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FEBRUARY 2005

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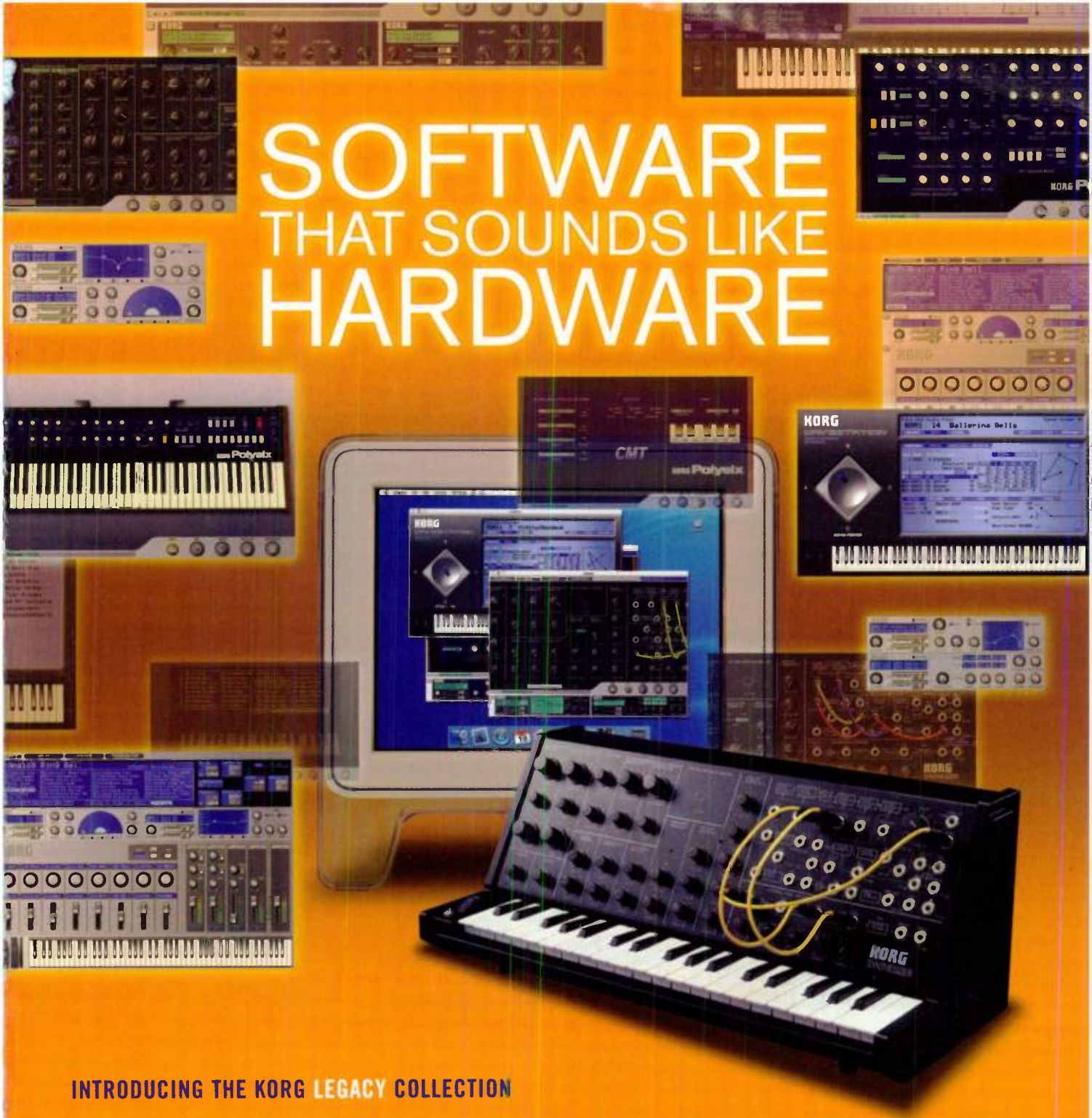


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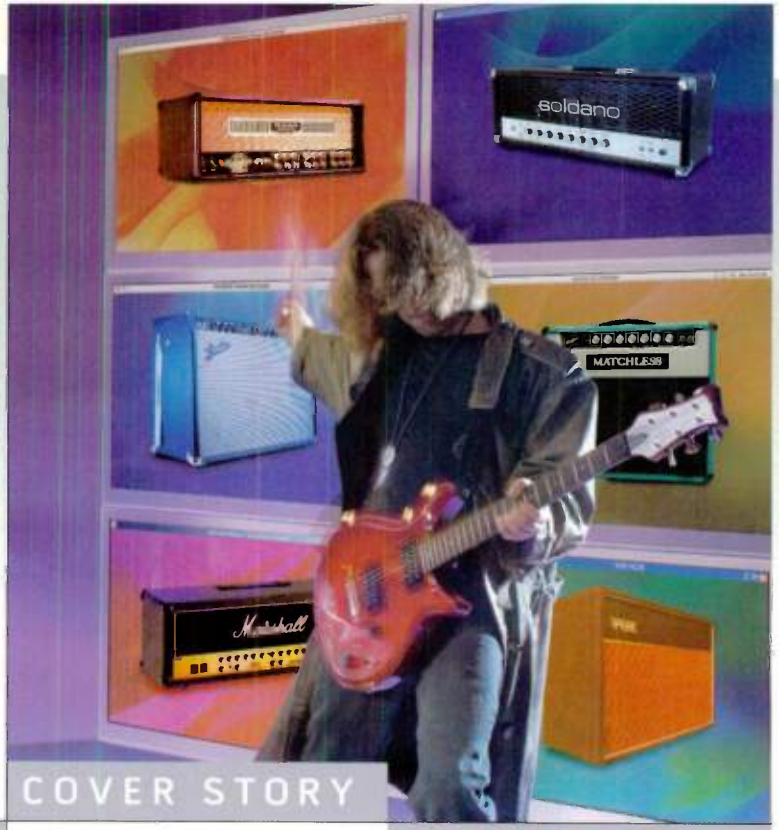
Electronic Musician
February 2005

# INSIDE




COVER STORY

## FEATURES



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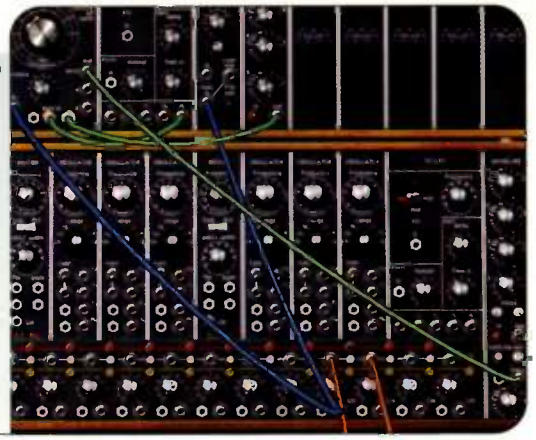
February 2005

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Radial X-Amp active reamping device

Crest Performance CP-6210 Mixer/CP-6220 Expander DJ and music mixer

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# It's Getting Better All the Time

SURPRISE! WELCOME to the new and improved version of *Electronic Musician*. The last time we redesigned EM was in 1988, and as much as we liked our old look, it was starting to look, well, old. Of course, we could have kept doing what has worked for so long. But when it comes to magazine designs, Thomas Jefferson and Chairman Mao were right that a revolution now and then is a healthy thing.

In my humble opinion, the new design is attractive, modern, sophisticated, easy to read, and unique in the music and audio industry. It enables us to create a wide variety of layouts, and its potential will become increasingly apparent as we explore its many subtleties, so what you see in this issue is truly just the beginning.

Along with a new design, we've made significant improvements to our content, especially the columns. In recent years, space limitations precluded us from running all of our columns each month, so you couldn't rely on seeing your favorites in every issue. We wanted to correct that without sacrificing features or reviews and yet continuing to offer a content-rich, balanced issue. In addition, we wanted to offer more short, practical tips that make your studio life more productive, creative, and enjoyable.

We started by creating two entirely new "tips" columns: "Sound Design Workshop" and "Making Tracks." Sometimes these columns will offer general techniques, and other times they will be product-specific—but they will always be practical. "Sound Design Workshop" is a one-page column, edited by associate editor Len Sasso, that presents synthesis, sampling, and effects-processing tips. Warning: following the suggestions in this column can result in stretched ears and bent minds! "Making Tracks" offers two pages packed with recording and sequencing techniques. Associate Editor Rusty Cutchin edits "Making Tracks" and, being from Texas, doesn't mess around; this column delivers the goods!

JULIE BIRUM

"Square One" was redesigned into a two-page column, and "Working Musician" was trimmed to a lean, mean one-pager. "Tech Page," "ProFile," and the ever-popular "Final Mix" continue unabated, although they certainly look a lot nicer. The other obvious change is one of omission: "Recording Musician" and "Desktop Musician" are gone. But have no fear; the important topics we would have covered in these columns will be presented as features. And except for rare occasions when columns are delayed for technical reasons, we will now run all of the columns all of the time.

In the reviews section, multiple EM meters are gone, replaced by one "overall" rating (as in Quick Picks) that gives you a quick summary of the reviewer's bottom-line evaluation. This doesn't excuse you from reading the review, though! Also, the manufacturer contact information has been reduced to the Web URL only, because the manufacturer's site is generally the best source to obtain supplemental information.

I am confident that you will find our new look and new columns exciting, useful, and enjoyable. Please feel free to email us your feedback at emeditorial@primediabusiness.com. We want to hear from you!

**Steve Oppenheimer**
**Editor in Chief**


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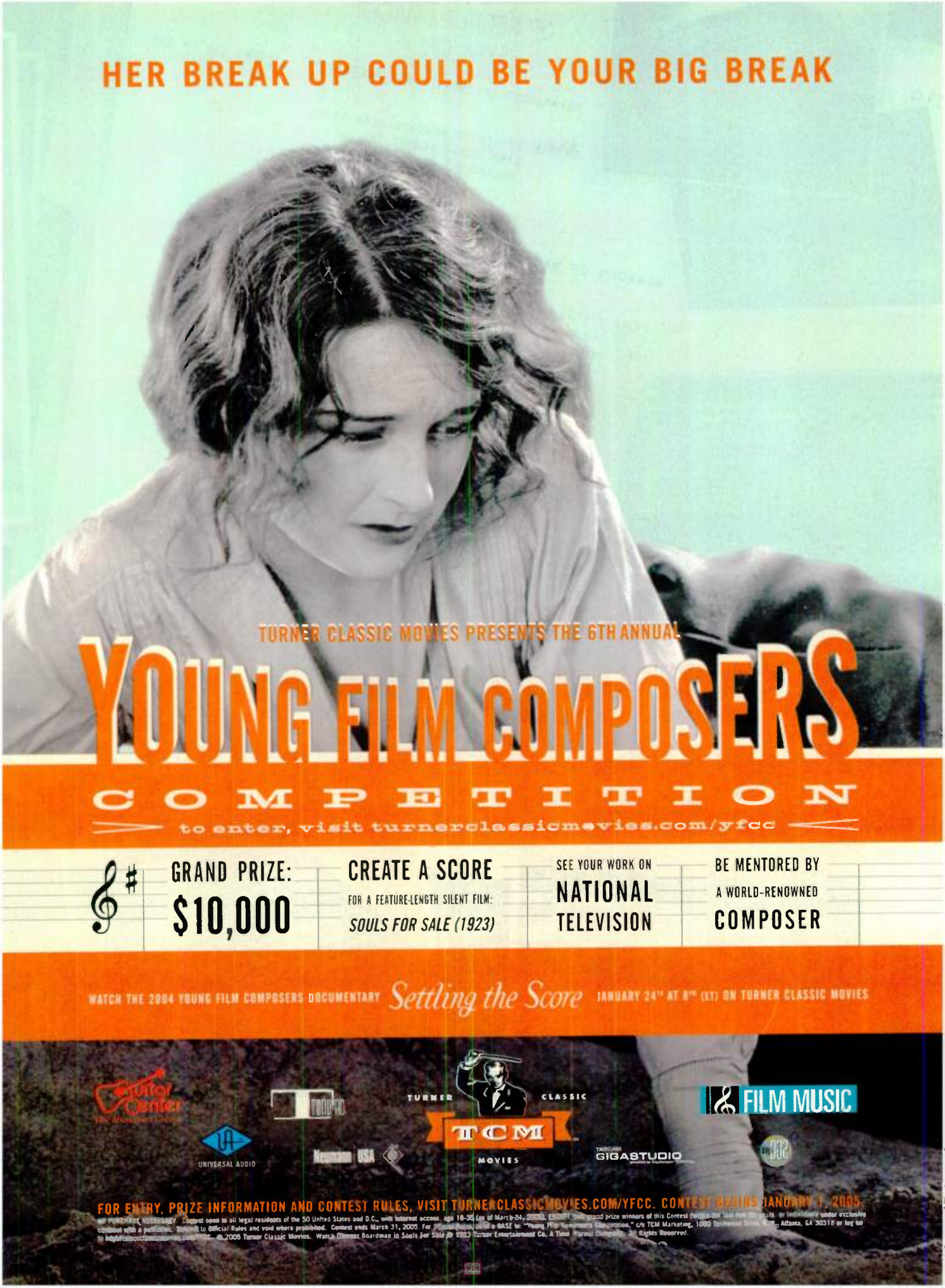
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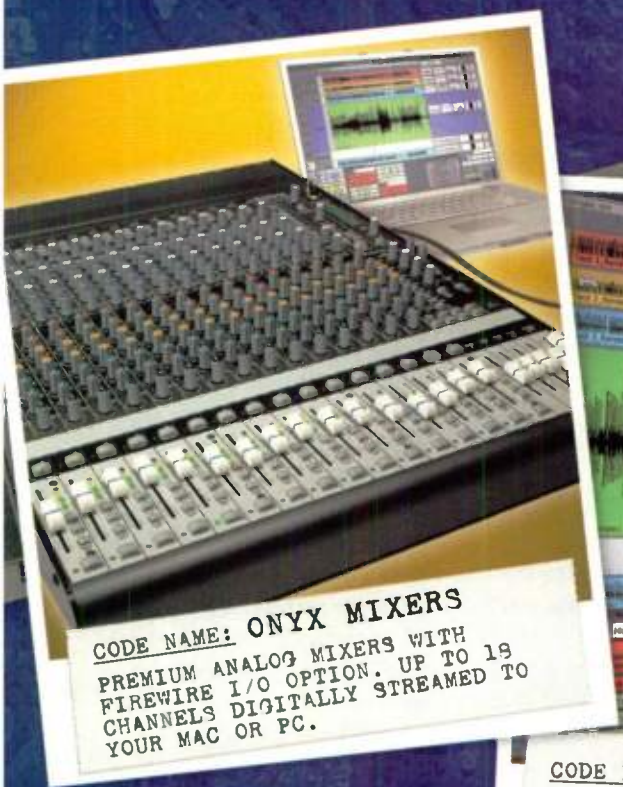

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# Letters

## Walking the Line

I loved Larry the O's "Final Mix" column "I'm Not Like Everybody Else" in the December 2004 issue. But it made me ask, "Where's the line between having great creative vision and simply having an original but terrible idea?"

Being different is one thing; having creative vision or a great idea is another. The problem is that people who are considered visionaries are often—in their lifetime—considered madmen or complete losers, and their great ideas are recognized only by later generations. Others just plain had terrible ideas, no matter how original.

So, how do you know if your idea is a great one that people just don't get yet, or a stupid one that no one will ever get? How hard do you push it until you give up?

Dave Hab
Forest Hills, New York

*Dave—Since, as you say, an idea could be despised in its time and appreciated by future generations, you might never know in your lifetime whether your idea is good. To quote Nigel Tufnel from* This Is Spinal Tap, *"There's a thin line between clever and stupid." The bottom line is whether you, the creator, believe your idea to be valid. You might change your mind based on the feedback you get, but then, you might believe they're all fools and posterity will judge—and you may be right or crazy. If you do believe in your idea, you stop pushing when you've burned out your drive to push. Maybe that's when you die, maybe it happens quickly, and that's a personal matter. —Larry the O*

## Brass Class

Thank you for publishing David Summer's article on recording brass ("Recording Musician: Brass Tactics," November 2004). For years I've been trying to find a way to record myself on trombone without sounding like I'm playing into a galvanized pail!

Please continue to print articles of interest to those of us who play nonelectronic instruments.

Tom Huelsmann
Stillwater, Minnesota

## Creative License

I found the article by Thad Brown ("World Wide Waveforms," November 2004) to be helpful in updating my knowledge regarding the technical aspects of preparing audio for the Web. However, I'm unclear about one point regarding licensing MP3 technology.

**How do you know if your idea is a great one that people just don't get yet?**

Does an individual need to obtain a license from mp3licensing.com if they encode their files in the MP3 format (I use iTunes) and provide samples of tracks from CDs that are for sale, without actually selling the encoded MP3 audio via download?

I'm certain that a lot of EM readers practice this, so the answer will most likely be of value to many.

RG Rhoades
via email

*Author Thad Brown replies: RG—The MP3 codec does use some patented "intellectual property," so licensing is an issue. The site to which you refer offers the following advice: "No license is needed for private, noncommercial activities (e.g., home-entertainment, receiving broadcasts, and creating a personal music library), not generating revenue or other consideration of any kind or for entities with an annual gross revenue less than US $100,000.00."*

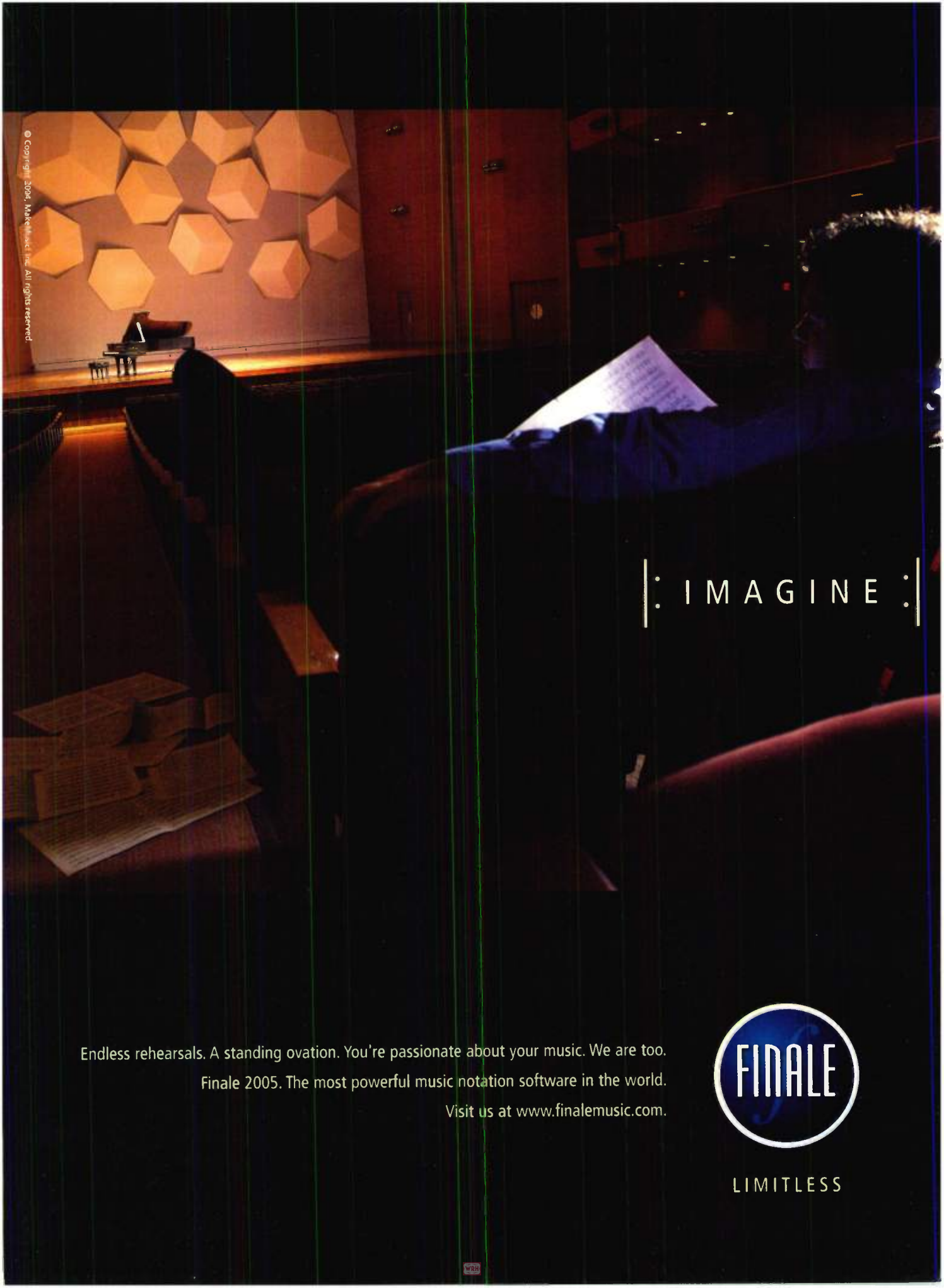
*I'm just guessing, but I expect that standard would eliminate 99.9999% of musicians in the world. Beyond that, I spent a good bit of time searching Google trying to find a case in which someone had been sued for distributing their own music using the MP3 codec. I couldn't find a single instance. That doesn't mean that it can't happen in the future, but with the amount of illegal music sharing going on, I'd guess that musicians who give out their own music will be very low on the hit list.*

*By the way, this is yet another fine argument for open-source software. Many of the tools that fuel the Internet (HTML itself, the Apache HTTP Server Project, Perl, and so on) are distributed under the ironclad GNU General Public License. I'm quite sure Bill Gates or Steve Jobs would love to receive a piece of a penny for every click on the Web but, by and large, they can't.*

*If you're concerned about licensing, check out the Ogg Vorbis format (see the sidebar "Alternative File Formats," in my original article available at emusician .com), which is an open-source codec.*

## Send in the Clones

I've spent most of my limited professional experience using Shure microphones such as the SM57, SM58, and SM81. With the glut of dynamic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# Letters

microphones on the market today, there seems to be an overkill of Shure SM57 and SM58 clones or copies out there. I can pick up a copy of *American Musical Supply* or *Musician's Friend*, and it seems that everyone and their brother are making these things and claiming that their microphones are the best.

I have often wondered whether these individual companies actually make their own microphones or simply license patents from other well-known companies. Or perhaps they put their brand name on a product that was made by someone else. Are there any facts or statistics on this?

Von Ehman
via email

*Von—The definitive answer is "absolutely yes and no"—which is to say, there is no one simple answer. A lot of companies still make their own dynamic mics (like those in the SM series), including Shure, E-V, AKG, Sennheiser, Røde, and others. Most of the confusion regards the numerous microphones that are made in China, where it's hard to get a clear story on who makes which mics and how much differentiation there really is. The fact that a mic is made in China is not significant to the end user unless you have a political problem with imports. The question is really whether the mics are of good quality, sound good, and are distinguishable from each other.*

*From what we have been able to learn, manufacturers have a variety of arrangements in China. Some do simply put their brand name on a stock design that was created and manufactured by someone else. Some mic companies begin with stock "clone" designs but add custom tweaks. These are probably the sorts of mics you are referring to. Other mics, however, that may appear similar are designed from scratch by the mic company and are custom manufactured in China to their specifications.*

*I have been told by a manufacturing contact that some Chinese factories subcontract certain jobs to other factories. Then again, some mic companies apparently have exclusive deals with factories to make only their microphones. Some of these factories are gigantic and can handle multiple completely independent lines, so the fact that two mics are made in the same factory doesn't mean they are similar in design or performance.*

*Quality assurance is the biggest issue; some mic manufacturers are willing to pay for more quality testing than others. The cheap mic that looks just like a more expensive one made in the same factory might, in fact, be identical, except that the cheap mic's capsule failed to meet the higher-end quality standards. In those cases, however, we're probably not talking about the name-brand models.*

*At least, we think that's the situation, but getting a straight story is difficult. What is clear is that the situation remains murky. I'm not saying anybody is lying to us, mind you, but I'm skeptical of almost everything I hear about this issue.*

*In the end, it's about whether the mic is well made and suits your purpose, not who makes it or where it is made. And the best way to determine that is to first read the reviews to narrow your choices, and then to test the mics. If possible, take each mic to your studio and test it in a real-world environment; testing mics in a music-store environment is not going to tell you what you need to know.—Steve O*

## We Welcome Your Feedback

Address correspondence and email to:

Letters
Electronic Musician
6400 Hollis Street, Suite 12
Emeryville, CA, 94608
or emeditorial@primediabusiness.com.

Published letters may be edited for space and clarity.

## Error Log

**December 2004,** "Download of the Month: X-Wheel of Fortune Pro," p. 20. The correct Web URL for downloading the freeware algorithmic-composition program X-Wheel of Fortune is www.algomusic.nl/freeware.html.

## Next Month in EM

### Powered Monitor Roundup

*Electronic Musician* tests and evaluates seven small, powered, close-field monitor speakers, including the M-Audio StudioPhile BX8, Phonic P8a, Alesis ProLinear 720, Event TR8XL, Fostex PM2, FBT Jolly-8 RA, and Tapco S-8.

FEATURES COVER STORY

### Subtle Gestures

Make your sample-based orchestral-instrument tracks sound like recordings of acoustic performances with these powerful synth, sampler, and sequencer tips.

### Production Values: Cake!

Cake lead singer John McCrea and his bandmates discuss their studio gear, recording techniques, and why the band switched from commercial studios to a project studio.

COLUMNS

### Sound Design Workshop: Twang, Plunk, Boing

Tips for using Ableton Live 4's Resonator plug-in.

### Square One: A Stitch in Time

Understanding and using pitch- and time-base manipulation.

### Working Musician: The DAW Apprentice

Hiring a pro to improve your mixes can also improve your engineering skills.

...and much more!

cakewalk

# SONAR 4

"SONAR 4 Producer Edition is simply stunning. Surround is logically integrated in a way that keeps the creative flow and mixing moving fast. And SurroundBridge is brilliant!"

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E-MU's 'm' series cards feature the very same 24bit/192kHz convertors as Digidesign's multi-thousand dollar Pro Tools HD systems, providing pristine audio & an incredible 120dB dynamic range.


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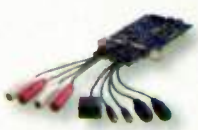

**0404** PCI card audio interface with 2 in 2 out analogue jacks offering 24bit/96kHz AD/DA conversion and AES/EBU compatible S/PDIF coaxial or optical I/O with 96kHz support.

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**1820m** All the features of the 1820 but with high-end 24bit /192kHz AD convertors as found in ProTools HD. An additional daughterboard also provides sync facilities in the form of WordClock, SMPTE and MTC.

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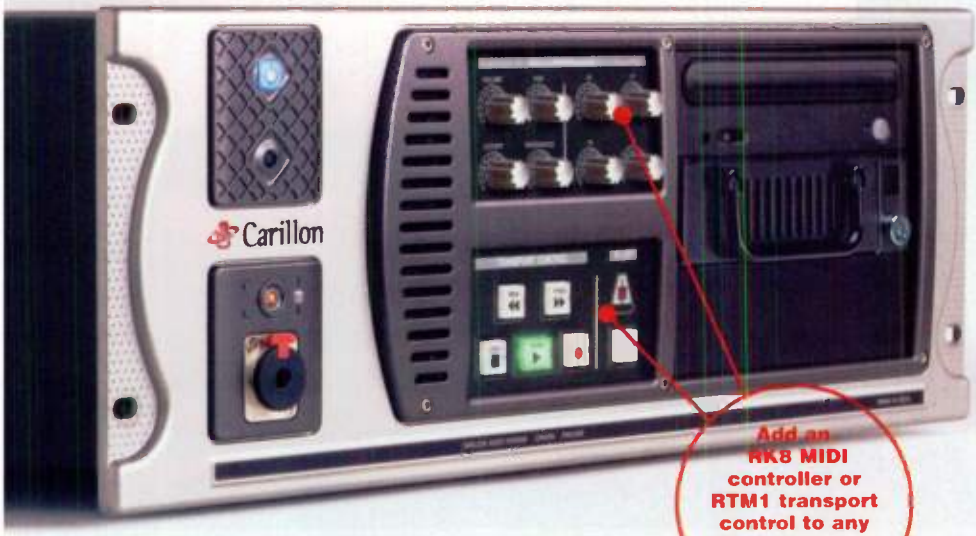
# DELIVERED

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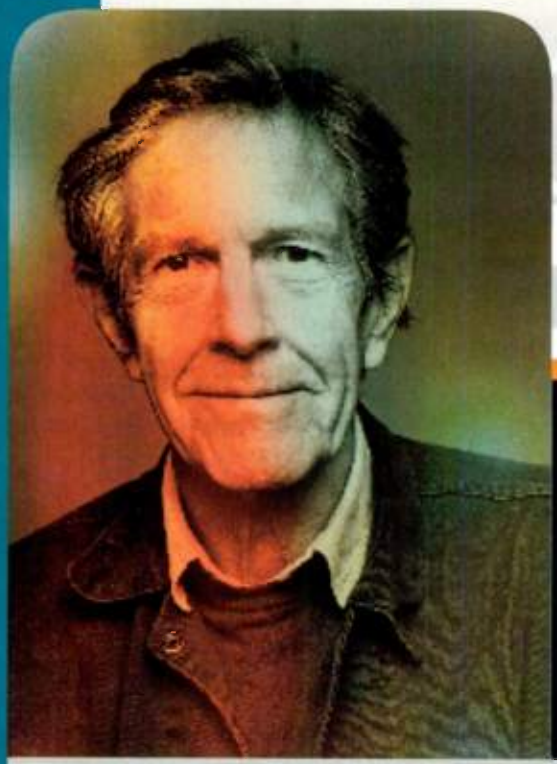

EMspotlight

## Conversations with Cage

As a musician, composer, and writer, John Cage helped change the course of 20th-century music. This exclusive interview from the EM archives reveals Cage's humility, inquisitiveness, and humor as he covers topics ranging from noise and electronics to poetry and the I Ching.

emusician.com/em_spotlight

## On the home page

### EM web clips

A collection of supplemental audio, video, text, graphics, and MIDI files that provides examples of techniques and products discussed in the pages of *Electronic Musician*.

### EM cool tip of the month

Sony Acid Pro 5 includes a number of powerful new tools. This month, we offer tips for getting the most out of these important features.

## show report

### 2005 Winter NAMM

The 2005 Winter NAMM show is the biggest annual musical-instrument expo in the U.S. Watch emusician.com from January 20 to 23 for daily updates on all of the exciting new recording gear, music software, and electronic musical instruments.

## editor's picks


Associate Editor Geary Yelton delivers his favorite EM articles about compressors. Topics range from basic parameters to the differences between various types of compressors.

emusician.com/editorspicks

## EM news

A weekly update on new hardware and software releases, manufacturer contests, and pertinent industry news.

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# DV-RA1000

# The new standard in high-definition 2-track mixdown and mastering.


**Introducing the ultra-high-resolution successor to DAT and CD recorders.**

Created in collaboration with Sony, the new **DV-RA1000** is the first affordable, true Direct Stream Digital recorder. It writes 1-bit/2.822 MHz DSD – the ultimate acquisition or archival format — or 24-bit PCM directly to standard DVD+RWs in real time. And then lets you edit and process the results without having to transfer to a DAW.

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| 192 kHz | 24-bit | 66 min. |
| 172.4 kHz | 24-bit | 66 min. |
| 96 kHz | 24-bit | 72 min |
| 88.2 kHz | 24-bit | 133 min. |
| 48 kHz | 24-bit | 267 min. |
| 44.1 kHz | 24-bit | 290 min. |

**Archiving.** Storing all those old school 44.1 kHz masters? Get almost 5 hours per disk with the DV-RA1000.

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DJ AND PRODUCER

PERSONAL CREATIVITY

By Geary Yelton

## Tascam DP-01/DP-01FX

Tascam has launched two new Portastudios, the DP-01 ($499) and the DP-01FX ($649). Each is a 9-pound hard-disk recorder that comes standard with an internal 40 GB hard disk. Although both machines are 8-track recorders, they also provide a stereo mixdown track and can record no more than two tracks simultaneously. Each channel has a 45 mm volume fader and dedicated knobs for pan, effects send, and high and low semiparametric EQ.

The front-panel LCD facilitates punch-in recording, locating to markers, hard-disk operations, and editing various parameters. The DP-01 and DP-01FX each have two unbalanced ¼-inch mic/line inputs and a separate ¼-inch guitar-level input. They also have two RCA line outputs, a stereo optical S/PDIF output, a ¼-inch effects send and stereo returns, and a ¼-inch stereo headphone output with its own level control. The MIDI Out port can transmit MIDI Time Code and MIDI Clock, and a USB 2.0 port lets you quickly back up data to your computer or an external hard disk.

The DP-01FX also has two phantom-powered XLR mic inputs, a selection of reverb types, and a multi-effects processor tailored for different instrument types. Effects types include amp modeling, chorus, echo, de-essing, and dozens more. Tascam; www.tascam.com.

## Earthworks DrumKit System

Most studios record drum kits with one mic on each drum and two more overhead. Earthworks Precision Audio, bucking the widely accepted technique that usually requires more than half a dozen mics, has introduced the DrumKit System ($2,100) in two distinct packages for recording and live performance. Both systems furnish one mic for kick drum and two for stereo overheads. According to Earthworks, the simplicity of the system yields increased detail and superior clarity.

For recording, the DK25/R comes with a matched pair of TC25 omnis for overhead placement and an SR25 cardioid for kick drum. The DK25/L, optimized for sound-reinforcement applications, has three matched SR25s only. Both models also feature the KickPad (available separately for $120), an XLR level attenuator with EQ processing that's purported to improve the sound of any mic used on kick drum. A free demo CD is available by request. Earthworks; www.earthworksaudio.com.

## MOTU Traveler

MOTU has unleashed the Traveler ($895), a portable audio and MIDI interface that draws its power from either the FireWire bus, a DC adapter, or an external battery pack of the type used with video cameras. Made of sturdy aluminum alloy, the Traveler includes removable rack ears, and runs either standalone or connected to a computer. CueMix DSP mixing lets you create four independent monitor mixes, each with as many as 20 inputs routed to any pair of outputs. A/D and D/A conversion rates are as high as 192 kHz, and the digital audio ports handle rates from 44.1 to 96 kHz.

The Traveler's rear panel furnishes four Neutrik XLR ¼-inch mic/instrument inputs, four ¼-inch TRS line inputs, eight ¼-inch TRS outputs, AES/EBU I/O on XLR jacks, S/PDIF I/O on RCA jacks, and TOSLink optical ports that handle Lightpipe or S/PDIF I/O. Two FireWire ports, BNC word-clock I/O, and a 9-pin ADAT sync input are also around back. On the front panel are a ¼-inch stereo headphone jack, 11 rotary encoders, four 48V phantom power switches, a 2×16-character LCD, and an assortment of colorful LEDs. MIDI In and Out ports and power connections are located on the side panel. Mark of the Unicorn (MOTU); www.motu.com.


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## Edirol R-4

Multitrack field recording just got easier: Edirol has announced the R-4 ($1,895), a 3.75-pound, 4-channel hard-disk recorder with onboard editing and two built-in, nondirectional, electret microphones. The R-4 records four simultaneous tracks of 16- or 24-bit audio at rates as high as 96 kHz onto a 40 GB hard disk. It has a limiter, a noise gate, an enhancer, graphic and parametric EQ, and a compressor/de-esser for recording or playback. The R-4 runs on eight AA batteries or an AC adapter.

The R-4's 128×64-dot graphic LCD displays recorded waveforms. Use the shuttle wheel to set edit points for trimming, splitting, appending, or merging audio data. Controls include individual input gain knobs, transport buttons, and marker set and locate buttons.

All four inputs are XLR/TRS combo jacks with switchable phantom power. A pair of RCA jacks and a ¼-inch headphone jack provide stereo outputs. Two more RCA jacks offer coaxial S/PDIF I/O. The R-4 also has a USB 2.0 port for exchanging data with your computer, a CompactFlash slot for offline storage, and an L terminal for start and stop sync with a digital video camera. Edirol North America; www.edirol.com.

## Best Service Artist Grooves

Best Service Artist Grooves (Mac/Win, $199.95), based on Native Instruments' Intakt, delivers 1 GB of sampled loops from four respected rock drummers: Simon Phillips (The Who, Jeff Beck), Mel Gaynor (Simple Minds, Robert Palmer), Dennis Chambers (Santana, Steely Dan), and Kenny Aronoff (John Mellencamp, Alanis Morissette). Each drummer supplies rocking beats and several variations at nine tempos ranging from 80- to 160 bpm (in increments of 10 bpm). In addition to complete stereo drum tracks, Artist Grooves includes mix-and-match parts played on hi-hats, cymbals, and kick and snare. Many loops are already beat sliced, allowing you to trigger individual beats using MIDI. All samples are 24-bit recordings.

Packaged on a DVD-ROM disc, Artist Grooves features the same drum kits used in the Kompakt-based Artist Drums. Because Artist Grooves is an Intakt instrument, you can vary the tempo with minimal artifacts and without affecting pitch, and you can beat-slice any loop as desired. You can also process the recorded loops with filtering, effects, and other synthesis parameters. Best Service/EastWest (distributor); www.soundsonline.com.

## Key Changes

**Roland** (www.rolandus.com) has made product manuals for all its current products available online in PDF format. To find a manual, go to the specific product's Web page and click on Manuals under the Support heading. The company plans to post manuals for older products, as well . . . **Cycling '74** has announced Pluggo for Windows XP ($199). Long exclusive to the Mac, Pluggo is a collection of more than 100 unique audio effects plug-ins. The Windows version supports VST and RTAS formats . . . **Audio Ease** (www.audioease.com) has updated its Rocket Science Bundle ($249; upgrades $79.95) to version 3.0.2. Now compatible with Mac OS X, the trio of plug-ins supports Audio Units, HTDM, MAS, RTAS, and VST. They include Roger (a vowel filter), Follo (an envelope-driven resonant bandpass filter), and Orbit (a location modulator). In addition, the most recent version of VST Wrapper (Mac, $39.95) is 4.1.2. Like the previous version 4.0, it makes VST plug-ins MAS-compatible in Mac OS X, for native operation in MOTU Digital Performer and AudioDesk. It also allows you to set preferences for each plug-in and improves support for previously problematic plug-ins . . . Virtual instrument developer **Wusik** (www.wusik.com) has updated its flagship VST plug-in Wusiksation (Win, $99.95; free upgrade) to version 1.1.0. It imports stereo 16-, 24-, and 32-bit WAV files at any sampling rate, adds new skins, and fixes numerous bugs . . . **Elektron** (www.electron.se) has updated the OS for its MachineDrum to version 1.20, adding features such as turntable sync, improved real-time control, and individual accent, slide, and swing tracks. Users can download the update for free.


# PATHBREAKING

Even a casual glance at the new Genelec 8000 MDE™ series bi-amplified monitors tells you they are extraordinary. Looks are indeed important. But we're Finnish. Form and function must co-exist in harmony and complement the true task at hand.

These new systems are in countless ways - pathbreaking - enabling a more revealing, natural and accurate sound. Sure, lots of technical terms abound, including reduced diffraction, minimized cabinet resonances, increased rigidity, lower distortion and more.

But the simple truth is the 8000 Series monitors *are* better. It wasn't an easy task, but at Genelec making the best monitors is what we are all about.

Combined with Genelec's 7000 LSE™ Series subwoofers, accurate reference systems can be easily integrated into nearly any environment, whether you are working in stereo or surround.

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## JBL LSR6325P

The latest addition to JBL's LSR6300 line of studio monitors is the LSR6325P ($399), a biamplified model with a 5.25-inch woofer and a 1-inch tweeter. Housed in a cast-aluminum enclosure, the LSR6325P was designed to minimize the detrimental effects of room acoustics while maximizing response characteristics at the mix position. According to JBL, it accomplishes a more accurate mix-position response by means of Linear Spatial Reference (LSR) technology.

JBL engineers assert that most speakers exhibiting flat on-axis response in an anechoic chamber might have irregular off-axis response that reaches the mix position. To compensate, a ±30 degree horizontal and ±15 degree vertical radiated response is built into the LSR6325P to ensure that the mid- and high-frequency content is balanced, regardless of the working distance. A user-adjustable boundary compensation setting is provided to correct spectral shift caused by mounting the speaker on a wall, in a corner, or on a work surface.

A 100W RMS amplifier powers the LSR6325P's high-excursion low-frequency transducer, and a 50W RMS amplifier powers the damped titanium-composite high-frequency transducer. The magnetically shielded monitor has balanced +4 dBu XLR and unbalanced –10 dBV inputs, a power switch, and a front-panel volume control. The LSR6325Ps can be used in combination with the PSR6312P subwoofer and its integrated Room Mode Correction system, which reduces the effect of low-frequency standing waves in problematic production environments. JBL Professional; www.jblpro.com.

## Zero-G Vocaloid Miriam

Vocaloid Miriam (Win, $279.95) is the third software instrument from Zero-G that uses Yamaha's vocal synthesis technology to put a virtual singer under computer control. Unlike Vocaloids Leon and Lola, Miriam models a specific performer: versatile British songstress Miriam Stockley, who has extensive experience as a session singer (with David Bowie and Elton John, among others) as the original vocalist for the new-age group Adiemus, and as a solo artist with two albums on the Narada label. Like the vocalist it emulates, Vocaloid Miriam is suitable for a variety of musical styles.

Miriam consists of an editor, a 16-bit vocal font, and a VST instrument. The Vocaloid Editor lets you enter notes on a piano-roll grid, type in lyrics, and add expressive details such as vibrato and pitch scoops. Miriam runs standalone or as a VST instrument. It slaves to ReWire hosts and has a maximum polyphony of 16 notes. Zero-G/EastWest (distributor); www.soundonline.com.

## Download of the Month

### TONIC 1.01 (MAC/WIN)

Tonic ($69), from Sonic Charge, is a VST drum machine for Mac OS X and Windows. Designed by Magnus Lidström, the brains behind Reason's Malström synthesizer, Tonic uses pure synthesis (no samples or wavetables) to generate its drum sounds, and it sounds great. It features eight pads, each using the same synthesis engine, and a 16-step pattern sequencer with flexible pattern chaining. You can load a fully functional demo as well as audio examples from the Sonic Charge Web site (www.soniccharge.com).


Tonic's synthesis engine consists of a multiple-waveform oscillator (sine, triangle, and sawtooth), a multimode (lowpass, bandpass, and highpass) filtered-noise source, and an output mixer with EQ and distortion. Each drum pad can be routed to one of two stereo outputs for four channels of independent outboard processing. The charm of Tonic's straightforward modules lies in the modulation options: in addition to decay envelope, sine-wave oscillator, and random for oscillator pitch, filter cutoff offers three envelope shapes. One of the envelopes automatically retriggers, making it ideal for handclaps and other repeated sounds (see **Web Clip 1**).

The pattern sequencer holds 12 patterns, each with 16 or fewer steps whose size ranges from 8th to 32nd notes. Each step has acce nt and fill options. A swing parameter delays even-numbered steps. Patterns can be organized into looping chains. Programs, which include all synth settings and patterns, can be saved to disk, as can individual synth patches. Tonic comes with 61 factory programs and 366 patches to get you started.

EM WEB CLIPS

*—Len Sasso*

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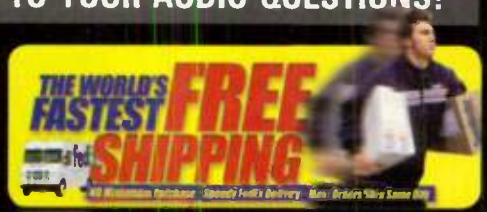


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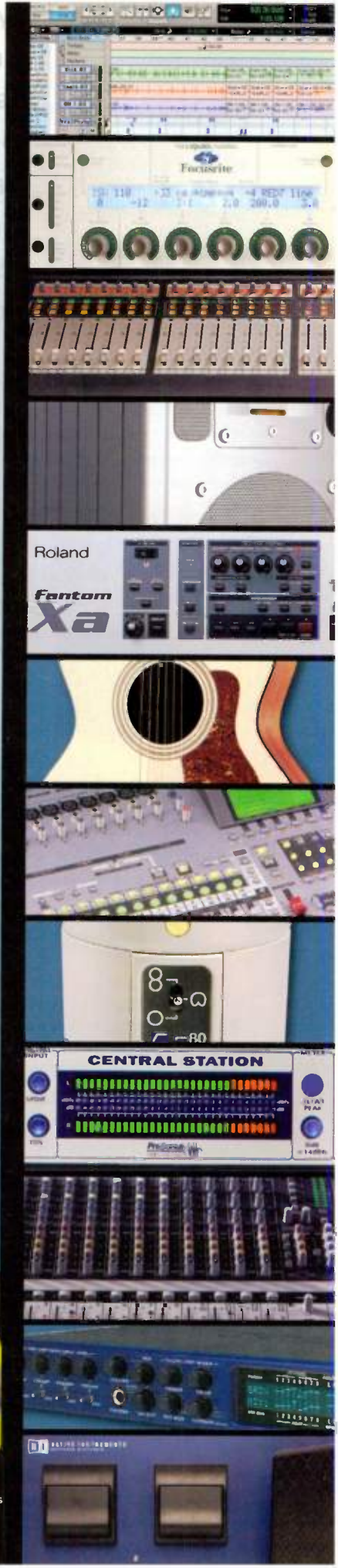
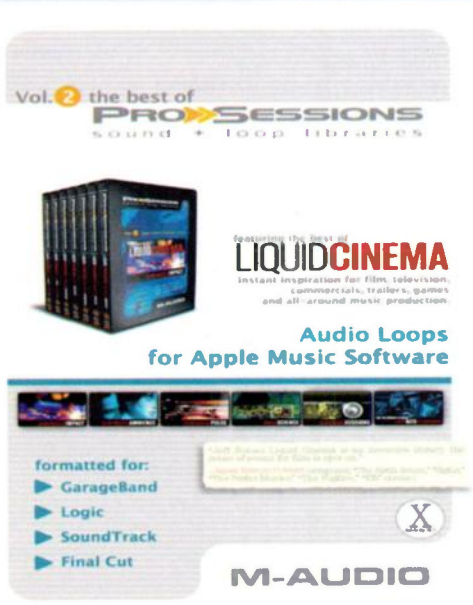


# Sound Advice

**M-Audio** (www.m-audio.com) continues to expand the ProSessions line by adding more titles to its already extensive list of sample CD-ROMs. Volumes 42 through 46 ($49.95 each) were produced in collaboration with Discrete Drums. They're entitled *Funky Beats, Rock Drums, Slow Rock Drums, One Big World,* and *More Funky Beats*. Like most ProSamples libraries, each disc delivers stereo files in Acidized WAV, AIFF, Rex2, and audio formats.

M-Audio has also repackaged hundreds of its best loops on *The Best of ProSessions, Vol. 1* ($99.95), a CD-ROM containing more than 640 MB of samples formatted for Apple Loops. Taken from a back catalog that




includes *Adrenalinn Guitars, Elektron Machinedrum,* and *Sounds Logickal,* the collection is suitable for users of Apple Logic 7, GarageBand, Soundtrack, and any software that imports audio loops. *The Best of ProSessions, Vol. 2* ($99.95), is a DVD-ROM containing almost 2 GB of samples from soundtrack composer Jeff Rona's *Liquid Cinema,* also formatted for Apple Loops.

High-quality sound effects are always in demand, and no one does them better than motion-picture sounddesigners. **Sony Pictures Digital** (www.sony.com/mediasoftware) has released *Sony Pictures Sound Effects Series* ($499.95), a 5-disc boxed set of CD-ROMs. The five volumes contain 16-bit WAV files ranging from animals and backgrounds to vintage cartoon and vehicle sounds. Each disc provides a list and a description of all recordings and their precise lengths.

## E-mu Proteus X

It had to happen sooner or later: E-mu's Proteus has gone virtual. Proteus X (Win, $199.99) bundles the 0404 PCI expansion card with a sample-playback soft synth that runs either standalone or as a VST instrument. Like previous Proteus models, Proteus X features a synthesis engine with conditional voice modulation, 36 patch cords per voice, and more than 50 Z-Plane morphing filters. Two effects processors offer as many as 67 simultaneous effects. Breakout connectors on the 0404 provide two ¼-inch inputs, two ¼-inch outputs, optical and coaxial 24/96 S/PDIF or AES/EBU, and MIDI In and Out ports.


Proteus X's 24-bit sample library includes the entire Proteus 2000 sound set, a hip-hop bank, drums and grooves, and a stereo grand piano—in all, more than 2 GB of sound data and thousands of presets. You can add more sound sets from E-mu modules or from any CD-ROM in the Emulator X library. The software also imports sample formats such as Akai, Giga, HALion, EXS24, and others. E-mu; www.emu.com.

## Universal Audio LA-610

On the hardware front, Universal Audio has unveiled the LA-610 Classic Tube Recording Channel ($1,795). This 2-space rackmount module combines the tube preamp and EQ of Bill Putnam's 610 modular recording console with the T4 cell, the compression detector that has made the Teletronix LA-2A leveling amplifier such a popular choice among professional recording engineers. According to Universal Audio, the T4 cell's electroluminescent panel and custom-made photoresistors are the crucial components responsible for the LA-2A's sonic signature and program-dependent behavior. Although the LA-610's compressor isn't an exact clone of the LA-2A, Universal Audio aims to offer project studios a vintage-style channel strip with the quality and capabilities of high-end, pro studio gear.

For warmth and balance, the LA-610's preamp section contains one 6072A, one 6AQ5, and three 12AX7A tubes. Its variable impedance switching makes it well suited for use with a variety of mics and as an instrument DI. The LA-610's specifications state that its frequency response ranges from 20 Hz to 20 kHz ±0.5 dB with a maximum gain of +40 dB for a line input and +77 dB for a mic input. Universal Audio; www.uaudio.com.

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## USB X-treme FX

The greatest challenge of working with a large collection of sound effects is gaining quick access to just the sound you need when you need it. Ultimate Sound Bank's new X-treme FX (Mac/Win, $399) is a sample-based RTAS, Audio Units, and VST instrument plug-in with more than 5,000 natural and electronic sound effects presets. The presets are organized into categories such as Atmospheres, Foleys, Science Fiction, and Urban, with subcategories such as Natural Ambiences, Space Storm, and Musical FX. A number of sounds are on loan from Hollywood Edge sound-effects libraries.

With a user interface very similar to that of USB's Ultra Focus, X-treme FX lets you layer two sounds and process them using two filters, three envelope generators, four syncable LFOs, two effects processors, ring modulation, and a vocoder. X-treme provides nearly 8.5 GB of source material on two DVD-ROMs. Ultimate Sound Bank/Ilio Entertainments (distributor); www.ultimatesoundbank.com or www.usbsounds.com.


## LinPlug SaxLab

Surmounting the difficulties of realistically emulating the saxophone, LinPlug is shipping SaxLab (Mac/Win, $149), a VST and Audio Units plug-in that replaces Dash Signature's TubiLeSax for Windows (upgrade, $99). This flexible virtual wind instrument plays monophonic multisamples in three adjustable layers.

In addition to numerous presets for alto, tenor, soprano, and baritone sax, SaxLab offers presets for flute and trombone and a selection of 30 temperaments. Its user interface offers real-time control of performance parameters such as scoop, pitch bend, and brightness, as well as controls to specify body frequency, resonance, and deviation. You can also determine Velocity-sensitive envelope, pitch deviation, LFO, chorus, and reverb. All controls respond to MIDI Control Changes. LinPlug Virtual Instruments GmbH; www.linplug.com.

# Rev Up

### PROPELLERHEAD REASON 3.0

Reason has indisputably changed the ways thousands of electronic musicians ply their craft. Now Propellerhead Software has updated its flagship software to Reason 3.0 (Mac/Win, $499; upgrades $129), which focuses on live performance and introduces a versatile new module to its already substantial collection.

Combinator lets you construct complex chains of instruments, effects, and dynamics and save them as Combi patches that you can quickly load and begin playing. An expanded sound bank supplies new multisampled instruments, and a new browser lets you organize, search, and audition all the samples in your sound library. Also new is MClass, a mastering suite comprising 4-band EQ, compression, a stereo imager, and a maximizer with look-ahead limiting. In addition, Reason 3.0 offers quick and easy integration with most major control surfaces. PropellerheadSoftware;www.propellerheads.se.


### DIGIDESIGN PRO TOOLS 6.7

Digidesign has upgraded Pro Tools (Mac/Win) to version 6.7, introducing features such as tempo-dependent automation and audio placement, graphic tempo editing, color coding, an Undo History window, and support for plug-ins with multiple outputs. All-new MIDI features include step input and enhanced MIDI region editing. MIDI Detective can generate tempo maps and groove templates from MIDI performances recorded without a metronome. In addition, Beat Detective LE is now part of Pro Tools LE.

MIDI time stamping, external MIDI studio setup, and advanced patch-name support are new to the Windows version, putting its MIDI sequencing capabilities on a par with the Mac version's. Windows users can also open older Sound Designer II–based sessions more easily than in the past.

Updates are free for registered owners of Pro Tools|HD and HD Accel running Pro Tools TDM 6.4 or higher, as well as for Pro Tools LE owners who bought their systems after February 25, 2004. Earlier HD system owners can upgrade for $175, and earlier LE owners can upgrade for $75. Note that Pro Tools 6.7 is incompatible with Digi 001 and Pro Tools|24 Mix systems. Digidesign; www.digidesign.com. EM

# ProteusX

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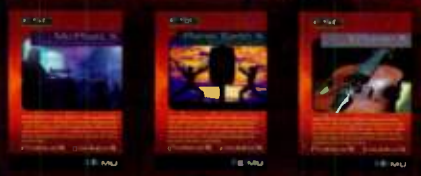

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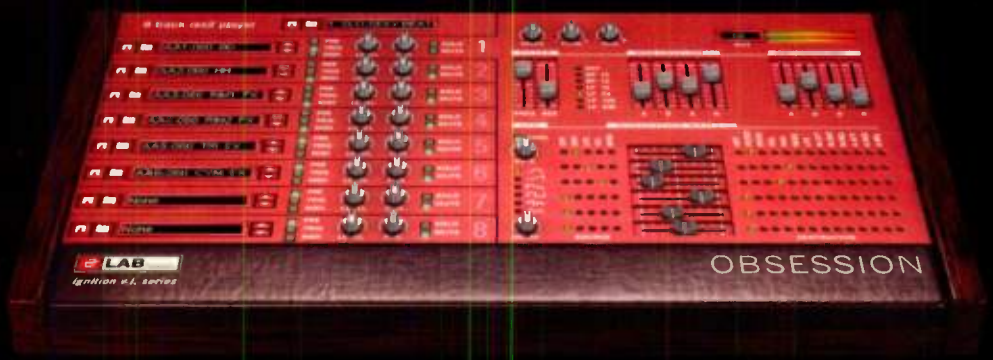


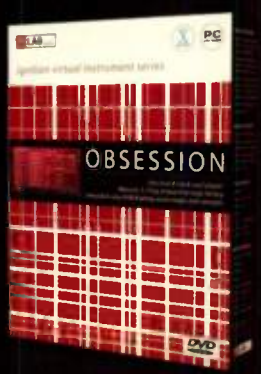


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# Tera Era

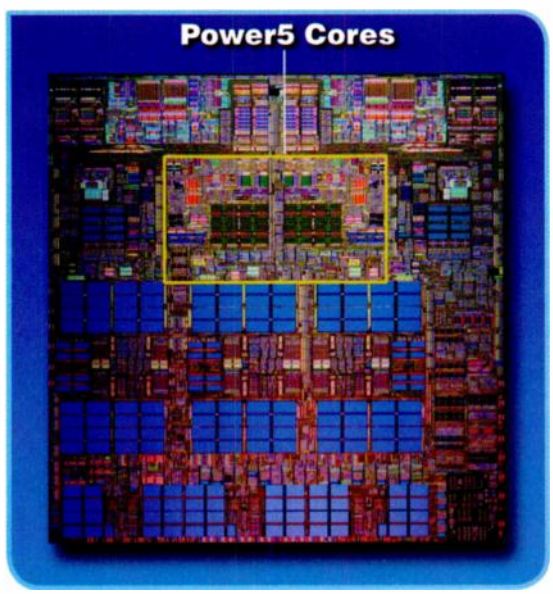
By Scott Wilkinson

## Parallel processing on a single chip.

In the unbridled rush toward computers with terahertz clock speeds and many terabytes of data storage, a few stumbling blocks lie in the path. Among the most important is the issue of heat, which increases with clock speed and other factors, such as gate density; in fact, today's microprocessors are already approaching the thermal limit beyond which silicon starts to break down. Apple has addressed this with liquid cooling in its G5 models, and Intel could soon follow suit, but it's an expensive solution.

Another concern is the delay introduced by the interconnections between gates. The speed at which electrons flow through copper wire is limited by the resistance and capacitance of the wire. As the gate density on a chip increases, the interconnecting wires get shorter, which is good, but they also get thinner, which increases the delay factor.

More significant delays arise from the relatively slow connection between the processor and main memory. It can take 400 times as long to fetch a piece of data as it does to execute an instruction, meaning that the processor is furiously spinning its wheels while waiting for more data to process. On-chip memory caches and instruction-level parallelism (working on one instruction while waiting for the data that another instruction needs) help alleviate this bottleneck, but only to a point.




COURTESY IBM SYSTEMS & TECHNOLOGY GROUP

**FIG. 1: IBM's Power5 microprocessor includes two processing cores.**

These problems have led to slowdowns in the development of faster processors. For example, Intel delayed the Prescott, a version of the Pentium 4 with 125 million transistors (compared with 55 million in the previous version), due to manufacturing troubles, and its performance improvements underwhelmed analysts when it was finally released. In addition, the company has postponed the introduction of a 4 GHz Pentium and completely stopped development on next-generation Pentium and Xeon chips.

Instead, Intel, IBM, and other chipmakers are shifting their focus to designs that include two or more processor cores, or computational engines, on a single chip. Such architectures are already being used in computers with multiple processor chips on the same motherboard, but integrating several processing engines within a single chip could lead to even higher plateaus of performance while reducing heat and delay concerns.

The idea is to divide complex tasks among multiple cores, allowing those tasks to be completed more efficiently. Because the cores reside on a single chip, their interaction time is greatly reduced compared with traditional multiprocessor machines. The clock speed of each core can be slower than that of single-core chips, which reduces the amount of heat generated and spreads it over a larger surface area. Even so, the effective computational speed is greatly increased; according to IBM, a dual-core processor can perform roughly twice as many operations per second as a single-core chip with the same architecture running at the same clock speed.

Multicore processors are not a panacea, however. For one thing, software must be designed specifically to take advantage of multiple cores, and some types of applications are better suited to exploit multicore processors than others. Fortunately, graphics-rendering and table-lookup operations are prime candidates for parallel processing, and both are important for electronic musicians.

In 2001, IBM was the first to introduce a dual-core processor, known as the Power4, which was updated to the Power5 in May 2004 (see **Fig. 1**). In the same month, Intel announced that its new desktop and server microprocessors would be multicore designs; the company now has a prototype dual-core version of the Itanium 2. Sun Microsystems introduced the dual-core UltraSparc-IV in February 2004, and an 8-core chip, code named Niagara, is expected to appear in 2006. Clearly, multicore designs are likely to become the next standard for microprocessor architecture, allowing ever-higher levels of performance to be achieved within the limits of silicon and copper. EM

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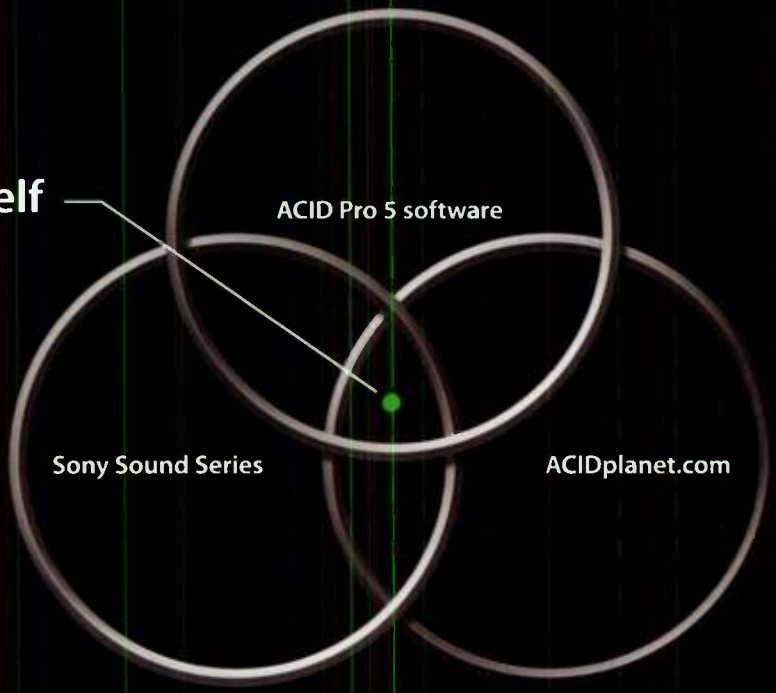


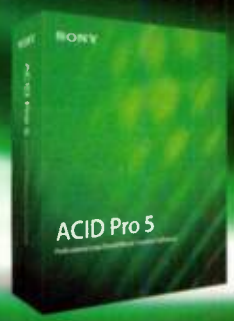



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# Golden State of Mind

By Matt Gallagher

## The edgy mixes of PC Munoz and the Amen Corner.

San Francisco Bay Area group PC Munoz and the Amen Corner offer a scintillating mix of R&B, funk, hip-hop, rock, and gospel. The Amen Corner consists of Paul Ruxton (keyboards), Stephen Smith (bass), Marc Weibel (guitar), and Danny Zingarelli (percussion and vocals). The group's third release, *California* (Beevine Records, 2004), presents an eclectic mix of instruments and musical styles. It features musical guests such as Jackson Browne, who recorded vocals for the title track in his studio, and former Prince and the Revolution keyboardist Dr. Fink.

"The record uses vintage sounds while also hinting at a futuristic sound," says Munoz, the group's leader. For California, Munoz recorded cajon, Chinese, and udu drums alongside drum machines. Ruxton played a range of electric pianos and synths, such as a 1970s model Wurlitzer EP200a and a Korg Karma. Munoz deftly orchestrates disparate sounds into a cohesive whole. "The more simply you execute a song, the better," he says. "I go to the heart of a song and determine how it can best be presented.


ANTHONY TWO MOONS

*California*/PC Munoz and the Amen Corner

"Some of the album reflects my love of the Minneapolis sound," Munoz says. "We did preproduction at Dr. Fink's studio [in Minnesota] using Mark of the Unicorn [hardware] and Digital Performer." Munoz laid down rhythm tracks by accessing Dr. Fink's samples of vintage drum machines such as the LinnDrum LM-1, Oberheim DMX, Roland TR-808, and a 1959 Wurlitzer Sideman. "We also recorded the kalimba part for 'Small Map' and Dr. Fink recorded his solos for 'Deathbed.'" The resulting sessions were then transferred into Pro Tools.

Munoz and his group recorded most tracks to Pro Tools in coproducer Peter Krawiec's studio space in an Oakland, California, warehouse. "We recorded bass, guitar, keyboards, drum set, percussion, and vocal tracks there," Munoz says, "but [the warehouse] was filled with loud bands. We would have to halt sessions. We had to go elsewhere to record the Hammond B-3 and the string quartet." Krawiec, Munoz, and the group lugged a Mac G4, Pro Tools HD rig, microphones, outboard gear, and instruments to other studios as needed.

"We worked that way until we moved into a new warehouse [space] in San Francisco," Munoz says. "The building used to belong to a sculptor, so Peter converted an old spray booth into an isolation booth, ran cables across an old metalworking shop floor, and set up a control room in the bedroom of the former owner. We built baffles to help with soundproofing. We were able to redo some [tracks] there. We also mixed there."

The vocal tracks on *California* particularly stand out among the menageries of instruments. "I like clarity," says Munoz. "Peter gets good sounds before we start tracking. I often track vocals over the drum and bass tracks, just to keep the feel of poetry and hip-hop. In some cases, I track vocals before the drums are on. On 'Portrait,' I did the vocal over the harpsichord part. Then Dave Worm came in and added his incredible mouth drums. We do a lot of overdubbing, often because I hear subtle things that would enhance a song," Munoz says. "I like to give the musicians a chance to respond.

"In the past, I rarely wanted effects on my voice," Munoz says. "I felt that they weren't right for spoken word. When [mix engineer] Chris Brooke started messing around with reverb and effects on my voice, I was like, 'Hmm,' but I stayed open. I believe in staying open-minded throughout the whole process of making an album. You never know when the next great serendipitous thing will happen." EM

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# Mastering From the Trenches

By Myles Boisen

Tips from a streetwise panel of experts.

Mastering has often been a job for highly trained and expensive professionals hired by major labels for major artists. Today almost anyone can attempt to master records at home using commonly available tools. But a middle ground also exists: a new generation of mastering engineers with fresh ideas operates closer to street level than the more traditional pros, working primarily on independent projects and offering affordable services at their studios.

Using outside mastering services is a smart and surprisingly affordable option for many, and understanding what goes into the process can help produce better results. To get an idea of some of the issues that arise, I interviewed three of the most experienced experts of the new mastering generation: Tardon Feathered (see **Fig. 1**) of Mr. Toad's in San Francisco, Jeff Lipton (see **Fig. 2**) from Peerless Mastering in the Boston area, and Paul Stubblebine (see **Fig. 3**) of Paul Stubblebine Mastering and DVD, also located in San Francisco.

The panel's combination of mastering knowledge and "street cred" can help anyone who wants to get the most bang out of every buck invested in a self-produced recording. Even if your next project is headed to a "spare-no-expense" mastering facility, some of these peer perspectives might save you a bundle.

**What are the most common problems you see with mixes coming from semiprofessional and home studios?**

**Lipton:** Most mixes coming in are optimized for the acoustically inaccurate rooms they were mixed in, as well as mixed on less-than-honest monitors. One major problem, therefore, is muddy low end

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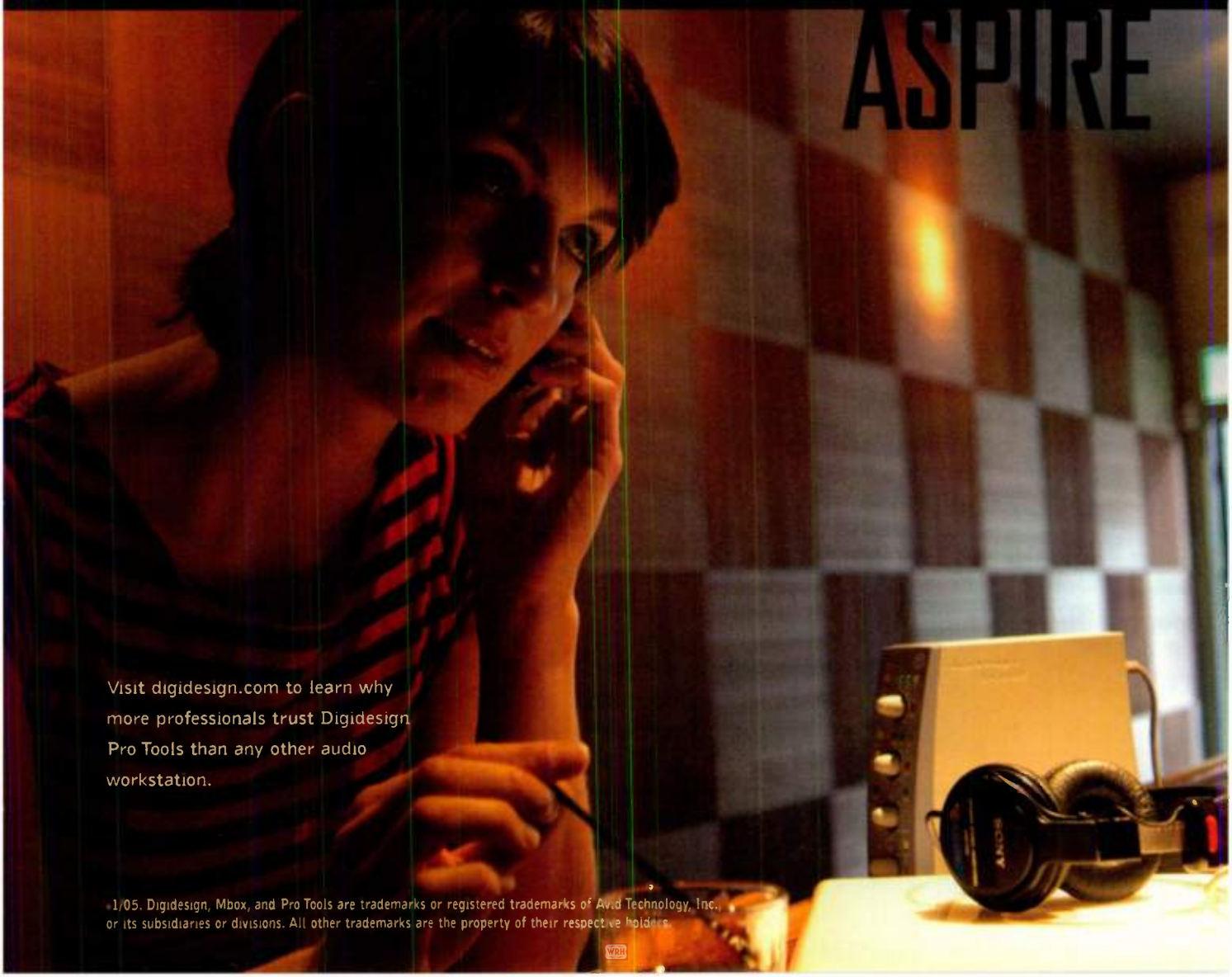


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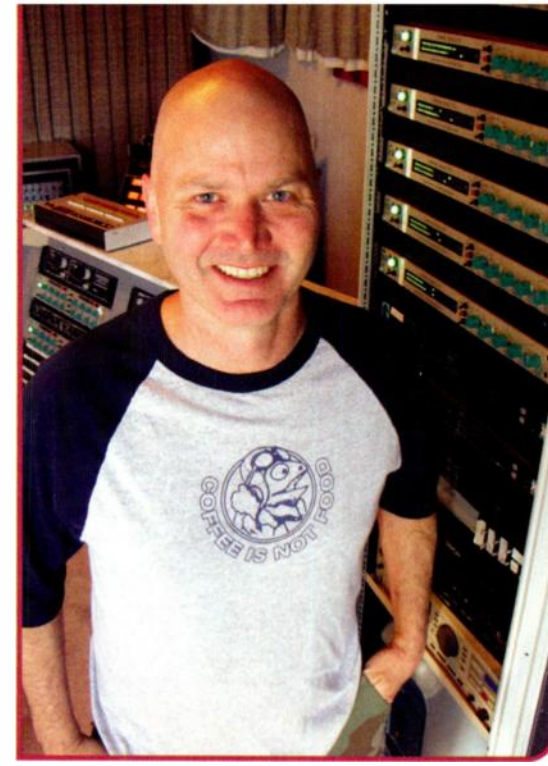
or muddy lower mids. Most inaccurate rooms portray bass inaccurately or not at all, so engineers tend to guess at what to do in that range. This either leads to way too much bass and lower midrange, or in some cases a bad balance between the kick drum and the bass guitar.

Many lower-end studio monitors seem to have midrange boosts and cuts, misleading the engineer in this critical frequency area. Other problems are too little high end because of the popularity of low-quality monitors with built-in high-end boosts; flat and muddy drum sounds, because it's hard to get a good drum sound in a house or project studio; and overcompressed or clipped audio on the mix bus. Instead of letting the mastering engineer get the desired compression level, inexperienced mix engineers usually turn all the faders up too high, and you hear the signal clipping all over the place.

**Stubblebine:** It's pretty common to find either too much [or not enough] bottom or the bottom-end varying wildly from one track to the next. Another important thing that can be frustrating for us is a mix with one important element too dull but some other element overly bright. That makes it difficult to dig in and brighten the dull element. It's also pretty common that the level of the vocal relative to the track isn't consistent from song to song.




COURTESY TARDON FEATHERED

**FIG. 1: Tardon Feathered is the president and mastering engineer at Mr. Toad's Recording in San Francisco.**

**What do you see as the primary causes of substandard recordings that might need drastic fixing in the mastering room?**

**Stubblebine:** I'd lump these causes into three groups. First, we keep coming back to relying on monitoring that isn't up to the task. The speakers don't have to be the most expensive in the world, but if you can't find some placement in the room that gives a reasonably balanced presentation, you're working with one strike against you from the start.

Second is pushing things too far. I'm in favor of using any technique or effect that makes a record better, but a lot of people just seem to turn every knob up until it hurts. There's a sweet spot for any effect, and it isn't always at maximum. I include mixing too loudly in this category. Mixes made that way tend to sound right only when they are played back loudly, whereas a mix made at a medium volume sounds pretty similar when you turn it up or down. Also, when you do all your listening at high SPLs you lose perspective on your mix earlier in the session. It becomes harder to judge where the vocal is sitting, and harder to judge the low end in relation to the rest of the mix.

The third thing just seems to fall under the general heading of inexperience. Making good recordings isn't easy; it takes both talent and practice. So keep practicing.

COURTESY TARDON FEATHERED

**The centerpieces of the mastering room at Tardon Feathered's Mr. Toad Recording are Dunlavy SC-IV monitors matched with a Hafler 9505 amp and Entech 24/96 D/A converters.**

**Overcompression and "the loudness war" have been common themes in mastering circles over the past few years. Are the voices of experience in the industry persuading engineer-musicians and indie labels to leave some dynamic range in their mixes?**

**Lipton:** No! I often ask my clients how compressed they want their album to be, rated on a scale of 1 to 10. With 1 being dynamic and high quality, and 10 being loud and overcompressed, and most of the time they pick 8 to 10. I explain the consequences of how it will suck the space out of the mixes and make the record tiring and hard to listen to. They say they just want it as loud as the other overcompressed albums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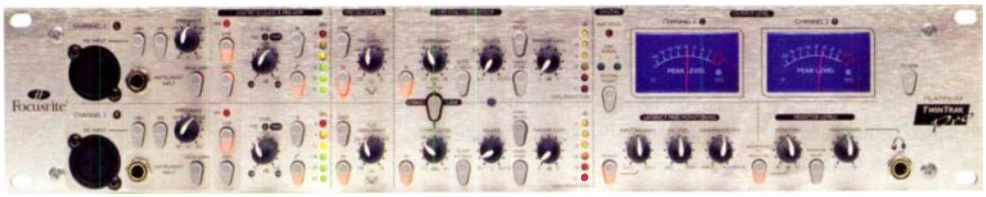

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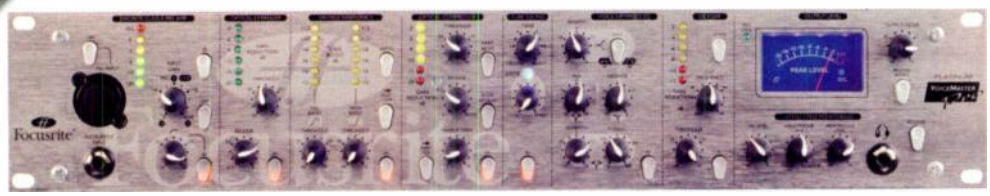

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Mark 'Spike' Stent- World-renowned recording engineer

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they listen to. It's sad, but I don't want to lose business by not meeting or exceeding my clients' expectations.

**Feathered:** In some ways, it's a hopeless battle at the indie level. For every mastering engineer who educates a client successfully on how to best capture a dynamic mix, one hundred more people are experimenting with [Digidesign] Pro Tools for the first time. When the tools are there to squash the music into oblivion, it can and will be done. Especially since making those final tweaks to your mix almost always means bringing things up in the mix, not down.

**Has the spread of 24-bit recording produced improvements?**

**Feathered:** No, the tools are the same; so are the levels they can produce. Some of the new formats, such as SACD, which can actually be rejected at the plant for being "too loud," have the potential to help battle the volume wars. But anything in the PCM audio world can't. As there is no enforceable standard, it is easy to make PCM audio louder than is necessary or enjoyable with a few simple, cheap tools.

**Stubblebine:** We've seen some improvement; more mixing engineers are asking about the issue at least. But in many cases mixing engineers feel that they have to give the client a reference copy that already sounds loud, and so they will mix through some fairly drastic compression. As long as the engineer saves an uncompressed mix too, there's no problem. But all too often the compressed version is the only one saved, and that's what we get to work with. That severely limits our room to maneuver.

## DOS AND DON'TS FOR A SMOOTH MASTERING SESSION

Sit on your final mix for at least a few days. Make notes of any things you want the mastering engineer to pay attention to. If you made vocal-up/vocal-down mixes, note which ones you prefer, but bring them all to the session. You may prefer a different one after it gets mastered, or you may want to lift a line or two from another mix and drop it into the preferred mix. And don't mix until three in the morning before the session! —*Paul Stubblebine*

Provide the mastering engineer with a compressed and an uncompressed mix so that they know what you are going for, if you enjoy mixing through compression. And be organized; it saves time and money. —*Jeff Lipton*

Don't allow the Number 1 offender—bad labeling. For example, the band has eight CDs with different mixes or names, and no one remembers which one they agreed to use. This is especially true when the mixes are on CD-ROM, and the band's reference is an audio CD. "Dude, use mix 4." Then you look at the CD-ROM and they're all named "vox_up," "vox_down," "bass_up," and so on. That's a true waste of money. —*Tardon Feathered*

BEN PALMER

FIG. 2: Jeff Lipton founded and is chief engineer of Peerless Mastering in Newtonville, Massachusetts.

**After hearing a project with the kind of major flaws we've discussed, do you ever advise clients to remix before proceeding with mastering?**

**Feathered:** Only with the knowledge that they probably won't come back to me once they've fixed it. So you're damned if you do, and damned if you don't. A better approach is to have them bring you the remix job, if you do such things.

**Would you take on the supervision of a revised mix from a client's DAW or multitrack computer files?**

**Feathered:** Absolutely. In many ways, this is the future of mastering. And it's a far better solution than simply telling the client they need to remix. Since the mixes are essentially totally recallable, I love this idea. The pitfalls come up when you try to open the projects on a different computer rig. It is much easier to have the client bring his or her own machine.

**Stubblebine:** We have found ourselves in that position a few times, and have indeed gone back to the mix stage with the client, tuned up the mix, and then mastered from that. Since the majority of projects exist in a workstation, it only makes sense to go back and revise it if there's something that is so drastic we can't deal with it effectively in mastering.

**What advice would you give to those weighing the potential costs and benefits of outside mastering?**

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**Stubblebine:** I feel that the money spent on a professional mastering job returns a lot of value. And it usually makes a bigger improvement in the final outcome than the same dollar amount spent on any other part of the production.

**Feathered:** If your music is your life, then you must understand that mastering is an essential part of the process. Some people say, "It's just a demo." To that I say, "You only get one chance to make a first impression."

Fan club releases, tapes of your family singing around the campfire, rough mixes—these can get away without being mastered. But don't mess with your life's work! Mastering is your last opportunity to confirm that it all sounds just like you think it does, and to know that it sounds as good as it can.

**Lipton:** If you've put a lot of time into an album, the last thing you should do is skimp on the mastering. There are so many advantages to mastering with a good mastering engineer in a well-equipped, acoustically designed room. For lower-budget and even many high-budget clients, this is the first time anyone has ever heard the true frequency response of the mixes. When you get your mixes to sound good and even in a flat room, they will sound better in every environment. For example, if a mix is too bassy to begin with, it will sound horrible [when you play it on a bassy system]. It is for this reason that I feel my best mastering tool is my monitoring environment, which I can trust 100 percent.

PHIL BROWN

**FIG. 3: Paul Stubblebine owns Paul Stubblebine Mastering and DVD in San Francisco.**

Quality mastering gear is also crucial to the process. If a processor colors the sound or has a negative effect, it will hurt the entire mix. Good mastering equipment will add the least amount of color, offer perfect phase correlation between the channels, and work musically. And $18,000 A/D/A converters, for example, will usually sound a lot more accurate than stock DAW converters—just like a $12,000 analog EQ will sound more accurate and musical than most plug-ins.

COURTESY PAUL STUBBLEBINE MASTERING

**At Paul Stubblebine Mastering, the Camelia Room's surround setup features main monitors custom built by Alon Wolf, Meyer HD-1s for satellites, and Bag End ELF subwoofers.**

### What is the best route for artists who can't afford to master their CD at a professional facility?

**Stubblebine:** At least involve someone else who hasn't been mixing the project. Part of the value of mastering comes from the fact that the mastering engineer brings a new perspective, and the people mixing the record get so wrapped up in it that they can overlook problem areas. So if you've got a friend who has a good sense of what a recording should sound like, but who hasn't been mixing with you, bounce some ideas off him or her.

**Lipton:** First of all, artists shouldn't be afraid to call a professional facility and discuss their budget. It is possible that the professional facility will have independent-artist discounts and be willing to work within the artist's budget. I try to fit in the struggling artist whenever I can, because often they have very interesting music.

If you just don't have any money, try to equalize and compress your material so that it matches a stylistically similar, professionally mastered album. Compare all your songs to make sure that they are consistent in level and relative frequencies. And listen to them in every environment you can.

**Feathered:** Call around. Professional mastering these days is cheaper than you think. That said, go semipro if it's all you can afford. At least you'll get to hear your project in a different studio with someone who aspires to master CDs professionally. Ask for referrals; listen to their work.

**What lessons can you impart to our readers to help them find the right mastering facility, and avoid a mastering job that is not right for them?**

**Stubblebine:** The best indicator would be that someone has mastered great-sounding projects—both musical and engineering—in styles that you like.

**Feathered:** There is no one correct way to master a CD. No two mastering engineers would even make the same mix sound the same. There are two major factors that affect mastering: the quality of your mixes and the quality of the mastering engineer and studio. A cruddy mix can only be polished so much. But a good mix has so much potential that sometimes it's worth asking an engineer to try it a different way.

**Lipton:** A lot of budget mastering studios out there are just people with DAWs working in acoustically imperfect environments. Go with an engineer that has mastered hundreds of albums, including several that you like. A big mistake people make is mastering with recording engineers who do not have real mastering experience. They may be good at what they do in their studio, but that won't always translate to objectivity or an ability to hear the imperfections in their material.

**Tardon, regarding the subjective nature of mastering that you brought up, would you say you have a consistent style or approach in your mastering work?**

**Feathered:** Absolutely. I have a vision of the way things should sound and often get fairly heavy-handed in my approach trying for a big pop sound. This is especially true at the self-recorded end of the scale, where there is a great likelihood that the finished recordings only marginally resemble a record that the artist wishes they could sound like. I try to make sure my clients know that I might push too far in search of "that sound," and encourage them to listen critically and make sure they enjoy what I did. I'm always happy to back off if I need

## OUR MASTERING PANEL


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www.mrtoads.com

**Jeff Lipton**
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to, but that happens on less than 5 percent of the stuff I work on.

**Lipton:** For me, it is all about the artist's vision. I will work as hands-on or hands-off as the project requires. For example, if a home-recorded mix comes in pretty muddy and everything sounds muffled and unclear, I will do whatever it takes, using whatever tools are required to get the recording to its full potential. However, if the artist prefers a muddy mix, I am very happy leaving it to their liking. In general, I would say that I don't have a "sound" or a consistent approach. I will often change my process and go as far as rewiring my studio to suit a project.

COURTESY JEFF LIPTON

**In Peerless Mastering's A room, Jeff Lipton works using an Alactronics custom 5.1 stereo console, and custom monitors through SLS speakers driven by SA Amps with custom crossovers.**

**What is your policy regarding client attendance at the mastering session? Some engineers enjoy interacting with clients. Other engineers simply prefer to work alone, and may offer a reduced rate for unattended sessions.**

**Stubblebine:** We welcome it. The majority of our sessions are attended by the producer, the engineer, the artist, or some combination. Experience shows that the more people attending, the longer the sessions take, just because

there are more opinions to consider. So it's not necessarily cost-effective to have everyone in the band show up. But it's the artist's choice, and we're fine with it. Of course, we have a certain number of projects we do without anyone attending, and that can work out fine too.

**Feathered:** I offer two rates to clients—attended and unattended. Unattended is about a 25 percent discount from our attended rates, and 90 percent of our clients go that route. I love this. It gives me great scheduling flexibility and lets me do my mastering work when I'm most in the mood—usually at night. I get to double-check my work and sequence the CD at the start of the next day, when I'm fresh. I feel it delivers my most consistent results.

**Lipton:** I will work hard to get to know my clients and their preferences, whether they are at the session or not. People who are out of the area can mail me their mixes, and we will discuss them over the phone. I always offer my clients free listening sessions before mastering, but personally I enjoy it if my clients come to the session. In my facility, the client sitting area is extremely accurate, so I can completely trust their comments and opinions of what we are doing. It's fun to have a session be as interactive as the client would like it to be.

**If you could generalize for a moment, how would you characterize the differences in quality between the top-level projects you've worked on and the majority of projects recorded at home or in a semiprofessional facility?**

**Lipton:** Top-level projects usually have great basic tracks and mixes that sound fuller and more spacious. Most project-studio mixes are muddier and less distinct, and have less space. In general, people who start with bad basic tracks end up with bad mixes. Inferior A/D converters can really hurt a project too, especially on the drums and vocals.

**Feathered:** The chasm between the best recordings and the rest of the recordings is now huge. Corners are cut at almost every stage of recording for the independent artist these days. At the very least, the independent artist has to be able to create great performances on their recordings or they just won't stand out from the pack.

**Finally, what's your ideal compliment to hear at the end of a successful mastering session?**

**Feathered:** I really dig it when days later the band calls up and is still flippin' out over the results. When it holds up well after multiple plays on multiple systems and they call you to tell you about it, that's the best.

**Lipton:** The best compliment is when artists tell me that their album sounds the way they've always dreamed it would. It's all about achieving their vision.

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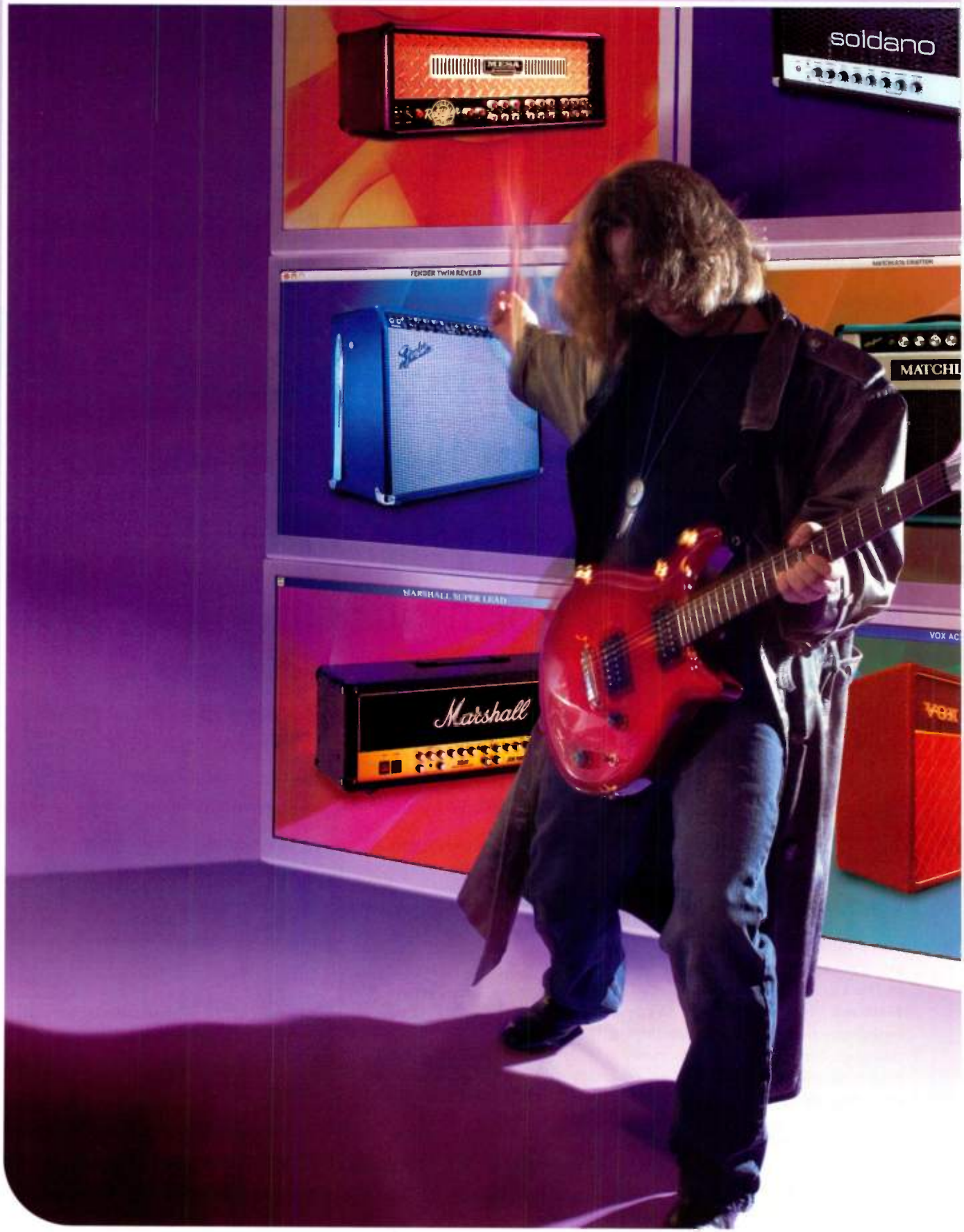
*Myles Boisen is the head engineer and relationship counselor at Guerrilla Recording and The Headless Buddha Mastering Lab in Oakland, California.*




Jane Richey, photographer. Guitar courtesy JJGuitars.com

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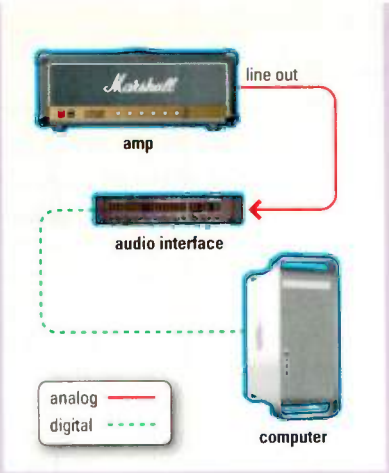


# Stack in the Box

By Orren Merton

After its introduction in 1998, Line 6's Pod probably did more to popularize the concept of digital guitar-amp modeling than any other product. But another Line 6 modeling product, Amp Farm—a TDM plug-in for Digidesign's Pro Tools that was released before Pod—also had a major impact. So impressive was Amp Farm that it created a new market among users of native DAW applications, who yearned for amp-modeling software compatible with their platforms.

But when such products began to appear, the response was not universal acceptance. Besides the usual authenticity argument that purists make about all digital modeling products, the biggest drawback was the latency inherent in native systems. (Latency is less of an issue on TDM systems, because the audio processing is done on a dedicated DSP card rather than in the host computer's CPU.)

In a direct-recording scenario, latency results because the signal from the guitar has to pass through the A/D converter hardware and the audio buffer set in the software, and then come back through the D/A converters. That journey causes a delay between when the guitarist hits a note and when the computer outputs the processed sound.

On the older, slower computer systems of several years ago, latency was noticeable enough that guitarists found the experience of playing through native modeling software to be less than satisfying—no matter how many cool sounds and effects there were.

## Improved Performance

The good news is that nowadays, processing speed has significantly increased and audio hardware can operate well at small buffer settings. As a result, latency can be reduced to almost imperceptible levels. With that hurdle cleared, native DAW users now can enjoy the benefits of guitar-amp modeling software just as their TDM contemporaries can.

After all, what guitarist wouldn't want to have dozens of amplifiers available at the press of a button? Having

amp-modeling software is a lot less expensive than owning a collection of vintage amps, and you don't have to worry about storage or maintenance or disturbing family, pets, or neighbors with late-night playing. Another advantage is that you can choose to record your guitar unprocessed and then use your amp-simulator software to shape the tone during mixdown, essentially reamping your guitar sound to fit the song.

Guitar-amp plug-ins are not just for guitarists, however. Keyboardists, vocalists, and bassists have often experimented with their sound by running their instruments through guitar amps. Now they too can experience the same flexibility using software.

## The Lineup

The following are reviews of five amp-modeling plug-ins for guitarists: Alien Connections ReValver, IK Multimedia Amplitube, MDA Combo, Native Instruments Guitar Rig, and Nomad Factory Rock Amp Legends. The criteria for inclusion in this roundup were that the software must run native and be available for use in multiple hosts. Four of the five products reviewed are cross-platform, and ReValver is for Windows only.

For one reason or another, a number of other guitar-amp modeling products on the market didn't meet the criteria for this roundup. They include products (like Amp Farm) that run on DSP cards (TDM, TC Electronic's PowerCore, and Universal Audio's UAD-1) or are exclusive to a single application. I provide coverage of many of those programs in the "Accelerated Amps," "Amp Sims in Pro Tools," and "Apples and Apples" sidebars.

## Alien Connections

### ReValver

(Win, $99)

Alien Connections ReValver was one of the earliest guitar-amp simulation plug-ins to be released. Its interface features a virtual rack into which you place components called Modules. Each Module represents a different virtual component such as a preamp, a power amp, a speaker cabinet, a chorus, a flanger, an auto wah, a delay, and so forth.

You can add as many as 16 Modules to your rack (depending on you CPU's available processing power), but there are some limitations to the order in which they appear in the signal chain. Effects can be placed only at the beginning or end; preamp simulations must come before power amps, power amps must come before speakers, and speakers must come before room simulations. Only Trim Pot modules and Parametric Filter Modules have no limitations on where they're placed in the chain. If you want, you can create racks consisting of only one type of Module, such as a speaker simulator. You can create


**FIG. 1: Alien Connections' ReValver lets you create a guitar amp from its virtual Modules.**

presets of entire rack configurations, or you can make presets for each Module.

ReValver offers an extensive collection of components. Fourteen preamp Modules are available, including unique ones for most genres (pop, country, and metal) and amp types (solid state and valve). The eight power amps cover those same genres and amp types.

Nowhere is it mentioned which specific makes and models of preamps or amps are being emulated. ReValver furnishes more than 20 speaker simulations, with some cabinets modeling a specific type (such as the 1×8 '60s Fender Tweed Champ), but most emulate only generic speaker configurations (2×12, 4×12, and so on).

Effects and dynamics-processor Modules include four types of stereo reverb (only one referred to as being "high quality"), three varieties of echo/delay, two noise gates, a chorus/flanger, a compressor, tremolo, parametric EQ, 9-band graphic EQ, and room simulator. As long as you follow ReValver's rules of Module order, you can create mind-numbing combinations (see **Fig. 1**).

I wasn't able to find any Module combinations that sounded like specific classic amps. None of the presets are named for actual amps, and ReValver has no facility for picking a preamp, amp, and speaker combination that's designated to sound like a specific amp. That isn't necessarily a bad thing, but it means if you have a certain sound in mind, it may be difficult to re-create it.

Since most of the preamp Modules are geared to one type of sound (heavy metal, clean valve preamp, and so on), if you change your mind about the tone you want, you'll need to swap preamps. Most of the simulations don't respond well to playing dynamics, and most don't sound particularly tubelike, but some of the lower-gain sounds have a nice bite and edge to them (see **Web Clip 1**). The effects are all usable. None are exceptional, but none

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are poor. The Fender speaker models sound particularly realistic.

ReValver is far less expensive than any of the other commercially available products reviewed here, and if you are looking for an inexpensive, DX-format plug-in that models amps and effects and offers lots of flexibility, ReValver just might fit the bill.

**Pros** Large selection of Modules with many combinations possible. Inexpensive.

**Cons** Limited Module-routing possibilities. Simulations don't respond well to playing dynamics. Most sounds don't model specific guitar amplifiers.

**Compatibility** Windows: DirectX.

**Contact** www.alienconnections.com

## IK Multimedia

**Amplitube 1.2**

(Mac/Win, $399)

Inside its stylized amp-head interface, IK Multimedia's Amplitube offers a selection of preamp simulations modeled from Fender, Vox, Marshall, and Mesa/Boogie tube classics, and two generic solid-state preamps (see **Fig. 2**). You also get four tube EQ models (two American and two British styles); four models of power amps (low- and high-power models of a solid-state and a tube amp); eight modeled vintage and modern speaker cabinets with two selectable mic types and two mic placements; modeled Fender tremolo and reverb; and a noise gate.

Amplitube's amp-simulation page provides six standard amplifier controls (Gain, EQ Low, EQ Mid, EQ High, Presence, and Volume), but if the amp modeled didn't contain one or more of those controls (Solid State Lead, for example, has no Mid EQ), the missing control (or controls)


**FIG. 2: IK Multimedia's Amplitube offers over 1,200 different combinations of preamp, EQ, and speaker configurations.**

will be grayed out. IK Multimedia says that Amplitube's simulations allow over 1,260 possible combinations.

If you would prefer to call up an entire amp simulation rather than individual components, the amplifier and cabinet sections have Match switches that will link the EQ, amp, and speaker model to the preamp model you choose. It's not possible to access only the modeled speaker cabinets to use with an external amp, but you can bypass individual sections such as the stompbox section, the amp section, and the master-effects section.

Amplitube also offers models of five classic stompbox varieties, which are placed before the amp and speaker simulations in the signal chain. You get a wah—complete with a highly responsive auto-wah mode—delay, chorus, flanger, and overdrive. In addition, Amplitube offers a selection of three digital effects: 3-band parametric EQ, stereo multitap delay, and reverb. You cannot rearrange the order of the effects, and they cannot sync to the host application.

Some of the effects, such as parametric EQ, have legends around the dials, but most have no markings at all. That won't be a problem for guitar players, who are used to making adjustments by ear, but the lack of markings limits Amplitube's versatility for anyone used to making precise parameter adjustments.

IK Multimedia ships a broad selection of presets with Amplitube, covering most popular guitar amplifiers and guitar-effects configurations. Presets labeled VIP attempt to capture the signature sound of a number of famous guitarists, including Steve Vai and Jimi Hendrix. Additional presets are available for download at www.amplitube.com. The presets will help you get started with Amplitube, but before long you'll want to explore what it can do on its own.

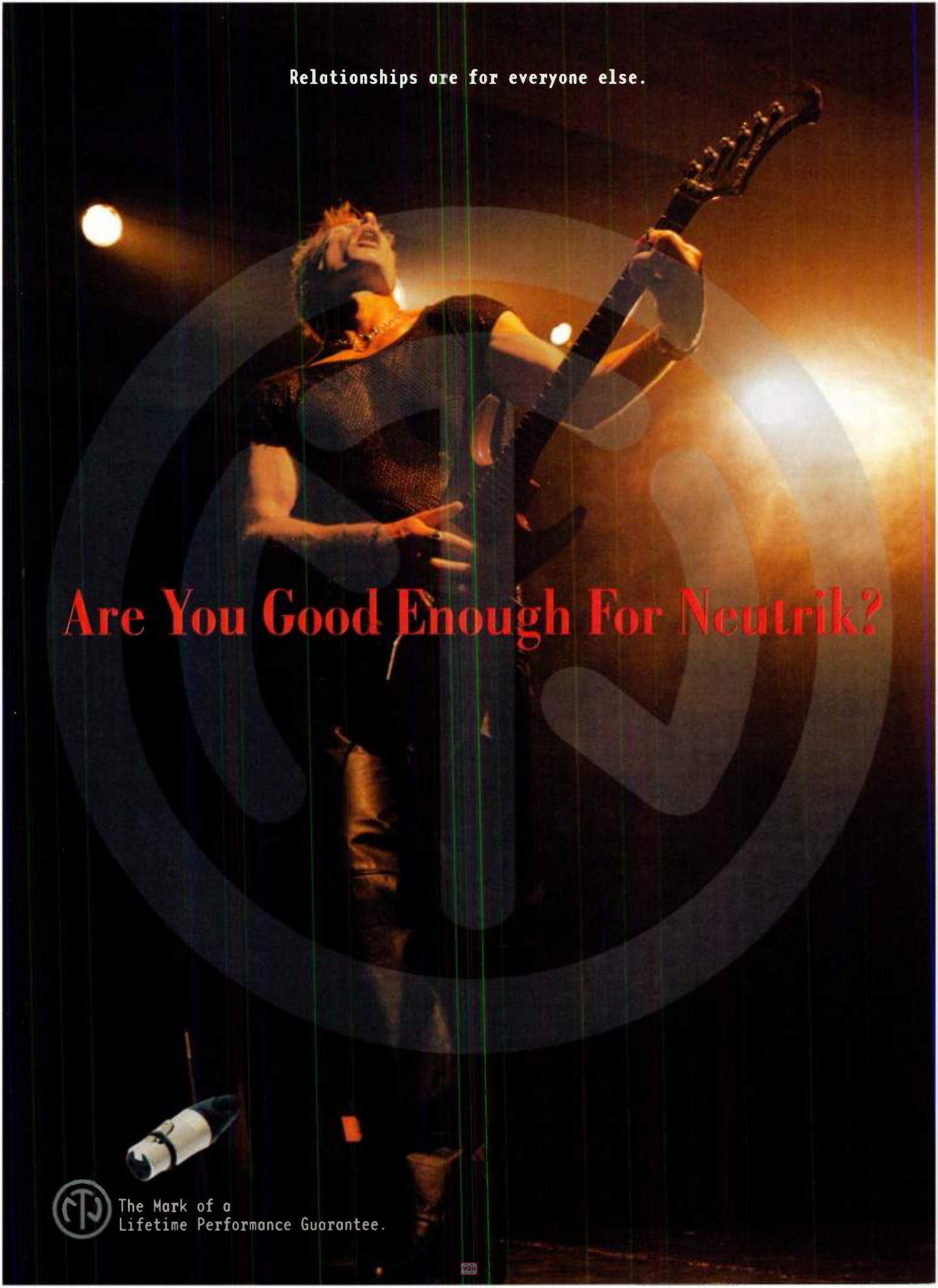
To my ear, the matched preamp-EQ-amp-speaker combinations often didn't sound like the amps they purported to simulate. For example, the Vintage Clean model (which is modeled from a Vox AC30) can't get distorted without a stompbox; a real cranked Vox can. I found that, in general, the clean amps thinned out the sound, although the Tube Clean preamp (based on a Fender Super Reverb) added some really nice warmth and harmonics with the Vintage Open 4×10 cabinet (see **Web Clip 2**).

Some of the distorted sounds lose definition at higher Drive settings, and they don't clean up well (an observation that is mentioned in the manual). The real strength of Amplitube is in all the combinations possible; it's very easy to find groupings of preamps, amps, and speakers that can cover almost any sonic territory. Moreover, the stompboxes sound so good that Amplitube could stand alone as a great analog-style multi-effects plug-in.

A standalone version of Amplitube called Amplitube Live is available for the Mac, and, according to IK Multimedia, a Windows version will be available by the time you read this.

**Pros** Excellent stompbox effects. The auto wah is very dynamic. Over 1,200 model combinations possible. Presets cover Amplitube's capabilities well.

**Cons** No tempo sync for effects. Cannot rearrange stompboxes. Cannot use only speaker simulations. Many amp models thin or unconvincing.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**Compatibility** Mac OS 9: HDTM, RTAS, VST/OS X: HDTM, RTAS, VST, AU. Windows: RTAS, VST, Direct X.

**Contact** www.ikmultimedia.com

## MDA

**Combo**

(Mac/Win, free)

MDA's freeware Combo plug-in (see **Fig. 3**) seems spartan compared with the other big-ticket simulators; it has no GUI, no presets, and a limited number of adjustable parameters. Perhaps because of its inauspicious appearance, I was surprised to find how much I liked it. Its simple architecture makes experimentation a snap. Its High Pass and Drive parameters are very responsive; small changes can make dramatic alterations in the sound.

Combo's six speaker simulations each have a very distinct personality and produce tones ranging from convincing amp sounds to transistor-radio effects. Indeed, I found that the High Pass control (which determines how much low end a tone contains) and the speaker simulator worked well in combination to create the basis for the sound that the Drive, Density, and Bias parameters would then shape.

My favorite speaker simulations were 4×12 Edgy, which sounds very in-your-face and live; MB Distant, which sounds wonderfully full and amplike; and Transistor Radio, which allowed me to achieve some great special-effects guitar tones when used in tandem with the highpass filter. If you want to use only the speaker simulator in Combo, you can set the other controls to zero and they won't affect the sound, allowing you use it in conjunction with a real tube amp.

Combo doesn't disappoint in the distortion department, either: it can deliver unholy gobs of gain. If turned too high, the gain control can overload the signal. I found that the sweet spot on the gain control is between 35 and 75 percent, depending on the type of sound you're going for, from edge-of-breakup to gut-busting metal (see

# Blending Real with Virtual

If your amp-modeling software allows you to use its speaker simulator independent of its other processing, you can take a line out from a real guitar amp into your audio interface, and record direct through the virtual speaker cabinet. You can use programs such as Guitar Rig, Combo, and Guitar Amp Pro (in Apple's Logic Pro) in this manner. It's the same concept that guitarists have been using for decades with speaker simulator hardware, such as products made by Palmer or Hughes & Kettner.

The setup is simple. If your guitar amp has a line out, plug it in to an instrument input on your audio interface (see **Fig. A**). If it doesn't have a line out, you can use the line out of a speaker-attenuator box such as the THD Electronics Hot Plate. Plug the attenuator into the speaker jack of your amplifier (using a speaker cable, of course), and then run an instrument cable from the attenuator's line out to your audio interface's instrument input (see **Fig. B**). Once you have your amplifier connected to your computer, put a sequencer track into record, instantiate your guitar amp plug-in, and dial up your favorite speaker simulation.

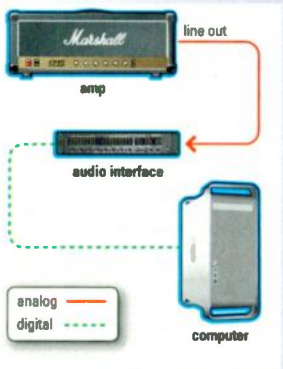


**FIG. A: If your amp has a line out, you can connect it directly to a line input on your audio interface. Remember that you'll still need to hook your amp up to a speaker to avoid damaging the output transformer.**

You can monitor your sound two ways. The first is to run your amp through both the computer and your speaker cabinet; your tone will be recorded from the line out, but you'll hear the room tone from your cabinet. The method I prefer, however, is to monitor completely through the computer; that lets me hear the exact tone I'm recording, at neighbor-friendly volumes. If you are not going to use the amp's speaker, though, it is important to know that you'll need a device (such as the THD Hot Plate) that can send out a dummy load to your amp; otherwise you can blow its output transformers.

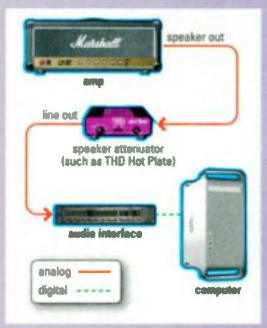


**FIG. B: If your amp does not have a line out, you can still connect it to your audio interface with the help of a speaker attenuator such as the THD Hot Plate.**

To me, using a real amp and a speaker simulator is the best of both worlds: the convenience and range of the speaker and microphone simulations of the software, with the tone of a real cranked amp.

# What do all of the following hit songwriters have in common?

| | | |
|---|---|---|
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| LAMONT DOZIER | JIMMY WEBB | GRAHAM NASH |
| CLINT BLACK | ASHFORD & SIMPSON | GARY BURR |
| STEVE KIPNER | LEON RUSSELL | PAUL ANKA |
| AMY GRANT | JEFFREY STEELE | AL ANDERSON |
| ANDRAE CROUCH | NIKKI SIXX | STEPHEN BISHOP |
| JOHN FARRAH | JEFF BARRY | RANDY BACHMAN |
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FIG. 3: MDA's freeware Combo plug-in may not look like much, but its simplicity belies its sound quality.

**Web Clip 3**). Combo's distortion doesn't sound tubelike; it's more like a solid-state transistor distortion. It's not quite liquid smooth, but not digitally buzzy either (unless you overload to digital clipping, of course). When you use a lower Drive setting, Combo reacts pretty well to playing dynamics. At higher gain levels, any dynamics in your performance are lost.

Combo doesn't sound like any specific vintage or modern guitar amp, and it doesn't claim to. Instead, it offers a CPU-friendly palette of tasty guitar-amp processing, and leaves it up to you to put together amplike sounds. Personally, I loved it for adding amp-style processing to dry guitars and for creating out-there, transistor radio–like, grunged-out tones.

Although Combo doesn't have the breadth of features that the commercially available amp modelers do, it's a wonderful addition to any plug-in library. Considering that it's free, and that it comes with a whole suite of free plug-ins, there's no reason not to download it and give it try.

**Pros** Free. Excellent range of tones possible. Speaker simulators can be used alone. Low CPU requirement.

**Cons** No GUI. No Presets. Controls can seem finicky. Doesn't simulate any specific amps. Limited dynamics at higher gain settings.

**Compatibility** Mac OS 9: VST/OS X: VST, AU. Windows: VST.

**Contact** http://mda.smartelectronix.com

## Native Instruments

### Guitar Rig 1.12

(Mac/Win, $499)

With the release of Guitar Rig, Native Instruments has brought its reputation for quality synthesis to guitar modeling. The program, which runs as either a standalone application or a plug-in, has a two-paned interface with the left pane featuring parameters, presets, and guitar-rack components, and the right side housing the virtual guitar rack into which all the effects, amps, cabinets, and other goodies are placed (see **Fig. 4**). Unlike ReValver, Guitar Rig's components may be arranged in any order.

Guitar Rig offers not one, but two digital-recording components called Tape Decks. The first is a file player with variable pitch and tempo controls, which you can use as either a backing-track player or as a practice tool for slowing down guitar parts you are trying to learn. This deck also includes looping controls and the ability to play at input or output. The latter allows you to record the backing loop along with your guitar for even more creative options.

The second deck is designed for recording what you perform through Guitar Rig, although it too includes looping and file-playback capability. The Tape Decks are valuable not only for guitarists, but they lend Guitar Rig to experimental-effects uses as well.

Guitar Rig is one of the few simulators that has a tuner. You also get a metronome, a CPU meter; a noise gate; input-, master-, and preset-volume controls; and full MIDI learn capability (for MIDI software controllers and guitar-oriented MIDI footpedals). To complete the package, Guitar Rig comes with Rig Kontrol, an outboard pedal with four footswitches and an expression pedal—all fully programmable (see **Fig. 5**). The Rig Kontrol, which also functions as a preamp, enables a laptop-equipped guitarist to use Guitar Rig in place of an amp-and-effects setup for live performance.

Guitar Rig includes four amp models: ACbox (Vox AC30), Plexi (Marshall Plexi), Gratifier (Mesa/Boogie Dual Rectifier), and Twang Reverb (Fender Twin Reverb). Each amp simulation has a GUI resembling the original amplifier, complete with its relevant controls. The models also feature tweaky amplifier parameters such as Variac (AC level) and Sag (rectifier sag).


FIG. 4: Native Instruments' Guitar Rig contains nearly everything a guitarist could want, along with all the software features a computer recordist needs.

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Guitar Rig's cabinet modeling offers extensive options. In addition to 14 cabinet models, you get 5 mic placements; 5 microphone models; a parameter called Air that adds room ambience; controls for pan, volume, bass EQ, treble EQ, and volume; and even a cabinet-size adjustment.

A wide range of effects models is included, many derived from classic stompboxes and rack units. You

## Amp Sims in Pro Tools

Three software developers currently offer amp-modeling plug-ins for Digidesign's Pro Tools TDM systems. Each has its own approach to the modeling process and provides different parameter controls, resulting in tonal characteristics unique to each. (Two of the three, Bomb Factory SansAmp PSA-1 and McDSP Chrome Tone, also run native. SansAmp PSA-1 also runs under RTAS and AudioSuite, and Chrome Tone under RTAS.)


FIG.A: Bomb Factory SansAmp PSA-1.

**Bomb Factory SansAmp PSA-1** (Mac/Win, $395) is a software emulation of the Tech-21 SansAmp PSA-1 and functions in much the same way. Overdrive is achieved in two separate stages: the Pre-Amp gain control simulates overdrive in the pre-amp stage, and the Drive knob controls power-amp distortion. In addition to Low and High tone controls, the output stage features a makeup level control.

All of the control knobs have an indent mark representing unity gain. The SansAmp PSA-1 also sports knobs marked Buzz, Punch, and Crunch, which control the amount of overdrive in the low, mid, and high frequencies respectively (see **Fig. A**). Different combinations of overdrive can yield a wide variety of sounds—from fat sustain to power shred (see **Web Clip 1**). The factory presets are useful, and the PSA-1 sounds great on other instruments as well. It uses relatively little DSP power.

**Line 6 Amp Farm** (Mac/Win, $595) bases its design on emulations of classic guitar amps (see **Fig. B**). It offers models ranging from vintage Fenders and Marshalls (see **Web Clip 2**) to modern Soldano and Mesa/Boogie amps. Each of the program's 13 amp heads is an accurate representation of the corresponding hardware version, complete with graphic representations of tone controls and switches specific to the selected make and model.

Amp Farm offers a range of speaker-cabinet simulations based on hardware models such as the Vox AC30 and Fender Deluxe, combined with several mic-placement options. Mixing and matching amp heads and cabinets can achieve a wide variety of tones. Whether used on input or as a mixdown effect, Amp Farm makes it easy to dial-in authentic-sounding guitar-amp tone.

**McDSP Chrome Tone** (Mac, $495) is a suite of plug-ins providing amp simulations and effects. The amplifier module is extremely flexible, featuring six preset levels


FIG. B: Line 6 Amp Farm.

of distortion combined with compression, gating, and EQ (see **Fig. C**). The distortion section has an Amount control coupled with single-band (200 Hz to 2 kHz) Frequency and Drive controls to tune the overdrive tone, followed by an output level control. The compressor offers threshold, response (attack), sustain, and release controls.

In addition to a noise gate, you get a 3-band parametric equalizer for further tone sculpting. The output stage includes a spring reverb, a level control, and four speaker simulations.

Chrome Tone's amp module is formidable as a stand-alone simulator, but it can also run in Stack mode with other included effects such as wah (see **Web Clip 3**), tremolo, tape echo, and chorus. The depth and modulation of these effects can be triggered by a range of input types (sidechain-audio input, MIDI notes, and so on), making the application very flexible and musical.

Chrome Tone currently runs only on Mac Pro Tools systems, but McDSP says that a Windows version should


FIG. C: McDSP Chrome Tone's Amp module.

be available by the time you read this. In addition, a version called Chrome Tone Amp is available as a plug-in for the VS8F-3 plug-in expansion board for Roland VS recorders. —*David Darlington*

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FIG. 5: Guitar Rig is the only guitar-amp simulator to come with its own hardware controller, the Rig Kontrol.

get volume boosters, echo units, wah-wahs, chorus/flanger units, a talk wah, rotor units, octave dividers, EQs, tremolos, a noise gate, a tube compressor, and even a splitter to create parallel stereo tracks of effects. Indeed, you can create complex routings of amps and effects; your only obvious limitations are your own creativity and your CPU power. When Guitar Rig is used as a plug-in, all of the effects featuring tempo-based parameters can sync to the host's tempo.

Not only do you get a large amount of power and flexibility, but the models sound great. The Gratifier and Twang Reverb simulations are the best models of their type that I've heard (see **Web Clip 4**). As a former Twin owner, I was amazed at how well the Twang Reverb nailed the Fender tremolo sound. The ACBox amp sounds excellent, although its tremolo isn't as realistic as the Twang Reverb's. The Plexi is usable, but Marshall sounds are not Guitar Rig's main strength.

Overall, the models respond well to playing dynamics. Guitar Rig's effects are also high caliber. I couldn't get great results from Oktaver, but the other effects are convincing replicas of the devices they emulate and good effects processors in their own right.

Guitar Rig isn't cheap, and it's not without some flaws. For users who are serious about their guitar-amp simulator software, though, it's a compelling product.

**Pros:** Very flexible. Large variety of speaker simulations and effects. Good sound quality. Runs in standalone or plug-in mode. Includes recorder with variable pitch and variable tempo. MIDI learn capability. Tempo-based effects sync to host tempo. Huge library of presets. Rig Kontrol pedal.

## Accelerated Amps

In addition to the native and TDM guitar-amp simulations available, two DSP plug-in accelerator packages, the TC Electronic PowerCore and the Universal Audio UAD-1, also offer guitar-amp simulation software. Since the plug-ins require hardware in addition to your computer to run, they're not technically native and therefore don't fit the criteria for this roundup. However, they're close enough that they do deserve mention.

PowerCore and UAD-1 plug-ins are compatible with the VST format on Windows and Macintosh computers and AU in OS X. Universal Audio offers the guitar-amp plug-in Nigel free with any UAD-1 package. TC Electronic includes one of its amp simulators, Tubifex, with all PowerCore packages, and the TC Thirty amp simulator plug-in is sold as an option.


FIG. A: TC Electronic's Tubifex plug-in runs on the company's PowerCore system.

At first glance, hardware DSP accelerators might not seem conducive to amplifier simulation because they double a system's latency, at best. But the appeal of DSP accelerators has always been that taking the process off the CPU allows for more processor-intensive algorithms, and that quality advantage applies to guitar-amp processing. The TC PowerCore plug-ins all feature a no-latency mode which, at the expense of CPU, runs the PowerCore process in parallel to the CPU buffer, eliminating the latency.

So how do they sound? Universal Audio's UAD-1 card has a well-earned reputation for truly spectacular analog processor emulations. Although Nigel is a nice addition to the package, it's not the equal of some of the other UAD-1 processors, nor does it stand above the native amp modelers. Its strongest point is its filter and modulation effects, which allow for some cool processed amp sounds. Because of the latency inherent in the UAD-1 system, it's only useful as a mixdown effect.

TC Electronic's Tubifex has a simulation of, among others, the Marshall Super Lead (see Fig. A). Its Expert level allows for almost ludicrous amounts of fine-tuning. The TC Thirty plug-in does an admirable job of capturing a '60s non-top-boosted Vox AC30 with the addition of a Treble Booster circuit (as made famous by Brian May).

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(chorus/phaser), and a tremolo. Finally, you get an A/B feature to load and compare two completely separate settings, and a choice of High or Low Input (featuring a cool graphic of a guitar plugged in to either input); the former adds a small boost to your signal.

Rock Amp Legends doesn't just look like a Marshall, it sounds like one. The Classic Lead and Modern Lead simulations are uniformly excellent. The sounds are full bodied, with that trademark midrange grit that rockers know and love (see **Web Clip 5**). The simulations are very sensitive to amp-parameter adjustments, so it's easy to get your own Marshall-like sound. These simulations respond well to playing dynamics, especially at moderate (>60) Drive settings.


**FIG. 6: Nomad Factory's Rock Amp Legends looks like a classic British '70s amp, and it sounds like one, too.**

Although the Marshall emulations are the standouts, the Combo and Tweed models are also quite usable. The Rectified Lead simulations sound a bit too scooped and nasal for my taste, but users who like that aspect of the Mesa/Boogie sound might love them. It's too bad that you can't access the amp and speaker simulations separately. I wish that I could have, for example, tried the Rectified Lead amp tone with a 2×12 simulation, or turned the amp simulation off altogether to use the speaker simulations alone.

Rock Amp Legend's noise gate is excellent. It's adjustable, and it's effective in quieting noisy pickups and heavy distorted patches without adversely choking the tone. The tremolo is also excellent; it's deep and rich, and responds well to playing dynamics. The compressor colors the sound, but that's par for the course with guitar compressors. The rest of the effects are all usable, though not exceptional.

The GUI for the FX section offers little in the way of user feedback. Other than a miniscule on-off light, only the compressor and noise gate give you any metering. None of the effects have numeric readouts, only position dots around the dial. You have no control over the order of effects other than a switch on the compressor and noise gate to place them before or after the amplifier simulation. Finally, none of the effects can sync to the host tempo. At the time of this review, parameters in Rock Amp Legends responded to sequencer automation under all supported plug-in formats except for Audio Units.

**Pros** Great Marshall-style simulations. Excellent noise gate and tremolo. Responds well to playing dynamics.

**Cons** Limited ability to rearrange effect order. No host sync for effects. No AU automation. No way to separate amplifier and speaker simulations.

**Compatibility** Mac OS 9: VST, RTAS, HDTM/OS X: VST, AU, RTAS, HDTM. Windows: VST, RTAS, HDTM.

**Contact** www.nomadfactory.com

## The Loud and the Software

Guitar-amp modeling software has gotten better and better. Some products are more successful than others at sounding like classic amps, but all definitively sound like amplifiers. Although none of five simulators were flawless, Native Instruments Guitar Rig offered the most complete package in terms of features and flexibility. Its Rig Kontrol pedal is a completely unique accessory. That said, Guitar Rig was the most expensive of the five products in this roundup, and not every user wants or needs that much amp simulator.

All of the plug-ins generally excelled in one area or more. If you want a great Marshall simulation, for example, Rock Amp Legends is a good choice. If you are on a budget, you can't beat Combo. If you are looking for an excellent Fender Twin, then Guitar Rig or Amplitube might be the ticket. Because most of the simulators offer additional goodies such as effects, tuners, and so on to sweeten the deal, you should definitely take those features into account as well.

Keep in mind that anyone's opinion of a given simulation depends on personal taste as much as algorithm quality. How faithful a simulation is to the amp it's modeling is not the only factor that determines its sound quality. You may prefer the modeled sound. Many guitarists, if you ask them privately and promise secrecy, will admit that they prefer their Line 6 Pod or Vetta over the real McCoy.

Even though the technology is better than ever, digital-amp simulations are unlikely to ever convince longtime tube snobs to sell their hardware. These plug-ins are good—some even great—but they're still not a complete replacement. There is something unique about the sound of a tube amp that software cannot yet completely capture.

But for many recording situations, it's hard to beat the variety, quality, and convenience of amp-modeling software. Guitar-amp simulation plug-ins are beginning to do for guitarists what software synthesizers have done for keyboardists—free them from the limitations of hardware, while offering them the sounds they love.

EM WEB CLIPS

*Orren Merton is the author of Logic Pro 7 Power (Muska & Lipman, 2004) and GarageBand Ignite! (Muska & Lipman, 2004).*

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LAURA WILLIAMS

# Picture Perfect

By Nick Peck

How to channel your creative energy to produce great soundtracks

The art of composing music for picture has a rich heritage, dating back to the very beginnings of cinema. One could easily argue that its roots date back thousands of years to the earliest days of theater. Almost anyone living in a civilized culture is constantly surrounded by moving pictures that tell a story, including feature films, television shows, commercials, movie trailers, Flash animations, and video games. In each of those genres, music exists to highlight the message's emotional underpinnings, to give the message context, or to comment on the message; to manipulate the viewer into feeling tension, joy, or sadness; and to add depth to the message, working in concert with the visual elements to create a stronger impression in the viewer's mind.

Composing for film, TV, or video games is really a vocational or applied art, as opposed to an abstract one. The composer must always remember that music for picture is created in service to someone else's idea; although it is a creative act, it is designed to integrate with the visuals, the dialog, and the sound effects to create a synergy more powerful than the sum of the elements on their own. Working within these genres can be a well-paying prospect, allowing those with talent, dedication, and a bit of luck to earn a living making music. Composers are granted the rare opportunity to hear their musical ideas realized by a symphony orchestra on somebody else's dime, and it gives them a wide distribution medium for their work.

Over time, a whole musical syntax has developed, filled with well-worn devices (clichés) that let the audience know what is happening. Some composers write brilliant, innovative symphonic works for picture; others rely on the tried and true, grinding out feature-length, low-budget scores in a week on their MIDI rigs. The act of telling stories with moving pictures


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isn't going away soon, nor will the need for music to augment them.

## Outstanding Scores

The classic, de facto standard instrumental palette used by film composers is the symphony orchestra. The orchestra is supple and flexible, capable of a seemingly endless variety of textures. Writing an orchestral score often represents the pinnacle of achievement, as well as the greatest challenge, in a composer's career. In the right hands, the orchestra can be lyrical, achingly beautiful, mysterious, enthralling, wrathful, or uplifting. Writing and preparing an orchestral score is a highly detailed, technical, and laborious process. But when all the cards fall into place, the effect is like no other.


NICK PECK

**FIG. 2: In describing the concept of leitmotifs, Mark Griskey says, "You create a small melodic device that is associated with a specific character. Such devices can be developed into more complex themes and melodies."**

Bernard Herrmann (1911–1975) was a masterful orchestral film composer. Best known for his work with director Alfred Hitchcock, Herrmann's credits include *North by Northwest* and *Vertigo*, as well as *Perry Mason*, *Citizen Kane*, and *The Day the Earth Stood Still*. An analysis of Herrmann's work could fill volumes on its own. But Herrmann will always be known for the violent, slashing string glissandi that accompanied Norman Bates' knife blade during the infamous shower scene in *Psycho*. That single device has been copied and satirized endlessly, becoming a bedrock cultural reference.

**FIG. 1: Despite its legendary status among Vangelis fans, the original soundtrack for Ridley Scott's 1982 science-fiction thriller *Blade Runner* wasn't released until 1994.**


Stanley Kubrick (1928–1999) made brilliant use of existing orchestral works in his masterpiece *2001: A Space Odyssey*. He harnessed the raw power of Richard Strauss's "Also Sprach Zarathustra" to represent humanity at the moment of evolutionary upheaval. This is contrasted by the balletic poetry of Johann Strauss Jr.'s "Blue Danube Waltz," which was used to portray the graceful movement of a rocket to the moon.

*2001*'s soundtrack is exemplary in its use of restraint. Music was used sparingly, and it was all the more powerful in impact as a result. Some of the scenes that take place in outer space follow the rules of physics, having no audio whatsoever. Toward the end of the film, the sound of fear and resolve are hauntingly articulated by astronaut Dave Bowman's claustrophobic breathing within his spacesuit helmet.

## Special Flavors

The orchestra's versatility may be tailor-made for creating music for picture, but custom palettes of sound can be just as effective, creating a specific context and a particular flavor forever associated with that work. Mix finger snaps, mouth pops, and slapped bass guitar riffs together, and what do you get? The theme music to the television show *Seinfeld*. What about a combination of whistling, a rough-and-tumble male chorus, and a twangy electric surf guitar? That concoction results in Ennio Morricone's soundtrack to the Sergio Leone/Clint Eastwood spaghetti Western *The Good, the Bad, and the Ugly*.

In 1982, electronic-music icon Vangelis used analog synths to create a memorable score for the Ridley Scott/Harrison Ford sci-fi classic *Blade Runner* (see **Fig. 1**). His synth pads were lush yet glassy and cold, illustrating the mean, rainy streets of a futuristic Los Angeles in an advanced state of decay. Gamelan and kotolike sounds reflected the Asian flavor visually depicted in the city streets, and deeply reverberant, menacing percussive hits set the stage for the dark events that unfold throughout the film.

Director Roman Coppola's *CQ* (2001) is a lighthearted homage to '60s filmmaking, set in Paris and Rome in 1969. French duo Mellow composed the score in their home studio. Vintage synths, twangy tremolo guitar, and an unabashed Euro-psychedelic

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vibe nail the spirit of the age, reminding the viewer of the story's set and setting.

## From the Experts

I interviewed two veteran music for picture composers to get their takes on the process and technique of this art form. Composers Mark Griskey and Jerry Grant write music for film, television, movie trailers, Internet animation, and video games. Grant was a longtime Los Angeles–based TV composer, cranking out hundreds of scores for shows such as *Quantum Leap*, *The A-Team*, *The Greatest American Hero*, and *Magnum, P.I.* He has scored many animated cartoons for Disney, biographies for A&E, and a pile of comedy and action-adventure "B" movies. He taught film scoring at UCLA and currently resides in Nevada City, California, where he composes symphonic and jazz art music. You can visit him on the Web at www.nujazzalternative.com.

Mark Griskey began his career as a classical percussionist and jazz/rock drummer, following the route of session and gigging musician. He later studied composition and film scoring at UCLA (under the tutelage of Jerry Grant, among others), held a staff position as composer at Atom Films, and has concentrated on writing music for movie trailers. If you've seen a commercial for a first-run blockbuster, chances are good that you've heard Mark's music. He is currently staff composer for LucasArts, where he has written the scores for the video games *Gladius*, *Sam and Max II*, and *Knights of the Old Republic II*. You can visit his Web site at www.griskey.com.



**What is your favorite orchestral film score?**

**Griskey:** There are so many good ones! When I saw the first *Star Wars* movie as a kid, I wasn't very sophisticated about orchestral music, but I just knew that I liked the score. It has really held up through the years. John Williams made effective use of the leitmotif idea throughout the films, which was originally a Wagnerian concept (see **Fig. 2**). Essentially, you create a small melodic device that is associated with a specific character. Such devices can be developed into more complex themes and melodies. The way that Williams created these devices for different characters and then interweaved them together into an engaging, powerful score supported the film perfectly.

**Grant:** Thomas Newman (*American Beauty*, *Horse Whisperer*, *Finding Nemo*) is a master at trying out interesting ideas. He has the courage to let himself fall on his face. If you have that courage, that's when you get into the really interesting stuff. Alan Silvestri (*Cast Away*, *Forrest Gump*, *Who Framed Roger Rabbit*) is a phenomenal composer; he goes to the edge. He is a jazz/rock guitar player who didn't know what a baton looked like when he got his first movie. He did his homework and became a phenomenal orchestral writer. James Newton Howard (*The Village*, *The Fugitive*, *The Sixth Sense*) is another one: he is a keyboard/synthesist who got immersed in the film world. He just dove into the orchestra and came out like a champ. There are lots of well-schooled film composers who play it safe. Their scores are always predictable. Thomas, Alan, James, and Danny Elfman (*Batman*, *Men in Black*, *Good Will Hunting*) all

COURTESY JERRY GRANT

**FIG. 3: Jerry Grant says, "When writing for film, I consider the picture to be the melody. What I am writing is the countermelody."**

go to the edge, and come up with brilliant scores as a result.

**What is your favorite nonorchestral film score?**

**Grant**: Luc Besson's *The Fifth Element* (1997) has a masterful score by Eric Serra. He is a phenomenal synth and symphonic composer. He creates very cool groove-oriented stuff and blends the orchestra with synths wonderfully. BT is also a master at his craft. His rhythmic drive is like no one else's. Check out his groove stuff on *The Fast and the Furious*.

**Griskey**: I really like the *Pulp Fiction*

## TWO COMPOSERS' STUDIO GEAR

**Mark Griskey**

Computers: Apple Power Mac G4/1.25 GHz (dual-processor), SoundChaser PC, Carillon rackmount PC
OS: Mac OS X, Windows 98, Windows XP
DAWs: Pro Tools|HD 3 Accel, Apple Logic Pro 7
Samplers: (2) Tascam GigaStudio 2.5, (2) Akai S5000
Sample Libraries: SAM Horns, SAM Trombones, Vienna Symphonic Orchestra, Quantum Leap Symphonic Orchestra
MIDI Instruments: Roland V-Synth, Roland V-Drums
Acoustic Instruments: drums, African and Middle Eastern percussion
Preamps: (2) Brent Averill Neve 1272
Compressors: (2) Urei LA-4
Microphones: (2) Neumann TLM 103, (2) Neumann KM184, (3) Sennheiser 421, (1) AKG D112

**Jerry Grant**

Computer: Apple Power Mac G5
OS: Mac OS X
Audio Interfaces: MOTU 828, MOTU 2408
DAW: MOTU Digital Performer 4.12
Samplers: MOTU Mach Five, (2) E-mu Emulator IV
MIDI Instruments: Roland JV-1080, Korg Wavestation, Roland R8M, E-mu Audity 2000, Yamaha KX88 controller
Notation Software: Sibelius

score. In all Quentin Tarantino's films that I've seen, he tends to shy away from creating an orchestral underscore or using any music written to picture. Instead, he licenses cool, obscure, funky pop music and edits it to taste. I think his choices support the picture really well.

**What are the differences between composing for picture and composing for a nonvisual medium? What are the similarities?**

**Griskey:** In both cases, you are composing music that you want to be interesting, dynamic, and engaging. When composing for picture, as opposed to writing a song or creating art music, the music is subservient to the picture. Its function is to underscore what's happening onscreen and support it.

**Grant:** The process of composing is always the same; I am always basing my work on a singular thought or feeling. The process is to come up with one word that describes the emotional quality of the picture. When I'm scoring a scene, I come up with the singular emotional word that best relates to what is going on: fear, sadness, joy, and so forth. For me, all music is dramatic, so it doesn't matter whether the music is picture-specific or not. I'll use the same approach to writing a piece of art music. I used to be a very cerebral composer, writing from my head; the result was that people would find my music "interesting." To go beyond "interesting," you have to transcend the technique. By focusing on this emotional process, I am able to write from the gut, which is where music really comes from.

When writing for film, I consider the picture to be the melody. What I am writing is the countermelody. As a result, the score is often not as dense as it would be in an art music context (see **Fig. 3**). It's very easy to overwrite, create too much density, or make things go too fast. Sometimes, a picture requires only a little stroke. A composer will feel insecure, which makes it hard to just let that little gesture sit there.

**Discuss your creative approach when making music to highlight someone else's vision.**

**Grant:** First, I want to understand the emotional attachment of the visual to the person who created it. How do they feel about each particular scene? If the director doesn't have a musical background, you have to reach into their head and find out what they are really looking for. You can't talk about music; you have to talk about the emotional quality of what they are looking at. I try to have the director define that emotional quality. We find that single emotional word, zero in on it, and then make sure that our individual definition of that word is the same. Once, in the mid-'80s, I was asked to create a rock score. So I went away and created something in the style of the Police, who were very hot at the time. I brought it in and the director said, "That's not what I want. I wanted the Platters!" So it's important to make sure that your visions are clearly defined.

The process of composing for picture seems to always be the same: you sweat it out for three or four days. I jump into the shoebox and rummage around for ideas. You try things, then toss them out. Pretty soon, you

come across something that's interesting, and that becomes your path.

**Griskey:** I need to get the vibe of the entire scope of the work before focusing in on one particular segment of it. I'll read the script and discuss the emotional elements with the director. Once we've established the mood of what we are trying to do, I start throwing ideas out there. I think about some musical directions that could work, then improvise against the picture. Sometimes I will throw some previous work against the picture as a temp, just to see what kind of approach might work. Then I begin to refine the process, focusing in and establishing the instrumentation and defining a tonal palette for the work.

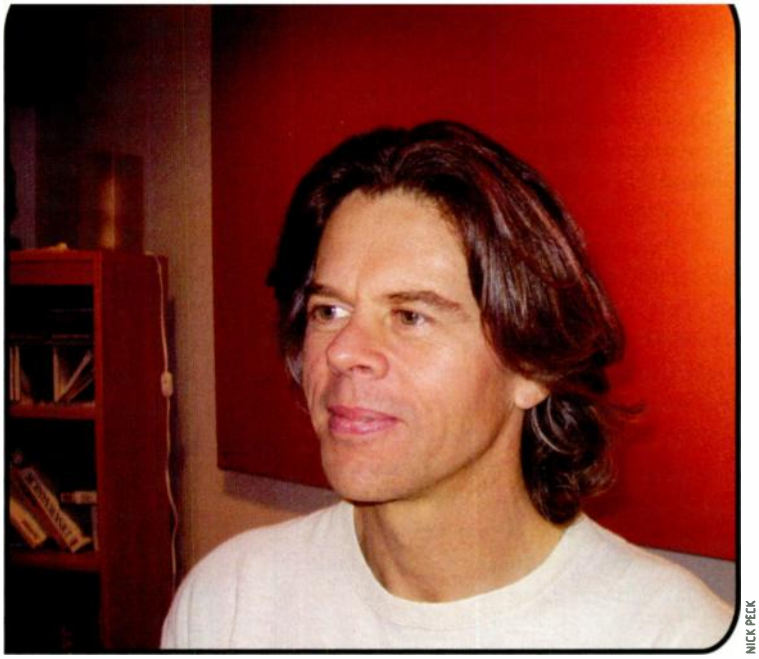
**What approaches do you use to make sure that your approach aligns with the director's approach?**

**Griskey:** Every project is different, and every creative team tends to have a slightly different way of working. The first thing to do is to establish a rapport and suss out the best way to work with the team. Some directors tend to be pretty hands-off, trusting your judgment based on your expertise and track record. The director drops off his or her project and picks up the music when it is done (see **Fig. 4**). Other directors might be more hands on, looking for a two-way interaction, particularly if you haven't worked together before. In that case, you definitely want to make sure everyone is on the same page creatively before you get too deeply involved in production. Discuss the direction, throw out ideas verbally, and watch to see which ideas make the director light up; that will guide your approach. If the director has a strong musical background, you can often achieve clarity verbally. Otherwise, you can cite specific examples that they are familiar with and play some examples. Once that's done, you can mock up sketches, which will eventually get the green light. At that point, the approval process becomes more of a rubber stamp, and you can just start writing in earnest.

**Discuss your thoughts on music's relation to other elements.**

**Grant:** Music's purpose during dialog is to constantly reflect the emotional quality of the dialog. Dialog rarely goes along at a flat pace. It becomes emotionally charged, then relaxes. There will be conflict or resolution in the dialog, and heightening that quality is really the job of the film composer.

**Griskey:** Whenever possible, a composer should collaborate with the other audio creatives on a project. When you are spotting a scene, you have to take into account where sound effects and dialog will be so you can write around them. You have to leave space in the music score to let the sound effects stand out and be prominent. If actors are speaking quietly, don't try to drown them out by writing music that is overbearing or that conflicts with the frequency range of the human voice.



NICK PECK

**FIG. 4: Griskey says that some motion-picture directors trust the composer to carry out his or her wishes without supervision, while others take a more hands-on approach to hearing their vision come to life.**

**Discuss your composing process for a project from soup to nuts.**

**Griskey:** First, you meet with the project team and determine who your creative point people will be. Read the script thoroughly, and ask questions if there are aspects of it you don't understand. Spotting sessions should happen as soon as the picture is locked. Sit down with the director, watch the film, and decide where music is needed and what purpose it should serve emotionally and aesthetically. Don't make the mistake of scoring the picture with wall-to-wall music. That takes away from its effectiveness and can just clutter up the soundtrack.

I usually create MIDI sample-based temp scores for everyone to comment on, then they get sent to the orchestrator. These days, MIDI scores really need to be pretty sophisticated. The tools are out there, and directors are used to hearing elaborately mocked-up MIDI scores. Your rig should use the most high-quality samples available and get as close as possible to the final sound.

Your orchestration and instrumental choices will determine much of the flavor of the score. You will work that out ahead of time to achieve a particular vibe. Budget plays a big role here: you might want a 100-person orchestra, but if the budget doesn't accommodate it, you can get creative with doubling parts and blending samples with live instruments. The first time you hear what your music is going to sound like is when you are actually on the scoring stage, hearing your music performed by these fine players. It is the highlight of the whole experience for the composer. When the final mixes are integrated into the film along with dialog and sound effects, many of the subtler moments may get buried. But the recording session is your moment to shine, standing in front of the orchestra and soaking it all in.

The mixing process brings it all together, achieving the goals you wanted to create. It's your last chance to balance levels between sections of the orchestra, making sure everything is heard that should be heard.

These days, I hear more after-the-fact music editing than ever before. With the tools we have now, you can move cues around and have more flexibility than you used to, all the way to the end. I think music editing for picture is much more of a creative tool than the mechanical process that it used to be. In the final mix, you always have to remember that the music is subservient to the picture and is just one element in the overall project. Don't make the mistake of thinking that every nuance you wrote in the score has to be heard in the final mix. If you've written your music effectively, it will do what it is supposed to be doing.

## When all the cards fall into place, the effect is like no other.

**You frequently compose music for picture without knowing in advance what the picture will be. What is your approach to composing trailer music on spec?**

**Griskey:** It's a whole different style of composing. In some respects, it is similar to songwriting in that you have to think of a formula with a beginning, middle, and end. Having an idea of what film genres you are composing for allows you to determine the appropriate instrumentation and tempo. The main thing is to keep focused. The piece can't develop too much; it needs to evolve, change, and build constantly through the short time that you have, without going off on some sort of tangent.

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**What do you like and dislike about working in film and TV?**

**Grant:** In TV, I like the royalties. You can't be as subtle in television, though. You have to make pretty obvious strokes in TV music. In film, you can make a very subtle stroke and often have it be heard. You just can't rely on the TV speaker to carry your music. Working in film is like writing a symphony. You get some ideas and consistently develop them throughout the whole picture. In film, I never wrote the main title first. I would start writing in the middle, and once the piece was half done, the main title would become very evident. That's the fun of writing for film: you get the excitement of making little discoveries in developing the material, like Beethoven did.

**Discuss the use of technology in film music.**

**Grant:** When I start, I make a sketch, often using MIDI. But I grew up with a pencil in my hand and love to write that way. I've noticed in pictures of contemporary studios that there is often nothing to write on. All you see is keyboards. The process of sitting at the keyboard and improvising creates a different end result. With a pencil, you get more counterpoint and less pad. I am able to interlock the melodic material better that way. When composing from a keyboard, you tend to rely on your licks, often just getting a melody with a chord pad underneath. I feel that music is made up of lines; their interplay is where the really interesting stuff happens.

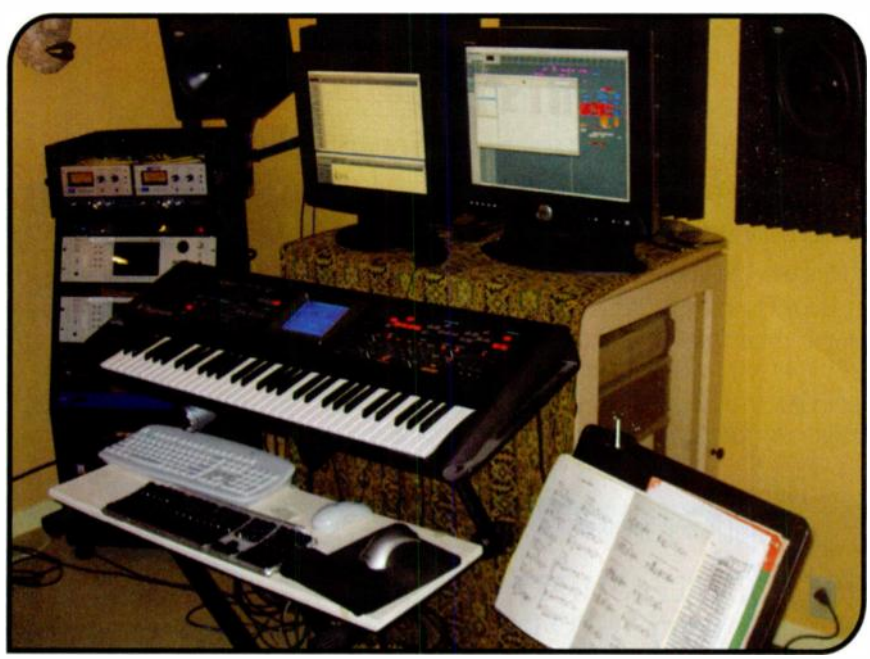
I've been subscribing to *Electronic Musician* for about 15 years now, and I read it religiously every February. There's nothing wrong with electronics; I've got a studio full of stuff. But to make the technology the music is a mistake.

In 1964, Marshall McLuhan wrote a very important book called *Understanding Media: The Extensions of Man*. This is where he coined the famous phrase, "The medium is the message." That's a good analogy to what can happen and often does happen with technology in today's musical spectrum. And it's unfortunate that many producers and directors have bought into this. Now they can create a score using Apple GarageBand. They can create their own score and don't even need a composer any more!

**Tell us about your rig.**

**Grant:** I buy a new computer every three or four years. I am not a gear nut. If you are a sailor and you lose the race, you blame it on the fact that your sails aren't good enough. That's not where the blame lies; it lies in the way you are sailing your boat. Moving back into music, in the heyday of the Yamaha DX7, we each had 10,000 sounds for the synth. Let's say I have to write three minutes of music in a given day. How long do I have to look through those thousands of sounds to find the perfect sound? You can't do it. Instead, you cultivate 100 favorites, and if a sound doesn't work, just find another one. It wasn't worth it to me to spend one hour editing a sound, when in that same hour, I could write 30 seconds of music.

**Griskey:** Music technology evolves so fast these days that it seems we constantly have to upgrade and research to keep on top of the curve. Having said that, you need to have an environment that is solid and reliable, so you can turn it on and get to work. That seems to be the challenge. Once a year, my studio goes through a pretty major overhaul (see Fig. 5). When I have some downtime between projects, I sit down and think about how I've been using the rig for the last year, making changes to the areas that could be more effective. Although I love cool analog gear, more and more my system stays in the computer, relying on plug-ins and software synths and samplers. That way, six Februaries after the fact, I can pull up a project and be able to rework it.



NICK PECK

**FIG. 5: "Although I love cool analog gear, more and more my system stays in the computer, relying on plug-ins and software synths and samplers," says Griskey. "That way, six Februarys after the fact, I can pull up a project and be able to rework it."**

---

*Nick Peck is a composer/keyboardist/sound designer/engineer living in the San Francisco Bay Area. Find him on the Web at www.underthebigtree.com.*
*Special thanks to Mark Griskey and Jerry Grant for their generosity of spirit in sharing their combined years of wisdom with us.*

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# Off the Beaten Path

By Babz

## Creating tempo maps in MOTU's Digital Performer 4.5.

MOTU's Digital Performer (DP) provides a variety of tools for aligning the tempo of a sequence with the tempo of recorded audio. You can make the sequence's conductor track follow the audio tempo, or you can make audio follow the tempo of the conductor track. The program can even match up audio containing tempo variations such as ritards, accelerandi, and rubato, with audio that has a constant tempo, such as a typical drum loop.

When you match the sequence to the tempo of the audio, the audio remains unchanged. You are just moving the lines in the conductor track's onscreen grid to match the tempo of the performance. This method will give you useful visual markers for later editing but will have no impact on the sound or the tempo of the audio.

To illustrate this point, I assembled a mix with a rubato guitar track and a simple drum loop. The guitar part was recorded freely without a click track and with a tempo that varied from 70 to 76 bpm (see **Web Clip 1**). The drum loop had a fixed tempo of 95 bpm (see **Web Clip 2**; you can load both Web Clips into DP and follow along). To preserve the loose, spontaneous feeling of the guitar track, I made the sequence follow the guitarist's performance using DP's Beat Detection Engine and Adjust Beats feature to construct a custom tempo map.

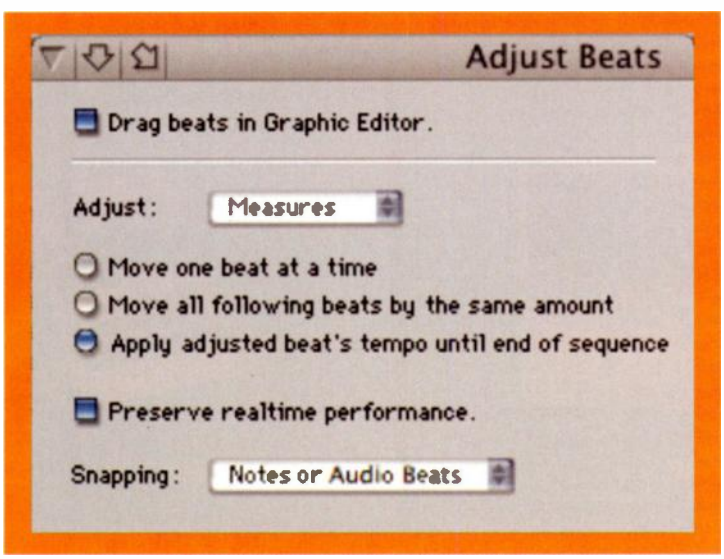


**FIG. 1: The Adjust Beats window gives you options for adjusting entire measures or individual beats within the measure. The Snapping option can be used to snap bar lines to MIDI notes or audio beats.**

### Beating a Path

I dragged the guitar sound bite into a new DP track, lining it up with bar 1 of the sequence. At this point, DP's metronome click track had no relation to the guitar audio. The Adjust Beats feature lets you use the peaks in a sound bite's waveform as a guideline for lining up bar lines by dragging them on the time ruler. Adjusting one beat at a time can be time-consuming—especially on a long piece—but a number of techniques can help speed up the chore, including a feature recently introduced in DP 4.5—the Beat Detection Engine.

The Beat Detection Engine looks at the peaks in an audio waveform and attempts to determine beat and tempo information. However, the feature has certain limitations. As the manual states, it works best on individual instrument parts that are rhythmic in nature and have a relatively steady tempo. My rubato guitar track was fairly rhythmic in nature, but its tempo varied. Before trying my usual method of constructing a tempo map with Adjust Beats, I decided to give Beat Detection a whirl.

The engine did a decent job of generating tempo information based on the guitar track's waveform peaks, but it misinterpreted the sound bite's tempo by doubling it instead. Fortunately, DP provides a handy command to correct this. With the sound bite selected, I chose Audio> Sound bite>Halve Sound bite Tempo and was back on track.

To check the results, I selected the guitar sound bite and chose Audio >Adjust Sequence To Sound bite Tempo. That adjusts the Conductor Track to match the tempo map created using Beat Detection. I set Tempo Control to Conductor track, enabled the metronome, and listened as the track played. The click tracks still didn't quite match up with the guitar playing. Beat Detection had gotten me in the ballpark, but I knew I would have to make further adjustments.

### Using Adjust Beats

Beat Detection is a valuable addition to Digital Performer and should be the first option to try when matching a sequence tempo to that of an existing sound bite. The Beat Detection Engine may be able to match the tempo automatically. Some of the new tempo maps, however, will require additional tweaking with the Adjust Beats option. In that case, use the following method:

1. In the Sequence Editor, zoom in so that you can see the waveform peaks in the audio track.

2. Make sure that Tempo Control is set to Conductor Track.

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3. Choose Project>Modify Conductor Track>Adjust Beats to bring up the Adjust Beats dialog window (see **Fig. 1**). Make sure that the "Drag beats in Graphic Editor" box is checked. Check the "Preserve realtime performance" box. Under Adjust, pull down Measures and click the "Apply adjusted beat's tempo to the end of sequence" option. Under Snapping, select the "Notes or Audio Beats" option (for more on snapping, see the section "Hot Tips for Beat Snappers").

4. Using the onscreen waveform peaks as a visual reference, drag the time ruler's bar lines so that they are better aligned with the music. The first bar already begins on time, so begin by clicking and dragging the start of the second measure. You'll see a red line appear that you can drag to line up with the correct spike in the audio (see **Fig. 2**). To check the results, enable the click track and listen to the first couple of bars. Press Stop and make further adjustments as needed. Continue to the next bar and always work from left to right. Don't skip to a later bar until the one before it is adjusted.

5. Once you have the beginnings of measures following the audio, you can go back and adjust individual beats within the bar. Leave the Adjust Beats window open as you work and select the options Beats and "Move one beat at a time" for this.

With practice, you can quickly work your way through a tune, listening with the click track, pausing, and dragging. The result will be a custom tempo map that follows the variations of your playing precisely and leaves your rubato performance untouched.

The final step in my example was to sync up the 2-bar drum loop. I dragged it into a track, lining it up with the beginning of the sequence, and then option-dragged it to make copies every two bars until the end of the sequence. I selected all of the copies and chose Audio>Adjust Soundbites To Sequence Tempo. The fixed drum loop now matched the guitar part with all of its rubato tempo variation. The original track remained unchanged, and instead of the guitar being a slave to the click track, the sequence and drum loop grooved along with the free playing of the guitar (see **Web Clip 3**).

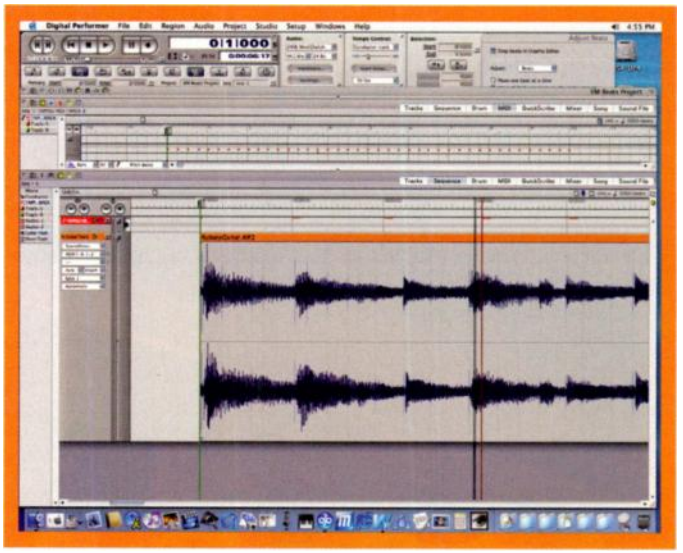

**FIG. 3: Recording a MIDI click track by tapping and then using Adjust Beat's note snapping feature on that track can help you adjust beats faster and more accurately.**

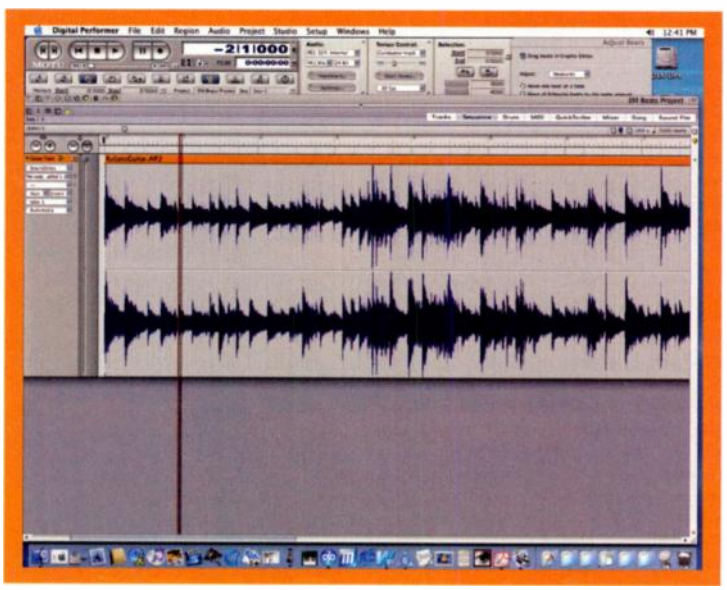

**FIG. 2: With Adjust Beats you can align the time ruler's bar and beat marks by dragging them over peaks in audio waveforms.**

## Hot Tips for Beat Snappers

Adjust Beat's little-known snapping feature has been one of Digital Performer's best-kept secrets. I first learned about it from MOTU's own "Magic" Dave Roberts, who explains how to use it, and why:

"I found that visually moving bar lines to match points on an audio waveform was tedious and inexact. The two fundamental problems are that audio cues may be slightly ahead or behind the beat for musical accent. If you line up a bar line on a kick that is supposed to be anticipated, the bar line is in the wrong place. The other problem is that if tempo is implied but not actually played, there's nothing to line up to at that point.

"So I record a MIDI click track by listening to the track and tapping along. Once I've got a MIDI click track that follows the music, I use the Adjust Beats feature and turn on Note Snapping (see **Fig. 3**). With snapping on, you can click the mouse in the ruler in the general area where there is a MIDI note, and the bar line snaps to the MIDI note. Once I've got the first two or three bar lines in place, I can just go click, click, click down the ruler, and snap all the bar lines into place."

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*Babz is a composer/multi-instrumentalist who has more than 15 years of experience using Digital Performer. She is a freelance writer on music technology and is based in New York City.*

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# Frequency Shifting Tips for Drums

By Len Sasso

## Five ways to liven up your percussion tracks.

Frequency shifting is a great way to add color and motion to almost any percussion sound. For this article, I've used the Bode Frequency Shifter module in Arturia's Moog Modular V2 (MMV) to liven up some fairly bland audio percussion tracks. You'll find the MMV patches described here on the EM Web site.

If you're using the MMV as a plug-in, you'll need to keep the VCA gated on, which you can do by assigning Keyboard Trigger Off as its trigger input and setting its sustain to maximum. You'll also need to cable one of its external inputs (or a mix of both) to the frequency shifter's input and to cable the frequency shifter's Mixt output to a VCA input. The Mixt knob then controls the mixture of upper and lower sidebands you hear; usually, you'll want it fully clockwise or counterclockwise to restrict the output to one set of sidebands. Alternatively, you can use the A and B outputs to process the sidebands separately.

### I Get a Kick

A small, slowly varying shift can make each hit of a kick drum sound a bit different, making the whole track come alive. Set the frequency shifter's initial shift close to 0 Hz, and set the scale to 50 Hz. Use the random output of an LFO synced to the host tempo to modulate the amount of shift; settings between 0.25 and 0.50 work well. Tweak the settings, especially the LFO rate, so that the variations in timbre sound natural and the amount of shift doesn't change during individual hits.

You can add some life to a snare drum by using an envelope follower to modulate the amount of shift in a direction opposite to the initial shift. An initial upward shift in the 50 to 100 Hz range with a modulation of -0.20 and a scale of 500 Hz works well. The envelope follower applies the most modulation during the loudest part of the input sound, which results in the least shift during the snare-drum attack. The shift increases as the snare dies out.

You can smooth the modulation by using the envelope follower to trigger a standard ADSR envelope. In any case, the envelope follower's trigger output must actually be used in the patch. Using it as the trigger source for an envelope is one approach.

A similar setup, but with a smaller initial amount and with the modulation in the same direction as the initial shift, works well for toms. Use a very small modulation amount, and tweak the envelope release to taste. Add a little random LFO modulation to sweeten the effect (see **Fig. 1**).

**FIG. 1: The frequency shifter setup for toms uses an envelope follower to trigger a standard ADSR envelope, which is used to modulate the amount of frequency shift. The envelope's release time controls the contour of the modulation.**

### Cymbals of Excess

Cymbals practically beg to be shifted, and large shifts often work well. A step sequencer or an LFO, with their clocks synced to the host's tempo, make interesting modulation sources. With the step sequencer, use an odd number of steps and alternate positive and negative values. With an LFO, try a fairly fast sine wave, and use an envelope triggered by an envelope follower to fade in the LFO by passing it through one of the mixer's control amplifiers. Also try using both the upper and lower sideband outputs of the frequency shifter panned to opposite sides of the stereo mix.

The processing described here, all of which can be heard in **Web Clip 1,** is at the subtle end of the range of possibilities. Try extreme shifts, radical modulation by multiple sources, and processing by other DSP effects before or after the frequency shifter. As with all sound design, breaking the rules often yields the most interesting results. EM

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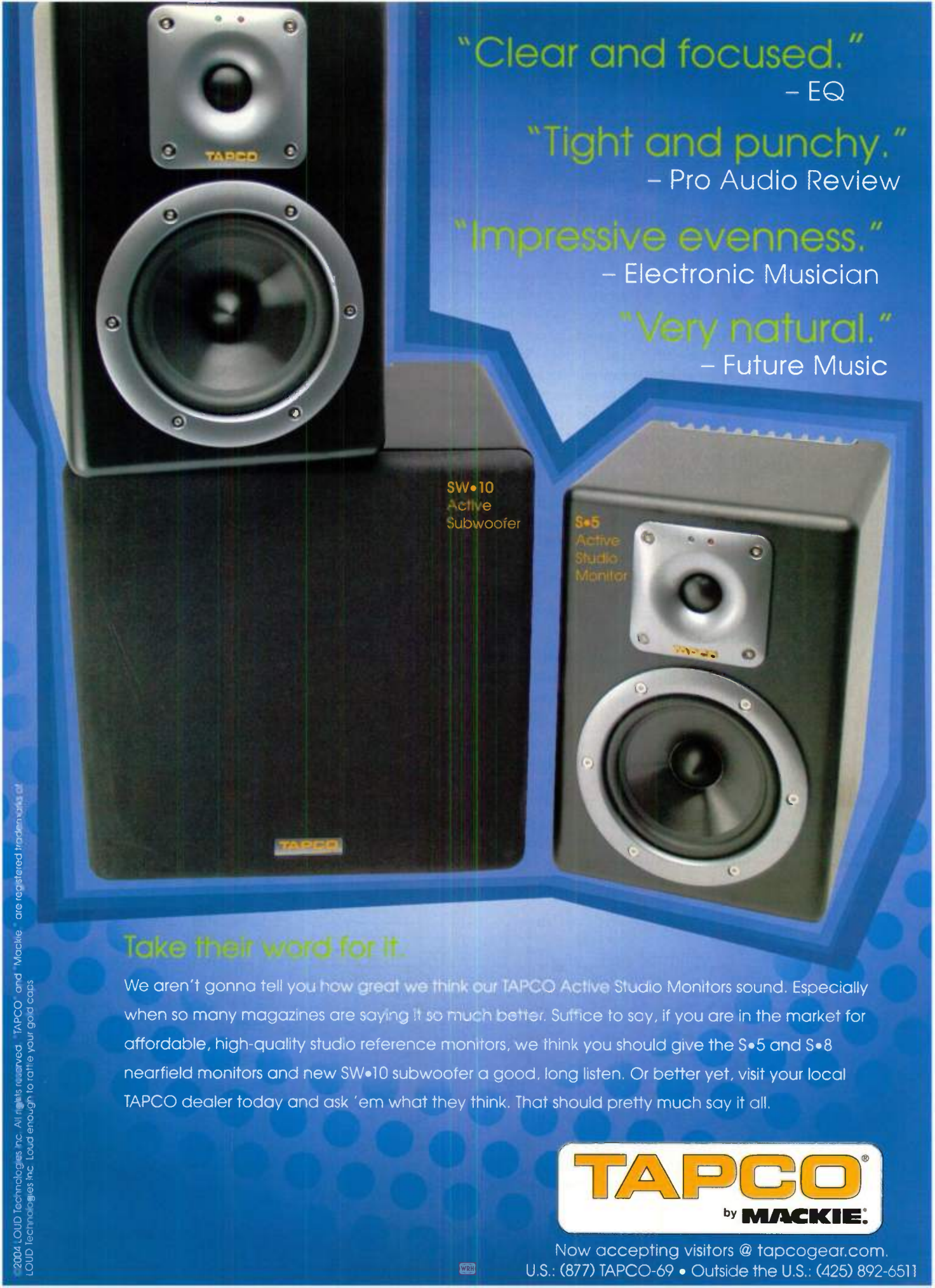
*Len Sasso is an associate editor of* EM. *He can be contacted through his Web site at www.swiftkick.com.*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# Just Passing Through

By Jim Aiken

## A basic guide to synthesizer filters.

Vintage synthesizers such as the Minimoog are prized more than other synths because of the distinctive sound of their filters. In fact, the filter is one of the key elements in the sound of any synth, new or old. Filters have other uses, too: they can add character to recorded acoustic-instrument tracks, for instance.

A filter is a signal processor. When it's fed an input, which might come from the synthesizer's own oscillators, a recorded track, or a live mic, it changes the signal in some way. But this definition is too general to be useful. It could apply to any effects device. More specifically, a filter changes the *frequency contour* of a signal.

When a signal passes through a filter, the amplitudes of some of its component frequencies will be reduced, or *attenuated*. A filter can also increase the amplitudes of some frequencies and leave others unaffected.

It's important to understand that a filter can't add components to a sound that wasn't there to begin with. The filter cuts or boosts only those frequencies that are already present. Some filter modules also have a distortion stage, which can be used to add new frequencies, but adding distortion is not the same as filtering.

### Low Rider

The most common type of filter is called the *lowpass* filter. It allows frequencies at low frequencies to pass through, while attenuating the frequencies at higher frequencies. The opposite of a lowpass filter is a *highpass* filter. As the name suggests, a highpass filter allows high frequencies to pass through while reducing the amplitudes of low frequencies (see **Web Clip 1**).

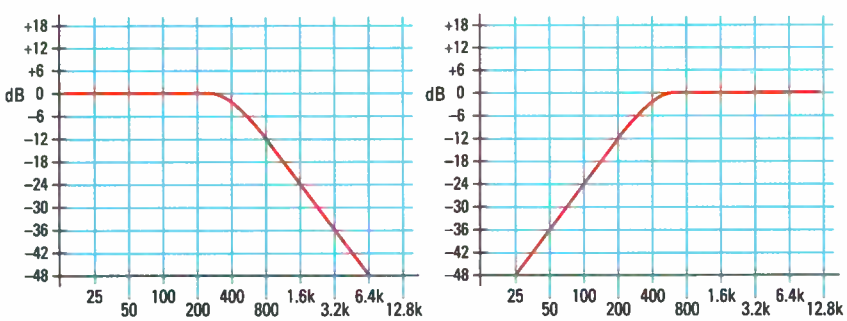


FIG. 1: This figure shows the frequency response of a lowpass filter (left) and a highpass filter (right).

The frequency response curves of two example lowpass and highpass filters are shown in **Fig. 1.** Wherever the curve is at 0 dB on the *y*-axis, the frequencies on the *x*-axis pass through without being changed. Where the curve drops below the 0 dB line, frequencies will be reduced in amplitude by the amount that the curve has dropped. For instance, where the curve shows –12 dB (on the *y* axis) at 800 Hz (on the *x* axis), a component whose frequency is 800 Hz will be reduced in level by 12 dB when passing through the filter.

Also common are *bandpass* and *band-reject* filters. A bandpass filter allows frequencies within a given frequency band to pass while attenuating both the higher and the lower frequencies around it. A band-reject filter does the opposite: it reduces the levels of components within its active band while allowing both higher and lower frequencies to pass through.

A *multimode* filter has a switch that allows it to operate in more than one of these modes. Most multimode filters offer lowpass, highpass, and bandpass modes. Some also have a band-reject mode. The mode switch may have many other settings as well, some of which are explained below. Some multimode filters have only one output. You choose the mode you want to use, and the signal coming from the output will be filtered accordingly. Other filters have separate outputs for each mode, so that one signal can be filtered in several different ways at the same time (see **Web Clip 2**).

### On the Slopes

When a lowpass filter does its job, it allows the sound energy at low frequencies to pass through, but reduces the levels of frequencies at higher frequencies. However, the filter does not simply cut out everything above some point and leave everything below that point entirely unaffected. Rather, the filter gradually lowers the signal's strength until it reaches total attenuation. The point at which the signal's amplitude has been reduced to 0.707 of its original strength is called the *cutoff frequency*. With a lowpass filter, the portions of the signal above the cutoff frequency will be attenuated by an even greater amount, while the bulk of the signal below the cutoff will pass through without being attenuated. (There is an intermediate area called the *transition band* that lies between the cutoff frequency and the point

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at which the filter attenuates the signal completely.)

Just about every filter has a knob or slider labeled Cutoff Frequency, Cutoff, or (if panel space is tight) Cut. With a lowpass filter, if the cutoff frequency is set to 20 kHz, the entire incoming signal will pass through. The filter will do nothing. At the other extreme, if the cutoff frequency is set below the lowest frequencies in the signal, the entire signal will be filtered out, resulting in silence.

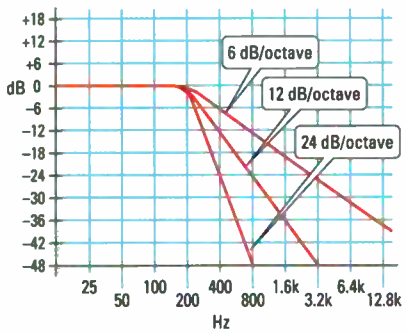


**FIG. 2: Frequency response curves for lowpass filters with slopes of 6 dB, 12 dB, and 24 dB per octave.**

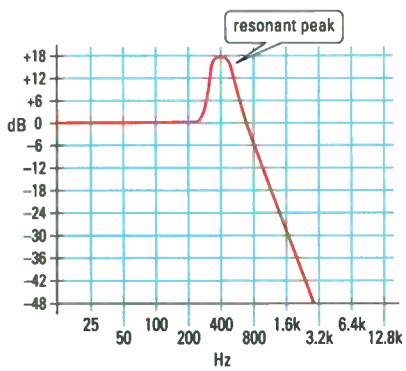


**FIG. 3: The frequency response of a resonant lowpass filter. As the amount of resonance is turned up, frequencies near the cutoff frequency are boosted more and more rather than being cut.**

To describe the amount of attenuation applied to the sound's spectrum at various frequencies, we use the term *slope*. Slope is usually discussed in terms of decibels per octave, and typical slopes for real-world filters are 6 dB, 12 dB, and 24 dB per octave, as shown in **Fig. 2.** With a slope of 6 dB per octave, frequencies one octave above the cutoff frequency are attenuated by 6 dB, those two octaves above the cutoff are attenuated by 12 dB, and so on. This is a relatively gentle type of filtering. With a 24-dB-per-octave slope, frequencies one octave above the cutoff will be attenuated by 24 dB, those two octaves above the cutoff by 48 dB, and so on.

Bear in mind that we've just been describing lowpass filtering. With a highpass filter, the frequencies *below* the cutoff frequency will be attenuated. Bandpass and band-reject filters are usually described in a different way, by referring to the width of their active band rather than their slope.

## Take Control

Because filters are so important, most synths give you several ways to change the cutoff frequency automatically while you're playing music. Also common though less frequently seen is a control on the filter's *resonance*. (Resonance, or Q, typically refers to the steepness of a filter and is the ratio of the filter's center frequency to its bandwidth. Resonant peaks can also occur in other types of filters.) Normally, all of a filter's control inputs can be used at the same time.

By moving the cutoff knob or slider in performance, you can do live filter sweeps. If the knob/slider can transmit MIDI data (most can), you can record your improvised filter sweeps into a sequencer and then edit them if needed.

Most synth filters have a dedicated envelope generator, whose output is used to sweep the cutoff up and down. The filter envelope can produce anything from a fast blip or click at the beginning of the note to a broad slow sweep (see **Web Clip 3**). Increasing the filter resonance will give the filter envelope a more pronounced sound (see **Fig. 3** and **Web Clip 4**). There will also usually be a parameter with which you can adjust the *amount* of envelope modulation.

By controlling filter cutoff with MIDI Velocity, you can cause a lowpass filter to open up further on high-Velocity notes, letting more frequencies through. This type of modulation mimics the sound of many acoustic instruments, such as guitar and piano, whose tone is not only louder but also brighter when they're played harder.

With the filter's keyboard-tracking input (which might have a name such as Keytrack), you can cause the cutoff to move higher as you play higher notes on the keyboard and vice-versa. Key tracking helps make the synth's tone more uniform across a wide keyboard range. Without key tracking, low notes will tend to sound very loud, because lots of frequencies are passing through the filter, but high notes will sound very soft, because few or no frequencies make it through the filter without being attenuated.

Most synths allow you to route the output of an LFO (low-frequency oscillator) to the filter cutoff frequency (see **Web Clip 5**). This type of modulation can produce various types of tremolo, such as pulsing wah-wah sweeps. If the LFO can be synced to the tempo of your sequencer, you can produce rhythmic filtered effects.

## In Action

Some filters have external audio inputs, with which you can pass any audio signal through the filter. By filtering a drumbeat, for instance, while triggering the filter envelope from a MIDI keyboard, you can add an extra rhythmic pattern to the beat.

As you get to know the filters on your synth, you'll discover other musical ideas. Go through some of the factory patches and analyze how the filter is being used. Adjust the cutoff frequency, the resonance, and the filter envelope parameters, and listen carefully to the results. The key to mastery of filters is experimentation.

EM WEB CLIPS

*Jim Aikin is the author of* Power Tools for Synthesizer Programming, *but his favorite instrument these days is his five-string Jensen electric cello.*


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# Get Focused

By Jeffrey P. Fisher

## Success can come from asking the right questions.

Do you want to get your music in front of more people and earn more money in the process? Even if you feel you know the ins and outs of your craft, it is possible that your career still isn't as successful or lucrative as you'd like it to be. Whether you're an old hand in the business or just starting out, selling your product or service boils down to a few simple concepts. First, you need music products or services that people want to buy. Second, you must tell people about what you have. And third, you must convince them to buy.

By asking yourself and answering the seven following questions, you'll create a plan that gives you a clear direction for your career, promotes your music or service effectively, and helps you make more sales.

**What do you sell?** Don't sell a *feature*, such as a band. Sell *benefits*—entertainment, for example—because that is what people really buy.

**What gig do you want to land?** Identify what it is you want to do, such as score an indie film, sell a CD, land a club gig, and so on. Think generally at first, then get more targeted and whittle down to possible venues and particular gigs.

People buy for two reasons: to solve a problem and to add something to their lives.

**What does it take to get the sale?** Discover those "hot buttons" that motivate people to buy what you sell. People buy for essentially two reasons: to solve a problem and to add something to their lives. You need to show your potential fans and customers what your music can do for them.

**Are there any obstacles or drawbacks?** Consider all the downsides that may interfere with closing the sale. Check out the competition, too. Then, figure out what it takes to overcome these challenges.

**Who is responsible for buying?** Research and find specific contact information. Use the Internet, national music industry directories, and local media resources. If you're in a band, contact the people who find and book entertainment such as meeting- and event planners, booking agents, and club owners.

**How do you make contact?** Advertising generates leads, and telephone and email are good for introductions. However, face-to-face contact is by far the most effective method for closing sales. Take a proactive approach that puts you in touch with prospects. If you have a cover band, place flyers at key locations and make your demo available at bridal stores.

**What will the pitch be?** Make an offer of some kind, preferably one that promotes the benefits you have determined that people want. Give discounts for initial bookings to build references and word of mouth.

These questions lay out in a general way how to formulate a career summary and promotional road map. Let's answer the questions specifically now, using as an example a cover band that wants to play at a certain club. Here are their answers to the seven questions. Notice how this process helps form a good game plan for them.

1. We sell entertainment, fun, escape, and nostalgia. We help people recall their favorite memories and leave our show feeling good.
2. Desired gig: Adam's Music Club downtown.
3. Research reveals that Adam's hires only cover bands and prefers acts that play tunes that get people dancing.
4. They hire the same established bands repeatedly.
5. Adam, the club owner, books all acts.
6. Call him at the phone number given to us by the club manager.
7. Call and introduce the band. Set a day and time to meet in person and drop off the demo. At the meeting, offer to play for free on an off night. If Adam's is satisfied with the performance, agree to be booked again with pay. Use the club as a reference to secure additional gigs.

Of course, for your career, your answers will vary based on your specialty and goals, but working the steps this way creates an action plan for landing each and every gig you want.

---

*Jeffrey P. Fisher wrote his* Moneymaking Music *(Artistpro, 2003) book to help musicians have more successful careers. Visit www.jeffreypfisher.com for further information.*

# "I Got a $ix-Figure Indie Label Deal Because I Joined TAXI"

*Jenna Drey – TAXI Member – www.jennadrey.com*

My name is Jenna Drey. That's me sitting next to TAXI president, Michael Laskow.

For as long as I can remember, I've wanted to be a recording artist. I've studied music my whole life. I've read all the books. I've been to the seminars. In short, I've done all the same things you're probably doing.

### Who Hears Your Music?

I'll bet you've also noticed that no matter how much preparation you've done, it doesn't mean anything if you can't get your music heard by people who can sign on the dotted line.

I found out about TAXI a few years ago, and have kept an eye on it ever since. The longer I watched, the more I became convinced it was the vehicle I needed for my music. When my demos were done, I joined. And guess what – it worked!

### A Record Deal With Lots of Zeros!

Seven months after joining, TAXI connected me with a great Indie label that's distributed by Universal. The president of the label heard my song, "Just Like That," and just *like* that, I was offered a record deal, and that song became my first single.

### Madonna, Bowie, Jagger, and me!

The icing on the cake? The label hired legendary producer, Nile Rodgers (Madonna, David Bowie, Mick Jagger, and the B-52s) to produce it! All these amazing things happened to me because I saw an ad like this and joined TAXI.

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### It Worked for Me

TAXI doesn't take a percentage of anything, and it will probably cost you a lot less than the last guitar or keyboard you bought. Think of TAXI as the most important piece of gear you'll ever need. It's the one that can get you signed.

If you're a songwriter, artist, or composer who wants to succeed in the music business, then do what I did and make the toll-free call to TAXI right now.

# REVIEWS



## MUSE RESEARCH Receptor (MAC/WIN)
## MANIFOLD LABS Plugzilla (WIN)

# Plug-and-go with these hardware VST hosts.

By Len Sasso

No matter how fast your computer is, how much RAM and hard-drive space you have, or how good your audio and MIDI interfaces are, you can never have too much horsepower when it comes to audio. Expanding your plug-in processing power with external hardware has always been an option, but two new products also allow you to unplug and take that solution on the road.

Manifold Labs' Plugzilla and Muse Research's Receptor are the first in a new breed of audio hardware: the standalone software plug-in host. Both machines currently run a variety of virtual-instrument and effects plug-ins in Steinberg's VST format for the PC. As the universe of VST plug-ins grows, the utility of these boxes will therefore grow, making them a rare breed of hardware device that improves with age.

Receptor and Plugzilla do not integrate directly with software running on your computer—they are designed for standalone operation using their own, built-in MIDI and audio interfaces. They can, however, be networked to your computer using Ethernet and TCP/IP for installing and removing plug-ins and presets as well as for updating their internal software. Although networking to a computer is convenient and provides added functionality, it is not strictly necessary. You can connect Plugzilla directly to the Internet for updating, and you can connect a keyboard, mouse, and monitor to Receptor to run its Muse Control software. (You need to network Receptor to a computer to update and add plug-ins.)


FIG. 1: Receptor's front panel features a 2-line, 48-character backlit LCD display; four freely assignable rotary encoders; a guitar input; a headphone output; and buttons for fast access to important functions.

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## Rack 'Em Up

Although Receptor and Plugzilla are capable of doing many of the same things, they have completely different architectures and different price tags (see the sidebar "Dollar for Dollar"). Receptor is organized like a typical hardware multisynth; it has 16 channels, each of which can hold a virtual-instrument plug-in followed by three insert-effects plug-ins. The effects can be arranged in any order (series, parallel, 1+2, or 2+1), and each Receptor channel can be set to receive on any MIDI channel, which allows virtual instruments to be layered or controlled separately.

Plugzilla, on the other hand, follows the model of a typical multi-effects box, with two effects blocks containing four slots, each of which can hold an instrument or effects plug-in. Flexible signal routing allows you to configure the slots in a variety of ways, including anything from hosting eight separate virtual instruments to creating a single 8-slot effects chain.

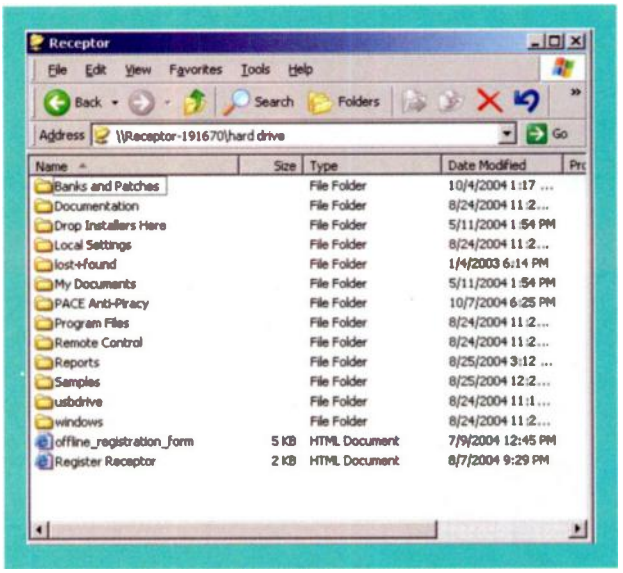


**FIG. 3: Receptor allows you complete read/write access to its hard drive for updating as well as for adding plug-ins and presets.**

Thinking in terms of those models is a good way to appreciate the difference between these two products and to understand how they might fit into your setup. To think of Receptor as a multisynth or Plugzilla as a multi-effects box, however, does not do them full justice. Whereas a multisynth's or multi-effects box's separate slots hold presets fashioned from the same synthesis, sampling, and effects algorithms, Receptor and Plugzilla slots can hold completely different instruments and effects, selected from the broad and ever-expanding array of VST plug-ins.

Although Receptor, with 143 included VST plug-ins, and Plugzilla, with 233, offer a wide variety from which to choose, they are not completely open systems. For one thing, neither product will accept all off-the-shelf VST plug-ins.

Manifold Labs maintains that Plugzilla will accept the simpler off-the-shelf free and demo PC–format VST plug-ins, but that many free plug-ins (and all plug-ins using copy protection) require modification to work with Plugzilla. Muse Research supports only plug-ins that have been "Receptorized;" however, the company does offer instructions for installing off-the-shelf plug-ins. I tried installing a variety of off-the-shelf freeware and demo plug-ins in both boxes with only moderate success.


**FIG. 2: Plugzilla's front panel features eight rotary encoders, two 80-character LCD displays, and buttons for access to individual slots and important functions.**

## Start Here

Hosting VST effects plug-ins wouldn't be of much use without something for the effects to affect. With Receptor and Plugzilla, that can be the output of a virtual-instrument plug-in or live audio input. And in keeping with their individual architectures, each one manages that somewhat differently.

Plugzilla lets you assign any combination of its eight audio inputs to any plug-in slot. If a virtual-instrument plug-in is inserted in the slot, its output is mixed with the assigned audio inputs and passed to the next slot. (The four slots in each of Plugzilla's two effects blocks are always connected in series; however, they can be assigned independent inputs and outputs.)

The input to each of Receptor's 16 audio channels can be set to a virtual-instrument plug-in or one of three audio sources: Line Input (rear jacks), Guitar Input (front-panel jack), or S/PDIF Inputs. To mix virtual-instruments with audio inputs, you need to use two or more channels, and to have them share effects, you need to use one of Receptor's two effects-send buses.

Their flexible signal routing allows each box to simultaneously function as an effects processor and a multisynth, but Receptor's greater number of slots and 16-channel mixer-style architecture gives it the edge in multifunctionality. Each product lets you load and save complete setups, including signal routing, MIDI settings, and plug-in configuration and settings. That allows you to create a variety of "multis" and quickly move among them during a live performance or a studio session.

## Ins and Outs

Receptor and Plugzilla include fully-featured audio and MIDI interfaces, but in keeping with its higher price tag, Plugzilla's audio and MIDI I/O is more extensive.

Receptor has a single MIDI port with input, output, and thru (for daisy chaining with other MIDI devices) and can therefore respond to 16 MIDI channels. Typically, you would assign each virtual instrument

# Velocity.


# B&H Pro Audio

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to its own MIDI channel; you can, however, assign several virtual instruments to the same MIDI channel for layering. You can also assign a Receptor channel to receive all MIDI channels, thus allowing the incoming MIDI channel to control the sound played by a multitimbral synth.

Receptor is a 2-channel audio device with ¼-inch balanced TRS jacks for each channel of analog I/O, RCA jacks for S/PDIF stereo I/O, and an ADAT output connector, which carries the same stereo signal as the S/PDIF output. (Eight channels of ADAT output are planned for a future software update.) There are also ¼-inch jacks with level controls on the front panel for guitar input and headphones output.

Receptor has five USB 2.0 ports (one in front and four in back), a 10/100Base-T Ethernet port, an SVGA monitor port, and two PS/2 ports for connecting a computer keyboard and mouse. The Ethernet port is for networking to your computer either directly using a crossover cable or through a router using a standard Ethernet cable. The USB ports can be used for computer peripherals such as a hard drive, memory stick, keyboard, or mouse; MIDI devices such as keyboard and control surfaces that feature a USB port; and the Pace iLok copy-protection key that Receptor offers plug-in developers for copy protection. (The front port is conveniently recessed to partially protect the iLok when Receptor is rackmounted.)

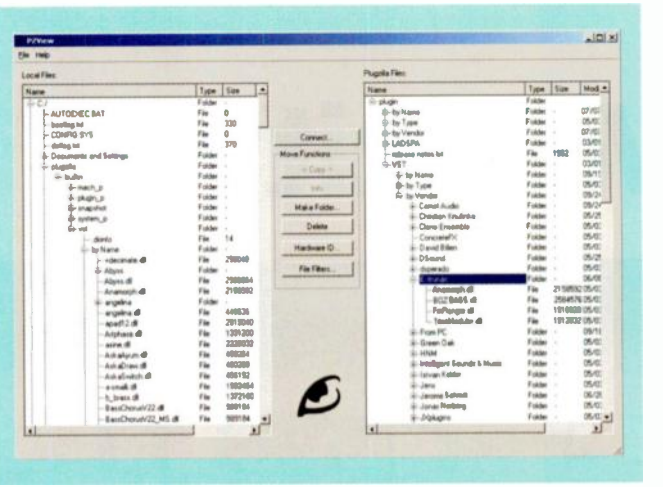

FIG. 4: PZView software allows write-only access to Plugzilla's hard drive for adding plug-ins and presets.

## Zilla's Plugs

Plugzilla comes with eight channels of analog I/O that is accessible from rear-panel, balanced XLR connectors. Digital-audio I/O includes AES/EBU with word clock, as well as S/PDIF. There is no mic/guitar preamp and no audio I/O on the front panel, presumably because it is assumed Plugzilla will be integrated with a mixing desk.

Plugzilla has two MIDI ports, for a total of 32 MIDI channels, one served by separate In, Out, and Thru connectors and the other served by a single In-Out connector. The second port is especially convenient for connecting an automated MIDI control surface. There are also two ¼-inch TRS footswitch jacks. As with Receptor,

## DOLLAR FOR DOLLAR

With Plugzilla ringing in at roughly twice the price of Receptor, it's natural to wonder what you get for your money. The short answer is that you don't need to look any further than the front and back panels. But before getting into the details, I'll describe how a specific setup might be accomplished with both machines.

Suppose your guitar player wants a little compression and distortion, your lead singer wants some EQ and a reverb of her own, and the keyboard player wants to layer a couple of his favorite synths. You can accomplish that in Receptor by using the front-panel guitar input for the guitar, the rear-panel line input for the singer—each with their own Receptor channel. Then dedicate a few more Receptor channels to the keyboard player for his synths and perhaps a couple of effects. But frankly, I don't want to be there when you tell the lead singer she's on the same output bus as the guitar and synths. (Of course, you could pan one source hard left and the other two hard right to get two mono outputs.)

To accomplish the same task with Plugzilla, you might devote one effects block (four slots) to the guitar and vocal (say, two slots each), with their own two channels of audio output. You could then devote the other effects block to the keyboard player to insert a couple of synths and a couple of effects and arrange the remaining four channels of audio output to suit. Eight channels of audio input and output do make a difference.

Moving around to the front panel, there are four rotary encoders with one 48-character LCD on Receptor, and eight rotary encoders with two 80-character VFDs on Plugzilla. Plugzilla also offers more buttons, which makes accessing specific tasks somewhat easier. For example, there are eight buttons across the top for selecting slots, and they have two levels of illumination: Dim, to indicate that the slot is filled (versus dark for empty), and Bright, to indicate the slot is filled and selected for editing. In fact, all Plugzilla buttons are intelligently illuminated, and each of the rotary encoders is ringed by LEDs to indicate the current parameter setting.

Do you need eight audio output buses with XLR connectors, eight rotary encoders ringed with LEDs, bigger displays, and illuminated buttons? If you do, you'll have to pay a premium.

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Plugzilla's slots can be configured to receive on one or all MIDI channels, and multiple slots can be assigned to the same MIDI channel.

Plugzilla offers five USB 1.1 ports—two type A and one type B on the back, and two type A on the front. The USB ports can be used for computer or MIDI peripherals. Just like Receptor, Plugzilla can be networked to your computer over a 10/100Base-T Ethernet connection.

FIG. 5: Muse Control software provides a graphic user interface for programming Receptor's mixer as well as individual plug-ins that use their own graphic user interfaces.

## Hob Knob

Designed for standalone use, Receptor and Plugzilla have extensive front-panel controls (see Figs. 1 and 2). At the heart of each is a 360-degree knob and an associated LCD display for making plug-in settings. Receptor offers four such knobs with a 48-character LCD display. Plugzilla offers eight knobs and two 80-character vacuum fluorescent displays (VFDs), which are clearer and brighter than LCDs. By default, four knobs and one display apply to the selected slot in each Plugzilla effects block, but you can choose to have all eight knobs and both displays apply to a single slot. Receptor's and Plugzilla's knobs incorporate push buttons for confirming choices and making menu selections when appropriate.

Plugzilla's Hot Knobs feature allows eight parameters for each slot to be assigned for quick access from the eight

control-panel knobs. Receptor has a similar feature called Soft Knobs. In addition, Receptor, through its Muse Control software, allows you to control which plug-in parameters are editable on the front panel, the order in which they appear, and the name that appears on the LCD. For plug-ins with tons of parameters, it's great to be able to rationalize front-panel editing and to pare down the front-panel parameters to those that are most important.

Separate knobs (Receptor) and buttons (Plugzilla) are used to move through multiple parameter pages. Separate buttons are also provided for changing modes, choosing which plug-in slot is being edited, loading and saving presets, and so on. In short, the controls are what you would expect to find on a sophisticated hardware multisynth or multi-effects box.

Plugzilla and Receptor have extensive MIDI-automation options. Plugzilla allows MIDI Control Change (CC) messages to be freely assigned (including their ranges) to any machine parameter as well as to any plug-in parameter. Receptor has fixed MIDI CC assignments for its mixer parameters and fixed NRPN assignments for plug-in parameters. But the first 16 parameters of each virtual instrument and the first 8 parameters of each effect that are assigned to the front panel can also be controlled by MIDI CC messages.

## Soft Landing

Both Plugzilla and Receptor can be networked to your computer using Ethernet TCP/IP. Receptor supports Mac OS 9 through X and Windows 9x through XP. Plugzilla supports Windows 9x through XP, with OS X and Linux versions in the works. Receptor and Plugzilla offer either manual or automatic (DHCP) setup. I used DHCP with Receptor and manual setup with Plugzilla, and the process was quick and easy in both cases.

Receptor gives you two-way access to its hard drive, allowing you to move plug-ins and their presets back and forth between Receptor and your computer (see **Fig. 3**). However, some of Receptor's plug-ins are protected from being copied to your computer. Of the 25 freeware plug-ins I tried to move from Receptor to my PC, only 10 were transferable, but those 10 did work in all of my VST hosts.

Plugzilla gives you one-way access. Using its PZView software, you can move plug-ins and presets to Plugzilla, but not vice versa (see **Fig. 4**). On the other hand, Plugzilla provides PC versions of all its plug-ins on an included CD.

Operating system and plug-in updates for Receptor can be downloaded from the Muse Research Web site, then moved to Receptor's hard drive for installation. Plugzilla connects directly to the Web for automatic updating, but it can also be updated manually using a USB memory device.

## Good Reception

Receptor includes a software graphic user interface (GUI) called Muse Control for managing its plug-ins. Designed in the form of a mixer with 16 input channels, 2 effects-return channels, and a master output channel, it lets you choose plug-ins and their presets for each slot as well as to program the plug-ins using their own GUIs (see **Fig. 5**).

Muse Control is run directly on Receptor by attaching a keyboard, mouse, and monitor. Alternatively, you can run companion software Receptor Remote on a networked computer, which gives you access to Muse Control over Ethernet. I did not have a monitor with which to test onboard operation, but the networked version worked quite well. The controls, however, were a bit sticky. Because the GUI is primarily intended for programming presets and setting up Receptor multis rather than for live performance, that sluggishness is not a big issue.

Most of the mixer controls can also be set from Receptor's front panel, and, of course, the settings

REVIEW

## THE TIME IS NOW

Latency is the bane of software synthesis, and considerable time can be spent trying to set up a computer to minimize latency while still delivering reasonable performance. Receptor and Plugzilla, being dedicated plug-in hosts with built-in audio and MIDI interfaces, can devote more of their resources to lower latency and come factory tuned for optimal performance. You don't need to deal with setting buffer sizes or disabling other drivers and background processes that interfere with performance.

In an unofficial head-to-head test running the same virtual-instrument plug-in (TickyClav from Big Tick Audio), there was no noticeable sluggishness with either machine. Furthermore, playing them simultaneously from the same MIDI keyboard resulted in no perceptible flamming. Performance with several layered synths was also clean and crisp on both boxes.

To get a rough idea of how they compared with an audio-optimized PC, I loaded TickyClav into Steinberg's V-Stack—a software VST host similar in architecture to Receptor—running on my 3.2 GHz Pentium 4 laptop using an RME Cardbus/Multiface audio and MIDI interface. (Bear in mind that this is not the inexpensive system discussed in the main text.) I used Apple Logic Pro 7 running on another computer to send MIDI to and record audio from Receptor and the PC, then Plugzilla and the PC. The results were nearly identical.

Once optimized for audio, the factor most influencing latency on a PC is the audio buffer size. Smaller buffer sizes result in lower latency at the cost of lower plug-in counts. The RME Cardbus buffer settings range from 64 to 8,192 samples, but in practice settings higher than 512 samples are unacceptable for performance.

With a buffer setting of 512 samples, Receptor and Plugzilla had an edge of roughly 6 ms over the PC. With a buffer setting of 256 samples, the performance was nearly identical, with roughly a 1 ms edge for the hardware boxes. With a buffer setting of 128 ms, the PC had roughly a 4 ms edge. Your mileage may differ.

are interactive with the GUI software if it is running. You would, however, most likely set up multis—complete Receptor setups including all plug-ins and their presets together with all mixer settings—with the instruments and effects desired, then use program changes to switch between them during performance. Changing multis does not cause plug-ins to reload if they are already in Receptor's memory, so with a well-thought-out setup, switching between multis can be fast.

Although Plugzilla does not offer a GUI front end, PC users can use the supplied PC versions of the VST plug-ins to program them graphically in another host. The presets can then be transferred to Plugzilla using PZView.

PRODUCT SUMMARY

MANIFOLD LABS Plugzilla

hardware VST plug-in host
$2,995

OVERALL EM RATING [1 THROUGH 5]: 3

PROS: Built-in MIDI and audio make for no-hassle, high-efficiency performance. Eight audio inputs and outputs for parallel effects processing. Roadworthy.

CONS: Limited selection of premium plug-ins. No graphic user interface software for setup and plug-in preset programming.

MANUFACTURER
Manifold Labs
www.plugzilla.com

### Plug for Plug

As you would expect, Plugzilla and Receptor ship with large complements of VST instrument and effects plug-ins. The version of Receptor I received for this review included 102 free plug-ins (42 instruments and 60 effects) and 41 premium plug-ins (19 instruments and 22 effects) that run in demo mode for 30 days, after which they must be authorized. (Registering Receptor will get you authorization for premium plug-ins worth roughly $400.) Plugzilla came with 233 plug-ins (71 instruments and 162 effects), all free except for PSP Audioware's Prozilla Pack bundle of mastering effects. Interestingly, Receptor and Plugzilla had only 8 instrument and 32 effects plug-ins in common.

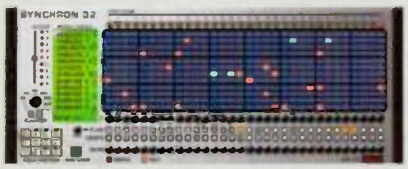
Both companies maintain a database of plug-ins on the Web. Plugzilla's database at www.plugzilla.com lists plug-ins that are compatible but not included and plug-ins that are not compatible. It indicates whether the plug-in was created in SynthEdit (a common VST plug-in developers' tool for the PC) and has space for a user rating, although none had been rated at this writing. In addition to sorting and filtering the list by various parameters, you can view the list in annotated form, which gives a detailed description of each plug-in. You can download the plug-ins directly from the site.

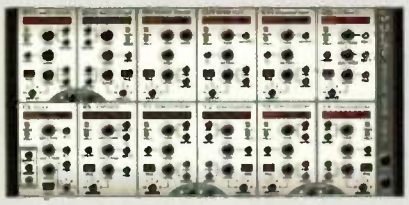
Manifold Labs has recently announced Plugzilla support for the Linux Audio Developers Simple Plug-in API (LADSPA), which should significantly expand the company's plug-in offerings.

Receptor's plug-in database is at www.plugorama.com. That's your source for updates, new preset banks, and new plug-ins. Premier plug-ins can be purchased directly from the site and can be downloaded free to use for 30-days in trial mode. As with Plugzilla's Web site, files can be filtered by various criteria, and you can view a detailed description of each plug-in. You can also maintain a wish list for your more generous friends and relatives.

### For a Fee

If you're contemplating buying products in this price range, you probably expect them to host an assortment of premium plug-ins. At the time of this writing, both Receptor's and Plugzilla's premium offerings are somewhat limited,





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*– DJ Times, November 2003*

**"Its instruments and effects are phenomenal"**
*– Computer Music, May 2003*

**"There's something about Project5 that just makes music happen"**
*– Sound on Sound, June 2003*

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*– Keyboard, June 2003*

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* Supports ReWire™; ACID™-format loops; DirectX & VST™ Effects; DXi & VSTi™ soft synths; and AIF, Akai™, Kurzweil™, LM4™, SF2™, WAV samples

cakewalk

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and some of your favorites are probably not among them. Receptor is definitely ahead of Plugzilla in premium offerings. One very nice Receptor inclusion is Native Instrument's Kompakt sample player, the only sample-playback virtual-instrument available on either box at the moment. Both companies are working hard to add premium content, and a visit to their Web sites will tell you what's currently available. Definitely look before you leap.

As with native hosting, premium plug-in developers generally require some form of copy protection. Receptor comes with a Pace iLok key that connects to one of its USB ports. All Receptor premium plug-ins use iLok protection.

Plugzilla offers a proprietary scheme tied to their hardware and operating system that does not require a hardware key and that allows a premium demo to run 30 times before being purchased. Manifold Labs plans to add the iLok protection option to Plugzilla.

## One from Column A

Both Plugzilla and Receptor are cleverly designed, well-built pieces of hardware. They are rackmountable and roadworthy. The obvious questions are how does one decide between them and why choose to buy either?

Although both products are adept at virtual-instrument hosting and effects processing, Receptor is more adept at the former whereas Plugzilla is designed more for the latter. Receptor's ability to load 16 channels of virtual-instrument plug-ins together with insert effects, then easily toggle channels in and out for layering and splitting those instruments, makes it ideal for the performing musician. Plugzilla's multichannel I/O, flexible I/O routing, and effects-block style architecture, along with its fully-featured audio interface, make it an ideal fit in a rack of effects.

That being said, the question remains, why not just buy a computer and dedicate it to running VST plug-ins. You can buy a desktop or laptop PC with comparable specs for somewhat less than the price tag for either Receptor or Plugzilla, even after adding audio and MIDI interfaces and VST hosting software. And a computer has the advantage of running all VST plug-ins off-the-shelf.

Muse Research and Manifold Labs answer that question in much the same way, with the argument that their systems, being designed exclusively for running VST plug-ins, are more efficient, less likely to crash, and less susceptible to the driver and software conflicts that plague computer users. Furthermore, by virtue of having

## COMPARATIVE PRODUCT SPECIFICATIONS

| | Receptor | Plugzilla |
|---|---|---|
| **Audio Inputs** | analog stereo (¼" balanced +4/–10)<br>S/PDIF stereo (RCA)<br>mic/guitar (¼" unbalanced on front panel) | 8 analog (XLR balanced)<br>S/PDIF stereo (RCA)<br>AES/EBU (gold plated XLR) |
| **Audio Outputs** | analog stereo (¼" balanced +4/–10)<br>S/PDIF stereo (RCA)<br>ADAT stereo (8 channels planned)<br>headphone (¼" on front panel) | 8 analog (XLR balanced)<br>S/PDIF stereo (RCA)<br>AES/EBU (gold plated XLR) |
| **MIDI Ports** | In, Out, Thru | In, Out, Thru<br>In/Out 2 (for control surface) |
| **Sampling Rates** | 44.1-, 48-, 96 kHz | 32-, 44.1-, 48-, 88.2-, 96 kHz |
| **Footswitch Inputs** | no | 2 |
| **PS/2 Inputs** | 2 (for keyboard and mouse) | no |
| **USB Ports** | 1 USB 2.0 (front)<br>4 USB 2.0 (rear) | 2 USB 1.1A (front)<br>2 USB 1.1A (rear)<br>1 USB 1.1B (rear) |
| **Word Clock** | S/PDIF | BNC in and out |
| **Ethernet** | 10/100Base-T | 10/100Base-T |
| **Monitor Out** | SVGA output for 1024 5 768 monitor | n/a |
| **LCD Display** | 48 character (2 rows of 24) | 2 × 80 character (2 rows of 40 in each) |
| **Presets/Multis** | 16,384/16,384 | 999/999 |
| **RAM** | 256 MB expandable to 2 GB | 256 MB expandable to 2 GB |
| **Hard Drive** | 40 GB | 20 GB |
| **Processor** | Athlon Barton-core XP2500+ | Celeron 2.0 GHz |
| **Computer OS** | Win 9x–XP, Mac OS 9–X | Win 9x–XP |
| **Dimensions** | 17.0" (W) × 3.5" (H) × 11.37" (D) | 19.0" (W) × 3.5" (H) × 15.0" (D) |
| **Weight** | 13.25 lbs. | 15 lbs. |

PRODUCT SUMMARY

**MUSE RESEARCH Receptor**

hardware VST plug-in host
$1,599

OVERALL RATING (1 THROUGH 5): 3.5

PROS: Built-in graphic user interface makes setting up a breeze. Built-in MIDI and audio make for no-hassle, high-efficiency performance. Easy and fast front-panel reboot in case of lock-ups during performance. Roadworthy.

CONS: Limited selection of premium plug-ins. Front USB jack only partially protects iLok hardware key. Audio output limited to two channels.

MANUFACTURER
Muse Research
www.museresearch.com

their audio and MIDI interfaces built-in and of being designed to withstand abuse, they are less accident prone and therefore more roadworthy. Finally, there is the question of latency, which is always a battle on a laptop (see the sidebar "The Time Is Now"). Those are all strong arguments if they apply to your situation.

After having both units in my studio for more than a month, I came to several conclusions. Receptor's multichannel design, GUI, and flexibility in setting up its front-panel controls make it an excellent live-performance virtual-instrument and DSP-effects host. Plugzilla's eight channels of audio I/O, dual-effects-block architecture, and more extensive front-panel setup are well suited to pro-audio effects processing in a live or studio environment. They eliminate many of the hassles of doing the same job with a PC, but to be truly competitive, both units need more premium content, and it is likely to be only a matter of time until they have it. Receptor and Plugzilla represent a clear advance in multisynth and multi-effects hardware.

*Len Sasso is an associate editor of* EM. *Contact him through his Web site at www.swiftkick.com.*

FIG. 1: Logic Pro 7 features the Apple Pro Application look and feel.

## APPLE Logic Pro 7 (MAC OS X)

# The emperor has new clothes and some shiny new toys.

By Len Sasso

ith version 7, Logic has been fully folded into the Apple product line, with a new look and feel, lots of operational enhancements, and a greatly expanded collection of proprietary effects and instrument plug-ins. But under the hood it's still Logic, with all the same power, flexibility, and head scratching that that entails. Current Logic users won't need to relearn Logic, but a little rethinking may be in order. For new users, getting up and running is significantly easier.

In addition to new headline-grabbing features such as Global Tracks, support for Apple Loops, compatibility with GarageBand songs, and Distributed Audio Processing, there are numerous smaller improvements that, taken together, greatly speed up the workflow. All that power comes at a price, though; you'll need a fast G4 or G5 (preferably dual-processor) machine with a good dose of RAM and 4 GB of hard-drive space to fully install and use Logic.

## Look and Feel

Logic's user interface is now pure Apple Pro, featuring rounded buttons for drop-down menus, dialog boxes with icons and tabs, and hierarchical menus throughout (see **Fig. 1**). In general, the graphic user interface is more ergonomic and easier on the eyes, but finding hot spots, many of which have been improved by incorporating cursor changes, seems a little more finicky. In addition, the handy two-dimensional layout for long menus such as the icon selector and the Multi-instrument's program menu is gone.

Logic's song architecture remains the same, but there is more active encouragement for saving songs as self-contained projects. When you create a new song, you are given the option to immediately make it a project, and when you save a song from a project using a new name, it also becomes part of the project. Unfortunately, you can't simply add a new song to a project.

Logic now incorporates song templates, rather than limiting you to a single autoload song. You can have as many templates as you like, and Logic comes with a useful assortment to get you started. If you do create one named Autoload, it will still be the default template, but as with other ancillary files, it now lives in Logic's Application Support folder.

## Foreign Exchange

Logic's ability to render audio and exchange data with other software applications has been enhanced in several ways. Logic now supports XML and AAF (Advanced Authoring Format) import and export for increased compatibility with Final Cut Pro, Soundtrack, Pro Tools, and other DAW applications that support those formats.

You can import GarageBand songs, and Logic includes all GarageBand instruments as plug-ins. Logic can extract soundtracks from QuickTime movies as well as replace a movie's soundtrack with rendered audio from a song.

Logic's bounce function has been greatly improved. You can now bounce directly to MP3 and AAC encoded files as well as burn Red Book audio CDs during a bounce.

# "Slammin'!"

*Anthony Roberts, Monitors - Tower of Power*

*"I'm in the studio with P.O.D and lovin' the i-5 on guitar cabs. Great punch in the upper mids and perfect for heavy guitars that need that special drive. Also fantastic on snare – it can sure handle some serious SPL's!"*
*Travis Wyrick, Producer, Engineer, Mixer - P.O.D., Charlie Daniels, Pillar*

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

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

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

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

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

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


"WE WANTED TO COMMEND YOU ON YOUR NEW I-5 MICROPHONE. IT PROVED BE THE CREW'S FAVORITE FOR THE YOUNG SCIENTIST MUSIC CHALLENGE, CONSTANTLY ADAPTING TO ANYTHING WE COULD THROW AT IT. WE USED IT IN A VARIETY OF SITUATIONS - RECORDING VOCALS, OVERHEAD MIKING OF DRUMS, TO REINFORCING THE THEREMIN AMPLIFIER. WE FOUND THAT IT PROVIDED US WITH A VERY CLEAN SOUND IN EVERY SITUATION DESPITE THE DIFFICULTY OF RECORDING IN A VERY NOISY ENVIRONMENT. OVERALL, THE I-5 IS AN EXCELLENT ALL PURPOSE MICROPHONE THAT WE'LL BE USING IN FUTURE PROJECTS."
WILLIAM WHITE, PROJECT COORDINATOR - THE DISCOVERY CHANNEL

*"I have dreamed of this day—I can now retire the last of my SM57's. Now that I've been exposed to the future, why would I want to live in the past?"*
*Eugene "Gino" Mulcahy, Lead Audio Engineer - Mohegan Sun*

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

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

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

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

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

*"The i-5 is more than an impressive upgrade to my usual snare and guitar cab mic—it's a big leap forward."*
*Ed Tree, Studio Engineer - The Spencer Davis Group*

*"Who needs a condenser when you can get this sound out of a dynamic. Audix has again come up with a winning microphone."*
*John Gatski, Pro Audio Review*

*"The best thing to happen to snare drum since Charlie Watts!"*
*Paul Hagan, FOH - American Hi-Fi*

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

*Gary Hartung, FOH - Crosby, Stills & Nash*

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For more fully-featured audio CD burning, Waveburner is now included with Logic but unfortunately, it is not backward compatible with previous Waveburner or Waveburner Pro projects.

Three new export options (collectively called Total Bounce) allow you to bounce audio tracks and regions directly from the Arrange window. You can select any audio region or track and export it as an audio file. Alternatively, you can simultaneously export all tracks as audio files. Exporting all tracks is especially handy for transferring time-stamped audio and virtual-instrument content to applications that don't support one of Logic's other export formats.

## In the Loop

Logic is now much more loop friendly. For one thing, looping audio or MIDI regions in the Arrange window is a simple matter of dragging the top-right corner of the region for as far as you want the loop to last. (No more inserting dummy regions to terminate a loop, thank you.) For another, Logic fully supports Apple Loops.

Apple Loops will be familiar to Soundtrack and GarageBand users and are similar in function to Acid files, for those familiar with that format. A new Loop Browser window, similar to GarageBand's, allows you to select and audition Apple Loops by category and to search by keywords (see Fig. 2). Apple Loops can be dragged directly from the Loop Browser into the Arrange or Audio windows.

FIG. 2: Logic's support for Apple Loops includes the GarageBand-style Loop Browser window.

Apple Loops on Arrange tracks adapt to tempo and transposition changes, which can be entered and displayed on the new Global Tempo and Transposition tracks. (For more on Global Tracks, see the section Global Concerns.) Some Apple Loops are audio only, while others also contain MIDI information and can be used on MIDI tracks. In a nice touch, Apple Loops with MIDI information are formatted to include channel-strip information, and importing them to virtual-instrument tracks automatically installs the plug-in instrument and effects necessary to reproduce the audio file. Among other things, that allows you to make pitch and tempo changes without the degradation that audio processing entails.

## The Acid Test

If you have GarageBand installed on your computer, you already have a large collection of Apple Loops, and you can add collections from Apple, like the new Jam Packs, or from other vendors. But, Logic also comes with the Soundtrack Loops utility (also called the Apple Loops Utility) for making your own. That allows you to enter

FIG. 3: Sculpture is Logic's new component-modeling synth.

classification tags as well as place the transient markers used in time stretching. The process is easy, although not quite as seamless as it might be, because you need to drag the resulting Apple Loops back onto the Loop Browser to get them added to your collection or back onto an Arrange track to use them in your song.

Apple also added support for Acid files to Logic. Acid files can be added to the Loop Browser and used on Arrange tracks just like Apple Loops. At the time of this writing, though, they don't adapt to transposition, and not all files that claim to be Acidized are recognized. Acid support was added late in the development cycle, and Apple is working to fix both problems. The great thing about Acid-file support is the huge library of Acid files that already exist.

## Node for Node

Logic's new Distributed Audio Processing (DAP) allows plug-in DSP calculations to be shared among computers networked with gigabit Ethernet connections. The computer running Logic is the host, and the remaining computers are called Nodes. The host can be any G4 or G5 capable of running Logic—a recent G4 PowerBook, for example—but the Nodes need to be G5s.

Setting up DAP is extremely simple. In the case of two machines, you connect them with an Ethernet cable, ensure that Built-in Ethernet TCP/IP is set to Using DHCP on both machines, launch the Node software application (supplied with Logic) on the Node machine, then start Logic on the Host machine and ensure that Nodes are enabled in Logic's Audio preferences. Only Logic (not AU) instrument and effects plug-ins inserted in audio and instrument tracks can be distributed. On such tracks, there is a button to enable processing on the Node machine.

I networked an 800 MHz Powerbook G4 host to a dual-G5 2.0 GHz Node machine, and tried DAP with songs of varying complexity. For example, a song with eight instrument and eight audio tracks, running a total of 33 Logic plug-ins that brought the PowerBook to its knees, played at about 60 percent CPU usage with ten tracks running

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on Nodes. In general, the DAP results were impressive; however, some finagling was often necessary to get Node processing working properly, and I wasn't always totally successful.


FIG. 4: The new Ringshifter plug-in offers ring modulation and frequency shifting.

REV

## Plugging In

Logic now allows you to load and save complete channel-strip settings, including all slot assignments and all settings for the channel strip itself and each of its plug-ins. That's a tremendous time-saver, and it makes channel-strip settings transferable between songs. A huge collection of factory settings is provided covering most classes of audio objects.

The Audio Unit scanning process is now carried out in a separate application called the AU Scan Manager, which is invoked automatically when Logic starts up, and can also be launched from Logic's Preferences menu. The Scan Manager verifies a plug-in only once, then remembers its status—rescanning only when the plug-in is updated. That makes starting Logic after the initial scan much faster. Scanned plug-ins are placed in three categories: passed, failed, and crashed. By default, all plug-ins in the latter two categories are disabled, but you have the option of enabling and using them (at the risk of destabilizing Logic, of course).

## Instrumental Decisions

Logic's collection of virtual-instrument plug-ins fall into four categories: GarageBand, basic, emulation, and advanced. The GarageBand instruments ensure compatibility with imported GarageBand songs, but they are also the simplest and least CPU-intensive of Logic's instruments. Don't overlook them.

A two-operator FM synth (EFM 1) has been added to the line of basic synths. Like the rest, it has a minimum of controls, but a quick spin through the factory presets shows it to be fully capable. In addition, it sports a variable-amount, randomize button for the knob-and-slider averse.

The other new kids on the block are Sculpture, a physical-modeling synth, and Ultrabeat, a classic drum-box emulation with built-in step sequencer.

## Hammer and Chisel

Apple's Logic-instrument developers' design philosophy emphasizes large control panels with more buttons, knobs, sliders, menus, and numerical displays than you can possibly assimilate. With Sculpture, they've taken that philosophy to new heights, and to prove they mean business, they've included 71 pages of documentation, with two levels of programming tutorials. Sculpture (see **Fig. 3**) it an unusually fascinating sound-design tool, but in case you have a life, it also comes with 276 outstanding factory presets and that nifty little randomize button.

Sculpture's brand of synthesis, officially called component modeling, begins by selecting a medium, specifying how it is set vibrating, and positioning two pickups that transduce the sound for further processing. You can start with anything from a steel or nylon string to a thick wooden or glass bar; you can whack on it, blow into it, jiggle it, hang weights on it, and drop it in a tub of water; then you can take the output from the pickups and pass it through a filter, waveshaper, delay, and EQ optimized for emulating various instrument bodies. Finally, there is modulation,

which has LFOs, breakpoint envelopes, MIDI continuous controllers, and morphing.

## Bang the Can

Ultrabeat is a 25-pad drum synth with built-in step sequencer that is designed to emulate classic drum machines. Each pad is an independent synth, for which you can choose from a variety of synthesis methods including classic analog, FM, sampling, physical modeling, noise sculpting, and ring modulation. Filter, distortion, and EQ modules round out the signal path. To facilitate independent outboard processing, Ultrabeat offers eight stereo output channels.

Ultrabeat's 32-step pattern sequencer holds 24 patterns with anything from 8th-note to 32nd-note resolution. You can add swing to even numbered steps and accent any combination of steps. MIDI Notes C-1 to B0 can trigger patterns, and the step sequencer can be used simultaneously with incoming MIDI.

**FIG. 5: The Beat Mapping Global Track allows you to conform loosely played material (top) to Logic's Bar Ruler divisions (bottom) without changing the sound.**

## Just for Effect

Logic's complement of plug-in effects has been expanded to include a guitar-amp modeler (Guitar Amp Pro), a couple of EQs (Linear Phase EQ and Match EQ), three modulation effects (Ringshifter, Vocal Transformer, and Pitch Correction), and three visual aids for mixing and mastering (Multimeter,

REV

Correlation Meter, and Level Meter).

Guitar Amp Pro simulates a variety of classic guitar-amp and speaker-cabinet configurations. It also allows you to switch between centered and off-center miking with a condenser or dynamic mic. Tremolo-vibrato and spring-reverb effects round out the signal path. Guitar amp simulators are the must-have effect of the moment, and Logic has covered the base nicely.

Linear Phase EQ is a high-quality, high-CPU-load variant of Logic's Channel EQ parametric equalizer. It uses look-ahead technology (and hence, introduces some latency) to preserve the phase of the signal regardless of the shape and amount of equalization.

PRODUCT SUMMARY

APPLE Logic Pro 7

digital audio sequencer
$999 (upgrade $299)

OVERALL RATING [1 THROUGH 5]: 4

PROS: First-rate collection of virtual instruments and effects. Instant access to complex setups with Channel Strip settings. Increased power with Distributed Audio Processing. Apple Loop and Acid file support.

CONS: Can't add new songs to a project. Apple Loop utility not fully integrated into Logic. No Distributed Audio Processing for Audio Units.

MANUFACTURER
Apple Computer www.apple.com

## Got a Match?

Match EQ will "learn" the average EQ spectrum of two audio files (Template and Current Material) and calculate an EQ curve to make the Current Material match the Template. Its presets are all analyses of different mixing styles (jazz, funk, disco, dance, and so on) set up as the Template.

You can analyze file spectra (Template or Current Material) on the fly during playback or offline by dragging them to the Match EQ control panel. A variety of sources produce interesting and unusual Templates, including the many impulse-response files that come with Logic's Space Designer convolution reverb. You can also experiment with the amount of matching EQ applied, and even reverse its effect, thereby emphasizing the similarities rather than compensating for the differences in the two spectra.

## Swing Shift

Ringshifter is a combination ring modulator and frequency shifter (see **Fig. 4**). Frequency shifting produces a linear shift in the harmonic spectrum, which sounds much different from the exponential, harmonic-preserving, shift produced by a pitch shifter. Frequency shifting can seriously mangle any sound, but it especially effective with percussion (see **Web Clip 1**).

Ringshifter uses an internal sine-wave oscillator whose frequency determines the amount of shift in the processed signal's spectrum. Modulating the oscillator frequency can have dramatic effects and an LFO and envelope follower are provided for that purpose. In Frequency Shifter mode, one set of sidebands can be suppressed, or the sidebands can be sent to opposite stereo channels. In Ring Modulator mode, the sine-wave oscillator can be replaced as the modulator by a side chain signal.

Pitch Correction and Vocal Transformer are primarily aimed at monophonic, instrument, and voice tracks; they can, however, be effective on other kinds of material. Pitch Correction does just that—it adjusts the pitch to keep it within a preset or user-defined scale. Vocal Transformer offers independent pitch and formant shifting, with a Robotize option that allows you to restrict or even invert the amount of pitch shift around a center pitch.

## Global Considerations

Logic users have long asked for a conductor track, and Logic's new Global

Tracks feature serves that purpose. Global Tracks can be displayed along the top of the Arrange window and any of the time-based MIDI editors (Matrix, HyperEdit, and Score). There are seven kinds of Global tracks—Marker, Signature, Chord, Transposition, Tempo, Beat Mapping, and Video—which can be individually suppressed and repositioned.

Most of the information displayed in Global Tracks is familiar from previous Logic versions, but in many cases it is clearer and easier to edit on a Global track. For example, at sufficient zoom, full Marker text will be displayed; key and time signatures are more easily inserted, moved, and edited; and tempo curves can be drawn in the familiar Track Automation style.

## Pitch and Groove

The Chord and Transposition tracks work together to adjust Apple Loops and MIDI regions to match the harmonic progressions in your song. The tracks are interactive in that entries in either are reflected in the other. (Chord roots become transposition amounts relative the current key signature.)

Events can be entered manually in either the Chord or Transposition track, but in a nice touch, MIDI regions can be analyzed and have their chords automatically inserted in the Chord track. Logic is capable of quite sophisticated chord analysis, but you can also simply play in a bass line and drag it to the Chord track to create transpositions that follow the harmony of your song.

Beat Mapping is one of the handiest Global Tracks—it's how Logic's Reclock Song feature should always have worked. You start by selecting a region, and in the case of audio, analyzing it for transients indicating beats or recording a matching MIDI tap. Logic then displays beat division gridlines over region-event gridlines, and you connect them manually as desired (see **Fig. 5**). Each connection results in a tempo change (visible and editable in the Global Tempo Track). MIDI events between connections are automatically adjusted to preserve playback, which, because of the tempo changes, also puts them on the beat divisions.

## Unsung Heroes

With all the major improvements and new features, it's easy to overlook the many, small advances in Logic 7. But the little things really do make the difference in terms of faster, smoother workflow. For example, laptop users will appreciate the Caps Lock Keyboard feature, which turns your computer keyboard into a MIDI keyboard.

User-interface improvements include being able to assign a tool (or the toolbox) to the right mouse-click, being able to hide various parts of the channel-strip display, and being able to toggle the Arrange window's Parameter Area to show only the channel strip of the selected track.

For users never quite at home with Logic's Smart Snap feature, there is now a Snap menu that allows you to control the snap behavior. In addition to Smart Snap, you can force snapping to bars, beats, division format, ticks, frames, and quarter frames. You can also control what happens when regions are dragged over each other (overlap, no-overlap, or crossfade) and when intervening regions are deleted (shuffle left or right).

Audio window improvements include grouping audio files, revealing audio files in the Finder, and simultaneously moving multiple files to the Arrange window. Arrange tracks now sport long-requested Solo buttons. Multiple channels can now be selected for editing in the Track Mixer. And the list goes on.

Logic 7 is a stellar upgrade to an already top-of-the-line digital audio workstation. Many user requests have been fulfilled; there are a number of clever, time-saving new features; and the new plug-ins alone are worth the price of admission. Performance has been improved as has compatibility with other applications and media. Upgrading is a must, and Logic deserves serious consideration as a first-time purchase. **EM**


FIG. 1: Big Knob, which offers DAW users the functionality of a console monitoring section, draws its name from the massive volume knob that sits in its center.

MACKIE Big Knob

# Console monitoring features for the mixerless studio.

By Mike Levine

With today's DAW software and a fast processor, you can create an entire mix inside your computer without having to route tracks through an external mixer. But with all the power that software mixers offer, there are some essential functions, such as monitoring and talkback, that still need to be accomplished with outboard hardware.

A number of companies manufacture specialized devices to provide the functions of a console's monitor section, and one of the more intriguing products is Mackie's Big Knob. It provides DAW users with input and monitor selection, cue and talkback, and monitor volume control and muting. With Mackie's experience as a manufacturer of quality yet affordable mixers, I was not surprised to discover that Big Knob is well designed and reasonably priced.

## Knob Hill

The metal-housed Big Knob, which is designed to sit on your desktop, is about a foot in length and six inches deep. It has an internal AC power supply (no wall wart) that can be switched between 100- to 120V and 220- to 240V operation.

Big Knob is aptly named, because its centerpiece is an oversized volume knob near the middle of its angled front panel (see Fig. 1). The sheer size of this control makes it easy to grab for a quick volume change. The volume pot inside it, like the other components in this device, is high quality; it fades out smoothly as you get to the bottom of its throw. According to Mackie, Big Knob uses parts that are similar in quality with those used in its Onyx mixer series.

Below the main knob are switches for three useful functions: Mute shuts off all output from the board to the monitors, Dim lowers the volume by 20 dB, and Mono folds your stereo signal down—great for checking a mix's mono compatibility.

A stereo 6-segment LED meter that displays input-signal level is located on the left-hand side of the front panel. Big Knob has four stereo inputs: DAW Mix, 2-Track A, 2-Track B, and Phono. Each input can be activated with the flip of a switch, which also lights a corresponding LED status indicator. You can have more than one input active at a time if you want.

The DAW Mix input and the two 2-track inputs are on ¼-inch TRS connectors, and each has a switch to toggle between +4 dBu balanced and –10 dB unbalanced operation. The Phono input is on unbalanced RCA jacks.

Depending on your hardware setup, you might not use all four inputs, but it's nice to have them available. The ability to quickly select different inputs makes life a lot easier and often eliminates the need to repatch. In my setup, I frequently have to switch between the outputs of two audio interfaces and my computer's built-in audio, and with Big Knob it's a breeze.

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TB101 Single Channel Version *$149

The TB202 valve (12AX7) mic pre-amp is a twin channel valve mic preamplifier that features independent switchable phantom power, phase reverse, -20dB Pad, optical compressor, and fully functional EQ all housed together in a single 1U rack mount chassis. With a warm valve sound and the addition of an Optical Compressor the TB202 is a tool for those who want that SPECIAL sound this type of equipment can produce. With XLR inputs and 1/4" inputs the unit can be used with microphones or instruments without the need for adaptors.


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## PR4 value *$79

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## HP4 value *$79

4 Channel Headphone Amp

## DI8 *$99

8 Channel DI/MIXER

## IN5 *$199

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*Estimated Selling Price

All specifications are subject to change without prior notice.


**FIG. 2: The rear panel features multiple I/O as well as switches and knobs for adjusting various inputs and outputs from –10 dB to +4 dBu.**

If you mix to a 2-track machine, Big Knob lets you easily toggle between listening to the outputs of your multitrack and your mixdown deck. Or if you're comparing your mix against a CD, you can patch a CD player into one of the 2-track inputs, and flip back and forth between its output and that of your main mix with the input select switches. If a turntable is part of your setup, it's handy to have the RCA Phono input with its built-in preamp.

The DAW, 2-Track A, and 2-Track B inputs all have corresponding outputs on the rear panel (see **Fig. 2**). Like most of Big Knob's I/O, these are all switchable between +4 dBu and –10 dB. You can use those outputs to feed 2-track machines with your mix or to send your mix back into your DAW or to any other device. You can think of Big Knob as a push-button-controlled audio matrix and patch bay.

## BIG KNOB SPECIFICATIONS

| | |
|---|---|
| **Audio Inputs** | (6) balanced/unbalanced ¼" TRS (3 stereo pair, 2 RCA phono, 1 stereo pair) |
| **Audio Outputs** | (6) balanced/unbalanced ¼" TRS monitor (3 stereo pair), (12) balanced/unbalanced ¼" TRS line (6 stereo pair), (2) ¼" TRS stereo headphones |
| **Talkback/Footswitch Output** | (1) ¼" TS |
| **Input VU Meter** | 6-segment LED ladder |
| **Frequency Response: Line-Level Inputs and Outputs** | 0+, –1 dB, 10 Hz–50 kHz; 0+, –3dB, 5Hz–100kHz |
| **Frequency Response: Phono Input** | ± 0.5 dB, 20 Hz–20 kHz |
| **Distortion: Line-Level Inputs to Line-Level Outputs (unity gain)** | >0.015%, 20 Hz–20 kHz @ +4 dBu |
| **Distortion: Phono Input, Nominal Gain** | >0.015%, 20 Hz–20 kHz @ +4 dBu |
| **Dynamic Range: Line Inputs** | 112 dB minimum |
| **Dynamic Range: Phono Input** | 93 dB minimum |
| **Dimensions** | 13.5" (W) × 3.2" (H) × 5.9" (D) |
| **Weight** | 3.5 lbs. |

## Select Me, Please

If you're used to a mixer with a single monitor output, you'll love Big Knob's monitor-selection features. Three Monitor Select buttons (labeled A, B, and C) that have corresponding ¼-inch outputs on the rear panel, allow you to switch between several sets of monitors. Monitor Trim pots let you adjust the level for each of the three monitor outputs anywhere from –10 dB and + 4 dBu, making it easy to match levels.

I patched the output of Monitor A to a pair of Genelec 1029As, and the output of Monitor B to a power amp that drives my Yamaha NS-10Ms. On my old mixer, I had to set up a dedicated bus to route the signal going to the Genelecs, and setting it up required patching and several adjustments. With Big Knob, however, my speakers are permanently configured and can be switched easily and often.

Because all of your monitor mixes will be passing through Big Knob on their way to your speakers, headphones, and 2-tracks, sound quality is an important factor. In the listening tests that I did, Big Knob exhibited a crisp, clean sound. To my ears there was no discernible coloration—it just sounded good.

## Answer the Phones

You get several options when it comes to headphone monitoring. The front panel has two ¼-inch TRS stereo headphone jacks, each with its own output control. The headphone outputs can pass along the main mix, or you can switch them to monitor the input of the DAW Phones Mix Input jacks by pressing the Phones/Studio Out Source button. (Because this button has no LED status light, it's a little hard to tell at a glance which way it's set.) The internal headphone amp seems plenty powerful.

Two ¼-inch Phones Amp output jacks give you the option to send your monitor mix to an external headphone amp or headphone mixer. You can also send that headphone mix or the main output to the ¼-inch Studio Outs jacks on the rear panel, which let you feed studio monitors in another room, allowing your talent to listen to playback with their headphones off.

## Back Talk

Big Knob has a built-in talkback mic with a compressor designed into its circuitry to help keep levels even

PRODUCT SUMMARY

**MACKIE** Big Knob

audio controller
$384

OVERALL RATING (1 THROUGH 5): 4.5

PROS: Solidly built. Fully-featured and versatile. Has the ability to handle both +4 dBu and –10 dB signals. Volume knob easy to grab. Plentiful I/O. Loud headphone amp.

CONS: Phones/Studio Out Source button status hard to tell at a glance. Tabletop design not ideal for rackmount setups.

MANUFACTURER
Mackie
www.mackie.com

between sources (such as engineers and producers) who are at different distances from the mic. The mic's output can be routed with the push of a button to either the Phones/Studio mix for talking to talent located in a different room or to the 2-track outputs for slating takes. A level control lets you adjust the output level of the talkback mic, and it has plenty of headroom.

There's even a Talkback Footswitch input for connecting a momentary footswitch or a momentary handheld switch (not included) so that somebody other than the engineer can trigger the talkback circuit.

## Big Deal?

If you're looking to replace those monitor-section functions from a hardware mixer and want some additional options to boot, Big Knob is an excellent product. It's well designed and offers a good blend of quality, features, and price.

I liked it so much that I bought one for myself. It's now become a thoroughly integrated part of my studio. I can't imagine doing a session without it.

*Mike Levine is a senior editor at* EM

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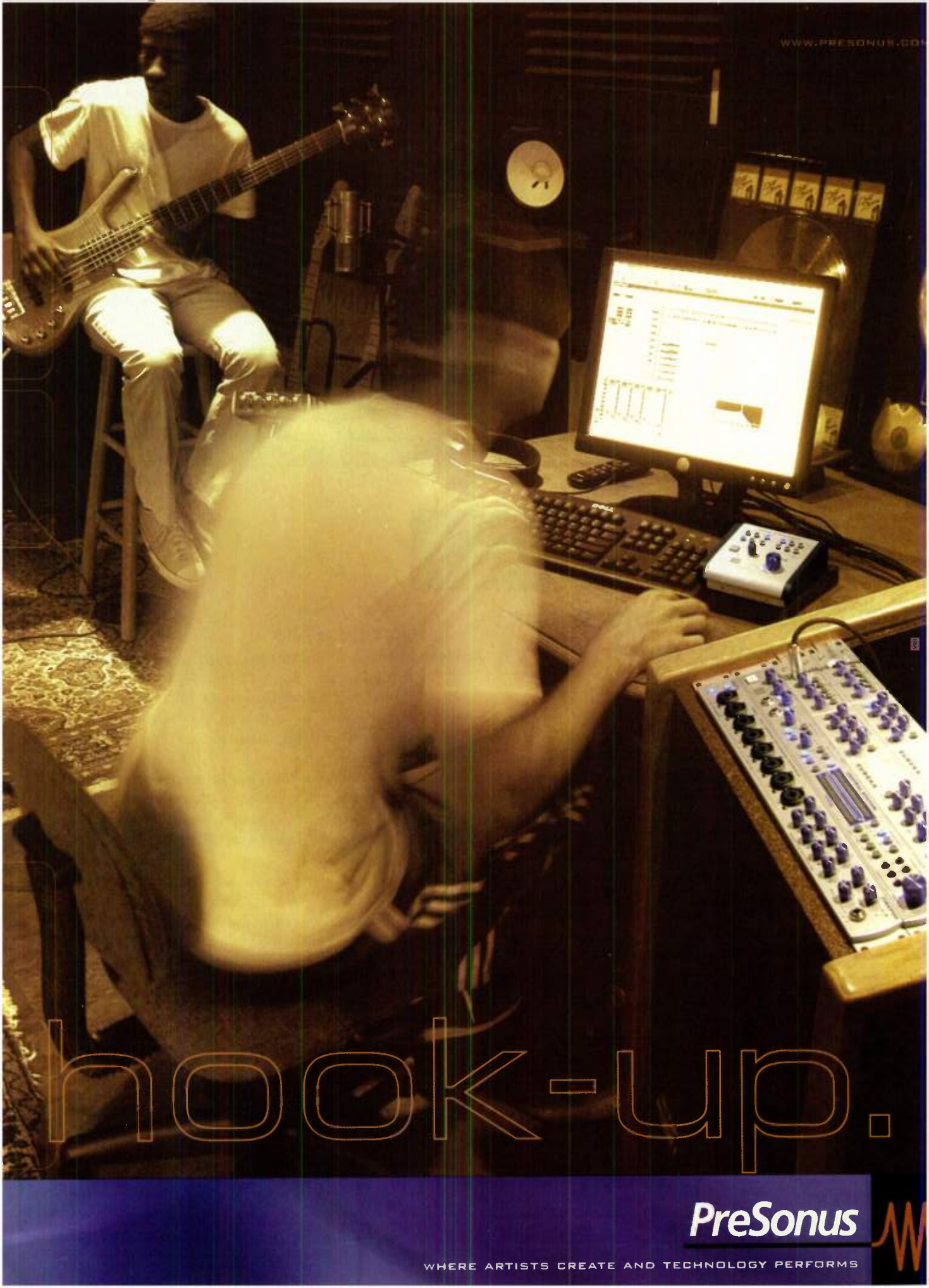
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FIG. 1: Sonar's main screen seems largely unchanged at first, but look deeper and you'll find better navigation tools, track folders, and full support for surround sound.

## CAKEWALK Sonar 4 (WIN)

# A venerable workhorse ups the ante once more.

By Allan Metts

he developers at Cakewalk don't get much rest: just after I settled into Sonar 3, Sonar 4 arrived at my door. This time around we get comprehensive surround-sound features, a new soft synth, and extensive workflow improvements. Other new Sonar 4 features and usability enhancements make your studio experience more efficient and productive.

I installed Sonar on a 2.4 GHz Pentium 4 and on a Pentium 4 laptop. Installation went smoothly both times. The main Sonar screen appears crisper and with more contrasting colors than previous versions (see Fig. 1), but otherwise the program looks mostly the same.

Dig a little deeper, however, and you'll find further great new additions. A Navigator Pane appears at the top of the Track view, showing your entire project at a glance. Every clip appears as a tiny bar that represents position and duration, and a Track Rectangle indicates the portion of the Project you're currently looking at. The current playback position is indicated as well.

You can move or resize the Track Rectangle to control what you see in the Track view. Drag the rectangle to a new set of clips in a different portion of the song, and the Track view follows suit. Making the box longer has the effect of zooming out the Track view horizontally. Shorten its height, and each track and clip will become taller.

## Fluff and Fold

New to Sonar 4 are Track Folders, which are especially useful if you have many tracks in a project. For example, once you have the individual drums within a drum kit mixed the way that you want them, you can hide the individual instrument tracks and view just one folder that represents all of the drums.

You create folders just like any other track, then drag the desired tracks into them. Close the folder, and everything inside is replaced with a single line of text widgets indicating how many Audio, MIDI, DXi, and Hidden tracks are inside.

You can mute, solo, archive, or arm all of a Track Folder's contents at once, and you can drag or resize a Track Folder just as you would a single clip. Any other operations you perform, be it adjusting MIDI Velocity values or normalizing audio, affect all of the appropriately typed tracks in the folder.

Although Track Folders help organize a project, I would like to see them enhanced. For example, you can't assign a global volume or pan envelope to a Track Folder (envelopes can be used, however, on each individual track within the folder), and in some cases, you can't change the properties of all the tracks in a folder at once. That last option would allow you to change the output of all of the drum instruments or shift all of the background vocals a few degrees left of center. Other options, such as arming all tracks in a folder at once

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or adding an aux send for all the tracks, can be accomplished easily.

## Take Me On

If you need more than one take to record that perfect performance (and who doesn't), you'll appreciate the new advanced take-management tools. You can now show multiple takes side by side within an individual track. (With previous versions, your only option was to stack the takes on top of each other.) There's no limit to the number of takes in a track, and each take can have its own volume and pan envelope (all takes share the same set of track envelopes).

It's easy to mute or solo individual takes without affecting any other clips in the track. But because your best recording might be attained by combining segments of several different performances, you might want to mute or solo only portions of takes. Sonar 4's new Mute tool makes assembling a comp track easy: you simply drag the tool over any content that you don't want to hear (you can also unmute with that same tool). I found it easiest to start by soloing a take that was almost right. Then I muted the sour notes and unmuted the sweet ones in other takes. Using the Mute tool's Isolate mode, which can follow the current Snap value, you can easily solo the repeated segments of audio based on a musical duration. The creative possibilities are vast.

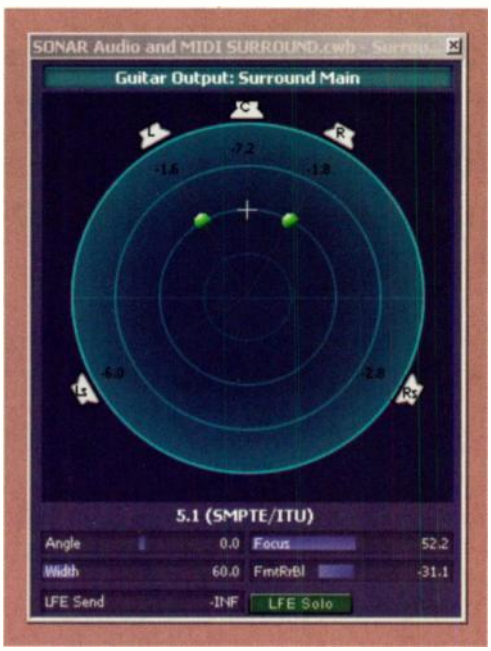


FIG. 2: Sonar's surround panner provides plenty of control to position your audio right where you want it. Joystick support is included.

The new Crop tool links two clips (for example, it links two takes on adjacent layers within a track) and shortens one while extending the other. That allows you to easily change where one take ends and the other begins (the two takes must be overlapping). The process is nondestructive, so you can slide the cropping point back and forth until you find just the spot you want.

You can now nudge clips in any direction using the numeric keypad or any key bindings you assign (the same tool works on notes, instead of clips, in the Piano Roll view). The number keys work in an intuitive manner: The number 8 moves up; 2 moves down; 1, 4, and 7 move left; and 3, 6, and 9 move right.

You can define three left-right nudging behaviors (all available simultaneously), which you use by choosing a different "row" on the number pad (for example, 1 and 3, 4 and 6, or 7 and 9). There are numerous nudging behaviors available. You can move in increments of musical time (such as measures, quarter-note triplets, or 16th notes), absolute time (including samples, milliseconds, ticks, or SMPTE frames), or you can default to the current snap resolution.


FIG. 3: The TTS-1 soft synth has a full set of General MIDI 2 patches that sound great. Patches can be edited, and settings can be automated using MIDI continuous controllers.

## I'm Surrounded

Perhaps the biggest new feature in Sonar 4 is integrated support for up to 8.1 surround mixing and editing. More than 30 surround configurations are supported, including 5.1 and 7.1. You can choose to monitor with or without Bass Management (four common cutoff frequencies are available). Once you choose a configuration, map each channel to your audio outputs.

Sonar's surround implementation is very intuitive. In fact, it follows nearly all the same paradigms as stereo mixing: left-right pan controls are replaced with surround panners, and what were once 2-channel meters now display all of the channels in your surround configuration. You can also create new surround buses just as easily as stereo buses.

Surround tracks and buses coexist peacefully with their stereo counterparts in the same project—each track's output setting determines whether it's a surround or stereo track. Send a track to Surround Main or a surround bus, and the fancy panner and multichannel meters appear.

There are three sizes of surround panners to choose from: a tiny one in the Track view, a medium-size one in the


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Console view and Track Inspector, and a large one that is available as a separate Surround Panner window (see Fig. 2) (A fourth Surround Panner appears if you enable a surround send). All depict the panning position as a set of points within a circle, and all have a dedicated slider for the Low Frequency Effects (LFE) channel.

The large Surround Panner provides additional detail and control. You can see the specific attenuation at each speaker location as numerical decibel values. There is also an LFE Solo button and dedicated sliders for angle, focus, width, and front/rear balance.

Joystick support is provided, as is full support for surround-panning automation (whether you use a joystick or not). Sonar's joystick implementation is intuitive and ergonomic: capture the current joystick position with the trigger or any other button, and hold the button down and move the joystick for sweeping effects. Holding another button allows you to use the joystick to shift its attention to a different surround panner (for example, another track or a surround-bus send level). You can map your remaining joystick buttons to often-used Cakewalk features such as transport controls and key bindings.

Surround effects operate just as they do in stereo tracks. In fact, you can even use stereo effects on surround tracks and buses. Sonar's new Surround Bridge will automatically create the proper instances of the effect and link their controls so they all operate as one. You can also unlink the effects and treat each effect separately. With 5.1 surround, four instances of the stereo effects are created (one apiece for the front and rear, and one each for the center and LFE channels). And to sweeten the package, surround versions of the Lexicon Pantheon reverb and Sonitus compressor, which packs four individual compressor modules into one, are included. In its Peak mode, the surround compressor looks across all channels and uses the level of the highest channel to key the compression of the other channels. Sum mode forces the selected compressor to use an RMS detector, so all input channels are summed, which provides a smoothed average of all the inputs.

Sonar now has import and export support for several surround-encoded file formats, so you can deliver your work for others to hear. And once you've printed that



PRODUCT SUMMARY

CAKEWALK Sonar 4

digital audio sequencer
$959

OVERALL RATING (1 THROUGH 5): 4.5

PROS: Comprehensive, intuitive, surround implementation. Efficient comp-track building. Ergonomic user interface.

CONS: Some software synths in previous versions are no longer included. Somewhat expensive.

MANUFACTURER
Cakewalk
www.cakewalk.com

perfect surround-sound master, you can downmix it to stereo and have complete control over how the process takes place. Separate controls determine how much of the Center, Surround, and LFE channels appear in the stereo mix.

## A Solid Upgrade

The remaining Sonar improvements are almost too numerous to mention. The Roland-powered TTS-1 wavetable soft synth (see **Fig. 3**) replaces the Edirol VSC. The TTS-1 supports the General MIDI 2 specification and offers substantial patch editing, comprehensive MIDI continuous-controller support, and great sounds. Those upgrading should be aware, however, that certain third-party soft synths that appeared in previous versions are no longer included (FXpansion's DR-008 and Speedsoft's VSampler, for example). But you can use the versions from your previous installation or reinstall them from the original CD.

Other new features include improved slip-editing (including slipping of multiple selected clips), playback of selected clips or time regions, optional key bindings that mimic those in other programs, and configurable panning laws. Track bouncing and audio exporting are now friendlier, a video thumbnail pane is included, and the behavior of meters is now even more customizable than it already was. High-quality time scaling based on Prosoniq's MPEX3 algorithm and top-notch POW-r dithering algorithms for making 16-bit CDs sound more like 24-bit mixes have also been added.

The Loop Construction view has improved envelopes. You can now use them on individual slices of a Groove clip to set gain or pan. You can also create an envelope to transpose individual loop slices (up to two octaves in either direction) in addition to scaling an entire loop two octaves in either direction. Finally, Sonar has Freeze features that help unburden your CPU. Once you have a soft-synth track (or a track with effects) sounding just the way you want, you can freeze it. When you do, Sonar creates a new audio clip with the effects or soft-synth performance already applied, and then disables the effects bin or synth. You can unfreeze just as easily as you freeze, for example, to change a synth preset, and there are plenty of configuration options to get the results you want.

To help you stay on top of all of these features, Sonar 4 comes with a printed manual, and the online help is comprehensive and context-sensitive. The price has gone up a bit, but if you're looking for audio software that can do it all, Sonar is hard to beat.

---

*Allan Metts is an Atlanta-based musician, a software/systems designer, and a consultant. Check him out at www.sonicbids.com/AllanMetts.*


FIG. 1: Emulator X Studio is the top-of-the-line offering in E-mu's new series of audio interfaces and software bundles. The system includes a PCI interface card with an external audio breakout box and a sync daughtercard. The sampling software is based on E-mu's EOS operating system.

## E-MU Emulator X Studio 1.0.1 (WIN)

# E-mu moves from the rack to the desktop.

By Dennis Miller

The new series of Windows-based digital audio workstations and sampling software from E-mu will turn more than a few heads. With their high-quality specs, hardware-accelerated effects, and breakthrough pricing, the systems offer a great value in configurable bundles, allowing you to buy only the features that you need. Emulator X Studio, the focus of this review, is the top-of-the-line offering in E-mu's new five-product series and combines a multicomponent audio interface with a sampling application that is based on EOS, the operating system found in E-mu hardware samplers (see Fig. 1). Cubase 5.1, SFX Machine Lite, and a file-format converter are also packaged with Emulator X.

E-mu calls its hardware-only products Digital Audio Systems. These include the 1212M, the 1820, and the 1820M systems. The other two systems in the lineup combine Digital Audio System hardware with a soft sampler: Emulator X bundles 1212M and a sampler, and Emulator X Studio bundles 1820M and a sampler. All of the systems use 1010 PCI, an internal audio-interface card that has coax S/PDIF I/O, a FireWire port, ADAT I/O, and a connector to the AudioDock breakout box. AudioDock comes with Emulator X Studio, 1820, and 1820M (see the table "Digital Audio System Hardware Specifications" for more on the system's hardware). Emulator X and 1212 use 0202—an internal card—for analog I/O. The 0202 card has the same converters as the other systems. As of this writing, E-mu is giving users of hardware-only systems the option to purchase the sampling software for $149, which is one of the best deals to come along in a while.

## Deal the Cards

All of the products in the new E-mu series rely on a PCI card. The card offers 24-bit/192 kHz recording and playback through its ASIO drivers and WDM drivers (the included WDM drivers supply a maximum of only two channels of audio) and connects internally to a daughterboard that has word clock and SMPTE I/O and MTC out. A lengthy Cat-5 cable provides connectivity and power to the AudioDock.

The 1010 PCI card uses E-mu's newest DSP engine, the 100 MIPS E-DSP, to give you as many as 16 simultaneous 32-bit effects, which allows your host computer to deal with other tasks. The effects vary greatly in the processing power that they require and make a welcome addition to the VST or DX effects that you probably already have on your system.

I installed Emulator X into my test machine—a Pentium 4/3.06 GHz workstation with 2 GB of RAM running Windows XP—with no trouble whatsoever. In fact, the entire hardware and software installation went

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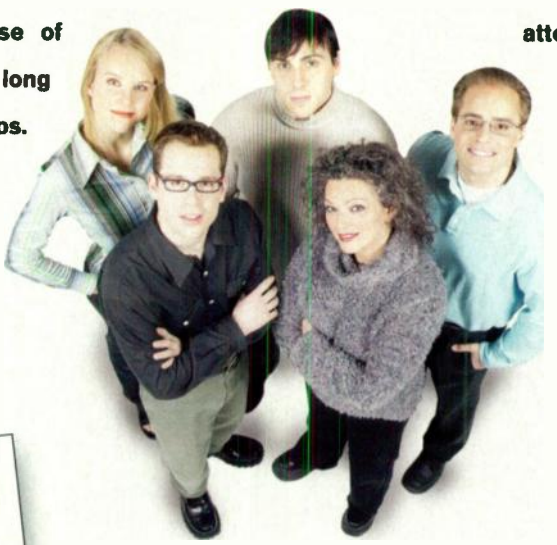

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smoothly. Emulator X Studio comes with printed getting-started instructions and an extensive manual in PDF format.

FIG. 2: The PatchMix console is home to Emulator X's DSP-based effects and also has an adaptive display of the channels that you have enabled.

## Get on the Bus

Once you have the system installed, you should configure some bussing schemes that work for your setup. That is done in the PatchMix DSP console application, which adapts to the number of physical and virtual (WAV and ASIO) channels (a maximum of 32) that you have enabled and gives zero-latency monitoring (see **Fig. 2**). There are numerous preset configurations (which E-mu calls Sessions) at a variety of sampling rates.

I wanted a scheme that would bring audio from my hardware sampler via digital input into Steinberg WaveLab to add some VST effects, and then send it over to PatchMix's mains for some additional processing and final output. I found a Session preset that was perfect for the job. I also found a preset that allowed me to use my external digital effects unit on a send/return chain, although that setup could be created manually with just a few mouse-clicks. Other presets are available for a variety of recording scenarios, transferring audio to and from an ADAT, and communicating with the sampler application. There's even a guitar tuner that puts

a test signal on each of six channels, although notes G, B, and E are pitched an octave too low.

## Patch It Up

The PatchMix interface is well laid out and is divided into four main sections. The channel strips are on the left side of the window, each of which has a level slider, a pan pot, mute and solo buttons, and six insert slots (by default—you can add more inserts as needed). In addition to effects, the inserts can hold a test-signal generator, peak meters, or a trim control. There's also a scribble strip, two aux sends, and buttons to add or remove a strip.

At the top-right side of the screen is a toolbar with dedicated buttons to open, save, or create a new Session; adjust sync and Session settings; set global preferences; and show or hide effects. There's a lot of flexibility here—from setting sampling rate to enabling or disabling the software's splash screen. There's no limit to the program's number of custom configurations.

Under the toolbar is the TV Screen window, which toggles between displaying effects parameters and I/O routings. Effects parameters are adjusted by clicking and dragging horizontal scrollbars or by typing in values. The I/O display toggles between inputs and outputs—assignments are made by clicking on tabs to route physical or virtual ins and outs to specific channel strips and the main and mix outs to various physical outs. At the bottom of the TV screen is a drop-down menu that allows access to the effects presets and the location in which you can save your own. It's a clean interface, although it would be useful if the screen (and the entire mixer for that matter) were resizable.

The final section of the mixer is the main section, which has standard controls for master level, two aux sends and returns, and the AudioDock's stereo monitor outs, which you can mute if needed. There's a balance control for the monitor outs, but the main volume uses only a single slider with no pan option. There are also peak level meters and indicators for sync and sampling rate, as well as six default insert slots.

## In Effect

Much of the work that you'll do in the mixer will involve effects, and there's lots to choose from. The effects, which use the card's DSP engine, come in a variety of flavors and are grouped in two categories: Core Effects, which appear in their own folder and are read-only, and nine additional folders that include various Core Effects in combination. You apply an effect by selecting it, dragging it directly into an insert slot, and then clicking on it to access its parameters. Each of the effects has a fair number of presets—over 500 in total—and most run efficiently.

For example, I loaded a combination of 18 1- and 3-band EQs at 48 kHz, at which point the remaining listings grayed out and became unavailable (the system ran out of horsepower). Four instances each of the chorus, compressor, flanger, and auto-wah, plus three

phase shifters, also loaded with no problem. Not surprisingly, the reverbs and delays demand much more system resources, but E-mu offers a range of options, from very short reverb and delay times to times that run as long as 30 and 3 seconds, respectively.

Among the other effects, the frequency shifter was the most unusual. It takes a sound's spectrum and shifts the partials into inharmonic ratios. You can configure the effect so that the right and left channels offset in different directions and change the shift frequency over a range of 20 octaves. As with all of the effects, there are bypass and solo switches. I also like the vocal morpher, a filter that lets you slowly transition between syllables.

FIG. 3: Emulator X offers 32 MIDI channels, which you configure in the Multisetup screen. Any number of presets can be assigned to the same channel.

Although you can't automate effects while in the PatchMix interface, you'll be able to accomplish that task using PowerFX. PowerFX is a utility that allows any VST host program to use the hardware-based effects, and if that host supports VST automation (which most do), you're good to go.

PatchMix has an efficient and somewhat unusual interface for adjusting the mixer's controls. The pan and aux send pots appear onscreen as colored knobs, but when you click on one to adjust it, a horizontal slider pops up. That arrangement is convenient and preferable to moving knobs by clicking and dragging them all over the desktop. I also like the fact that when you load a multi-effect into a slot, the effects parse out into their own slots, so you can see exactly what the multi consists of. The downside, however, is that you can edit only one of the effects in a multi at a time.

## EMULATOR X SOFTWARE SPECIFICATIONS

| | |
|---|---|
| Included Presets | >1,500 |
| Envelopes | 1 hardwired, 2 configurable |
| LFOs | 2; 17 shapes |
| Polyphony | CPU dependent |
| Multitimbral Parts | CPU dependent |
| File Formats | WAV, AIFF |
| Filters | 12 types (>50 presets) |
| Modulation Matrix | 36 source/destination routings |
| ASIO Output Buses | 32 channels (16 stereo) |
| Sampling Features | resampling, autosampling, 12 DSP functions |
| MIDI Channels | 32 in standalone mode; 16 per VST instantiation |
| Keyboard Trigger Modes | 13 |

The output of 1820M is outstanding—my Genelecs never sounded so good. As you may have seen in the ads, the system uses the same converters that Digidesign's high-end gear has. Not only did I hear more detail in my own music, but some tests with a few recently acquired production-library tracks also showed the high quality of the system. The low end was extremely solid and full, and throughout the spectrum I heard minute and subtle aspects of the sound.

## The Sampling Lineup

E-mu's vast experience in the world of hardware samplers has put it in a good position to build a computer-based system. As mentioned above, the Emulator X software is based on E-mu's EOS, the operating system used in its top-of-the-line sampling hardware. You'll find the majority of the latest EOS features here, although some, such as beat munging (changing the tempo of a sample without changing its pitch), have yet to appear. There's also an array of time-varying filters from E-mu's Morpheus line, and a number of software-based effects that you can use in your patches. Emulator X vastly exceeds its hardware brethren in numerous areas, especially with its option to stream samples directly from a hard drive. It can also run as a standalone and as a VST Instrument.

The Emulator X interface consists of an Internet Explorer–style pane (called the Tree) on the left and a series of work areas that toggle in the display on the right (see **Fig. 3**). At the top level is the Multisetup view (shown in Fig. 3), where you'll find slots for 16 MIDI channels, each with volume and pan sliders, an output selector, and a switch to enable routing to an aux bus. Clicking on a button at the top of the screen toggles the view to a second set of 16 MIDI channels.

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*Orbert Davis,*
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*Patrock (Dirty Power),*
*Grand Prize Winner, West IMWS*

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The lower portion of the Multi window displays a number of parameters that are associated with the current channel as well as global tuning and transpose functions. There are also main-mix meters, a volume slider, three aux outs, and a virtual keyboard that triggers the patch on the current channel. The channel parameters have a filter section, which overrides the filter configured at the Voice level, and 16 assignable MIDI controllers.

## Up a Tree

Once you load a bank, you'll see a list of all the presets, samples, and multisetups on your system in the Tree view. You can toggle a display of the folders' contents, but here again, being unable to resize a window can be a problem when you have more than several files to handle. Fortunately, there are some display options that allow you to view a list of your data in the large window on the right and even sort the information in various ways.

To load a preset, click-and-drag it from the list to one of the slots, and you're ready to go. I had expected Emulator X to let me put more than one preset on a MIDI channel as does Tascam's GigaStudio, but at first I didn't see that option. Within a few moments (and a quick read of the manual), I discovered that you can link any number of presets into a group and assign the entire group to a single MIDI channel. In effect, you can have as many presets playing on one channel as you want (see **Web Clip 1** for an example of linked presets).

There's a dedicated Preset Editor in which you can make global volume and tuning adjustments and pick from one of 12 tuning tables (you can't make your own). The Preset Editor also gives access to several data processors—for example, the two Channel Lag processors, which you can use to alter a stream of control data on its way to its destination. Somewhat reminiscent of several Kurzweil K2xx series Funs, the Lag processor could be inserted between an LFO and, say, a filter cutoff, and would modulate the modulator (that is, the LFO). You can make the various routing assignments in the preset's Voice-Processing screen.

## Build Me Up

Like its hardware counterpart, Emulator X's architecture starts with a sample that, when assigned to a key and Velocity range in the Voices and Zones screen, becomes the basis for a voice. One or more voices is used to create a preset, and presets are saved in banks. Unlike the hardware sampler, you can save individual presets to disk. Each preset can contain as many as two software effects, and there are more than 100 templates to choose from that employ the 19 basic software-effects algorithms.

The Voices and Zones screen toggles among its four dedicated work areas: Mix/Tune, Key Window, Velocity Window, and Realtime Window, which are accessed by clicking on their respective buttons at the top of the display. There are an additional five windows in which you can assign various sources to control fading and switching among voices at a

note's start time. Each of the work areas allows for multiple methods of data entry. For example, in addition to using scroll arrows to set values for a sample's high and low key in the Key Window screen, you can type in a value or manipulate a graphic display of the sample's position (a piano keyboard appears above the display as a reference).

Also in the Key Window, you can import samples from your drive or click-and-drag them directly from the Sample folder in the Tree and adjust their pitch using the Transpose, Fine Tune, or Coarse Tune settings. You can use the Fade feature to fade the samples in a voice in or out as notes in its key range are received. The Fade feature also works for Velocity switching, which you would set in the Velocity Window. You can even configure an option for different voices to randomly crossfade by enabling that feature in the Realtime Window.

In general, working with the Voices and Zones functions is easy, but E-mu makes the job even simpler with a MIDI learn feature called IntelliEdit, which allows you to assign key ranges by pressing notes on your MIDI controller. There are also a variety of automated preset and voice-creation features. For example, if you choose the Import Sample command from the File menu and pick 50 WAV files, Emulator X will automatically create a new preset containing all 50 samples in individual, editable voices. If you enable the Single Voice and Chromatic options, the samples will be assigned to a single voice and mapped chromatically, one sample per note, up the keyboard. That feature is a huge help for sound effects (Foley, for example) and would take hours to duplicate on most hardware samplers.

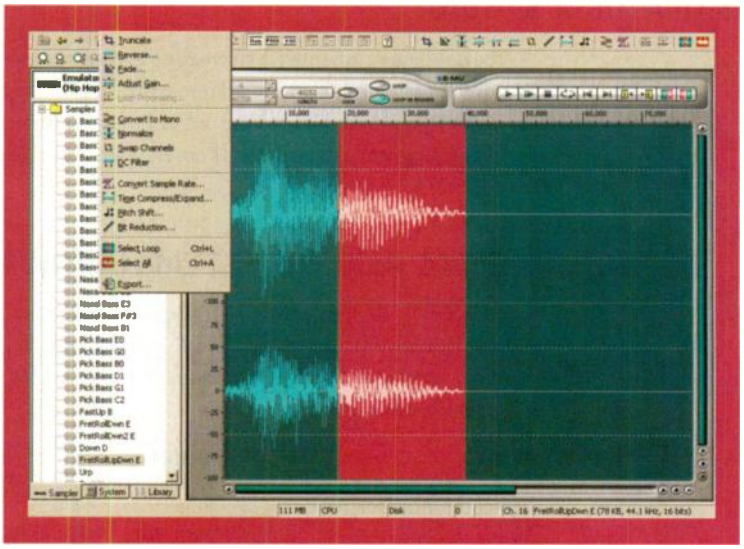

**FIG. 4: The Sample Editor has a number of destructive effects (shown in the drop-down insert) and is well suited for tuning loops.**

The only snag I ran into when creating a voice was trying to access the drives on my system using the Library tab in the Tree—that dumped me out of Emulator X and closed the program. Apparently, there is a bug that confuses the Emulator X file database when it tries to access external drives (I have FireWire and USB drives). E-mu is looking into the problem and expects to have a fix by the next release.

## DIGITAL AUDIO SYSTEM HARDWARE SPECIFICATIONS

E-mu's series of five products includes Emulator X and Emulator X Studio, which combine one of the Digital Audio System audio interfaces with sampling software. The table below shows the specs for 1820M, which is the hardware side of Emulator X Studio, and 1212M, which is bundled in Emulator X. Both 1820M and 1212M are available as hardware-only options, as is 1820, which is also shown below.

| Model | 1820M | 1820 | 1212M |
|---|---|---|---|
| Computer Interface Type | PCI | PCI | PCI |
| Power | PCI bus | PCI bus | PCI bus |
| Sampling Rates | 44.1-, 48-, 96-, 192 kHz | 44.1-, 48-, 96-, 192 kHz | 44.1-, 48-, 96-, 192 kHz |
| Maximum Sampling Resolution | 24-bit | 24-bit | 24-bit |
| Analog Inputs | (2) balanced mic preamps; (6) ¼" balanced line ins; turntable input | (2) balanced mic preamps; (6) ¼" balanced line ins; turntable input | (2) ¼" balanced line ins |
| Analog Outputs | (8) ¼" balanced line outs; (8) ⅛" speaker outs | (8) ¼" balanced line outs; (8) ⅛" speaker outs | (2) ¼" balanced line outs |
| Digital I/O | ADAT (switchable to S/PDIF); coaxial S/PDIF (switchable to AES/EBU); optical S/PDIF (switchable to AES/EBU) | ADAT (switchable to S/PDIF); coaxial S/PDIF (switchable to AES/EBU); optical S/PDIF (switchable to AES/EBU) | ADAT (switchable to S/PDIF); coaxial S/PDIF (switchable to AES/EBU) |
| Additional I/O | SMPTE, MTC, word-clock sync; (1) ¼" stereo headphone; FireWire (data or video only) | optional sync; (1) ¼" stereo headphone; FireWire (data or video only) | optional sync; FireWire (data or video only) |
| Mic Preamp | (2) TFPro mic preamps with 48 V phantom power and Neutrik connectors | (2) TFPro mic preamps with 48V phantom power and Neutrik connectors | none |
| MIDI | (2) In, (2) Out | (2) In, (2) Out | (1) In, (1) Out |
| Effects | 16 | 16 | 16 |
| Total Harmonic Distortion | –110 dB (1 kHz @ –1 dBFS) inputs; –105 dB (1 kHz @ –1 dBFS) outputs | –102 dB (1 kHz @ –1 dBFS) inputs; –98 dB (1 kHz @ –1 dBFS) outputs | –110 dB (1 kHz @ –1 dBFS) inputs; –105 dB (1 kHz @ –1 dBFS) outputs |
| SNR Ratio | 111 dB input; 112 dB output | 120 dB input and output | 120 dB input and output |
| Price | $699 | $499 | $299 |

# Resource.


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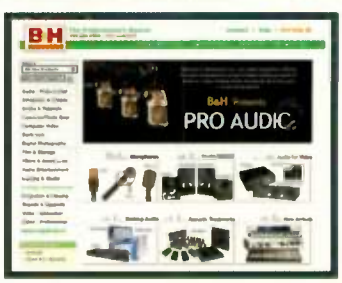

## Up Close

Emulator X has a built-in sample editor that can perform many basic and even some complex tasks, which means that you don't have to exit the program to tweak your audio files. Double-click on a sample from the Tree list and the Sample Editor window opens, revealing a large, zoomable waveform display (see **Fig. 4**). Sample Editor is optimized for looping operations and also has various destructive-editing functions. Transport controls have the usual options.

Among the more interesting processing functions is the time-stretch/compress feature, which has 12 stretch/compress algorithms and produces clean stretches to its maximum 200 percent length. Even performing multiple stretches at the maximum setting in succession produced fewer artifacts than I'm accustomed to hearing. You can adjust the timing ratio using percent (step increments are one-tenth of one percent), file length, or tempo (beats per minute). You can also export your files in WAV or AIFF format if you do need to use other editing software (there are no hot links to open other software).

A number of professional features—such as allowing different curves for the beginning and end of a fade—make Sample Editor a versatile tool, but it would be great to have support for VST plug-ins from that work area. That would be especially helpful if, for example, you wanted to apply destructive effects such as reverb, delay, and chorus to your samples. You can build these effects into your presets or bus Emulator X's output to PatchMix channels containing the effects you want. (A preset Session has that configuration.)

It is worth noting that Emulator X does something that many other soft samplers don't: it samples. And although you cannot resample directly from within the Emulator X main screen, it is trivial to set up a routing from PatchMix back to Emulator X's Acquire Samples screen, where you'll find the system's recording feature.

**FIG. 5: The Voice-Processing screen is at the heart of the Emulator X's programmable parameters. You can save presets from each processing module.**

## Find Your Voice

The next level up is the Voice Editor, which offers a vast array of synthesis options, including three envelopes (one hardwired to amplitude and the others freely mapable), two multiwave LFOs, filters, an amplifier, and an extensive modulation matrix (see **Fig. 5**). There are also controls to delay a note's start time, chorus and glide effects, and a variety of tuning options. All of the functions are laid out in a single, neatly organized screen, and several of the controls have a visual display of their settings, although only the envelopes (which have six segments and segment times to a maximum of 136 seconds) can be edited graphically. There's no on/off button for the LFOs—a silly oversight—but if you set their tempo control to external and don't send a timing signal, it serves the same purpose.

E-mu has implemented the exact code for its filters that is used in its hardware, and that alone would be worth the price of admission. Filter settings, like those of all the other components, can be saved independently of the voice you're modifying and used where needed. There are 12 unique filter types that are configured into 53 different filter presets, and their range is extraordinary. Steep, 6-pole lowpass; phasing comb filters, AM-radio emulations; sweeping, vintage effects of all varieties; and much more are available, each subject to a time-varying Morph and Gain setting that adds even more flexibility. Four of the filters implement E-mu's well-known morphing capability, which lets you move between two completely different filter settings as a note plays using various control sources.

The Voice Editor is also home to the Modulation Cords patching area. Here again, E-mu has carried over the concept of Cords from its hardware. Put simply, Cords carry modulation sources to their destination and can be modulated (the amount of control, for example) in their own right. The

PRODUCT SUMMARY

**E-MU Emulator X Studio**

Emulator X Studio
audio interface and sampling system
$799

Emulator X
audio interface and sampling system
$399

**OVERALL RATING (1–5): 4.5**

**PROS:** Well-integrated hardware/software combination. Huge included sound library. Excellent audio specs.

**CONS:** No VST plug-in support in sampling software. Nonresizable windows.

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patching system is extremely easy to use—a source on the left is mapped to the destination on its right—and in addition to various MIDI controllers, envelopes, and LFOs, you'll find some unusual control sources (Flip-Flop, Quantizer, and Diode, for example) that perform different types of processing on a control signal before it reaches its destination.

## All Preset

No soft instrument would be complete without its presets, and E-mu has gone all out in this area. Emulator X ships with four CDs full of sounds, including a two-disc grand piano, a hip collection of loops and one-shots called Beat Shop One, the Hip Hop Collection, and the Proteus Composer, which contains the entire library (samples, presets, and all) from the Proteus 2000 (a review of the Proteus 2000 is available online at the EM Web site). There's also the St. Thomas string library and a General MIDI set. It would be great if E-mu provided vocal samples and the Proteus World Collection in a future release.

The huge piano collection has numerous multisampled grands (concert, stage, and the like) and some novelty instruments such as Chorused Piano. There are also several combinations of piano and strings. If you don't have a top-quality piano library in your collection, it will be more than adequate.

The Hip Hop collection has all of the expected hits and scratches, plus some unique presets such as All Snares, which maps 31 different snares across the keyboard in a multisample. All Kicks and All Hats and Cymbal have similar setups. Beat Shop is probably my favorite collection. It offers percussion grooves under the control of tuned filters that progress from I to IV to V and others that use LFOs timed to tuplet ratios of the groove's beat; pretty unusual stuff.

The space allotted doesn't permit a more in-depth examination of the presets, but the package is an excellent mainstream library with more than a few twists. Check out the EM Web site for examples of presets that I created (see **Web Clips 2** and **3**).

## Compared to What?

There are a lot of software samplers on the market today, but E-mu is the first of the major hardware manufacturers (Kurzweil, Yamaha, and Roland) to bring its sampling expertise to the desktop. Not surprisingly, the many years of producing high-quality hardware has paid off in the current system. Emulator X is a mature and well-planned workstation. This applies across the board, from its excellent documentation, which is full of usage tips and background material, and the large number of Session configurations to the overall stability of the system. Even the AudioDock breakout box is an attractive and solid-feeling piece of gear.

I've reviewed a lot of products over the past ten years but have never felt a review simply scratched the surface more than this one. There are numerous important aspects of Emulator X that, due to space constraints, this review doesn't cover. Check out the PDF manual online at E-mu's Web site, and you'll see what I mean. What's more, E-mu claims to have big plans for the system, including better integration with VST hosts, more effects, and additional sound libraries. One company representative told me that everything the company had recorded in the last three years was done with Emulator X in mind, and even as I was reviewing the system, software updates appeared at the Web site, and a new collection of sounds, called Beat Shop Two, showed up at my door.

If you already have a software sampler and just need a new audio interface, you can check out the other options that E-mu offers. But for a little more money, Emulator X Studio has one of the top soft samplers on the market in a well-integrated bundle with professional hardware. Either way, the new series from E-mu has something for everyone.

EM WEB CLIPS

*EM associate editor Dennis Miller lives in the suburbs of Boston.*

# LINE 6 Variax 700 Vetta II Combo

## A guitar and amp that create an unlimited variety of tones.

By Rob Shrock

FIG. 1: The Variax 700 achieves its wide range of guitar emulations by using a piezo pickup built into the bridge. A built-in DSP chip processes the signal and transforms it into one of 60 models.

Line 6's Variax 700 is an electric guitar that emulates 28 separate guitar models or similar stringed instruments. The Vetta II Combo provides the power of two PodXT Pros in an open-back, 212 combo amp. Separately, the Variax 700 and Vetta II are very powerful; when connected, they provide a mind-blowing palette of guitar tones.

The combination of Variax and Vetta II could be a godsend for guitarists who record at home where space is limited and noise can be a problem. The system can replace a studio full of guitars, effects, pedals, and amps. It also allows you to record massive-sounding tones using headphones for monitors. You can take this minimal setup to a gig and have a virtual encyclopedia of guitar and amp combinations at the touch of a button.

### Variax 700

The Variax 700 (see **Fig.1**) uses a piezo pickup built in to the bridge to capture string vibrations. (There are no electromagnetic pickups.) A built-in DSP chip modifies the signal to match one of a number of painstakingly modeled guitars. There is a negligible delay (under 2 ms) in processing.

The Variax is not a MIDI guitar or guitar synth. It responds to a player's touch the way any other electric guitar does, albeit with a large collection of personalities culled from some of the most popular guitars in history. Dynamics, hammer-ons, pinch harmonics, and false harmonics sound just as they do on other guitars. Even E-bows work, although bowing closer to the pickup doesn't affect the Variax's output as it would with a traditional electric guitar. The Variax sounds like each modeled guitar's output before any processing or amplification occurs.

The Variax has three knobs: Volume, Tone, and a Model Selector. The Volume and Tone controls for each model have been tailored to emulate the controls of the original guitars as closely as possible. The Model Select knob has 12 positions, each of which holds a bank of 5 models, for a total of 60 models. You can select a model from each bank by using the 5-position pickup selector. Two of the banks store your favorite presets. Oddly, those two banks are situated in the first and last preset positions, with the ten preset banks in between them.

Line 6's terminology requires some getting used to. For example, the Les Paul bank is called Lester and the Strat bank is called Spank. The model indicator is hard to see in certain lighting conditions; I put a small piece of white gaff tape on the guitar body to help identify the indicator's location. The text on the Model Select knob is small and difficult to read. I wish that the pickup selector were in a different location. I had to retrain myself from strumming broadly on this guitar, because I kept knocking the selector to the down position.

### Juice Use

Because of its built-in DSP, the Variax must be powered to generate sound. If you connect the Variax to the Vetta

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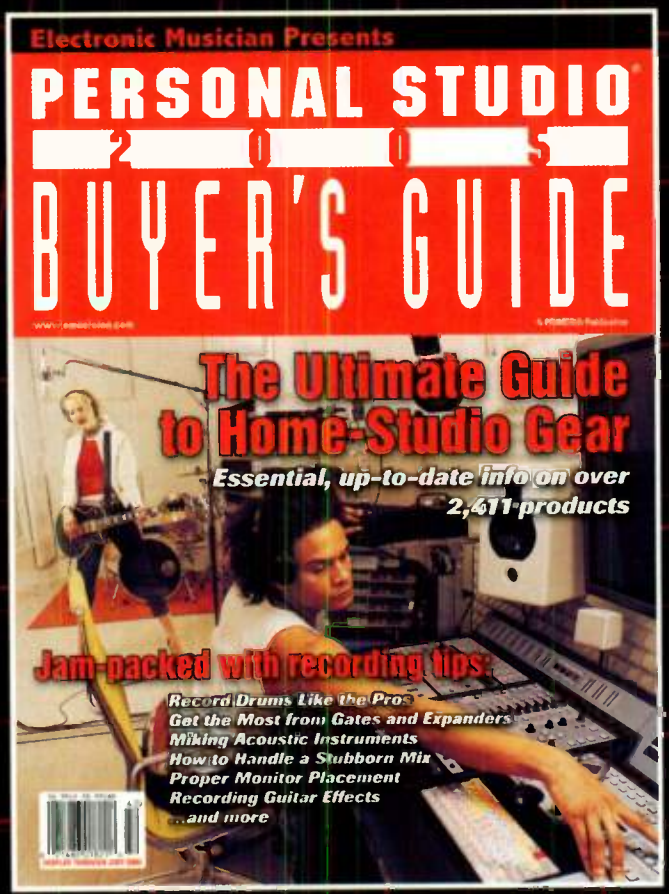


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amp using the guitar's RJ-45 output, the Variax will receive power from the amp. If you want to use the Variax simply as a guitar with other amps, you can install six AA batteries, which will provide approximately 12 hours of operation. (Unplugging the guitar cable when not playing extends battery life.) Or you can connect the Variax to the XPS footswitch with a TRS ¼-inch cable. (Both are included with the guitar.)

Besides providing power to the guitar, the XPS functions as a direct box, sending the full-frequency guitar signal out the unit's XLR jack when the footswitch is pressed. This is useful especially for the Variax's modeled acoustic guitar sounds, which many players will want to send directly to a mixing board. One problem with this setup is that the XPS's 12-foot AC power cable houses an inline converter positioned right in the middle of the cable's run. I stepped on or kicked it several times during rehearsals, once knocking the power out of the XPS.

Most of the models are impressively accurate representations of the basic tone and response of the original guitars. Many models provide the sounds of individual bridge, neck, and combined pickup positions. I especially liked the Telecaster, Gretsch, Danelectro, and Les Paul models. The Gibson and Epiphone semihollow bodies sounded authentic as well. The Coral Sitar model will have you playing '60s-style Indian-sounding licks in no time, even if the G string on this model was noticeably louder than the other strings. I enjoyed the wide variety of timbres in the Variax.

Although the Variax is a powerful instrument in its own right, I didn't care for the sound of a few guitar models. In particular, I was disappointed with the 1959 Strat model, which is modeled in all five pickup positions. I sensed that some envelope shaping had been used in an effort to give the sound the fast decay *sploing* that makes a real Strat so good for R&B music. I tended to go for the Telecaster model when I was looking for a single-coil sound, and I was usually happier with that choice. The 12-string models use pitch shifting to create the octaves, and the effect is apparent. The acoustic models were pretty good, sounding a lot like acoustic guitars with piezo pickups pumped through a PA. Hopefully, Line 6 will continue to refine the models and perhaps offer even more choices in the future.


FIG. 2: The Vetta II contains two separate 75W channels that operate independently, which is like having two of Line 6's PodXT Pros in a 150W combo amp.

## Stage and Studio

For live gigs, most of these deficiencies are more than tolerable in exchange for the guitar's flexibility. I would not hesitate to use an acoustic model for the intro of a song before switching to the electric sound at the chorus in a live setting. The same goes for the occasional 12-string or Dobro passage. I would not use the Variax for those sounds on a recording, however, unless I was going for something with lots of effects. Those models are just not authentic enough in an exposed setting. But I would have no problem using most of the 6-string electric sounds on a critical recording.

The Variax 700 itself is well crafted and better than the original Variax 500. My review model, however, was in need of intonation- and string-height adjustments. (According to Line 6, the Variax is now set up and intonated properly when shipped.) After adjustments, the guitar played well.

The Variax can be modified somewhat for those with different tastes. The Strat-style neck can be replaced with a comparable neck without any compromise in the Variax's functionality. Replacement necks are available from Warmouth. (For more information about replacements, visit www.line6.com.) You can install other modifications, such as the Earvana nut or Feiten tuning systems. Even without those mods, the Variax has become a favorite of mine.

PRODUCT SUMMARY

LINE 6 — Variax 700, Vetta II Combo

Variax 700
digital-modeling electric guitar
$1,899.00 (black)
$2,099.99 (other colors)
OVERALL RATING [1 THROUGH 5]: 4

Vetta II Combo
digital modeling guitar amp
$2,399.99
OVERALL RATING [1 THROUGH 5]: 4

PROS: System provides a virtual collection of coveted guitars, amps and effects. Most models sound close to the originals. When connected there is no hum or buzz. Variax guitar plays well and can be customized. Vetta II is versatile, loud, and sounds good. Built-in effects cover most of the bases.

CONS: Variax must be powered to operate. Model indicator is hard to see. Pickup selector is easily bumped when strumming. Vetta II digital outputs lack depth of a miked cabinet. Both are expensive.

MANUFACTURER
Line 6, Inc.
www.line6.com

## Vetta II

The Vetta II (see **Fig. 2**) is a 212, 150W combo amp that is roughly the size and weight of a Fender Twin. It contains two separate 75W channels, allowing you to create two entirely different amps in the same physical enclosure. You could stack a Vox AC-30 and a Marshall J-900 on top of each other for that classic dirty and clean sound combination. The amp tones can be panned to any position in the stereo field. An extension cabinet can be connected to the Vetta II, letting you treat each physical cabinet as a completely different amp rig. The Vetta II can also get quite loud. I have yet to push it close to its limits for fear of

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FIG. 3: A line-level effects loop and digital interface with both AES/EBU and S/PDIF digital inputs and outputs are accessed on the Vetta II Combo's rear panel.

breaking glass. (For those who need even more power, the Vetta HD is a separate 300W head and 412 cabinet system.)

There are no vacuum tubes in the Vetta II, but it offers all the functionality of the PodXT Pro (it's actually more like two PodXT Pros, since Amp 1 and Amp 2 can be programmed independently of each other). The Vetta II also adds more stomp boxes (three at once instead of one), more post-amp processing, and more flexible routing. The elaborate interface is a bit daunting at first because of the amount of buttons and lights. Once you learn the layout of the Vetta II, however, you'll appreciate its capabilities. A free editor/librarian called Line 6 Edit (Mac/Win) makes programming and managing patches a breeze.

## VETTA II COMBO SPECIFICATIONS

| | |
|---|---|
| Audio Inputs | ¼" analog; proprietary CAT-5 from Variax; AES/EBU and S/PDIF digital |
| Speaker Connections | (2) left/mono; (2) right |
| Controller Input | (1) RJ-45 jack for foot controller |
| MIDI | In, Out |
| Amp Models | 73 |
| Maximum Simultaneous Amp Models | 2 |
| Cabinet Models | 27 |
| Effects Models | 85 (11 simultaneous) |
| Presets | 128 (64 user, 64 factory) |
| Power Section | 150W |
| Speakers | (2) 12" Celestion G12H-90 |
| Dimensions | 29" (W) × 20" (H) × 10.1" (D) |
| Weight | 65 lbs. |

## VARIAX 700 SPECIFICATIONS

| | |
|---|---|
| Audio Output | ¼" TRS analog; proprietary CAT-5 digital |
| Pickups | piezo, in bridge |
| Body | carved ash over mahogany; solid carved mahogany (black finish models) |
| Neck | maple with rosewood fingerboard |
| Scale Length | 25.5" |
| Fingerboard | radius 10" |
| Controls | volume, tone, model select |
| Power | (6) AA batteries, (1) 9V battery, or AC with XPS footswitch |
| Weight | 7 lbs. (approximate) |

## Amp Vault

The Vetta II Combo contains 73 detailed amplifiers; 27 cabinets; 8 distortion stomp boxes; 15 modulation pedals and effects; 12 analog, digital, and tape-based delays; 6 stompboxes and processors for dynamics; 12 synth and filter effects; and a variety of studio effects (some the same as the stompboxes) designed to be applied after the amp tones. The sounds of many of these modeled classics have shown up on countless records over the past few years courtesy of other Line 6 products, so the Vetta II has a bit of pedigree.

At first I was disappointed in the Vetta II's factory presets. The preset sounds are overprocessed to show off the amp's capabilities. But once I started building up my own tones from scratch, I appreciated the power, flexibility, and quality of the amp. Most of the amps and cabinets sounded great.

I liked most of the effects, although I wasn't able to get some of the stompboxes to sound as much like the originals as I wanted. In those instances, I moved on to a different effect until I found a sound that I liked. Considering all of the variables—choice of guitar, amp model, cabinet, effects, routing, and so on—it's possible to get just about any sound, as long as you have the patience to do it. A programmable line-level effects loop (see **Fig. 3**) allows you to inject your favorite effects into the system.

The Vetta II ships with a digital interface card that provides AES/EBU and S/PDIF digital inputs and outputs at a maximum 24-bit, 96 kHz resolution. Recording with the Vetta II's digital outputs is similar to recording digitally with a Pod. It's not my favorite method, but the speaker emulation is good and many users like the sound. The digital I/O can also be used as a digital effects loop (replacing the analog effects loop) or for reamping a recorded signal.

I had more success recording the Vetta II with dynamic, condenser, and ribbon mics. Varying the mics and employing different amp and guitar settings resulted in recordings that truly sounded as though entirely different guitar rigs were employed.

I also tested the optional FBV Foot Controller ($599), which is the largest of four compatible pedal boards that connect to the Vetta II with RJ-45 cables. The FBV comes with dedicated volume and wah pedals. Eighteen buttons are well laid out for changing patches, turning the separate amps and effects on and off, and providing access to the built-in tuner.

## Tandem Notes

When the Variax is plugged into the Vetta II using the included RJ-45 digital cable, patches stored in the amp can contain the specific guitar model information, which can be loaded back into the Variax. In that mode, whenever the model knob or pickup selector is moved, the new guitar model is immediately selected. (Line 6's upcoming Variax Workbench will allow users to build guitar presets with alternate tunings and capo settings.)

Another huge benefit to using the Variax and Vetta II as a system is that there is absolutely no hum, buzz, or other interference noise. It was almost disconcerting to have a cranked-up single-coil sound with full-on distortion and not hear any pickup garbage. But I quickly got used to it, and became acutely aware of the noise in my other guitar-amp rigs.

The system is not perfect. A few of the Variax models leave room for improvements, especially the 12-strings. The Vetta II digital outputs don't sound nearly as good as the sounds you can get by miking the cabinet. The system is expensive (street prices are significantly lower). The only way to get any closer to owning this large a collection of tones is to spend hundreds of thousands of dollars.

An intangible symbiosis exists between the Variax and Vetta II that makes the sum greater than the parts. The Variax and Vetta II are formidable in their own right and are legitimate tools in a guitarist's arsenal. As a system, there's no comparable guitar rig that comes close in the versatility department.

---

*Rob Shrock recently worked on releases for Aretha Franklin, Ronnie Isley, and* American Idol II. *He has recorded and/or performed with Burt Bacharach, Elvis Costello, Sheryl Crow, Dionne Warwick, and David Foster, among others. Visit him at www.robshrock.com.*

FIG. 1: The Command|8 control surface features 100 mm motorized faders, rotary encoders, transport controls, and a battery of special-purpose buttons and LEDs.

# DIGIDESIGN Command|8

## Hardware-controller mixing for Pro Tools just got better.

By Nick Peck

Digidesign's new, USB-based Command|8 combines an 8-channel MIDI control surface, a MIDI interface, and a stereo monitor. Command|8 requires Pro Tools 6.4 and works with all compatible hardware systems, including Pro Tools Mix, HD, HD Accel, Mbox, 001, 002, and 002 Rack. Version 6.4 TDM and LE software for both OS X and Windows XP are included, which is a nice freebie for those who haven't already upgraded.

Command|8 is a direct descendent of the previous Digidesign–Focusrite controller products Control|24 and Digi 002. Its eight channels offer a window into eight Pro Tools tracks at a time. From within Pro Tools, Command|8 offers three modes: Home View, in which the eight channels are used for standard volume and panning; Console View, in which the rotary knobs are used to control sends and inserts; and Channel View, in which all the controls are used to edit parameters for a single plug-in on the selected channel. Transport and zoom controls, some Pro Tools command- and keystroke-equivalent buttons, and a stereo analog monitoring system are also part of the design. A 1-in/2-out MIDI interface is thrown in for good measure.

### Channeling In

Each of Command|8's identical channels includes a touch-sensitive, 100 mm motorized fader; mute and solo buttons; a multipurpose Channel Select button; and a rotary encoder (often called a 360-degree knob). The encoder is surrounded by a ring of LEDs that mark its current position. A 5-segment LED ladder for level metering is at the top of each channel strip (see **Fig. 1**).

The faders feel smooth, without any spurious chatter. In the default Home View, the Channel Select button highlights the channel's currently assigned track in Pro Tools. When the record-arm (Rec) button is pressed, the Channel Select button then toggles arming of the current track for recording. In Console view (in which sends or inserts are displayed), pressing Channel Select will bring up the channel's send or insert information for editing.

One of the coolest features of MIDI controllers is being able to edit plug-in parameters directly from the control surface. Command|8 does not disappoint in that area. The plug-in editing process is slick and intuitive. Selecting a plug-in for editing takes three keystrokes: press the Insert button, then the Channel Select button for the track, and then the Channel Select button under the name of the desired plug-in. Dedicated EQ and dynamics buttons narrow the selections to plug-ins of those types. Once a plug-in is selected, the first eight

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**"Auto Endings"** are added for styles that don't have endings, such as styles made from MIDI files. **Synthesizer Patch file lists** (.PAT files) can now be made easily by converting PowerTracks or Cakewalk patch lists.

**"Jazz Chord-Symbol Graphics"** (triangles for major, circles for diminished and a circle with a slash for half-diminished) are now supported. A new **"Vocal Wizard"** displays and transposes to the best song keys for your vocal range.

Editing of the Audio Track is now **non-destructive**, so changes only become permanent if you save the file. The TC-Helicon Audio Harmonies have been enhanced with **Vocal Pitch-Styles** (automatic "Vibrato" and "Scooping") that can be added to the vocal harmony parts. **Multiple sound cards are supported**—you can now choose which sound card to use. **Full Stereo or Mono support** has been added for the Audio Track. There are now on-screen **VU meters** to monitor the Audio Track.

**Multiple lines of Lyrics** are now supported on the Fake sheet and Printout. Chords and Lyrics can be displayed on separate lines on the Big Lyrics Window. A new **Play-Loop feature** allows you to select an area and play it in a repeated loop.

The SongPicker can display in subfolders, and you can add styles to the StylePicker. Karaoke files (.KAR) can now be read directly, including lyrics and analysis of chord symbols... **and much more.**

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parameters are displayed, which can then be edited with the corresponding rotary encoders. On/off parameters are toggled with the Channel Select buttons. If more than eight parameters are available, Page Back and Page Forward buttons access the additional parameters. A Master Bypass button allows you to optionally bypass the plug-in during editing. A single keystroke exits plug-in editing, returning Command|8 to its default mode.

## Beam Me Up

Command|8's transport control puts commonly used navigation commands at your fingertips. Standard tape-transport controls (return to zero, rewind, fast forward, stop, play, and record) are laid out in a row of large, oval buttons. Loop Play, Record Toggle, Quick Punch, and Memory Location Window buttons are located just above. To the left of those buttons are buttons to bring the mix, edit, and currently selected plug-in windows to the foreground.

Large buttons labeled with arrows help with primary system navigation. Above those are Bank, Nudge, and Zoom toggle switches. The Bank and Nudge switches shift the focus of Command|8's faders by one or eight Pro Tools tracks, respectively. The Zoom switch changes the function of the navigation buttons to horizontal and vertical track zooming.

The transport section includes a Flip switch, which swaps the functions of the rotary encoders and the faders. There is also a Master Fader switch, which focuses the Command|8's faders on all masters used in your Pro Tools session. The Flip switch is particularly handy for creating plug-in automation using the faders.

Command|8 has dedicated buttons for the computer's Enter and Undo functions as well as for the modifier keys Shift, Option/Alt, and Ctrl/Cmd. While they don't obviate the need for a dedicated computer keyboard, they do enhance productivity.

## Now Hear This

Like its predecessors, Command|8 includes a rudimentary analog monitoring system. It offers two sets of stereo inputs and one pair of stereo outputs on the rear panel, all using +4/–10 dB, TRS-balanced ¼-inch jacks. There's also a ¼-inch headphone output with level control on the front panel. The output section includes a Master Level knob, Mute button, Main External source switch, and a Mono button, which is useful for catching potential phase problems in a stereo mix. Although it's bare bones, the system delivers the basics for someone working completely "in the box."

Command|8's rear panel is a bit sparse (see **Fig. 2**). It includes audio-monitor inputs and outputs and a USB port. Like the Digi 002, Command|8 includes a MIDI interface with one input and two output ports. A socket to connect the heavy-duty external power supply and a ¼-inch jack for a punch-in pedal complete the rear panel.

PRODUCT SUMMARY

**DIGIDESIGN Command|8**

MIDI control surface
$1,295

**OVERALL RATING (1 THROUGH 5): 3.5**

**PROS:** Clean, intuitive layout. Easy to set up and use. Seamless integration with Pro Tools. Smooth, responsive touch-sensitive faders.

**CONS:** No shuttle mode. No automation mode selection. Can't connect multiple Command|8s together. No talkback section in monitoring system. No readily available configurations for non–Pro Tools software.

MANUFACTURER
Digidesign, Inc.
www.digidesign.com

## Mixing It Up

Some people prefer mixing with a mouse, and some don't. I fall firmly in the latter category, craving the feel of hardware faders and knobs to create complex automated mixes. For that, Command|8 delivers the goods. Setting up and configuring the unit is easy; I simply plugged in the USB and power cables, specified the Command|8 in the Pro Tools peripherals dialog, and started mixing, without ever cracking the manual. I have berated Digidesign in past reviews for releasing buggy hardware and software, but the Command|8 worked perfectly—right out of the box. The faders are smooth and responsive and don't have any of the fader chatter that I've experienced with other controllers. Digidesign based the Command|8's ergonomics and layout on the 002 and Control|24; if you have used either of those products, you'll feel right at home.

Command|8 has a standalone mode, in which it functions as a generic programmable MIDI controller. Eight custom MIDI maps can be stored in the unit, allowing you to configure the faders, knobs, and some of the buttons to generate MIDI continuous controller messages. I was able to quickly and easily teach Reason to respond to Command|8, but I could get only the faders, mute and solo buttons, and pan knobs to work. Unfortunately, I could not get the transport controls to work, because they are hardwired to send standard MIDI Machine Control messages. It would be nice to be able to configure the transport controls to transmit continuous controller values.

## COMMAND|8 SPECIFICATIONS

| | |
|---|---|
| **Audio Outputs** | (2) +4 dBu / –10 dBu ¼" TRS jacks |
| **Audio Outputs** | (2) +4 dBu / –10 dBu ¼" TRS jacks |
| **Audio Inputs** | (2) main: +4 dBu / –10 dBu ¼" TRS jacks<br>(2) ext source: +4 dBu / –10 dBu ¼" TRS jacks |
| **Additional Ports** | (1) MIDI In, (2) MIDI Out, (1) USB, (1) footswitch |
| **Power** | external power supply (U.S., Japan, EU, UK) |
| **Dimensions** | 16.375" (W) × 4.75" (H) × 17.12" (D) |
| **Weight** | 11.3 lbs. |

Command|8's standalone mode is useful as a secondary mode of operation, but I would not recommend it as a replacement for products such as the Mackie Control Universal. It is designed to be used primarily with Pro Tools, and standalone mode is an afterthought. That mode would be more useful if third-party manufacturers included Command|8 MIDI configurations with their software. If you mainly use Logic, Digital Performer, Cubase, or Cakewalk Sonar with Pro Tools hardware, you'll do better with competing MIDI controllers.

## All That Glitters . . .

Command|8 is also missing other features. There is no shuttle mode, even though the large navigation buttons would work well for that purpose. You cannot select automation modes, which is a shame because Command|8's *raison d'etre* is automation-based mixing. The monitoring system could use a dim button, a talkback section, and a set of aux outputs. Unlike some other MIDI controllers, you cannot connect multiple Command|8s together, nor has Digidesign announced additional fader pack expansions. You can, however, use one Command|8 in conjunction with a Control|24, Pro-Control, or Digi 002.

Command|8 is a good fit for existing owners of Pro Tools systems who have a limited budget and desktop space. But the Command|8's greatest competition comes from within Digidesign—for about $1,000 more, the Digi 002 delivers all the same capabilities, as well as an excellent-sounding 96/24 Pro Tools LE system complete with standalone digital mixer. On the other hand, if you have a TDM system, have a 001 or an Mbox, primarily work within Pro Tools, and are looking for faders, then Command|8 fits the bill.

**FIG. 2: The Command|8 rear panel includes audio and MIDI I/O jacks as well as USB and footswitch input jacks.**

Digidesign has delivered a solid and worthy performer in Command|8. Its layout, feature set, and ease of use greatly improve the efficiency and fun of working within Pro Tools. If Pro Tools is your primary work environment and you don't already have a Control|24, Pro-Control, or Digi 002, check out Command|8. You'll wonder how you ever got by when using a mouse.

---

*Nick Peck creates sound for film and games, teaches Pro Tools, funks it up on the Hammond organ in the wee hours, and is about to become an expert in diaper changing. Email him at nick@perceptivesound.com.*


FIG. 1: The Z 5600 A from SE Electronics is a large-diaphragm tube mic that offers cardioid, omni, and bidirectional operation, as well as six "in-between" patterns.

# SE ELECTRONICS Z 5600 A

## A Chinese-made, multipattern tube condenser that offers quality and value.

By Rich Wells

The so-called Shanghai mics that have made their way into the audio market in recent years are a remarkable phenomenon. You can't open a retail gear magazine or look at online audio sites without running into one of them. In fact, I own one and didn't even buy it. (Well, not directly anyway; it came as a bonus with my purchase from a certain Pacific Northwest–based online retailer.)

The overwhelming majority of those mics originated from the 797 factory (a once-secret military facility) in the Beijing area of Feilo, which is a Shanghai-based facility with intellectual-property and engineering ties to 797. You'll find the mics in all shapes, sizes, and brand names. Sometimes you'll even find the same mics with different brand names. Not so, however, with SE Electronics products. All its mics and components are built and tested in its own factory.

### Eastern Philosophy

Based in Shanghai, SE Electronics was once one of the companies that made its mark in the OEM market. Now privately held, the company no longer sells OEM components. It has redesigned its entire line of microphones and begun to make new models. SE Electronics' current flagship models are both tube mics: the Gemini, which incorporates two tubes, and the Z 5600 A (an update of the prior Z5600)—which uses the traditional single tube.

The Z 5600 A (see **Fig. 1**) wants to look like a Neumann U 47, although it more closely resembles a Lawson L47 with simpler machining. Both the mic and its hefty spider shockmount exhibit a solid-build quality. The shockmount has a unique locking mechanism that screws onto the base of the Z 5600 A, leaving virtually the entire microphone body securely suspended in space.

### Totally Tubular

The Z 5600 A's wide body holds a 12AT7 tube, found in many budget tube devices. Whereas most of those use an underpowered tube in the circuit to generate a little distortion (that can then be attributed to the tube), the Z 5600 A uses the 12AT7 in a traditional high-voltage circuit. SE Electronics chose the 12AT7 for its ready availability, which is something you'll

### LEND ME A MIC

SE Electronics offers a unique program in which it will lend you one of its tube mics free of charge for a seven-day evaluation period. The company will even cover the cost of shipping the mic to you. (You can also borrow nontube models, but you'll have to pay the shipping costs on those.) If you want to keep it, SE will arrange for you to purchase it through one of its dealers. If you don't, it will pay for return shipping. —*Mike Levine*

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appreciate if you've ever looked at the going rates for new old-stock replacement tubes for certain classic German mics. SE Electronics also tests each tube at its facility.

The mic's power supply comes with a 9-position pattern switch that covers the standard omni-cardioid-bidirectional sweep, with six additional points along the way. The power supply light blinks during the first 20 seconds after it is switched on. Sonic Distribution, SE Electronics' U.S. distributor, says the blinking occurs while the power supply gradually applies voltage to the tubes. That gradual application of voltage is intended to prevent cathode stripping of the tube. You can replace tubes without voiding the warranty.

The mic comes in a wood jewel box housed within an aluminum flight case that also accommodates the shockmount, cable, and power supply. The wood box is nothing fancy, but it's functional and appears to be sturdy enough for travel.

## Mics in Action

I tried out the Z 5600 A on a number of different sources. For perspective, I frequently compared it with my Neumann UM 57. The UM 57 is a 1960s-era tube mic that was manufactured in the Gefell plant; it uses the same capsule as a U 47 and the same tube as a U 67.

Overall, the Z 5600 A's sound exuded that larger-than-life tube-mic goodness. It has nice detail, because of its wide, gentle frequency bump centered at 10 kHz, but it still sounds fairly natural on most instruments. In comparison, the frequency emphasis on the UM 57 is centered a bit lower and is less hyped sounding. Both mics sounded good when I compared them on individual male and female vocalists, and choosing between them was a matter of taste.

When I tried the Z 5600 A on a group-vocal track, I noticed that, unlike the UM 57, its off-axis frequency response was noticeably different than its pickup of direct sound. The sound of the track changed distinctly if there was much movement among the peripheral singers. The effect was most noticeable on sources that were 30 degrees or more off axis. Setting the mic to Omni allowed for a more uniform sound, but it also added more room ambience.

The Z 5600 A was awesome when I used it to mic stringed instruments, especially those with metal strings. I tried it on several acoustic and classical guitars, a sitar, and a fretless cumbus, all with great success. The Z 5600 A's high-frequency bump probably helped. No corrective equalizing was necessary on any of those tracks during mixdown.

The sitar and cumbus tracks sounded particularly nice; the Z 5600 A deftly captured those instruments' natural reverberant qualities. The high output of the mic allowed me to keep the gain on my preamp at moderate levels. I obtained strong, clear signal levels, even with mic distances of up to six feet. At that range, the sympathetic strings of the sitar and the resonant metal body of the cumbus rang out clearly without being clouded by noise.

## ICIS

SE Electronics' Icis (see Fig. A) is a cardioid-only tube mic with a list price of $749. Whereas the Z 5600 A features a center-mount capsule, the Icis capsule is edge mounted, which gives it a bit more of a "hyped" sound, as if you'd already applied a bit of EQ and compression (sort of a radio-ready sound). This can be good for a lot of things, but it may be a problem if you're recording a source that is intended to be for the background of a mix.

I loved its sound on stringed instruments, from classical guitar to acoustic guitar. On vocals, its sound was a bit more aggressive and biting than the Z 5600 A in cardioid mode, whether the singer stood one foot away with a pop filter or four feet away without one. For these two uses alone, the Icis is worth its price, and I wouldn't hesitate to put it up in any number of tracking situations. That said, considering the relatively minimal difference in price between the Icis and the Z 5600 A, I would opt for the more flexible and natural-sounding Z 5600 A. — *Rich Wells*

**FIG. A: The SE Electronics Icis is a single-pattern tube mic with a more aggressive sound than the Z 5600 A.**

## Z 5600 A SPECIFICATIONS

| | |
|---|---|
| Type | tube condenser |
| Capsule | 1.07" sputtered gold 6-micron diaphragm |
| Polar Pattern | omnidirectional, cardioid, figure-8, and six intermediate stages—selectable on power supply |
| Frequency Response | 20 Hz–20 kHz |
| Sensitivity | 20 mV/Pa or –38 dB (±2 dB) |
| Output Impedance | <200Ω |
| Equivalent Noise Level | <16 dB typical (A weighted) |
| THD | <0.5% at 130 dB SPL |
| Power | external, custom power supply with 9-point polar pattern selector |
| Dimensions | 8.75" (H) × 2.44" (diameter) |
| Weight | 1.5 lbs. |

## Bang the Drums

I tried the Z 5600 A with several drum-miking applications. The first was as a room mic in front of the kit, placed about four feet away and two feet off the ground. The Z 5600 A sounded open and clear in the lows, much more so than the UM 57.

Because my recording room is approximately 400 square feet, bleed can sometimes be a problem. For the most part, I use dynamic mics when recording basic tracks, with a pair of small-diaphragm condensers as drum overheads and a large-diaphragm condenser as either a room mic or a spot mic for hand percussion. The Z 5600 A's ability to take 130 dB SPL with virtually no distortion and its pleasant conveyance of low-end information make it a good choice in front of a kick drum. That is especially true when using a minimal drum-miking scheme. With the mic near the floor, unwanted bleed can be addressed fairly easily with a couple of gobos and a blanket.

I also tried the Z 5600 A as a drum overhead about six feet off the ground, directly above the kit, and pointing at the snare. This time, the mic's upper-frequency peak made the cymbals stand out—in a sizzling sort of way—noticeably more than they did with the UM 57. The toms and snare on the Z 5600 A's track weren't as well balanced as when captured by the UM 57, either. The Z 5600 A's cymbal-heavy track did sound decent in the mix; the mic would make a pretty good mono overhead if the drums were reinforced with additional mics.

The output of the Z 5600 A was so strong that whenever I used it for drum miking, I had to set both of the preamps I used (an MTA A-Range and a Drawmer 1969) to their lowest gain to avoid overload.

## "Z" Bottom Line

All in all, the Z 5600 A is a versatile and fine-sounding tube mic that has a relatively low price tag. The various clients whose sessions I used it on liked it, even when I told them they were listening to it in comparison with a Neumann. And that may be the biggest sign of all that the Z 5600 A is pretty darned good.

PRODUCT SUMMARY

**SE ELECTRONICS Z5600A**

multipattern tube microphone
$899

**OVERALL RATING** (1 THROUGH 5): 4

**PROS:** Sounds great on vocals and metal-stringed acoustic instruments. Quality shockmount and metal flight case included in package. Well priced.

**CONS:** Off-axis frequency response noticeably different.

MANUFACTURER

SE Electronics/Sonic Distribution (U.S. distributor)
www.sonic-distribution.com

*Rich Wells oversees the Supreme Reality, a recording studio, band, and waste-management concern in Portland, Oregon.*

# QUICK PICKS

## STEINBERG

### CUBASE SYSTEM 4

By Orren Merton

Steinberg has reentered the studio-in-a-box market with Cubase System 4, a bundle consisting of the new MI4 USB audio-MIDI interface and Cubase SL 2, the little brother of the venerable Cubase SX 2. With a retail price of $899, Cubase System 4 is more expensive than its competition; its street price, however, is considerably less, and Cubase SL is arguably more fully featured.

The real surprise in this bundle is Steinberg's Media Interface 4 (MI4), a bus-powered, 24-bit USB box offering either four input channels and stereo outputs at 44.1 and 48 kHz sampling rates or stereo inputs and outputs at 88.2 and 96 kHz sampling rates. The interface also includes MIDI I/O and many other goodies. Cubase SL is similar to Cubase SX, but with a few limitations. It can be upgraded to Cubase SX 3 or SL 3 for an additional charge. In the space allotted here, I'll concentrate on the MI4. For a full review of Cubase SX 2.0.1, see the May 2004 issue of EM.

#### Ins and Outs

The front panel of the MI4 sports two ¼-inch jacks: instrument input (mono) and headphone output (TRS). The front panel also contains gain knobs for the two included mic preamps. The preamps offer as much as 50 dB of gain—enough for most mics that you'd find in a project studio.


**The MI4 control panel features gain controls for the mic/line inputs, a dry/wet mix knob, and volume controls for main and headphone outputs.**

Four LEDs next to each mic preamp, provide rough metering of input signals between –20 and 0 dB. (Inputs 3 and 4 get only two LEDs: a green signal indicator and a red peak indicator.) The front panel has knobs for setting the headphone volume, the master output volume, and the level of the input signal that is mixed with the output. Finally, a power LED indicates that the unit is receiving power from the USB bus, and MIDI LEDs indicate MIDI input and output signals.

XLR jacks as well as ¼-inch TRS balanced-line jacks for inputs 1 and 2 grace the rear panel. The XLR jacks override the line inputs, and the instrument input on the front panel overrides the XLR jack for input 1. In a very welcome addition to a unit of this price, the MI4 offers ¼-inch TRS insert-effects jacks for channels 1 and 2. Placed directly before the analog-to-digital converters, they allow you to use a splitter cable for the send and return signal from an external processor such as a compressor-limiter or EQ. The rear panel also houses unbalanced ¼-inch line-input jacks and balanced ¼-inch TRS output jacks for channels 3 and 4.

#### Digital Dexterity

The MI4 includes coaxial digital I/O (S/PDIF). The S/PDIF output can either mirror the main or serve as a physical output for channels 3 and 4. That effectively changes the MI4 to a 4 input and 4 output device for S/PDIF users. MIDI input and output jacks and a USB connector round out the rear panel.

The MI4 driver control-panel software offers users access to even more features, including +48V phantom power for the mic inputs, –20 dB pads for line inputs 1 and 2, gain adjustments (–8 dB, +2 dB, +8 dB, +10 dB) for all four inputs, monitor source selector, and an external clocking switch for the S/PDIF connection.

The MI4 is one of the most feature-packed USB interfaces available and offers very acceptable sound quality. Be forewarned, though, that it is power hungry. When I first plugged the MI4 into the USB port on the rear of my PC, the plug-and-play installation Wizard failed to install it. After some troubleshooting, I realized that the power light wasn't on. Only unplugging all other devices left enough power for the MI4. Fortunately, the included version of Cubase SL doesn't require a USB-powered dongle, and uses the MI4 as its dongle. If, however, you upgrade to Cubase SX, you'll probably need a separate USB port (as opposed to a hub) for its dongle.

Steinberg's Cubase System 4 is a worthy addition to the studio-in-a-box market. If you have a USB bus to dedicate to the power-thirsty MI4, and you're looking for an all-in-one package, you should definitely consider purchasing this one.

**Overall EM Rating (1 through 5): 4**
Steinberg
(877) 253-3900
info@steinberg.net
www.steinberg.net

## RØDE

### S1

By Karen Stackpole

Røde, the studio mic company from Australia, has stepped up on stage with the S1 ($599), the company's first live-performance mic. The new handheld condenser is designed specifically for live vocal applications but boasts studio-quality sound. The S1 features a tight supercardioid pickup pattern for combating feedback and bleed. The mic is built to reduce handling noise and plosives and has a frequency response tailored to minimize rumble and proximity effect.

#### High Class

The S1 has a sleek profile and is bound to make the performing vocalist feel classy. The mic's satin nickel finish gives it a polished look that sets it apart from the common assortment of sound-reinforcement transducers. It also features a durable, easy-grip design. The elegantly tapered housing flairs slightly at its base, and a five-layer rounded fortress of mesh protects the delicate capsule inside from particles and external buffeting.

This woven high-strength grille forms an effective pop filter for the sensitive element. The head twists off to reveal the small diaphragm capsule, which is secured in a rubber mounting that

helps to isolate it from the rest of the housing and reduce handling noise. A steep frequency response rolloff below 100 Hz also serves to negate structure-borne noise and control proximity effect. The mic comes with a carrying pouch and stand adapter and carries a generous five-year warranty that covers even accidental damage.

### Stage and Studio

I tested the S1 on vocals and electric guitar during live performances and studio sessions to see how the mic fared on vocals, trumpet, guitars, drum overheads, and percussion. I used preamps that included a Mackie 1202-VLZ, a Crest V12 live console, and an M-Audio Octane. The sessions were held at Ex'pression College for Digital Arts, Sound Arts Student Assaf Lotan's project studio, and my own home studio. The S1 sounded fantastic on stage and proved its mettle in the studio over a range of applications.

In its dedicated assignment as a vocal mic, the S1 performed like a champ both onstage and in the studio. The sound was remarkably smooth, present, and clear. The live-sound instructors at Ex'pression admired the tight, clean response and the mic's excellent gain before feedback. Eric March, the vocalist for the band Jingle Punx was disappointed by the steep low-end rolloff because he liked to make use of the low-end boost from proximity effect, but he appreciated the way the vocals cut through the mix without sounding harsh or brittle.

Røde's S1 features a tapered housing and five layers of protective mesh as well as a frequency response that minimizes rumble and proximity effect.

The S1's frequency response shows a presence boost around 4 kHz and another rise centered at approximately 12 kHz. That accentuated airiness enhanced a softer female vocal, giving it presence and definition. Recording a trumpet in a jazz quintet during a single-room session was easy with the S1 because of the mic's excellent off-axis rejection and high SPL-handling capabilities. The trumpet track sounded clear and bright with very little bleed from other instruments in the room (including a drum set). So effective is the integrated plosive screening that no pop filter was needed.

The S1 wasn't full in the low mids as I prefer with both nylon- and steel-string acoustic guitar, but the mic did capture a sparkly and detailed sound while recording both guitar types. The S1 shone with electric guitar in the studio and on the live sessions. Its dip in the lows and enhanced airiness gave the guitars plenty of cut and definition in a dense mix. The mic's brightness and clarity also worked well to represent shakers and claves.

Since I received a pair of S1s for testing, I tried them out as drum overheads. The tight pattern enhanced stereo separation and focused on the source without picking up a lot of room sound the way a broader-pattern mic would. While the mics were a bit on the bright side for the brilliant Paiste cymbals used on the session, they brought out a pleasing crispness and definition from the drum set. The S1 could definitely help out a darker-sounding drum/cymbal setup by enhancing the attack.

### Røde Ready

The Røde S1 is road ready and excels as a top-quality live-vocal mic. But the S1 is also a versatile studio mic for vocals and for other applications. Bright but not brittle, the S1 sounds smooth, airy, and clean. For a $599 list price, the S1 offers a great onstage vocal sound and makes an easy transition to the studio. With its great off-axis rejection, excellent plosive control, crisply defined sound, and sleek appearance, the S1 will add class and versatility to any mic cabinet.

**Overall EM Rating (1 through 5): 4.5**
Røde Microphones
(877) 328-7456
usasupport@rodemic.com
www.rodemic.com

## UEBERSCHALL

### VLP120 1.1 (MAC/WIN)

**By Marty Cutler**

Ueberschall VLP120 Vintage Licks and Phrases ($299.95) is a sample-playback module that offers a generous and diverse collection of 24-bit, 96 kHz sampled musical phrases. The overall tempo of the phrases is 120 bpm, hence the product name. Ueberschall licenses Prosoniq's MPEX2 algorithm, however, for pitch-shifting and time-compression and -expansion chores. That gives you a wide latitude of tempo and pitch adjustment capabilities, with minimal formant distortion—even on polyphonic material. Depending on the musical material, the result is a usable tempo range between 60 and 240 bpm and a pitch-shift range of plus or minus an octave (see **Web Clips 1**, **2**, and **3**). The only catch is that VLP120's time and pitch processing takes place offline.

The performances in VLP120 aren't perfect, but that's exactly the point of this collection. The time pushes and pulls, and there is fret noise and sympathetic resonance in the string parts. However, these artifacts keep the instruments from sounding sterile.

VLP120 takes up five CD-ROMs, with more than 3 GB of loops stored in Ueberschall's proprietary .ulp file format. The plug-in supports Audio Units, VST 2, and RTAS. Installation on my

# They *LAUGHED* when I said they could have **Perfect Pitch**

## . . . until I showed them the simple secret *—and they heard it for themselves!*

David Lucas Burge

## Learn to recognize EXACT tones and chords—BY EAR!

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**The true story behind the worldwide #1 best-selling ear training method**

by **David Lucas Burge**

*It all started as a sort of teenage rivalry . . .*

I'd slave at the piano for five hours daily. Linda would practice far less. Yet somehow she always shined as the star performer of our school. It was frustrating.

*What does she have that I don't?* I'd wonder.

Linda's best friend, Sheryl, bragged on and on to me, adding more fuel to my fire.

"*You* could never be as good as *Linda*," she would taunt. "*Linda's* got *Perfect Pitch*."

"What's Perfect Pitch?" I asked.

Sheryl gloated about Linda's uncanny abilities: how she could name *exact tones and chords*—all BY EAR; how she could sing any tone—*from memory alone*; how she could play songs—after just *hearing* them; the list went on and on . . .

My heart sank when the realization came to me. *Her EAR is the key to her success.* How could I ever hope to compete with her?

But it bothered me. Did she *really* have Perfect Pitch? How could she know tones and chords just by *hearing* them? It seemed impossible.

Finally I couldn't stand it anymore. So one day, I marched right up to Linda and asked her point-blank if she had Perfect Pitch.

"Yes," she nodded aloofly.

But Perfect Pitch was too good to believe. I rudely pressed, "*Can I test you sometime?*"

"OK," she replied.

### Now she would eat her words . . .

*My plot was ingeniously simple . . .*

When Linda least suspected, I walked right up and challenged her to name tones for me—*by ear*.

I made her stand so she could not see the piano keyboard. I made sure other classmates could not help her. I set up everything perfectly so I could expose her Perfect Pitch claims as a ridiculous joke.

With silent apprehension, I selected a tone to play. (She'll *never* guess F♯, I thought.)

I had barely touched the key.

"F♯," she said. I was astonished.

I played another tone.

"C," she announced, not stopping to think.

Frantically, I played more tones, skipping here and there all over the keyboard. But somehow she knew the pitch each time. She was AMAZING.

"Sing an E♭," I demanded, determined to mess her up. She sang a tone. I checked her on the keyboard—and she was right on!

Now I started to boil. I called out more tones, trying hard to make them increasingly difficult. But she sang each note perfectly on pitch.

I was totally boggled. "*How in the world do you do it?*" I blurted.

"I don't know," she sighed. And that was all I could get out of her!

"How in the world do you do it?" I blurted. I was totally boggled. (age 14, 9th grade)

The dazzle of Perfect Pitch hit me like a ton of bricks. My head was dizzy with disbelief. Yet from then on, I knew that Perfect Pitch was real.

### I couldn't figure it out . . .

*"How does she DO it?"* I kept asking myself. On the other hand, why can't *everyone* recognize and sing tones by ear?

Then it dawned on me. People call themselves *musicians* and yet they can't tell a C from a C♯?? Or A major from F major?! That's as strange as a portrait painter who can't name the colors of paint on his palette! It all seemed odd and contradictory.

Humiliated and puzzled, I went home to work on this problem. At age 14, this was a hard nut to crack.

You can be sure I tried it out for myself. With a little sweet-talking, I'd get my three brothers and two sisters to play piano tones for me—so I could try to name them by ear. But it always turned into a messy guessing game I just couldn't win.

Day after day I tried to learn those freaking tones. I would play a note *over* and *over* to make it stick in my head. But hours later I would remember it a half step flat. No matter how hard I tried, I couldn't recognize or remember any of the tones by ear. They all started to sound the same after awhile; how were you supposed to know which was which—just by *listening*?

I would have done anything to have an ear like Linda. But now I realized it was way beyond my reach. So after weeks of work, I finally gave up.

### Then it happened . . .

*It was like a miracle . . . a twist of fate . . . like finding the lost Holy Grail . . .*

Once I stopped *straining* my ear, I started to listen NATURALLY. Then the simple secret to Perfect Pitch jumped right into my lap.

Curiously, I began to notice faint "colors" within the tones. Not *visual* colors, but colors of *pitch*, colors of

*sound*. They had always been there. But this was the first time I had ever really "let go"—and *listened*—to discover these subtle differences.

Soon—to my own disbelief—*I too could name the tones by ear!* It was simple. I could hear how F♯ sounds one way, while B♭ has a *totally different sound*—sort of like "hearing" red and blue!

The realization struck me: THIS IS PERFECT PITCH! This is how Bach, Beethoven, and Mozart could mentally envision their masterpieces—and know tones, chords, and keys—all by ear!

It was almost childish—I felt sure that *anyone* could unlock their own Perfect Pitch with this simple secret of "Color Hearing."

Bursting with excitement, I told my best friend, Ann (a flutist).

She *laughed* at me. "You have to be *born* with Perfect Pitch," she asserted. "You can't *develop* it."

"You don't understand Perfect Pitch," I countered. I showed her how to listen. Timidly, she confessed that she too could hear the pitch colors. With this jump start, Ann soon realized she had also gained Perfect Pitch.

We became instant celebrities. Classmates loved to call out tones which we would then magically sing from thin air. They played chords for us to name by ear. They quizzed us on what key a song was in. Everyone was fascinated with our "supernatural" powers, yet to Ann and me, it was just normal.

Way back then, I never dreamt I would later cause such a stir in the academic world. But as I entered college and started to explain my discoveries, many professors *laughed* at me.

"You must be *born* with Perfect Pitch," they'd say. "You can't *develop* it!"

I would listen politely. Then I'd reveal the simple secret—*so they could hear it for themselves*. You'd be surprised how fast they changed their tune!

In college, my so-called "perfect ear" allowed me to skip over two required music courses. Perfect Pitch made everything easier for me—my ability to perform, compose, arrange, transpose, improvise, and even sight-read (because, without looking, you're sure you're playing the correct tones). And because my ears were open, music just seemed richer.

I learned that music is definitely a HEARING art.

*Oh, you must be wondering: whatever happened with Linda?* Excuse me, I'll have to backtrack . . .

It was now my senior year of high school. I was nearly 18. In these three-and-a-half years with Perfect Pitch, my piano teacher insisted I had made ten years of progress. And I had. But my youthful ambition still wasn't satisfied. I needed one more thing: *to beat Linda*. Now was my *final chance*.

The University of Delaware hosts a performing music festival each spring, complete with judges and awards. To my horror, they scheduled me that year as the *grand finale* of the event.

The fated day arrived. Linda gave her usual sterling performance. She would be tough to match, let alone surpass. But my turn finally came, and I went for it.

Slinking to the stage, I sat down and played my heart out with selections from Beethoven, Chopin, and Ravel. The applause was overwhelming.

Later on, I scoured the bulletin board, searching for our grades in the most advanced performance category. Linda received an A, which came as no surprise. I scored an A+.

*Sweet victory was music to my ears—mine at last!*

## Join musicians around the world who have discovered this secret for success with the Perfect Pitch® Ear Training SuperCourse:

● "Wow! It really worked. I feel like a new musician. I am very proud I could achieve something of this caliber." *J.M.* ● "Thanks...I developed a full Perfect Pitch in just two weeks! I don't know how it worked. It just happened out of nowhere like a miracle." *B.B.* ● "It is wonderful. I can truly hear the differences in the color of the tones." *D.P.* ● "I heard the differences on the initial playing, which did in fact surprise me. It is a breakthrough." *J.H.* ● "I'm able to play things I hear in my head a lot faster than ever before. Before the course, I could barely do it." *J.W.* ● "I hear a song on the radio and I know what they're doing. My improvisations have improved. I feel more in control." *I.B.* ● "In three short weeks I've noticed a vast difference in my listening skills." *T.E.* ● "I can now identify tones and keys just by hearing them. I can recall and sing individual tones at will. When I hear music now it has much more definition, form and substance. I don't just passively listen to music anymore, but actively listen to detail." *M.U.* ● "Although I was skeptical at first, I am now awed." *R.H.* ● "It's like hearing in a whole new dimension." *L.S.* ● "I wish I could have had this 30 years ago!" *R.B.* ● "Very necessary for someone who wants to become a pro." *L.K.* ● "This is absolutely what I had been searching for." *D.F.* ● "Mr. Burge—you've changed my life!" *T.B.* ● "Learn it or be left behind." *P.S.* . . .

## Now it's YOUR turn!

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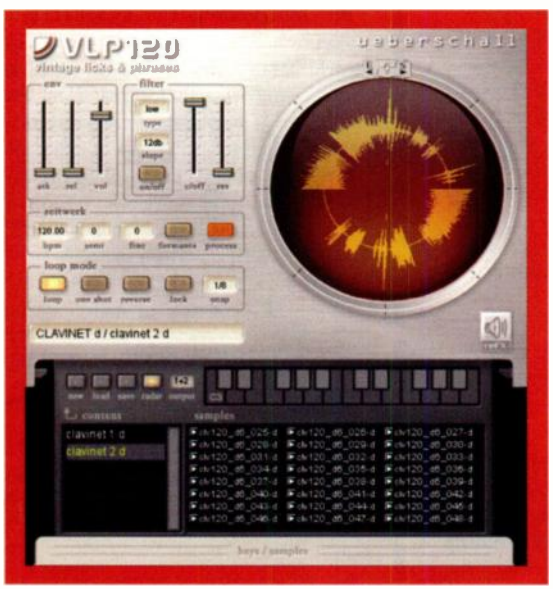
Mac G4/Dual 1.42 GHz was completely pain-free.

The loop categories include Bass, Brass, Flute, Organ, Synth, Guitar, Piano, and Clavinet, but there are multiple subcategories for each. For example, the Bass category has slapped, fingered, and fretless varieties; the Piano group includes acoustic, Rhodes, Wurlitzer, and an unspecified electric piano; and the Brass group provides trumpets and reeds.

You can select a bank of presets from a drop-down menu in the lower-left corner of the plug-in. Each bank contains a two-octave group of phrases in one of three keys: A minor (C major), D minor (F major), and E minor (G major). Despite unified keys and thematic relationships within banks, VLP120 is not a construction kit by any means: you can build up a groove with the bass lines, but they may not work with the piano part from another group.

### Circular Logic

Central to the program's user interface is the Loopeye, which is an animated, circular waveform editor. The currently selected loop wraps around a 360-degree waveform display while a beam sweeps the display in the manner of an air traffic controller's radar screen. Other than conservation of screen real estate and a novel visual appeal, it's probably easier to edit using a linear loop display. The loops range from one to four bars, and a defeatable Snap menu lets you select slider resolutions ranging from one bar to a 32nd note. In addition, Loopeye parameters can be also accessed using MIDI controllers.




**The VLP120 interface features a circular waveform editor that is called the Loopeye.**

Clicking on the bottom pane opens a panel containing a keyboard map and a list of the loop categories. Every loop can be processed separately: just drag any loop to a key between C3 and B4. You can cherry-pick loops from all categories; edit their length, pitch, tempo, envelope, and filter settings; map them to the keyboard; and save the edited bank as a custom set. Because of this flexibility, VLP120's lack of multitimbral capabilities is not a major issue.

Besides pitch-shifting and time-compression amenities, VLP120 includes basic subtractive synthesizer features. The plug-in offers attack, release, and volume sliders. Filter settings include filter type, cutoff frequency, and resonance. Registered users can download version 1.1 of the plug-in, which adds several quality levels of pitch and time compression. The upgrade also adds more filters to the list, including highpass, bandpass, and notch varieties, as well as 36-, 48-, 60-, and 70 dB slopes. The filters offer a great deal of sonic variety, but I experienced significant zipper noise while sweeping the filter cutoff.

### Knocked for a Loop

VLP120's pitch- and time-correction capabilities were effective, although attack transients smeared somewhat at drastic tempo reductions. The content is well played and nicely recorded, although some loops (particularly some of the guitar and bass lines) have passed from vintage classification to cliché status. I love many of the saxophone phrases (particularly the alto and soprano), but the predominance of rubato passages obviates the need for looping.

The excellent PDF documentation notes that the recording of the different instruments occurred individually rather than as a band effort. The result is the absence of congruent thematic development between instruments. That lack of thematic unity is fine, especially if you can appreciate the grab-bag nature of the collection—just don't look to this set for carefully developed construction kits.

**Overall EM Rating (1 through 5): 3.5**
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## STUDIO ELECTRONICS

### ModMax Phaser

**By Jonathan Segel**

Studio Electronics has entered the modulation effects market with the Phaser ($349) phase shifter, one of three products in the ModMax line of pedals. The Phaser's "indoctrination sheet" says "Don't fear the ModMax," which is meant to allay the fears of musicians who are not used to a stompbox with so many controls. In fact, the Phaser has 13 knobs and 6 switches, including rate and depth controls and an LFO Waveform switch that offers triangle, square or random waveforms.

The Phaser has input and output controls above their respective ¼-inch jacks. Those controls are invaluable, because they change the ways in which the rest of the controls affect the sound. The Mix knob is a standard dry/wet control. The Dynamics control has a center detent with a negative or positive setting, allowing the input dynamics to sweep the mix setting from dry to wet or vice versa. The Drench control overloads the processed signal's output, which can significantly increase the output gain of the unit, making the level controls that much more important.

Located in the next row of knobs is the Frequency control, which sets the center frequency of the sweep, and the Resonance control. Between them is a switch that sets the number of stages—2, 4, or 6—for phase sweeping.

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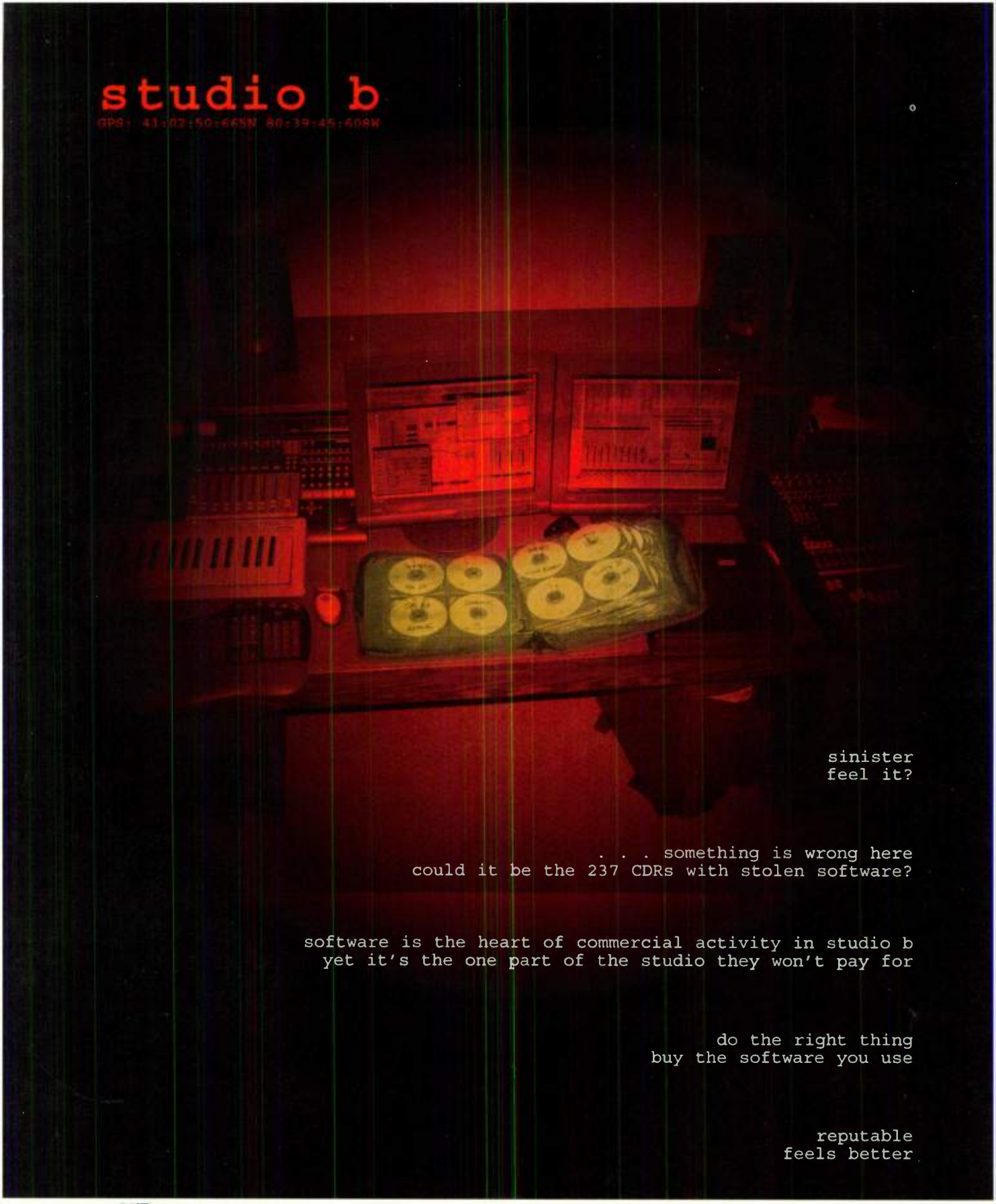

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The controls in the middle, which slave the unit's functions to input dynamics, include attack and release knobs, with LEDs to show input level. A 3-way switch sets the trigger response: Normal, in which the LFO is continuously running; Trig, in which the input triggers the start of the LFO; and One-shot, in which one cycle of the LFO is triggered. The LFO's triangle waveform starts at zero, and the square wave starts at one.

The Frequency Dynamic knob has a negative-positive switch above it to set the polarity of the filter sweep. The Rate Dynamics knob has a center detent: for negative settings, a dynamic trigger decreases modulation, which decays into the set modulation rate; for positive settings, a trigger produces modulation that slows down as the signal decays. Finally, the Depth Dynamics knob offers positive and negative dynamic control over LFO depth.

The Studio Electronics ModMax Phaser includes three LFO waveforms and Frequency, Resonance, and dynamics controls.

There is also a switch that sets the LFO base rate to slow or fast. When using the slow setting, the LFO's duty cycle ranges from roughly 30 seconds to around 10 Hz. When using the fast setting, the LFO gets into audio-rate frequencies and can produce frequency modulation effects.

### Set to Stun

I first used the Phaser with my guitar as a standard stompbox phase shifter, keeping the Frequency and Resonance knobs near their centers and playing with the rate and depth controls. The results were sweeping comb-filter effects in the 2-stage setting, with added lushness in the 4- and 6-stage settings. It never became so lush, however, that it could compete with my older MXR and Electro-Harmonix phase shifters. With careful adjustments of those controls, I produced nice tremolo/vibrato effects, similar to the vibrato from a Vox AC30 and the warbly tremolo of a brown-face Fender amplifier. With the Drench switch on, the volume increased dramatically, adding unpleasant distortion and output noise. By adjusting the input and output levels to compensate, I was able to get watery Univibe-like effects. But I was disappointed with the Phaser's performance as a normal phase shifter.

Sensing that this unit might be more interesting on the desktop, I set it up as an auxiliary send on my mixer and sent other kinds of sounds through it. On drums, the dynamic triggering was perfect, and the distortion that the Drench switch provided sounded decent here, resembling bit-degradation effects.

I tried running vocals and other instruments through Phaser. While it produced some interesting sound effects, Phaser's dynamic triggering possibilities seemed best suited to percussive sounds. The Phaser livened up basses with its subtle phase shifting and filter sweeps in a drum & bass environment. A word of caution: the filter's center frequency control has a very wide range. Combined with the resonance control, the low end can get particularly out of control if you aren't careful. Nevertheless, that would be a fun tool to interact with in a live electronic situation.

### Color My World

Although the Phaser is fairly idiosyncratic, it doesn't replace traditional stompbox phase shifters, but that may not be its purpose. However, with its many controllable parameters, the Phaser could be a sound experimenter's dream. As a tool for studio technicians and DJs, it may provide just the right color.

**Overall EM Rating (1 through 5): 3**
Studio Electronics
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## RADIAL

## X-Amp

By Rob Shrock

Reamplification has been around for decades and is a favorite trick of professional engineers, yet it's a technique that's often overlooked in personal studios. Radial's X-Amp ($200) could help to change that. It is a Class-A device that makes it easy to transform line-level signals into the proper impedance and level for input into guitar amplifiers, stompboxes, or other instrument-level devices.

### Reamp, Revamp

The obvious use of the X-Amp is to run a dry, DI-recorded bass or guitar track from the multitrack back into an amplifier to change or tweak the tone. The advantages are that the player doesn't have to commit to a sound at the time of tracking, and, after he or she is gone, you can spend as much time as you'd like experimenting with different amps, settings, and effects until the desired sound is achieved.

The best way to do that is to run the guitar into a DI box, routing the dry signal direct to your multitrack from the balanced output and sending the instrument level output to an amplifier. Let the guitarist set the amp to taste (distortion, effects, and so on) so that he or she is inspired to play a great part. (It's a good idea to also record the amp at this time.) Played effects such as feedback and false harmonics are recorded into the dry signal and will be reproduced when reamping.


Radial's X-Amp is an active device that converts line-level signals to instrument level, allowing you to patch an already recorded guitar, bass, or other instrument track back into an amplifier for reamplification.

Why the need for the X-Amp? Guitar and bass amplifiers (and stompbox effects) expect to "see" a certain signal level to operate properly. The X-Amp changes the line-level signal of your recorder's output into the proper level and impedance; otherwise, the amp or effects won't sound right or could even be damaged.

The X-Amp's input is balanced, XLR line level. (Be aware that the XLR connector does not "click" into place.) Ground lift switches are provided for both the input and output. An LED lights if the signal going into the X-Amp is too hot.

The X-Amp is active (powered by a 15VDC wall-wart power supply) and can provide two ¼-inch outputs: one direct-coupled and the other transformer-isolated. Two amps can then be driven simultaneously without ground loops or grounding noise. A phase-reverse switch is provided for output 2, and an output-level control lets you to adjust the signal into the amp or effects chain.

X-Amp is not just for reamping dry guitar or bass tracks. The creative-minded person will run vocal tracks through guitar amplifiers and percussion sounds through stompboxes. Many keyboards, synth tracks, and samples benefit greatly from being reamped.

## Session Time

I reamped several guitar parts using the X-Amp and was extremely pleased with the results. In one instance, I recorded the original part using a DI to split the signal coming from the guitar, running one side to a Line 6 Vetta II amplifier while recording the dry signal into my DAW. (I recorded the amp with a dynamic mic at the same time.)

I was playing a heavily distorted sound with moments of controlled feedback throughout. After several passes, I comped the final take together, making identical edits to the recorded-amp and dry-guitar tracks.

I later used the X-Amp to route the dry signal back into the Vetta II. After toying with the output level and the ground switches, I had a signal going into the amp that sounded exactly like I was in the room playing. I experimented with the Vetta II until I settled on a sound I really liked. I also used the second output of the X-Amp to drive a small Vox combo amp set to a clean sound. I then hit record and printed the new guitar tracks.

When I listened to it later in the day, I realized that I'd rolled off too much of the Vetta II's highs. No sweat. I swapped the dynamic mic for a ribbon and recut the tracks using the X-Amp's output to drive the Vetta II, with satisfying results. The flexibility of reamping, and the utility of the X-Amp was abundantly clear. I was sold.

## X Marks the Spot

X-Amp flawlessly does what it's supposed to do. The signal it produces is clean, strong, and sounds exactly like the original guitar output. The unit is built like a tank, and you get added versatility from

its output control and dual outputs. Most importantly, the sonic options of reamping, which the X-Amp facilitates, are considerable. If you regularly mic guitar amps in your studio, the X-Amp is a no-brainer.

**Overall EM Rating (1 through 5): 4.5**
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## CREST PERFORMANCE

### CP-6210 Mixer/CP-6220 Expander

By Orren Merton

Crest Audio has long been a respected name in power amplifiers, mixers, and loudspeakers. In developing the Crest Performance line, the company applied its expertise to products for smaller installations, DJs, and remixers. Crest Performance's new rackmount CP-6210 Classic Professional DJ Mixer and its companion, the CP-6220 expander, are aimed squarely at the karaoke, DJ, and remix markets. The overall design is based on the classic but long-unavailable Bozak and UREI rotary mixers from the 70s and 80s, but with modern circuitry and components.

The CP-6210 mixer (top) and companion CP-6220 expander EQ module feature large, comfortable knobs and switches for performing a broad array of DJ and remix functions.

#### Featurama

Despite their deceptively simple appearance, the units are loaded with options. The CP-6210 mixer offers six discrete stereo channels, each with its own volume and balance knobs. Inputs for stereo channels 1 through 4 use pairs of RCA connectors and can be switched between moving-magnet (phono-cartridge) and –10 dBV line-level signals. Inputs 5 and 6 use XLR connectors and feature mic/line-level buttons, with line level calibrated to +4 dBu. Inputs 5 and 6 also feature trim knobs offering 50 dB gain and high- and low-frequency EQ knobs offering 15 dB of boost or cut. Finally, there are five auxiliary stereo inputs served by pairs of RCA jacks, calibrated to –10 dBV, and sporting trim knobs with a –20 to +15 dB range. Each of the six main channels of the CP-6210

mixer includes a rotary knob for selecting among that channel's phono/line input and any of the five auxiliary inputs.

The CP-6210 offers myriad output options, including a Cue output that can be a mix of any of the six channels with the main program output. The headphone output can carry the Cue output, the program output, or both. There are two sets of main program outputs: the House outputs offer mono and stereo XLR as well as RCA jacks, and the Booth outputs offer mono-balanced or stereo ¼-inch TRS as well as RCA jacks. The mixer also offers two sets of tape outputs—one pre- and one post-effects. All outputs except tape have their own volume knobs.

### In the Loop

EQ and an effects loop, both of which apply to the entire mix, round out the CP-6210. The stereo effects loop features a bypass switch and ¼-inch balanced TRS jacks for the sends and returns. The EQ offers 6 dB of boost or cut for four bands centered at frequencies of 7 kHz, 4 kHz, 500 Hz, and 200 Hz. The EQ can't be defeated, which is unfortunate because the real EQ magic happens in the CP-6220 expander unit.

The CP-6220 looks a lot like the CP-6210 mixer, but that's where the similarity ends. The CP-6220 has three bands of EQ for each of the CP-6210's six channels. The EQ divides the frequency spectrum in the classic DJ configuration—4 kHz and above, 300 Hz to 4 kHz, and 300 Hz and below—offering 6 dB of boost to infinite cut for each band. Each channel can also be assigned to the A, B, or Program bus.

### On the Bus

The A and B buses offer DJs and remixers some real fun because the CP-6220 includes a voltage-controlled crossfader between them. A DJ could, for example, keep the bass and a microphone channel on the program bus, while crossfading between additional tracks assigned to the A and B bus. For added flexibility, there's an A/B bus-swap (hamster) switch and a Taper control for altering the shape of the crossfade. Only the CP-6220 offers metering, with a separate stereo meter for each of the Cue, A, B, and Program mixes. (It would be nice to have Cue, House, and Booth meters on the CP-6210 mixer itself.)

For its target market, this is a well thought-out duo. The large, easy-to-handle rotary knobs have a solid feel and lend the units an instantly familiar vibe. Their design is as straightforward as possible for a mixer of this flexibility. They are remarkably easy to connect—a single, included ribbon cable is all that is required. Finally, the sound and stereo separation are good and are in line with the pair's $1,780 retail price. Remixers, DJs, and anyone looking for a flexible smaller-installation mixer should definitely look here.

**Overall EM Rating (1 through 5): 4**

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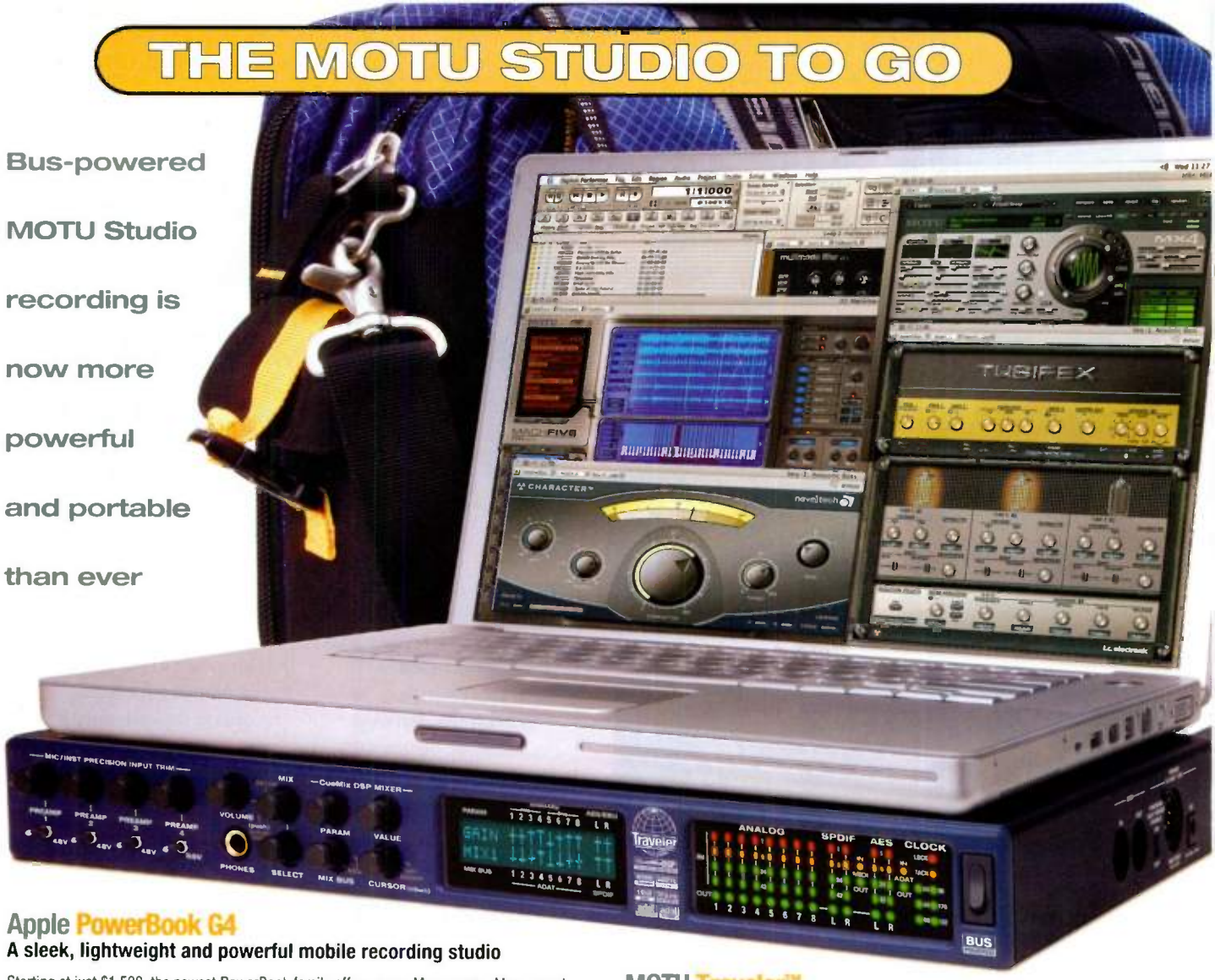


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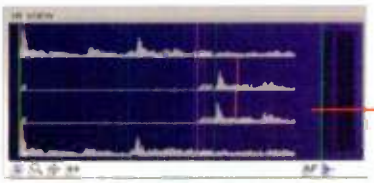
# Audio Ease Altiverb V5™

## Your first choice for convolution reverb

Altiverb broke new ground as the first ever convolution reverb plug-in, delivering stunningly realistic acoustic spaces to your MOTU desktop studio. Altiverb V5 continues to lead the way with cutting edge features. Altiverb V5's ever growing Impulse Response library provides the most diverse and highest quality acoustic samples on the market. Recent additions are shown below from the Altiverb Fall 2004 East Coast Tour. Version 5 delivers more seconds of reverb, more instances, and less CPU overhead than any other convolution reverb. And its new adjustable parameters are a snap to use! Altiverb takes full advantage of the Altivec™ processor in your PowerBook G4 or desktop Power Mac G4 or G5. THE must-have reverb for every MOTU studio.

- Highest quality samples on the market.
- Legendary concert halls and studios.
- Versatile damping and hires-EQ section.
- Click-and-drag 3D sound placement.
- 'Size' parameter shifts resonances and room modes.
- Gains and delays for direct early-reflection and tail.
- Waterfall diagram shows time-frequency behavior in 3D.
- Surround up to 192 kHz.
- Snapshot automation for mixing and post-production.
- Available for MAS and all other Mac plug-in formats

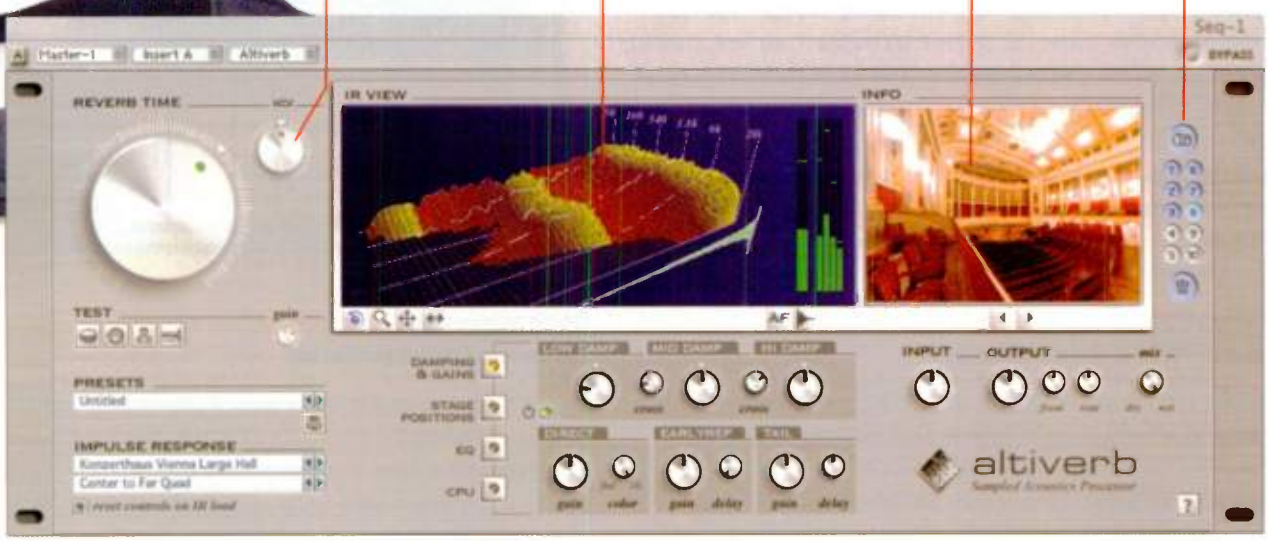


The new multi-channel waveform overview reveals crucial detail about gain levels and timing during the first tenth of a second of a reverb tail. The rotatable and zoomable 'waterfall' (3D time/frequency diagram) reveals even more about Damping, EQ and resonances.

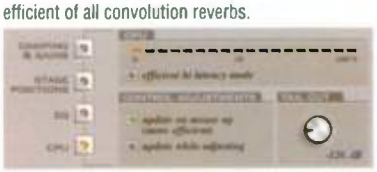
A rotating VR (Virtual Reality) movie helps you feel the presence of each room.

Snapshots let you automate complete preset changes.

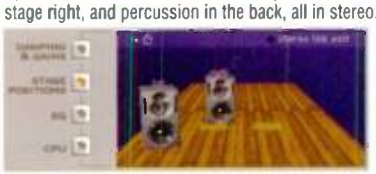
The size control shifts the frequency behavior of a room while adjusting reverb times.




CPU Control — Altiverb is the most efficient of all convolution reverbs.



Speaker Placer — Put the violins stage left, cellos stage right, and percussion in the back, all in stereo.



EQ — Use up to four bands of EQ, tailored for reverb tail adjustment, to fine-tune the sound.

*Allaire studios Great Hall, Shokan, NY*

*www.allairestudios.com*

*Edison, NYC*

*Clubhouse Studio, Rhinebeck, NY*
*www.clubhouseinc.com*

*Mechanics Hall, Worcester, MA*

*www.mechanicshall.org — Photo by Steve Rosenthal*

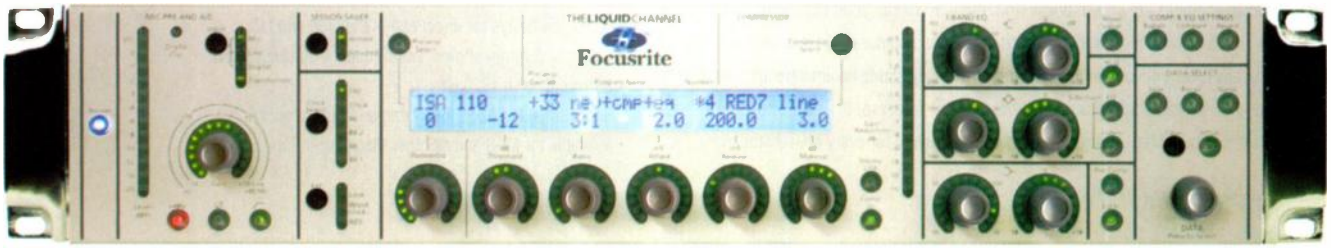
*Forest Austerlitz, Netherlands*

*Sound on Sound Studios, NYC*
*www.soundonsoundstudios.com*

## Focusrite Liquid Channel™

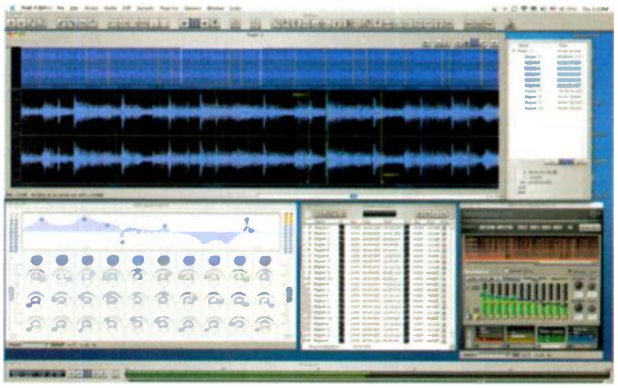
**A Console Master Section Without the Console!**

Every MOTU personal studio deserves luxurious outboard gear. And what better than a piece that delivers the sound of 40 classic mic pres and 40 vintage compressors in one box! The Focusrite Liquid Channel is a revolutionary professional channel strip that can replicate virtually any classic mic-pre and compressor ever made! Combining radical new analog pre-amp technology with special Dynamic Convolution techniques, the Liquid Channel fuses cutting-edge analog design with lightning fast SHARC DSP. Augmented by fully digital controls, the Liquid Channel provides unlimited possibilities with available FREE LiquidControl software, which allows for remote control of the Liquid Channel and future FREE pre and compressor replica downloads for unlimited additional sound expansion. The Liquid Channel provides the ultimate fluid vintage collection.




## BIAS Peak 4.1 Mastering & Restoration Edition

Peak 4.1 plus SoundSoap Pro and SuperFreq. Imagine the world's most popular stereo audio editing, processing, and CD mastering program for the Mac, combined with unparalleled noise reduction and restoration technology — all at a jaw dropping low price. You get Peak 4.1 (including ImpulseVerb, Sqweez, Vbox SE, Jam 6, SFX Machine LT, and more), SoundSoap Pro (combines four state of the art restoration and noise reduction tools in a single plug-in), and the SuperFreq suite of mastering EQs all in one great package. Launch Peak directly from DP4 for more editing and processing power. Run SoundSoap Pro within DP4 or in Peak as an AU plug-in. For the very best in sample editing, batch processing, file conversions, loop creation, sound design, restoration, and Redbook CD mastering on OS X, pick up the Peak 4.1 Mastering and Restoration Edition today — the perfect mastering and restoration companion for DP4!



## Native Instruments Absynth 3

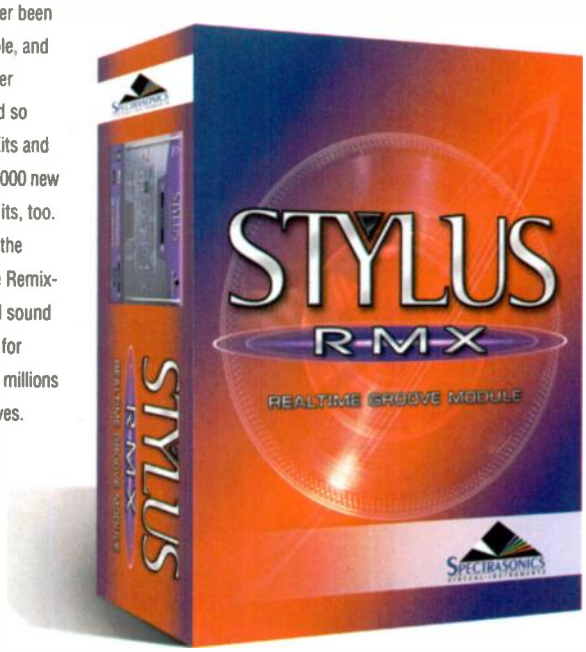
**Bend, mold, meld and morph sounds!**

ABSYNTH was used extensively, together with Digital Performer, on the Matrix Reloaded soundtrack by electronica mastermind and Juno Reactor founder Ben Watkins. And now, this award-winning synthesizer hits the scene for the third time armed with a host of new and unique features. ABSYNTH 3 brings dozens of new features that greatly expand its already extraordinary sound spectrum. The powerful synthesizer now incorporates a new user interface with convenient one-window editing, envelope-controlled surround sound features, live audio inputs, real-time fractalization, unison mode, advanced envelope control, 2 new special effects and 256 additional presets. Combining FM and subtractive synthesis, ring modulation, a live stereo input, classic and granular sampling with the most advanced envelope control ever implemented, this unrivalled synthesizer will take you on the most outrageous sonic adventures. There's really nothing else like ABSYNTH 3.


## Spectrasonics Stylus RMX

**The power of groove production**

Stylus RMX is the first product to offer the combined power of Groove Control™ with Spectrasonics Advanced Groove Engine (S.A.G.E.™) giving users dramatic new control over groove production. Dozens of new features include a completely redesigned interface, a new 7.4 GB core library of cutting-edge grooves and sounds produced by Eric Persing, and the ground-breaking, always changing Chaos Designer™. Real-time groove creation has never been so simple, and has never sounded so good! Kits and over 10,000 new single-hits, too. RMX is the ultimate Remix-oriented sound module for building millions of grooves.

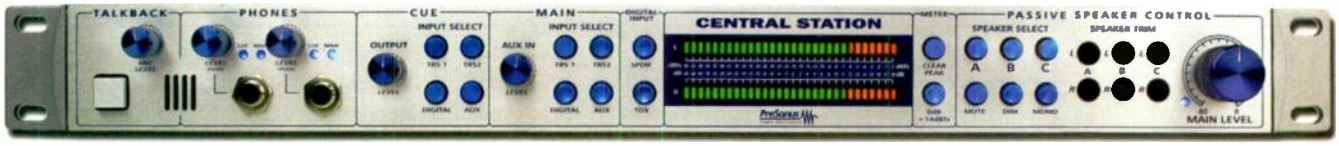


## PreSonus Central Station™

**A Console Master Section Without the Console!**

**Special limited time offer!**
get a CSR-1 remote with your Central Station
for only $99! Save $50!

The PreSonus Central Station is the missing link between your MOTU recording interface, studio monitors, input sources and the artist. Featuring 5 sets of stereo inputs (3 analog and 2 digital with 192kHz D/A conversion), the Central Station allows you to switch between 3 different sets of studio monitor outputs while maintaining a purely passive signal path. The main audio path uses no amplifier stages including op amps, active IC's or chips eliminating coloration, noise and distortion enabling you to hear your mixes more clearly and minimize ear fatigue.In addition, the Central Station features a complete studio communication solution with built-in condenser talkback microphone, MUTE, DIM, two separate headphone outputs plus a cue output to enhance the creative process. A fast-acting 30 segment LED is also supplied for flawless visual metering of levels both in dBu and dBfs mode.




## Mackie Control Universal™

**Automated hands-on control for the DP4 studio**

Imagine the feeling of touch-sensitive, automated Penny & Giles faders under your hands, and the fine-tuned twist of a V-Pot™ between your fingers. You adjust plug-in settings, automate filter sweeps in real-time, and trim individual track levels. Your hands fly over responsive controls, perfecting your mix — free from the solitary confinement of your mouse. Mackie Control delivers all this in an expandable, compact, desktop-style design forged by the combined talents of Mackie manufacturing and the MOTU Digital Performer engineering team. Mackie Control brings large-console, Studio A prowess to your Digital Performer desktop studio, with a wide range of customized control features that go well beyond mixing. It's like putting your hands on Digital Performer itself.

## Mackie HR-series Active Studio Monitors

**Nearfield monitors for your MOTU studio**

Mackie's HR-Series Active Studio Monitors are considered some of the most loved and trusted nearfield studio monitors of all time, and with good reason. These award-winning bi-amplified monitors offer a performance that rivals monitors costing two or three times their price. Namely, a stereo field that's wide, deep and incredibly detailed. Low frequencies that are no more or less than what you've recorded. High and mid-range frequencies that are clean and articulated. Plus the sweetest of sweet spots. Whether it's the 6-inch HR-624, 8-inch HR-824 or dual 6-inch 626, there's an HR Series monitor that will tell you the truth, the whole truth, and nothing but the truth.


## Sweetwater SweetCare™

**Your personal MOTU studio expert advisor**

When setting up and maintaining a MOTU desktop studio, there are many considerations to factor in to your decision making. Both the hardware and software landscape are constantly changing, and it's hard to keep up with all of the advancements. That's where Sweetwater comes in. Your personal Sweetwater sales engineer offers much, much more than just a great price. They do the research, day in and day out, to ensure that you'll fine-tune your MOTU system to fit your exact needs.

**Call now for your MOTU Studio To Go personal consultation: 800-222-4700**

# Opening the Door

By Larry the O

## So you want to be a rock 'n' roll star . . .

Having kicked around in the audio and music industry for a few years, I occasionally get inquiries from students and other people who want my advice on how to break into the business. Despite the many articles and books on this topic, there still seems to be a need for more perspectives—probably because breaking in is hard to do. Because "Final Mix" is an appropriate spot for fearless commentary, I shall take a short stab (sorry, that's all they give me) at conveying a few hints from my real-world experience.

Let's start with some of basic concepts. First, getting a job and making a living doing audio is easier than making a living playing music. Second, even given the first point, it's still a bear, and you can probably make a better living programming databases. Most of us in this business have difficulty bearing the thought of enduring such a boring profession as database programming, though. (That said, I recall a top-flight engineer who transitioned to precisely that job.)

Therefore, make your choices with the conscious understanding of what you're getting yourself into, what you're opting out of, and why the trade-offs are worth it—assuming that you conclude they are. Most forms of audio production that I know of, and nearly all forms of performing music, require lots of hours, struggles with technology, and difficult clients. Creating and shaping sound and music can, however, also bring immense satisfaction. If the satisfaction outweighs the frustrations, and the financial situation is at least acceptable, then it could be a fine career.

> You can probably make a better living by programming databases.

Next, you must endeavor to acquire the necessary skills. A lot of things I've read about the industry and promotions for schools I've seen suggest that being a Pro Tools wizard or knowing how to run a big SSL console are the things you need to know to make a living in this business. There is no question that understanding how to use modern tools is important, but that is the easiest knowledge to acquire.

What is emphasized less often is the need to understand basic underlying principles. Knowing how to make a crossfade of any shape is useful. Knowing why you would want to choose one shape over another for a given application is more useful. If you also understand how crossfading is accomplished inside the computer and the implications of that, then you've learned something of great practical value.

But even that is an advanced principle. In the last several years, I have seen many people coming up who don't know nearly enough about acoustics, transducers (for example, microphones and loudspeakers), and basic concepts of filtering. Many lack a full understanding of the importance of time in audio (not just delay and reverb, but phase; you *do* know that "polarity" is different from "phase," right?). What is often missed is that this knowledge comes into play indirectly more often than directly. For example, if you grasp acoustical principles, you are well equipped to be able to make convincing reverb simulations, whether for a game or for ambience matching of production dialog and ADR dialog.

Another set of absolutely crucial skills not often taught in schools is project management and how to work in teams, including showing a constructive attitude, employing political skills, and mastering the delicate art of writing email. Without these skills, you can never rise from being a "worker" to being a leader. Do not let the fact that I am devoting less verbiage to this subject than to others in this column lead you to underestimate its importance.

Finally, it is true that who you know is more important to breaking in than what you know. So if you don't know the right people now, make an effort to meet them. Networking is extremely important if you want to break in to the business, so go to conferences, attend meetings of local professional groups, and, yes, join email lists. Ultimately, in-person contact is the single most important factor to getting work. Lots of people have good demos; meeting someone in the business and impressing them with your excellent presence will have much more impact than a demo alone. Furthermore, in talking to those who are already in the industry, you will learn more of what you need to succeed.

These are a few things I have found to be key but often underemphasized. Now that you know the "secrets," go get 'em! EM

*Larry the O is accustomed to spending hours alone in windowless rooms, during which time he fondles a small gold ring and mutters "My Precious!" a lot.*

# AUDIOFIRE™

## FIREWIRE RECORDING

**AUDIOFIRE12**

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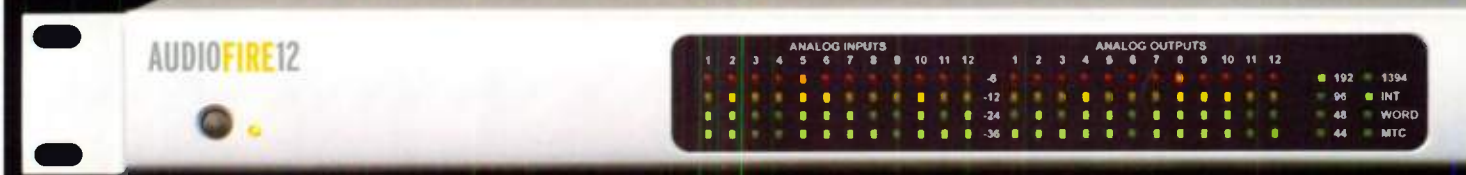



**AUDIOFIRE8**

• 2 Universal Inputs with mic preamps, meters, trim, and channel inserts • MIDI input/output • Headphone Output
• 6 +4dBu Inputs • 8 +4dBu Analog Outputs • ADAT and S/PDIF input/output • Word Clock Sync

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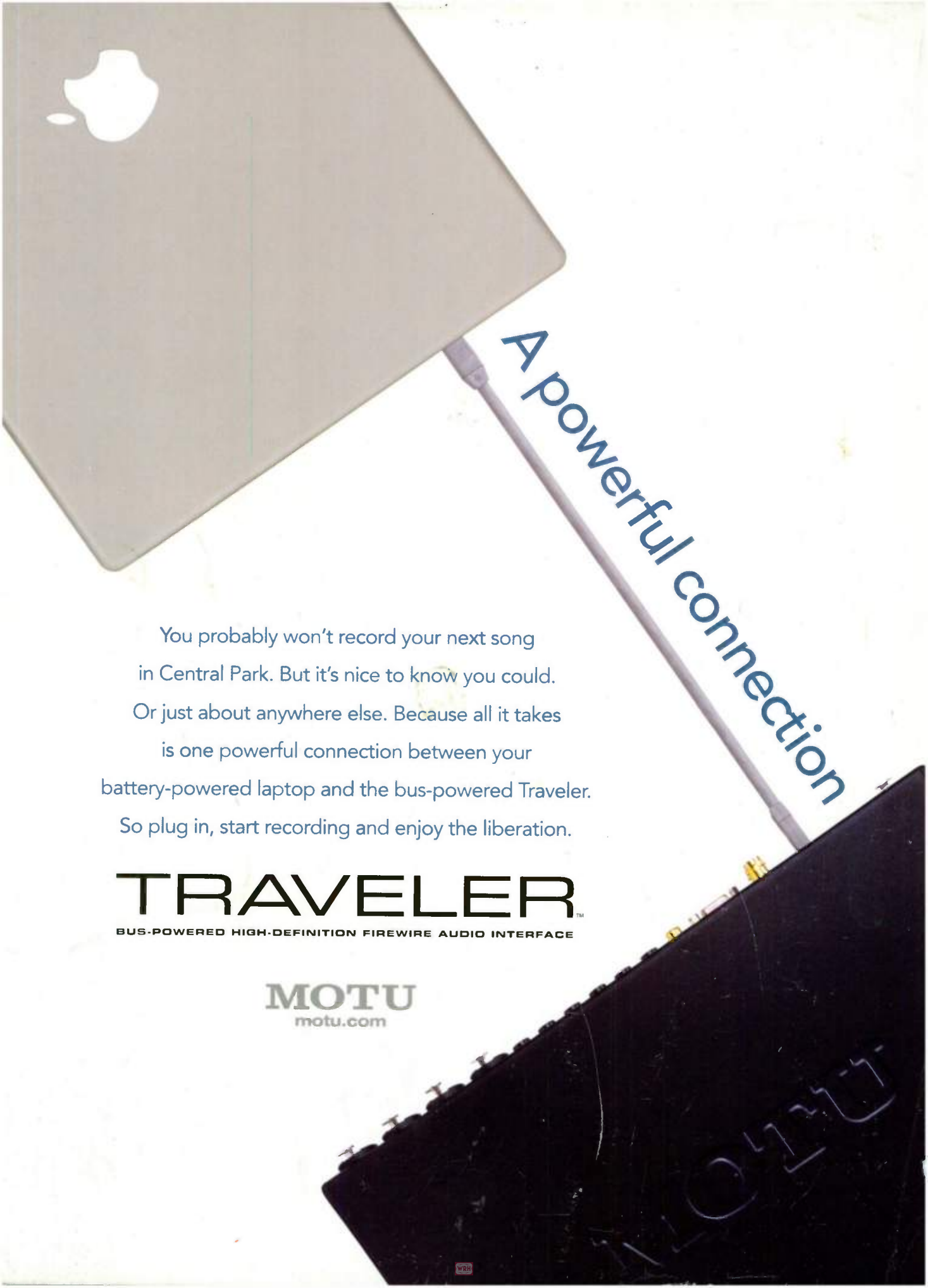


You probably won't record your next song
in Central Park. But it's nice to know you could.
Or just about anywhere else. Because all it takes
is one powerful connection between your
battery-powered laptop and the bus-powered Traveler.
So plug in, start recording and enjoy the liberation.

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