most processors and plug-ins also let you create libraries of unique presets that can be loaded or edited as needed.

Automating Signal Processors: Using a DAW, it's possible to automate many parameters of processors over time. Effect bypass, changing presets, the number of echo repeats, and lowpass filter frequency are a few examples of possible candidates for automation. Using the session's tempo map, you can program automated changes to occur in sync with the rhythm and tempo of the audio. However, not all parameters can be automated without glitches. Parameters that control volume are usually safe, whereas those that affect delay times (for example) can be more problematic.

Tal Herzberg is a Los Angeles-based programmer and engineer. His credits include the Counting Crows, Vanessa Carlton, Christina Aguilera, and the Grammy-award winning "Lady Marmalade" remake.

THE GUITAR PICKER'S DREAM

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we would have nearly 100 tracks going in Nuendo. I pre-mixed all this to what were essentially stems sent out to 24 outputs, which were then brought up in the custom Neve at Air Studios.

We mixed to a Michael Spitz-modified ATR-100 one-inch two-track as well as back to Nuendo through Mytech converters. Initially we mastered from the analog one-inch because I love the way that machine sounds, but for this album we ended up mastering straight from the digital files.

Why?

We were so pleased with the CDs that I burned straight out of Nuendo, that both Mark and I felt like there wasn't any point to change it. The analog machine, no matter how good a machine it is, is going to add some coloration to your mix. Sometimes it's an advantage and sometimes not. This time the digital won. That's what's on the final record.

What was the biggest challenge you faced recording this record?

This album was so easy in every respect. We really had the best time. Communication between everybody was so good that it just made it great. The sounds just seemed to come together because everybody was pointed in the same direction.

As we overdubbed, it wasn't a hard decision whether or not to add something, it was the song that dictated that. Mark's singing was great! He's quit smoking now for about five years. He could do things he never could do before, and so it was a piece of cake for him. His singing was amazing.

When we got to the mix — because as we had been going along and doing the overdubs, we were tweaking the mix in Nuendo — it was pretty much just push up the faders and there it was. We didn't use a lot of effects in the mix, either. I think at most I may have used two reverbs and a couple delays. For some of the songs I just turned all the effects off and there was nothing on there but the actual real ambience of the recording. I think this will make a spectacular surround album because of all the additional ambient miking that we did...and obviously it's great

AVALON STUDIOS

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four of them in a mix," he explains. "When I work in other studios that have these pieces, there's no guarantee that they're going to sound right. They may have leaky capacitors, modifications, or the alignment may be off. Quite often when I find four 1176's in a studio rack, they all sound different. It took years of using various units to find the ones that were outstanding. Every outstanding example I found I purchased, and it became a part of my personal studio."

"A great advantage of using the Mackie UAD-1 Powered Plug-Ins is that — when I need extra compressors of this particular family and color — I can get the sound and consistency I'm looking for. I could be anywhere, but I know I'm going to get a good 1176 out of the UAD-1. It might not be quite as amazing as a cherry-picked vintage unit, but having said that — you try and find one!" ■

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GRM TOOLS ST

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move it across the frequencies — the result is like a wild stepped multi-band filter sweep. Equalize can be a powerful creative tool in addition to serving as a standard tone-shaper. As a bonus, each of the EQ slider "tracks" is a level meter showing the amplitude of that frequency band. Nice.

FREQWARP

Okay, we're getting out there now. FreqWarp "re-arranges" the frequency components in a signal; essentially you "map" an incoming frequency to a different outgoing frequency. The manual says "This can result in a radical change in timbre." No joke!

You work on the sound graphically, using the mouse to create "junction points" and sending input frequencies to output frequencies. You're given control over the number of frequency bands (up to 1,024), smoothing (affects the intensity of the frequency transfer), scale (displays frequencies using linear or logarithmic scales; the log scales let you use more of the display for bass frequencies, for example), linear or curved interpolation between frequency points, and the quality or resolution of the output signal (high-resolution requires more CPU power).

So what does it *do*? Amazing stuff. Effects range from semi-pitch shift to pseudo-ring modulation to pitch bend to anarchy. With one preset, I was able to reduce a pop CD into what sounded like rhythmic breathing accompanied by clangorous metallic bells; in another case, by automating a junction point I simulated a vinyl record slowing down and speeding up. Other effects are simply indescribable. This plug-in will really awaken the sound designer in you...it's wild.

Shift lets you pitch shift, ring modulate, or do both together for wild, wacky effects.

SHIFT

Shift contains two functions, which can be used separately or together. The "Shift" part is basically a ring modulator, adding a constant frequency to each spectral component. The "Scale" part multiplies each spectral component by a constant frequency, transposing the sound. You're given control over the number of bands the input signal is split into, and you can lock either or both Shift and Scale so that you can change one effect without affecting the other.

The sounds produced range from "standard" pitch shifting and ring modulation effects to unusual combination sounds: pitch-shifted ring modulation and vice-versa. The results can really get out there when you start interpolating using the Super Slider or when you quickly change from one preset to another.

MIND TWISTER

If you're looking for fresh sounds, look no further. GRM Tools ST is one of the more mind-bending collections of plug-ins that I've come across — especially when you morph between presets and even more so if you start automating parameters. I spent *way* too many hours creating interesting new sounds from what were originally mundane sound sources.

At $549 for the bundle, or $249 for each plug-in separately, these aren't the cheapest processors on the market, but they are completely unique. And besides being quite useful, they're a load of fun to experiment and play with. With GRM Tools ST, INA-GRM has taken plug-in processing to a new, innovative place. ■

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EAST WEST JOEY KRAMER

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snare, hi-hat to kick, etc. Generally this isn't an issue, and really has to be considered part of what makes this library sound so authentically "Aerosmith" rock 'n' roll, but it can make it challenging to cut and paste sections of loops around. You'll have to be careful of which sections you choose so that you don't get, say, crash cymbal bleed pasted into a section where there is no crash cymbal hit.

Incorporating the individual drum samples is also easy — pretty much the same thing we're all used to doing with other drum sample libraries. There is one catch: Kramer used a number of different drums to track the loops. It's not indicated in the documentation which drums were used where, so finding a sample that matches the drums used in a given loop is tedious — and in the fill samples, you may not be able to match the loop drum sounds. I found that in the context of creating songs and layering other tracks on top of the drums, I could get away with using the occasional non-matching drum without it being a problem.

Having the tracks arranged into multitrack form makes it a joy to assemble songs. You can easily pick and choose the loops you want, balance tracks as you see fit, and really customize the drums to your liking. You can also EQ and process the individual tracks separately, which is a big benefit. Further, you can choose to limit the number of tracks used to match the sound and size of the drums to your music. In some cases, all I used were the kick, snare, and room tracks — that's all that was needed to get the musical effect that I wanted.

It probably goes without saying, but the loops are all expertly played, with excellent feel. Kramer recorded to a click, so tempos are constant, but his trademark groove still comes across in spades. Almost immediately upon opening the first Pro Tools session, I was inspired to grab my Les Paul and Marshall and start jamming along. About as close to actually playing with Aerosmith as I'm likely to come!

For those after rock 'n' roll drum tracks, but who don't have the room, gear, or — most important — the expert drummer, this library is a godsend. The sounds are great, the variety and flexibility of the loops is broad, and the feel and vibe is outstanding. Go for the WAV or Pro Tools multitrack version if you can — the added flexibility they provide is well worth the extra bucks. ■

FNP AUDIO RNP8380

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run my levels more conservatively anyway. A couple dB don't make much difference in the real world, and there is an advantage to repeatable settings. If it really bugs you, put a variable-gain device in the insert loop.

THE SOUND

The company readily notes that the RNP is relatively noisy compared to many mic pres — the EIN is quoted as –120 dB. Ignoring the fact that I would have loved to have something that good at this price when I first got into recording, for most applications the extra 6 dB or so of EIN isn't going to spoil a session.

Compared to my other preamps, the high-frequency performance stood out, particularly with dynamic mics. I suspect this is a combination of the input stage not loading the mic, and the amp's high gain-bandwidth product (GBP). The highs aren't brittle — the effect is more like the clarity you get from a slight high-end lift from a good EQ. The low end was tight; other preamps sounded slightly muffled by comparison. One tube pre held its own against the RNP because it has a "sweet," desirable coloration, but the RNP was more accurate.

If you're looking for a colored, "creamy," or "warm" sound, the RNP won't give it to you. But it will preserve whatever you put into it, retaining both clarity and "punch" without adding anything significant of its own. Like the RNC, the RNP impresses with both performance and price. ■

World Radio History

ROGER NICHOLS

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is some loss in quality when using AC-3. Only 48k is supported. AC-3 is used for surround audio tracks on DVD. All DVD players and receivers contain AC-3 decoders.

2. DTS also compresses 5.1 channels of audio into a continuous stream of bits. DTS uses a higher data rate. For 48k the choices are 1,536k or 768k bits per second. At 44.1k the data rate is fixed at 1,234k bits per second. DTS 96/24 allows even higher quality audio to be compressed. DTS is used for surround tracks on DVD and on DTS-CDs. DTS is available on newer DVD players and receivers. 96/24 DTS will playback as 48k on decoders that don't support 96/24 DTS.

3. MLP is a loss-less compression scheme. That means there is no loss in audio quality when compressed with MLP. MLP is used for any channel configuration from mono to 5.1 surround. Audio files can be 16-, 20-, or 24-bit with sample rates from 44.1k to 96k. MLP is used on DVD-A discs. All DVD-A players will decode MLP.

The final audio choice is no compression. DVD discs can contain stereo audio at 48k with a bit depth from 16 to 24 bits. DVD-A can accept un-encoded audio files from 16 to 24 bits, and from 44.1 to 192 kHz. 192 kHz is reserved for stereo audio only, as anything else will exceed the maximum bit rate.

Make sure you always play back the audio after you have encoded it. One reason is to make sure that you didn't place an audio file in the wrong channel. When you're encoding 20 songs each with six audio files, it can get pretty hairy. If you don't have a professional decoder you can connect digital audio from your DAW to the digital in of a surround receiver. This will work for everything except MLP. For MLP you will need to burn a DVD-A and play it back in a DVD-A player. So far there is no other choice.

Now that we have the audio straightened out, it is time to author a DVD-A with a companion video zone that will play on a regular DVD player. Last month I reviewed Disc Welder CHROME from Minnetonka Audio. CHROME will take care of all your DVD-A needs, and will even import the files for the video zone. The video zone files must be authored in a DVD authoring program. The problem is that DVD authoring programs and DVD players are designed primarily for movies with sound, not for sound with some picture menus. It becomes a giant pain to get everything just right on the DVD side.

You want to be able to have still pictures during the songs to show you which song you are playing, allow you to select another song and skip to it, switch between DTS, PCM, and AC-3 while the song is playing, and not have any clicks between songs if you are playing the DTS track. This is such an ugly job that I am going to have to tell you how to do it next month, after I figure it out!

Roger has been performing too long without a safety net. One too many lines of DVD scripting could plunge him into the abyss.

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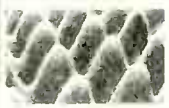

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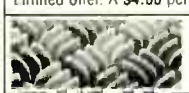

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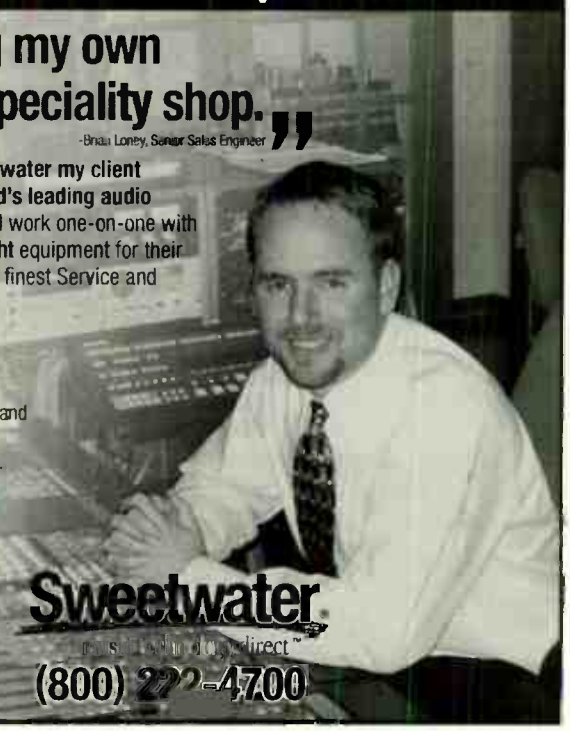

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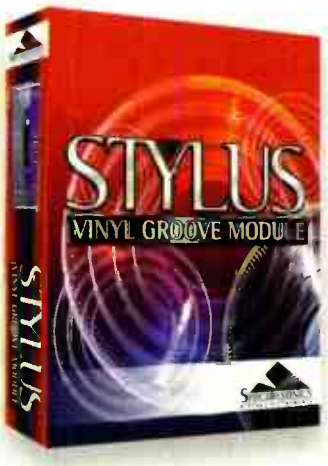

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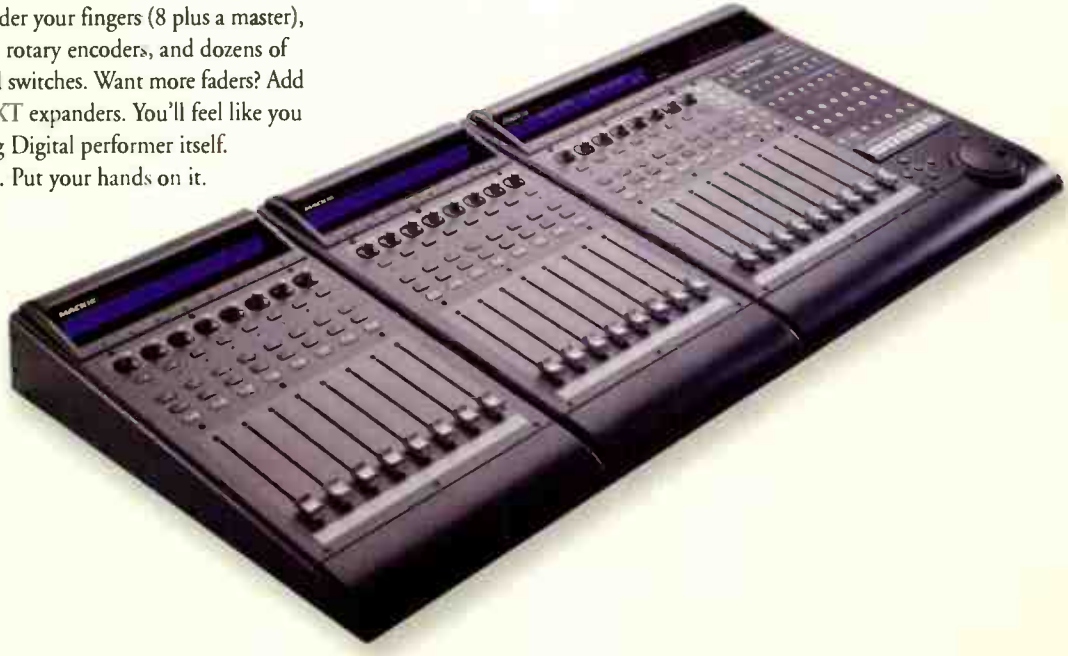

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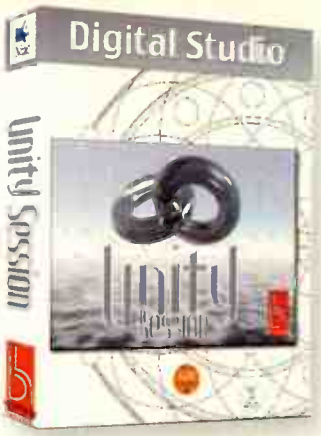

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More life on the burning edge of DVD

I Feel Disc-Connected, Part 2

This month I get to talk about DVD-A. I just finished re-mixing Donald Fagen's *Kamakiriad* in surround for DVD-A release. The plan was to do a "universal" or "hybrid" disc that will play on a DVD-Audio player and a DVD video player, but first, the mixes.

TRANSFERS & REMIX

The original *Kamakiriad* tapes were recorded on a Sony 3348 48-track digital recorder at 48 kHz/16-bit. The Sony tape was transferred digitally into a 48 kHz/24-bit Pro Tools session. There was no reason to dump the audio into a 96k session, but there are advantages to dumping 16-bit data into a 24-bit session.

Since the tape was recorded at 48 kHz, nothing above 22.5 kHz made it onto the tape. Nothing you do in a 96k session will add anything above 22.5 kHz. Even if you crank up 24 dB of EQ boost at 30 kHz, nothing will show up because there was nothing there to boost. Remember, if you multiply 24 times zero, the answer is still zero (in most U.S. public schools).

Now, there are plenty of reasons to take advantage of a 24-bit session even though the original sounds were 16-bit. First we look at fader levels. If you change the level of a 16-bit signal by any amount there is a multiplication performed. Except for multiples of 6.02 dB, which generate an exact 16-bit answer, there will be fractions of a bit in the answer. 24-bit gives you 256 steps between each bit change at the 16-bit level. Any level changes, EQ, effects, reverbs, delays, panning, compression, gating, expanding or limiting performs mathematical computations that will produce 24-bit results from the original 16-bit audio.

You also must take into consideration that the final mixes will remain at the 48k sample rate because DVD-A allows any sample rate (44.1, 48, 88.2, 96, 176.4, 192), bit depth (16, 20, 24), and track number (1, 2, 3, 4, 5, 5.1) combination. All you have to be aware of is the space available, and the total available bit rate (9.6 megabits per second) of the DVD-A disc. This, however, may be the hardest part to overcome.

At first glance, the DVD disc seems to have plenty of room available. But after you start adding up the space necessary for six tracks in the surround version, two more tracks in the stereo version, and then the same space again for the video zone so someone can play your disc if they only have a regular DVD player, you quickly run out of room. Your bit budget must be monitored throughout the process to make sure that everything will fit. This is where encoding comes in.

ENCODING

There are two reasons for encoding audio. The first reason is to make the files smaller so that they will all fit onto the disc. The second reason is to reduce the data rate. Since the files are smaller, the data rate is lower. If a five-minute song is only 50% of its original size, then during those five minutes of playing time only half as much data needs to be transferred to the decoder.

If you want to place six channels of audio at 96k/24 bits onto a DVD without compression, the data rate would be 13.8 megabits per second. This exceeds the maximum data rate of 9.6 megabits per second for DVD-A. It just won't come off of the DVD fast enough.

There are three different encoding (compression) schemes used for audio:

1. Dolby Digital, or AC-3 compresses the 5.1 channels of audio into a continuous stream of bits that contain information about all six channels. The data rate can be set between 224k and 640k bits per second. The reason you have a choice is so that you can decide whether fidelity or disc space is more important. An AC-3 data stream can contain from one to six channels of audio. Any configuration more than two channels includes a LFE or Low Frequency Effects channel. The LFE channel is sampled at a lower frequency because it only needs to reproduce frequencies below 120 Hz. There

▶ continued on page 119

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SATISFACTION

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High Definition Audio Redefined

Does high definition audio need to break your bank account? **Not anymore.**

Is the new MOTU HD192 system affordable? **Absolutely.**

Does the HD192 cost more than the MOTU 1296? **No.** The new HD192 offers more and costs less.

Are the HD192's A/D converters the same as another popular 192kHz audio interface? **Indeed.**

Does the HD192's dynamic range exceed 120dB? **Yes.**

Is this a theoretical number? **No.** It's a real-world measurement.

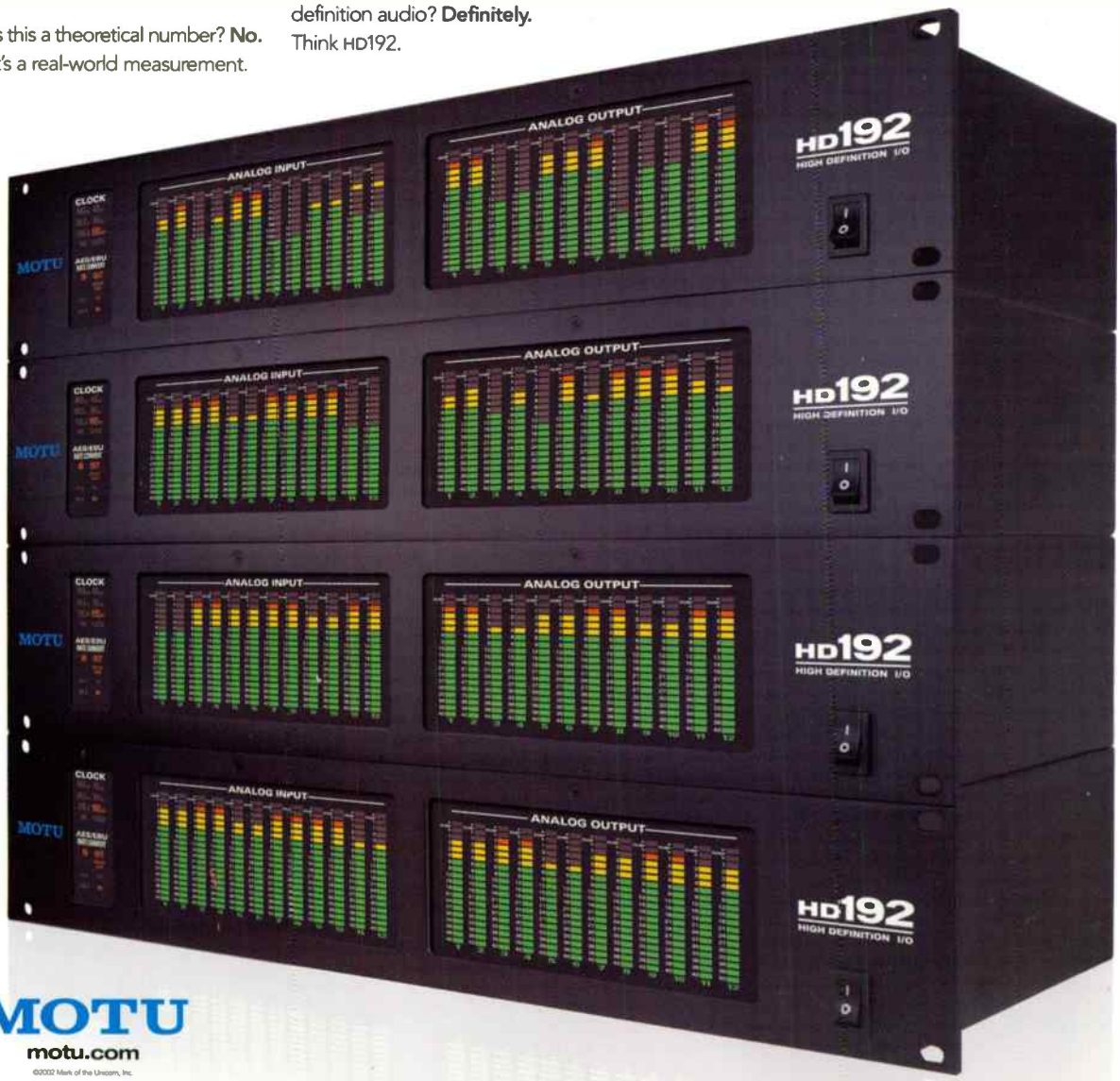
Does the HD192 core system include MOTU's powerful new PCI-424 card with CueMix DSP™ monitoring? **Yes.**

Will I hear host buffer latency (delay) when monitoring live inputs? **No!** CueMix DSP eliminates monitoring latency.

Is CueMix DSP flexible? **Yes.** It's a 96 x 96 digital mix matrix that you control with our redesigned, intuitive CueMix Console software (included).

Is it time to reconsider high definition audio? **Definitely.** Think HD192.

- **12 XLR analog ins/outs** — transfer 12 channels into or out of your computer at 192 kHz.
- **Expansion** — connect up to four HD192's for 48 analog inputs and outputs at 192 kHz.
- **Extension** — mix and match with any MOTU PCI audio interface (2408mk3, 24I/O, 2408mkII, 2408, 1296, etc.)
- **PCI-424 card** — connect four interfaces and monitor live inputs with zero host buffer latency via CueMix DSP.
- **On-board SMPTE sync** — resolve the HD192 directly to time code with fast lock-up and sub-frame accuracy.
- **Digital I/O** — AES/EBU with sample rate conversion.
- **Compatibility** — works with all audio software for Mac and Windows 98SE/Me/2000/XP.
- **Available** as a core system (with PCI card & Macintosh AudioDesk software) or as a PCI-424 expansion I/O.



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