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KICK DRUM THERAPY

ONLINE MARKETING DOS AND DON'TS

# BUILD A LAPTOP STUDIO

ON ANY BUDGET



A PENTON MEDIA PUBLICATION

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## REVIEWS

- UNIVERSAL AUDIO 710 TWIN-FINITY
- SM PRO AUDIO V-MACHINE
- DIG DESIGN PRO TOOLS 8
- TASCAM DP-004 | AND 4 MORE

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**TWO**

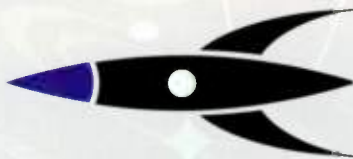


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BOB MONTECLARIO

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Laptops are more powerful than ever, and many musicians are using them as their primary music-making computer. This month we assemble portable studios around three different approaches—in-the-box production, songwriting, and live recording—at a variety of price points.

By the EM Staff



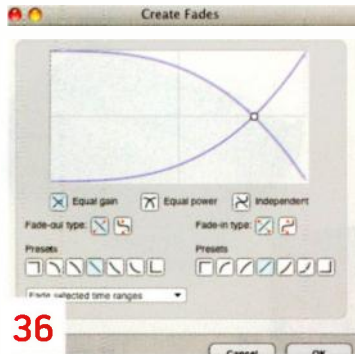
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To record saxophones and other reed instruments well, you need to know how the instruments produce sound. We show you how to get rich, vintage timbres using the proper mics and placement.

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### MASTER CLASS: BITS AND PIECES

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**PRO/FILE**  
**TECHNO LATINO**

Electro-Latin sounds from German-born producer Señor Coconut.

**TECH PAGE**  
**K-BOW BULL'S-EYE**

A new electronic bow lets string players control synths using their own instruments.

**MAKING TRACKS**  
**JUST FOR KICKS**

Our MIDI guru shows you how to rescue ailing kick-drum tracks.

**SOUND DESIGN WORKSHOP**  
**A DIFFERENT SLICE**

When your loops get boring, try stuttering a little.

**SQUARE ONE**  
**SCALING UP**

Adapting your soft synth to microtunings is a breeze with Scala.

**INDUSTRY INSIDER**  
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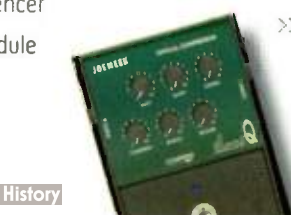
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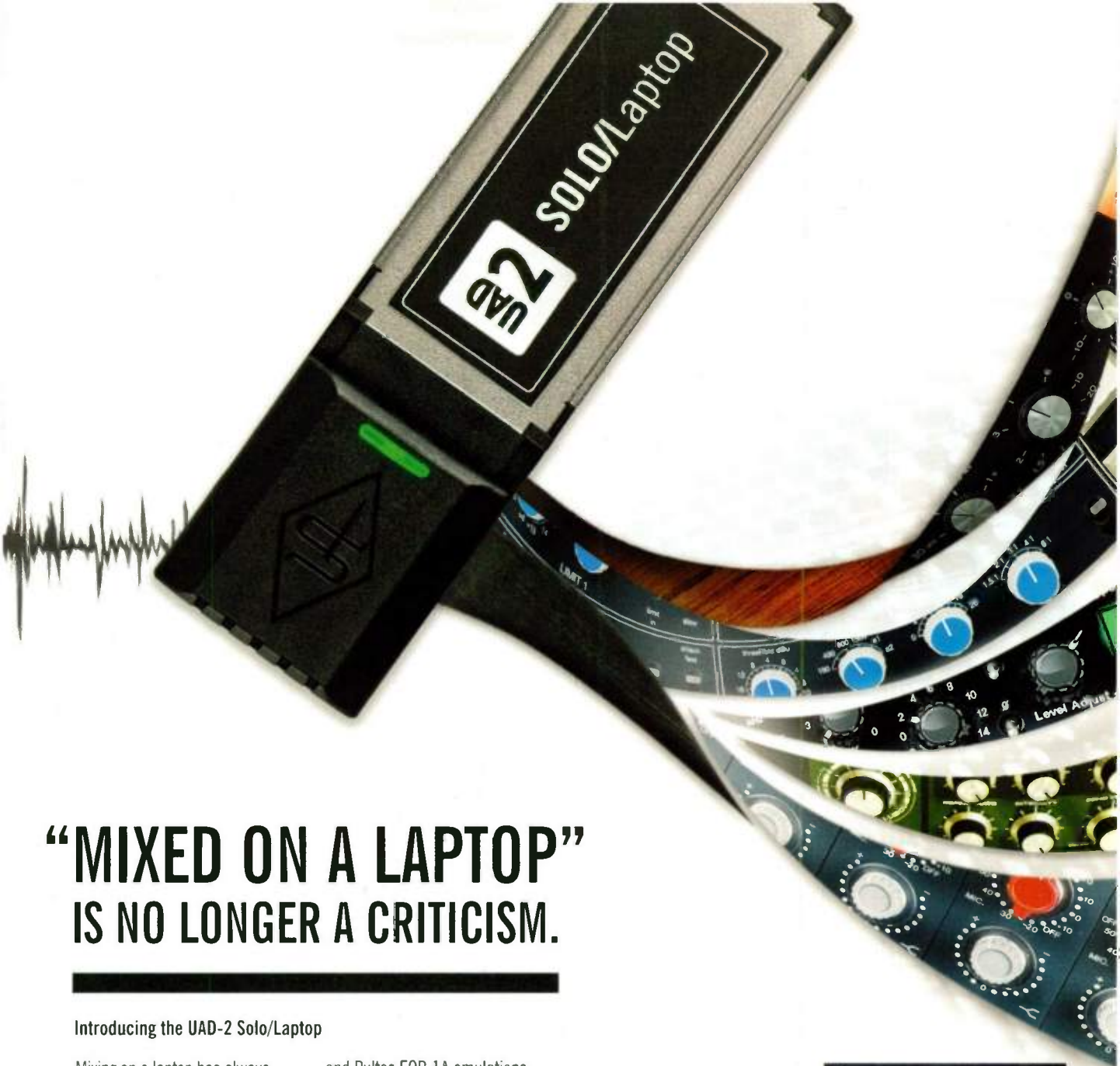
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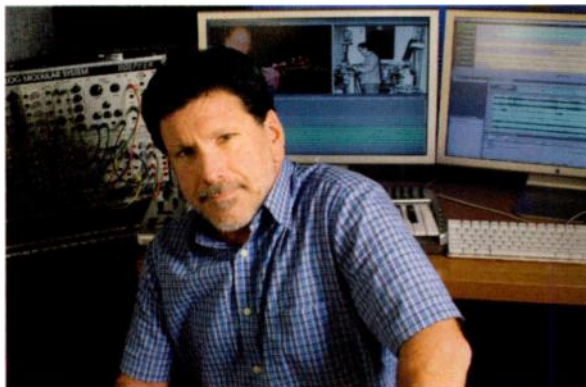


UNIVERSAL AUDIO

# Diversity and Change

In age from teens to retirees) are developing a passion for recording for the first time. At the beginning of each semester, I encourage them to explore music that differs from their favorite styles. As you might expect, the main interests for the younger people are urban styles (rap, R&B, and so on), electronica, and guitar-based rock, and often this class provides their first glimpse into genres that they are unfamiliar with (or that they thought they wouldn't enjoy), such as classical, country and western, or jazz.

One of the main goals for expanding their listening awareness, beyond the fact that it's culturally important, is that it makes sense economically. It's quite an eye-opener for the class when I explain that many professional engineers record more than one type of music. When it comes to recording vocals, for example, the same rules apply whether you're tracking rap, rock, or reggae: The tools and skills needed to get the job done are universal. After that, it's all about identifying and mastering the sonic fingerprints of a musical style.



JAMIE RICHIEY

Later in the semester, we spend time analyzing and critiquing each other's work on a technical, as well as musical, level: How well do the vocals sit in the mix? Are some instruments masking others? Is the mix too dense? Does the arrangement build in a pleasing way, or is it static? Soon the students begin to understand the complexities involved in recording and mixing a song, no matter the style, and they can see how the same basic recording techniques apply to all. Sure, some genres place the vocals up front and in your face in a mix, while others seat them inside the ensemble. But knowing how to record the voice well or how to keep a bass drum from stepping on the bass is something everybody can grok in only a few weeks.

By the end of the semester, the rock players can give meaningful criticism about how a rap track was mixed, while my rap artists can tell when a shredding guitar solo isn't sitting well in a mix. At the very least, they know enough to ask, "Did you intend for the kick drum to sound so muddy?" Now they are ready for the next step: The lifelong journey of learning the personalities of each mic, preamp, and processor that they will encounter, and how to get the best results from them.

The reason I believe it is important to be able to listen beyond your comfort zone is because in the real world these days, musicians must diversify to some degree if they want to survive while doing what they love. That might mean recording, editing, and mastering CD projects or recording live shows for hire. Consequently, one day might bring in a bluegrass session, while the next might bring in a punk band. But by offering even the simplest of services for people beyond your circle of friends, you will not only earn a bit of cash, but you'll also gain experience that will help you with your own musical projects. You just have to keep your mind and ears open to new experiences and embrace change when it comes.

Speaking of change, the time has come for Copy Chief Marla Miyashiro, Art Director Earl Otsuka, and me to bid you adieu. The positive influence that Marla and Earl have had on the magazine has helped make it as editorially sound and good-looking as ever. I admire their talent and enthusiasm very much, and I will miss working with them.

Personally, I have enjoyed being a part of EM's staff for over a decade, and as editor, I have been extremely fortunate to have had such an amazing team, including Mike Levine, Geary Yelton, Len Sasso, and Sarah Benzuly. I want to thank all of them for their commitment and exceptional work ethic during these challenging times.

But I especially want to thank you, the reader, for your support during my tenure as editor. Your continued participation, whether through subscription or newsstand purchase, praise or criticism, is crucial to EM as it works to educate its readers about using technology to make music.

Keep in touch!

In the Music Technology Center at Diablo Valley College, my students (who range

professional engineers record more than one type of music. When it comes to recording vocals, for example, the same rules apply whether you're tracking rap, rock, or reggae: The tools and skills needed to get the job done are universal. After that, it's all about identifying and mastering the sonic fingerprints of a musical style.

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Gino Robair  
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By Gino Robair



## Download of the Month

### Five12 Numerology 2.0 (Mac) By Len Sasso

**N**umerology 2.0 (\$119) from software developer Five12 is a modular, multi-track, step-sequencing workstation. It is a standalone program that boasts its own sample looper and sampled drum machine, and it hosts AU instrument and effects plug-ins. You can also link and sync it to your DAW to use just its step-sequencing capabilities, which are prodigious. It will run as a ReWire slave, but I find it more convenient to sync Numerology using MIDI Clock and then use its MIDI ports to route data back and forth. If you use Numerology's audio features, you can pipe its audio output to your DAW with third-party audio-routing software like Cycling '74 Soundflower (soundflower.com; free).

Numerology has many tricks up its sleeve for generating note and MIDI continuous controller sequences. Rather than applying one basic design to different sequencing objectives, it has separate note-sequencing modules designed for monophonic, polyphonic, drum, and arpeggiation-style sequencing. Beyond that, you can get under

the hood and build your own sequencer setups. That method, called discrete sequencing, is one of its best options—it lets you manipulate the Velocity, trigger, and pitch sequences separately. You can, for example, change their lengths and play-back directions independently and even automate those changes to create long-running, but not completely random, patterns (see **Web Clip 1**).

Besides note sequencing, you get a variety of CV (control voltage) generating and processing modules such as LFOs, envelope generators, virtual manual controls (fader, joystick), parameter modifiers, and signal analyzers. Internally these operate at a higher resolution than MIDI and are then converted to standard MIDI continuous controller messages at the output. You also get sophisticated clocking options for simultaneously altering the groove of all your step-sequencer modules. You can download the full version of Numerology from the Five12 Web site (five12.com), try it out in save-limited demo mode, then buy it online if you like the results.



### OPTION-CLICK By David Battino

## Easily Trigger Sound Bites Online or Onstage

Discover cool features lurking inside popular software products.

To present MP3s online, I've come to love Delicious Play Tagger (delicious.com/help/playtagger; free). You simply insert one line of code in your Web page, and a little play/stop button magically appears next to each MP3 link. You can grab the code from the URL above; there's also a "bookmarklet" version that adds the button to *other* sites you visit. It's a great way to browse songs and samples.

I thought Play Tagger would be ideal for

triggering sound effects in a theater but discovered it only works online. (For security reasons, Web browsers disable its call to the remote Flash file if you try to run it locally.) So I downloaded the component files and modified them to work locally. Now making a custom sound-board is as easy as typing up some MP3 links. You can download my examples at emusician.com. (For more about David Battino's work, visit batmosphere.com.)



I hacked Delicious Play Tagger so it can trigger MP3s without an Internet connection. I enlarged the buttons as well.

## From the EM Archives: Part 3

1986



**Beetle PR-7**

A dedicated hardware programmer, with cartridge port, for Yamaha TX-series FM synths.

1986

### Octave Plateau OP MIDI Guitar Controller

Besides having a standard magnetic pickup, it offered wired frets and other sensors for dynamics and string bending, and a built-in program stepper.



1986

### PalmTree Instruments Airdrums

A MIDI percussion controller with a pair of clavé-size handheld triggers.



# THIS MONTH'S SOUNDTRACK

These releases encompass a diverse range of styles and composition methods, from ambient and prog to jazz and new classical.



**THE SEASON STANDARD: SQUEEZE ME AHEAD OF LINE** (UN Sung)

This German band's fascinating release blends vocal-based prog-rock structures with elements of electronica. Music so intense and fast that it's soothing—think King Crimson at double speed.



**PARALLEL WORLDS: SHADE** (DIN)

Purely electronic, glorpy textures combined with seductive sequencing make this disc from Greek composer Bakis Sirros a real winner.



**RETURN TO FOREVER: RETURNS** (EAGLE ROCK)

On this 2-disc live set, RTF reinterprets some of its classic *Romantic Warrior*-era pieces during its 2008 reunion tour.



**BLACK MOTH SUPER RAINBOW: EATING US** (GRAVE)

Dreamy songs awash with psychedelic textures, and catchy melodies sung by vocoded voices. For fans of Boards of Canada.



**SUZANNE CIANI: GALAPAGOS: A MUSICAL ODYSSEY** (SEVENTH WAVE)

This DVD features 12 musical suites that enhance the stunning HD video footage of wildlife in the Galápagos Islands.



**1986 Blacet Research Time Machine**

An analog delay with voltage control-lable delay time, effect level, LFO rate and reset, modulation depth, and regeneration.



**Late 1980s**

**Lync Systems LN-4 MIDI Controller**

The instrument featured four MIDI outputs and a 49-note Velocity-sensitive key-board with pitch bend and an assignable wheel.



**1988**

**G. Finkenbeiner Glass Harmonica**

Originally invented by Benjamin Franklin, the bowls in this version of the instrument are made of pure quartz.

## IN STEP

FUTURE RETRO  
ORB SEQUENCER

Future Retro ([future-retro.com](http://future-retro.com)) has released the first in a new line of XS-orics for controlling its XS semi-modular synthesizer as well as other CV/gate and MIDI synths. The hand-built Orb (\$550) holds 256 16-step patterns governing note duration, pitch, accent, glide, loop point, time signature, and swing. You can record and edit everything on the fly, and the Orb automatically saves your changes. Patterns can be arranged to create 16 songs, and you can chain songs to play sequentially. Save everything to your computer or other Orb and Revolution units using MIDI SysEx dumps. Each Orb has 1/4-inch jacks for CV, Gate, and Accent outputs as well as MIDI In, Out, and Thru ports.



## FABULOUS SUBTRACTOR



## FABFILTER TWIN 2

Dutch software developer FabFilter ([fabfilter.com](http://fabfilter.com)) has upgraded its flagship subtractive synth plug-in. Twin 2 (Mac/Win, \$169) boasts enhanced oscillators and filters, a feedback-delay effect with additional filters in the feedback loop, and on-demand modulation with drag-and-drop routing. Its three oscillators host the usual waveforms along with white and pink noise. They feature ring modulation, hard sync, stereo panning, and polyphonic portamento. You can arrange the two multimode filters in series, parallel, or per oscillator and choose from FabFilter's full complement of 11 filter characteristics. Modulator sources include *x-y* controllers, LFO/step-sequencer modules, ADSR envelope generators, most MIDI message types, and envelope followers that track Twin 2's sidechain audio input.



## FRONT AND CENTER

# LEXICON IONIX U42S

The Lexicon ([lexiconpro.com](http://lexiconpro.com)) Ionix U42S USB 2.0 audio interface (Mac/Win, \$399.95) puts the controls right where you need them: between your computer keyboard and monitor. You get level knobs and LED metering for its four input channels and its main stereo output along with level knobs for two headphone outputs. Rear-panel XLR combo jacks serve as mic/line inputs with 48V phantom power and dbx high-voltage, low-noise mic pres on each channel. The left side sports high-impedance instrument inputs for the first two channels. You also get S/PDIF I/O and a single-port MIDI interface. Manufacturer's specs call out 44.1 to 96 kHz, 24-bit resolution, zero-latency monitoring, and low-latency ASIO drivers. Bundled software includes Lexicon's Pantheon II reverb VST/AU plug-in, Steinberg Cubase LE4, and Toontrack Ezdrummer Lite.

# ABLETON LIVE 8 AND SUITE 8

Live 8 and Suite 8 (Mac/Win, \$449 and \$699) add a host of features and a completely new sound library to Ableton's ubiquitous sequencing and performance software. Extracting and working with grooves is made easy with Groove Pool; the Warp engine now identifies transients and flexes the sample rather than the timeline; and you can group tracks, step enter MIDI, and draw crossfades. New effects include Looper for classic sound-on-sound recording, a vocoder, a frequency shifter, and new dynamics and distortion processors. The overhauled Operator and a new physical-modeled percussion synth, Collision, with a companion resonator effect, Corpus, beef up the premium-plug-in content. You'll find movies and more at the Ableton Web site ([ableton.com](http://ableton.com)).

## ALIVE AND WELL



## GET SMART

### Digital Music Doctor's Know It All



Digital Music Doctor ([digitalmusicdoctor.com](http://digitalmusicdoctor.com)) has released three new titles in its *Know It All* series of DAW video tutorials. The new videos (\$34.95 apiece)—which cover Cakewalk Sonar 8, Digidesign Pro Tools 8,

and MOTU Digital Performer 6—are available on DVD and as downloads. The tutorials begin with a quick-start overview of the application and then go into greater detail in separate sections on audio, MIDI, loops, and remixing. The Sonar 8 tutorial contains an additional section on new tools and techniques. The company's aim is to get beginners up and running quickly, then delve deeply into all aspects of the software.

### Human Factor's Brand, Buzz, & Success



Artist-development and music-production consulting firm Human Factor ([hfproductions.com](http://hfproductions.com)) has just published *Brand, Buzz, & Success: Your Guide to the New Music Industry*, by Blake Althen (\$12.95). The book aims to show

musicians, composers, and lyricists how to navigate the challenges of the 21st-century music business in order to become their own brand. After a brief look at past practices, the author focuses on the Internet, technology, production, marketing, and distribution. He goes on to explore opportunities in gaming and advertising. The emphasis throughout is getting your image out there and creating a buzz.

### MusicWorks Interactive's Finale DVD



Whether you're new to MakeMusic Finale scoring and composition software or have just upgraded to Finale 2009, composer Paul Gilreath will get you up to speed in his series of videos *The Finale 2008-2009*

*Tutorial DVD* (Mac/Win, \$49.95 [MSRP]) from MusicWorks Interactive ([musicworksinteractive.com](http://musicworksinteractive.com)). The 156 videos (running roughly 9 hours) use a custom Flash player and were captured in 960-by-600 format to avoid resizing and provide crystal-clear viewing. Gilreath begins with the basics: navigation, score setup, playback, and simple entry. He then covers alternative note-entry options; editing; articulations, text, and lyrics; advanced score layout; and time-saving extras.

## Sound Advice

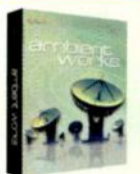
### EastWest Quantum Leap's Silk



*Silk* (Mac/Win, \$595 [MSRP]) is a 35 GB library from EastWest Quantum Leap of multisampled instruments from China, India, and Persia. Each instrument has its own interface displaying only the essential controls. The underlying engine is a

custom-designed, iLok-protected, standalone and VST, AU, and RTAS plug-in virtual instrument. Key features include scripted playing techniques, authentic microtuning and scale correction, convolution reverb, and interval sampling (where appropriate) controlled by the MIDI Mod Wheel. All recordings are by master musicians on their instruments. Check out the video and audio demos featuring Quantum Leap producer Nick Phoenix on the EastWest Web site ([soundsonline.com](http://soundsonline.com)).

### Big Fish Audio's Ueberschall Ambient Works



*Ambient Works* (Mac/Win, \$99.95) is the latest in Ueberschall's Nouvelle Series of pliable construction kits utilizing the Melodyne-powered Liquid Player virtual instrument. The 1.8 GB collection contains loops and individual hits arranged in 24 kits covering a cross-section of tempos and tonalities—

more than 780 samples in all. You'll find pads, strings, atmospheres, natural sounds, and percussion, and Liquid Player lets you bend both pitch and time to your needs. *Ambient Works* is distributed by Big Fish Audio ([bigfishaudio.com](http://bigfishaudio.com)); find full details and audio demos on its Web site.

### Wallander Instruments' Saxophone Collections



Saxophones 1 and 2 (Mac/Win, \$399 and \$299) are the latest releases in the Wallander ([wallanderinstruments.com](http://wallanderinstruments.com)) WIVI collection of resynthesized orchestral virtual instruments. Because the instruments are not sample based, you are not

limited by discrete Velocity zones, RAM requirements, or disk-streaming speed. WIVI automatically handles divisi voicing across multiple instruments in ensemble playing and gives you precise control over spatialization and performance expression. Saxophones 1 covers the traditional family of baritone, tenor, alto, and soprano sax. Saxophones 2 adds C melody, mezzo-soprano, C soprano, and soprano saxes to the mix. In both collections, you get three of each instrument. Wallander instruments are distributed by MV Pro Audio ([mvproaudio.com](http://mvproaudio.com)).

## OVERLOUD AUDIO TOOLS TH1

LOUD IS GOOD



TH1 v1.1 (Mac/Win, \$349 [MSRP]) is a fourth-generation suite of guitar effects from Overloud Audio Tools. It is distributed by Ilio ([ilio.com](http://ilio.com)). The standalone, VST, AU, and RTAS plug-in starts with 8 amps with 15 channels, SLR amp morphing, and VariFire gain character control; 21 cabinet models; and 3-D microphone positioning for its selection of 18 mics. That's augmented with 60 stompbox, pedal, and rack effects; Smart Controls with fully configurable MIDI mapping; and a browsable library with 12 factory sound banks. Overloud claims 4-sample latency for the amps and zero latency for all other modules. See for yourself by downloading the full-featured 14-day demo from the company's Web site ([overloud.com](http://overloud.com)).

## PMI AUDIO GROUP JOEMEEK FLOORQ

UNDERFOOT

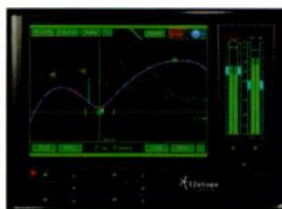
Noting that guitarists and bass players are buying



its JoemeeK TwinQ and threeQ just to process their instruments during performance, PMI Audio Group ([pmiaudio.com](http://pmiaudio.com)) put pedal to metal. The JoemeeK FloorQ (\$249.99) delivers the same optical compressor circuitry where it belongs onstage—under your foot. The unit has a high-impedance JFET input and a Class A preamp with input-level control, so that even with the compressor switched out, it can serve as a front end and level matcher for guitar amps by providing an additional 20 dB of gain. The floorQ comes with a 12V AC wall wart, but you can use virtually anything in your rig from 9V to 18V, AC or DC to power it.

## IZOTOPE OZONE 4

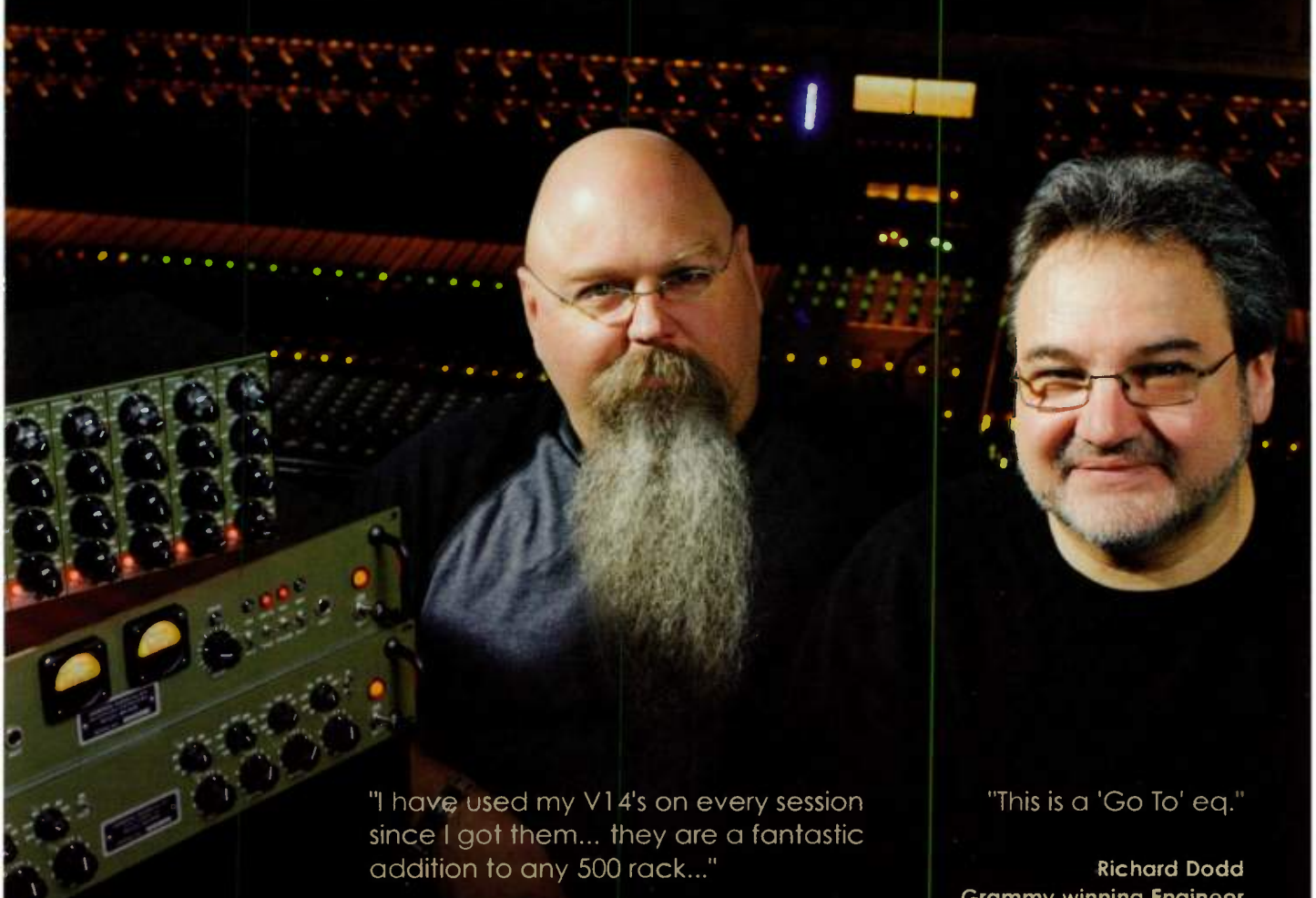
IN THE OZONE



Ozone 4 (Mac/Win, \$249.95 [MSRP]), the latest update of iZotope's mastering suite, packs seven top-notch tools and a user-configurable signal path into a single plug-in that is available in all DAW formats.

These analog-modeled, linear-phase tools cover the bases with loudness maximizing, multiband dynamics, stereo imaging, parametric EQ, mid-side processing, harmonic enhancement, dithering, and mastering reverb. You get extensive metering and spectrum analysis, sampling rates up to 192 kHz, and full-featured automation. The documentation goes beyond module specifics to help demystify the mastering process, and a new preset manager offers over 100 presets and MacroPresets to show the way. Download a 10-day trial version from the iZotope Web site ([izotope.com](http://izotope.com)).

# Field Tested.



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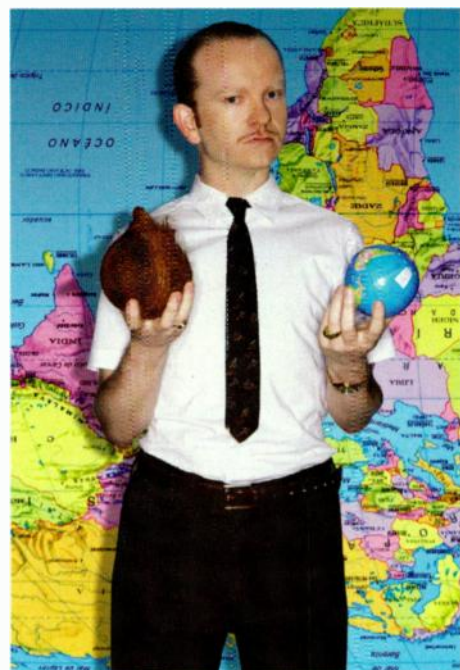


Home bases: Santiago, Chile and Cologne, Germany

Sequencer of choice: Digidesign Pro Tools LE 6.4

Go-to drum plug-in: Native Instruments Battery

Web site: [senor-coconut.com](http://senor-coconut.com)



COURTESY NACIONAL RECORDS

## Techno Latino

Señor Coconut's cut-and-paste, Latin-dance excursion.

**L**ike an inspired tape splice between '50s Latin bandleader Perez Prado and some overachieving club DJ, Señor Coconut matches cha-cha, merengue, and mambo rhythms with precision techno style. Layering vintage samples, programmed rhythms, vocals, and live instrumentation in Digidesign Pro Tools (LE 6.4 on an Apple Mac G4 PowerBook), he created exhilarating Latin-dance tracks for his sixth album, *Around the World* (Nacional Records, 2008).

By Ken Micallef

"I have cut and moved and touched manually every single sound you hear," says the German-born Señor Coconut (whose real name is Uwe Schmidt, but who also uses the alias Atom™), referring to his new CD. Replicating the percussion mayhem and full brass shouts of a Latin big band, Schmidt painstakingly organizes his basic ingredients into complex Latin arrangements.

"I work in layers within Pro Tools," he says. "First I arrange the rhythm section and then I go from the rhythmic to the melodic: the conga to the bass, then to the marimba, then to the trumpets, maybe at the end, the vocals. But I go four to eight bars throughout the entire song. The main process,

after I have recorded and programmed everything, is cutting and looping and arranging in Pro Tools."

Working under myriad aliases since the early '90s, Schmidt has produced numerous albums varying in style from glitch to pure techno to Latin. *Around the World* is a follow-up of sorts to Señor Coconut's *El Baile Aleman* (Emperor Norton, 2000), which covered the music of German electronic innovators Kraftwerk. Using his labor-intensive cut-and-paste aesthetic, Schmidt imbues the classic club hits of Daft Punk, Prince, and Eurythmics (as well as Les Baxter and Perez Prado) with frenetic Latin fever on *Around the World*.

"For songs like 'Pinball Chacha' or

'Kiss,' I come up with a guide template, a basic 4-, 6-, or 8-bar loop," Schmidt explains. "Once the song is arranged, I know what type of accent or rhythms are needed in each part of the song. Very often I switch from double tempo to half tempo, or I adjust the accents within the beat. As the track progresses, I try to find better-fitting samples, recordings [of the 1950s Latin variety], or I add live performances. If not, I program the rhythms very simply, maybe using Native Instruments Battery and the internal MIDI provided by Pro Tools. I program the rhythms and record live percussion over that. Then when I get all the melodic and harmonic information and vocals

together, I go bar by bar, looping 4- or 8-bar segments and cutting everything within those bars. I cut them into pieces, and after I decide on the core elements of the rhythm section, I cut all the other elements around that core element."

Not content to work solely in the box, Schmidt employs his "orchestra," which consists of eight musicians (brass, reeds, percussion) based in Cologne, Germany. They often replicate a Tito Puente or Perez Prado sample, anything from a timbale solo to a full brass section shout chorus. Schmidt layers the live instrumentation, samples, and programming with the kind of meticulous attention to detail that has become his trademark.

"To me," Schmidt confides, "making music is not about being organic or free, it always comes down to control and shaping things that you can generate in different ways. There has to be a human being giving it a certain shape and controlling it."

(For a free download of "Pinball Chacha," see the online bonus material at [emusician.com](http://emusician.com).)



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FIG. 1: In this screen from the K-Bow application, a player can monitor the output of the various sensors and control the DSPs, looping sequencer, vocoder, and volume levels of each module.

## K-Bow Bull's-Eye

Bowed strings have a new way to make electronic music. | By Scott Wilkinson

Electronic music is primarily a keyboardist's game. Most electronic instruments are keyboard oriented, and even the language of electronic music—MIDI—is based on keyboard parameters such as Key Velocity and Sustain Pedal. As a wind player, I've spent a lot of time configuring synthesizers to respond well to MIDI woodwind controllers, but it isn't always easy.

Bowed-string players have it even harder. Many bow gestures are completely lost in translation, never affecting any part of the electronic sound. However, that could soon change thanks to the K-Bow, which was designed by industry veteran Keith McMillen ([keithmcmillen.com](http://keithmcmillen.com)).

The K-Bow provides an electronic controller for all bowed-string instruments. Available for violin, viola, cello, and bass, the K-Bow is the same size, weight, and balance as a conventional bow, but it's packed with technology that senses and communicates position, Velocity, and other parameters, allowing all of them to control various aspects of a synth's sound.

The bow itself is made of Kevlar and carbon fiber embedded with two full-length loop antennas at right angles to each other. In conjunction with a small RF


(radio frequency) emitter that clips under the end of the fingerboard on any traditional instrument, these antennas enable the system to measure the distance between the bow and the end of the fingerboard. The emitter also includes four IR (infrared) LEDs that generate beams detected by a sensor in the bow frog (the piece that secures the bow hair at the end held by the player), which determines the distance between the frog and the fingerboard as well as the angle of the bow with respect to the top of the instrument.

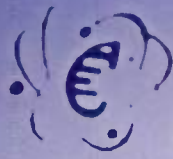
In addition to the IR sensor, the frog is crammed with electronics, including a grip-pressure sensor, a bow-hair-tension sensor, and a 3-axis accelerometer that measures the bow movement in three dimensions. Twenty op-amps precondition the sensor signals, which are then sent through a 12-bit A/D converter and processed by an 8-bit RISC CPU. All the information is transmitted wirelessly via Bluetooth from a transceiver controlled by a 32-bit ARM CPU. A 6 gm lithium-polymer battery provides a full day of use, and it can be recharged through a standard USB connector that also facilitates firmware updates.

The K-Bow comes with a software suite for Windows or Mac written in Cycling 74 Max/MSP (see Fig. 1), which lets users modify and extend it as they wish. Its

basic capabilities include calibrating the system and adjusting the sensitivity for different playing styles. It also includes a 4-track looping sequencer and 13 DSP functions such as reverb, wah, and so on, which can be applied to any audio signal from a pickup or microphone. Each bow signal can be mapped to control any of several hundred parameters, including a 6-channel phase vocoder applied to existing audio files.

Neural-net technology lets you train the software to recognize various gestures made with the bow. For example, you could "write" the number 2 in the air to select track 2 in the sequencer, or move the bow up, down, right, left, back, and forth at different speeds to trigger different drum sounds. You could also move sounds around with the surround processor, which can handle up to eight audio channels.

The violin K-Bow with fingerboard emitter and software retails for nearly \$4,000, which isn't cheap by any means, but it's a real bargain compared with the price of a good conventional bow. Even better, profits from the sale of the K-Bow go to the Beam Foundation ([beamfoundation.org](http://beamfoundation.org)), a nonprofit organization McMillen founded to promote new music. Making *and* supporting new music at the same time—now that's a double bull's-eye! 



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MYLES BOISEN

# Essential Reeding

Recording saxophones and other reed instruments.

By Myles Boisen

**T**he saxophone and its single- and double-reed cousins are some of the most challenging instruments to record. Their complex systems of tone production, based on multiple harmonic stops along a lengthy and often curved bore, require exacting microphone placement. Saxophones in particular can sound strident or tonally imbalanced when miked too close or with the wrong mic. The acoustic environment also has a big impact on the sound of any woodwind instrument, and key mechanisms can be noisy and idiosyncratic, presenting additional impediments to ideal recorded tracks.

Preparation, an understanding of woodwind mechanics, and knowing what to listen

for are all vital ingredients for successful reed recording. To begin, let's get acquainted with the members of the saxophone and woodwind families. For the purposes of this article I have omitted the flute, which is a woodwind but not a reed instrument, and focused on instruments that are in common contemporary usage.

**Curved saxes.** The common curved saxes—baritone, tenor, and alto—are functionally similar, although each has its own characteristic timbre and stylistic usages. The baritone typically provides the lowest voicings in jazz and R&B horn sections and is less commonly used as a solo instrument. The tenor and alto saxes are ubiquitous as solo and sectional instruments in a variety of musical styles. In

the right hands, the tenor has a warm, mellow low end and is very expressive throughout its entire range.

The lower range of the alto can be a bit stuffy- or muddy-sounding and difficult to capture clearly. But often this is not a major issue, because most alto players favor the effortless cutting power native to the mid to high ranges of the instrument. The curved soprano, which has the same fingering and range as the straight soprano, functions similarly to the alto and often has a different sound than its straight cousin due to the latter's forward-facing bell.

**Straight saxes.** Thanks to Kenny G, most people know what a soprano saxophone looks



like. Beyond its smooth-jazz reputation, the soprano is interchangeable with clarinet in trad-jazz circles and has also stayed contemporary in the hands of John Coltrane and Steve Lacy, among others. The soprano is similar in construction to the soprano and inhabits a high, piping range that makes it the piccolo of the sax family.

**Clarinets.** The bass, alto, B-flat, and E-flat clarinets differ from other woodwinds in this article in that they have a cylindrical bore rather than a conical one. This internal structure imparts a characteristic bright timbre to the upper harmonics, while the low notes tend to be subdued and woody. The bass and alto clarinets have a small upturned bell below the lowest pads to aid in volume and projection.

**Double reeds.** The English horn and oboe look similar to the clarinets. Their arrangement of two reeds that vibrate together, combined with a conical bore, grant a distinctive buzzy tonality that is fairly uniform throughout the entire range.

### Mic Matters

The first rule for miking any reed instrument in the studio is a simple one: *do not* stick the mic straight into the bell. This type of placement has its uses with live sound for isolation and reducing a player's movement, but it also brings out the tonal qualities you don't want to hear in a recording: excessive midrange, scratchy highs, uneven timbre, and loud low notes when most of the pads are closed.

To get the richest and most balanced tone for any woodwind, you want to incorporate a blend of the higher harmonics, which come from the highest holes near the mouthpiece, and the sound that develops around the edge of the bell.

### Curves Ahead

For the curved saxes, a handy visual placement aid is to imagine a straight line drawn from the top of the crook (the curved pipe that connects the horizontal mouthpiece to the vertical body) down to a spot about 3 inches in front of the bell. The most accurate and/or usable sound will normally be picked up by a microphone positioned somewhere along the lower half of this imaginary line.

Placing the mic lower and closer to the outer edge of the bell will give a big proximity-effect boost to the low notes. Putting the mic just above the lip of the bell and pointing into the bell will also emphasize the cutting power of the upper-midrange harmonics. Conversely,

it is also possible to tame the sound of a strident alto or tenor by moving the mic below the lip of the bell (see Fig. 1). I find that these kinds of placements work best for the lower saxes or to give soloists a larger-than-life sonic signature.

Placing the mic nearer to the high keys will yield an airier, neutral sound that represents what the player or a listener might hear. Higher placement also affords the performer more lateral movement before going audibly off-mic. But this higher positioning also picks up more breathing and mechanical key noise. The recorded sax sounds that please me most are usually the result of moving the mic an inch at a time along the aforementioned imaginary

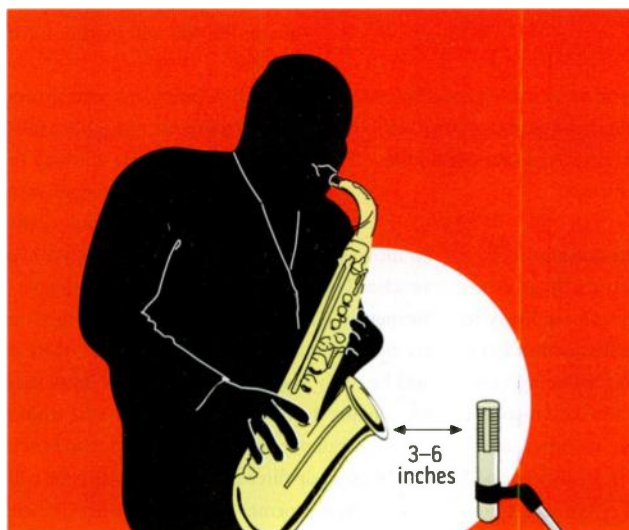


FIG. 1: You can accentuate the highs of an alto sax by positioning the mic's diaphragm partially beneath the lip of the bell.

line and then fine-tuning the position by rotating the mic to pick up more or less of the bell.

### Straight Talk

The principle behind miking the straight saxes, clarinets, and double reeds is not so different conceptually. It's all about getting even coverage of the entire length of the key mechanism, as well as blending in the bell sound.

Finding the sweet spot using a single microphone takes some adjustment, and capturing a good tonal balance may entail moving the microphone a foot away or more. For quieter reed instruments in ensembles, it may be advantageous to mic as closely as possible. But bear in mind that getting too close to the bell or any group of pads with a single microphone will cause certain notes or frequencies to dominate.

Of all the straight reeds, I have found soprano sax to be the most challenging to

record due to its inherently warm tonality. And because many soprano players don't point the sax at the floor, the bell sound disperses away from them and they don't hear the instrument as listeners do. To get enough highs and definition on this instrument, I often end up with the mic 1 foot to 18 inches away, aimed somewhere between the middle of the horn and the lowest pads (see Fig. 2).

If you're after a more intimate, detailed soprano track, try using two microphones: one at the lip of the bell and the other around the middle of the key assembly. As with any multiple-mic setup, it is important to check for phase coherence and to make sure that the

combination of two microphones doesn't color the midrange or produce phasing or chorusing effects when the sax moves around.

It is common practice to use two mics on a bass clarinet as well. Due to the length of the body, phase cancellation tends to be less of an issue, but it should still be checked. I have obtained good results using an XY stereo pattern with matching mics near the middle of the bore, as well as miking the bell and high keys separately.

When evaluating single- or 2-mic placement, it is vital to hear all the notes throughout the instrument's range reproduced evenly, with a pleasing tonal balance from airy highs to warm, low frequencies. Bear in mind that closer miking emphasizes high- and low-frequency details and yields a drier, more modern sound that may need added reverb. Distant placement favors a blended, organic, midrange tone with some room sound, which may be more appropriate for jazz and classical music, vintage sounds, and ensemble playing.

### Mic Matching

In most cases, I use condenser mics for reed recording. The higher saxes and clarinets, as well as the oboe and English horn, sound best to me when paired with a high-quality small-diaphragm condenser possessing flat frequency response. My preferred mics for this application are the Neumann KM 140 and Schoeps CMC6

CHUCK DAHMER



FIG. 2: Moving the microphone toward the mouthpiece accentuates the highs; toward the bell increases the cutting power and honk. Close-miking emphasizes warmth and high- and low-frequency details, while distance-miking yields a more natural sound.

series (with the MK4 cardioid capsule).

Overly bright mics such as those commonly used for drum overheads are likely to sound thin and also boost breath and mechanical noise. Obviously, with ranges that approximate the violin and trumpet, low-end response is not crucial on the higher woodwinds. A small-diaphragm condenser is also a good choice for miking the high keys or as a stereo pair in a 2-microphone setup.

For the lower saxes and bass clarinet, as well as for the bell mic in a 2-mic system, a warm low end is essential. For these applications, I prefer a large-diaphragm tube mic with minimal presence boost. My favorites include the Blue Bottle, the Neumann CMV 563 and U47, and various U47-inspired designs like the Neumann M147 and the Lawson L47 MP with its variable pickup pattern.

I have also gotten good results using ribbon mics on the lower saxes, especially for vintage-sounding R&B and reggae/ska horn sections. In addition, the softened high-end response of the better contemporary ribbon mics is a useful way to deal with any woodwind that sounds too harsh.

The Sennheiser MD 421 and Electro-Voice RE 20 are large-diaphragm dynamic mics regularly used for saxophones and brass in live sound settings. When a suitable condenser or ribbon mic is not available, this type of microphone makes a good substitute for studio work. (For more on large-diaphragm dynamic mics,

see “Capturing Big Sounds” in the November 2007 issue, available at [emusician.com](http://emusician.com).)

## The Player

Reed players are generally very sensitive to matters of tone. When it comes to reed preparation, recorded sound, and sound and placement in the room, honor the performer’s years of expertise with a few minutes of your patience and attention. I guarantee you will learn a lot if you do.

All woodwind and brass players move off-mic a bit. Moderate compression is one way to help maintain a consistent mix level with a player who tends

to move around. Two physical techniques I’ve practiced have also been helpful at keeping performers in place. First, put short strips of tape on the floor, in front of the toes of the shoes where it will be easily visible. Make sure your musicians literally toe the line after returning to the studio from a break or between takes. The second trick is to align a pop filter concentrically with the bell to give the performer a visual reminder of their ideal orientation relative to the mic.

Although saxes are less vulnerable than stringed instruments to changes in temperature and humidity, relative tuning throughout the range of the instrument can often be an issue. Sax players will often have to lip up or down to get certain notes in tune. Extreme dynamics can also produce variations in pitch that may escape the artist’s attention in the heat of the moment.

## Room Service

When it comes to the recording environment, woodwind musicians like to hear a lot of reflected sound coming back at them from reverberant surfaces in the room. This desire is often contrary to the engineer’s preferences.

The majority of clarinet and double-reed players point the bell of their instruments toward the floor, as do many soprano saxophonists. For these instruments, a reflective flooring material—preferably hardwood—is advantageous. For curved saxophones, reflective walls or ceilings are best for reflecting bell

sound back at the player. In an otherwise dead recording room, a sax player may prefer to play in front of a window or glossy-finished door to liven up their sound with some strong early reflections.

However, the sort of early reflections that make reed players smile can often vex engineers with phase cancellation, excess leakage, and other problems. The best room for recording reeds is one that has either a reflective floor or walls, but not both. Ideally the musician will be situated in the middle of the room, with no walls within at least 6 to 8 feet of the mic.

The worst sonic environment for woodwind musicians and recordists alike is the small, acoustically dead isolation booth. The low ceilings, carpeted floors and walls, small room size, and lack of high-frequency reflections are all negative factors for reed recording, especially for saxophones. If isolation of the instrument is a necessity, be prepared to mic as closely as possible.

Subtractive EQ around 300 to 450 Hz will help to minimize the boxy sound that characterizes most small booths. And added reverb will almost certainly be needed in the mix when recording in any kind of dry room. In this case, predelay and/or early reflections can be increased to make woodwinds sound more live without resorting to obvious long hall or church reverbs.

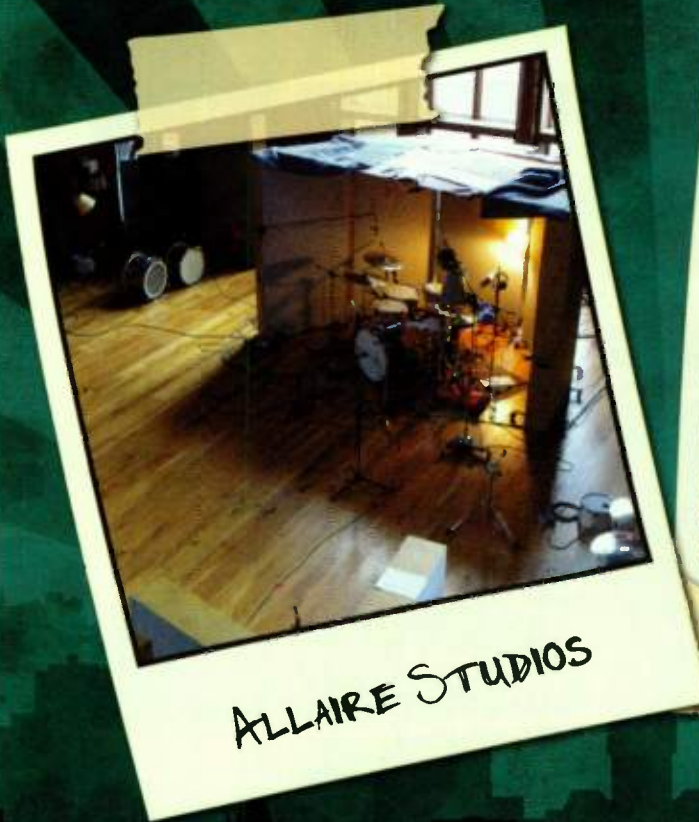
Besides sound bouncing off walls in a room, music stands can often introduce phase cancellation by directing a delayed waveform toward the microphone diaphragm. Out-of-phase reflections can be dealt with by changing the angle or height of the stand or by draping fabric over the stand.

## Reed ‘em and Smile

Despite all the potential pitfalls I have mentioned, great reed recordings are made every day. In addition to the tips offered here, you can find supplemental information in my article “Honk If You Love Horns” in the January 2000 issue and in the **online bonus material** at [emusician.com](http://emusician.com). 



*Engineer Myles Boisen ([mylesboisen.com](http://mylesboisen.com)) toots his own horn from Guerrilla Recording Studio/Headless Buddha Mastering Lab in Oakland, California.*



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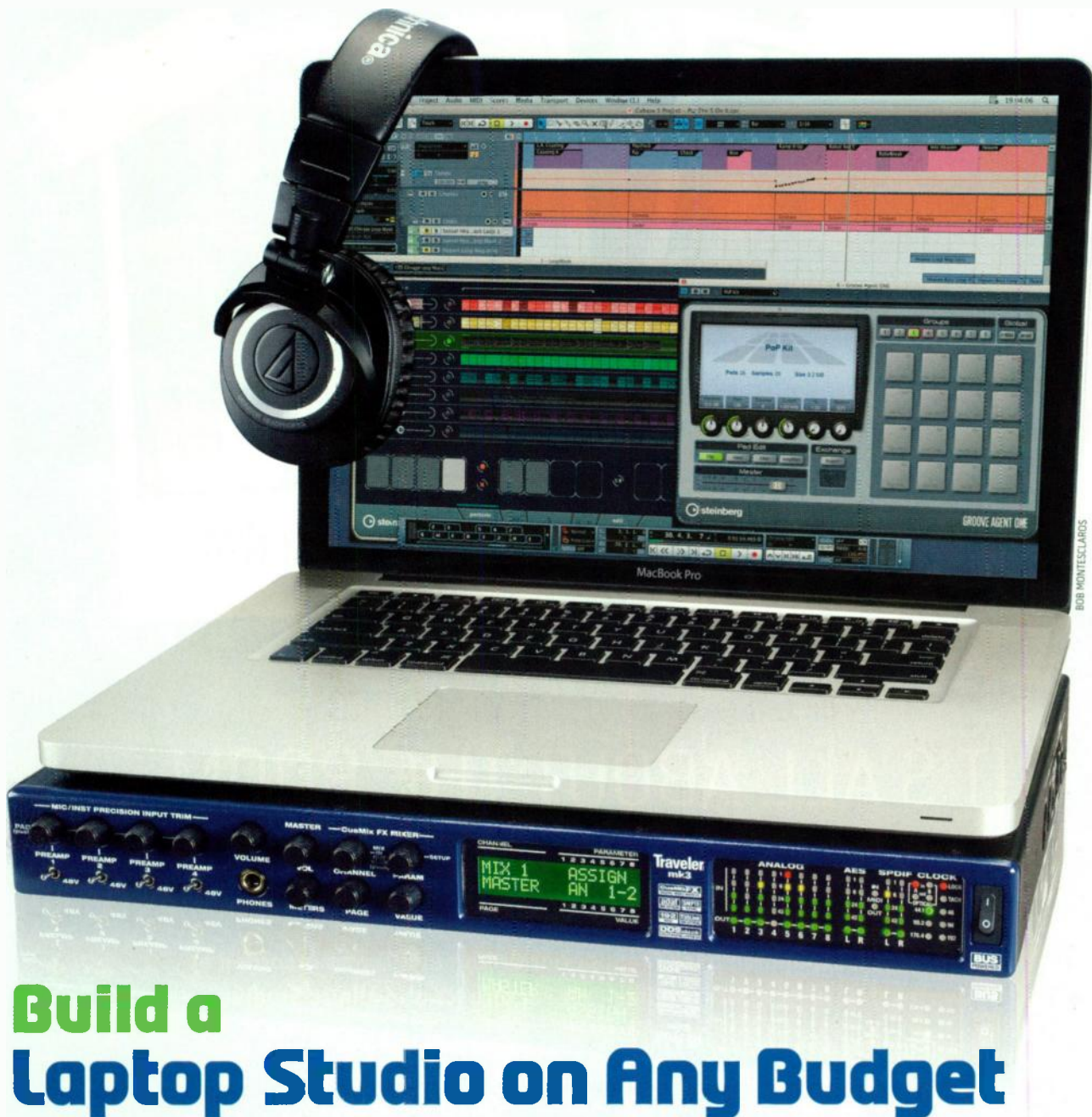
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BOB MONTECLAROS

# Build a Laptop Studio on Any Budget

Six setups for making music on the go.

By the EM Staff

**T**he latest laptop computers are powerful enough to make them a viable alternative to the tower in the personal studio, especially for musicians for whom portability is an important factor. Whether you are a touring musician, a weekend gigger, or just someone who wants to make music while on vacation, there's a lot you can do with just your laptop and a few choice pieces of gear. Play your cards right, and you can fit the whole setup into a gig bag or a backpack.

Although there are many reasons for choosing a laptop for music making, we've focused on three common scenarios: the software-only, all-in-the-box setup for the composer-performer; the songwriter's studio, which will need mics for recording voices and instruments; and the multitrack live-recording rig. Even if what you do doesn't fit neatly into

one of these areas, our reasons for choosing particular pieces of gear may help you with your own buying decisions.

For this article, we'll assume that you already have a laptop or are getting ready to purchase one. (With so many options and price ranges to choose from, it would be impractical to factor the computer into the cost of these studios.) In addition, we expect that you already have a digital audio sequencer that you're comfortable with, so we've designed these studios in such a way that for the most part, it doesn't matter what software or platform you prefer. (The exception, of course, is Digidesign Pro Tools, which requires that you use a Digidesign or M-Audio interface.) The prices, rounded to the dollar, are average street, such as you would find on the Web or in a brick-and-mortar store.

## The Software-Only Studio

By Len Sasso

In this section, I'll cover studios designed for creating music completely within your computer using your chosen sequencing software, virtual instruments, and sound libraries. At the budget end, the cost is considerably lower than that of the other studios here because it doesn't include mics, multiport audio interfaces, mic preamps, and ancillary recording hardware.

### Ultracompact on a Modest Budget (\$89 to \$1,000)

For starters, you need a way to hear your music. I suggest either the M-Audio IE-10 Professional Reference earphones ([m-audio.com](http://m-audio.com); \$89) or the Audio-Technica ATH-M50 closed-back headphones ([audio-technica.com](http://audio-technica.com); \$159). The earphones look cool and are certainly more convenient if you're sitting in the middle seat on a coach flight. The headphones offer higher fidelity, better isolation, and greater comfort. You can use either of them with your computer's built-in audio output. Because most sequencing software gives you complete operational access (including primitive note entry) from the computer keyboard and mouse, you can make a lot of music with nothing more.

Of course, using your computer keyboard for writing and mixing music gets old pretty quickly. If compactness is the ultimate issue, consider one or more of the USB Korg nanoSeries control surfaces ([korgnano.com](http://korgnano.com)). The nanoKey (\$49) has 25 Velocity-sensitive keys along with pitch-bend, mod-wheel, and octave-shift buttons, and its CC mode provides access to other MIDI Control Change messages. The nanoPad (\$59) is a 12-pad drum-synth controller. You can configure its pads to trigger chords, and it has an x-y pad with roll and flam modes. The nanoKontrol (\$59) provides transport buttons along with 9 sliders, 9 knobs, and 18 switches for mixing duties. The nanoSeries control surfaces are just over a foot wide and weigh less than a pound.

For a more conventional solution, I recommend the Novation ReMote SL Compact 25 ([novationmusic.com](http://novationmusic.com); \$285; see Fig. 1). If you don't need keys and want a smaller footprint, consider the Frontier AlphaTrack ([frontierdesign.com](http://frontierdesign.com); \$199). Both units are supported by most DAW software and will follow your selections to give you instant access to mixing and plug-in parameters. In addition, the ReMote SL's Automap Universal software lets you customize its plug-in mappings.

Finally, you can get the music out of your ear and improve on your computer's built-in



FIG. 1: The Novation ReMote SL Compact 25 delivers a lot of control in a small footprint.

audio while staying within your budget with the Alesis M1Active 320 USB ([alesis.com](http://alesis.com); \$99). This powered-speaker system doubles as a 16-bit, 44.1/48 kHz USB 1.1 audio interface with two inputs and stereo headphone output. In the best of all budget worlds, you can have everything here for about \$1,000.

### Full-Featured In-the-Box (\$2,700 to \$4,600)

With a higher budget, you can improve your audio experience as well as make your laptop serve as a viable home studio. For road work, you might want to upgrade your headphones with either the M-Audio IE-30 earphones (\$225) or a pair of Sennheiser HD 380 Pro headphones ([sennheiserusa.com](http://sennheiserusa.com); \$199). The IE-30s add dual-driver technology, separate canals for high and low frequencies, and an in-line level control. They boast the same noise isolation of 26 dB as the IE-10s, but a greater frequency

response—20 Hz to 16 kHz versus 13 kHz for the IE-10s. The closed-back Sennheisers claim ambient noise suppression of 32 dB, a maximum 110 dB SPL, and a frequency response of 8 Hz to 27 kHz, and they weigh 7.75 ounces.

For use at home, where you're not constrained by noise or weight, you have more speaker options. Nothing compares with being able to audition speakers unhurriedly in a good listening environment and, whenever possible, in your studio. Having said that, I recommend a pair of Genelec 8030As ([genelec.com](http://genelec.com); \$1,499 per pair). These biamped monitors give you a variety of mounting options to make them work in any space and orientation. For better low-end resolution, add the 7050B powered subwoofer (\$1,229).

Your range of options for an audio interface depends on your laptop's I/O. For multitrack audio, FireWire is the preferred choice. However, USB 2.0 is a reasonable alternative, especially if



FIG. 2: The MOTU UltraLite mk3 doubles as a FireWire audio interface and a standalone 10-by-14 mixer.

# Build a Laptop Studio on Any Budget



FIG. 3: The PreSonus FireBox audio interface combines portability with flexible I/O.

you're not concerned with high track counts when multichannel recording. For compactness and quality in a USB interface, consider the new U42S in the Lexicon Ionix line (lexiconpro.com; \$399). It has 24-bit, 96 kHz resolution and puts the controls and metering for its stereo output and two headphone channels conveniently next to your laptop. It includes S/PDIF digital I/O as well as a single-port MIDI interface. In case you decide to venture outside the box and do some live recording, you get four mic/line inputs with mic preamps and 48V phantom power along with DI instrument inputs on the first two channels.

If your laptop has FireWire, the MOTU UltraLite mk3 (motu.com; \$549) is a compact option that doubles as a standalone portable mixer (see Fig. 2). It features 24-bit, 192 kHz operation (96 kHz for S/PDIF) and has 10 inputs and 14 outputs, making it suitable for stereo, quad, and surround. Its onboard Cue-Mix FX digital mixer and built-in DSP effects provide no-latency processing with no hit on your computer's CPU. All controls are accessible from the UltraLite mk3 front panel. You can use FireWire bus power if your laptop supports it, or use the included power supply. MacBook Pro users should also consider the 2-channel Apogee Duet (apogeedigital.com; \$495). It lacks the multichannel recording and mixing capabilities of the UltraLite mk3 but gives you 24-bit, 96 kHz processing and the renowned Apogee converters.

For road work, you might prefer one of the compact control-surface options mentioned earlier. For home-studio use, I've chosen the Studiologic VMK-161 Plus keyboard controller (studiologic.net; \$620). Its 5-octave keyboard features full-size, weighted piano-action keys; a combo Pitch Bend and Mod Wheel joystick; transport buttons; 25 programmable knobs,

sliders, and buttons; and 3 pedal inputs. At 33 pounds, the VMK-161 Plus isn't something you'd jam into your backpack, but its Fatar Grand Touch action is the best I've played. For more DAW and plug-in management, you could add the Novation ReMote Zero SL (\$275), which has the same features as the Novation ReMote SL Compact 25 but without the keys.

With a little restraint, you can put this studio together for around \$2,700, or you can go

full bore, including the Genelec subwoofer, for around \$4,600. Either way, you'll have a pro-quality rig both at home and on the road.

## The Songwriter's Studio

By Mike Levine

If you're a songwriter, you want a laptop studio that lets you record your creations as fully realized arrangements, including drum tracks and MIDI keyboard parts. At the same time, you want to retain as much portability as possible. Here are two options, the first weighted toward low price and a small footprint, and the second offering higher quality and more flexibility.

### Budget Songwriter's Studio (\$1,162 to \$1,582)

This studio is designed to be both inexpensive and highly portable. Not including your mic stands, you should be able to fit it into a backpack. It will serve as a traveling rig—for

## Accelerate Your Studio



FIG. A: The UAD-2 Solo/Laptop card allows you to use Universal Audio's UAD plug-ins on your laptop.

If you're looking for excellent-sounding signal processing for your projects, you might consider a hardware accelerator such as the TC Electronic PowerCore Compact (tcelectronic.com; \$499) or the new Universal Audio UAD-2 Solo/Laptop card (uaudio.com; \$499 to \$799 depending on plug-in bundle; see Fig. A). The former connects to your laptop using FireWire, and the latter through the ExpressCard/34 slot (also known as the PCMCIA slot).

Because both units supply their own DSP, you can add effects through them without maxing out your laptop's CPU.

Not all laptops have an ExpressCard slot. Apple MacBook Pros do, but regular MacBooks don't. Because the new MacBooks don't have FireWire either, you're out of luck for running either the UAD or PowerCore devices on those machines.

On the PC side, many laptops now come with ExpressCard slots. Most have the larger ExpressCard/54 slots. The UAD-2 Solo/Laptop card is compatible with those as well. (Universal Audio includes an extender that fits on the card to make it sit more firmly in the slot.)

Both the UAD-2 Solo/Laptop and the PowerCore Compact come bundled with a range of plug-ins, and more can be added. The Solo/Laptop's plug-ins lean heavily toward emulations of classic hardware such as Pultecs and 1176s. The PowerCore's plug-ins run the gamut from hardware emulations to channel strips and even a synth. —Mike Levine

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by David Royer



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writing and recording in hotel rooms and on tour buses, for example—and also work well for the stay-at-home songwriter who wants to keep costs down but still produce solid demos. This setup gives you the ability to record vocals, instruments, and MIDI tracks. It doesn't provide for recording live drums, so I'm assuming that any drum tracks you'll have will be loop or MIDI based (or both).

For those whose laptops have FireWire ports, I suggest the PreSonus FireBox (presonus.com; \$299) as an audio interface (see Fig. 3). This half-rack unit offers two mic/instrument inputs, an additional pair of line inputs, a pair of S/PDIF inputs, MIDI In/Out, and six balanced outputs.

If you don't have a FireWire port, substitute an M-Audio Fast Track Ultra USB 2.0 interface (\$349). Although a bit costlier, it has four mic preamps, two of which are mic/instrument combo jacks, and six balanced line inputs and outputs, as well as S/PDIF I/O (giving you up to eight channels of audio input at a time). It also includes dual headphone amps. Both the FireBox and the Fast Track Ultra offer low-latency monitoring.

If you plan to run Pro Tools, you can substitute a Digidesign Mbox 2 Pro (digidesign.com; \$699) on FireWire-equipped laptops. Or you can run Pro Tools M-Powered on the Fast Track Ultra.

To keep things really portable, the MIDI controller for this setup is an M-Audio Oxygen 8 (\$119), which gives you MIDI input through USB and a diminutive 25-key keyboard. If you're a keyboard player, you might want to substitute a larger controller with more keys, such as the M-Audio Oxygen 49 (\$139), although your setup will be less portable that way.

To keep costs down, this studio has only two mics, both of the budget variety. The Sterling Audio ST51 (sterlingaudio.net; \$99) is a large-diaphragm condenser that will serve as the primary vocal mic. It was rated very highly in an EM comparison of budget

large-diaphragm condensers, where it did well on vocals and on acoustic guitar (see "Budget Mics, Big Sound" in the May 2008 issue, available at emusician.com). The other mic, a Rode



FIG. 4: The ribbon tweeter-equipped ADAM A5 can be supplemented with the Sub7 subwoofer.

M3 (rodemic.com; \$199), is a small-diaphragm condenser that is a versatile workhorse for instrument sources and can also be used as an alternate vocal mic. It's double the price of the ST51, but it adds flexibility and excellent sound quality to your studio.

For monitoring, I've chosen a pair of Mackie MR5 powered monitors (mackie.com; \$149 each), which garnered a 2009 EM Editors' Choice Award. These speakers offer a relatively flat frequency response and, with 5.25-inch woofers, don't take up much space.

For situations where you can't use the speakers, I've included two pairs of headphones. The primary set is the Sennheiser HD-280 Pro (\$99), which gives you a circumaural (closed) design for good sound isolation. I've also included the AKG K 77 (akg.com; \$49) for when you're recording with another musician or singer.



## Full-Featured Songwriter's Studio (\$4,068 to \$5,271)

I have expanded this setup to allow you to record live drums as well as vocal, instrument, and MIDI tracks with your laptop. Not only does it offer more recording possibilities than the budget studio, but it also has better-quality components. As a result, its price tag is considerably higher. In the interest of keeping it affordable, I've picked items that offer good value. This studio is still quite portable, but it will require more than a backpack to cart it around.

Because I'm configuring this setup for drum recording, I'll need more inputs than in the budget studio, but I also want quality mic preamps. I opted for the Focusrite Sapphire Pro 40 audio interface (focusrite.com; \$499). It has eight Focusrite mic preamps/instrument inputs on combo jacks, a pair of headphone buses, and low-latency monitoring, among other features.



FIG. 5: The Tascam US-1641 USB 2.0 interface offers plenty of features at an affordable price.

If you don't have FireWire, my USB 2.0 alternative is the M-Audio Fast Track Ultra 8R (\$499), which has eight mic preamps on combo jacks, a pair of front-panel instrument inputs, MIDI and S/PDIF on a breakout cable, and low-latency monitoring. It also can run Pro Tools M-Powered, which might be useful depending on your situation. If you want to run Pro Tools on a FireWire-equipped laptop, you could substitute a Digidesign 003 Rack+ (\$1,549), which includes eight mic preamps.

I chose the Novation ReMote SL Compact 49 (\$399) for the USB MIDI keyboard controller. It gives you 49 keys, 8 drum pads, programmable buttons and knobs, and Novation's Automap Universal software.

The mic collection starts with the Mojave Audio MA-200 (mojaveaudio.com; \$995). This large-diaphragm cardioid condenser gives you pro audio quality at a reasonable price, and it will serve as your primary vocal mic. For instrument recording, I've also included a matched pair of Rode NT5 small-diaphragm condensers (\$429 per pair). They work well on

acoustic instruments and as drum overheads.

I've added some classic studio mics for the drum kit: an AKG D112 (\$250) for the kick drum, and three Shure SM57s (shure.com; \$99 each). That gives you seven mics, covering kick, snare, one rack tom, and one floor tom, with an overhead pair and a room mic.

For monitors, I chose the ADAM A5 (adam-audio.com; \$399 each), which is relatively small, with a 5.5-inch woofer and a ribbon tweeter (see Fig. 4). In his A5 review in our sister magazine *Mix*, Kevin Becka said he was "nothing short of astounded by their balance, smoothness, imaging, and detail." If you're going to be doing a lot of mixing and you need more bottom end, you can always add the ADAM Sub7 subwoofer (\$549).

For headphones, I chose the high-quality Sony MDR 7509HD (sony.com/proaudio; \$189). In case you want to track a band, I'll add

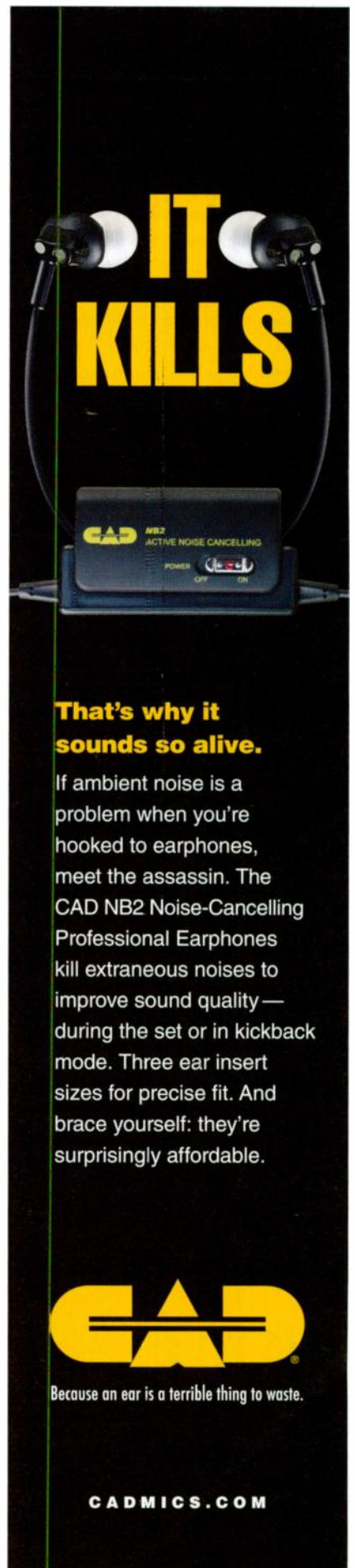
three pairs of the modestly priced AKG K77s (\$49 each), as well as an ART Headamp4 headphone amp (artproaudio.com; \$65) since you'll need extra headphone outputs.

## The On-Location Laptop

By Geary Yelton

The latest generation of portable recorders is perfect for recording live performances in stereo (see "Studio in Your Pocket" in the June 2008 issue). For on-location multitrack recording, though, it's hard to beat a laptop rig with the right peripherals. No matter what your budget, you should be able to assemble a compact, portable studio you could pack in a suitcase and toss in the back of your car or even carry aboard a plane, train, or subway.

At the very least, any laptop recording setup needs the means to get multichannel audio into your computer, and headphones to monitor what's being recorded. The ideal approach to capturing live performances is to record individual channels from the front-of-house (FOH) mixer. Most sound-reinforcement



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# Build a Laptop Studio on Any Budget

consoles have separate outputs or at least effects sends for each channel, which allow you to route the console's signals to individual tracks in your audio sequencer. However, you'll run into problems if the house mix uses more channels than your system can record. If that's your situation, you'll either need to have your own mixer handy, record from the house's mixdown buses, or decide which channels are most essential to capturing the live performance.

Your audio interface will be the biggest determining factor for how many channels you can record. The more inputs the interface has, the greater your flexibility in handling different scenarios. The trade-off is that once you go beyond eight channels, your system will be less compact. For most situations, your best choice will be an interface with balanced TRS inputs, which can handle unbalanced signals when the need arises.

To get signals from the FOH mixer to your interface will require either separate audio cables or a multichannel snake. For speed and

ease of setup and teardown, I highly recommend the snake. Keep in mind that its length will determine how far from the FOH mixer you can set up for recording.

For monitoring live sound, nothing beats a good pair of headphones. They should be durable enough for frequent transport and comfortable to wear for long periods. It's also important that they provide a good seal around your ears to prevent leakage from the outside world.

## Low-Budget Mobile Recording (\$446 to \$703)

Even if your budget is extremely limited, you might be surprised at what you could do with some



FIG. 6: The Ultrasonics HFI-580s are closed-back headphones that remain comfortable during long recording sessions.

carefully chosen purchases. Let's look at a minimal setup and work our way up from there. You can get by with as few as three essential items: an 8-channel audio interface, an 8-channel snake, and a pair of stereo headphones.

You'll find no shortage of interfaces that would suit your needs, but if your computer has FireWire, the least expensive one I've found that has at least eight balanced inputs is the Edirol FA-101 ([edirol.com](http://edirol.com); \$379). Two of its inputs are combo jacks, and it delivers 24-bit, 96 kHz audio to your computer.

If you can spare a few more bucks, the MOTU UltraLite mk3 (\$549) is an excellent choice. It gives you eight TRS inputs that handle balanced or unbalanced signals, as well as two additional inputs for instruments or microphones. As your budget grows, you could buy a second UltraLite and link them via FireWire, doubling the number of simultaneous channels you could record.

If your computer has USB 2.0 instead of a FireWire connection, the Tascam US-1641 ([tascam.com](http://tascam.com); \$399) is the most cost-effective solution that would serve your needs (see Fig. 5). It gives you numerous additional inputs and, like the others, handles 24-bit, 96 kHz audio. Unlike the others, however, its balanced inputs use XLR jacks rather than TRS.

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The least expensive 8-channel snake I've found is the Hosa CSS-803 (hosatech.com; \$47). It's almost 10 feet long and has molded TRS plugs on each end. If you need XLR plugs on one end, go for the almost-identical Hosa STX-803M (\$51). If that's not long enough, the 23-foot Hosa CSS-807 (\$65) has TRS plugs on each end, and the 23-foot Hosa STX-807M (\$69) is terminated by TRS plugs on one end and XLRs on the other.

For headphones, the least expensive pair

optimum recording quality, and it can be battery powered for complete portability.

For USB 2.0 users, I recommend two MOTU 828mkII USB interfaces (\$749 each). The interface handles 96 kHz sampling rates and has eight TRS inputs, as well as two combo inputs with mic preamps. Like other MOTU interfaces, it also includes the multitrack recording application AudioDesk (Mac).

You'll need either one 16-channel snake or two 8-channel snakes, but just so you'll have a

Just about any mic you'd use in the studio is appropriate.

that will do the job is the no-nonsense Yamaha RH2C (yamaha.com; \$20). They offer good isolation at a rock-bottom price. If you can afford more, step up to the Sony MDR-7505 headphones (\$85), which offer superior sound and swiveling ear cups.

### Bigger-Budget Mobile Recording (\$1,912 to \$4,025)

A more luxurious recording rig would record 16 channels simultaneously and include at least one pair of condenser microphones for capturing live room sound. Mics would also allow you to record performers in an environment without a house mix. With a bigger budget, you could also afford better headphones and a higher-quality snake.

When I started looking for a FireWire or USB interface with 16 TRS inputs, I was surprised to find none at all. The obvious solution, then, was to pick a matching pair of units with fewer inputs. Several models are designed to link together for expanded systems, and you could go beyond 16 channels if you needed more.


FireWire users have the greatest number of choices. Consider the new Focusrite Saffire Pro 40 (\$499 each). A pair of them provides 16 balanced inputs on ¼-inch/XLR combo jacks, physical knobs for each input, and 4 separate headphone outputs.


Another very nice selection is a pair of MOTU Traveler mk3s (\$849 each). The Traveler features 192 kHz A/D/A converters for

backup, I recommend getting three 8-channel snakes. I like the ProCo MT8BQBQ-20 (procosound.com; \$143), a 20-foot snake terminated by TRS plugs at each end. If you need more length, longer models are available.

For monitoring your recordings, I like the Ultrasonics HFI-580 headphones (ultrasonics.com; \$199; see Fig. 6). They produce higher levels with less power than most headphones and block outside sounds quite effectively. They scored well in EM's headphone roundup "It's in the Can" in the July 2008 issue.

Last but not least expensive are microphones. Just about any mic you'd use in the studio is appropriate for live recording. You might want to steer away from ribbon or tube mics because they tend to be more susceptible to damage during transport, and you'll probably be moving them a lot. Small-diaphragm mics are a good choice for a compact, portable rig. If you're going to buy two to record in stereo, you should probably select a matched pair.

The Røde NT5 is an especially good deal when purchased as a pair (\$429 total). They're versatile and excel at handling high sound-pressure levels. If you want to go all out, though, get a pair of Neumann KM 184s (neumannusa.com; \$1,699 total). These cardioid condensers handle serious SPLs, and they're renowned for their sonic detail. With interfaces, snakes, headphones, and mics in hand, you'll be ready to record practically any club or concert performance. 



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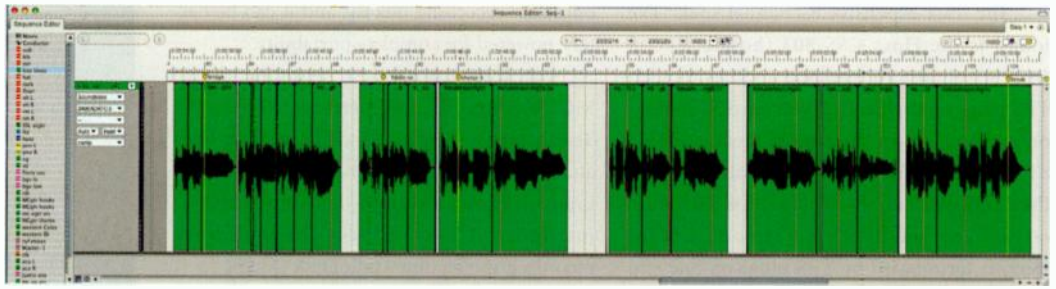


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➔ FIG. 1: Many times, a vocal comp for a 3-minute song will have scores of edits.



# Bits and Pieces

Creating composite vocal tracks using butt splices, fades, and crossfades.

By Michael Cooper

**M**ost of the hit records of the past couple of decades owe their winning lead vocals to composite-editing techniques. For those unfamiliar with composite editing, this essentially involves recording multiple takes of a vocal performance and then combining the best parts from each take into one composite, or *comp*, take. This creates a superior vocal track where every line is the very best that the singer is capable of delivering.

For example, you might choose take 2 of a vocal track as your best overall take. Let's suppose the first and third lines of the first verse were sung great on this take, so you leave them intact. The second and fourth lines sucked, however, so you need to replace them with parts of other takes where those lines were performed better. You copy and paste the second phrase from take 5 and the fourth phrase from take 6 into take 2 at the same points in the song's timeline at which they originally occurred. Now all four lines of the first verse in the edited take 2 rock!

This technique can be used throughout a song to build a vocal comp where every line is the best it can be. But why limit yourself to pasting entire vocal phrases? You can also paste a single word or syllable or even one vowel or consonant. This might seem like overkill at first, but an emotive growl on a vowel sound in an other-

wise flawed take can be pasted into a comp take to bring a phrase to life. On a 3-minute song, it's not uncommon for me to paste together more than a hundred pieces of multiple vocal takes to build a vocal comp, sometimes resulting in four or more edits on a single line (see Fig. 1).

Some DAWs offer highly useful features that streamline the process of copying and pasting together a comp track (see the review of MOTU Digital Performer 6.02 in the April 2009 issue, available at [emusician.com](http://emusician.com)). This functionality is a godsend for quickly assembling the best parts from multiple takes. The challenge, however, is to make all the transitions from one audio region to the next sound as transparent as possible, without any pops, clicks, abrupt changes in volume, dropped consonants, or other unnatural artifacts ruining the flow.

In this article, I'll show you how to choose the best splice points for joining two audio regions together for a seamless performance. I'll also discuss the art of applying a crossfade to a butt splice (two audio regions assembled together so they are contiguous) to eliminate artifacts at the splice point. The focus here will be on comping lead vocals, but many of the same techniques can also be used for comping background vocals and instrumental tracks.

I'll start with the basics but progress quickly to tips even experienced DAW users should

find helpful. I'll use Digital Performer 6 (DP6) to illustrate my points, but most DAWs can be used to execute the same basic techniques.

## What's Wrong with My Butt?

Indiscriminately joining two audio regions (or Soundbites, in DP's parlance) together to form a butt splice can cause a pop or click at the splice point (the common, adjoining edge at the transition point) between them. As a Soundbite's waveform progresses from positive to negative amplitude and vice versa, it passes through a zero-amplitude crossover point where it is—for a tiny fraction of a millisecond—dead quiet. If one or both of two Soundbites are not at their zero crossover points (and silent) where they are joined, an instantaneous level change happens (see Fig. 2). The resulting square wave creates a click or pop.

After you paste two Soundbites together in your comp take, zoom the waveform display down to the sample level. Use DP's Roll tool to drag the splice point to the right or left as needed until you find a spot where the amplitude of both Soundbites is zero.

Finding a common zero crossover point may not be enough, however, to avoid creating a pop or click. Often you must choose a point where the phase of both Soundbites is trending in the same direction. For example, if the leading

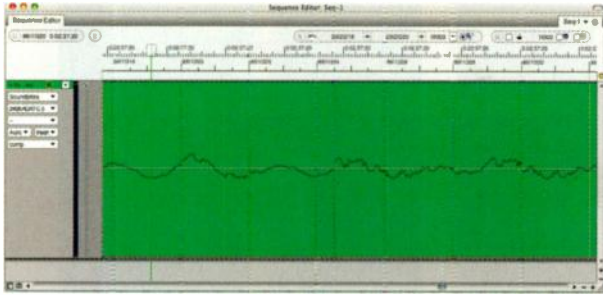


FIG. 2: The leading Soundbite of this butt splice ends with zero amplitude. But because the following Soundbite's amplitude is not zero at the splice point, an instantaneous jump in level occurs, causing a click.

Soundbite is transitioning from positive to negative amplitude at the splice point, the following Soundbite should be as well; in this case, a click or pop will often occur if the following Soundbite immediately trends toward a positive amplitude. A click is most likely to occur when the slope of both waveforms at the splice point is very steep (indicating high-frequency content) and the immediately preceding and following amplitude crests are high (indicating loud volume). Conversely, you can often get away with opposing phase cycles at the splice point when both waveforms are low amplitude and gently sloping (see Figs. 3a and 3b).

There will be times when you simply can't find an edit point that fits the criteria just mentioned and a crossfade at the splice point won't get rid of the resulting click. In those instances, choose a splice point where one of the Soundbites has zero amplitude. Then edge edit the other Soundbite to its closest zero crossover point where its phase trend will be the same as that for the first Soundbite at its splice point (see Figs. 4a through 4c). Trimming will initially cause a slight gap between the two Soundbites. Select one Soundbite and, in DP6, Ctrl-drag it toward the other to make it snap to it, eliminating the gap. Usually, trimming and snapping a Soundbite thus will offset it from its original articulation by only about a millisecond along the timeline—not enough to affect the vocal's groove on a short phrase.

Don't be afraid to break the rules if it sounds good. Suppose the singer sang a consonant such as *t* or *k* so softly that it becomes masked by accompanying instrumental tracks. A Soundbite pasted immediately before the consonant might cause a click if you're not careful. But if the click is soft enough, it might actually accentuate the soft consonant it abuts

sounds too soft, you can always copy the same consonant from somewhere else in the song where it was sung louder. Then simply paste it over your soft consonant to replace it. Can't find a loud-enough consonant anywhere? Make a time-range selection across the one that's too quiet, press Command + Y to make the selection a separate Soundbite, and then increase the Soundbite's nondestructive Bite Gain setting to make it louder. (The Bite Gain setting is located in DP6's Sound File Information dialog box; open the dialog box from the Studio menu or by pressing Ctrl + Option + Command + A.)

### Double Cross

In most cases, careful placement of a splice point will preclude the need for placing a crossfade across it. The fewer crossfades you have in your Project document, the less CPU drain there will be on your computer and the quicker your document will open.

That said, crossfades are sometimes necessary to eliminate clicks, pops, and other artifacts. Your DAW will likely give you a choice between making an equal-gain or equal-power crossfade at the splice point. I find that equal-gain crossfades typically yield better results when the adjoined Soundbites contain similar material (as is the case when comping vocals). In any event, you'll want to be able to adjust the length of your crossfades to achieve the best results. Open DP's Create Fades

in a way that sounds totally natural. Likewise, an extremely mild pop might make an immediately following *b* or *p* sound more intelligible. Just be sure to check the result both on headphones and on full-range monitors (or a subwoofer) to get a feel for whether it might sound excessive or artificial on other monitors.

If a consonant still

dialog box (in the Audio menu) and choose Fade Selected Time Ranges.

Most of the time, a crossfade spanning only 5 or 10 ms of material is all that's needed to clean up a splice point. Particularly stubborn artifacts, however, may require a 30 ms crossfade or longer. Just be aware that a long crossfade will likely create an audible doubling effect across its span because both Soundbites will voice during the crossfade. That can be either distracting or a nice creative touch, so judge the results carefully.

If even a long crossfade doesn't clean up the splice point, try skewing its crossover point (that is, the point where both Soundbites are equally faded) so that it's slightly earlier or later in the timeline. In DP's Create Fades dialog box, grab the crossfade's center handle (the crossover point) and drag it to the left or right of center. This creates an asymmetrical crossfade across your time-range selection (see Fig. 5).

To appreciate what this accomplishes, remember that a crossfade includes material in both joined Soundbites beyond the splice point: material after the end of the leading Soundbite and material before the start of the following one are both voiced. (This is true only if each Soundbite's edge was trimmed and there is more material in each parent file beyond the

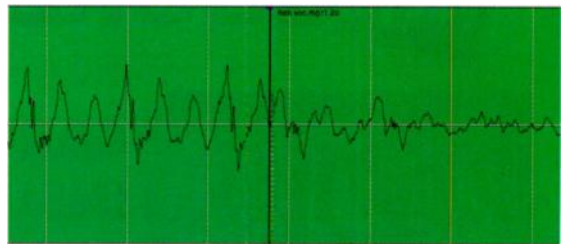


FIG. 3a: This vocal's waveform at the splice point is whipsawed from a negative direction in phase to a positive direction at the zero crossover point, causing a click. The steep slopes and high amplitude crests immediately to either side of the splice point make an audible click more likely to occur.

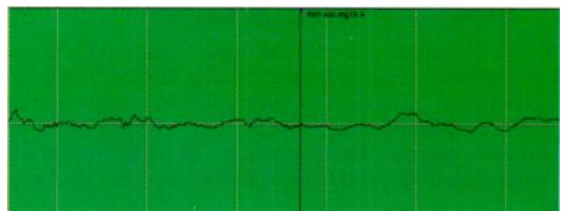


FIG. 3b: Although the phase trend at the splice point reverses from positive to negative, the amplitude crests and slopes of the two waveforms to either side of the splice point are mild enough that an audible click doesn't occur.

# Bits and Pieces

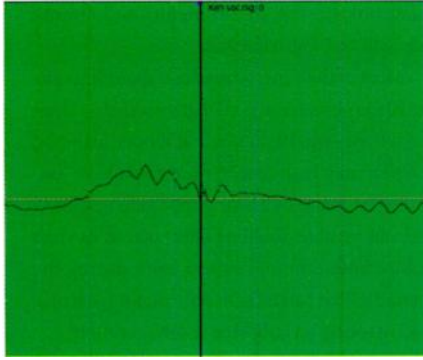


FIG. 4a: A zero crossover point cannot be found anywhere near the desired splice point for these two Soundbites.

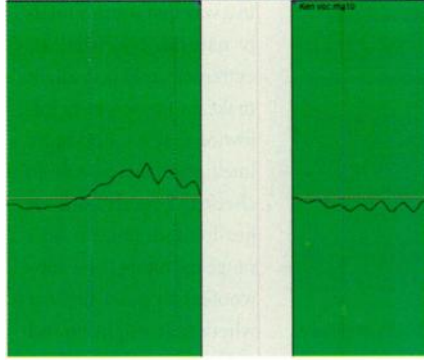


FIG. 4b: Around half a millisecond is trimmed from the start of the following Soundbite so that it begins at a zero crossover point.

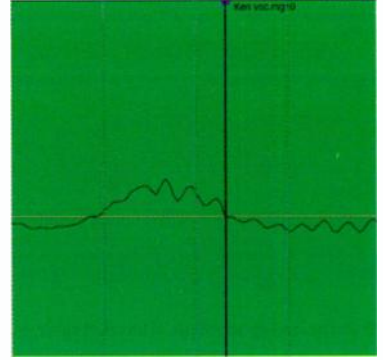


FIG. 4c: The following Soundbite is then snapped to the end of the leading Soundbite. Now both Soundbites exhibit zero amplitude and the same phase trend at the splice point.

current edge.) Creating an asymmetrical crossfade results in an exponential curve that accentuates one Soundbite with respect to the other for a longer period during the transition (including beyond the splice point) between them.

For example, moving the crossfade's center handle to the right of the splice point makes the

material at the end of the leading Soundbite sound more pronounced and softens material at the start of the following Soundbite. Conversely, moving the center handle to the left of the splice point emphasizes the following Soundbite's material while understating the leading Soundbite's content during the transition.

Let's examine a situation in which an asymmetrical crossfade would be useful. Suppose the leading Soundbite ends with a soft consonant most clearly enunciated past the splice point. It's followed by a Soundbite that begins with a hard glottal stop on a vowel. Each Soundbite sounds fine on its own, but when combined, the transition between them sounds unnaturally abrupt. You try moving the splice point later to capture more of the consonant, but that only makes the glottal stop sound harder. Worse, you can't find a later splice point that doesn't cause a loud click.

The solution is to drag the crossfade's center handle to the right of the splice point. This emphasizes the soft consonant by fading it less than the glottal stop at the splice point. It also softens the hard glottal stop by reducing its volume at the splice point more than a symmetrical crossfade would.

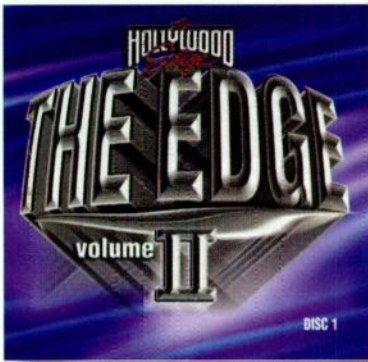
## X-plosive

A serious blemish at the start or end of an otherwise fantastic Soundbite might prompt you to disqualify it from use in your vocal comp. Don't be so quick to throw it away.

A subwoofer-popping plosive (such as a hard *b* or *p*) at the start of a Soundbite can often be tamed by applying a short fade-in there. Make the fade-in long enough to span the high-amplitude transient at the start of the plosive but not so long that the consonant at the start of the lyric becomes so quiet as to be unintelligible. An undesirably hard glottal stop on a vowel sound can also be softened the same way.

The end of a vocal phrase may be contaminated by drum bleed from headphones

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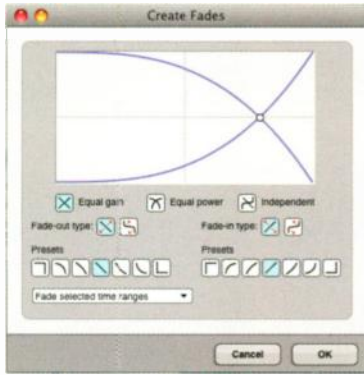



FIG. 5: The center handle of a crossfade is dragged to the right here in DP6's Create Fades dialog box to create an asymmetrical crossfade. This emphasizes the leading Soundbite's material at the splice point.

or the singer tapping their foot to the beat of the music. If a simple edge edit sounds too abrupt—cutting out prominent room tone captured by the omni mic you used, for instance—try applying a short fade-out at the end of the Soundbite to reduce the noise in volume.

Make it a point to supersize your vocal comp by zooming in both vertically and horizontally. You'll be able to see quiet noises such as that caused by an HVAC system, the singer brushing an arm against their shirt, or a neighbor's car door slamming shut in the distance. Trim your Soundbites and fade them in and out as needed to eliminate these distractions. You might not hear them now, buried in a rough mix, but you will after compression and limiting are applied during mixdown and mastering.

### I'm Fading Fast

Comping a vocal takes time when many edits are needed. That's partially because the success or failure of any one technique used on a particular edit is hit-and-miss—on a difficult splice, you might have to try a few different things to see what works best. Truth be told, it's not uncommon for me to take several hours comping a single lead-vocal track for a project whose budget allows.

It's the mastery of multiple techniques and the attention to detail, however, that allow you to do a ton of edits on a vocal track and have it sound completely natural. And killer. 

Visit EM contributing editor Michael Cooper at [myspace.com/michaelcooperrecording](http://myspace.com/michaelcooperrecording). Every lead vocal there is a comp composed of between 70 and 140 edits.

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## Just for Kicks

Bass drum track not working? Try these tested tweaks. | By Jim Aikin

**T**he pulse of the kick drum anchors just about every pop-music arrangement. So getting the kick to sit perfectly in the mix is essential. Finding the right rhythm for the song is vital, too—but assuming you’ve nailed the rhythm you want, what can you do if the kick still isn’t working?

Depending on how the kick sound is being generated, you’ll have various tools with which to massage it or thrash it into submission (see Fig. 1 and Web Clips 1 and 2). If it’s embedded in a sampled loop, for instance, you may need to extract it to a separate audio track or copy and paste the kick audio into a sampler. The methods for doing that are beyond the scope of this column. Assuming the kick is

available as a separate sample, I’ll show you some good ways to mess with it (see “Step-by-Step Instructions”).

### Overtone Control

A kick that sounds firm and full when soloed may have too much beater click when placed in the mix. You can pull back the highs using EQ or a gentle lowpass filter, but then it may not cut through enough. Apply a peaking filter (which emphasizes the overtones at its peak frequency without cutting any) to the highs or mids to move the kick forward in the mix. This is often a better approach to making it more audible than simply increasing its overall level at the mixer.

If the kick is mostly boom, with no mids or highs that can be brought out with EQ and filtering, apply some distortion to add overtones. Heavier industrial styles call for a lot of distortion, but a little gentle distortion may work well to fill in the kick sound in grooves that are not quite so in-your-face.

### Tune Out the Mud

If your kick has a ringing sustained tone, when you add a bass track you may find that the kick and bass are fighting with one another, producing sonic mud. This can happen when the tone of the kick is in a different key from the bass line.

One way to deal with this is to retune the kick up or down a few half steps so that it’s in



### STEP-BY-STEP INSTRUCTIONS



**Step 1:** Choose a filter type that will bring out the best in the kick.



**Step 2:** To add missing overtones, apply some gentle distortion.



**Step 3:** Retune the kick up or down so that it’s in the same key as the song.



the right key. If the kick sample is assigned to multiple MIDI keys, you can do this by editing the sequencer track. If it's assigned to only one key, use the coarse tuning parameter in the sampler.

If the bass line is harmonically active, you may still find the frequencies fighting. In that case, try shortening the decay or release segment of the kick's envelope so its tone stops more quickly. In one song, I used a sustaining kick tone in the intro, tuned to the key of the song, but when the bass entered, I switched to a kick that used the

envelope. The ear is very sensitive to attack transients, so even a small adjustment can make a big difference.

### It's About Time

Advancing a MIDI event just slightly ahead of the beat makes it feel more aggressive. Delaying it just slightly behind the beat creates a laid-back feel. To experiment with this, start with a perfectly quantized beat and put your sequencer in loop playback mode. In the piano-roll editor, switch off the snap-to-grid option, zoom in so that the

a double-click or flam sound. This can work well in a hip-hop groove, as it can add a hypnotic feeling that something is slightly wrong. But if you don't want it, grab the MIDI notes that are triggering one of your two kicks and drag them forward or backward, moving them all by the same amount, until the flam disappears.

Sometimes I use radically different kick sounds in different parts of a song, strictly for the sake of variety or surprise. Another way to keep the kick fresh is to automate subtle sonic changes during the course of the song. For instance, you might add more distortion at a key point in the chorus, or lengthen the attack time slightly to enhance the more hesitant sound of the bridge. And don't forget to edit the kick pattern when it's time for a fill.

*Jim Aikin writes about music technology, teaches classical cello, and writes fiction. Visit him online at [musicwords.net](http://musicwords.net).*



FIG. 1: The beat heard in the online audio example was created in the Step Sequencer grid in Image Line FL Studio 8.

## Getting the kick to sit perfectly is essential.

same sample and played the same rhythm but with a shorter envelope decay so that the tone was tighter.

Speaking of envelopes, some musical styles call for a softer, more muffled kick. You can easily tame an aggressive kick by lengthening the attack time of the kick's amplitude

mouse can make very small timing changes, and scoot individual kick-drum notes forward or backward.

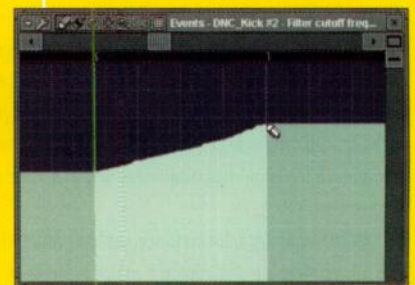
This technique can be especially useful if you choose to layer one kick with another. The attack transients in the two kicks may not line up perfectly, which could result in

Step 4: For a softer tone, increase the envelope attack time slightly.



Step 5: FL Studio's Step Sequencer window has a strip chart for shifting the timing of notes.

Step 6: Automating sonic changes can keep the kick fresh.



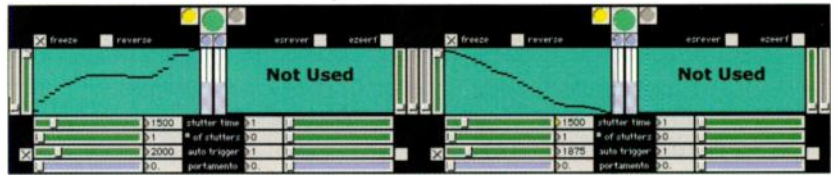


FIG. 1: Here the left channels of two instances of Stutterer are used to process the left and right audio channels.

## A Different Slice

Enhance your beats with stutter effects. | By Len Sasso

**S**tutter effects slice incoming audio into discrete chunks and then manipulate those chunks in various ways before spitting them out, usually with some tempo-synced delay. The simplest example arranges the slices in a different order while ensuring that only one slice plays at a time. More-complex options include reversing, slowing down, pitch-shifting, rapidly repeating, and other DSP effects.

Stutter effects are most often applied to percussion tracks, but here I'll discuss some interesting alternatives. I'll use three different plug-ins for my examples: SupaTrigga (Mac/Win; free) from Bram de Jong of Smartelectronix ([smartelectronix.com](http://smartelectronix.com)), Ableton Live's built-in Beat Repeat (Mac/Win; [ableton.com](http://ableton.com)), and Stutterer from the Cycling 74 Pluggo collection (Mac/Win; [cycling74.com](http://cycling74.com); \$199).

### Get a Grip

To understand how a particular stutter effect works (and they often seem inscrutable at first), start by feeding it a recognizable sequence of medium-length notes spaced the same distance as the slice size. Then manipulate the plug-in's parameters one at a time to discern their effect.

With SupaTrigga, for instance, set the granularity to 8 slices/measure and record a major scale of 16th notes at eighth-note intervals. Set all the sliders full left, then play the clip while increasing the Rearrange Prob. slider. You'll notice that more and more notes are out of place but that even at 100 percent, only about half the notes are rearranged, and never the first two (the inscrutable part). Increase the remain-

ing sliders individually and in combination, and you'll immediately grasp how this plug-in works. Notice that except for Silence, processing is applied only to rearranged notes (see Web Clip 1).

Stutter effects are a great way to add interest to repetitive short grooves. To keep the effect subtle, I use SupaTrigga as a pefader send effect, and I'll often feed it from two or more tracks. I'll then automate the track and return levels to produce variations that don't conform to the groove length (see Web Clip 2).

### Repeat After Me

With Live's Beat Repeat, you focus on a specific time slice within an interval ranging from a 32nd note to four bars. When the interval selected is greater than one bar, only the first bar is processed. You can filter, repeat, repitch, and decay the captured slice. You introduce an element of chance into Beat Repeat by decreasing the Chance setting and increasing the Variation setting.

Because Beat Repeat zeros in on a single time slice, you'll often want to use several instances of the plug-in, and the easiest way to do that is to use a Live Effect Rack and insert the Beat Repeats in parallel chains. Then set each Beat Repeat's output mode to Gate so that it outputs only the processed audio. Use the rack as a send effect or add an empty chain to mix in the original audio, then use it as an insert effect.

In Web Clip 3, I've used Beat Repeat to mangle a speech clip. A handy trick for this kind of processing is to set the clip's tempo so that the phrase fills one measure, then focus Beat Repeat on the fragment

you want to process. Beyond stuttering repeats, you might use Beat Repeat to add subtle accents and transpositions to music tracks (see Web Clip 4).



### The Utter Stutter

Cycling 74 Stutterer is the ultimate stuttering effect; it gives you complete control over separate left- and right-channel stuttering. Unfortunately, two important right-channel features—freeze and the pitch graph—don't work, so you're better off using a separate instance for each channel (see Fig. 1).

Stutterer has three critical settings: stutter time, autotrigger time, and number of stutters. Both times are measured in milliseconds, so for tempo-based results you need to make your own calculations. For example, at a tempo of 120 bpm, the settings on the left side of Fig. 1 will capture a 3-beat (1,500 ms stutter time) slice of audio from each bar (2,000 ms autotrigger) and repeat it once (1 # of stutters). You can also turn autotriggering off and click on the buttons at the top center of the GUI to capture slices manually. The graph in the middle sets a pitch contour for each stutter relative to the gray part of the slider to its right.

Stutterer is especially useful for shifting time relationships between a processed and unprocessed track within a mix. In Web Clip 5, for instance, only the guitar track is processed, and it uses left-channel 1-measure autotriggering, right-channel 1/2-measure autotriggering, and quarter-note stutters.

*Len Sasso is an associate editor of EM. For an earful, visit his Web site at [swifkick.com](http://swifkick.com).*

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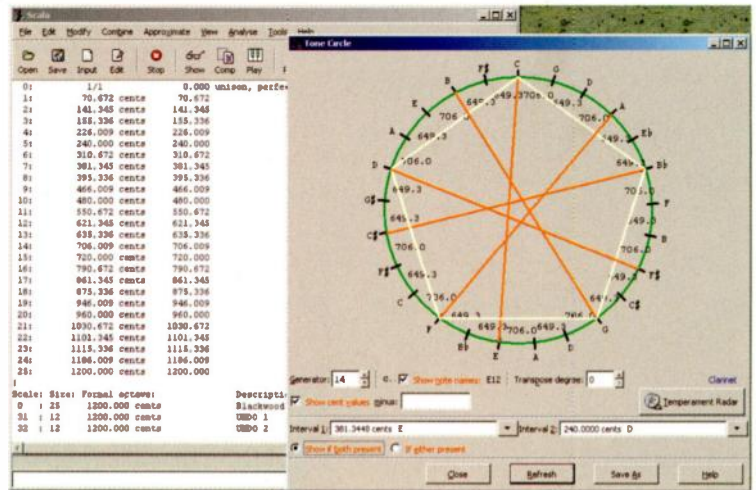


FIG. 1: Scala's main user interface (left) is text based but includes graphic tools, such as a graphic analysis (right) of intervals in the 25-note scale visible on the left.

## Scaling Up

Microtuning your soft synth is easy with Scala. | By Jim Aikin

For musicians who want to explore alternate tunings, computer-based synthesizers are good news indeed. Many software instruments can load small data files that let you tune each key on a MIDI keyboard to any frequency.

Several file formats are available with which to define tunings. The owner's manual may tell you what types your synth supports; however, this is such an esoteric area that some manuals skip the specifics, so you may get better information by posting questions on a user forum.

### Start with Scala

The best way to create and edit tuning files is with Scala, a free, cross-platform program packed with utilities for defining and analyzing microtonal tunings (see Fig. 1). Scala uses menus and pop-up windows, but some of its deeper features require that you type commands in a command line.

The Scala Web site ([huygens-fokker.org/scala](http://huygens-fokker.org/scala)) contains an archive of more than 3,000 tunings in the SCL format as well as a page giving full details on that format. You'll find tunings by Harry Partch, Wendy Carlos, Ivor Darreg, Easley Blackwood, and other visionaries, along with historical tunings and tunings used in music cultures from around the world.

Some synths can load SCL files, others require a translation into the TUN format, and still others

respond to messages in the MIDI Tuning Standard bulk-dump format or in their own SysEx format. Scala supports them all. To consult a long list of both old and new instruments of all these types, type `show synthesizer` in the Scala command line.

### Get in TUN

Both SCL and TUN files are in an easy-to-read ASCII text format, so you can open them in a text editor and see how the tuning is defined. The SCL format can specify the frequencies of notes either as ratios of some base frequency, which is how tunings are defined in just intonation, or in cents. (A cent is 1/100 of an equal-tempered semitone.) An SCL file defines only one range of frequencies, which are then repeated up and down the keyboard. A range doesn't need to consist of 12 notes, however.

A TUN file defines the pitches of all 128 MIDI notes in cents relative to the standard MIDI note tunings. If middle C is left at its default tuning, for instance, the TUN file will include the line `note 60=6000`. If it's tuned a quarter tone (50 cents) sharp, the line would read `note 60=6050`. High-precision values are also included in the file for synths that can tune to intervals smaller than a cent.

To translate an SCL file into a TUN file in Scala, create a directory called `tun` in your Scala directory in which to store the new files. Load an SCL file (or cre-

ate a new tuning of your own), and type the following commands:

```
cd tun
set synth 112
set map_freq 440.0 69
set middle 60
send/file filename.tun
```

The first line changes Scala's output directory to the `tun` folder you've created. The 112 in the second line is a Scala code that sets it to output in the TUN format, and the third line specifies the frequency in hertz of a MIDI key (in this case, 440.0 Hz for MIDI Note Number 69, which is key A3) that will be used as the reference or center of the tuning. The fourth line sets the starting point for the range of frequencies defined in the SCL file. In the last line, substitute whatever file name you like. After the TUN file is saved, you can load it into your soft synth using whatever menu command the synth provides for that purpose.

The musical possibilities offered by alternate tunings are vast, evocative, and little explored. Earlier composers had to tune their instruments laboriously by hand (or build new ones) to hear these sonorities, but today we can do it with a few mouseclicks.

*Jim Aikin writes about music technology, teaches classical cello, and writes fiction. Visit him online at [musicwords.net](http://musicwords.net).*

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STELLAR 1B - Based on **UNIVERSAL AUDIO M610** mono tube mic-pre

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FIG. 1: Chip Schutzman specializes in Internet-based marketing.

# Q&A: Chip Schutzman

An expert's advice for marketing yourself on the Web.

**W**ith all the media attention given to file sharing and the travails of the major labels, the Internet's role in the distribution and sale of music has been highly visible in recent years. But what's been left out of the conversation—something that's equally if not more important for independent musicians—is the use of the Net for marketing and promotion. Chip Schutzman (see Fig. 1) is the president of Miles High Productions, an L.A.-based Internet marketing firm ([mileshighproductions.com](http://mileshighproductions.com)), and has a great deal of expertise on the subject of promoting indie musicians on the Web.

By Michael A. Aczon

**Chip, why don't you start by telling the readers what your company does.**

Miles High Productions is an online marketing and promotions company for music artists and brands. We work with hundreds of artists—both independent and established—in all popular music genres and from all walks of life. I started the company in late 2002 and early 2003 after observing that so many record labels at that time were downsizing their staffs. I thought it would be a good idea to support both major and independent labels with cost-effective online marketing services to supplement their marketing endeavors.

**How would you describe viral marketing and how it developed?**

Viral marketing is the [Internet] equivalent of word of mouth, and it developed in community forums and chat rooms whenever someone mentioned, rated, or gave an opinion about a product and was reinforced by others.

**Was there a groundbreaking viral campaign—maybe a key artist or recording project—that sparked the viral/Internet marketing revolution?**

I'm sure there are many, but Phish and Dave Matthews Band are two bands that come immediately to mind, primarily due to the timing of the Internet boom and the popularity these two bands had around 1998, when fan communities were emerging online. Pearl Jam's 10 Club is another example of loyalty and a brilliantly executed and operational fan club.

**What are the most important elements in an online marketing campaign?**

Each artist and each online marketing company have different opinions of what the key elements are. The Miles High Productions method is to ensure that all our artists have press coverage in Webzines, online and satellite radio stations, online press wires by way of press release and early prerelease buzz on tastemaker blogging sites, and with Podcasters worldwide. Another large percentage of concentration we handle for the artist is our social-network marketing program; keeping the social sites updated on an ongoing basis as opposed to solely for the term of the online marketing campaign.

**Are there basics that every artist and label has to**

### take care of at a minimum?

By all means, yes. The more content an artist, manager, or label can contribute to their fan base online, the more traffic and return visits will occur to create a stronger loyal fan base. Song descriptions, blogs, new photos, and keeping social-networking sites refreshed all help. Artists and labels should ensure that any releases of music have been entered into the music databases (Muze/All Music Guide) and to all digital retailers on their distribution partners list.

### Becoming known to a lot of people is one thing, but making money is quite another. Are there basic strategies musicians should employ to get people to hit the buy button?

Every artist should have two elements on the front page of the site: (1) an email opt-in sign-up list for future news, updates, tour date announcements, and

any other news the artist wishes to promote, and (2) some form of promotional advertisement on the front page of the current product or item the artist is promoting (usually tour date links or merchandise or CD links to their online store). If the fan enjoys it, they will buy it and support the artist, in most cases.

### Is there a way for artists to incorporate special products, prizes, giveaways, and contests into their promotional efforts? Have you seen specific effective uses of these methods that independent artists have used to develop their audience?

Lately I have seen artists offering a free download in exchange for signing up on their mailing list, which I feel is a great way to build up their potential consumer base over the course of their career and develop an initial relationship with the potential fan or consumer. This is cost-effective and efficient to set up as opposed

to finding a sponsor for a grand prize giveaway.


### When developing an online marketing and audience relationship strategy, it seems that the long-term approach of getting a potential audience to receive multiple impressions to attract them to your home page followed by getting them to return to that page is the key. Do you have advice on how to do that?

My position is that content is key. So is the interactivity the artist will have when connecting to their fans. The more photos, songs on social-network-site playlists, artist blog updates, and news that can be dispersed and updated to these pages, the more fans will revisit the page to look at new content and/or hear new songs and provide feedback to the artist.

### How far in advance should an independent artist be planning their Web site and online campaign?

I always advise independent artists who are doing marketing on their own to first and foremost create a marketing plan and start working on their sites anywhere from 3 to 12 months in advance of a CD release date. For online marketing and online presence, an artist should start reaching out to bloggers and Podcasters approximately six to eight weeks in advance of the CD, while mailing out press kits to media about three to four months in advance of a CD release date.

### The YouTube video is now being tossed around by industry people as the new introduction point for an emerging artist, much like the radio single was in the past.

Videos in general are becoming increasingly more popular with music fans wanting to find new music on the Web, as there is a visual element attached to the music which can help drive interest towards a particular song or artist. Viral marketing by using the YouTube embedded links has become popular on music blogs and personal music fan pages, and they help attract new audiences. Nowadays videos are much less expensive to produce due to lower-quality standards for Internet use and artists [see "You Ought to Be in Pictures" in the November 2008 issue of EM, available at [emusician.com](http://emusician.com)]. 

*Michael A. Aczon is a 25-year veteran of the music industry, teaches music-industry courses at two colleges in California, and is the author of The Musician's Legal Companion, 2nd ed. (Cengage Publishing, 2008).*

## To Do or Not to Do

**W**hen asked for a list of dos and don'ts on the subject of musician Web sites, here's what Schutzman had to say.

**Do** create a marketing plan for your Web site—decide what elements are key in promoting yourself.

**Do** ask the right questions when you're searching for a Web designer, such as "How much will it cost?" and "How long will it take to build the site?" Also check into tools that will allow you to update the site yourself (content-management services), and provide the designer with all the key elements so that he or she can deliver a great Web site for you.

**Do** ask for advice from fellow musicians and compare Web-site-designer pricing and testimonials before you choose one. Create a Web-site style that will be complementary to your music (for example, a black background for goth/industrial/heavy metal bands, light pastels for female singer-songwriters, and so on) so that it appeals to the tastes of the demographic audience you are attempting to reach.

**Do** include the basic sections on your Web site such as tour dates, news, blog, music and videos, biographical info, and an online store, and present them in a detailed and organized manner.

**Do** place the two most important elements—an email opt-in sign-up area and a link to buy your

latest CD release—on your home page.

**Do** make your site interactive. Create a forum or chat room element; engage your fans to participate and respond.

**Don't** use an all-Flash-embedded site, because it will not show up as easily in Google and other search engines.

**Don't** clutter up the home page, because it's usually a first impression/introductory page to invite people into your "home." Instead, make them feel comfortable and offer a great navigation bar to allow them to easily search your Web site for content.

**Don't** use MySpace or Facebook as your official artist site. It's okay to use them as temporary sites but inadvisable to rely on them as your main Web presence.

**Don't** include many links that will pull the fan away from your site. Keep visitors on your site as long as possible by engaging them with compelling content and by keeping the content updated frequently.

**Don't** think that once your site is up and going your work is done. Your work is just beginning in regards to marketing your music and your content to the public.

**Don't** name your site incorrectly. Your URL should be simple and easy to remember (for example, your band name or your own name).

## Digidesign Pro Tools 8 (Mac/Win)

Pro Tools gets a makeover and then some.

By Eli Crews

### »» PRODUCT SUMMARY

**digital audio sequencer**  
**upgrade** \$149.95–\$249.95  
**M-Powered** \$249.95

**PROS:** Excellent plug-in collection. Easier comping. Multiple automation lanes per track. Ten plug-ins per track. Enhanced track hiding.

**CONS:** LE and M-Powered still lack automatic delay compensation. A.I.R. plug-ins are RTAS only. Ambiguous Export Tracks dialog box.

FEATURES	1	2	3	4	5
EASE OF USE	1	2	3	4	5
QUALITY OF SOUNDS	1	2	3	4	5
VALUE	1	2	3	4	5

Digidesign  
digidesign.com

»» In our reviews, prices are MAP or street unless otherwise noted.

#### GUIDE TO EM METERS

- 5 Amazing; as good as it gets with current technology
- 4 Clearly above average; very desirable
- 3 Good; meets expectations
- 2 Somewhat disappointing but usable
- 1 Unacceptably flawed



**A**mong DAWs, Pro Tools is a ubiquitous behemoth. From M-Powered to LE to HD, Pro Tools is the software you're most likely to find running in studios of all sizes. A major upgrade like version 8 is always enough to get the whole pro audio community abuzz with excitement, and this reviewer is certainly no exception. New features include user-interface enhancements, integrated score and MIDI editors, new Elastic Audio functions, a sizable loop collection, 20 all-new effects plug-ins, 4 all-new software instruments, and more.

### Gray Is the New Black

My first task was to install Pro Tools LE 8 on my studio's 8-core 2.8 GHz Mac Pro. I received my update information by email, which prompted me to log in to Digidesign's user area. I entered the activation code and downloaded the 4.1 GB application installer, which includes several software instruments and sample libraries. Installation was straightforward and speedy, and I didn't need to have a previous version already installed.

The most noticeable difference in Pro

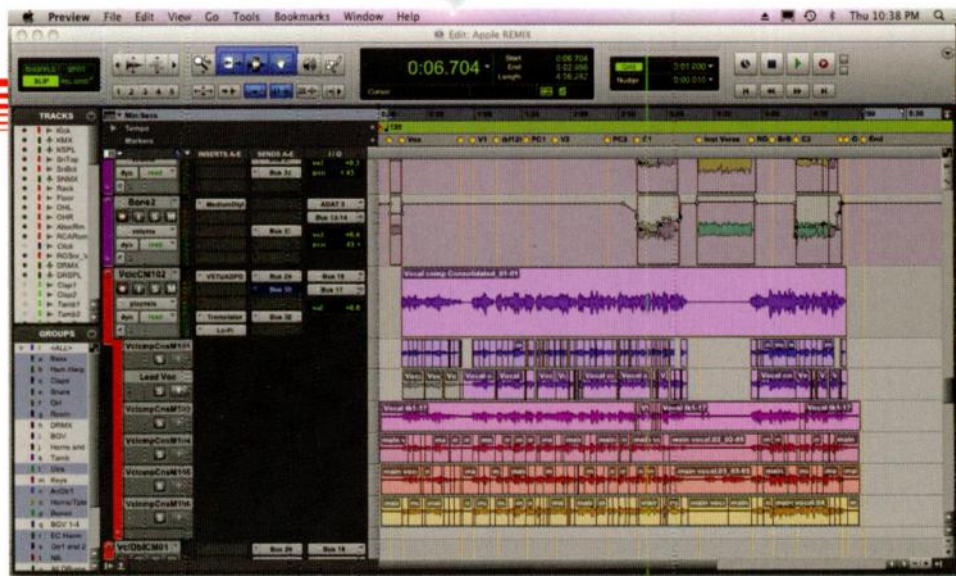
Tools 8's graphical user interface is the color scheme, which now emphasizes shades of gray. In the Mix window, you can color code each full channel strip using the color-palette preferences. In the Mix and Edit windows, moving tracks around is significantly easier, because brilliant yellow highlights indicate their new locations. Bus and I/O assignments are also highlighted when you change them.

Other GUI improvements include knobs for panning (instead of sliders), more-detailed metering in the Mix window, multiple lanes of automation data per track in the Edit window, and more-customizable (and recallable) window configurations. The new Universe view allows you to navigate your entire session from a miniature overview in the Mix window. My only gripe is that it's harder to see the difference between active and inactive tracks.

### Not Just Another Pretty Face

Pro Tools 8 has loads of new features, as evidenced by the 131-page PDF *What's New in Pro Tools*. It's impossible to tackle them all in this review, so I'll focus on the most important ones.





**FIG. 1:** With an updated GUI and loads of new features and plug-ins, Pro Tools 8 changes the face of Digidesign's powerful DAW software. The new Playlists Track view speeds up the comping process.

Pro Tools LE and M-Powered now have 48 simultaneous stereo or mono tracks, which you can expand to as many as 128 mono or 64 stereo tracks using one of three optional Toolkits (\$395 to \$1,995). Although that's quite a few more tracks than the previous version, non-HD users still don't get automatic delay compensation. You can have up to ten inserts per channel, twice as many as before. You can sweep the mouse over multiple tracks in the Track List to show or hide them.

One of my favorite new features is the Playlists Track view, which displays each playlist in its own lane below the main playlist (see Fig. 1). A new key command for copying a selection from an alternate playlist to the main playlist makes comping much, much easier. The key commands Shift + S, Shift + M, and Shift + R now solo, mute, and record enable the currently selected track or playlist. Another handy new feature: Command + Option + Z (Mac) or Ctrl + Alt + Z (Win) now restores your last selection if you accidentally deselect a region or section of the timeline.

The new Elastic Pitch function lets you change pitch in a recorded track on a region-by-region basis. You manually select the notes

you'd like to change and then type the plus or minus value (in semitones or cents) in a dialog box. You'll start to hear artifacts if you go too far up or down, but it works quite well within a semitone or two.

The only feature that took a backward step is the Export Tracks dialog box. Parameters that don't apply aren't sufficiently grayed out, making it hard to see what attributes your export will have. In addition, Export Tracks doesn't default to the last-used folder like it used to when you click on the Choose button.

### A.I.R.-Plugs

One of the upgrade's most exciting aspects is its new plug-in bundle. Although many of these plug-ins deliver the same capabilities that other major platforms have had for years—automatic panning, a real-time multitap delay, and multiple reverbs, for example—the sheer number of them is impressive, and they all sound really good (see the [online bonus material](#) at [emusician.com](#)). The various distortion processors are real standouts. Bomb Factory/Tech21 SansAmp, for instance, sounds remarkably like my beloved SansAmp PSA-1 rackmount unit. A.I.R. Frequency Shifter is a Bode modulator

that's similar to a ring modulator but with more control. I also liked A.I.R. Stereo Width, a powerful yet simple-to-use M-S encoder/decoder with several useful modes. Other notable additions are A.I.R. Spring Reverb, A.I.R. Talkbox, and TL Metro, a feature-laden alternative to the standard Click plug-in.

In addition to the effects and utility plug-ins, Pro Tools 8 comes with four new virtual instruments, a previous one (Structure Free), and an updated one, all developed by A.I.R. (Advanced Instrument Research, a company under the Digidesign umbrella). Xpand!2, which blends sampling and synthesis, updates Digidesign's unique instrument plug-in. Mini Grand (piano), DB-33 (Hammond organ), Boom (drum machine; see Fig. 2), and Vacuum (virtual analog synthesizer) are all totally new. They all sound great and come in handy, especially for those of us without large software instrument libraries. The only problem I encountered is that DB-33 introduced crackly glitches running at 96 kHz, but it ran fine at lower sampling rates.

One great thing about all A.I.R. plug-ins is that they utilize the mouse scroll wheel, a feature I'd like to see on all plug-ins. A minor drawback for Pro Tools HD users is that A.I.R.



FIG. 2: Boom, one of four new virtual instruments, is a drum machine with a very intuitive interface.

instruments and effects run only as RTAS plug-ins, so they don't take advantage of TDM cards' processing power and low latencies.

### MIDI Consultation

Since my work revolves primarily around audio recording and mixing, I wanted the opinion of someone who uses MIDI to compose on a daily basis. Steve Kirk, a member of the fantastic Bay Area band Orchestra Nostalgico, is a prolific composer for film, commercials, and video games. He uses a myriad of software-based sounds either as placeholders for real instruments or as part of the final arrangement. Steve had switched from Pro Tools to MOTU Digital Performer a few years back, citing more-complex MIDI requirements than Pro Tools could handle at the time. He recently upgraded to Pro Tools 8, hoping that what he considers superior audio editing in Pro Tools would be matched with ample MIDI implementation. He wasn't disappointed, and in fact he said he was incredibly impressed with the new MIDI features.

Steve found the new MIDI Editor (available as a tile at the bottom of the Edit window or in its own separate window) an elegant interface for accessing his complex layers of MIDI data. The MIDI Editor window can follow the main Edit window's tool and operation modes (Slip, Shuffle, Grid, or Spot) or have its own unique setup (see Fig. 3). It also has its own track hid-

ing, Timeline view, and Conductor rulers. In addition, Steve really appreciated the new Score window, which is loosely based on Digidesign's Sibelius notation software, which he uses to

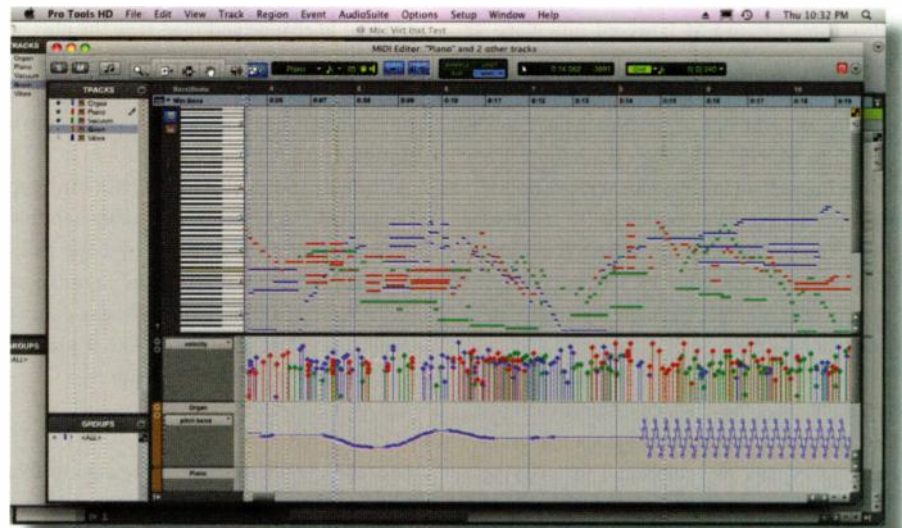


FIG. 3: The new MIDI Editor window makes editing various MIDI parameters on multiple tracks a breeze.

flesh out his scores. His only (very modest) complaint was that there is only a global split point in Notation view; he'd like to be able to split the default Grand Staff on a local basis.

### Cut to the Chase

Shortly before I finished this review, I received a new HD2 Accel system, which included an

upgrade to Pro Tools 8. The Pro Tools HD-only features mostly revolve around Avid video improvements and Satellite Link (for running sessions across multiple computers over an Ethernet network), neither of which I use. In general, though, Pro Tools HD 8 has been running like a dream, with all the same features I'd been enjoying in LE, especially after I installed the CS (customer service) update. I have a general issue with Digidesign not alerting its customers to CS updates well enough, but it claims that automatic update notification will be part of a forthcoming release.

To be clear, this review is not really meant to compare Pro Tools with the many other DAWs out there. I'm a dedicated longtime Pro Tools user, and the latest version contains numerous components that make my day-to-day work easier, more pleasurable, and more creative, all at a very low upgrade cost. Although I've touched on only a handful of new features, I'm sure you'll continue discovering them around every corner as I have. I feel strongly that Digidesign has never offered a

more compelling total software package than Pro Tools 8.

*Eli Crews wrangles both ones and zeros at New, Improved Recording (newimprovedrecording.com), his studio in Oakland, California. Special thanks to Steve Kirk (stevekirpop.com) for his help with this review.*

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FIG. 1: Superior Drummer's Standard view shows drums as a complete kit. Just click on any drum or cymbal to hear it.



# Toontrack

## Superior Drummer 2.0 (Mac/Win)

A big kit recorded in a world-class room is at your command.

By Emile Menasché

**PRODUCT SUMMARY**

**drum module** **\$299**

**PROS:** Realistic sound. Natural drum articulations. Ambient and bleed tracks enhance realism. Bounce feature allows easy and efficient interaction with DAWs.

**CONS:** Can be processor intensive.

FEATURES	1	2	3	4	5
EASE OF USE	1	2	3	4	5
QUALITY OF SOUNDS	1	2	3	4	5
VALUE	1	2	3	4	5

Toontrack  
toontrack.com

Toontrack Superior Drummer 2.0's subtitle, "New York Studio Legacy Series," offers a clue to the software's concept. Think of it less as a high-powered drum machine and more as a user-controllable recording session that puts a well-miked set of drums in a great room—in this case, Manhattan's Avatar Studios. In many ways, it's the built-in mixer (and not the drum triggers) that forms the plug-in's core. Multimiking, bleed, and ambience play important roles in Superior Drummer, which emphasizes the holistic sound of the kit over the more detached and isolated sounds typical of drum samplers.

### Gettin' It On

Toontrack describes Superior Drummer 2.0 as a complete overhaul of its predecessor, dff Superior (see "Beat Generation" in the September 2004 issue, available at emusician.com). Version 2.0 is compatible with its forebear's libraries and has features designed to put experienced users in familiar territory.

Five DVDs furnish AU, RTAS, and VST plug-ins for the Mac and Windows. The included EZplayer Pro lets you load and edit MIDI drum performances and use them to trigger sounds in Superior Drummer and other drum pro-

grams. You also get a collection of MIDI files and about 20 GB worth of samples, all played by drummer Nir Z (who has recorded with artists as diverse as John Mayer, Chris Cornell, Alana Davis, and Genesis). The samples are stored using Toontrack Percussion Compression (TPC), real-time data-compression technology that's designed to save disk space and computer resources while allowing fast sample loads into RAM. Toontrack Solo, a low-latency host that enables the VST plug-in to function as a stand-alone program, is also included.

I installed Superior Drummer on my MacBook Pro, which has a 2.2 GHz Core Duo processor and 2 GB of RAM. I tested the VST plug-in in Toontrack Solo and the AU plug-in in Apple Logic Pro 8 running under Mac OS X 10.5.5; either version runs in stereo or multi-channel modes. Operation was about the same in both hosts, though the AU version smashed up against my computer's limits a few times. Fortunately, Superior Drummer 2.0 offers resource-saving features.

### Get in the Zone

Loading the plug-in presents you with the Construction window, which in Standard view offers a graphical depiction of a nice-size drum



kit owned by someone with a healthy cymbal fetish (see Fig. 1). Clicking on a drum triggers its samples, and clicking on its associated pop-up menu button lets you replace the loaded drum with another of the same kind; for example, the kick drum's menu lets you choose from an assortment of kick drums. You can also choose whether to strike the drums with sticks, brushes, or rods (such as Pro-Mark Hot Rods), and whether the kick's beater is plastic or felt.

Less visually compelling—but in some ways more effective—is the Construction window's Classic view (a carryover from the original dff Superior), which displays the kit as a bunch of drum pads. These pads let you hear more of each drum's sample set; click on the bottom of a pad for quiet sounds, on the top for loud sounds, and in the middle for sounds in between.

SuperiorDrummerusesaVelocity-mapping scheme that's intended to make each drum sound more natural. You get three zones: hard hits (by default, triggered by a Velocity of 127), soft hits (Velocities from 1 to 20), and gradient hits (Velocities from 21 to 126). You can easily reassign any zone's Velocity range, which also changes the range of the one above or below it. Because each zone triggers multiple samples, repeatedly slamming the snare at a Velocity of 127 plays different hits selected at random instead of retriggering one sample machine-gun-style. Some instruments have as many as 25 samples for hard and soft hits, respectively.

## Everything's Under Control

Superior Drummer's well-organized interface gives you access to important controls right from its Construction window. Essential functions are in a large row at the bottom. At the lower left is the Memory & Status section, which indicates RAM usage and allows you to switch from the default 24-bit samples to 16-bit.

Left of center is the EZ Mixer, which lets you set each virtual mic's basic parameters, including level, pan position, and bleed. A large Master Volume knob in the middle governs the loudness of the entire kit, postmixer. The Voices & Layers section lets you adjust the Velocity mapping and determine the number of samples assigned to each drum—useful if you want to save resources. In the lower right corner, the Instrument section lets you fine-tune a drum's level, balance its articulations, specify its MIDI

note mapping, and adjust its relative volume.

By default, each kit loads a specific set of drums, but you can load additional drums and percussion instruments using the X-Drum feature. Added drums can augment or replace those already in the kit. For instance, you could add a conga drum and assign it to its own MIDI note, or you could steal the MIDI assignment from a kick drum and have it trigger the conga. Working with X-Drums can get pretty complex and offers you the chance to move beyond the program's natural kit model.

An ADSHR Envelope Designer lets you control the behavior of the sample itself. You can use it to create realistic choke and swell sounds for cymbals, among other things. You can toggle the envelope on and off and assign it to respond to MIDI Aftertouch, Note On, or Note Off.

Superior Drummer treats each drum in the kit as a number of individual articulations, which helps key instruments like hi-hat and snare behave more realistically. For example, pressing one key triggers a sampled snare roll that continues until you press the key assigned to a single snare hit—totally intuitive and impressively natural-sounding (see Web Clip 1).

When you're editing a drum in the Instrument section, you have the option of working on the entire drum (in essence, all hits on that drum) or a single articulation (for instance, the side stick) by toggling the Edit Articulation Only button. That means you could use the envelope editor to make the side stick attack more slowly or make center hits transpose higher—powerful stuff.

## Mix It Up

Superior Drummer's Mixer window sets it apart from other drum samplers I've used (see Fig. 2). Many drums are spread across multiple channels. Load up the Avatar kit, for example, and you'll find three channels for the kick drum, mics for the top and bottom of the snare, and more. Instruments that rarely get individual mics in real life—such as cymbals—get picked up on overheads and ambient mics. There's not a disembodied crash cymbal within earshot.

Each channel sports conventional controls such as faders, pan pots, and inserts for adding EQ and dynamics processors. The effects—highpass and lowpass filters, 5-band EQ, gate, compressor, and even a transient modeler—work well and sound quite good, but I was



FIG. 2: Superior Drummer's Mixer lets you set how much each drum's bleed will be heard in individual mics.

surprised to find no spatial processors such as reverb. You can, however, add great-sounding room ambience from the mics.

## Let It Bleed

Superior Drummer's most intriguing feature is the Bleed control. It lets you set how much of any given drum gets picked up by another drum's mic. You can, for instance, let a bit of the kick drum, toms, or hi-hat bleed into the snare's top or bottom mic, or you can choose to isolate the snare completely (see Web Clips 2 through 5). Bleed works for all mics; by default, the overheads and room mics pick up everything, but if you want them to exclude the kick, you can remove it from their respective bleeds.

The bleed feature adds to Superior Drummer's naturalness, but it can also chew up resources. By turning off individual bleeds, you can take a load off your system while you're editing the drum parts in your sequencer, and then turn them back on later. You can also save resources by bouncing the bleeds to disk, which generates a separate audio file for each mic (see the [online bonus material at emusician.com](http://online.bonus.material.at.emusician.com)).

Superior Drummer 2.0 boasts killer sounds and a bunch of unique features, but its best attribute may be the way it gets your head out of the machine and into the mix. With the ability to pick up the subtleties of a real performance—either via programming or played with electronic drum triggers—this may be the most realistic digital drum instrument yet.

*New York-based guitarist, composer, and producer Emile Menasché is the author of The Desktop Studio (Hal Leonard, 2002). His latest album, Overtones, is available on iTunes.*

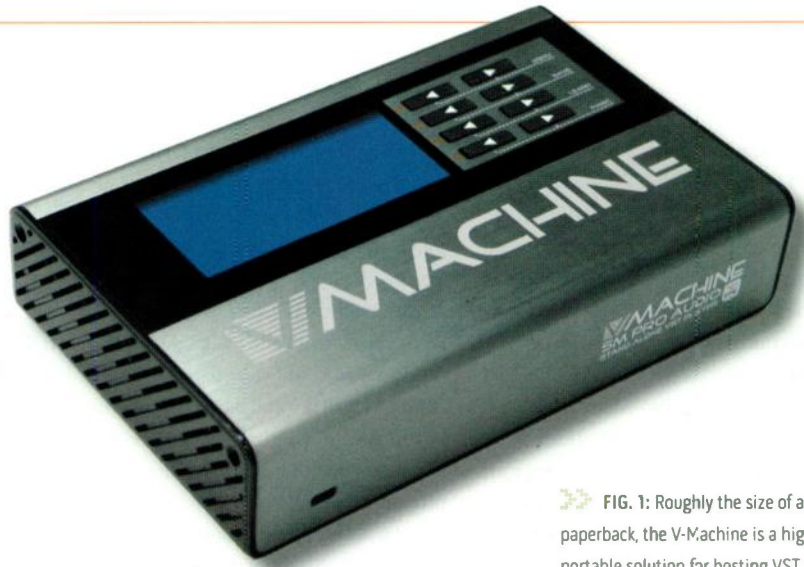


FIG. 1: Roughly the size of a thick paperback, the V-Machine is a highly portable solution for hosting VST plug-ins without your computer.

# SM Pro Audio

## V-Machine

Get your VST plug-ins to go.

By Jason Blum

»» PRODUCT SUMMARY					
DSP host	\$519				
<b>PROS:</b>	Runs VST plug-ins without a computer. Compact and durable form factor. Stable performance.				
<b>CONS:</b>	Lacks tactile controls. Unbalanced I/O with 1/8-inch audio input and headphone jacks.				
FEATURES	1	2	3	4	5
EASE OF USE	1	2	3	4	5
DOCUMENTATION	1	2	3	4	5
VALUE	1	2	3	4	5
SM Pro Audio smproaudio.com					

The advent of Steinberg's VST plug-in format was a pivotal moment in the history of music technology. Shedding the shackles of dedicated, bank-breaking out-board gear for software-based signal processing laid the foundation for today's modern project studio, raising the bar for the pace and quality of music production across the board. Still, plug-ins have long been dogged by one irksome characteristic: they're designed to run on standard computers, making them cumbersome to use on the road or onstage.

Enter SM Pro Audio's V-Machine, a handy device conceived to bridge the gap between plug-ins and portability. The concept isn't new—Muse Research released a similar product, the Receptor, in 2003—but the V-Machine packs this capability into a compact, road-ready chassis that's smaller than most portable audio interfaces yet surprisingly affordable. The V-Machine works only with Windows VST plug-ins, and its internal architecture relies on the DLL files associated with those plug-ins. Fortunately, compatibility with Mac plug-ins (as well as Syncrosoft copy-protected plug-ins) is in the works.

Is this little unit the holy grail of VST portability that working musicians have been

clamoring for? Read on for a rundown on what works, what doesn't, and how the V-Machine might fit into your rig.

### Pint-Size Power

The most striking thing about the V-Machine is how tiny it is—about 4.5 × 7 × 1.5 inches—about the same size as a large paperback (see Fig. 1). The box contains only a slim *Getting Started* manual, but more-extensive PDF documentation is available on the enclosed driver disc. Online video tutorials and a dedicated knowledge base are encouraging signs that support will be ongoing and comprehensive.

On the rear panel, one USB type B port offers connectivity to a Windows-based host computer, allowing you to transfer plug-ins to the V-Machine and run the custom control software, VFX. In addition, two USB type A ports let you connect MIDI controllers and flash drives without a PC (see Fig. 2).

Supplementing two unbalanced 1/4-inch outputs, the headphone jack is a convenient way to monitor the V-Machine's plug-ins. It's particularly handy for quickly auditioning plug-ins without patching the unit into a larger system—think hotel rooms, airplanes, or anywhere else that proper studio monitors would





FIG. 2: The V-Machine's tidy rear panel sports plenty of USB connectors alongside unbalanced outputs and a stereo 1/8-inch input jack.

be a tight fit. I found the amp slightly underpowered, though, and I was disappointed that the connection is 1/8 inch rather than a studio-standard 1/4-inch headphone jack.

I was even more disappointed by the V-Machine's 1/8-inch audio input. I haven't seen a piece of studio gear with a minijack input since I sold my old DAT Walkman back in the mid-'90s, but a minijack is the only way to get audio into the V-Machine. I was hoping to seamlessly integrate the device into my studio setup as an additional VST effects processor, but aside from the obvious inconvenience of adapters or Y-cables required by using a miniplug, the fact that the audio input is unbalanced—along with the rest of the unit's I/O—gave me the impression that the V-Machine is aimed solely at live performance and not pro studio use.

### It's What's Up Front

The V-Machine's front panel is sleek and straightforward, with a large, backlit LCD monopolizing the top left quadrant, and four rows of two rubberized buttons located just to the screen's right-hand side. The LCD is divided into four lines that display bank, preset, parameter, and parameter values, and the buttons increment or decrement the adjacent value displayed onscreen. Text on the LCD is big and easily readable from a distance in both dim and brightly lit environments, and information from all VST plug-ins is presented in a clear-cut and consistent fashion. Patch selection is a bit sketchy as there's no button to load or cancel—you simply scroll to the desired patch and pause on it for more than a second. That's not bad for preplanned live performances, but also not conducive to casually scrolling through presets.

Each pair of buttons serves a secondary purpose when pressed in tandem, providing additional control over the unit right from the front panel, including a quick MIDI Learn

command that's convenient for mapping controllers to plug-in parameters on the fly.

### Bridging the Gap

The VFX software serves as the bridge between your PC and the V-Machine, allowing you to configure and tweak plug-ins using the native onscreen GUI. It's essentially a 4-channel virtual mixer with 2 sends and a master fader; each channel can be loaded with up to 3 plug-ins, giving you slots for a maximum 21 simultaneous plug-ins. The VFX software's potential for flexibility is quite impressive, and you can easily create complex, layered stacks of instruments by placing multiple plug-ins on each channel. Although the VFX software runs in Windows only, SM Pro Audio says that both Mac and Linux versions are in the pipe, so users of those platforms may eventually find the V-Machine a useful tool for running plug-ins that aren't native to their operating system.

Loading plug-ins into the V-Machine can be a chore, and the easiest way to minimize the pain is by using a VFX Info file, a small text file that tells the VFX software how to properly install the plug-in on the V-Machine without errors. Unfortunately, VFX Info files are not available for every plug-in you might own, and my experience installing VSTs without an Info file was a crapshoot at best. When I tried importing AudioRealism's ABL2 plug-in, for instance, the VFX software crashed hard and dumped me to the desktop. However, simpler, single-file VST plug-ins like Big Tick Audio's Ticky Clav installed easily, and I was able to get Arturia's Moog Modular V up and running flawlessly thanks to a VFX Info file available on the SM Pro Audio Web site (see the online [bonus material](#) at [emusician.com](#)).

### Hands On

The V-Machine's clean front panel is great for traveling, and the lack of any knobs or faders means less stuff dangling off the unit and potentially getting snagged or broken in a careless moment. However, fewer tactile controls also means more difficulty when trying

to tweak parameters; as a result, my hopes of using the V-Machine as a standalone effects processor for DJ sets were dashed. An external MIDI controller is absolutely essential for getting the most out of the V-Machine.

Once I patched in a good controller, though, the V-Machine was a breeze to use, and the large LCD makes it perfect for onstage use. Latency was so low as to be unnoticeable, even with large stacks of VST instruments. I never encountered a situation in which the V-Machine crashed or locked up. Its stability during hours-long sessions was comforting, leading me to believe that the V-Machine can be trusted to perform reliably in critical live-performance situations.

### Are We There Yet?

The V-Machine is a valiant effort with a great deal of potential, but in its current form, its compromises are obvious. It is a well-built little box, clearly targeted at traveling artists and built to withstand the rigors of the road, and in many ways it's straightforward and easy to use. Hooking up USB MIDI controllers is a breeze, and the unit is rock solid at negligibly low latencies.

However, the V-Machine's lack of knobs or faders makes it a hard sell for anyone looking for an all-in-one standalone VST solution, and the omission of professional-grade I/O is a serious oversight. With a few minor upgrades—balanced audio, additional 1/4-inch connectors, and a few knobs and faders—the V-Machine would easily find its way into stage rigs and DJ setups worldwide. SM Pro Audio does have a larger version that adds these features in development (the V-Rack), and pro studio users would be best off waiting for this more comprehensive unit.

Still, for basic VST playback and onstage work, the V-Machine performs solidly and reliably at a bargain-basement price. The pint-size powerhouse packs an impressive amount of storage and processing muscle into its diminutive frame, wraps it in a rugged metal chassis, and makes connectivity a breeze for quick setup at gigs.

*Best known as a DJ and producer in the electronic group Deepsky, Jason Blum is currently focused on commercial mixing and mastering in his Los Angeles studio.*

## TASCAM

### DP-004

By Babz



The DP-004 gives Tascam's Portastudio a 21st-century makeover. Smaller than a videocassette, this 4-channel recorder features a separate stereo mixdown track and an integrated mixer, tuner, and metronome.

Back in the tape era, Tascam ruled the home multitrack recording world thanks to its line of Portastudio 4-track cassette recorders with integrated mixers. Nowadays most recordists use laptop rigs for mobile multitracking or pocket recorders for stereo recording. The DP-004 (\$199) handily fills a niche by marrying the best advantages of today's portable recorders—compact size, CD-quality digital audio, flash memory, battery power, and built-in condenser microphones—with multitrack audio and the tactile experience of the classic Portastudio environment. In addition, the DP-004 supports USB 2.0 connectivity and WAV files for exchanging audio data with a computer.

#### SIZING IT UP

Compact design is obviously a major part of the DP-004's appeal. It has roughly the same dimensions as a VHS tape but is about an inch shorter. Recalling that VHS-size ADAT tape was once a standard digital multitrack recording medium, it's remarkable to consider that you can now hold an entire multitrack recorder in the space of less than one tape. Though it's

considered a pocket-size recorder, however, the DP-004 would fit better in a coat pocket than in a shirt pocket.

Within its compact footprint, the DP-004 offers a working environment that immediately feels intuitive and familiar to former Portastudio users like me, but that also affords many modern amenities. Dedicated knobs and buttons are readily available for most essential tracking and mixing tasks, and you can access deeper functions using the LCD and menus.

Digital technology allows tricks that were impossible with tape: various editing tasks, undo and redo, repeat, and even bouncing four tracks onto one while including the destination track in the bounce (tape requires an open track). You get a separate stereo mixdown track that doesn't replace any of the other four tracks, as well as a built-in tuner and metronome.

Connecting the DP-004 to a computer furnishes even more options. You can export discrete tracks or stereo mixes to your DAW, or you could begin a project on your computer, port a cue track over to the DP-004, and then take it anywhere for mobile recording overdubs.

The user interface is well streamlined for the quick layering of musical ideas. However, the DP-004 has one tragic flaw: the LCD is not backlit. Perhaps such a compromise was intended to hold down costs or to help conserve battery power, but inasmuch as this unit is intended for the uncertain lighting conditions of location recording, this limitation is hard to understand.

#### POWER, STORAGE, CONNECTIVITY

The DP-004 is powered by four included AA alkaline batteries, NiMH batteries, or an optional AC adapter, and it uses SD cards for data storage. It comes with a 1 GB card,

and you can use high-capacity cards up to a maximum of 32 GB. The file system uses two drive partitions: a multitrack recording (MTR) partition and a FAT32 partition. The DP-004 writes your recordings to the MTR partition, a proprietary format not recognized by computers. To exchange data with a computer, therefore, requires an extra step. Data transfer isn't especially difficult, but it would have been nice if the extra step were unnecessary.

Audio ins and outs include two ¼-inch inputs that can accept mic, line, or guitar sources; a pair of condenser mics; and a single stereo minijack for headphone/line out. I tested the DP-004 with a variety of sound sources, including my Fender bass plugged in direct, a Roland keyboard at line level, and my acoustic guitar with the built-in mics. The recorder delivered pro-quality results throughout (see Web Clip 1).



#### IN THE POCKET

The DP-004 offers greater flexibility than 2-track pocket recorders, as well as portability and accessibility that are superior to a laptop setup. The nonbacklit LCD is disappointing, and a few onboard effects would be nice to have, but it's hard to complain at this price point. The DP-004 could be a great tool for quickly capturing songwriting ideas, arranging vocal harmonies, or mobile overdubbing. It allows you to get right to work without booting up a computer, but it also records high-quality audio that integrates well with a computer-based platform. The folks at Tascam have done a great job of updating the Portastudio concept into a compact, easy-to-use, low-cost solution for the digital age.

#### Value (1 through 5): 4

Tascam  
tascam.com



## ABBEY ROAD PLUG-INS

### TG Mastering Pack (Mac/Win)

By Nick Peck

TG Mastering Pack is a pair of plug-ins that closely mimic the EQ modules in Abbey Road Studios' custom-built TG12410 mastering desks. Those desks, known for their fantastic sound, were installed at Abbey Road in 1972 and are still in daily use. Much of the circuitry is derived from EMI's designs used to record the Beatles in the '60s. TG Mastering Pack (\$560 TDM, \$335 RTAS/AU/VST) is as faithful a re-creation of the hardware modules as possible, vetted by a picky group of Abbey Road engineers.

#### STONE CONTROL

TG12412 is a 4-band parametric EQ. Each band has five discrete frequency selections, 10 dB cut or boost, and five possible EQ shapes. TG12412's frequency bands were chosen to correspond to musical pitches rather than mathematically convenient numbers, and they proceed mostly in half-octave increments (see the online bonus material at [emusician.com](http://emusician.com)). The hardware unit is a very musical, smooth EQ that has been used on virtually every mastering session at Abbey Road since the early 70s.

The five EQ shapes are what give this plug-in so much flexibility. The blunt, medium, and sharp shapes make each band operate parametrically. Blunt is a low-bandwidth setting, useful for broad, gentle boosts and cuts across a larger range of frequencies, whereas sharp is better for more-surgical problem solving. But things get really interesting with the addition of low- and high-shelving shapes on each band. It's actually quite useful to have shelving options in mid-

frequency EQ bands. They allow you to create low or high shelves anywhere in the frequency spectrum. That means you can create very broad tonal changes with the shelves, which you can augment with sharper alterations at narrower frequency ranges by using other bands as parametric shapes.

#### FILTER MODULE

TG12414 consists of lowpass and highpass filters, a master level adjust, and a single-band midrange EQ referred to as "presence." The lowpass filter has five discrete frequency values, and the highpass filter has four. These filters are so smooth and noninvasive that I had to toggle bypass on and off repeatedly to convince myself that they were working.

Presence has eight frequency choices between 500 Hz and 10 kHz, with up to 10 dB of cut or boost. The presence circuit was first used in the group and master sections of the TG12345 mixing console that the Beatles used to record *Abbey Road*. It was later integrated into the TG12410 mastering desk. I threw TG12414 on a rock drum track, and as soon as I cranked presence to +10 dB at 6.5 kHz, the snare started sounding very Ringo-esque.

#### THAT CERTAIN SOUND

I remixed a grunge song that originally had been mixed in the analog domain, and I just couldn't get the overall flavor right. My Digidesign Pro Tools remix sounded big and punchy, but it still didn't have the airy lift in the highs that the original did. I strapped the TG12412 plug-in across the master bus and dialed in the sought-after sound within seconds, boosting the highs from about 5 kHz and tucking in the lows by 2 dB at 128 Hz and below. I then went to a few master mixes from my *Under the*



*Big Tree* album, mixed on modest gear a decade ago. As soon as I started playing with TG12412, I wanted to go back and remaster the whole record. The plug-in smoothed the highs, punched up the lows, and cleaned up the low mids effortlessly.

Nothing is perfect, of course. While playing back content, I heard a high-pitched click when switching between EQ shapes on TG12412; to be fair, EQs from other manufacturers exhibit the same behavior. Although the plug-ins work beautifully with a hardware controller, operating the knobs with a mouse can be cumbersome. In addition, I wish that each EQ band had its own individual bypass.

TG Mastering Pack is all about creating a certain sound that has appealed to generations. TG12412 and TG12414 are not the be-all and end-all, Swiss Army knife EQs that will cover every mixing circumstance, nor are they intended to be. But if you love the sound of legions of classic albums that have emerged from Abbey Road Studios and you're looking to capture a bit of that magic in your own recordings, then these smooth, musical equalizers are the way to go.

**Value (1 through 5): 3**  
Abbey Road Plug-ins  
[abbeyroadplug-ins.com](http://abbeyroadplug-ins.com)

Abbey Road's TG Mastering Pack is a pair of equalizer plug-ins that deliver the smooth, musical sound used on countless legendary records.



UNIVERSAL AUDIO

710 Twin-Finity

By David Franz

The 710's compact design makes it ideal for standalone or half-rackspace operation.



knob to the Trans side to utilize only the solid-state transistor preamp, roll it to the Tube side to utilize only the analog tube preamp, or set it anywhere in

without distortion or any loss of sonic detail. This transimpedance design provides transparent amplification with very little coloration and a wide frequency response. The tube preamp design borrows as much from tube guitar amps as from tube mic-preamp circuitry. Its 12AX7 tube is located after the gain control pot, which enables a gentle transition from mild tube warmth to full-on, dirty, even-order

Universal Audio products have been the go-to preamps in my studio for some time. With UA's introduction of the model 710 Twin-Finity Mic/Line/Hi-Z Preamplifier (\$799), I have a new favorite. Its unique design features both analog tube and solid-state preamps, and you can seamlessly blend them while maintaining phase alignment. This just may be the most sonically versatile preamp I've ever used.

The 710 looks sharp. Its silver metal case resembles the attractive Avalon U5 and M5, but the glow from the diamond-shaped VU meter in the middle of the unit adds warm distinction. Its 2U, half-rackspace design lends itself to rack-mounting (rackmount kit included) or to standalone use (handle kit available separately).

NOT JUST A PRETTY FACE

The front panel has knobs for Gain, Level, and Blend, which are used in combination to dial in the exact sound you want. The Gain knob sets the input gain, and because it drives the transistor and tube circuitry, it has the most influence on the tone. The Level knob sets the master output volume, setting the amount of signal sent from the 710's rear-panel line output. Roll the Blend

between to combine the phase-aligned transistor and tube sounds.

The 710 accepts mic, line, and Hi-Z instrument (DI) input. The mic and line inputs are on the rear panel, whereas the Hi-Z input is on the front. The front panel also sports a +48V phantom-power switch, a 15 dB Pad switch for lowering the mic input level (this has no effect on line input or Hi-Z signals), a Low Cut switch that applies a 75 Hz low-cut Bessel-type filter, and a polarity-reversal switch. The Mic/Line switch selects the input source unless something is connected to the Hi-Z input, which trumps the other inputs. As you'd expect, the meter function switch determines what is shown on the 710's VU meter. When switched to Output, the VU meter displays the output level. When switched to Drive, the VU meter shows the THD (total harmonic distortion) level after the Gain control but before the preamplifier circuitry. That lets you observe how hard the tube and solid-state preamps are being driven.

A TRUE HYBRID

Under the hood, the solid-state preamp utilizes a transistor design that generates current feedback to create gain

harmonic distortion as you turn up the gain.

The art that you can create with this hybrid preamp testifies to the science inside. The variety of tones that it generates can make just about any mic sound special. Performances captured with tube mics have added clarity when run through the 710's solid-state side. Signals recorded with inexpensive dynamic mics have increased depth and warmth when routed through the 710's tube side.

I tested the 710 on a number of input sources—bass, acoustic guitar, male and female vocals, and electric guitar—and was impressed in every case. To hear some examples, check out **Web Clips 1 and 2.**



The 710 is more than just two preamps in one. The infinity symbol below the Blend knob is very fitting because you can get just about any preamp sound that you want from it. This preamp would be a terrific addition to any studio, especially a smaller-budget studio that could benefit from its sonic versatility.

Value (1 through 5): 4  
Universal Audio  
uaudio.com

## SONIVOX

### Playa 1.0 (Mac/Win)

By Jason Scott Alexander

SoniVox Playa (\$149) is a sample-playback virtual instrument that provides quick access to a wide range of hip-hop and R&B sounds. More than 400 presets are offered and assignable across 16 user-programmable pads for MPC-style beat construction. Note that Playa is strictly a sound module that must be driven by a DAW host or from a real-time controller: it does not have integrated sequencing capabilities.

Playa works standalone and supports the AU, VST, and RTAS plug-in formats. The application is very light on the CPU, and authorization requires only a serial-number challenge and response—no dongle is needed. I ran it as a VST plug-in on a 2.8 GHz Pentium 4 with Windows XP, and it barely tickled the processor meter. (Vista is also supported, and Mac users will need an Intel-based processor and OS X 10.4.1 or later.)

#### DRESSED THE PART

The 4-by-4 pad matrix is prominent within the attractive GUI. Beside it are controls that let you access Playa's four modes. You're in the Pads play mode by default, which lets you crank out beats right away from any of the 50-plus factory layouts. Alternatively, you can enter Keys mode for standard keyboard-based melodic performance using the multi-sampled instruments. Because Playa is not multitimbral in this mode, you must run several instances in order to build arrangements.

Map mode lets you assign new sounds to pads and set their pitch by entering note values with the virtual keyboard, located at the bottom of the interface, or from a MIDI keyboard controller. Parameters for a selected pad are displayed in the blue porthole, where you can also load, save, or clear your custom pad layouts. The turntable arm serves no function.

Learn mode allows you to program

which key or pad from your external controller will trigger a given pad. You can have any number of MIDI or USB hardware controllers connected to Playa at once. Typically, you'd combine a standard keyboard controller with a pad controller, such as the M-Audio Trigger Finger.

#### TRICKY PLAYA

Pad layouts are different from Playa instruments in that they contain only the MIDI notes and remote trigger assignments for each pad: they do not contain the sounds themselves. Because of this, you can use a pad layout as a template for any Playa instrument. Also, there is no limit to the number of sounds or notes that you can have mapped to a given pad. You can stack multiple kick drums, for example.

But what's really cool is applying the tempo-synchronized (to host), variable-resolution Retrigger function in Pads mode. Because Retrigger can be set individually for each pad, you could have it turned off during one-shot sounds while it is set to whole, half, quarter, eighth, or 16th notes on others. Because you can adjust the retrigger resolution in real time, it makes for a fantastic live remixing tool, mimicking DJ-style sample cutting on the fly.

You can sculpt the response of each pad using the AHDSR envelope section. If your hardware controller sends MIDI continuous controller messages, you can assign those to the envelope parameters in real time. Sadly, there is no real-time pitch control per pad, as on the MPC, nor is there a filter anywhere within Playa.

The 4-band global EQ section is handy for adding some low-end bump or wedging sounds into a dense mix. Chorus and delay effects are provided, which are quite lush and sweetly analog-sounding to my ears.

#### HIT IT

The more that I dug into Playa, the more I felt like the coolness of the interface began to outshine the sounds. Playa boasts a sizable 5 GB of core content,



which hits on all the categories you'd expect to find in any hip-hop or R&B tune. There are many nice electric, acoustic, and synth basses to choose from, and dozens of synth lead and pad programs as well. But there is a hit-and-miss nature to the keyboards, guitars, orchestral, and ethnic instruments folders, and many of Playa's sounds lack attitude. (SoniVox has a couple of instrument expansion packs in the works that should remedy the situation.)

Nonetheless, with its utilitarian sound set, Playa's real value is in giving budget-conscious beat producers a solid collection of genre-centric, meat-and-potatoes sounds at a low price.

#### Value (1 through 5): 3

SoniVox  
sonivoxmi.com

Playa's interface bridges the gap between MPC-style beat creation and the typical computer-based virtual instrument.

**VIENNA SYMPHONIC LIBRARY**

**Vienna Suite Plug-ins (Mac/Win)**

By Eli Crews

The graphic interfaces on Vienna Suite's EQ and Limiter plug-ins show exactly how the processors affect your audio.



Vienna Symphonic Library (VSL) has a great reputation for providing composers with superb orchestral sample libraries. Noting a lack of effects plug-ins offering full 64-bit processing, the company developed the Vienna Suite plug-ins (approximately \$537). Although the plug-ins' presets are primarily geared for use with VSL virtual instruments, these effects work remarkably well in other types of audio production.

Installation of the Vienna Suite is easy. You need a Syncrosoft USB key to hold the authorization, which you buy through VSL or a third-party vendor. The downloadable installer provides VST (Mac/Win) as well as AU and RTAS (both Mac-only) versions.

**EQUALIZE THIS**

The eight plug-ins possess no-nonsense names: Equalizer, Master Equalizer, Limiter, Compressor, Multiband Limiter, PowerPan, Exciter, and Analyzer. The primary difference between the two EQs is that Master Equalizer has high- and low-shelving filters in addition to the five fully parametric bands of Equalizer. Master EQ has three different filter types for each of the bell bands and two each for the shelving bands. And Master Equalizer employs 4x oversampling for a significantly higher resolution at a cost of slightly higher latency and CPU usage.

Both EQs share a sleek GUI, breakpoint and numerical data editing, and a real-time 120-band pre- or post-EQ spectrum view overlaid on the EQ curve. That gives you a tremendous amount of insight into which frequencies to target and how the EQ is affecting the signal, and it is unique among EQ plug-ins I have used.

**LIMITED EDITION**

The Limiter plug-in is a brickwall-type digital limiter. It is useful for getting program material or a single track to have a louder apparent

volume. The controls are straightforward, but the display has some unusual features.

You see the audio passing through the plug-in as a scrolling waveform, with different shades for the input and output signals. In addition to the standard gain-reduction meter, an indicator line dips down in real time to show the curve of attenuation. That is unlike any limiter display I've seen, and it permits a greater understanding of the effect that limiting is having on the envelope of your signal.

The Compressor plug-in has a similar display without the attenuation curve. It boasts a few other bells and whistles: three different sidechain filters, Opto mode using vintage knee characteristics, and Fat mode adding tapelike harmonic distortion.

Multiband Limiter has four bands, with adjustable crossover frequencies and Threshold, Gain, Attack, and Release controls for each band. It also provides an Opto mode, and it offers an optional brickwall limiter at the end of the signal path.

**ODDS AND ENDS**

Exciter is the first of three wild-card plug-ins in the Vienna Suite. It generates odd or even harmonics to give your tracks more presence without using EQ.

It can drive the harmonics into distortion, providing even more sonic sculpting capabilities, and when used subtly, it can really make a track come alive in a mix.

PowerPan is a comprehensive panning tool for managing where and how stereo tracks appear in the stereo field. Its balance, center, width, and level sliders are augmented by channel-swap and individual-channel polarity-reverse buttons.

The Analyzer tool is a 120-band frequency analyzer, similar to the one embedded in the EQ plug-ins. The frequency spectrum of your signal is displayed as 120 small bars or as a continuous line graph, and you can change the ballistic behavior of the analyzer as well as enable a peak-hold feature. In a useful touch, Analyzer indicates the loudest frequency of the signal as a MIDI note name.

**SUITE DEAL**

I found the Vienna Suite very useful in both Pro Tools LE 8 and BIAS Peak Pro 5.2. I and other engineers at my studio now rely heavily on the plug-ins for mix duties. Our consensus is that the plug-ins, especially the EQs and Compressor, have a gentle approach that is highly effective without being too noticeable, perhaps due to the 64-bit computations (see **Web Clips 1 through 4**).

I have plenty of plug-ins that produce a colored, heavy-handed sound, but the Vienna Suite offers a more transparent way of getting your tracks to behave. The display options also got my attention. My only issues were with some GUI stickiness, which the company claims to have addressed in a new release, and with the lack of a manual. Other than those trifles, the Vienna Suite is a winner, even for those not using Vienna Symphonic Library sounds. **EM**

**Value (1 through 5): 4**

Vienna Symphonic Library  
vsl.co.at



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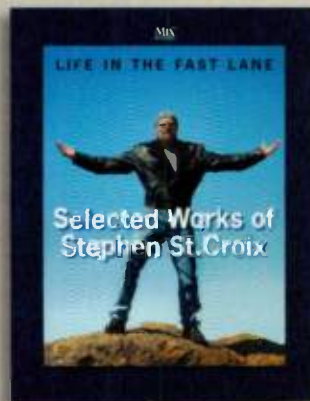
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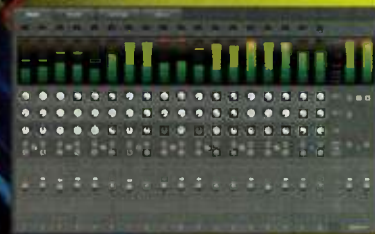
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# Save As...Archive

By Nathaniel Kunkel



One of the unfortunate chores at the end of any DAW-based music project is the creation of the archive files. I adhere to the NARAS delivery protocol ([http://content.grammy.com/PDFs/Recording\\_Academy/Producers\\_And\\_Engineers/DeliveryRecommendations.pdf](http://content.grammy.com/PDFs/Recording_Academy/Producers_And_Engineers/DeliveryRecommendations.pdf)).

While some might deviate from that standard, most people have similar tasks in front of them between the final mix and long-term storage.

I cannot stress how important it is to create archive files. Without making our files platform agnostic, we cannot guarantee that they will survive and be supported in future wares from DAW manufacturers. That is just a fact.

I don't want to get too much into what the possible delivery standards are and what will work for you. You can do that research yourself, beginning with


the link above. What I want to do here is plead with the DAW manufacturers of the world: make this process easier, whatever our ultimate archive scheme is.

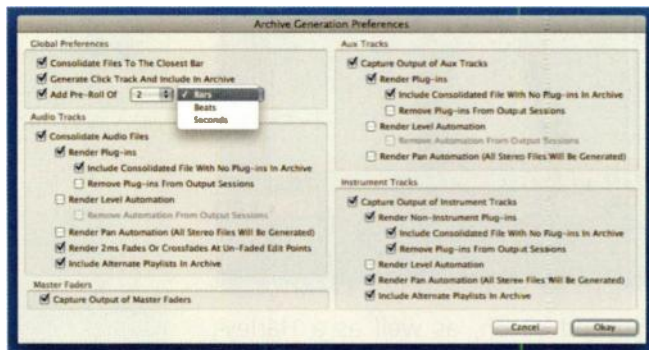
Give us a Save As Archive function. It takes days to create an archive file set, and what we want is pretty consistent. We need the files to be consolidated from the top to the tail, we need them to be the same length, and we need options on plug-ins and automation rendering. Even if it's not perfect, give us something.

It could have a preferences pane like other functions do, and the command would output a folder with a session file and an audio directory full of files of identical length. The preferences pane could look something like what is shown here.

It would also be great if there were a way to batch process this function. That way, I could drag a bunch of sessions into a queue and go to bed while the computer does all the work. Then I could write an AppleScript that automatically makes a Zip file that gets uploaded to my servers. Hello, productivity; good-bye, I-have-been-making-archives-for-12-hours errors.

The other thing that this option would provide is a more streamlined stem-print work flow. If you mix in the box and render all your automation and plug-ins to stereo files, you'll have individual track stems, with one menu selection.

I know that this may seem like a lot to ask for, but it is one of the few features that a DAW manufacturer could provide us with that would streamline the processes we dislike, as opposed to streamlining the ones we enjoy. I mean, if I have to sit in front of a machine for 6 hours, I would rather be comping a vocal than making an archive delivery. 



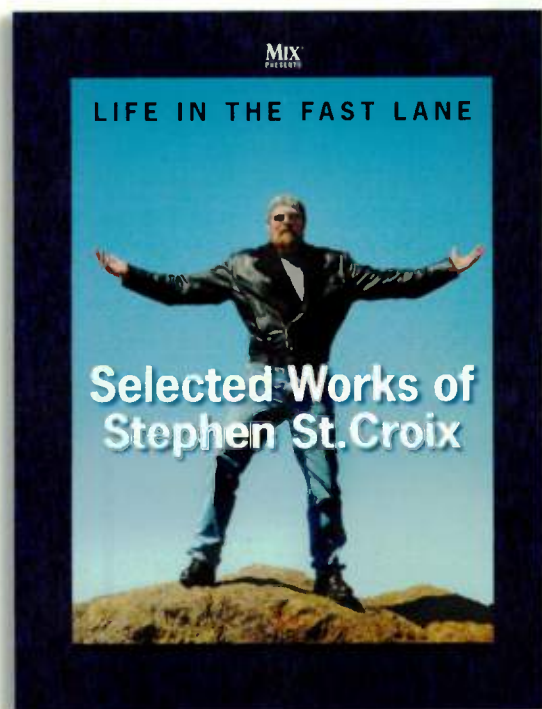
*Nathaniel Kunkel (studiowithoutwalls.com) is a Grammy and Emmy Award-winning producer, engineer, and mixer who has worked with Sting, James Taylor, B.B. King, Insane Clown Posse, Lyle Lovett, I-Nine, and comedian Robin Williams.*

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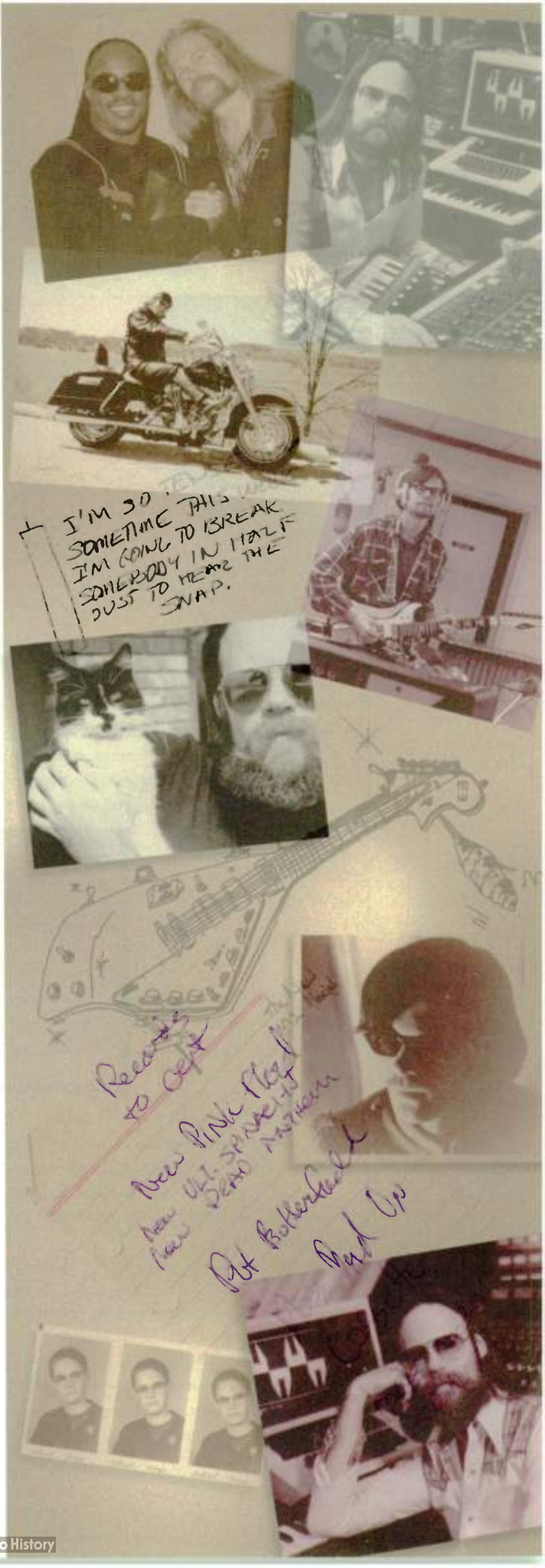
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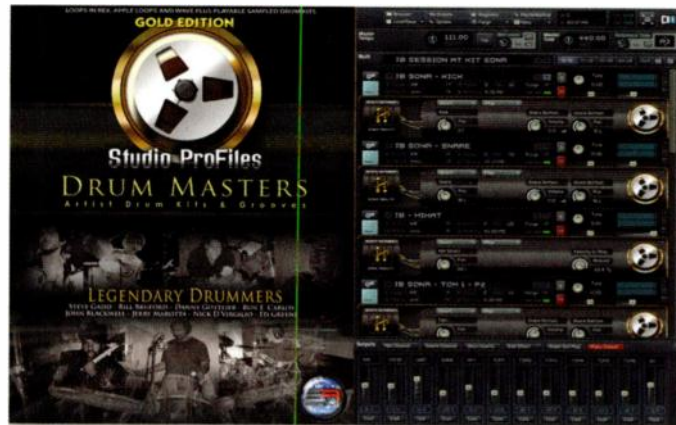


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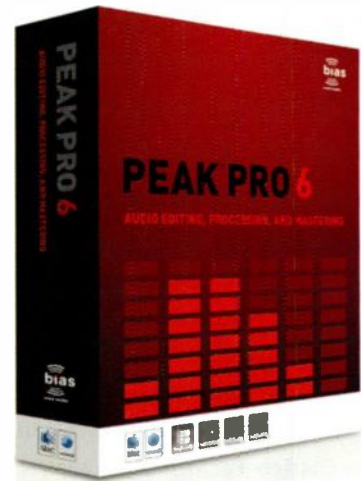


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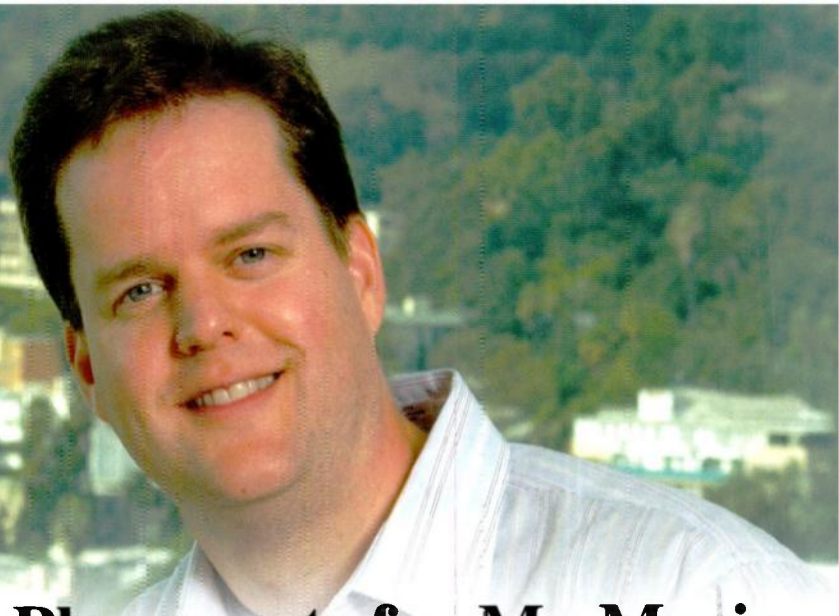
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*Stuart Ridgway - TAXI Member*  
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