2002 DESKTOP MUSIC PRODUCTION GUIDE

US $6.99 CAN $8.99

Electronic Musician®

www.emusician.com

A PRIMEDIA Publication

THE HOW-TO RESOURCE FOR COMPUTER MUSIC PRODUCTION

12 EASY SOUND-DESIGN PROJECTS

MP3 SECRETS

SNEAKY MAC & WINDOWS TRICKS

BUILD AN INTERNET RADIO STATION

With the TASCAM US-428 and your computer, creativity knows no boundaries.

Four in the morning...back at the hotel...and you want to keep the creative juices flowing after last night's gig. With your computer and the **US-428** DAW Controller/USB Interface from TASCAM and Frontier Design Group, you can. Just connect it to your compatible Mac or PC via its USB interface and record 24-bit digital audio and MIDI tracks to your heart's delight. Then use its real faders and knobs for total hands-on creative control of the included multitrack recording software...Cubasis VST for PC from Steinberg™ and Deck LE for Mac from BIAS™. Or, use your compatible audio software from Digidesign™, MOTU™, Emagic™ and more. Either way, no matter where and when you want to be creative, the US-428 is the ultimate plug-and-play solution for computers and music...in a cool blue box from the world leader in recording technology.

US-428 DIGITAL AUDIO WORKSTATION CONTROLLER

Want to make sure that your computer and software are compatible with the US-428? Go to www.tascam.com and check out the "US-428 Compatibility Chart", or learn all about computer recording from our "PC Recording Guide".

TASCAM US-428 by FRONTIER DESIGN GROUP

TASCAM
a whole world of recording

TEAC America, Inc., 7733 Telegraph Road, Montebello, CA 90640
323-726-0303 www.tascam.com

Here are a few of the innovative software developers who offer support for the US-428. Cakewalk, Sonar and more virtual synth support coming soon. See the TASCAM web site for the latest info.

PC Mac

DISCOVER

TC•POWERCORE

New Version from 12/01:

POWERCORE FOR WINDOWS

POWERCORE 3RD PARTY

POWERCORE INSTRUMENT

DISCOVER hi-end processing in TC quality, completely integrated with your native audio workstation! How? Simply add **TC•POWERCORE** to your existing Mac or PC audio platform, using any VST/MAS audio software and any supported sound card – that's like adding the equivalent to 2.8 GHz of sheer power, only for audio processing!

TC•POWERCORE is an incredible value, right out of the box: Run a stack of the included world famous TC TOOLS Plug-Ins – virtual versions of TC Electronic's M5000 Reverb, TC1210 Spatial Expander and Finalizer™ EQ technology. Want more? Take advantage of the limited MasterX³ introductory offer and additionally receive a **virtual Finalizer™** for industry-standard knock-out punch mastering*! Still not enough? Check out the WALDORF Vocoder, ANTARES Autotune, TC HELICON Voicecraft or other 3rd party products that will become available soon. Discover **TC•POWERCORE**!

MSRP US $1299

PC + MAC >> VST + MAS >> INSTRUMENTS >> 24/96 >> ANY I/O >> 4 DSPS + POWER PC >> $1800 US WORTH OF SOFTWARE

*Introductory offer featuring MASTER X³ ends 12/31/01

TC | WORKS

ULTIMATE SOFTWARE MACHINES

US & CANADA: TC ELECTRONIC INC. • 805.373.1828 • CALIFORNIA • US@TCWORKS.DE • WWW.TCWORKS.DE

WRH

Electronic Musician
Desktop Music Production Guide 2002

contents

start up

8 GADGET GALLERY
Turbocharge your computer with these 11 irresistible music peripherals. *By David Battino*

14 HOW TO RECORD YOUR OWN SONG
Step by step, here's how to go from inspiration to finished song on your computer. *By Mark Nelson*

30 LEARN TO BURN
Discover how to transfer your favorite tunes from records, tapes, MP3s, and more to CD. *By Scott Wilkinson*

internet

36 MAKING MUSIC ONLINE
Dial up an Internet studio and you can collaborate with musicians from all over the globe. *By Brian Smithers*

44 WORLD WIDE WADIO
Put your music on the biggest radio in the world with this straightforward introduction to Webcasting. *By Ron Simpson*

54 NO MONEY DOWN
Fire up your modem. Here are ten free (or amazingly inexpensive) programs no desktop musician should be without. *By Todd Souvignier*

hands on

60 HOW TO MAKE KILLER MP3s
Don't let MP3 encoders savage your sound. Follow these insider tips to preserve the luster and impact of your music. *By Todd Souvignier*

68 CAUSING EFFECTS
Blast your music out of a rut with these 12 easy sound-design recipes. *By Dan Phillips*

74 CHEAP BASTARDIZATIONS
Learn tons of sneaky, free ways to coax more music out of your computer. *By Jim Rippie*

overdrive

82 PLAY HARD
Have some serious fun with "toy" music software. *By Randy Alberts*

88 OBLIQUE STRATEGIES FOR DESKTOP MUSIC
Be Dirty—and 36 other ideas to catalyze your creativity, based on Brian Eno's notorious deck of inspirational cards. *By Frank Jones*

departments

6 PRODUCTION NOTES

92 AD INDEX

93 PRODUCTS & SERVICES

Electronic Musician® (ISSN: 0884-4720) is published monthly except semi-monthly in January by PRIMEDIA Business Magazines & Media Inc., 800 Metcalf, Overland Park, KS 66212-2215. © 2001. This is Volume 18, Number 2, January 2002. One-year (13 issues) subscription is $40, outside the U.S. is $75. Periodicals Postage Paid at Shawnee Mission, KS and at additional mailing offices.

This is the only thing missing from your home studio.

- Capture/record digital or analog audio
- Edit tracks/mix/master
- Add dynamic effects (delay, reverb, etc.)
- Publish to tape, CD or web based delivery

From the people who built the first digital audio interface & MIDI tone module – comes the **SD-90 Studio Canvas**. Connect this compact unit to your computer via **USB** and you have a professional quality digital audio workstation. Works with a variety of popular recording/sequencing software. Occupies a very small space. Makes huge amounts of music. Just add your imagination.

- Create original music with MIDI tone module
- 1,024 instruments
- 36 drum sets
- 128 note polyphony
- 32 part multi-timbral
- Use your favorite MIDI controller

Edirol is your complete DeskTop Media Production resource. Check our selection of: MIDI Controllers • USB MIDI Interfaces • USB Digital Audio Interfaces • Digital Audio Software • Amplified Audio Monitors • Digital Video editing and more...

Specifications: USB interface to computer • 24bit/48kHz AD/DA converters • Coaxial/optical S/P DIF I/O • 1/4" guitar/mic input • Stereo RCA I/O • 2 mono RCA out • 2 MIDI I/O • GM2/GS compatible • Rich Sound Source selections • ASIO 2.0 (WIN/MAC), MME (WIN), Sound Manager (MAC)

For more info: www.edirol.com
Email: sales@edirol.com

Toll-Free: 800 380-2580
Voice: 360 594-4273

EDIROL EDIROL EDIROL EDIROL

Production Notes

OTTO TEIMER

As I SLOUCH on a lawn chair typing these words, I'm glancing at the ugly back end of a stereo I bought 15 years ago. It's perched on a table at my yard sale. Having squeezed so much musical enjoyment out of the box, I somehow imagined it would be the featured item at the sale, yet it's among the last remaining—even though I'm asking only 2 percent of what I paid.

Technology seldom ages gracefully, but fashion undoubtedly plays a bigger role in popularity. Several shoppers at my sale have been interested in a sleeker-looking but inferior-sounding boom box next to the stereo. No one was interested in the fact that I'd sent away for the stereo's schematics and wired up a custom interface that let me simultaneously connect an external tape deck and a horde of synthesizers. Admittedly, that hack was hardly rocket science, but here's the point: you'll be richly rewarded if you seek out the hidden capabilities in any piece of gear or software.

That concept is the inspiration behind Jim Rippie's article "Cheap Bastardizations" (p. 74) and, more generally, this entire magazine. It's easy to fall into the trap of feeling you don't have enough gear to make music, but in the computer age, the requirements are surprisingly modest. Mark Nelson walks through them in "How to Record Your Own Song" (p. 14). Frank Jones, who contributed the wonderful collection of creativity tips on p. 88, says he's reduced his entire studio to a single MIDI keyboard and a pack of powerful software.

The laptop computer that's scorching my legs as I write this is so small that I occasionally lose it under papers on my desk. But last year, on a slower, heavier one, I was able to make significant progress on a CD collaboration with a friend in Japan. We'd been trading MP3 files of the work in progress, but that approach was more analytical than creative. On a subsequent trip to Tokyo, I hauled the laptop to his apartment, plugged it in to his boom box, sat on the tatami floor, and proceeded to make the edits we'd been agonizing over for months.

As Brian Smithers details in "Making Music Online" (p. 36), there are faster and flashier ways to collaborate, but again, the point is to get creative any way you can. So thanks for picking up *Electronic Musician* magazine's fourth annual guide to making better music with your computer. We hope it inspires you to start your own projects. Read EM every month for the latest information on desktop music, and let us know what you'd like to see here next year. I decided to keep both stereos, by the way. You can't have too much music.

David Battino
Editor
emeditorial@primediabusiness.com

MORE ON THE WEB

When you see this icon, visit the DMPG section of www.emusician.com for related software, links, and articles.

Desktop Music
PRODUCTION GUIDE

Editor David Battino
Editor in Chief Steve Oppenheimer
Managing Editor Patricia Hammond
Assistant Editor Matt Gallagher
Copy Editors Erin Hutton, Jennifer Moline, Anne Smith

Art Director Linda Birch
Consulting Art Director Dmitry Panich
Informational Graphics Chuck Dahmer

Publisher John Pledger

Associate Publisher Erika Lopez
Advertising Director Joe Perry
Northwest Advertising Associate Joanne Zola
Southwest Advertising Associate Mari Stancati
Sales Assistants Kathya Fuentes, Joe Madison

Classifieds/Marketplace Advertising Director Robin Boyce-Trubitt
Classifieds/Marketplace West Coast Sales Associate Kevin Blackford
Classifieds/Marketplace East Coast Sales Associate Jason Smith
Classifieds Assistants
Heather Choy, Monica Cromarty, Diane Williamson-Suber

Marketing Director Christen Pocock
Marketing Project Manager Angela Muller Rehm
Marketing Trade Show and Events Coordinator Alison Eigel
Marketing Coordinator Starla Estrada
Marketing Art Director Wendy Shiraki

Senior Director of Production Curtis M. Pordes
Group Production Manager Melissa Langstaff
Advertising Production Coordinator Roxana Candillo
Computer Systems Coordinator Stanley Faulkner

Group Circulation Director Philip Semler
Circulation Marketing Manager Austin Malcomb
Circulation Fulfillment Coordinator Jef Linson

Human Resources/Office Manager Julie Nave-Taylor
Human Resources/Office Coordinator Janette Rosbroy
Receptionist Lara Duchnick

National Editorial, Advertising, and Business Offices
6400 Hollis St., #12, Emeryville, CA 94608
tel. (510) 653-3307; fax (510) 653-5142
Web www.emusician.com

Primedia Business Magazines & Media
9800 Metcalf Ave., Overland Park, KS 66212

Primedia Business Magazines & Media
Timothy M. Andrews, Chief Executive Officer
Jack Condon, Chief Operating Officer
Ron Wall, President
Pete May, Vice President, Entertainment Division
Stephanie Hanaway, Division Director of Marketing

Primedia Business-to-Business Group
David G. Ferm, President and CEO
Andrea Goldschlager, Vice President and Group CEO
Craig Reiss, Chief Creative Officer

PRIMEDIA Inc.
Tom Rogers, Chairman and CEO
Charles McCurdy, President
Beverly C. Chell, Vice Chairman

Electronic Musician is published by PRIMEDIA Business Magazines & Media Inc., 6400 Hollis St., #12, Emeryville, CA 94608; tel. (510) 653-3307; fax (510) 653-5142; Web www.emusician.com. *Electronic Musician* and *Desktop Music Production Guide* are registered trademarks of PRIMEDIA Business Magazines & Media Inc. Copyright 2002 by PRIMEDIA Business Magazines & Media Inc. This is Volume 18, Number 2.

PRIMEDIA
Business Magazines & Media
Printed in the USA.

ALSO PUBLISHERS OF:
MIX®, ONSTAGE™, REMIX™, DIGITAL HOME KEYBOARD GUIDE™, PERSONAL STUDIO BUYER'S GUIDE™, AND *MIX MASTER DIRECTORY.*

WWW.EMUSICIAN.COM

You'll agree.

"The D1600 offers a good balance of straightforward operation and sophisticated capability."

"I suspect a lot of folks will see this machine as a luxury ride commanding a midsize price...give the D1600 a good look before you decide to spend more."
- **Keyboard Magazine.**

"The touch screen is quite wonderful; I could get around the unit fast...[The D1600] sounds great, is intelligently designed, and easy to use."

"...you can now produce truly pro-level recordings with a compact, budget-friendly box."
- **EQ Magazine.**

We think you'll agree. The D1600 Digital Recording Studio—all you need to record, mix and master your next CD.

D1600

- Recording Format: 24-bit/16-bit uncompressed, 44.1 kHz
- 8 track recording/16 track playback @16-bit mode
- 20 GB swappable internal IDE hard drive
- 100 scenes/4 locate points per song
- 3-band EQ per channel
- Four XLR inputs w/phantom power
- 24-bit A/D, D/A conversion
- 4 track recording/8 track playback @ 24-bit mode (8 virtual tracks per track)
- Optional internal 8x CDRW drive
- 24 channel, 8 bus digital mixer with scene memory and MIDI automation
- Up to 11 effects simultaneously
- 24-bit optical S/PDIF I/O
- Total of 128 tracks
- 106 effects algorithms
- 215 PCM drum rhythms
- Built-in tuner

Visit korg.com/d1600 for a demo.
Version 2.0 software and video manual now shipping and available online!

KORG

Gadget Gallery

Turbocharge your computer with these 11 irresistible music peripherals.

What's good-looking, highly portable, packed with unusual music features, and costs less than $500 on the street? Probably not your PC. Fortunately, not only do the following 11 devices fit that description, but each one can integrate with your desktop setup to enhance its music-making power. Clear a space on your tool belt—here are 11 gadgets you won't want to be without.

By David Battino

MP3 Marathon

At just 4.5 by 3.2 inches, the ARCHOS JUKEBOX RECORDER ($349) will fit on top of a CD with room to spare. Recording directly from its analog inputs to MP3 files, the Jukebox can store 100 hours of music on its internal 6 GB hard drive at the standard 128 kbps rate. (For higher quality, you can boost the rate to 160 kbps.) Still not enough? A company called FunMP3Players.com will exchange the hard drive for a 30 GB one, giving you the capacity for almost 21 straight days of music. A built-in mic facilitates clandestine recording. Even better, the Jukebox is configured as a USB hard drive. No convoluted MP3-transfer software is needed; just plug the device in to your PC or Mac and drag files over, be they MP3s, spreadsheets, or photos. And while the RIAA may grumble, the Jukebox isn't SMDI-compliant, so you can upload your MP3s to other computers.

CONTACT: Archos Technology; tel. (949) 453-1121; e-mail tech-support@archos.com; Web www.archos.com

All Your Music—to Go

It looks like a portable CD player, but the curvy CREATIVE LABS NOMAD JUKEBOX ($399) actually packs a 20 GB hard drive. That's enough space to store 340 hours of MP3 or WMA music—about 500 CDs' worth—downloaded from your PC or Mac over USB. (A $279, 6 GB model, shown here, is also available.) Creative's Kurt Heiden reports that musicians are bringing the Jukebox onstage to play their backing tracks, or exploiting its time-stretching feature to slow down recordings (without changing the pitch) and figure out tough licks. But the Nomad's real strength for music production is its ability to record audio through its analog inputs, save the recordings as uncompressed WAV files, and then upload them to your computer. Concert, anyone?

CONTACT: Creative Labs; tel. (800) 998-5227; Web www.nomadworld.com

Listen to the Birdie

Belt space is getting mighty crowded these days. The KODAK MC3 ($229) aims to help by combining an MP3 player with a digital camera that also records short QuickTime movies. DMPG contributor Frank Jones (an MC himself) says he carries an MC3 with him everywhere, often using it to demo remixes for clients. Although the MC3's midresolution images are best suited for Web pages, not prints, Jones has achieved surprisingly good results by processing the raw photos with *Photoshop*'s Unsharp Mask filter. He's also flexing his video-scoring skills by uploading MC3-captured QuickTime movies to his computer and overdubbing soundtracks in his sequencer.

CONTACT: Kodak; tel. (800) 235-6325; Web www.kodak.com/go/mc3

You're on the Air

One of the secrets to getting good mixes is to listen on a variety of speakers. But stopping to burn a CD to check on your stereo is inconvenient. Instead, plug the AKOO KIMA KS-110 transmitter in to your computer's audio output and connect the Kima receiver ($99.95 for both) to your stereo. Using a proprietary 900 MHz signal, the Kima will transmit the music up to 1,000 feet—even through walls. The receiver can run on batteries and rebroadcast the signal to a nearby FM radio, so you could even take it out to a parked car for the ultimate reality check. Or just kick back and beam Internet radio or MP3s to a boom box on your patio.

CONTACT: Akoo; tel. (708) 583-9600; e-mail info@akoo.com; Web www.akoo.com

Amp in Style

Feel an inspired solo coming on but your roommate's asleep? Plug your guitar into the BEHRINGER V-AMP ($269), connect the V-Amp's output to your computer, fire up your recording program, and wail away. The V-Amp, short for virtual amplifier, beefs up the naked signal with 1 of 15 digital guitar-amp simulations as well as effects such as chorus, echo, or wah-wah. Additional presets are tailored for enhancing keyboards and vocals. A custom version of Emagic *SoundDiver* (Mac/Win) lets you access parameters not found on the front panel and save your creations.

CONTACT: Behringer; tel. (425) 672-0816; e-mail support@behringer.com; Web www.behringer.com

Tweak Like an Octet of Octopi

Virtual knobs look slick, but they're a pain to adjust with a mouse. Arm yourself with the DOEPFER DREHBANK ($450) and you'll get instant access to the hidden expressive parameters of MIDI-compatible hardware and software. Each of the Drehbank's 64 knobs can send any MIDI message, including Control Change, Pitch Bend, Aftertouch, Note On, and even System-Exclusive messages. It comes with presets for Propellerhead's *ReBirth*, General MIDI mixing, and Yamaha groove boxes, but you can also create and store your own twisty setups with the bundled version of Emagic *SoundDiver* (Mac/Win).

CONTACT: Enport (distributor); tel. (402) 398-0198; e-mail enport@home.com; Web www.en-port.com

Space Shuttle

Don't need 64 knobs? How about a single great-feeling one? The programmable GRIFFIN POWERMATE ($45) attaches to a USB port on your Mac (and soon PC), providing fast access to volume, audio scrubbing, or whatever function you assign. DMPG contributor Jim Rippie, who fondled a prototype at last summer's Macworld convention, praised the PowerMate's "wonderful, smooth, tactile feel." It also sports a programmable button, letting you mute tracks, insert markers, and even turn the computer on—handy for recent Macs that lack a keyboard-mounted power button. Blazing blue LEDs in the base make the PowerMate appear to float above your desktop; they change brightness to reflect the knob's current position and pulse when your computer is asleep. Griffin's Jason Litchford suggests buying two to create an Etch A Sketch.

CONTACT: Griffin Technology; tel. (615) 399-7000; e-mail support@griffintechnology.com; Web www.griffintechnology.com

Sampling Safari

Built by Mattel and approved for ages six and up, the INTEL COMPUTER SOUND MORPHER ($49.99) is a toy with a lot of sonic potential. Send your kid sister off to school with it or pass it around at a party; you'll end up with lots of great sound bites as people compete to try it out. When you've filled the four-minute, 99-sample memory, press a button to transfer the recordings to a computer through the computer's mic input. (The transfer also works on Macs, though you'll hear a slate tone between each recording.) The bundled Windows software lets you cut and paste sections, apply effects, and render new sounds with a speech synthesizer. You can also make cartoon faces and save them as animated e-mail postcards; the characters' mouths twitch in sync with the peaks in your recordings.

CONTACT: Intel Play; tel. 916-377-7000; Web www.intelplay.com

new technology. new tools.

Times change. So should your tools.

The soft synth is here to stay, and making music will never be the same. The Oxygen 8 is the first in a series of new controllers from MIDIMAN designed for the *software-centric* musician.

Oxygen 8 puts you in control of any 8 MIDI-assignable parameters within your favorite soft synths, VST instruments, or any MIDI-compatible software. Real time control is now yours for the taking: LFO rate, filter frequency, modulation, amplitude, whatever--it's all at your fingertips. You don't even need a MIDI interface for the Oxygen 8, because it *is* the MIDI interface. And since the Oxygen 8 doesn't use an external power supply, your laptop and the stage are sounding more like the studio than ever before.

Take a deep breath. You're in control now.

Oxygen 8 Features:

- 25-note controller with 8 MIDI assignable knobs, one MIDI assignable slider.
- USB MIDI interface integrated into the keyboard--no external devices needed.
- Laptop-ready: input and output 16 channels of MIDI via USB.
- Power the Oxygen 8 with the USB port or batteries for complete portability.
- Designed for: Soft Synths, Live Performance, Programming.

USB MIDI

midiman

M POWERED.

800-969-6434 • www.midiman.net/oxy8/remix • email: info@midiman.net

Running on MD

It's tough to keep track of all the Internet audio formats, much less convert them to a format you can transfer to a portable player. The SONY MZ-G750DPC MiniDisc recorder ($299.95) makes the process easy. Just connect it to your computer's USB port and it will digitally record up to five hours of anything you play—MP3, WMA, WAV, AAC, RealAudio, Ogg Vorbis, or whatever next week brings. Recording starts automatically when a digital signal is received; track markers are inserted automatically, too. And at three bucks a pop, blank MiniDiscs are about 1/10 the price of the fragile RAM cards that portable MP3 players use. The 3-inch-square device, which also features a digital AM/FM tuner and stereo microphone input, can play for up to 48 hours on a single AA battery.

CONTACT: Sony; tel. (800) 222-7669;
Web www.sony.com/walkman

Groove to Go

Grab a BOSS SP-303 DR. SAMPLE ($395) and you may not need to lug your expensive laptop or sampler to gigs. This dictionary-size device stores samples on SmartMedia RAM cards, so with a $35 card reader, you can quickly transfer WAV and AIFF files between the SP-303 and your computer. Featuring 26 effects, including an overdriven filter, a vinyl simulator, and a beat slicer, the SP-303 may even have you offloading files from your computer just for processing. (The effects also work on live input, and you can adjust them in real time with three knobs.) A resampling function applies effects to your samples, saving them as new files, and an onboard sequencer lets you record multitrack grooves, delivering massive sounds from a tiny box.

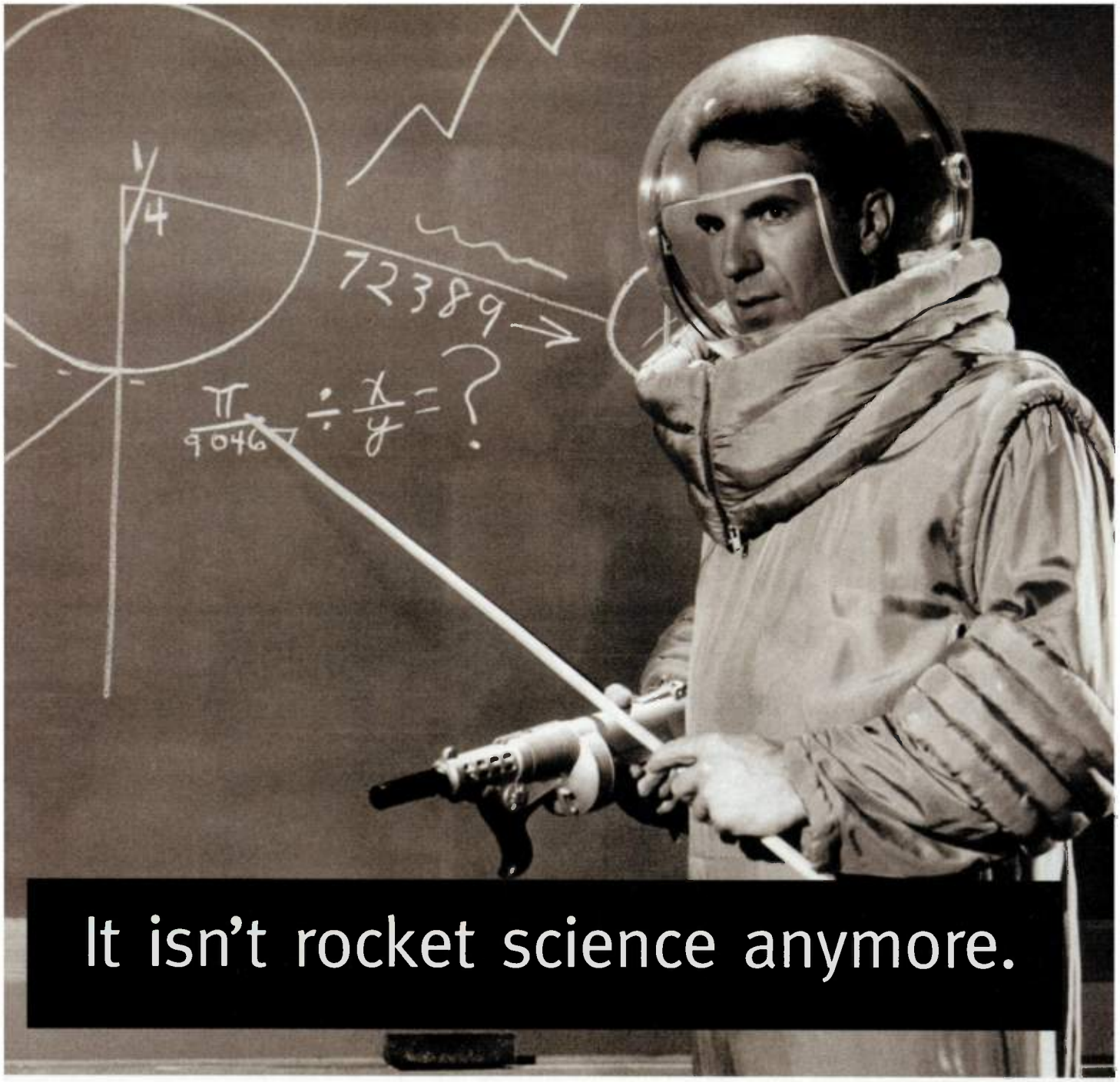
CONTACT: Roland; tel. (323) 890-3700 ext. 2463; Web www.bossus.com

Hide and Sequence

A studio the size of a video tape, the YAMAHA QY100 ($629) houses a 24-track MIDI sequencer, 519-sound XG synthesizer, 20 drum kits, and 3 programmable 24-bit effect processors. To keep the inspiration flowing, it also includes over 4,000 preset phrases. Onboard A/D converters let you plug in a mic or electric guitar and record solos (with effects) onto a SmartMedia RAM card. When you return to your desktop, you can back up your compositions with a card reader—or simply use the QY100 as a compact MIDI sound module.

CONTACT: Yamaha; tel. (714) 522-9011;
e-mail info@yamaha.com;
Web www.yamaha.com, www.yamahasynth.com

AT TIMES, **DAVID BATTINO**'S STUDIO RESEMBLES A COLLECTION OF GADGETS SEARCHING FOR A GROOVE. HE RUNS BATMOSPHERE.COM, A MUSIC AND MEDIA PRODUCTION SERVICE.



Introducing Finale 2002. Easy to use. Easy to learn. Easy everything. See for yourself at www.codamusic.com/em. It's easy.

"Finale is so much easier to use now... and still the most powerful!"
Don Pederson, *School of Music, University of Tennessee at Knoxville*

"It automatically creates and prints custom exercises for every instrument in my band." Kay Hawley, *Hopkins West Junior High School*

"These new slurs look great... just click and drag!" Robert Piéchaud, *Engraver*

"Finale's new Band-in-a-Box® Auto-Harmonizer makes arranging fast and easy."
William Goldstein, *Composer*

FINALE 2002

Finale®. The world's best-selling music notation software.

codamusic.com/em

STEP BY STEP, HERE'S HOW TO CREATE AND CAPTURE ORIGINAL MUSIC ON YOUR COMPUTER.

BY MARK NELSON

How to Record your own Song

I spend a fair amount of time at acoustic music festivals around the country. Invariably after a frenzied jam, someone will turn to me and say, "Hey, I've heard I can plug a microphone in to my computer and make a CD. How's that done, exactly?" Well, just pass that jug over here and old Uncle Mark will tell you all about it. Got a song in your heart and a banjo-ukulele in the garage? You've come to the right place.

Desktop recording isn't just for techheads. In the past couple of years, software and hardware have evolved to the point where just about anybody with a kazoo can create and record an original song. In the following pages, I'll explain step by step how to go from inspiration to a finished song. Don't worry about jargon; where it's unavoidable, I've italicized the terms and defined them in a glossary (see p. 21). And although I'll focus on recording vocals and acoustic instruments, there's no reason you can't use these same techniques to create electronica or loop-based music.

MAKING YOUR COMPUTER MUSICAL

Just about any computer built in the past couple of years can be used to record at home. You can also build a mobile recording system around a laptop. For in-depth tips on optimizing your computer for music, see "Cheap Bastardizations" on p. 74.

Macintoshes are strongly supported with both audio hardware and software; the venerable Power Mac 9600 remains a professional standard. Wintel machines have the obvious advantage of choice, because every component is customizable. (That can also be a drawback; plan to spend some time perusing FAQs and online user forums for compatibility issues. I've put links on the DMPG section of www.emusician.com.)

Most professionals suggest choosing your software first and then building a system around it. Better yet, have a customized system built by a music specialist. You can sometimes find a qualified person in your local music store, but a better bet might be a musical computer specialist such as Audio Computing (www.audiocomputing.com), Sound Chaser (www.soundchaser.com), Sweetwater Sound (www.sweetwater.com), or Wave Digital (www.wavedigital.com).

I/O Silver! Of course, you'll need some way to get the sound into and out of your computer. Save consumer-grade sound cards for games, and invest in an interface designed for recording instead. Pros prefer interfaces with the connectors and *analog-to-digital converters* (*ADC*s) mounted in an external box, because they're more convenient and less likely to pick up electrical noise from the computer.

Originally, these boxes were connected with a thick cable to a proprietary circuit board that you plugged in to a slot in your computer. In recent years, manufacturers such as Roland and MOTU have released external interfaces that connect directly to your computer's USB or FireWire port, bringing quality audio to laptops and iMacs, which lack slots. (iMacs also lack fans, which makes them great for acoustic recording.) A few USB-based interfaces like the Tascam US-428 (see **Fig. 1**) include full-fledged *mixers*, *effects*, and software controls—handy if you're on a budget.

MORE ON THE WEB

Online Recording Resources

Visit the DMPG section of www.emusician.com for numerous helpful links to desktop-recording information and software.

For the love of mic. Because they literally determine your sound, microphones are vital. Professional engineers may have dozens to choose from, matching the mic to the voice or instrument with the care of a wine connoisseur.

Mics come in two main flavors. *Dynamics*, like the venerable Shure SM58, are rugged enough for stage use and don't require power to operate. *Condensers*, on the other hand, need juice via *phantom power* or a battery. While dynamics are great for capturing loud sounds and generally standing up to abuse, condensers excel at detail. Large-diaphragm condensers such as the Neumann TLM 103 are best for vocals, though some producers swear by them for everything from acoustic guitars to hand percussion. Small-diaphragm condensers such as the AKG C 1000 S capture the crisp highs of a cymbal or the zing of a mandolin. Buy two for stereo recording.

Mics need a *preamplifier* to boost their signal to a usable level (called line level). Dedicated preamps often have better performance than those found in a mixer and may have additional useful features. Some computer audio interfaces feature built-in preamps as well as guitar inputs (see **Fig. 2**). Guitars also put out a signal that's too soft to feed a line-level input directly.

Mixers, monitors, MIDI, more. In setups such as the one in **Fig. 2**, you don't really need a hardware mixer, because the interface includes enough inputs and outputs to keep everything cabled up. A mixer offers more flexibility, though, as well as fast, hands-on control. **Fig. 3** shows a similar setup with the mixing done outside the computer. It also includes a *MIDI* synthesizer as an additional sound source. Today's synthesizers can play 16 or more different sounds simultaneously. Using *sequencer* software and a MIDI interface, you can record your MIDI performances

into a computer and edit them note by note, correcting pitches and timing, and even substituting sounds. MIDI is much more flexible than audio.

Many home recordists *monitor* through a consumer stereo or multimedia speakers and wonder why their songs don't sound as good as professional mixes. The short answer is that pros take extraordinary care to ensure that the listening environment—the room, the speakers, the amplifiers, even the cable—reveals exactly what has been recorded and nothing more. A good set of close-field monitors and a pair of professional-grade headphones will make all the difference. Set up your speakers so they form an equilateral triangle with your ears. Make sure both speakers are at the same height and keep them away from corners and reflective surfaces in the room.

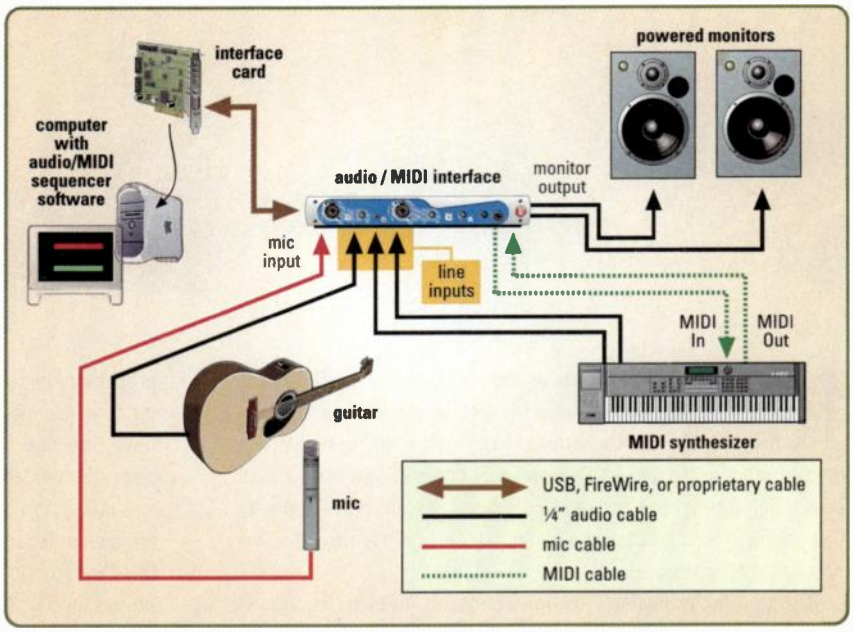


FIG. 2: For the highest recording quality and convenience, use a dedicated audio interface. This setup, built around a Digidesign 001–style audio interface, features inputs designed for guitar, mics, and keyboards as well as MIDI input and output.

Don't forget high-quality cables, mic stands, and mood lighting for those long nights of creativity. And you will need a place to put everything. I recently moved all of my gear into a single piece of dedicated studio furniture.That was the best decision I ever made—now everything is at the proper height and right within reach (see **Fig. 4**).

SOFTWARE

Getting started with music software is remarkably inexpensive. You can download any number of excellent freeware and shareware programs (see "No Money Down" on p. 54) or even commercial demos. Most audio interfaces come bundled with basic software.

FIG. 1: Tascam's US-428 is a combination audio interface, MIDI interface, mixer, and software remote control. It connects to your computer's USB port, eliminating the need for an internal sound card.

Recording software usually emulates the look and feel of an analog recording studio, right down to tape recorder-style transport controls (see **Fig. 5**). Most programs include an internal mixer to combine your *tracks*, plus sound-shaping tools for tone, dynamics, and effects. Support for third-party effect *plug-ins* is a strong plus. Features such as a sequencer, virtual synthesizers and samplers, drum-machine-style rhythm creation, and *sample*-accurate waveform editing add value.

PC programs generally use *WAV* files; *AIFF* and *SDII* are standard on Macs. *MP3* file support is increasingly popular on both platforms, but because MP3 is designed for small size rather than high quality, it's best to use the other formats for initial production, then save a copy of your final mix as an MP3 if you want to distribute it on the Internet. (See "How to Make Killer MP3s" on p. 60.)

LET'S START RECORDING

In the following example, I'll explain how to record a basic song using acoustic guitar, lead and harmony vocals, and a rhythm section of sampled drums and keyboard bass. Before we begin, check your recording software's manual to make sure you've disabled any programs that might conflict with the audio software. When recording acoustic instruments or miked guitar amps, turn off your speakers and monitor through headphones to avoid feedback loops and to keep previously recorded tracks from leaking into the mics. (You can leave the speakers on when you're recording synthesizers or the direct output of a guitar processor like a Behringer V-Amp.) Depending on your sound card, you may have to set monitor levels by tweaking the software volume controls in your computer.

Recording a drums is out of the question for most home studios. I once crammed a kit into the tiny hallway between my studio

firewire storage is here!

introducing...

GLYPH **M Project** FireWire Storage

MacOS Windows

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

Call Glyph at 800.335.0345

GLYPH Technologies, Inc. • 735 W. Clinton St. • Ithaca, NY 14850 • 607-275-0345 • 607-275-9464 fax • www.glyphtech.com

WRH

and the guest bathroom, but the drummer had to climb over the toilet to get to his, umm, stool. That's why CDs of drum loops from companies such as Big Fish, East-West, and Ilio are such huge sellers. It's also easy to find samples and loops on the Net, though you'll often have to do a lot of work to get them to sync up.

Once you've selected some drum loops, import them to your audio program and repeat them as many times as you need to. Found a great four-bar drum groove, but the tempo's wrong? If it's fairly close, you can speed it up or slow it down with a feature called time-stretching that's built into many audio programs. This doesn't alter the pitch, but sometimes it will change the sound (which can be a good or a bad thing).

Another option for taming loops is to transpose them up or down a few semitones. Like turning the pitch control on a turntable, this makes the sound play faster or slower, but it also changes the pitch and tone—again, sometimes a useful effect. The third option is to slice up the file into individual beats and subbeats and spread them out. You could do this manually, but it's far easier with programs such as Sonic Foundry's *Acid* or Propellerhead's *ReCycle* (see **Fig. 6**). Ilio's Groove Control loops come presliced.

I like to add a smidgen of MIDI percussion to spice up rhythm loops. Most MIDI sequencers include a virtual drum machine; just make sure the tempo of your sequencer matches that of the audio loops.

FIG. 4: Ergonomic studio furniture such as the Omnirax F2 more than pays for itself in comfort and convenience.

GUITAR HEROICS

Here's a good starting point for recording an acoustic guitar: point a condenser mic toward the 12th fret, about eight to ten inches away. Experiment with different placements. Even a difference of a couple of inches has a big effect.

You can't simply stick up a pair of mics and expect to get a decent stereo recording. The sound waves may partially cancel each other when mixed, an effect called phasing. Always check the phase by listening in mono. If part of the sound disappears, adjust one of the mics or flip the polarity switch on the mixer *channel*.

If your guitar has a pickup, route it to a separate track and choose the best blend when you mix. I often warm up the sound of a piezo pickup by running it through a tube direct box like the ART Tube MP; a software amp simulator will also work.

Depending on your software, you may need to record-enable ("arm") the tracks before you can hear anything. Adjust the level of the signals until they peak just below the maximum. Trust me, you do not want to hear what digital *clipping* sounds like (see **Fig. 7**).

Now, hit Record and go to town. Don't worry if you mess up; just rewind and do another take. Some software saves every pass as a *virtual track* so you can reclaim an earlier take. Later, after you've recorded the vocals, go back and add some lead fills and a solo.

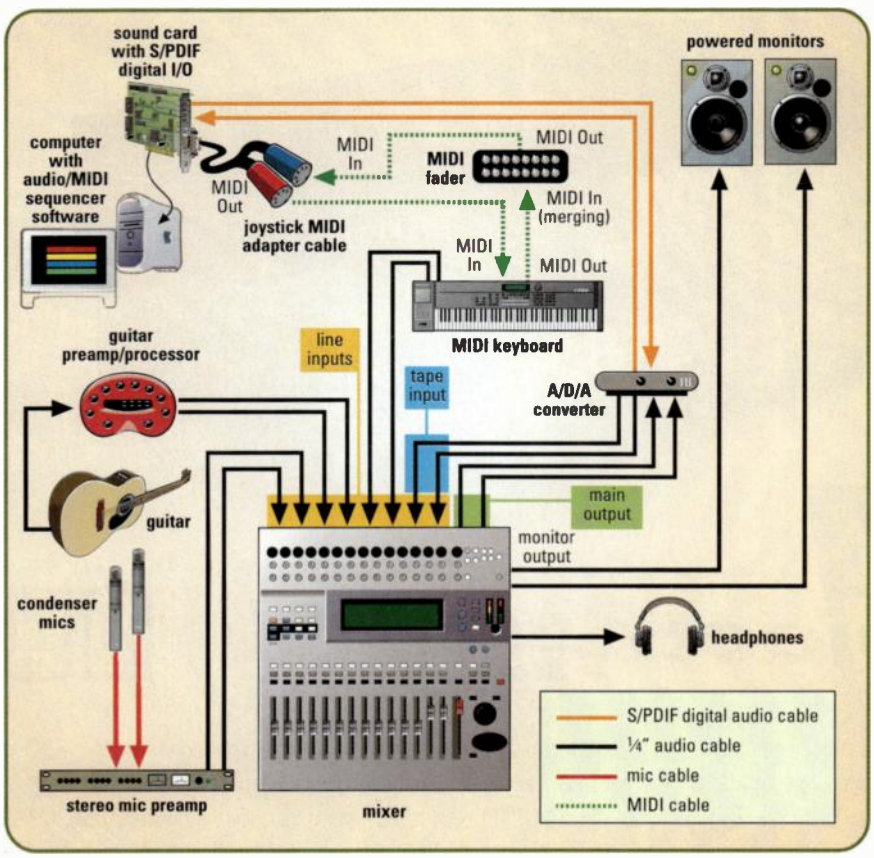


FIG. 3: Even a consumer sound card can deliver high-quality results when paired with an external digital-audio converter such as the ART DI/O. An external mixer is more comfortable for some people.

AMAZING BASS

For the bass part we'll use a keyboard playing an acoustic bass preset. Don't have a keyboard? Download a software synthesizer; some even let you enter notes with a mouse. Even better, try a Twiddly Bits bass line from Keyfax Software (www.keyfax.com). These are short MIDI files that were recorded by

WAVES New RESTORATION

Software bundle establishes a new standard for restoration and noise reduction.

Fast and incredibly simple to use, providing real-time feedback.

Ideal for music, post-production and forensic professionals.

X-NOISE

Intelligently learns from a section of noise and then applies broadband noise reduction.

X-CLICK

Effectively removes clicks from vinyl records as well as digital spikes.

X-CRACKLE

The 2nd stage in record restoration eliminates crackles and surface noise.

X-HUM

Removes ground loop hums, rumbles, microphone pops, and DC-offset.

See your WAVES dealer. Free 14-day demo at www.waves.com.

North and South America
Waves Inc., 306 West Depot Ave., Suite 100, Knoxville, TN 37917 USA, Tel: 1-865-546-6115, Fax: 1-865-546-8445
Rest of the world
Waves Ltd., Azr eli Center 1, Tel Aviv 67011, Israel, Tel: +972-3-608-1648, Fax: +972-3-608-1656

WAVES

world-class performers on MIDI-fied basses (and other custom instruments). The concept is similar to audio drum loops, except that MIDI files are more like a score than a recording—you choose the playback sound and tempo in your sequencer.

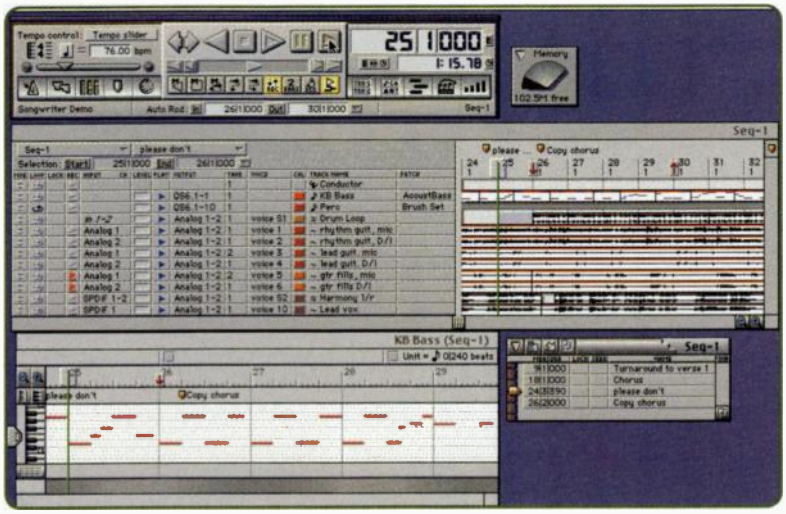


FIG. 5: This shot from MOTU *Digital Performer* (Mac) shows the windows you'll find in most multitrack recording software: tape deck-style transport controls; a counter showing bars, beats, and time; a track overview; and a "piano roll" MIDI editing window.

If you're playing the part yourself, record-enable a MIDI track and play along with the audio tracks you've already recorded. Again, don't worry if you flub a note. Enter the MIDI editor window, grab the clam, and move it where it belongs. Experiment with different bass sounds; there's no need to commit to anything before you're happy.

To add the bass to the finished mix, assign the output of your keyboard to a stereo pair of inputs on the audio interface. In some programs, you'll need to physically record the part as an audio track before you can mix. (If you're using a software synth, you may be able to render its output into an audio file automatically.)

Here's another tip for those of us with lousy keyboard chops: enter chords in an auto-accompaniment program like PG Music *Band-in-a-Box* and save the part as a Standard MIDI File. As you did with the Twiddly Bits files, import it to your audio program and adjust it as needed.

OPPORTUNITY VOX

Getting a great vocal take is easier than you think. Of course vocal skills and a good mic help, but attitude, creativity, and concentration are vital. Don't like the sound in your studio? Take advantage of the acoustical properties of different parts of your home. There's a reason everybody loves to sing in the shower.

Use a pop filter or a foam windscreen to tame the bursts of air some vocalists make when singing *P*s and *B*s. (You can make a pop filter by stretching a nylon stocking over an embroidery hoop.) A specialized equalizer called a de-esser can reduce sizzling *S*s and *T*s; software versions are available.

Adding reverb makes many singers more comfortable. It's best to add the effects only to the signal that's sent to the singer's headphones; once an effect is recorded, you can't make changes. I'll discuss effects in more detail shortly.

Rather than starting every recording pass at the beginning of the song, set a "locate point" just ahead of the first verse. Begin playback a few seconds before you need to come in, then hit Record and go. I like to automate the process by setting *punch-in* and *punch-out* points to cover just the bits I need. Once I'm finished with a take, I'll get picky and replace individual words or even syllables. With hard-disk recording I never have to worry about erasing that irreplaceable take.

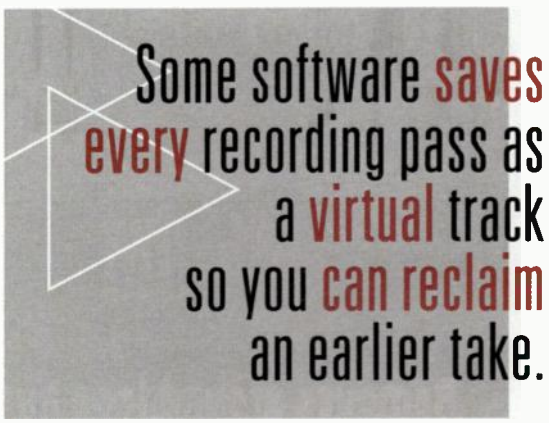
Next, add the background vocals. If harmony's not your thing, use pitch-correction software like Antares *AutoTune* or a harmony generator like the TC-Helicon VoicePrism.

EDITING 101

Digital recording has one huge advantage over tape: ease of editing. Because it's dealing with ones and zeros, your computer massages audio and MIDI data as easily as it cuts and pastes text. Here are just a few examples of what you can do.

If the song has a repetitive chorus, there's no need to record a new vocal each time. Simply copy and paste. Similarly, you can change the entire feel of a song by inserting or removing a bridge or chorus, doubling the length of the outro, and so on. I like to save multiple versions of my edits so I can go back if I mess up.

In some musical styles, background vocals should closely match the lead vocal in timing, so open the waveform editor and slide any offending phrases into line. Flub a note in a solo? Grab it from somewhere else in the file. Use a quick *crossfade* to mask the transition.



What if you get halfway through the project and realize it's in the wrong key? Transposing MIDI files is a piece of cake; audio takes a bit more effort. Be aware that moving an audio file more than a step or two sometimes creates weird artifacts.

glossary

ADC/DAC (Analog-to-digital converter/digital-to-analog converter): Circuitry to move audio into and out of the digital domain.

AIFF (Audio Interchange File Format): A digital audio format common to both PCs and Macs.

analog: A method of reproducing sound based on a continuously fluctuating voltage. (Contrast digital, which is a series of "snapshots.")

cardioid: A heart-shaped microphone pickup pattern. Cardioid mics tend to minimize sounds coming from the rear, making them a good choice for home recording. Hypercardioid patterns are narrower.

channel: (1) A discrete signal path in a mixer. (2) A discrete transmission and reception path for MIDI data.

clipping: The phenomenon that occurs when audio signals hit the maximum possible level. Digital clipping looks like a flat chunk was bitten out of the waveform. It will hurt your ears and could damage your equipment.

compressor: A processor that progressively reduces the level of a signal as it exceeds a set threshold. By lowering the peaks and adding make-up gain, compressors can make a track louder.

condenser: A microphone with a thin membrane stretched near a charged backplate. Capable of reproducing fine detail, condenser mics require a power source.

converter: *See ADC/DAC.*

crossfading: Simultaneously raising the level on one sound while reducing it on another. Quick crossfades are used to mask transitions across edits.

dynamic microphone: A microphone with a built-in magnet suspended in a coil. Dynamic mics do not require an outside power source and are great for recording loud sources.

dynamics: The difference between the loudest and softest portions of a sound.

effects: A term for different processes that enhance sound. Compressors, limiters, and noise gates affect level; time-based effects like delay, reverb, and chorus alter the perception of the sound in space. Other popular effects include wah-wah, distortion, tube emulation, and vocoding.

EQ: Short for equalization, a selective boost or cut of certain frequencies.

figure-8: A pickup pattern that detects sounds directly in front of and behind a microphone while rejecting sounds at the sides.

Hz: Hertz, or cycles per second. A measurement of frequency. 1 kilohertz (kHz) = 1,000 Hz. Humans perceive sounds between 20 Hz and 20 kHz.

MIDI (Musical Instrument Digital Interface): A standard for connecting and controlling electronic devices. Originally devised to let one keyboardist play several synthesizers simultaneously, MIDI is now used for everything from mixer automation to controlling stage lighting.

mixer: Hardware or software used to control and route multiple audio and/or MIDI sources.

monitor: *n.* A loudspeaker. Close-field monitors are designed to deliver sound relatively uncolored by room reflections. *v.* To listen closely.

MP3: A "lossy" data-compression scheme that discards "redundant" frequencies in an audio file. MP3 files are far smaller than CD-audio files, which makes them handy for transmission via the Internet.

omni: A 360° pickup pattern. Omni mics are useful for extreme close miking because they have no proximity effect. See *proximity effect.*

phantom power: Voltage (usually 48V) supplied through a microphone cable to power condenser mics. Phantom power does not affect dynamic microphones, but can destroy a ribbon microphone.

plug-in: Audio processing software that works inside a host application. Some plug-ins operate in real time, others alter the sound file.

preamp: A specialized amplifier to boost a weak signal from a microphone or instrument to a usable level, called line level.

proximity effect: An artificial boost in lower frequencies heard when a source moves closer to a cardioid or hypercardioid mic. Many singers take advantage of this to boost thin vocals.

punch: To record over an existing portion of a track at a specific location.

ribbon mic: A microphone whose element consists of a thin ribbon. Though highly accurate, ribbon mics tend to be delicate; even a stray breath can cause damage to some models.

S/PDIF (Sony/Philips Digital Interface): A digital-audio transfer protocol that uses either RCA (phono) or optical (TOSLINK) connectors. Often used to connect third-party audio converters to an internal sound card.

sample: (1) An instantaneous measurement of digital sound (see *sampling rate*), analogous to a snapshot. (2) A brief recording, such as that used to produce a single note in a MIDI sampler.

sampling rate: The number of measurements per second used to represent a sound digitally. Because representing a given frequency takes at least two samples, 44.1 kHz sampling can reproduce sounds up to 22 kHz.

SDII (Sound Designer II): A common audio-file format for the Mac, created by Digidesign, maker of Pro Tools.

sequencer: Hardware or software designed to record and play back MIDI data.

SMF (Standard MIDI File): A universal exchange format for MIDI files.

track: A legacy of tape-based analog recording, a track is a single "stripe" of audio data. A hard-disk track may consist of one audio file or many.

virtual track: An audio track that is saved but not currently assigned to a mixer channel.

WAV: Sometimes spelled WAVE or .wav. The standard Windows audio-file format.

MEET YOUR MIXER

In multitrack audio software as in traditional tape-based studios, each track is assigned to a mixer channel complete with a volume fader, a pan control for positioning the track in the stereo field, insert points for effects such as *EQ* and dynamics, and auxiliary-send controls (aux sends) to route the track to reverbs and other effects (see **Fig. 8**).

Why use auxes instead of inserts? Sometimes you want to put the same reverb on a number of different tracks to help unify the overall sound. Rather than overload your CPU by duplicating the effect for every channel, you can route the channels to one master effect with an aux send.

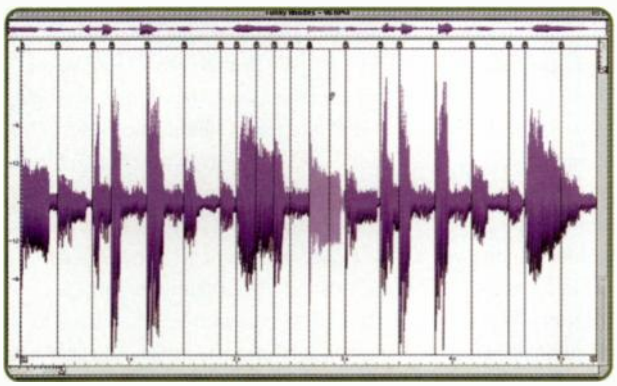


FIG. 6: Propellerhead's *ReCycle* (Mac/Win) can slice a rhythmic recording into beats, letting you replace individual sounds or adjust tempo without changing pitch.

FIG. 7: When recording, set your levels so that the peaks fall just below the red zone. Record too low and you compromise resolution; go into the red and the signal distorts horribly.

The majority of recording programs ship with enough effects to get you started. However, thanks to standardized plug-in formats, you can purchase (or download) just about any effect imaginable. Make sure your software supports the format. VST and DirectX are popular on PCs; VST and MAS are common on Macs. Your software may use its own plug-in format; Digidesign *Pro Tools* (Mac/Win) uses TDM and RTAS.

Hip faders. As a rule of thumb, you should try to keep the master fader around 0 and adjust the others accordingly. Use the trim control (if available) to boost or cut individual levels coming into a channel so you don't have to keep one fader unnaturally high or low.

You may be asking yourself, "Holy moley, how do I move all those faders and knobs with just a mouse?" Automation to the rescue—there's no need to mix everything in a single pass. Instead, work on sections of the song, going track by track until you've got it just right. Many audio programs support MIDI control of their faders and knobs, so you can use your keyboard's mod wheel and data sliders to get a handle on them. For even more finesse, pick up a dedicated MIDI fader box like the Doepfer Pocket Fader or a full-on control surface like the CM Automation MotorMix.

Inspiration Without Perspiration

Having trouble coming up with something to record? Your computer can be a creative firestarter—and it will never sue you for a share of the dough. Here are some tips and tricks to tickle the muse. Several are addressed at length elsewhere in this issue.

Work the Web. Rhythmic inspiration is yours for the asking; any number of Websters are willing to share their coolest loops, samples, and MIDI files. For personal use or inspiration, these resources are fair game. But if you're planning to distribute your recordings, incorporating the downloads wholesale could lead to potential copyright violations.

Phone it in. Don't like to work alone? Now you can find a songwriting partner anywhere in the world with the Rocket Network (www.rocketnetwork.com).

Eavesdrop. I like to hear what other writers are up to, so I'll listen to *anything*. Remember, if you steal ideas from lots of people, it's called research.

Try new tools. You can find just about any musical tool as shareware. Don't know what granular synthesis is? Doesn't matter; download a free generator and see what happens. Maybe it's what you've been looking for all along.

Get lyrical. Do you want to know what rhymes with orangy? Check out an online rhyming dictionary, such as Eccentric Software's *A Zillion Kajillion Rhymes and Cliches* (www.eccentricsoftware.com). Once you get it all together, go to www.joescafe.com for the perfect band name.

Appliance within. A buddy once told me that my bodhran (an Irish frame drum) sounded like tennis shoes in a dryer. So I miked up the Maytag and popped in the Keds. A little careful editing and I had a chuggin' track.

Let it flow. One of my favorite tricks is to improvise straight into the computer. I'll record maybe half a dozen versions of the same basic idea; it doesn't matter if I start over or make mistakes. Later, I listen to everything and do a rough edit. If it's any good, I've got a new song.

FIG. 8: The mixer controls in Steinberg *Cubasis* (Mac/Win) are spread between multiple windows. At rear are faders to adjust the relative volumes of the different instruments. At center is a pop-up window for tweaking effects and EQ. (Here I've created the world's most piercing guitar sound.) The window at left controls the inserted chorus effect.

MIXING IT UP

Ask any two engineers the secret of a good mix and you're likely to start an argument. Like any art, mixing is entirely subjective. Keep that in mind as you go through the following mixing tips. Before you start, think about how the finished song will sound. Is it a ballad, in which the lead vocal is the focus, or a dance mix driven by the drums and bass? I always listen to CDs of similar songs for inspiration before I start a mix.

Compress play. One of the secret weapons in a mixmeister's arsenal is the *compressor*, a device that smooths out dynamic changes, creating a more consistent volume throughout the song. Like any weapon, though, it can backfire if used incorrectly. If you don't know how to use a compressor, start with the presets and listen.

Compressors have two main parameters: ratio and threshold. Generally speaking, lower ratios are best for vocals and acoustic guitars; higher ratios tame the errant drum hit. By carefully adjusting the threshold you can affect just the peaks while leaving the rest of the track untouched. Resist the urge to overcompress your mixes; it makes them loud but lifeless. One of the joys of digital audio is a huge dynamic range, so use it.

Department of equalization. EQ can be tricky. Be sure to listen to the track as part of the overall mix. For instance, the bass strings on an acoustic guitar cover the same range as many male vocalists. To keep the mix from sounding muddy, back off on the lows on the guitar. The instrument may sound thin by itself, but it will let the singer shine. It pays to know something about the range of each instrument. There's no point in boosting the bass on a cymbal; all you'll do is accentuate any room noise that got into the mic.

Speaking of noise, mute any track that isn't needed. Sometimes you can't avoid noisy tracks; common problems are hum from single-coil pickups on guitars and electric basses, ground loops or 60-cycle hum, and hiss from parts transferred from tape. In many cases, software like *Ray Gun* from Arboretum Systems can scrub and rinse the noise from your tracks. You just have to be careful not to remove too much music along with the dirt.

Consider the effects. Today's software effects range from simple stompbox-style distortion emulations all the way to sophisticated multi-effects generators as good as those found in any studio. Be aware that the more complicated the effect, the more processing power it will require. With reverbs, sometimes less is more. A tight vocal "plate" preset may be all you need to perk up a track. Often, a simple echo will sound better than a reverb.

Take a tip from the pros: once you have a great mix, run off another with the lead vocal up slightly. Then do one with the vocal down a notch; it saves having to remix later. Did you blow the fade-out? No need to remix the whole song; just redo the fade and paste it over the bad part.

THAT'S A WRAP

The final stage of the recording process is called mastering. That's the stage when your song gets shined up and ready for the world through artful adjustments to volume, tone, and more subtle parameters. Professional mastering engineers have great tools and killer ears; a few legendary names dominate the industry. If you seriously want your project to compete with the big dogs, have it professionally mastered.

That said, desktop mastering is within your reach. First, decide where your song is going to end up. Data-compression schemes like MP3 work by removing some audio information. That translates into decreased dynamic range and less high end, so plan your mixes accordingly. (See "How to Make Killer MP3s" on p. 60.)

FIG. 9: Channel-strip processors combine all the essential tools for recording vocals. The PreSonus VXP includes a high-end microphone preamplifier, a dynamics processor, a de-esser, and EQ.

Making a CD is the goal for many of us, and it's surprisingly easy. CD-burning software lets you assemble a collection of songs, set the length of time between them, and make adjustments to the relative levels. For a complete walkthrough, see "Learn to Burn," directly following this article.

I hope this brief overview has piqued your interest. As I said, desktop recording is within anyone's reach, so get out there and make some tracks.

MARK NELSON LIVES AND RECORDS IN SOUTHERN OREGON'S APPLEGATE VALLEY. HE REALLY DOES HAVE A BANJO-UKULELE IN THE GARAGE.

		WDM	E-WDM
1	MME bit depth	Up to 16 bit	16/24 bit up to 32 bit
2	Total channel availability	12 In / 10 Out	Unlimited I/O
3	Independent MME support	NO	YES
4	GIGA X ready	NO	YES
5	ASIO 2.0	Rarely	YES
6	SONAR with 1.5ms	NO	YES

Are you xp Ready?

E WDM is "One for All"

Introducing..

WaMi Rack 192X

- Premium 192kHz 8 channel Audio interface

7	98SE/ME/2000/XP	YES	YES
8	Multi Client	NO	YES
9	Multi Streaming	YES	YES
10	GIGA WIRE Enabled	NO	YES
11	Multiple MIDI ports	NO	YES
12	Multiple Direct Sound	NO	YES
13	-6 dB Problem fixed	NO	YES

EGO·SYS

www.egosys.net

3350 Scott Blvd, Suite 33 Santa Clara, CA 95054 Tel :408.748-1070 Fax: 408.748-1470

learn to burn

HERE'S HOW TO PUT YOUR FAVORITE TUNES ON CD.

If you're like me, you have boxes of records and cassette tapes in your garage, and you haven't pulled them out in years. You've probably replaced many of them with CDs, but undoubtedly some of your favorite albums were never reissued. Besides, you only like certain tunes on each one, and programming your CD player to skip them each time you play a disc is a big fat hassle.

In addition to those dusty relics, you might also have a growing collection of MP3 files downloaded from the Internet. Wouldn't it be nice to consolidate your favorite tunes from all those sources and more onto custom CDs? You could create one disc with party music, another with more intimate selections. Alternatively, you might want to archive some treasured LPs against the ravages of time—or just to play in your car. Fortunately, it's quite easy (and amazingly inexpensive) to do just that with recordable CD technology. With recordable CDs costing as little as 15 cents apiece in bulk, they're also ideal for backing up normal CDs you wouldn't want to be lost or stolen

WRITE ONCE, READ EVERYWHERE

There are two types of recordable CDs: CD-R and CD-RW. In both cases, a laser *burns* a pattern representing the ones and zeros of digital-audio data into a preformed spiral track on the blank disc. The CD-R format lets you record data only once, whereas the CD-RW format lets you record, erase, and rewrite many times on the same disc (RW stands for "rewritable"). However, many standard CD players can't read CD-RW discs, so if you want to record audio CDs to use in normal players, CD-R discs are a better choice. Oddly, home DVD players are more likely to be able to read CD-RW discs than CD-Rs, although computer DVD-ROM drives are generally able to read CD-Rs.

There are also two types of audio CD-R/RW burners: standalone

BY SCOTT WILKINSON

and computer-based. Standalone units have audio inputs and outputs as well as tape-deck-style controls. Some even include both a CD player and a CD-R/RW burner for easy dubbing. Consumer models require special blank discs and use the Serial Copy Management System (SCMS) to prevent making copies of copies, whereas professional units can use less expensive blanks and do not implement SCMS. Computer-based CD-R/RW drives are available as external or internal devices, are generally less expensive than standalone units, and (with the right software) offer far more flexibility. Those drives connect to computers via SCSI, IDE, USB, FireWire, or PC Card ports.

HOW NOW, DAO TAO?

In the early days of CD-R, you had to record everything on a disc all at once; now, you can record one or more tracks, stop, then record more, stop, and so on until the disc is full. If you want to play a partially recorded CD-R in a standard player, you have to close the session. Then, to record more material, you open a new session. You can continue doing this until you finalize the disc or run out of storage space.

Unfortunately, most standard CD players only recognize the first session on a disc, although a few can play all sessions. As a result, you should always record audio CDs in one session. That doesn't mean you have to record the entire disc in one continuous pass; you can record tracks separately as long as you don't close the session. This is called *track-at-once* (TAO) recording.

The word *track* here does not mean that you have to record a single song in each one; a CD track can include multiple tunes. The limit is 99 tracks per disc, and a slight loss of available storage capacity is associated with stopping and starting the laser. Specifically, a bit of space is left blank between tracks, although some combinations of software and hardware might leave junk data there, which could result in an audible click. In addition, you might not be able to control the size of the gap, which is often fixed at two seconds.

The other option is recording the entire disc in a single, continuous pass; this is called *disc-at-once* (DAO) recording. In this process, the burn must proceed without interruption from beginning to end. DAO is by far the preferred method for audio CDs.

Most CD burners can perform TAO or DAO, but standalone units are rather cumbersome, especially when compiling tunes from different sources using TAO, because it's very difficult to match levels between tracks and you typically can't control the gap length. A much better approach is to record your source material onto a computer's hard drive, assemble an *image file* that corresponds to a complete CD, and use DAO to burn the disc. Using the appropriate software, this lets you arrange the tunes in any order, adjust levels and EQ, remove noise, and manipulate the gap between tracks or even crossfade them. Leading Windows programs that can handle DAO include Roxio's *Easy CD Creator Platinum* and Ahead's *Nero;* for the Mac, you have Roxio's *Jam* and Emagic's *WaveBurner Pro* (see **Fig. 1**).

The only drawback to this approach is that it requires a lot of free hard-disk space. A CD-R can normally hold 74 minutes, 44 seconds of audio, which will require about 750 MB of disk space on your computer. Because audio software writes a lot of temporary files as it processes data, it's best to double that figure. (Interestingly, 74-minute CD blanks only hold 650 MB of computer data, not 750 MB, due to error-correction data added to the CD.)

Depending on the CD burner, software, and disc media, it is sometimes possible to record more data using a process called *overburning,* but you run the risk of generating errors or even damaging the playback drive by forcing its head to move too close to the edge of the CD. You can also get CD-R blanks that ostensibly hold 80, 90, or even 99 minutes of audio, but they might not play in all players. Stay within the official CD spec for maximum compatibility.

HOOKING IT UP

To record an analog source into your computer, you'll need an analog-to-digital (A/D) converter. The consumer-grade sound card that comes with most computers is adequate for the task, but not ideal. If possible, install a higher-quality sound card,

FIG. 1: Emagic's *WaveBurner Pro* offers audio-enhancement features such as track crossfading and multiband dynamic compression for achieving consistent levels.

such as the Digital Audio Labs CardDeluxe, Creamware Luna II, Emagic Audiowerk2, or M-Audio Audiophile 2496. (Visit the DMPG section of www.emusician.com for contact information.)

If you want the highest possible quality, use an outboard A/D converter such as the Midiman Flying Calf A/D or ART DI/O. They connect to a sound card through an S/PDIF digital input,

which you'll often find on better consumer cards such as the Sound Blaster Live. S/PDIF connectors come in two types, optical and electrical, so make sure to get a matching converter. Another option is to use a USB audio interface, such as the Tascam US-428 or Edirol UA-3 or UA-30, which send digitized audio into the computer over a USB cable.

Some DAT recorders perform A/D conversion and send the result to their digital output in real time. In that case, the DAT's digital output can be connected to the digital input of the computer (again, as long as the digital interfaces match). If you have a DAT recorder that doesn't do this, another option is to record your sources onto DAT and then play them back through the DAT's digital output into the computer; make sure to record at 44.1 kHz if possible. Some older DATs can record only at 48 kHz, which means you must do a *sampling-rate conversion* to match the CD sampling rate of 44.1 kHz. Many S/PDIF interfaces can do sampling-rate conversion in hardware, and various programs, such as Syntrillium's *Cool Edit 2000* (Win), can also do it in software, but the audio quality can suffer.

The vinyl frontier. To record from LPs, you need a turntable and a *phono preamp* to boost the turntable's output signal to line level and correct the infamous *RIAA EQ curve*. Although it is physically possible to connect a turntable's output directly to a sound card's analog input, you'll end up with a thin, trebly sound at a relatively low level. That is because when vinyl records are produced, the bass is reduced to prevent the needle from jumping out of the groove and the treble is boosted to help reduce high-frequency noise.

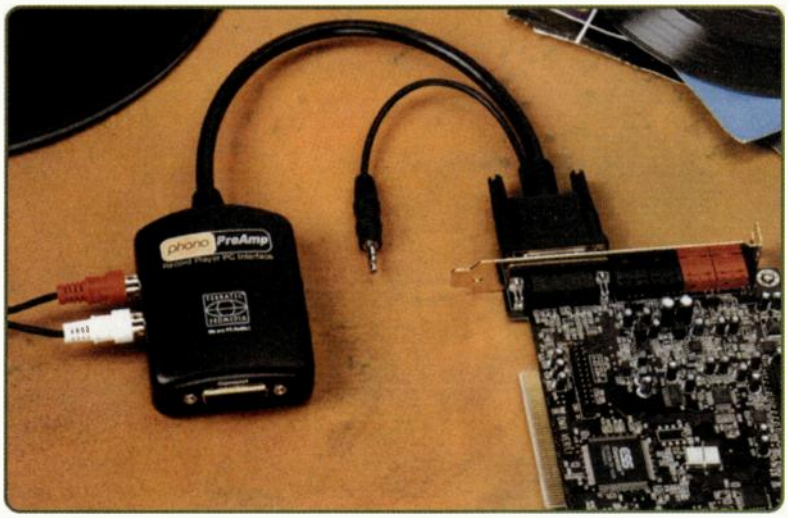


FIG. 2: Plugging your turntable directly into your computer will yield inferior sound. The Terratec Phono PreAmp applies the necessary level and tone corrections. Powered by the PC's joystick port, it's also more convenient than lugging over your receiver.

How does boosting the treble *reduce* noise, you ask? When the LP is played, the preamp reverses the RIAA curve, boosting the bass and reducing the treble, which also lowers the inherent noise of the vinyl. Virtually all consumer receivers have a phono preamp; there are also dedicated ones (see **Fig. 2**). You may need to connect the turntable's grounding wire to a screw on the computer to prevent hum. Don't forget to clean the record first by wiping it with a soft lint-free cloth in the direction of the grooves.

If you're transferring material from multiple analog sources, the most convenient approach is to connect them all to a receiver and connect the receiver's line outputs to the analog input of the sound card or outboard A/D converter. Then, simply select the source you want to transfer from the receiver. Alternatively, you could connect all devices to a mixer and route them through it to the computer. (If you want to transfer from vinyl, put the phono preamp between the turntable and the mixer input.)

The purist approach is to place as few devices in the signal chain as possible. This means connecting the output of each source device to the sound card or A/D converter separately, which is more of a hassle, but it could yield better audio quality in the long run. One final note: for the cleanest sound, be sure to use the *line* (not microphone) inputs of your sound card and the line (not headphone) outputs of your receiver or mixer.

MAKING THE TRANSFER

Once all your connections are made, you can start recording audio from your sources into the computer. If you record analog audio from tape or vinyl, make sure the recording level is as hot as possible without actually reaching the red zone on the software's level meters. There are many places in the signal chain and software to adjust the level; in general, try to avoid maxing out any level control. All final files must be at a sampling rate of 44.1 kHz with 16-bit resolution, which is the CD specification, so use that as your recording setting. (With some software, such as

the CD part of town—online resources

CD Page (www.cdpage.com):
Straightforward tutorials and links.

CD-R FAQ (www.cdrfaq.org):
The premier source for recordable-CD information.

CD-R Primer (www.mrichter.com):
Behind-the-scenes tips from CD developer Mike Richter.

CD-RW Central (www.cdrwcentral.com):
News, reviews, and walk-throughs of leading programs.

CD Speed (www.cdspeed2000.com):
Free Windows software for testing digital-audio extraction accuracy.

Digital Domain (www.digido.com):
Tips (and cautions) from renowned mastering engineer Bob Katz.

Roxio Support (www.roxio.com/en/support):
Helpful information, tutorials, and forums.

REASON

THE STUDIO OF YOUR DREAMS

IS YOURS FOR 20 MINUTES*

In case you didn't already know: Propellerhead Reason is a beast of a music system. A self-contained, all-in-one software studio in the shape of a classic studio rack, filled to the brim with all the gear you could ever dream of: Analog synths, Samplers, Step-time drum machines, ReCycle-loop players, Mixers, Effects and a lightning fast multi-track sequencer. You want even more machines? No problem. Reason lets you create as many of each instrument or effect as your computer can take, so you can build yourself a serious monster rack. If you ever wished you had eleven samplers and eight compressors, Reason is for you.

Reason lets you make more music. More often. Reason looks great, sounds even better, and has more knobs and controls than a nuclear power plant. But it's Reason's simplicity that makes all the difference. Just start it up, get friendly with the machines, and you will find yourself making music within three minutes. Getting started is that simple. And so is getting hooked. Once you get bitten by Reason you'll find it hard to quit, but when you have to, just save your song and all your sounds and settings will be saved along with it, so you can pick up exactly where you left off, whenever you want to.

Reason makes sense. Reason is a fast, flexible power-pack that acts on your every command. In fact, it's so flexible it can be tailored to suit your specific needs. Reason easily adapts to you and your working methods; use it as an all-in-one midi studio in which you create and mix your own tracks, or sync it to an audio sequencer and process the outputs with plug-in effects. You can even play Reason's instruments from another MIDI sequencer. And we're still just scraping the surface. With patching powers rivaling modular synthesizers, full graphical automation, and millions of other features you didn't even know existed, you'll never run out of options. With Reason, you make the rules. And the music.

***How to obtain your 20 minutes of free Propellerhead Reason studio time:** Point your browser to **www.propellerheads.se/reasondemo**, download the Reason 1.0 demo, install it, and you're rolling! The demo is just as powerful as the full version, but it only works for 20 minutes at a time. It is a sweet 20 minutes, though.

THE REASON RACK 01. MIDI IN DEVICE/64-CHANNEL AUDIO INTERFACE 02. MIXER 03. EFFECTS 04. SUBTRACTOR POLYPHONIC SYNTHESIZER 05. NN19 DIGITAL SAMPLER 06. EFFECTS 07. DR REX LOOP PLAYER 08. DEVICES CAN BE FOLDED IN 09. EFFECTS 10. MATRIX PATTERN SEQUENCER 11. REDRUM DRUM MACHINE 12. EFFECTS 13. REBIRTH INPUT MACHINE 14. THE REASON SEQUENCER 15. TRANSPORT

propellerhead

www.propellerheads.se

Distributed exclusively in the USA and UK by: **MIDIMAN, Inc.** www.midiman.com

LEARN TO BURN

Emagic *WaveBurner Pro*, it's possible to record at higher resolutions and *dither* the files down to 16-bit, 44.1 kHz, but that's beyond the scope of this article.)

Don't worry about starting and stopping the recording between songs on a record or tape; it's easy to snip them apart later in the computer. Software such as Mike Looijmans's *CD Wave* (Win) and Roxio's *CD Spin Doctor* (included with *Toast Titanium* and *Easy CD Creator Platinum*) can split the recorded file into separate songs on track boundaries. You can also remove needle-drop noise this way. If you're making a CD of your daughter's piano recital or of another live show in which one tune leads into another with applause rather than silence, you can manually insert track-start markers. This makes it easy to cue to different sections of the recording or have it play as a continuous experience.

Don't fear the ripper. You may also want to copy individual tunes from CDs. To perform digital-audio extraction (DAE; also known as *ripping*) from a CD directly to the computer's hard disk, you need a CD-ROM drive that supports DAE, which is rare among older drives but common in newer ones. (Windows users can test their drives' capabilities with the free *CD Speed*.) You also need DAE software, such as Andre Wiethoff's *Exact Audio Copy* or ShareIt's *Audiograbber* (both Win).

Interestingly, the accuracy of ripped audio data is not guaranteed, because the official CD specification doesn't identify the exact beginning of the blocks containing audio data. The result can be doubled or skipped bytes that manifest as clicks and pops, especially if the hard disk can't keep up with the CD-ROM drive that's extracting the data. Most DAE programs can correct the problem, but in general, it's better to extract digital audio in one continuous pass at slower speeds. Be aware that some DAE programs truncate the last two seconds from extracted audio tracks, which can be annoying.

MORE ON THE WEB

Visit the DMPG area of www.emusician.com for links to CD-burning software and hardware.

Have a little MP3. Most current CD-burning software can import MP3s from your hard drive and burn them directly onto a CD-R. This lets you put about ten times as much music on a CD compared with standard audio, because the MP3 data is highly compressed. However, such CDs can only be played back on a computer or a special CD player (such as the SonicBlue Rio Volt) that can decode MP3 files.

To make standard audio CDs or to combine MP3s with audio from other sources, MP3 files must be converted into uncompressed WAV or AIFF files. (Newer software—such as *Toast Titanium*, *Nero*, Apple's *iTunes*, and *MusicMatch Jukebox* [Win]—does the conversion on the fly, letting you burn directly from a playlist containing MP3s.) If your CD-burning software doesn't do the conversion, try a shareware utility such as Norman Franke's *SoundApp* (Mac) or use the Wave Writer feature in Nullsoft's *Winamp* (Win). See the DMPG section of www.emusician.com for step-by-step instructions.

I COULDA ENHANCED ALL NIGHT

After you collect some audio files on a hard disk, it's time to organize and process them before burning them onto a CD-R. If you digitized some tunes from records or cassette tapes, they probably have some noise: hiss, clicks, pops, and so on. Many digital audio programs—such as *Cool Edit 2000*, *Easy CD Creator Deluxe*, *Nero*, *Toast Titanium*, and Steinberg's *Clean* (Win)—include automatic noise-reduction functions, and some also let you manually remove big pops and other nasties.

Burning Brighter

Three ways to enhance your CDs.

With the right software, you can add digital videos, slide shows, and even a Web site to a music CD, creating a disc that dances as well as sings. The most elegant method involves burning the audio tracks in *session-at-once* mode and then adding the computer files as a second session and closing (finalizing) the disc at that point.

If you'd like your data to be usable on both PCs and Macs, choose the *ISO 9660* data format, make sure all files have 8.3-character names, and include only documents (such as HTML and JPEG files), not programs. Of course, if you're targeting only PCs *or* Macs, you can safely put programs on your disc and use standard naming conventions.

The slickest way to make a cross-platform data CD is to use the *hybrid* format, in which the disc contains both a Mac volume and ISO files, with each side invisible to the other platform, although universal documents such as MP3 files can be shared to save space. Hybrid format lets you include full-on programs such as *Flash* games and *Director* movies. On the Mac, you can make hybrid CDs with *Toast Titanium* or *Charismac Discribe*. On Windows, try Ahead's *Nero* (which can mount Mac volumes over SCSI but can't share files) or Logiciels and Services Duhem's *MacImage*.

A far simpler way to enhance your CDs is by adding *CD-Text* data, which allows compatible players to display the album title, artist name(s), and track titles during playback. Several Windows burning programs can embed CD-Text; on the Mac, you can use Emagic's *WaveBurner* or Ahead's new *NeroMax*.

Finally, for those who want to live on the edge, the CD Oddities Page (www.turbine.com/oddcd) contains information about creating hidden tracks and other naughty tricks.

—David Battino

Musician's Friend

APPLY TODAY!

YOUR CHOICE SAME AS CASH!

3 MONTHS Minimum Purchase $199

6 MONTHS Minimum Purchase $499

The Musician's Choice For Great Gear At Great Prices!

AKAI professional

DPS16 16-Track Digital Recorder

242049Y

List $2,795.00

$1399.99

Steinberg

Cubase VST 5

708002Y

List $399.00

$289.99

GRACE design

Model 101 Microphone Pre-amp

180920Y List $699.00

$599.99

CAD

M-37 Recording Mic

270761Y

List $399.99

$99.99

Triton Expandable Rack Module/Sampler

702231Y

List $2,500.00

$1599.99

TAIYO YUDEN

CDR-80PA

80-Minute

16x Silver CD-R

950168Y

List $3.96

ONLY 69¢

FREE CATALOG!

ONE-YEAR SUBSCRIPTION

WEEKLY WEB FREE GEAR GIVEAWAY!

WORTH UP TO $1000

CALL TOLL-FREE

800-776-5173

or visit us online at

musiciansfriend.com®

Five Easy Ways To Order!

1. Call: 800-776-5173
2. Click: www.musiciansfriend.com
3. Write: P.O. Box 4520 Medford, OR 97501
4. Fax: 541-776-1370
5. Lease: 800-359-4790

Rapid Delivery!

- Most orders shipped same day!*

45-Day Double Guarantee!

- Money-Back Satisfaction Guarantee
- Best Price Guarantee

*On orders received by 5PM ET Mon.-Fri. Limited to stock on hand; prices subject to change; standard catalog shipping rates apply.

To get your FREE Catalog subscription, fill out this handy coupon and mail to: Musician's Friend, Dept. DMPG, P.O. Box 4520, Medford, OR 97501

Name _____

Address _____

City _____ State _____ Zip Code _____

E-mail address _____

Area(s) of interest: ☐Guitar ☐Bass ☐Keyboard ☐Drums ☐Studio (recording) ☐Stage (PA, lights, etc.) ☐DJ

SOURCE CODE: DMPGAL

You'll also notice that some files sound louder, brighter, deeper, or more spacious than others. The programs mentioned previously (or nearly any audio editor) can be used to adjust those characteristics, helping the CD to work as a whole. You can tweak tone with EQ and spaciousness with reverb and stereo-enhancement effects, though they're best used sparingly (see **Fig. 3**).

The easiest way to match levels between tracks, especially if they come from different sources, is *normalization*. Most audio software performs the operation, in which the level of each track is boosted until the peak level is the maximum it can be without clipping. But even after normalization, the average level of the

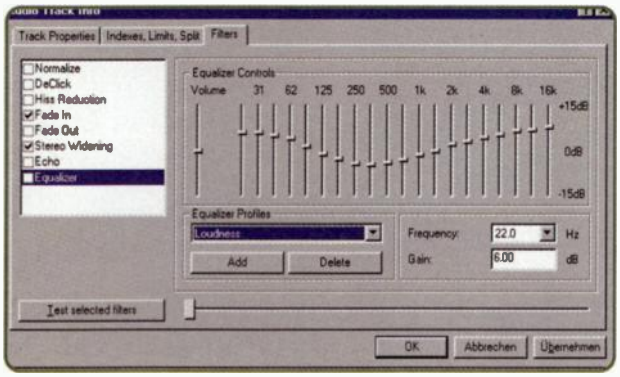


FIG. 3: Ahead's *Nero* includes several effects for cleaning up audio transferred from tapes and records. Use effects sparingly for the most natural results; the equalizer settings shown here are rather extreme.

tunes might seem to fluctuate too much. Therefore, you might want to apply *compression* to one or more of the tracks. This reduces the dynamic range—the difference between the softest and loudest parts—of the selected material. (Note that dynamic compression is different than data compression.) Compression is important if you plan to listen to your CDs in the car, where the background noise can mask the quieter parts of the music; it increases the level of the quiet parts so you can hear everything. Most modern digital-audio software offers compression; programs designed specifically for this purpose include Richard Hanson's *WAV File Leveller* (Win).

Go with the flow. Next, assemble the songs into a playlist. Establishing the specific sequence of songs is an art in and of itself that depends on the emotional impact you wish to convey. If you're archiving an entire LP, you probably should retain the order of songs as it is on the album. However, if you're compiling favorite tunes, you have several approaches, depending on the nature of the material. For example, if you have tunes with many different tempos, you might arrange them in order of ascending beats per minute (bpm); increasing the tempo with each successive song can slowly build dramatic tension.

On the other hand, if you're making a dance CD, gather tunes with similar tempos. If you're going for an upbeat mood, try including a slower tune once in a while to give the dancers a break. A CD for more intimate occasions should probably include mostly slower selections.

The majority of traditional albums include a gap of two to three seconds between tunes; as mentioned previously, burning a CD-R in TAO mode usually means you'll get a two-second gap between tracks whether you want these or not. Even fractions of a second can affect the emotional flow of a CD, so experiment with adjusting the gap. One effective technique is to start the next tune on what would have been a downbeat if the previous tune had continued for another bar or two. (That is reasonably easy to adjust by ear, but for the obsessive, many groove-oriented programs include a *tap tempo* feature that lets you calculate a sound file's tempo by banging a key on the beat. For 4/4 music, you can then divide 60 by the tempo to calculate the duration of one beat; then, multiply that number by 4 or 8 to determine the gap in seconds.)

In some types of music, particularly dance music, the end of one track often smoothly overlaps the start of the next; this is called *crossfading*. If you crossfade between tracks, it's important to match tempos and keys as much as possible to avoid jarring and dissonant transitions. Several CD-burning programs, such as Steinberg's *WaveLab* (Win) and Emagic's *WaveBurner Pro*, can do crossfades. Perhaps the most useful program in this regard is *MixMeister* (Win), which sorts all tracks by tempo, overlaps tunes in the playlist intelligently, and even adjusts tempos as desired for a smooth DJ mix (see **Fig. 4**).

TIME TO BURN

Once all the processing is finished, burn the CD-R in one pass using DAO mode. One consideration in this regard is burn speed, especially with CD-R drives that can burn at 4× or faster. This is a subject of some debate; in general, slower burns result in fewer problems, but it ultimately depends on the software, hardware, and media you're using. Speaking of media, all CD-R

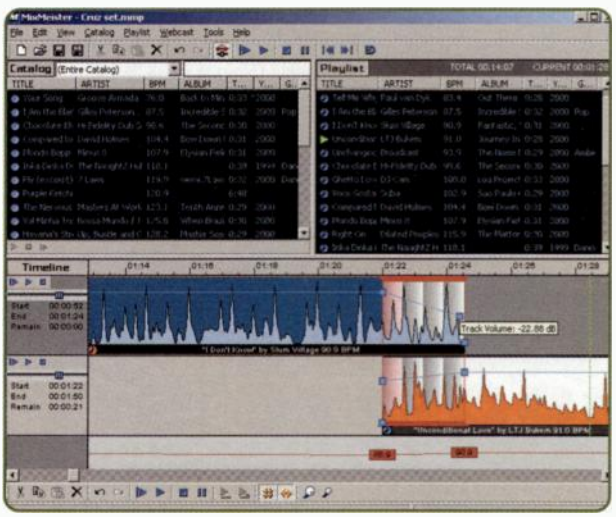


FIG. 4: *MixMeister* automatically detects the tempo of each tune in your playlist and creates intelligent crossfades for a seamless DJ mix. It can even adjust tempos without changing pitch and can align overlapping beats. You can export the mix and burn it to CD.

MAKE TRACKS

Echo's new LAYLA LapTop and MONA LapTop recording sytems easily connect to most Macintosh and Windows notebooks.

echo
digital audio

phone: 1.805.684.4593 www.echoaudio.com e-mail: info@echoaudio.com

LEARN TO BURN

blanks are not created equal; quality and compatibility vary, so try several different brands in your CD burner and player to find the best combination for you.

As the CD-R is being recorded, the process must not be interrupted, or a physical gap will be created that could confuse CD players. As a result, CD burners include a buffer of 512 KB to 8 MB that holds data to be written. If the data momentarily stops flowing, the buffer allows the recording to continue for a short time. However, if the burner tries to get data from an empty buffer, the recording process is interrupted; that is called a *buffer underrun*, which can leave you with a lovely plastic coaster for your coffee table.

There are several ways to prevent buffer underruns. Once again, record in DAO mode from a preassembled image file and record at a slow speed, because it takes longer for the buffer to empty. Use a fast AV-capable hard disk (most are these days), and defragment it before recording. It's also a good idea to use a dedicated hard disk for audio data. Don't have the computer doing anything else while recording and don't record from a file server. Disable screen savers, anti-virus programs, and anything else that might start doing something during a burn.

Some CD-R drives and software now include a feature called Buffer Underrun Proof (BurnProof), which suspends the recording process when the buffer is about to empty and resumes when there is more data in the buffer. Theoretically, an interrupted BurnProof recording should be indistinguishable from an uninterrupted one, but there might be a glitch at the point where recording was suspended, because hidden "links" are inserted between the audio data. Ricoh's version of this technology is called JustLink, and Yamaha's term is Waste-Proof Write Strategy. If you're preparing a CD for mass duplication, don't use BurnProof.

If you're like me, you miss the music on those old cassettes and albums out in the garage. Fortunately, you don't have to give up on ever hearing it again. All you have to do is burn those tunes onto a CD-R, and you'll be able to revel in them to your heart's content.

SCOTT WILKINSON WAS THE TECHNICAL EDITOR OF *ELECTRONIC MUSICIAN* FOR MOST OF THE PAST TEN YEARS.

DISCRETE DRUMS

REAL DRUMS ON 8-TRACKS

The Most Flexible, Customizable Drum Library Ever

Discrete Drums Series One is a collection of multitrack performances by Greg Morrow, one of the country's most renowned drummers (38 Special, Bad Company, Dixie Chicks and Van Zant). **Now you can add his incredible feel to your tracks for less than $10 a Song.**

The Box Set includes (9) CD-ROMS containing 31 performances on 8 separate tracks, to mix, equalize, process, and arrange any way you'd like. It also contains (2) stereo CDs for auditioning songs or sampling where track counts are tight, PLUS (1) CD-ROM filled with AIFF samples of individual hits on all drums and cymbals used in the recordings.

Features:

- Professional version – with 31 mixable tracks
- Multitrack files – kick, snare, stereo toms, stereo overheads, and stereo room tracks
- Audio CDs for auditioning tracks or stereo sampling (also includes individual drum hits)
- Sample CD ROM filled with 16 bit AIFF samples of every drum and cymbal at every velocity with both Dry and Ambient samples
- Limited Edition – 16 bit version with 15 mixable tracks

12-CD PROFESSIONAL SET Only$299
(as shown) 31 tracks

4-CD LIMITED EDITION SET Only$179
16 bit, 15 tracks

AUDIO CD Only $99
15 stereo tracks

CALL 1-800-387-5720

Or visit our website for a FREE DEMO, sample tracks, and our ONLINE ORDERING CENTER.

WWW.DISCRETEDRUMS.COM

Now compatible with Roland VS 2480, CDX-1, ACID and REASON!

Making Music Online

It's a global village, and we're the minstrels.

By Brian Smithers

Computer, get me the Record Plant! Michael Brecker's standing by to lay down a sax solo for my song." Sure, it's a fantasy, but not because of the technology. After all, you can chat online with folks halfway around the world, so it's easy to imagine that someday you might be able to record songs with them as well, trading overdubs and suggestions in near-real time. In fact, you can do it today—and I'll show you how.

There are many ways to collaborate online, and they don't all require lightning-fast connections or fancy equipment. Years ago, when I got my first MIDI-capable computer, one of the first things I did was compose a 60-second sequence and e-mail it to my friend Andy with a one-word note: "Tag!" He fixed the bass line and added a B theme, and the next morning, I found his version in my inbox. That was the beginning of a long and fruitful collaboration. As bandwidth increased, we were able to include samples and even audio files. Andy only lives across town, but the great thing about online collaboration is that it makes no difference if your musical partner is across the street or across the planet.

I'll start with the direct (cheap, that is) approaches to online musical collaboration and work up to the next-best-thing-to-being-there techniques. Along the way, I'll point out some of the challenges of this strange new world and offer tips on how to take advantage of its creative potential.

YOU'VE GOT MIDI

Most bands break up because the members get sick of each other during the long months of writing and recording. Why not trade songwriting ideas from a safe (and sane) distance instead? Sending MIDI files through e-mail can be an ideal way to share ideas, because the files are tiny—typically well under 100 kilobytes.

Keep in mind, though, that you're asking for trouble if you don't coordinate your synthesizers' patch layouts with one another. Is everybody's slap-bass patch assigned to the same Program Change number? If it isn't, your collaborators will wonder why the heck you played that line on a nose flute. (Then again, maybe they'll like it!)

Unpredictable patch changes, of course, are what General MIDI (GM) was designed to fix. GM-compatible synths (including nearly all consumer sound cards) feature a collection of 128 main sounds in specific memory locations. If your synths have a GM mode, using it will simplify your file exchanges. On many modern synths, you can invoke GM mode by inserting a Universal System Exclusive message at the beginning of your sequence (see the sidebar "Modem Operandi" for details).

You can also create your own *patch maps* to facilitate collaboration. Put your heads together and agree on a common set of patches; it doesn't matter what it is as long as you agree. Then, either map the desired sounds into the specified order within your instruments or write a macro in your sequencer to remap Program Changes to the right numbers.

Don't write off GM because it "sounds cheesy." If you invoke GM mode on something like the Korg Triton, you'll sing a different tune. If you haven't tried GM in a while, you owe it to yourself to explore some of the General MIDI 2 (GM2) enhancements, such as key-based controllers and an expanded patch list. (See "Desktop Musician: General MIDI Redux" in the June 2001 issue of *Electronic Musician,* reprinted at www.emusician.com.) Conversely, you don't have to equip your entire band with Tritons; even a sound card clogged with Velveeta will let your bandmates evaluate a melody or a chord progression that you send them as a Standard MIDI file (SMF). In fact, one might argue that if the tune isn't compelling on a tweezy synth, somebody needs to do a bit more composing.

Going native. Although using SMFs is a great way to ensure compatibility between different sequencers, native file formats allow you to name tracks, include session notes and lyrics, and organize data into musical phrases (often called *chunks* or *regions*). If you use the same software as your partners, this is a great way to track changes, offer suggestions, and challenge each other to rise above the ordinary.

If you monitor your synth outputs through your software, you can take advantage of audio plug-ins to shape the sound before committing it to disk as audio. Native file formats also store software-synthesizer settings if those synths run as plug-ins, so you'll know your partner is hearing the same sounds that you are. An increasing number of audio sequencers, such as Steinberg's *Cubase* 5 and Cakewalk's *Sonar,* come with their own GM software synths. If you're using a standalone soft synth, you'll want to save its settings as a preset and include that as another file attachment.

Propellerhead's *Reason* (see **Fig. 1**) gives you a nearly complete soft-synth-based collaboration environment, storing all of the sequencer and synthesizer settings needed for

FIG. 1: Propellerhead's *Reason* (Mac/Win) is an ideal tool for online collaboration. A *Reason* Song file contains settings for all the program's built-in instruments and effects as well as all sequencer data and custom samples.

chain-letter songwriting within a file appropriately called a *Song*. The only things missing are dedicated linear audio tracks, though you can get around that by using the onboard sampler. *Reason* includes a 508 MB audio-sample collection. If your song includes custom samples, you can send them, as well, by embedding them in a self-contained song, though the file size will be bigger.

PHAT SOUNDS, FAT FILES

If your contribution to a song is a tenor-sax solo, MIDI isn't going to do you much good. You'll need to record the sax as digital audio and then send the audio file to your collaborator to import into the session file. Bear in mind that you've just taken a quantum leap in file size by going from MIDI to audio. You can fit scores of MIDI files on a single 1.44 MB floppy, but every minute of mono 16-bit, 44.1 kHz digital audio consumes more than 5 MB.

In other words, if your tenor solo lasts only 30 seconds, you'll have a 2.5 MB audio file to send your friend. Instead of the 15 seconds it takes to send a MIDI file over a 56K dial-up connection, it will take more like 15 minutes. You may also find that your e-mail provider limits file attachments to 2 MB. If you try to reduce the file size with *StuffIt* or *WinZip*, you'll discover that they can compress audio files only slightly. Happily, you have several ways around these obstacles.

Find your space. Many online services, including some free ones, offer users several megabytes of server space for trading digital photos and such with friends and family. Upload that big audio file to your server space and send an e-mail to your partner stating that it's waiting to be downloaded. Uploading is handled either through an HTTP form on a Web page or by a File Transfer Protocol (FTP) utility such as *CuteFTP* (Win) or *Interarchy* (Mac).

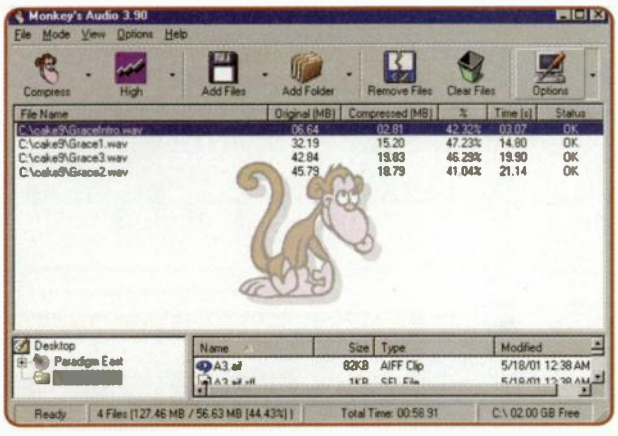


FIG. 2: A free Windows utility, *Monkey's Audio* compresses WAV files by about 50 percent with no reduction in quality. Its lossless algorithm provides bit-accurate decoding of the compressed files.

ONLINE STUDIO TOUR

Ready to join a virtual recording session? Log on to these sites. With the exception of Tonos, all use Rocket Network technology.

Emagic Studios (www.emagicstudios.com) This is the home of *Logic* collaborations.

Futurehit (www.futurehit.com) Like Tonos, this online studio touts the potential promotional exposure its members can receive.

InWire Studios (www.inwire-studios.com) Sponsored by Steinberg, this is the place for *Cubase VST/32* partnerships.

Musician.com (www.musician.com) This site, run by retailers Guitar Center and Musician's Friend, offers studios as part of its online community.

Strongroom (www.strongroom.com) London's Strongroom Recording Studios offers one-shot or extended-stay virtual studios as a service for its typically high-end clientele.

Tonos (www.tonos.com) Tonos is a lively online community with a unique approach to online music-making and talent promotion.

By the time you read this, the **Digidesign Production Network** (www.digipronet.com) should be offering Pro Tools–based virtual studios. Seattle's **Experience Music Project** (www.emplive.com) is also planning to offer virtual studios.

Check with your Internet Service Provider (ISP) to find out how your space is allocated. AOL, for example, gives members 10 MB of server space, but it's allocated in five, 2 MB chunks, one for each screen name. Yahoo's free Yahoo Briefcase (http://briefcase.yahoo.com) offers 25 MB with a maximum file size of 5 MB.

That limit isn't as bad as it might seem; I've sliced a sax solo into two or more phrases for easier transfer. For a bass or drum part, you might prefer to send a single phrase and have your partner loop it in his or her sequencer rather than send a full-length track. Utilities that can split a file into manageable parts are another option—check out Innovative Quality Software's *FloppyKopy* (www.iqsoft.com) or search for "segmenting" at www.download.com.

PUTTING THE SQUEEZE ON

You can reduce the size of your audio files by lowering their bit depth or sampling rate, but the quality will suffer substantially before you can shrink them very much. You'll get better results by converting them to a format such as MP3, which discards data more intelligently. (See "How to Make Killer MP3s" on p. 60.) For quick demos, this is a good option; better to keep the creative dialog going than to sit around waiting for downloads.

Nevertheless, there are ways to squeeze your files without any sonic compromise. *Lossless* compression algorithms are capable

of shrinking a file and then decoding it with bit-for-bit accuracy. *StuffIt* and *WinZip* are in this category, but as I mentioned, they're not very effective with audio files. One sound-savvy alternative is *Monkey's Audio* (Win), a free lossless-compression utility from www.monkeysaudio.com (see **Fig. 2**). The program allows you to encode your audio into APE files (honest!) that take up about half as much space. To use APE files in your audio editor, though, you'll need to decode them into WAV files first. Mac people can use *ZAP!* from Emagic or *Daxaif* (www.dakx.com/daxaif), a shareware program that supports direct playback of encoded files.

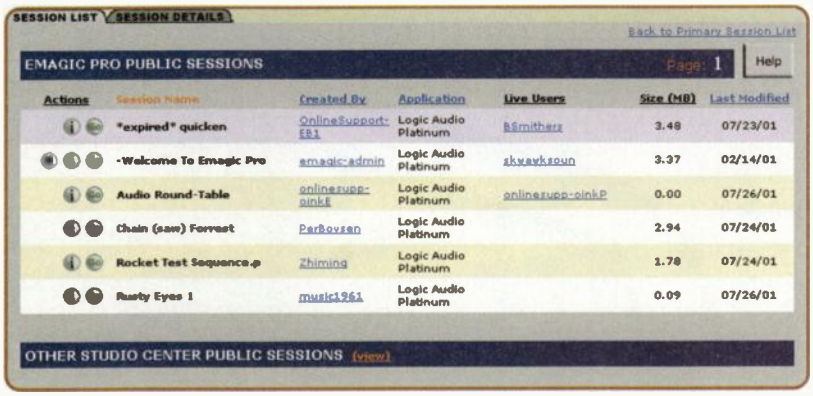


FIG. 3: After connecting to the Net through a RocketPower-enabled application, you can choose from available recording sessions. The above application is Emagic *Logic Audio Platinum*, but free programs are also available.

Sonic Foundry has also developed a lossless-compression format called Perfect Clarity Audio (PCA), which is said to offer compression from 2:1 to 5:1, depending on the source material. *Vegas* and other Sonic Foundry programs offer native support for PCA files, saving you the trouble of decoding them.

STUDIO IN THE SKY

Lately I've been experimenting with the *online studio* method of collaborating, a market dominated by Rocket Network (www.rocketnetwork.com) and its partners. Like any emerging technology, it has its occasional frustrations, but I'm finding it to be bursting with creative and economic potential.

Rocket Network doesn't sell its services directly to end users. Instead, it sells its technology (RocketPower) and server space to virtual *Studio Centers* that resell to you and me, though limited free access is often available. Rocket Network also provides the application—*RocketControl*—that handles the interaction between your host audio program and the sessions stored on the Studio Center's servers.

RocketPower applications can exchange session files and audio or MIDI data with each other. Unfortunately, this sharing currently works only among programs from the same manufacturer. Emagic recommends avoiding collaborations even between the PC and Mac versions of *Logic*. The Internet is the last place you'd expect to see a stick-to-your-own-kind paradigm, but the issues of file compatibility need to be resolved before you can expect all your favorite programs to communicate seamlessly.

The current roster of RocketPower applications includes Emagic *Logic Audio Platinum* and Steinberg *Cubase VST/32*. Free, scaled-down versions, *Logic Rocket* and *Cubasis InWired*, are also available for those who want to feel out the technology before spending big bucks. RocketPower support is slated for MOTU *Digital Performer*, Digidesign *Pro Tools* 5.2 (Mac TDM systems first, with Windows and *Pro Tools LE* support expected to follow), and more.

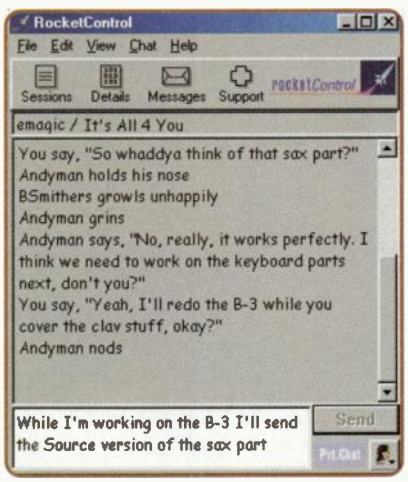


FIG. 4: Rocket Network's *RocketControl* manages your interaction with the Studio Center and other online musicians, providing access to chat, messaging, and session management.

BLASTING OFF

My journey into the future began by downloading and installing first *Logic Rocket* and then *RocketControl*. (Be sure to install your audio application before installing *RocketControl*. Otherwise, its Rocket features won't be enabled.) A Rocket Network menu appeared as a submenu within *Logic*'s File menu; it appears as its own InWire menu in *Cubase*. (*InWire* is Steinberg's name for its Rocket implementation.)

I clicked on Rocket Power from *Logic*'s menu, and it launched my Internet connection and logged me in to the online studio. Emagic and Steinberg have their own online studios, and Digidesign will probably have its running by the time you read this. Other entities are sponsoring virtual studios, as well, including at least one commercial recording studio. (See the sidebar "Online Studio Tour" for links.)

Once online, I was presented with a list of available Public and Private work sessions (see **Fig. 3**). Serious projects demand a Private session, with definable permissions that allow members to contribute or to just listen, but Public sessions can be fun in a jam-session sort of way. You'll need to upgrade to a $29.95 Access Account to gain access to Private sessions or upgrade to a $10.95-per-month Private Account to create sessions of your own.

I chose a session that seemed to cry out for a sax part, and *Logic Rocket* prompted me to download the current version of the session. My enthusiasm was dampened when I saw that it would take 45 minutes to download. Although three different levels of compression are available—including Source (uncompressed), Standard (about a 10:1 ratio), and Preview (about a 20:1 ratio)—it turns out that *Logic Rocket*

supports only Standard quality files, so I had to wait. I learned later that you can bump up the Standard compression ratio in the *RocketControl* preferences.

Once I downloaded the session, working with it was just like working with any other session on my hard drive. I recorded a burning funk-tenor solo (on the first take, naturally), I selected Post Changes, and my contribution was uploaded. At this point, if your collaborators are online, they can listen to your work and comment using text chat (see **Fig. 4**). Otherwise, they can check out your update the next time they log on and provide feedback by posting a message. Once you've agreed on final parts, you exchange full-fidelity source files for mixing.

ENTER THE COLLABORATORY

A variation on the Rocket theme is Tonos (www.tonos.com), a virtual studio with a communal vibe. Built around a simple 8-track recording program called the *TC8* (see **Fig. 5**), Tonos combines a studio environment called the Collaboratory with an aggressive effort to expose members' work to the community and to industry professionals. Regular "Challenges" give members opportunities such as finishing a David Foster song—with Foster himself as the judge. Tonos also publishes a steady stream of tips-and-insights articles and interviews with the likes of Diane Warren and Steely Dan.

The you've-got-a-friend-in-the-biz attitude isn't a façade: Tonos was founded by hit makers Carole Bayer Sager, Kenny "Babyface" Edmonds, and Foster. Along with an advisory/A&R

FIG. 5: The free *TC8* (Mac/Win) enables Tonos.com members to record and exchange audio tracks online. It functions very much like a simple multitrack cassette deck.

panel of equally prominent writers and producers, they've managed to create a positive online village that nurtures both serious, career-minded musicians and weekend-warrior hobbyists.

Emagic developed the cross-platform *TC8*, and the program is as limited as it is simple to use. It's hard to imagine a software recorder without an edit window, but then the cassette multitrackers that helped revolutionize home recording didn't have edit windows, either. The *TC8* does, however, feature a set

MODEM OPERANDI

Tips and tricks for online musical collaboration.

Call the shots. If you have a inexpensive long-distance calling plan, consider making a direct modem connection for file transfers to your partner. It removes one step from the upload-download process, cutting transfer time in half.

Bring out the General. The Universal SysEx command to invoke General MIDI (GM) mode in compatible synthesizers is F0 7E 7F 09 01 F7. Place that command at the beginning of your sequence, and your gear will switch to its GM mode. (If your gear supports General MIDI 2, use F0 7E 7F 09 03 F7 instead.) Allow a tenth of a second for the reset to take effect before trying to play any notes.

Remember: it's only a demo. Most MP3 encoders offer two encoding options: quick and dirty or slow and higher quality. Choose the fast method for demos. You're going to replace the files anyway.

Get good upgrades. If you can afford it, use the full versions of *Cubase* and *Logic* for RocketPower work. You'll have more control of compression formats, you'll get better tech support, and you'll be able to share plug-in settings with your collaborators.

Go public. I found the company at the Public recording sessions to be pretty thin most of the time, so you might want to plan your virtual-studio explorations to coincide with those of a like-minded friend.

Seek member benefits. Once you've decided to use a virtual studio, pay for the upgraded membership. You'll be able to access to private sessions, create sessions, and list your profile alongside other available musicians'.

Feel browsy. If you find yourself running low on RAM, you can quit your Web browser after joining a session, because it's only necessary for navigating through session listings and community amenities.

Bring on the klez-hop. Challenge yourself by periodically joining sessions that stretch your stylistic envelope. The next big thing could be the sound of your hip-hop sensibilities merged with that klezmer accordionist.

of basic-but-useful effects, including compression, distortion, and reverb.

The process of joining a session and uploading and downloading files is comparable to Rocket Network's, but the software has some quirks that get in the way. When you launch the *TC8,* it goes through an "unpacking data" procedure that takes more than a minute on a moderately fast PC. Then, without prompting, it always tests your audio hardware, a process that takes you pretty close to three minutes just to start the program. When you open a session from your local drive, it needs to decode the compressed audio, and that takes at least another 30 seconds.

What the Collaboratory does have going for it is an extremely active community of musicians. The atmosphere is ripe with enthusiasm and camaraderie, and the message boards are lively. You can search for musicians or sessions by instrument and genre, and enough public sessions are going on for you to find plenty to do. It's a less sophisticated environment than any of the Rocket studios I've visited, with all the benefits and drawbacks that the term *public* suggests.

Your first 30 days on Tonos, including the use of the *TC8,* are free. After that you can purchase a year's membership for $29.95. I have seen a lot of attempts at building online communities, and Tonos is among the most interesting yet. Check it out. A virtual studio might well be the "killer app" that makes a cable modem or DSL a must-have. If you can't upgrade, make good use of the available compression and plan to download sessions ahead of time. Also, never try to play a partially downloaded session, because that will pause the download and slow you way down.

ALL TOGETHER NOW

As I am typing these final paragraphs, someone out there is developing a brand new tool that will revolutionize online musical collaboration, and soon the notion of "near-real-time" virtual studios will seem positively quaint. As ironic as it is to use a dead language to give advice on third-millennium technology, here it is: *Carpe diem!* Use whatever tools are at your disposal, but use them creatively and use them now. Sure, a T1 line would be nice, but your dial-up connection is not a real limitation if you use the techniques I have outlined.

Online collaboration solves numerous problems for musicians: You can't find a good trombonist? Check Eastern Europe. You can't schedule a session together? Work in your pajamas and upload it. Can't figure out how David Foster got "that sound"? Ask him at Tonos. The global village is a reality, and minstrels are needed. Step up to the modem and be heard.

BRIAN SMITHERS PHONES IT IN FROM SOMEWHERE IN CENTRAL FLORIDA—OR SO HE CLAIMS. HE'S ALSO ASSOCIATE COURSE DIRECTOR OF MIDI AT FULL SAIL REAL WORLD EDUCATION.

World Wide Wadio

By Ron Simpson

Are you sick of the corporate drivel of commercial radio? Thanks to the Web and some slick software, you can now take matters into your own hands, sampling the latest sounds from more enlightened parts of the world and even broadcasting original music to any place there's an Internet connection. In this article, I'll explain how Web radio works and how you can set up your own online radio station.

FORMAT FUNCTION

There are two main ways to deliver audio on the Web: *downloading* and *streaming*. In most cases a downloaded audio file will not begin to play until the entire file has transferred to the listener's computer. (The notable exception is *pseudostreaming*, in which the file begins to play as soon as it starts to download; Apple's QuickTime uses this technique.) A streaming broadcast is transmitted to the listener's computer in small chunks that are deleted after they're played. With streaming, the listener can also request a file and have it transmitted to his or her computer, or jump to the middle of a broadcast already in progress.

The downside of streaming, which is used for Internet radio, is that audio fidelity is limited by the amount of data that can squeeze through

Start Webcasting today and play your music to a global audience.

the listener's Internet connection on a sustained basis. This flow is called the *bit rate*. Like modem speeds, it's measured in kilobits per second (kbps).

In a quest to deliver the best listening experience, programmers have developed numerous data formats. I'll stick with four of the most popular ones here, formats that work equally well on Mac OS and Windows, are free, and whose players are easy to install. They are

- MP3 (www.cselt.it/mpeg)
- QuickTime (www.quicktime.com)
- RealMedia (www.real.com)
- Windows Media (www.windowsmedia.com)

Note that *QuickTime Player, RealPlayer,* and *Windows Media Player* can all play MP3 files. If you haven't done so already, download these players from the respective sites and install them. While you're at it, drop by www.macromedia.com and grab the player and plug-in for Shockwave and Flash. With this software installed, you should be able to play more than 95 percent of the streaming-media content you're likely to encounter on the Web. (Interestingly, the soundtracks of most Shockwave and Flash movies actually use a version of MP3.)

WHICH FORMAT IS BEST?

This is a loaded question, but one I'm often asked. With a broadband stream (16 bit, 44 kHz, 128 kbps stereo or better), all of these formats are close enough to each other in sound quality that the difference is negligible in most cases. At low bit rates, streaming RealMedia files (version 8.5 or later) sound best to my ears. An unprocessed stereo MP3 or Windows Media file at a bit rate lower than 64 kbps is a bad, bad thing. Ditto for a QuickTime audio file encoded at 32 kbps stereo or lower using the standard QDesign Music compressor. However, if you process an audio file before encoding it, it will sound considerably better at the lower bit rates. More on that later; first, I'll discuss the formats in more detail.

Getting real. By virtue of being the first company to show up at the streaming-media party, RealNetworks is the majority owner of the online radio market share. In offering a combination of powerful development and delivery tools, lots of great content, and an easy-to-use, multiplatform media player *(RealPlayer),* RealNetworks makes the streaming media experience enjoyable.

RealNetworks' encoding and serving programs, *RealSystem Producer Plus* ($149.95) and *RealServer Plus* ($2,000 and up), are expensive, but for those willing to forgo some of the bells and whistles, both *RealServer* and *RealProducer Basic* (the entry-level versions) are available at Real's site as free downloads. You can also stream RealMedia content to a limited audience without using *RealServer.* The process, called *HTTP streaming,* involves creating a *metafile,* a simple text document that points to the audio file. You can read the details at www.realnetworks.com/devzone or in my book, *The Professional Musician's Internet Guide.*

The best place to start looking for online radio content is at RealNetworks' Radio Tuner page (http://realguide.real.com/tuner). From this page you can search for more than 2,500 of the online broadcasts available in the RealMedia format and bookmark any of the stations for playback at your convenience.

Windows Media frenzy. When Microsoft jumped into the streaming-media foray with its Windows Media format, it looked as if the company was a couple of years too late to have any impact. However, Windows Media quickly jumped to number two in terms of popularity. It even works on most modern Macintosh computers and is integrated into the Liquid Audio format. Windows Media's advantages include free or inexpensive encoding tools and very good sound quality at 64 kbps or above. To judge for yourself, point your browser toward www.windowsmedia.com and click on the radio link in the left-hand column. You'll be directed to the Windows Media Radio page, where you can access Microsoft-powered radio stations from all over the world.

MORE ON THE WEB

More WWWadio

I've created a page on my personal site (www.bozangeles.com/BA/webradio.htm) containing all of the links featured in this article. I'll also include any relevant updates.

In the quick of time. Apple's QuickTime has always been the most misunderstood of all the popular streaming-media formats. Rather than being a format unto itself, QuickTime is a wrapper for over 30 different formats including MP3. With the release of QuickTime 5 a year ago, it's now possible to stream QuickTime content (audio, video, radio, and more) using RealNetworks' *RealServer.* This is done using RTSP (Real Time Streaming Protocol) and is definitely a step in the right direction. You'll find the latest QuickTime radio stations at www.apple.com/quicktime/qtv/radio.

TUNE IN

Before you create your own Webcast, take some time to audition what others are doing (I'll suggest some sites in a minute). You'll notice during your listening tour that advertising is everywhere. It shows up in the form of banners, pop-up Web pages, and Flash movies. Traditional radio has always used advertising to generate the income needed to broadcast, and Web radio will likely be no different. Unlike traditional radio, though, Web radio has additional income options, including paid subscriptions and profit-sharing from merchandise sales.

Have you ever heard a killer tune on the radio only to wait in vain for the DJ to identify the song or artist? Of course. Happily, most commercial Web radio stations not only list the song and artist during playback but also offer a link to a Web page where the

song is available for purchase as a CD, cassette, or encrypted digital file. You may also find links to the artist's or record company's site, complete with tour information.

To start your own online radio tour, surf to the six sites covered next; I have listed particulars in the "Dashboard Presets" table. Although you can connect to any of these stations with a dial-up modem, the experience is sonically better with a cable modem or DSL connection.

House of Blues (www.hob.com) is my favorite online music destination. While I've yet to pay for a live Webcast concert there, the free concert archives offer an incredible selection of live performances that generally run longer than an hour each. HOB.com also has 15 genre-based radio stations streaming from its site.

Live365 (www.live365.com) claims to have more independent online radio content than any other destination on the Web, and with thousands of stations to choose from, that is not an idle boast. Live365.com is also a great place to host your own show, as I will explain.

Shoutcast (www.shoutcast.com) is the brainchild of the *Winamp* development team. As with Live365.com, you can be either a broadcaster or a listener. Because Shoutcast streams MP3 audio at bit rates as high as 128 kbps, the quality is quite good.

Spinner (www.spinner.com) is one of the oldest and best-known Web radio destinations. The Spinner player is a customized version of *RealPlayer* with a 10-band graphic EQ and oodles of e-commerce and advertising functions. Although the overall audio quality is lower than that of TuneTo.com and Shoutcast, Spinner.com is still a worthwhile stop for music fans.

TuneTo (www.tuneto.com) is your best shot at customizing a genre preset to your liking, because you can set your preferences and flush the artists you don't like from the preset. The audio quality is very good with a broadband connection.

Virgin Radio's online Webcast (www.virginradio.co.uk) is a live simulcast of Virgin Radio's UK radio station. Listeners can choose QuickTime, RealAudio, or Windows Media to listen to this unique British program.

BUILDING YOUR OWN STATION

If you already have a Web site, it's relatively simple to stream MP3s from it for free. Musician and sound editor Skip Adams explains the technique on a secret page within his site, www.globalgraffiti.com/demo.htm. To create a full-on Internet radio station, though, the best solution for most people is Live365.com. There are several different broadcast options; it's Mac- and Windows-friendly; and most important, it's easy. Before I get to the mechanics of station construction, let's take a quick tour from the listener's perspective.

Listening at Live365. When you first arrive at Live365.com,

broadjam

highest ranked broadjam artists: **10.2001**

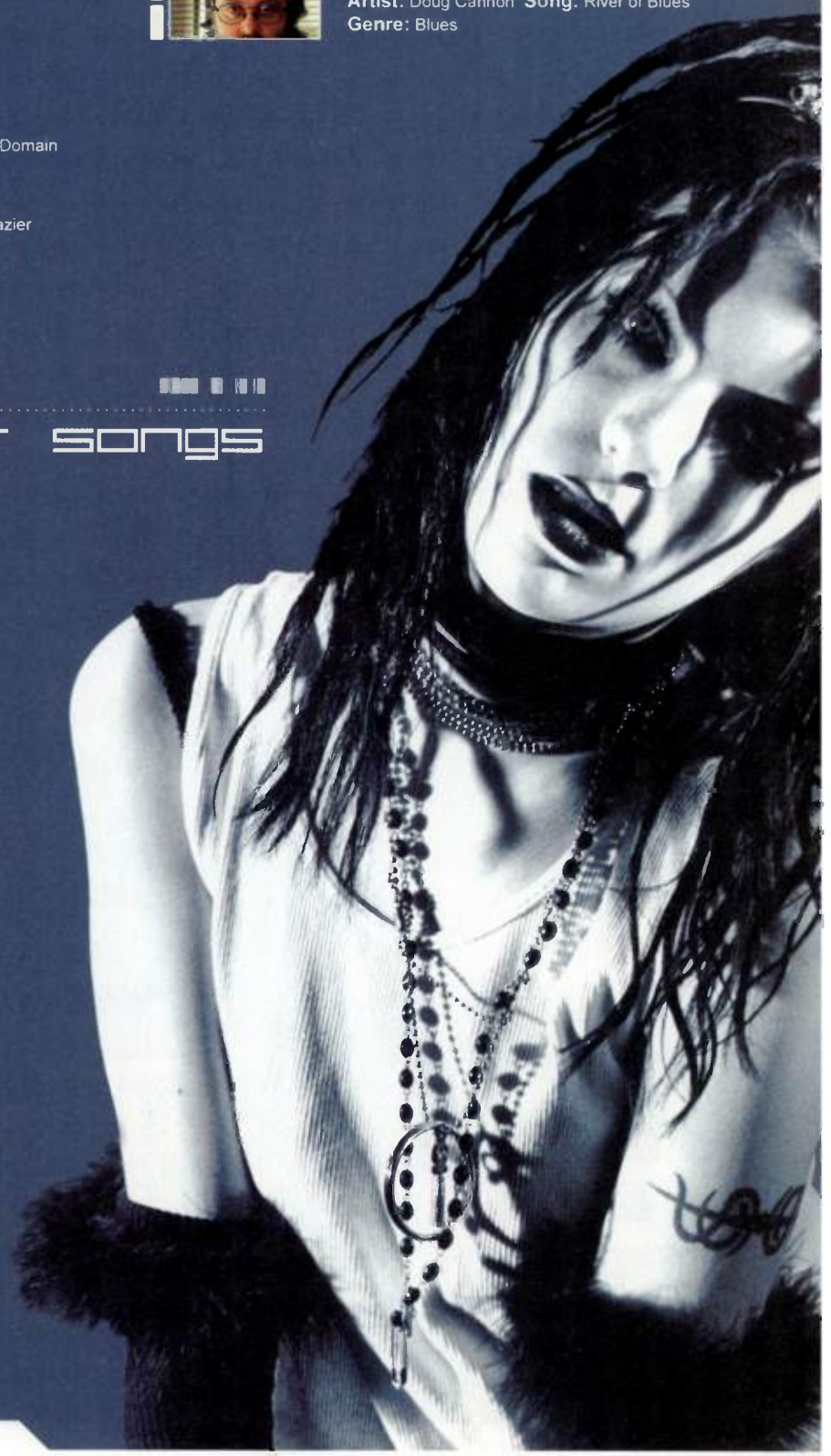
Artist: Robb Roy **Song:** What If
Genre: Alternative

Artist: Brassnucks **Song:** Digital Domain
Genre: Rap / Hip Hop

Artist: deepBluesecret **Song:** Glazier
Genre: Electronic

Artist: Natalie Brown **Song:** You Gotta Believe
Genre: R & B

Artist: Doug Cannon **Song:** River of Blues
Genre: Blues



unleash your songs

Get it up

Don't want to deal with the hassle of encoding and uploading your music? Send it to Broadjam, and we'll do it.

Get it out

We'll get it up on our site and then get it out to all the best Internet music sites.

Get it back

Oh you'll get feedback all right. From fans, peers, industry pros, professional guest reviewers and even a moron or two.

Get a homepage

A well-designed world-class page that you'll be proud to call home.

Get it on

Whatever you do, get it online and give your music a chance. And give us a chance to do it for you. If you want to talk to a human and ask questions, call us toll free at 877-527-3651. If you prefer email, we can deal with that as well.

CustomerService@Broadjam.com

Broadjam Corporation
1101 State Highway 69, #8 | New Glarus, Wisconsin 53574
608-527-3633

www.broadjam.com

you'll be asked a few questions about your connection speed and player preference. If you don't have a compatible player, you'll be given the opportunity to install and test one. After you've gone through this process, Live365.com will dump a cookie into your browser that will automatically configure your system for optimum playback whenever you return to the site.

The next step is to search for a station that matches your musical tastes and connection speed. You can search by genre, name, or location (see **Fig. 1**). The search results display basic information such as the name of the broadcaster, a description, and the required connection speed. Once you've found a station, click on the little yellow speaker to start playback. This will bring up the player window (see **Fig. 2**).

FIG. 1: Live365.com hosts thousands of Internet radio stations. With its search engine you can zero in on the ones of your choice by genre or name. But you can't escape the ads.

PREPARING TO BROADCAST

There are three ways to broadcast at Live365.com. For simplicity's sake, I'll start with the Basic Broadcast option, which lets you create an online MP3 playlist that loops endlessly, allowing listeners to jump in and hear it at the current point. You're given 100 MB of disk space for your MP3 files, and once you're up and running, your station is online 24/7. Not bad for $4.95 a month. There are some rules and limitations, which I'll cover briefly as I walk you through the setup process.

Starting on Live365.com's home page, click on the Broadcast tab. You'll be given two options: Professional or Personal Broadcasting. Click on Personal; a list of optional services will appear. Basic Broadcasting is $4.95 a month; for additional monthly fees, you can view listener statistics, order additional server space, or add the ability to broadcast live from your computer. (Unless you have a cable modem or DSL, it's best to stick with broadcasting from Live365's servers.)

Accuracy – from A to B.

Genelec's Digital Double Play.

The 2029A
S/PDIF

The 2029B
AES/EBU

Today's audio control rooms and media production facilities are fast becoming all-digital environments. With the proliferation of digital workstations, the only tools which *aren't* digital are microphones and audio monitors. Until Now.

The **2029A** and **2029B Digital Active Near-field Monitoring Systems** are complete digital solutions that complement the interface from digital bitstream to acoustic energy. The extremely linear, integrated D-to-A converters circuitry used in both models offers a precision-matched electrical interface to the active electronics and amplifiers. This results in the best possible resolution and reproduction of your carefully-crafted, all-digital productions – whether they're from a desktop suite or a mega-studio facility. Developed from our highly-acclaimed **1029A** analog near-field monitor, the 2029A or 2029B can also be used in conjunction with our **1091A** subwoofer to create an incredible power-packed, full-bandwidth stereo monitoring system. The 2029A's are precision-aligned and balanced – from the single stereo 24-bit **S/PDIF digital input** – to their highly-efficient, 110dB/SPL matched drivers. The 2029A is 48kHz compatible.

The 2029B offers the same precision alignment with an **AES/EBU digital interface** on a digital XLR-type input. The 2029B is 96kHz compatible.

In both models, stereo listening level is controlled with a single, front-mounted adjust knob. And like any other Genelec Active Monitor, rear-mounted room response controls let you match the speaker's response to your room's response.

Want to hear what digital audio really sounds like? Audition the 2029A for an S/PDIF digital rig, or the 2029B for your studio's AES/EBU digital network – two more great reasons to invest in Genelec.

the whole truth and nothing but the truth™

GENELEC®
ACTIVE MONITORING

Genelec, Inc., 7 Tech Circle, Natick, MA 01760 • 508/652-0900 Fax: 508-652-0909 www.genelec.com

WRH

After you've selected the services you want, read the user agreement and click the Next button. The legal text is as long as this article, but the most crucial bits are (1) that you're prohibited from broadcasting abusive material, (2) that your playlists must comply with U.S. copyright law (more on this in a moment), and (3) that Live365 owns the rights to redistribute your mix on other Web sites and compilations—royalty-free. That's something to consider before uploading original material. From this point, there are just a few easy steps to take and Live365.com holds your hand through each one. Still, a number of issues aren't covered thoroughly enough, so I'll save you some grief by adding detail.

FIG. 2: The streaming-media player you choose during the setup process powers Live365's Player Window. Note the song information and e-commerce buttons.

Step 1. If you haven't already created a user name, you'll be prompted to do so now. Next, fill out your billing information.

Step 2. Before you rip any CDs or convert any audio files to MP3 format, consider your target audience—most important, its connection speed. The "Strike Up the Bandwidth" table on p. 52 offers encoding guidelines. Another issue is that as of press time, 56 kbps stereo was the maximum bit rate Live365 permitted for MP3 files on personal radio stations. If you're like most MP3 enthusiasts, your files are 128 kbps or higher. While you *can* convert high-bit-rate MP3s back into WAVs or AIFFs and reencode them at a lower rate, you will get better sound by starting fresh. The "MP3 Encoding Tips" sidebar offers some pointers; see "How to Make Killer MP3s" on p. 60 for more detail. The simplest option is to use Live365's *Studio365-Loader*, a free program that alters the bit rate and uploads the files in one step.

Here's another time-saving tip: before you spend two days encoding your entire music collection for upload, create a couple of test files. Upload the test files and see how they sound and if they work. If the songs play back as planned, you're good to go.

Step 3. Upload the files. You can do this directly through the site or with the aforementioned *Studio365-Loader*. Either option is easy, but *Loader* offers the twin advantages of automatic bit-rate conversion and batch uploading.

Step 4. Using **Fig. 3** as a reference, enter information about each uploaded song into each of the five fields. Note that field 5 is optional.

MP3 ENCODING TIPS

An MP3 file encoded at 56 kbps—the maximum allowable broadcast rate on Live365.com—only retains five percent of the original program material. The fact that you can hear anything at all is proof that this technology works quite well. However, you can improve the sound by anticipating the frequency loss in the target MP3 and subtly adding EQ to the original WAV or AIFF file before encoding it.

I accomplish this task by working backward. I import a 56 kbps MP3 of the song into a stereo editing program (BIAS *Peak* on the Mac or Sonic Foundry *Sound Forge* in Windows) and then create an EQ preset that boosts the signal in the frequencies that were compromised during encoding. I then apply the EQ preset I created to the original WAV or AIFF file and encode it again. Because of the variables involved there is no magic EQ setting I can recommend. You will have to experiment until you find the optimum settings for the type of music you're encoding; however, this technique really works well once you get the hang of it.

Another issue to consider is using stereo versus mono. Unlike WAV or AIFF files, mono MP3s at a given bit rate are the same size as stereo ones, because the extra data is used to improve the sound of the encoding. (A stereo WAV file is twice the size of a mono WAV because it has twice the bit rate, though we don't normally think of it in those terms.)

So do you surrender the depth of the stereo field for a higher quality mono file? For my Live365 station, I chose stereo, but when creating sound files for a Flash movie, I tend to go with mono. It's a personal decision; your best bet is to encode a file in both mono and stereo and let your ears make the call. As long as you don't mix mono and stereo MP3 files in a Live365 playlist, you should be okay.

DASHBOARD PRESETS

Here are some Web radio sites that are well worth visiting.

Site	URL	Mac	Win	E-commerce in Player	Minimum Connection
House of Blues	www.hob.com	yes	yes	yes	28.8 kbps
Live365	www.live365.com	yes	yes	yes	28.8 kbps
Shoutcast	www.shoutcast.com	yes	yes	no	28.8 kbps
Spinner	www.spinner.com	yes	yes	yes	28.8 kbps
TuneTo	www.tuneto.com	no	yes	yes	56.0 kbps
Virgin Radio	www.virginradio.co.uk	yes	yes	no	28.8 kbps

Step 5. Create your online playlist (see **Fig. 4**). All of the MP3 files that you uploaded to your directory will be listed in the box on the left. To add a file to the playlist (on the right side of the page), just select the file you wish to move and click on the Add button. To change the order of the playlist, select the misplaced file and use the Up or Down buttons to walk it to the desired location.

Once you've created a playlist, click on the Save button and scroll down the page to the Controls area shown in **Fig. 5.** The Playlist Analyzer will display the sampling rate and bit rate of each of the files in the current playlist. For trouble-free playback, it's important that they all be the same. The broadcast controls allow you to start and stop playback of the current playlist (you can save multiple playlists). The Restart Broadcast button is your start switch.

Tell the world. The simplest way to promote your Live365 Web radio station is to e-mail a Live365.com Radio Card to your friends, family, and business associates. You also do this on the Broadcast Controls page. The Radio Card is a standard e-mail message that contains a direct link to your station. If you're feeling well-liked, you can ask the recipients to forward the message to everyone they know. With a little luck, the news about your station will multiply over the Internet like a friendly virus.

FIG. 3: For each track in your Live365 playlist, you can enter information to guide the listener, including an audible station ID and a link to your Web site.

FIG. 4: Creating a Live365 playlist is easy. Simply select files from your master library in the left pane, click the Add button to transfer them to the right, and then use the arrow buttons to change the playback order.

IT'S NOT TOO FUN AT THE DMCA

If you looked closely at **Fig. 5,** you may have noticed some legalese. Before your playlist can start streaming to the world, there are some rules you need to follow regarding the content and order. While I do suggest you read all of the rules that are posted

FIG. 5: Clicking the Restart Broadcast button starts your Internet broadcast. Be sure to check the playlist rules first so you don't violate the law.

on Live365's site, here they are in a nutshell: You may not play the same artist or the same song (regardless of artist) more than three times in a three-hour period. You may not take requests within a one-hour period of playing a song. You may not post your playlist in advance.

Whose boneheaded idea was this? You can thank the major record labels, which pressured Congress to enact the draconian Digital Millennium Copyright Act (DMCA). The labels feared that if you created an all–Britney Spears channel, no one would need to buy her albums. On the other hand, services like Live365 couldn't do what they do without the DMCA, which grants the right to Webcast without obtaining a separate license for each song. For this privilege, Live365 pays royalties to the RIAA, ASCAP, BMI, and SESAC. Note that if you're broadcasting your original music and own all of the rights to it, the DMCA does not apply.

FIG. 6: It looks like a normal boom box, but the new Philips FW-*i*1000 is equipped with an Ethernet port for tuning in Web radio.

THE FUTURE

Though Internet radio delivers exciting features—huge selection, two-way participation, and helpful information and links—listening on a computer is not always convenient. In early 2000, several companies announced dedicated Web radios to make listening more natural and easy. Of course, that was before the plunge in tech stocks caused development money for many of these innovative products, such as the Kerbango radio, to go kerplop.

However, there are still a couple of interesting options available. The iRhythm iM Radio Tuner, formerly known as SonicBox, lets you use your computer to tune to the Web radio station of your choice while your home stereo handles the audio playback. One version beams the audio signal to your stereo using 900 MHz radio waves, which even travel through walls; another uses a direct connection. An included 900 MHz remote control lets you change stations from the living room or patio. I was able to find the wired version of the system on Amazon.com for less than $50 and the wireless one for about $75. Visit www.imnetworks.com for details.

The massive Dutch electronics company Philips Electronics has incorporated the iM Networks technology into its fledgling FW-*i*1000, a combination Internet radio, MP3 player, and CD player (see **Fig. 6**). The FW-*i*1000 looks very much like a typical bookshelf stereo, but connect its Ethernet port to a network and you can locate and save Web radio stations as presets. There's a cool Flash movie at www.philipsusa.com that demonstrates the highlights. As broadband connections snake their way into our homes and offices, you can bet that more manufacturers will be adding Web-radio tuners to the entertainment devices that are part of our everyday lives.

Traditionally, demographics (a description of who's listening) have given corporate broadcasters enough statistical ammunition to generate advertising revenue and show a profit. It is still unclear how companies like Live365.com and even traditional radio stations with online simulcasts are going to break even, much less show a profit. But regardless of the financial considerations and consequences, Web radio is here to stay. As technology continues to march forward, the audio quality of Web radio will get better and possibilities will continue to grow. Stay tuned.

RON SIMPSON (RON@BOZANGELES.COM) IS A MUSICIAN, WRITER, AND WEB-AUDIO TECHNOLOGIST. HE IS AUTHOR OF THE *PROFESSIONAL MUSICIAN'S INTERNET GUIDE* (MIXBOOKS).

STRIKE UP THE BANDWIDTH

Because Internet connections rarely achieve their maximum rated speed, it's wise to scale your audio files for real-world conditions. This table, adapted from one at Live365.com, suggests safe bit rates to use for different target audiences.

Listener Connection	Recommended MP3 Bit Rate
14.4 kbps modem	8 kbps
28.8 kbps modem	16 kbps
33.6 kbps modem	24 kbps
56K modem	32 kbps
T1, cable, DSL, ISDN	56 kbps*

*Although rates from 96 to 128 kbps should be possible, Live365 restricts personal Webcasts to 56 kbps files.

Customers and reviewers say:

"WaveCenter/PCI was a snap to install, and I appreciate the included Cool Edit Pro SE software. A very fine product at a great price."

"Tango24 provides accurate, robust, well-defined and clean recording. It captures the body and essence of the instruments it is recording. This is a very fine sounding and well-designed recording system."

"WaveCenter/PCI has been trouble-free and robust. Tango24 sounds superb, to my ears. Even older 16-bit mixes are sounding more detailed and alive."

WaveCenter/PCI:

8 channels ADAT optical I/O.
Stereo coax/optical SPDIF I/O.
Built-in MIDI (2-in, 2-out).
GigaSampler & ASIO drivers.
Easy plug-and-play installation.
Windows & Macintosh support.
Includes Cool Edit Pro SE.
Patchbay for input monitoring.

Tango24:

Professional 24-bit A/D & D/A.
Optically-isolated converters.
Balanced analog I/O (8-in, 8-out).
ADAT optical in/thru/out.
BNC word clock connectors.
Switchable +4dBu/-10dBV levels.

Buy a Bundle

Save a Bundle

WaveCenter/PCI + Tango24 bundles are now available at fantastic prices.

FRONTIER DESIGN GROUP

1•800•928•3236

www.frontierdesign.com

No Money Down

Free software never sounded so good.

By Todd Souvignier

Some of the best music software costs almost nothing. A lot is even free. But as with many things, if you choose by price alone, you'll often get burned. I spent several weeks scouring the Web and turned up ten top-notch Mac and Windows programs any desktop musician would be proud to own.

In evaluating programs, usefulness and stability were my paramount considerations. Programs that crashed or expired were punted immediately. I also shunned programs with major features disabled (such as the ability to save files) unless they did something really special in their demo state. The winners are grouped into four categories: Internet audio, recording/editing, synthesis, and utilities.

How is it possible to get high-quality software so cheaply? Thank efficient online distribution, the honor system, and the benevolent notion of sharing. Many great apps are given away under the *shareware* model. For sharing their work, the programmers request money from satisfied users. If you come to rely on such a program, kick a few bones to the creator.

Freeware comes with no such obligation. Sometimes it's designed to introduce you to a program in hopes that you'll upgrade to—and pay for—a more full-featured version. Sometimes it's released as a competitive move (think Microsoft's *Internet Explorer*). Sometimes programmers release freeware just to share the fun of making music. It's all proof that once in a while there really is a free lunch, or at least a free multitrack editor.

INTERNET AUDIO

Microsoft Windows Media Encoder (WIN)

Windows Media Audio (WMA) is a great sounding file format with many advanced features. The coolest part of *Windows Media Encoder* (see **Fig. 1**) is the ability to insert Scripts, a feature that's turned off by default. Turn it on by checking the Script checkbox in the Session Properties dialog (under the Sources tab). This lets you add extra information, called *metadata,* to your music or video. By inserting URLs in the metadata you can push Web pages to listeners every time they play your file. The ability to present lyrics, art, ads, animations, or other material to your listeners is limitless.

DOWNLOAD FROM: www.microsoft.com/windows/windowsmedia/en /wm7/encoder.asp

PRICE: free

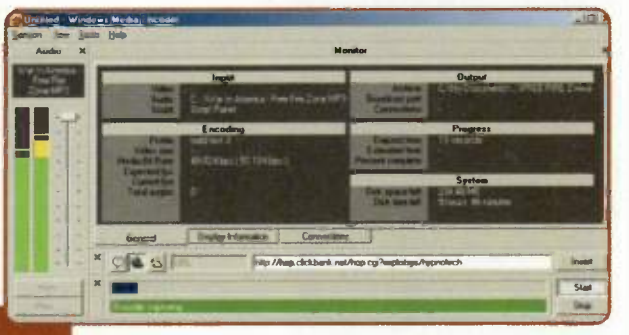


FIG. 1 WITH *WINDOWS MEDIA ENCODER*, YOU CAN EMBED A URL IN YOUR MUSIC TO DIRECT LISTENERS TO YOUR WEB PAGE.

COURTESY OF APPLE

FIG. 2 ***ITUNES*** **FEATURES THE COVETED FRAUNHOFER MP3 ENCODER, INTEGRATED CD BURNING, AND A STRAIGHTFORWARD DESIGN.**

Apple iTunes (Mac)

Apple put software engineer Jeff Robbin (author of Casady and Greene's *SoundJam MP* and *Conflict Catcher*) on the job, and the result is *iTunes* (see **Fig. 2**), the last word in Mac player-encoders. It plays, it rips, it burns CDs, it has a truly attractive interface, and Apple paid the Fraunhofer license, so you get unlimited MP3 encoding. The program also includes support for portable players and streaming Internet radio stations, onscreen light shows that react to the music, and a full-featured jukebox. All that power and beauty requires some muscle: you'll need at least a G3 or iMac with OS 9 or higher.

DOWNLOAD FROM: www.apple.com/itunes

PRICE: free

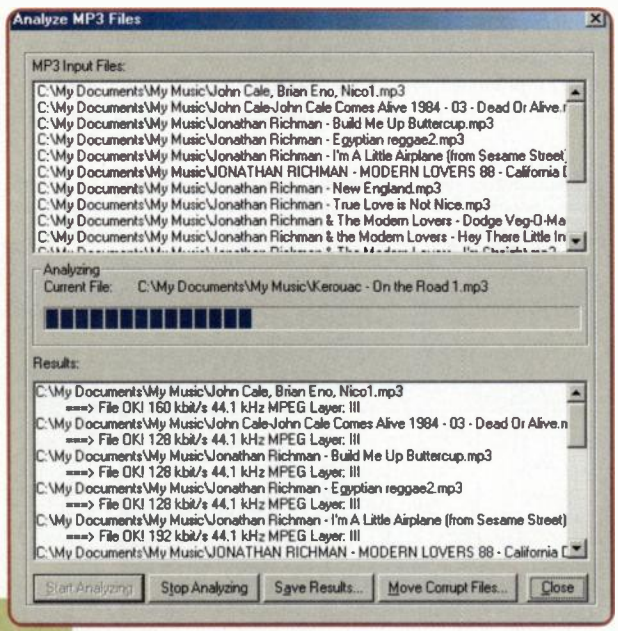


FIG. 3 **WEED OUT CORRUPT MP3 FILES WITH MP3** ***CHECK&CONVERT.***

Ashampoo MP3 checkconvert (win)

One of the problems with file-sharing networks such as Napster and Gnutella is the lack of quality control. Poorly ripped songs, corrupt files, and transmission problems render many downloads unusable. If your favorite network is about to be unplugged by the RIAA, you might not have time to listen to each download individually to make sure it's okay. Ashampoo to the rescue! *MP3 Check&Convert* (see **Fig. 3**) scans batches of MP3 files, detecting those that have been damaged. Registering the program adds MP3-to-WAV conversion and extra "bad-file" handling features.

DOWNLOAD FROM: www.ashampoo.com

PRICE: $9.95

RECORDING/EDITING

digidesign pro tools free (Mac/win)

It says a lot about the evolution of the audio-software market that companies are now giving away digital recorders and editors. *Pro Tools Free* (see **Fig. 4**) is the real deal, a fully functional 8-track audio recorder/editor with 48-track MIDI sequencing and AudioSuite signal-processing plug-ins. It's distributed as a no-cost point of entry into the Digidesign family of products. Naturally, a few things are missing, and Mac sessions can't be transferred to Windows (or vice versa). But who's complaining? *Pro Tools Free* runs on most current Mac or Windows setups, particularly those with basic sound cards. It's a great way to get going with Pro Tools.

DOWNLOAD FROM: www.digidesign.com/ptfree

PRICE: free

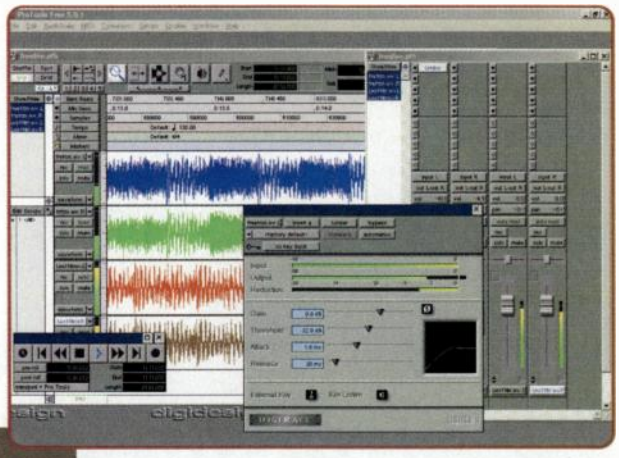


FIG. 4 **BUILD YOUR PRO TOOLS SKILLS WITH** ***PRO TOOLS FREE*** **(MAC/WIN), THE NO-COST VERSION OF THE HIGH-END MULTITRACK EDITING SYSTEM.**

cay-eric schimanski silent-bob (win)

If you like to sample audio from TV or radio, *Silent-Bob* (see **Fig. 5**) is an easy solution for grabbing sound bites on the fly. (Note that much of what you snag will be copyrighted and therefore legal only for personal use, not distribution, but the rhetoric of public figures is fair game.) *Silent-Bob* continuously records up to two minutes of

incoming audio into a buffer file—essentially a holding pen on your hard drive. Just patch your TV or radio's audio output into your sound card's audio input; then, launch *Silent-Bob* and put it into Standby mode. Now you can kick back, listen to the news, and when you hear that politician say something mind-boggling, just click Stop/Save. *Silent–Bob* will have safely preserved the last two minutes of sound as a 16-bit, 44.1 kHz stereo WAV file.

DOWNLOAD FROM: www.silent-bob.de/en

PRICE: free

FIG. 5 EVER HEARD A GREAT SOUND BITE ON TV OR RADIO AND WISHED YOU'D HAD A TAPE RECORDER RUNNING? *SILENT-BOB* AT YOUR SERVICE: IT'S ALWAYS LISTENING.

SYNTHESIS

image-line fruityloops 3 (win)

Image-Line claims *Fruityloops* is the "No. 1 loop and song-creation tool on the Net," and I find no reason to argue. This thing is deep, with flexible sampling-plus-synthesis drum voices, plenty of fat basses and synths, VST and DirectX plug-in support, and easy step sequencing (see **Fig. 6**). It's also one of the best-looking programs anywhere, fully documented and packed with tutorials and examples. The *Fruityloops* 3 demo does everything but save the session; you can render to WAV or MP3, however, and generate loads of grooves for free.

DOWNLOAD FROM: www.fruityloops.com

PRICE: $39.00–$99.00, depending on version

FIG. 6 FIRE UP *FRUITYLOOPS*' VIRTUAL INSTRUMENTS, RECORD THEM WITH ITS SEQUENCER, APPLY EFFECTS, AND EXPORT THE WHOLE PRODUCTION AS A WAV OR MP3 FILE.

master-zap stomper hyperion 5 (win)

Need drum sounds, especially kick drums? Download this extremely cool little freeware app. *Stomper Hyperion* (see **Fig. 7**) allows you to

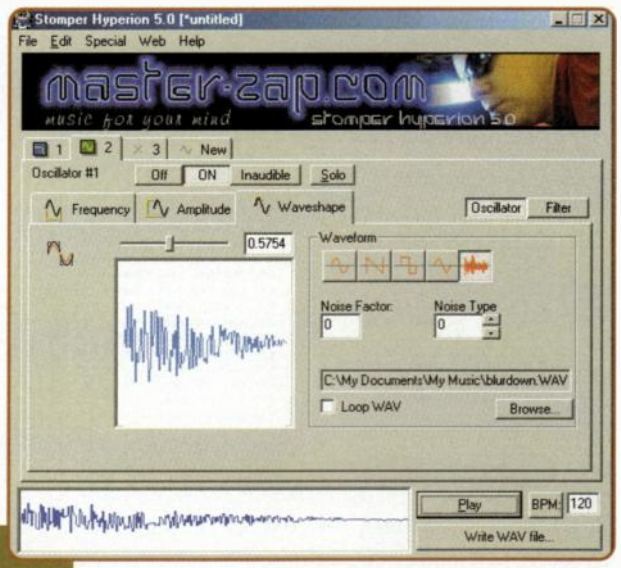


FIG. 7 GET YOUR KICKS—AND BOATLOADS OF OTHER SOUNDS—WITH STOMPER *HYPERION*, A MONSTER DRUM SYNTHESIZER.

import a number of samples, stacking up multiple oscillators—each with frequency, amplitude, wave shape, modulation, noise, and resonant-filter controls. Build the monster drum sounds of your dreams, save them as WAV files, and then transfer them to a sampler or import them into any audio sequencer. A rock-solid, great-sounding app, *Stomper* sports a unique revenue model: the program nags the user to listen to music that Zap and his wife made, offering a link to a site that pays him a royalty.

DOWNLOAD FROM: www.master-zap.com

PRICE: free

büro </stelkens> crusher-x live (win)

Now in a 2.0 edition, *Crusher-X* (see **Fig. 8**) is a synthesis and algorithmic-composition environment with a unique "vapor synthesis" algorithm. This offshoot of granular synthesis works by slicing a sound into many tiny segments and rearranging the pieces. The main draw is that *Crusher-X* starts churning out bizarre noise

FIG. 8 JUST A GUESS, BUT YOUR MUSIC IS PROBABLY MISSING VAPOR SYNTHESIS. DOWNLOAD *CRUSHER-X LIVE* AND ADD SOME.

PUT THE POWER IN YOUR HANDS

POWER SERIES

A thorough guide to Sonic Foundry's digital audio-editing software.

By Scott R. Garrigus

Technically edited by Sonic Foundry

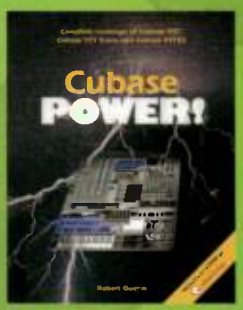
1-929685-10-6 $29.95

Covers hardware and software setup, score editing, track editing and distribution.

By Robert Guérin

Technically edited by Steinberg

1-929685-45-9 $29.95



Takes the reader from start to finish, from conception to polished CD.

By Ben Milstead

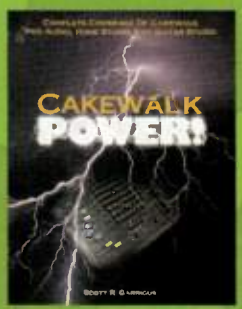
1-929685-08-4 $29.95

Create, mix, record and deliver music and sound projects for CD, video and multimedia projects using SONAR.

By Scott R. Garrigus

Technically edited by Cakewalk

1-929685-36-X $29.95



Covers Pro Audio 9, Guitar Studio 2 and Home Studio 9.

By Scott R. Garrigus

Technically edited by Cakewalk

1-929685-02-5 $29.95

Approaches ACID 3.0 from a creative and artistic angle.

By David E. Franks

1-929685-49-1 $29.95

MUSKA & LIPMAN Publishing

www.muskalipman.com or call 888-270-9300

Books are available at bookstores, music stores or wherever books are sold

Distributed to bookstores by Independent Publishers Group/Distributed to music stores by Music Sales Corp

almost instantly. The sleek metallic interface with thousands of tiny buttons and sliders is a bit daunting, so just select DSP Start from the Crusher menu to begin generating sound, and then try moving sliders at random. *Crusher-X* is save disabled until you pay, but it makes a lot of sound even in demo mode and is worth the upgrade to the full version.

DOWNLOAD FROM: www.crusher-x.de

PRICE: $49.00

AUDIO UTILITIES

Audio Ease Make A TestTone (Mac)

Test tones are useful in many situations, including calibrating analog recorders, audio-system troubleshooting, and acoustical-treatment work. Such tasks once required hardware tone generators or test-tone CDs, but now you can do it on your Mac for free. *Make A TestTone* (see **Fig. 9**) creates AIFF, SD2, WAV, and PARIS-format sound files of single-frequency tones or full-spectrum sweeps. With sweeps, it embeds text markers in the file, indicating the frequency at specific points during playback. (How high does *your* hearing go?) It even gives the output files intelligent, easy-to-read names. See the Web site for detailed application tips.

DOWNLOAD FROM: www.audioease.com

PRICE: free

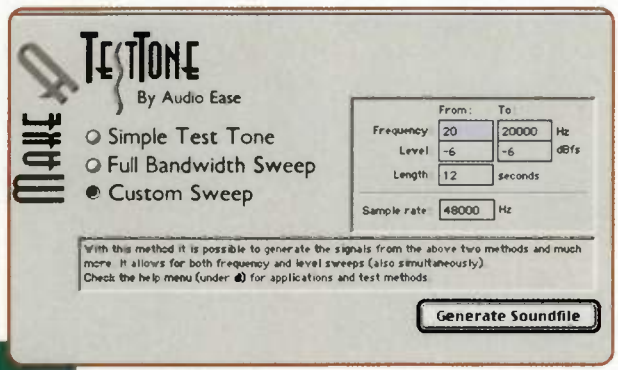


FIG. 9 TEST YOUR SPEAKERS—AND YOUR EARS—WITH *MAKE A TESTTONE*, A FREE 24-BIT TONE GENERATOR.

Audio Phonics AP Instrument Tuner (Win)

It won't replace the ubiquitous stage tuner, but there are plenty of instances in which this software tuner is just the ticket. Audio Phonics actually offers two tuners, a six-note model especially for guitarists, and a chromatic version (see **Fig. 10**) that allows you to tune to any note. You can adjust center pitch by ±10 Hz, input and output devices are selectable within the program, an input-level meter lets you check signal strength, and a help file is included. If your analog synths have tuning issues, check *AP Instrument Tuner* before every take.

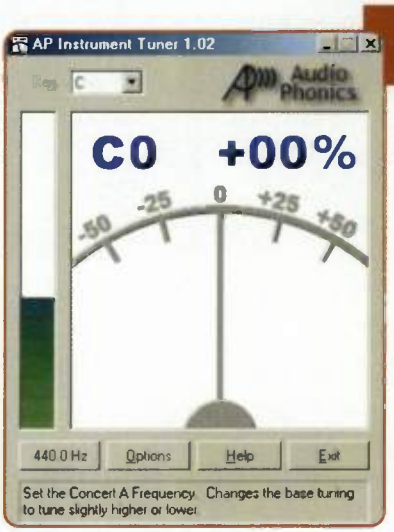


FIG. 10 TUNE UP WITH THE STRAIGHTFORWARD *AP INSTRUMENT TUNER*. YOUR AUDIENCE WILL THANK YOU.

DOWNLOAD FROM: www.audio-phonics.com

PRICE: free

TODD SOUVIGNIER IS PRESIDENT OF EXPLOIT SYSTEMS (WWW.EXPLOITSYSTEMS.COM), A FIRM THAT ENABLES E-COMMERCE IN PEER-TO-PEER FILE SHARING NETWORKS.

You Want More?

Here are some good sites to search for music shareware, freeware, and demos. If the site offers downloads, be sure to click the author link (if available) for each program to ensure you're getting the latest version.

Site	URL	Features
AudioTools	www.audiotools.co.uk	Windows software with star ratings
CINet Download	www.download.com	Hundreds of audio programs with user reviews
Dasound.com	www.dasound.com	Over 800 categorized and summarized programs
Shareware Music Machine	www.sharewaremusicmachine.com	Colossal shareware collection
Synth Zone	www.synthzone.com/utilities.htm	Dozens of annotated links and a clean design

Power beyond the printed word.

Our ability to help you solve business problems extends beyond the great editorial in this publication.

E-Mail Newsletters. Get the news you need, as it happens. Sign up for a subscription to one of our e-mail newsletters. Go to PrimediaBusiness.com and click on "I want to subscribe to a newsletter." Or, sponsor one of our targeted newsletters to reach buyers in your market. Contact Rob Shore (rshore@primediabusiness.com or 212-204-2622).

Amplified coverage. Every Primedia Business publication has a Web site with relevant news and additional resources. Go to PrimediaBusiness.com and click through to the publications you're interested in.

Supplier Directory. Find a product or service in our multi-industry Supplier Directory. Go to PrimediaBusiness.com and click on the Supplier Directory link.

Custom online "special reports." Our editorial content and your sponsorship can help you increase your sales. Contact Christina Julian (cjulian@primediabusiness.com or 212-204-1411).

Banners. Properly created and targeted Web banners can actually be incredibly effective. Target by audience or content. Contact Rob Shore (rshore@primediabusiness.com or 212-204-2622).

Industry news, delivered. Get the latest industry-specific news automatically delivered fresh to your corporate Web site, intranet or extranet. Go to PrimediaBusiness.com and check out Primedia Insight newswire.

We can connect you with the exact buyers you're looking for or bring you the information you need to win in today's markets. Click or call today to tap into the power of Primedia Business.

PRIMEDIA
Business Magazines & Media

PrimediaBusiness.com

How to make

Crunching audio files down to a fraction of their normal size while maintaining relatively good sound, the MP3 format has become the most widely used music-delivery vehicle on the Internet. Although other file formats offer copy protection, smaller size, and better sound, the public prefers MP3, so it's important to understand how to get the most out of it. Whether you want to distribute your own music in MP3 format or simply enhance your personal file collection, read on. I'm going to help you make your MP3s sound as good as possible.

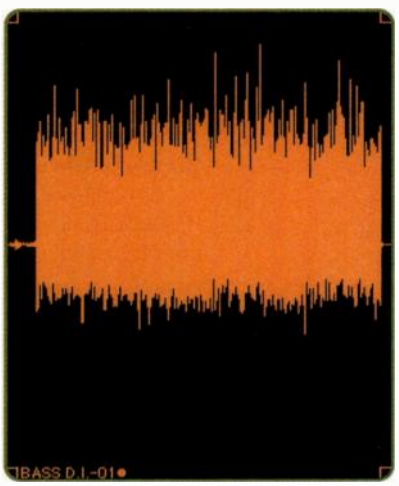


FIG. 1: Note how the waveform is mostly in the upper (positive) half of the display. This track has extreme *DC offset*, which will degrade the audio quality when you convert it to MP3 format.

WHAT'S AN MP3?

Multimedia files can be huge. Stereo CD audio demands over ten megabytes (MB) of storage per minute; video is even greedier. So the Moving Picture Experts Group (MPEG) was convened to find a way to make audio and video files smaller. The audio section of the resulting MPEG-1 standard has multiple "layers," representing data-compression schemes of increasing complexity and quality. MPEG-1 Audio Layer III, also known as MP3, sounds better than Layers I and II (MP1 and MP2).

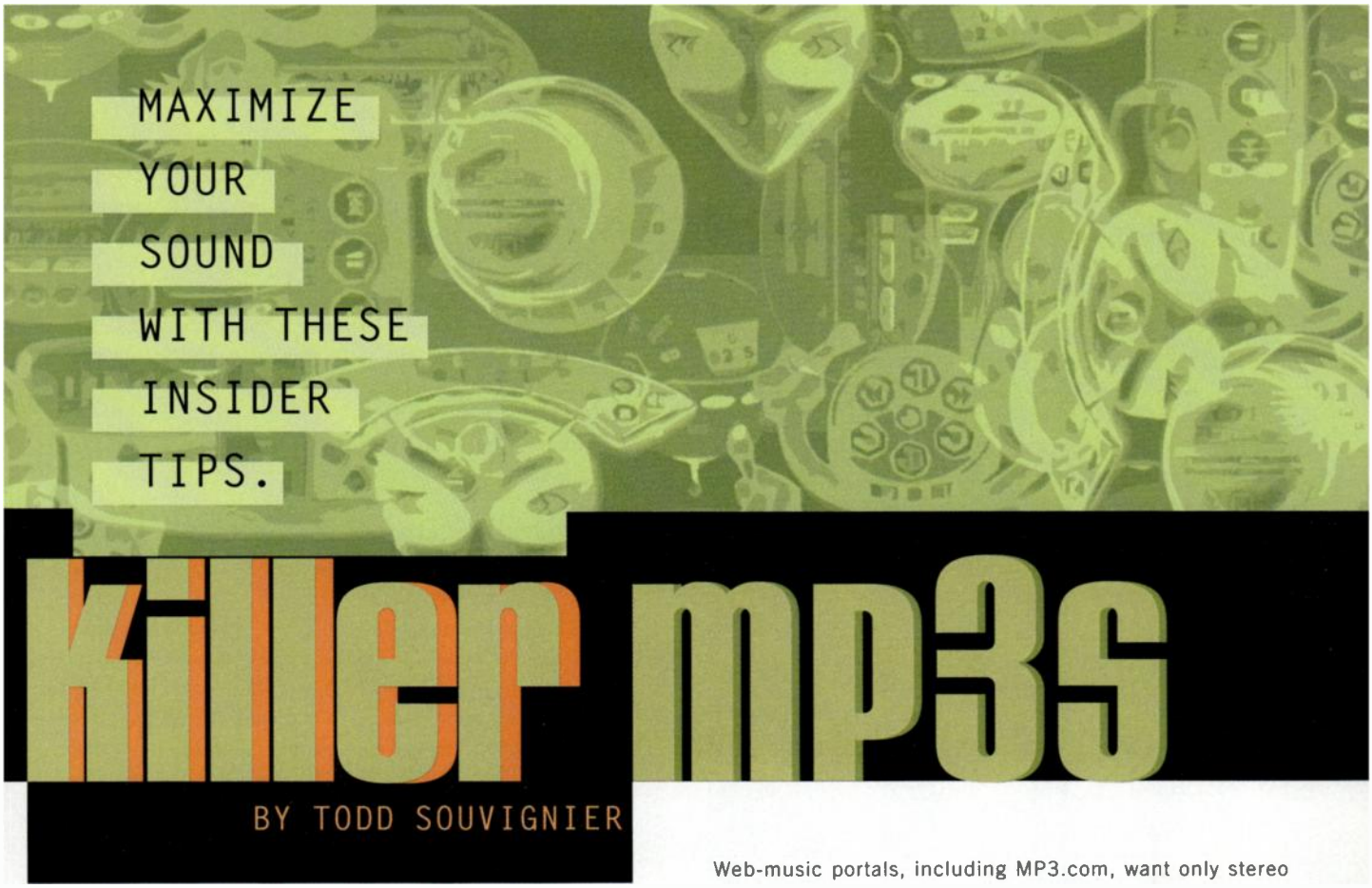
Data compression is different from audio compression, such as you would do with a compressor/limiter. Data compression uses mathematical analysis to detect patterns in the file that will allow it to be described (and thus stored) more efficiently. Archiving utilities such as *StuffIt* and *WinZip* use *lossless* compression, meaning the compressed file can be expanded into an identical copy. Although they achieve tremendous size reductions with text and graphics, they're not very effective with audio files. So the MPEG took a different approach, developing a *lossy* process that achieves significant size reduction at the expense of a slight loss in sound quality.

HOW PERCEPTUAL OF YOU

Converting a file into an MP3 uses a process called *perceptual coding* that applies some intelligence to the task of discarding data. One of the quirks of hearing is the phenomenon of *auditory masking*. Masking occurs when a loud sound at one frequency obscures a weaker sound at a different frequency. Operating on the principle that people probably can't hear many parts of an audio signal and might not notice if those parts were removed, perceptual coding assigns fewer bits to the masked parts of a signal than to the prominent ones.

MP3 algorithms work well but still cause a noticeable reduction in the sound quality at moderate compression levels. At extreme settings, they can easily introduce distortion. Compare a CD track to an MP3 of the same song; to varying degrees you'll hear:

- Reduced clarity and definition in the high end
- Less impact in the low end
- A collapsed stereo image
- Decreased separation between instruments
- Lowered intelligibility of speech or singing



MAXIMIZE YOUR SOUND WITH THESE INSIDER TIPS.

Killer mp3s

BY TODD SOUVIGNIER

Once encoded, an MP3 file cannot be substantially edited. Utilities such as *MP3Trim* (Win; www.logiccell.com/~mp3trim) do allow some basic manipulations such as cropping, normalizing, and fading, but to apply serious signal processing you'll have to convert the MP3 back into an uncompressed format, which can lead to quality loss when the file is re-encoded. A better option (assuming you have the original uncompressed file) is to enhance the audio before it is converted to an MP3, a process one might call *post-mastering*. I'll examine that approach first.

FILE PREPARATION

I'll assume that you have finished pieces of music on CD or in another uncompressed digital format such as WAV, SDII, or AIFF. I'll also assume that your music has been competently mastered or at least is in its best-quality version. When doing post-mastering, follow the "If it ain't broke, don't fix it" rule. Apply as few of the following processes as necessary—each one takes your 16-bit files, converts them to a higher bit depth for processing, then converts them down to 16-bit again, compromising audio fidelity a little each time. With that in mind, fire up Sonic Foundry *Sound Forge,* BIAS *Peak,* or any other full-featured audio editing software, load up your sound files, and try the following tweaks.

Stereo to mono. In the world of uncompressed audio, stereo files take up twice the space of mono ones. With MP3, the encoder adds the extra channel of information by reducing the overall quality of the file. A stereo and mono MP3 file are virtually the same size. So your first decision is whether you want a smoother-sounding file or a more spacious one. Although most Web-music portals, including MP3.com, want only stereo uploads, try creating mono material for easier distribution on file-sharing networks and better HTTP streaming from your personal Web site. (See "World Wide Wadio" on p. 44.) Casual listeners generally aren't able to discern between stereo and mono under typical listening circumstances. For best results, use the stereo-to-mono conversion feature in your audio editor rather than the one in the MP3 encoder; the mixing algorithm is likely to have better quality.

Remove DC offset. *DC offset* is caused by mismatched voltages in the audio chain, and is frequently encountered on recordings made from turntables or home stereo systems. It diminishes a track's volume and impact. While difficult to detect by ear, DC offset is visually obvious, appearing as an imbalance in the waveform display. Many audio editors have a "Remove DC Offset" function; use it only when the problem is apparent, as in **Fig. 1.**

MORE ON THE WEB

Visit the DMPG section of www.emusician.com for links to MP3 encoders, listening tests, and tutorials.

Normalize. The Normalize function provides a simple way to make a file louder. It finds the highest peak in the file, then increases the level of the entire file until that peak is at the target level (typically 100 percent). This volume increase is the same across the entire file; only the loudest point reaches the target level. If the original peak was close to the maximum, normalization won't have much effect, and you may want to consider *dynamic compression* (discussed next) instead. Some encoders are not graceful about handling 100 percent energy levels,

creating noticeable distortion on peaks that might sound okay in an uncompressed file. Never normalize to 100 percent if you're going to a compressed format like MP3; use a setting in the range of 95 to 99 percent instead.

Compress or limit. If your audio file has volume fluctuations that make listening problematic, try compressing its dynamic range (see **Fig. 2**). The two main options are *limiting*, which imposes an absolute ceiling on peaks, and *compression*, which reduces the peaks proportionately based on how far they exceed a set threshold. Both compressors and limiters usually include a *make-up gain* feature that boosts the resultant signal.

Getting the best results requires experimentation; **Fig. 3** shows a typical scenario using the Graphic Dynamics processor in *Sound Forge* 5. To begin, set a short attack (1 ms) and a release of 500 ms or more. Next, set the threshold to around –12 dB and the compression ratio to 2:1. (For every 2 dB the input signal exceeds this threshold, the output signal will be reduced by 1 dB.) Click Preview to listen to the effect, and adjust Output Gain so that it doesn't clip (distort) on loud passages. Fine-tune threshold, attack, and release until you find a point at which the gain changes sound natural. Use the Bypass button to compare your processed result with the unprocessed original. When you like the effect, click on Process to apply it to the file.

FIG. 2: The top window shows a song with uneven volume levels. The bottom shows the same file after limiting (with make-up gain); note the increased volume in the quiet passages.

If used correctly, this effect should be completely transparent. You should not be able to hear the volume changes, nor any distortion, just a stronger impression during quiet passages. When it's used incorrectly you'll hear a sucking sound.

Equalize. Like compression, equalization (EQ) is generally applied during the mastering phase and should only be approached post-mastering with caution. The goal here is to filter out frequencies the encoder can't handle well, thereby reducing pitched noise ("aliasing") in the encoded MP3. A cautious approach would be to filter out frequencies below 60 Hz and high frequencies above 15 kHz. A more aggressive approach might entail rolling off frequencies below 100 Hz and above 12 kHz, then selectively boosting midrange frequencies to accentuate the vocals. Listen carefully while making such adjustments; visual monitoring with a spectrum analyzer is helpful during this process. See p. 50 for more EQ tips.

Insert silence. If you want to stream your MP3s from the Web, it's a good idea to add a second or two of digital silence to the beginning of the master audio file. This helps to compensate for dropouts the listener may hear while his or her player is loading the file.

Now that your WAV, AIFF, or SDII files are up to snuff, let's make some MP3s.

CHOOSING AN MP3 ENCODER

Although MP3 players are distributed for free, software developers must pay a licensing fee to include an MP3 encoder in any product. Apple secured a flat license for the industry-standard Fraunhofer algorithms for *iTunes* and gives the program away for free. If you have Mac OS 9 or higher, download *iTunes* right now from www.apple.com/itunes. Panic *Audion* (www.panic.com/audion) is a good alternative for users of older Macs; in addition to the Fraunhofer encoder, it also includes the open-source LAME one.

Windows users have lots of MP3 encoder choices. *MusicMatch Jukebox* (www.musicmatch.com) is a popular package, Xing *Audio Catalyst* (www.xingtech.com) is highly regarded for its professionalism and sound quality, and there are many others. I've posted links to numerous encoders and listening tests on the DMPG section of www.emusician.com.

All MP3 encoders offer settings that impact the sound quality and marketability of your MP3s. To get the best results, you need to understand what these settings do. Here's a summary:

Bit rate. Sound quality in an MP3 is largely proportional to the

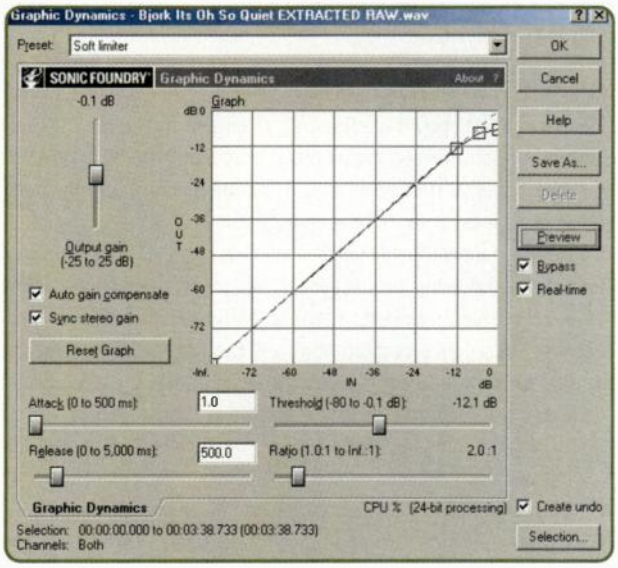


FIG. 3: If your audio files have wide dynamic swings, try smoothing them with a compressor/limiter such as this one in *Sound Forge* 5.

MP3Pro: The Pros and Cons

Fraunhofer Institute and Thomson Multimedia, which license MP3 encoders, recently announced a new, higher-quality format called MP3Pro. Developed in conjunction with Coding Technologies (www.codingtechnologies.com), MP3Pro uses two separate streams of data to represent audio. The second stream is dedicated to high frequencies, which are compromised in standard MP3 files.

While few third parties had announced support for MP3Pro at press time, RCA (www.rca.com) had a downloadable demo program that encoded and played files at rates up to 64 kbps. (RCA is a division of Thomson.) Coding Technologies claims that 64 kbps MP3Pro files sound as good as regular 128 kbps MP3 files, but don't believe the hype. My listening tests discovered that MP3Pro creates a watery aliasing during loud passages that is not found in conventional, 128 kbps MP3s. Although my testing wasn't blind, I can confirm that the sound quality is otherwise very comparable.

While backward compatible with the original MP3 format, MP3Pro files may sound worse on players designed for the current standard because the older players will recognize only the low-frequency audio stream. Also missing from MP3Pro is any provision for copy protection or digital rights management (DRM). Coding Technologies and Thomson assert that DRM technology can be superimposed on MP3Pro, but some industry analysts remain skeptical about the format's commercial potential.

amount of data compression. This value is expressed as the *bit rate*, which is measured in kilobits per second (kbps). MP3 players and encoders handle bit rates ranging from 8 kbps to 320 kbps. The 128 kbps stereo setting has become something of a standard; MP3.com requires this bit rate for all files uploaded to its band pages. Files encoded at 128 kbps are roughly 1/10 the size of the uncompressed original file, and the sound quality is pretty good, akin to an FM radio broadcast.

At 64 kbps, stereo MP3s sound more like AM radio and distortion or aliasing may become noticeable; file size is about 1/20 of the original. Bit rates lower than 64 kbps produce a muffled or muddy sound with pronounced aliasing. (This may be an acceptable tradeoff if you're making streaming MP3s.) Higher bit rates sound better but produce larger file sizes and longer download times. 160 kbps is a popular compromise.

CBR/VBR. Most MP3s found in the wild are produced with *constant bit rate* (CBR) encoding. As the name implies, the bit rate remains the same throughout the file. The MP3 spec also allows files to be encoded using a *variable bit rate*, or VBR. This method strives to improve the balance between file size and sound quality by encoding complex passages at higher bit rates and simpler passages at lower bit rates. In practice, this produces larger file sizes than CBR with negligible improvement in sound quality. Certain online music services (including MP3.com) and many player/encoders do not support VBR. Keep your encoder set on CBR and forget about it.

Stereo/mono. Some encoders offer a choice of stereo options. "Simple" stereo encodes the left and right channels independently. *Joint Stereo* encodes information that is common to both left and right into one channel, while encoding the differences into the other channel. This process is sometimes referred to as *middle-side* stereo or *intensity stereo*. By any name it wipes out phase information, only provides benefits at bit rates below 80 kbps, and should not be used for high-quality encoding. As mentioned, mono encoding provides a smoother sound than stereo at the same bit rate (or an equivalent sound at a lower bit rate). But remember to do stereo-to-mono conversion in a professional sound editor rather than in the encoder for the best quality.

Encoding speed. Some encoders offer a choice of speed, and if you have the time, it pays to take the slow route. Slow encoding uses more CPU cycles to calculate the perceptual coding, resulting in better-sounding MP3s with no increase in file size.

Tags. *ID3 tags* are *metadata*, essentially little pieces of text you can attach to an MP3 file that carry information such as song title, album title, genre, copyright date, and even the address of a Web site. There are two versions, ID3v1 and ID3v2, with the latter holding substantially more information, including graphics.

Most MP3 players rely on ID3 tags to populate their playlist and status displays. If the ID3 tags have not been filled in, the listener will see "Unknown Artist—Unknown Song" or some other cryptic readout. It's vital for the listener experience to add complete tags to any music you distribute. Furthermore, file-sharing applications and search engines are beginning to recognize metadata, making it potentially a huge boon to targeted distribution.

If you're converting your own SDII, WAV, or AIFF files to MP3, you'll have to tag the files by hand. Most player/encoders have a rudimentary dialog box for this purpose; applications dedicated to tagging, such as Kevesoft *MP3 Tag Clinic* (Win; www.kevesoft.com), are also available. If you're encoding a popular CD to MP3 with a commercial encoder, chances are good the software will be able to download the correct information from the Gracenote database (www.cddb.com) and tag the new MP3 files automatically.

QUALITY CONTROL

Encoders aren't perfect, nor are the computers they run on. Errors in MP3 files are very common, the most prevalent being *packet loss*, an interruption that sounds like a CD skip or dropout. If a computer has lots of programs running in the background while encoding, it can easily bog down and start dropping packets.

Another common defect is *aliasing*, a grating, metallic sound associated with extreme levels of compression. If you're hearing such distortion; flanging; or a swirly, watery sound, try a higher bit rate or a different encoder. Aliasing should not really be noticeable at 128 kbps stereo but it is usually distinct at 64 kbps and lower, regardless of the encoder.

Ashampoo makes a shareware utility that scans MP3s and detects errors such as packet loss or file corruption (see "No Money Down" on p. 54). It's a real time-saver, but it's no replacement for a good set of ears. If this is your music, be sure to listen closely to each finished MP3 once or twice before hanging it on a Web site or sharing it with thousands on a network.

PLAYBACK ENHANCEMENT

Having done all we can to preserve the original sound during the MP3 compression process, let's now look at audio enhancement and restoration techniques that can recover some of that lost sound quality.

Player plug-ins. Digital signal-processing (DSP) *plug-ins* are audio effects that can be added to a host program. Nullsoft *Winamp* has the largest selection of third-party DSP plug-ins, many developed by major companies. They all work in real time, processing the music as it's played through the DirectSound audio channel. (See the sidebar "Cranking *Winamp* to 11" for instructions on configuring the program.) By directing *Winamp* to play its output to a file instead, you can apply these effects permanently, which is handy if you want to enhance MP3s you didn't make yourself and burn them onto an audio CD. I've posted a step-by-step tutorial in the DMPG area of www.emusician.com.

Sound-enhancement processors go by many names but fall into the following general categories:

Equalizers. These are multi-band tone controls similar to the ones on home stereos.

Compressor/limiters. Described earlier, these adjust the volume so it stays loud all the time.

Stereo expanders. These effects are not much different from the "super stereo" switch you find on many boom boxes—they extend the stereo image so sound sources appear to move out beyond the speakers. There are many such systems, but they all spring from the *comb filter*, a variant on the digital delay or chorus effect.

3-D or surround simulators. Rather than merely widening the stereo field, 3-D effects attempt to simulate 360-degree coverage from two speakers, so it seems like sounds are behind or even above you. These effects typically manipulate phase, level, or delay to work their magic. But like stereo expanders, they can adversely color the sound.

Exciters. These popular effects make sounds seem brighter. They're first cousins of the fuzz box; both processes add high-frequency harmonics to an audio signal. Exciters help bring out voices, percussion, and other trebly instruments. They also accentuate any distortion or aliasing in a track, so use them with care.

Bass maximizers. These "big bottom" effects are a variation

cranking winamp to 11

Nullsoft *Winamp* is a terrific MP3 player, but you can make it even better by adding plug-ins, which you can download from www.winamp.com. To run Winamp audio plug-ins, you'll first need to install Microsoft DirectX (free from www.microsoft.com/directx). You'll also need to configure them. Here's how to do it.

1. Launch Winamp.
2. Type Control + P to open the Preferences dialog (see **Fig. A**).
3. In the left panel, under Plug-ins, click on "Output."
4. In the right panel, click on "Nullsoft DirectSound plug-in" to select it. This routes audio through DirectSound so that you can process and hear it.
5. Back in the left panel, under Plug-ins, click on "DSP/Effect."
6. In the right panel you should see a list of all installed DSP plug-ins. Click any plug-in's name to enable it. The plug-in window should now open and begin processing audio.
7. Click on the Configure button under the right panel. Some plug-ins have parameters that should be adjusted here; others just display an About dialog.
8. Click the Close button to exit the Preferences dialog, and proceed with adjusting the effect.

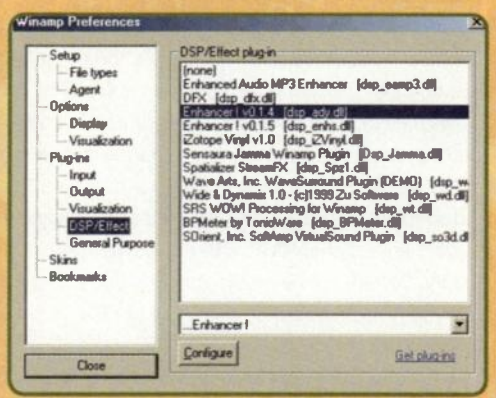


FIG. A: *Winamp*'s hidden Preferences window is the key to configuring plug-ins and output options.

Outrageous Holiday Special

Give a Gift and get a Gift

Give a gift of Electronic Musician for only $9.97/year and receive a free "4 x 6" 'Musician of the Year' magnet frame. Visit us at www.emusician.com for more details.

www.emusician.com

FIG. 4: Power Technology's *DFX* plug-in is derived from the company's high-end processors. The "Fidelity" control is an exciter; "Ambience" adds reverb.

FIG. 5: Do your MP3s lack bass? Adrian Iosif's free *Enhancer* plug-in for *Winamp* offers two different low-frequency enhancers.

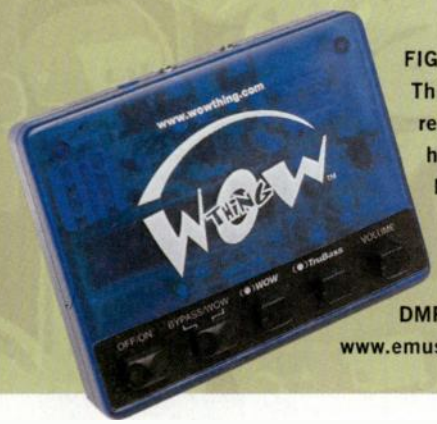


FIG. 6: The SRS Labs Wow Thing ($29) can help restore the spaciousness, highs, and lows lost during MP3 encoding. For reviews of it and three more hardware enhancers, visit the DMPG area at www.emusician.com.

FIG. 7: For a fun effect, try the SOrient *SoftAmp VirtualSound* plug-in for *Winamp*. It simulates surround sound from two speakers.

on the exciter. They analyze just the lower range of the audio spectrum, and by adding overtones to that signal create the impression of strong fundamentals.

Reverbs. Simulating large interior spaces with cascades of tightly spaced echoes, reverbs can be used for playback enhancement, but it's a bit gauche to my way of thinking.

Exciters and stereo expanders are the most important processes for MP3 restoration, bringing back lost high end and stereo imaging, useful in nearly any circumstance. Bass maximizers and limiters are also helpful, but loss of bass is generally less of a problem in MP3s.

PLAY TO WIN

Following are profiles of some of the best *Winamp* DSP plug-ins; several of them are also available for other MP3 players, such as *RealJukebox* and *MusicMatch Jukebox*. In most cases, the programmers have hard-coded the effect parameters, providing a limited range of functionality that is controlled with a single slider. All are downloadable from www.winamp.com.

Power Technology's *DFX* (Fig. 4) combines an exciter, a reverb, a stereo enhancer, a limiter, and a bass maximizer. It's a versatile and good-sounding plug-in.

Adrian Iosif's *Enhancer* (Fig. 5) features two types of bass boost, a stereo widener, a speaker-size simulator, an exciter, and a midrange voice filter (presumably for karaoke). It sounds as good as *DFX* to my ears and is true freeware—there are no disabled features.

SRS Labs' *Wow Thing* offers an exciter and a stereo widener in a single process called *Wow*, in addition to bass boost. Sounding watery at maximum settings, this plug-in is essentially an advertisement for the company's better-sounding hardware enhancer (see **Fig. 6**).

SOrient's *SoftAmp VirtualSound* (Fig. 7) is a fun 3-D-audio plug-in that lets you create any type of four-speaker configuration. Although the effect is somewhat convincing, the phase cues are sonically obvious and may be more of a detraction than an enhancement.

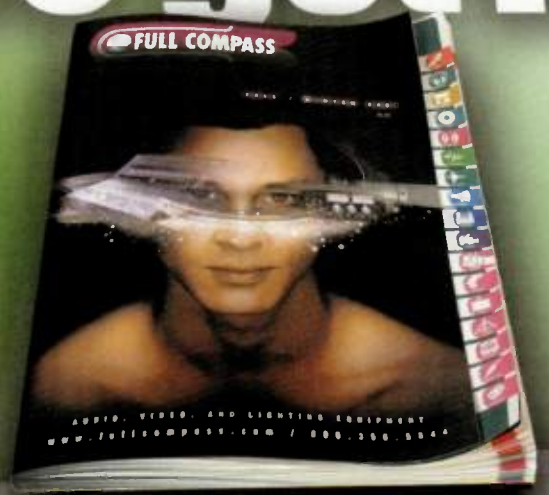
While not an effect itself, GMixon's *Adapt X* permits the use of DirectX plug-ins within *Winamp*, and chains the effects if you so desire. This lets you apply any professional DSP effects you may already use in your sequencer or editor to your *Winamp* audio. If you have DirectX plug-ins, usually included with programs such as *Cakewalk* or *Sound Forge*, going this route sounds a lot better and offers more control than the consumer plug-ins mentioned previously.

MP3 STRIKES

MP3 may not be the newest or best-sounding audio file format, but its popularity and widespread support make it an obvious choice for online distribution and personal music enjoyment. Try these techniques with your own tunes to ensure that listeners get the most from your music. And don't forget to visit the DMPG section of www.emusician.com, where you'll find numerous links to MP3 encoders, listening tests, and tutorials. ■

You want it.

We got it.



Now get it.

Inspiring deals on professional audio, video and lighting equipment
from the people who know everything about it.

COMPASS XPRESS

800.476.9886

Need it now? Extended hours.

8am to 10pm CST M-F.

10am to 6pm CST Sat.

Great deals. All the time.

Call 800.356.5844

FULL COMPASS

9am to 5:30pm CST

8001 Terrace Avenue Middleton, WI 53562 USA www.fullcompass.com

Causing

Adding a new sonic flavoring to your music can help blast it out of a rut. For everyone whose recordings have been missing that special something lately, here are 12 easy sound-design recipes to get the studio juices flowing. Although some require you to supplement your computer with outboard gear, many can be done with software-based effects or simply by using offbeat techniques. To give you an idea of what's possible, I've uploaded MP3 examples of these projects to the DMPG page of *Electronic Musician*'s site, www.emusician.com. So grab your mouse and let's begin.

THE LAST SHALL BE FIRST

Normally, people think of reverberation as being the last effect in the chain, but things can get interesting if you place the reverb *before* other effects. For instance, I've created great distorted lead "guitar" sounds by running a basic sawtooth patch on a synthesizer through reverb and then into heavy distortion. The reverb produces random-sounding overlapping between notes, reminiscent of feedback. For more ambient sounds, try running the reverb output through a stereo modulation effect such as a chorus or phaser. The result is rich, swirling, and spacious.

MORE ON THE WEB

Hear MP3 examples of these effects in the DMPG section of www.emusician.com.

FEELS GOOD? DO IT AGAIN

A friend of mine is fond of saying, "Nothing succeeds like excess." If you're working toward a unique sound but haven't found quite what you're looking for, try duplicating the processing. If you've used one chorus, use two; if you've used one reverb, add a second. You can place the duplicate effects either in series or parallel. I prefer to use reverbs in parallel, but experiment to see what works best for each project. Sometimes running two reverbs in series will smooth out the sound perfectly.

Vary the parameters between the two effects slightly to create a fuller, more complex sound. Using effects from two different manufacturers will almost guarantee that they'll sound a little different and (hopefully) complement each other.

BUG OR FEATURE?

Ever wonder how Garbage created the strange, sputtery effect on the bridge to "Stupid Girl" on their first album, *Garbage*? It wasn't the latest effects plug-in, or a painstakingly sculpted multi-effect masterpiece, but rather the sound of a malfunctioning digital multitrack recorder. When one of their machines suddenly went on the fritz, they were quick to recognize an interesting timbre. And so instead of hitting the Stop button and powering down, they whipped out a tape and started recording (using another machine, of course!).

Equipment malfunctions can be annoying interruptions, but they can also create happy accidents as the errant gear makes bizarre sounds you might never be able to create otherwise. So the next time your favorite studio toy is acting up and spewing out mangled audio, try recording its output instead of turning it off.

SAY GOOD-BYE TO THE DRY

Glen Phillips, former lead singer of Toad the Wet Sprocket (now a solo artist; see www.glenphillips.com), has a favorite trick for creating ambient pads. He will run his guitar through delays and/or reverb—and perhaps a chorus as well—then record just the output of the effects, not the original dry signal. Using only the wet signal creates beautiful, lush pads that are wonderfully

TWELVE QUICK RECIPES FOR HEAD-SPINNING SOUND EFFECTS

BY DAN PHILLIPS

organic in quality but difficult to identify as a guitar. Of course, this trick can also work for other sources, such as keyboards and backing vocals.

HOUSE OF ODD

Back in the dawn of the sampler age, it was cool to explore the percussive possibilities of kitchen equipment, augmenting a rhythm track with spoons hitting glasses and pans crashing to the floor. While I still love a good cast-iron clank from time to time, household appliances can be a source of sustained, ambient sounds as well.

Try walking around your house and turning on any piece of electrical equipment—computer fans, food processors, blenders, razors, hair dryers, and so on. If there's a pitch within the noise, set up a mic and record it (see **Fig. 1**). With today's plentiful RAM and drive space, I'd recommend sampling 10 to 30 seconds of sound, so you can avoid (at least initially) the time-consuming task of looping. After the sound is in your computer or sampler, give it an envelope with slow attack and release times, run it through delay effects, reverb, and possibly a chorus, and *voilà*—a new ambient bed.

JEAN MORRISON

FIG. 1: Household appliances make some surprisingly evocative noises. You can't plug a microphone into this kind of mixer, but you can capture and process its sound to create a unique ambient backdrop.

LOOKING FOR SYMPATHY

Have you ever been annoyed by something in the studio that rattles when the amps are turned up? Snare drums buzzing, lamp shades ringing, glasses dancing on a table? Those are called *sympathetic resonances,* and their energy can be harnessed for good as well as evil. For instance, try using a hand drum (such as a djembe) as a resonator. Using a boom stand, place a microphone deep inside the drum, and then sing into the open end (see **Fig. 2**). You might also try tuning the drum head to match the key of the song.

You can also use a speaker to run previously recorded audio through a drum and then record the result. Producer Ethan Johns used this trick on an upcoming CD collaboration by

JEAN MORRISON

FIG. 2: By placing a mic deep inside the bell of a hand drum and singing into the neck, you can add an odd, filtered ambience to your vocals. Here I used a small-diaphragm condenser microphone with an omni capsule.

Glen Phillips and folk-circuit favorites Nickel Creek, turning a kick drum into a quirky reverb.

BE YOUR OWN SAMPLE CD

This trick is from one of my favorite bands, Geggy Tah (www.geggytah.com). On its first CD, *Grand Opening*, the band took a single vocal phrase from one track and used that one sample to create almost all of the elements for a different song on the same album. The band members reused other elements from the first CD in their latest release, as well, lending a certain self-referential consistency to their oeuvre. So the next time you're about to reach for a sample CD, consider plundering your own catalog instead.

JUST FOR THE LFO OF IT

With a tempo-controlled low-frequency oscillator (LFO), you can set the frequency in terms of note length and beats per minute instead of Hertz. This makes it easy to program flangers, phasers, and other LFO-driven effects so that they pulse in time with the music. Many modern effects processors include tempo-controlled LFOs, which detect the tempo using MIDI or a tap-tempo button or footswitch.

Tempo-controlled LFOs are very slick for processing everything from drum loops to pads, but they can also become a sound in and of themselves. You can start with almost any source signal, including simple white noise. Run the signal through a tempo-controlled flanger or phaser set to cycle every eighth or 16th note. If you can set the LFOs for the left and right channels to be 180 degrees out of phase, so much the better. I like to use downward-sawtooth shapes for the LFOs, but other waveforms will work as well.

Next, crank up the resonance (or feedback) of the flanger or phaser until you can hear the pitch distinctly. Finally, tune the center frequency so that the LFO creates laserlike sweeps, and you have a distinctive element to add to a loop.

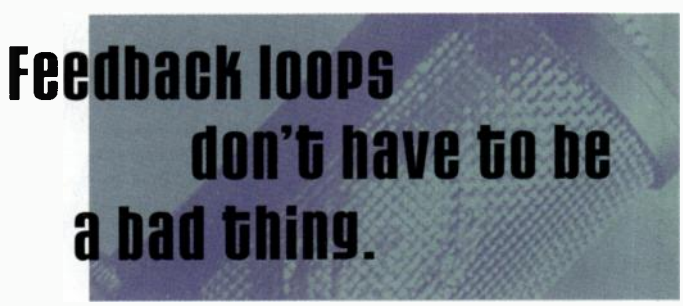
FEEDBACK . . . ACK . . . ACK . . . ACK

Have you ever been using a delay and accidentally created a positive feedback loop so the sound built in volume with every repeat until it was a pulsing, distorted mess? If so, you probably reached quickly to turn down the volume or yank out the patch cord. If you're interested in a creative experiment, however, feedback loops don't have to be a bad thing.

First, a caution: this exercise can create runaway volume levels, so before starting, make sure to turn down your speakers to a very low volume, and don't use headphones. To create a feedback loop, begin with a delay effect. I like to use very long delays, between 8 and 40 seconds, but short delays also produce good results.

You may be able to create the loop entirely within a single effects device by setting the delay's internal feedback volume so high that it's equal to or greater than the input level. You can also patch several effects (filters, delays, reverbs, pitch shifters, and so on) together in a chain so that the last one feeds back into the first.

Once you've created the loop, "seed" it with a bit of audio input—a noise burst, vocal phrase, keyboard or guitar lick, loop, or whatever catches your ear. Then wait for a while and allow it to build on itself. Sometimes I'll even walk out of the studio for



ten minutes or more, then come back to hear what's happened.

Alternately, stick around as the loop builds and try modulating elements within the loop: change delay times, pitch-shift amounts, filter cutoffs, volume levels, and so forth. This is especially effective with long delays, because it takes a while for these changes to come back around.

Once the sound has built into something interesting, record the output. (Because hard disk space is so cheap and plentiful, I'll sometimes just press Record at the very beginning.) You can then load the sound into a sampler, import it into an audio

Introducing the

C-Port (DSP2000)

Change the way you think!

(Works on all PCI 2.1 compliant motherboards Including Intel, AMD, VIA)

$449*

Total 12 in 12 out (10in 10 out 24Bit 96Khz) including - 2 Balanced XLR inputs with MIC preamps and Phantom power - 8 in 8 out 1/4" jack Line level 2 in 2 out Digital IO (Optical, Coaxial and AES/EBU) - Headphone output Stereo 18Bit Converters on the card for Accelerated Direct Sound Support 32 Channel MIDI out - 16 Channel MIDI in - ASIO2, MME, GSIF, Direct Sound, with Rock Solid 2ms Latency @ 24Bit 96Khz Drivers - Multi Card Support (up to 40 Channels I/O) ADAT TDIF VIA DS2000 (Optional) - Logic Soundtrack 24Bit Software

See it! hear It! Believe it!

Unconditional 12 Months warranty Including a 60 day money back guarantee

Distributed by KAYSOUND
5 Coton Lane, Champlain, NY 12919
2165 46th Ave., Lachine, Quebec H8T 2P1
1-800-343-0353

www.staudio.com

www.kaysound.com

Available at

www.marsmusic.com

MARS MUSIC™
the musicmaker's destination™

Musician's Friend
1-800-776-5173
www.musiciansfriend.com

*Estimated Street Price.

track as an ambient bed, or use it as the basis for further experimentation.

SMOOTH MODULATOR

Sometimes called *modulatable* or *glide* delays, interpolated delays smooth out changes as you change the delay time, creating a temporary pitch-bend effect. (Choruses and flangers are essentially very short interpolated delays driven by LFOs. Delays that don't have interpolation will click as the delay time is changed.) You can find this type of delay on effects processors including the Korg OASYS PCI, the Lexicon PCM 81, and the Eventide DSP 4000, DSP 7000, and Orville.

Interpolated-delay algorithms generally allow access to the degree of smoothing, which means you can control the time it takes to slide from one delay setting to another (see **Fig. 3**). With higher degrees of smoothing, you can create very cool tape-stop and Munchkin effects by switching the delay time from very short to very long and back again. Use this in conjunction with feedback, as described in the previous tip, for even more interesting results.

TRIGGERED GATES

Gate triggering is currently my favorite production trick, and it's dead simple. Start with a pad—strings, vocals, analog sawtooth, or the like. Send the pad through a gate with external triggering ("keying") capabilities; this could be a plug-in, an analog gate with a key input, or a MIDI-controlled gate. Next, the fun begins.

Create a monophonic rhythm pattern in your sequencer to use as the gate trigger (see **Fig. 4**). You could use straight eighth or 16th notes, but you'll get more interesting results by varying the rhythm, the note duration, or both. Next, send the output to the

FIG. 3: Interpolated delays let you change delay times smoothly, often creating an interesting pitch-bend effect during the transition. The Smoothing knob on this control panel for an Korg OASYS PCI sound card determines how long it takes to slide from one delay value to another.

gate's trigger input. If the gate responds directly to MIDI Note On messages, you're done. If it requires an audio key input, assign the MIDI track to a synth patch with a fast release time (for precise duration control), and then use the synth's audio output as the key.

At this point, your pad will have become a pulsing rhythm, controlled by the gate. If the gate allows it, work with the attack and release controls to hone the sound. Now you can experiment: Add a tempo delay after the gate to augment the rhythm (with a tempo delay, you can set the time in note-length and tempo instead of milliseconds). Program filter sweeps or other timbral changes in the pad. Vary the gate's attack and release in real time. Change the duration of the trigger pulses.

Here's another variation, suggested by musician and producer Thomas Dolby Robertson: program the gate (or expander)

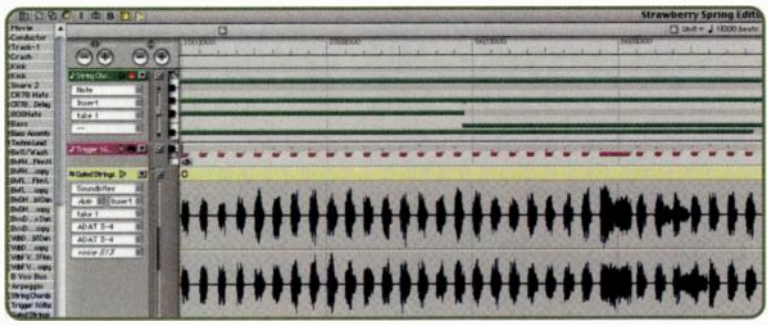


FIG. 4: In this window from MOTU *Digital Performer*, a MIDI track (green) is playing string chords on an E-mu e6400 Ultra sampler. The sampler's output is routed through a gate in an OASYS PCI, which is being triggered by the middle (purple) MIDI track. The stereo audio track at bottom shows the result: a rhythmic, pulsing string pad.

so the volume is not completely off when the gate is closed. That lets the pad continue to sustain, with the triggered gate providing a gentle pulse on top.

DARTH VOCODER

The name *vocoder* comes from what the device was originally intended to do—encode voices for data-efficient telephones. While the technology never came into common use for those weekend calls to Grandma, it did give us the processed vocal timbres of Laurie Anderson's "O Superman" and Styx's "Mr. Roboto."

For a completely different sound, and one that blends more easily into a mix, try giving the vocoder a rhythmic twist by using drums instead of vocals for the modulator input. (The modulator input controls the output sound's rhythmic and harmonic content, whereas the *carrier* input provides the dry sound.)

Use a pad with high-frequency content, such as airy vocals or strings, for the carrier. The result is similar to the effects of the triggered-gate trick, but with a unique, softer twist. For a thick, unusual drum timbre, try using white or filtered noise as the carrier and then mix the vocoder output with the dry signal. The final effect is something like a compressed room reverb run through a fluttery cassette tape—weird and ear twisting.

AN EVEN DOZEN

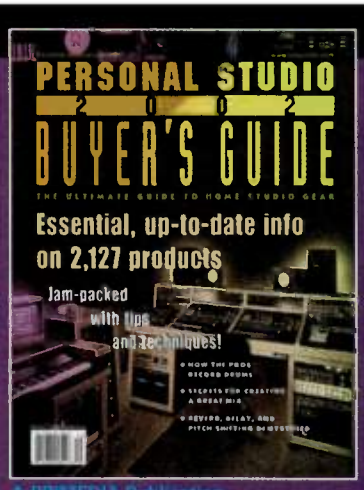
So, that's the wrap: 12 tricks to break out of the sonic doldrums. Stop by the DMPG page at www.emusician.com to hear them in action, try a few yourself, and then go and invent some of your own!

SINGER/SONGWRITER/PRODUCER **DAN PHILLIPS** IS ALSO A PRODUCT MANAGER AT KORG R&D. CHECK OUT HIS MUSIC AT WWW.DANPHILLIPS.COM.

Electronic Musician presents

PERSONAL STUDIO 2002 BUYER'S GUIDE

THE ULTIMATE GUIDE TO HOME STUDIO GEAR



A PRIMEDIA Publication

Today's personal-studio owner has more equipment to experiment with than ever before, so choosing the right tools is a crucial step in developing recording skills and maximizing productivity.

The fifth edition of PSBG boasts pages loaded with the most comprehensive product specification charts available. Editorial features offer applications and ideas about creating the ideal personal-studio environment. Tips and tricks throughout the guide provide quick refreshers and new approaches to home recording.

Look for essential, up-to-date info about 2,127 products listed in 38 categories!

Editorial features and tech support throughout, including:

- Maximizing Your Mixer
- Creating the Ultimate Mix
- Getting a Drum Sound
- Power Hitters
- Ten Mastering Recording Tips
- Reviewing the Basics: Reverb, Delay, Compression, and Pitch-Shifting
- 300 Manufacturer Contacts

Personal Studio Buyer's Guide 2002 is available in music stores, bookstores, and wherever ***Electronic Musician*** is sold.

Order toll free in the U.S. at 800-441-0294; outside the U.S. at 913-967-1701.

Visit us online at www.emusician.com!

THE CHARTS

Analog Mixing Consoles
Audio Patch Bays
CD Recorders
Channel Strips and Voice Processors
Computer-Based Digital-Audio Workstations
Digital-Audio Converters
Digital Mixdown machines
Digital Mixing Consoles
Direct Boxes
Drum Machines
Dynamics Processors
Effects Processors
Equalizers
Headphones
Keyboard Synthesizers and Samplers
Microphone and Instrument Preamps
Microphones
MIDI Interfaces, Patch Bays, and Processors
MiniDisc and Cassette Multitracks
Modular Digital Multitracks
Modular Hard-Disk Recorders
Power Amplifiers
Reference Monitors
Sequencers
Sonic Treatment
Studio Furniture
Synthesizer and Sampler Modules
Synchronizers

Tease more performance out of your computer for free.

cheap Bastardizations

Every few months, music-software companies add spectacular new features to their programs, but some of the most useful goodies are right under your nose. You can exploit tons of tricks, secret compartments, and insider hacks to squeeze more music out of your computer right now. These "cheap bastardizations" aren't just fun to try—because they involve finessing common software and your operating system itself, they're dang near free.

I've picked some of the best, for both Windows and Mac, to highlight. Except as noted, I tested Windows tips in Windows ME and Mac tips in Mac OS 9, but most should also work in other versions of the operating systems. (Don't worry: these techniques are sneaky, but they're safe and reversible.) I'll start with some powerful key commands for both platforms and then focus on each platform individually.

By Jim Rippie

THE KEY(S) TO FAST NAVIGATION

You probably know that you can switch instantly between programs with the Tab key. (In Windows, press Alt + Tab. In Mac OS, it's Command + Tab; the Command key has an Apple logo and/or a four-corner "clover leaf" symbol on it.) But there are many other

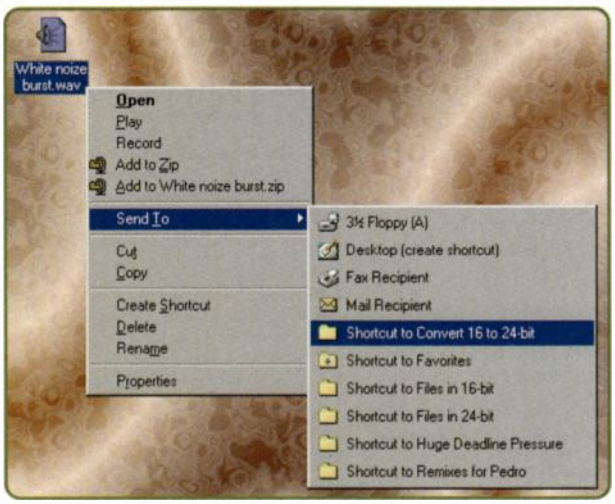


FIG. 1: Use Windows' right-click Send To menu to move files to frequently used or important folders instantly. Your wrist will thank you.

key commands you can use to rocket around your programs without groping for the mouse. With the number of files you have to save and locate during a typical music project, the time savings add up quickly.

Windows navigation secrets. Use your keyboard for a quick trip to a clutterless desktop by pressing Windows + M. This minimizes (hides) all the open windows. (The Windows key has, not surprisingly, a Windows logo on it.) Press the Backspace key to back out of folders, moving to the enclosing folder. It's faster and easier than trying to hit that tiny "up folder" button with your mouse.

Windows also provides a handy "fast-forward" mechanism in its file manager: right-click on any file, and you will see the Send To menu (see **Fig. 1**). You've probably used this menu to create an e-mail with the highlighted file as an attachment, but by adding your own items to the menu, you can also use it to move any file to an important folder instantly. To modify the menu, just create a shortcut to the desired folder in the Windows SendTo folder. In Windows 98 and ME, the SendTo folder is in the Windows folder (see **Fig. 2**). In Windows 2000, it's in the Documents and Settings folder.

Mac navigation secrets. Holding the Option key when dragging an item in the Finder creates a copy of that item. But holding Command + Option when dragging an item creates an alias of it (rather than a copy) wherever you drop the item. Even better, the Mac doesn't add that annoying "alias" to the end of the file name when you use this technique.

The Mac's Command and arrow keys allow you to fly through Finder windows. Command + Down Arrow opens a folder (and when used on a file, opens the file). Command + Up Arrow opens the enclosing folder. Add the Option key to those combinations to close the window you were looking at automatically when the new item opens, avoiding clutter. The Command + Up Arrow shortcut also works in Open/Save dialog boxes. To open or save a file on the desktop, press Command + D.

OPTIMIZING WINDOWS FOR MUSIC

Most people—especially cheap bastards—hate plunking down hard-earned money for computer upgrades before they are absolutely necessary. But you can take some easy steps to delay that day by altering settings to make your current hardware run better, especially for performance-sensitive tasks such as MIDI and audio.

I'll start with some easy optimization tricks that aren't too risky. A word before you begin: keep track of everything you try and try no more than one idea at a time. That way, if a tip doesn't work with your particular setup, you can remember what you changed and back out easily. Most important, use these tweaks only if you aren't getting enough performance or stability out of your system—if it ain't broke, don't fix it.

Networking for success. Network servers would seem to have nothing in common with music-making computers. The former prioritize network activity such as running mail-server software; the latter focus on getting music in, out, and edited as smoothly as possible. Irreconcilable differences? Not for cheap bastards. Both systems need great disk performance. Open your System control panel, head for the Performance tab, and click on the File System button to open the File System Properties dialog box (see **Fig. 3**). Select Network Server in the drop-down menu to make your machine masquerade as a server. Windows will give more attention to disk activity, and you should get more audio tracks.

Run DMA. To further increase hard-drive performance, enable Direct Memory Access (DMA). What's DMA? Long story—cheap bastards can skip the details and just turn it on (see **Fig. 4**). Get there by going to the System control panel and clicking on the Device Manager tab. In the list of devices on your system, find your hard drive (or drives) and display its properties. (For those with

MORE ON THE WEB

Cheap Stuff Online

Visit the DMPG section of www.emusician.com for an open bar of music software, AppleScripts, and links to more computer-acceleration resources.

undying curiosity, DMA allows your computer to read and write data more efficiently by offloading data-copying from the CPU itself.)

At the risk of revealing myself as a non–cheap bastard, here's a great tip for audio: spend some money and use a second dedicated hard disk for recording and playback. Your main hard drive is occasionally busy loading software, checking other files, storing virtual memory, and executing other mundane tasks. When your dedicated audio hard drive is busy doing nothing but handling your music and you see your track count climb, you'll thank yourself.

If you can't afford a new hard drive or you really are a cheap bastard, you can make the best of a pretend drive you can create by dividing a single physical drive with software like PowerQuest's

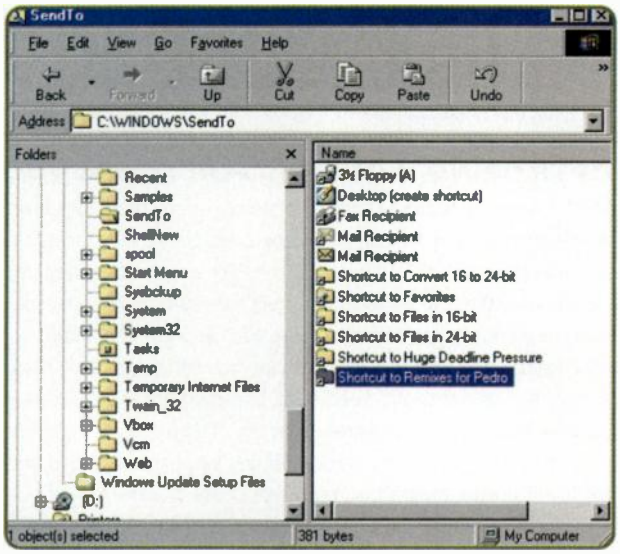


FIG. 2: Adding folder shortcuts to the Windows SendTo folder will add destinations to the pop-up Send To menu.

Partition Magic. Put your audio on the lowest partition (the lowest letter, typically Drive C, reported by your partitioning software). This partition lies at the outside of the platter, and thus has the fastest seek and file-access performance.

Power outages. California isn't the only place you'll encounter power outages. Computer users face "mini brownouts" all the time as operating systems throttle back the CPU and other hardware in the name of better energy conservation and longer laptop battery life.

Windows may manage power like a dominatrix, but here's how to reverse the roles: disable Active Configuration and Power Interface (ACPI). Having ACPI enabled on some systems can cause poor audio performance and even IRQ problems. This tweak is pretty esoteric, so try it only if you have problems that don't seem to disappear with other solutions.

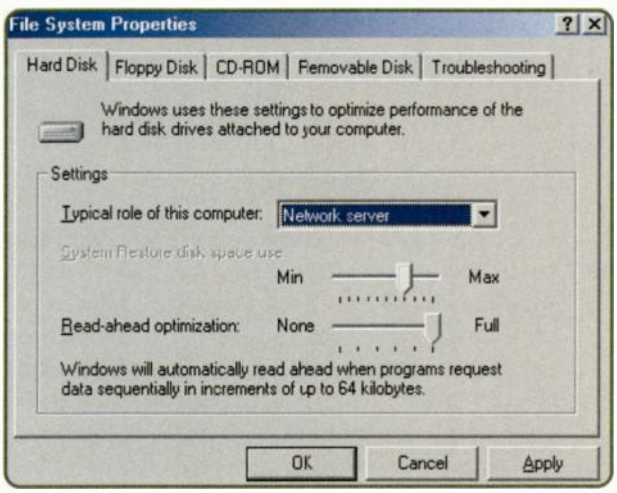


FIG. 3: Your computer doesn't have to know that you're a lowly musician, not an Internet Service Provider. Pretending to be one can get you more audio tracks.

Much of ACPI's control comes from the hardware itself—you enable and disable it in BIOS, the mini-OS stored in ROM on your motherboard that helps boot your machine. To get inside BIOS, look for an onscreen instruction as your computer boots ("Press Delete to enter BIOS," for example). There are a lot of settings in BIOS; look for Power Management or anything with a similar name. If you use a laptop computer, be sure to check the power-management control panels for settings that slow the processor or hard drive when the PC is running on battery power.

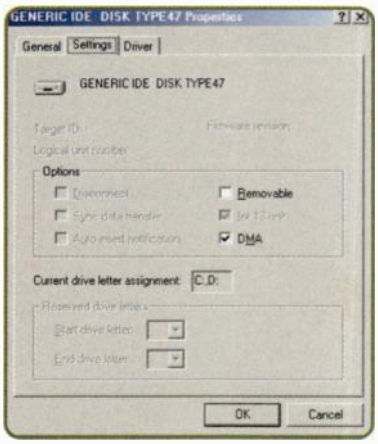


FIG. 4: Don't ask what it is; just turn on DMA. You'll enjoy the results.

Kill unnecessary tasks. You'd be surprised by the number of superfluous programs running behind the scenes on your system, sucking away performance you could direct toward music. To see what is active, hit Ctrl + Alt + Delete to bring up Windows' *Task Manager.* It lists all running items, displays which (if any) are no longer responding after crashes or other problems, and gives you a chance to shut down misbehaving or unnecessary tasks.

You could shut down superfluous programs that way every time you booted, but preventing them from starting at all is a better long-term solution. For that, use *MSCONFIG* (see **Fig. 5**). This application, located in the System directory of your Windows folder, provides a graphic interface to edit Windows configuration files, which tell the computer what tasks to initiate at system startup. *MSCONFIG* also features other settings that help you step through the boot process to identify problems and control startup behaviors.

But I really want to DirectMusic. Many pros who create sound and music for games are familiar with Microsoft's free authoring tool for DirectMusic, *DirectMusic Producer.* It's a secret weapon with a host of interesting uses, such as being able to mock up film cues quickly and perform live remixing. *Producer* can also turn your PC into an interactive software sampler.

For this, you'll take advantage of DirectMusic's support of the Downloadable Sounds Level 2 (DLS2) format. Wearing your new sound-designer hat, you can import your own mono or stereo WAV files into *Producer*'s DLS Designer and assign those sounds to keys on a MIDI keyboard. You can adjust envelopes, add low-frequency oscillators (LFOs), and apply lowpass filters, all with MIDI control (see **Fig. 6**). You can then use *Producer* itself as your soft synthesizer or export your sounds for use in DLS2- or SoundFont-compatible synthesizers such as a Sound Blaster Live sound card.

Because its heritage lies in sound design for games with highly interactive needs, DirectMusic is an interesting tool for DJs and producers who crave interactive control. It renders audio in real time, provides mechanisms for controlling real-time transitions, and enables composers to add and subtract new audio textures

interactively, all the while maintaining tight rhythmic synchronization (see **Fig. 7**).

DirectMusic Producer also offers features not often found in traditional sequencers. It can layer looping segments with unique time signatures to create polyrhythmic textures and can create additive layers of pitch bends or volume changes. For real bang-for-no-buck factor, play with *Producer*'s ability to remap MIDI files to new chord changes. The Demo8 sample project included remaps Bach's A-minor Prelude to the progression in Coltrane's "Giant Steps." Suitably curious yet? Visit the DMPG section of www.emusician.com for links to *DirectMusic Producer* and tutorial files.

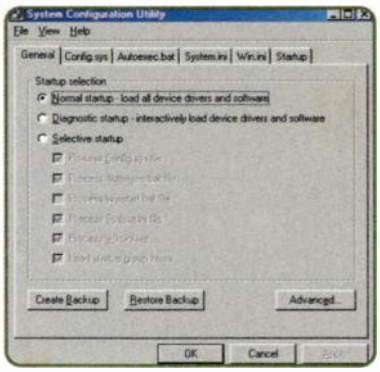


FIG. 5. *MSCONFIG* makes controlling what's running on your PC much easier than manually editing system files in a text editor.

OPTIMIZING MACS FOR MUSIC

You can't really get inside the inner workings of a Mac without resorting to bizarre contortionist acts, so I'll cover some of the simpler ways to diagnose problems and improve performance.

Call the Manager. Many Mac crashes and problems are caused by *extension conflicts*. Extensions are little bits of code that load into your Mac's memory at startup to provide additional features. Their cousins, *control panels*, offer extra features, too, but with some user-adjustable settings. (The icons that march across the bottom of your screen when you boot represent extensions and control panels loading into memory.) Unfortunately, because extensions and control panels are developed by a variety of programmers, they often conflict. To promote harmony and better performance, fire up the Extensions Manager control panel. This utility allows you to determine which extensions and control panels will load at startup. You'd be surprised how many aren't necessary.

One way to diagnose problems is to select All Off in Extension Manager's Edit menu to disable everything, then restart. If your programs run, you'll experience much snappier performance because all that gunk won't be in memory. More likely, though, your music software will need at least a few of the disabled extensions and control panels to work: QuickTime, OMS, CD-ROM drivers, and various libraries are common requirements. (Often the programs will tell you what's missing when you try to launch them.) So after restarting with extensions off, use Extensions Manager to add the excluded items in small groups (starting with the Apple "base" items) until you are able to run your programs or reproduce the problem. Having identified the problem, you can either live without the extension or contact the software developer's tech-support department for advice. The rule for this exercise is similar to the rule for adding hot chilies to salsa: start small and add gradually.

This rule has a corollary: don't install every kooky utility and extension on the planet. The most productive audio professionals keep their systems lean and mean, restarting with a carefully controlled set of extensions when they do work. (You can save extension sets, but unless you also *lock* them, they'll be modified whenever you install a new extension or control panel. Visit the DMPG section of www.emusician.com for a free drag-and-drop utility that will lock and unlock extension sets.)

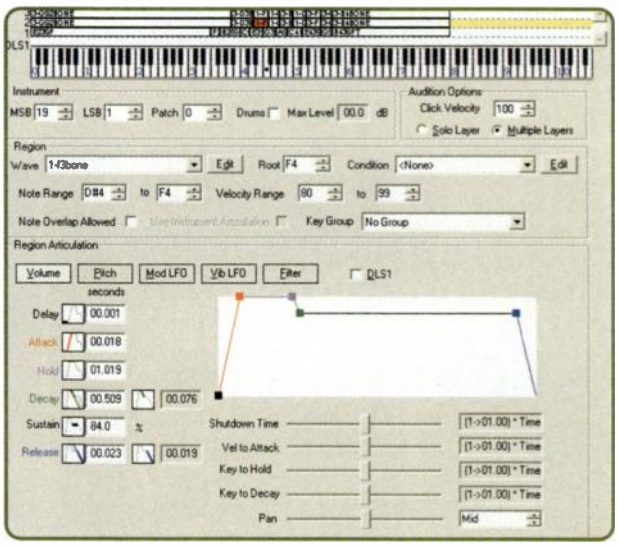


FIG. 6: Extensive sound-design control is at your fingertips with Microsoft's free *DirectMusic Producer*.

Mac the Ripper

Apple's free *iTunes* (www.apple.com/itunes) can digitally extract ("rip") tracks from CDs and transfer them to your hard drive. To save disk space, the program defaults to saving the ripped files as MP3s. But you also have a high-quality option: uncompressed AIFF or WAV files. Set those up on the Importing section of *iTunes*' Preferences window (see Fig. A). You'll get original-quality audio at the expense of lots of hard drive space (typical CDs have more than 500 MB of sound).

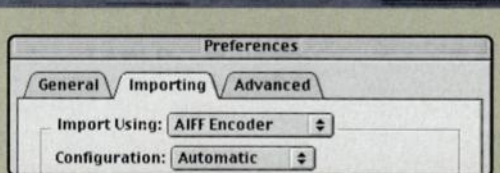


FIG. A: This hidden menu lets you command *iTunes* to rip audio from CDs without degrading it.

FIG. 7: Microsoft gets funky. With *DirectMusic Producer*'s Secondary Segment Toolbar, you can trigger audio loops interactively.

No-hit *Sherlock*. Apple is rightfully proud of its fast *Sherlock* search program, which can locate documents quickly, even searching inside them for specific words. The price for speed in this case is *indexing*, a lengthy process during which the Mac tabulates names, locations, contents, and other attributes of your documents. The Mac is set to index automatically on a schedule, and if indexing occurs as you record audio, it could trip you up. (By default, it happens at midnight, but everyone knows musicians stay up past their bedtimes.)

Sherlock provides a slider to control system responsiveness during indexing, but you'll be better off if you simply deactivate automatic indexing. Select Index Volumes from *Sherlock*'s Find menu and turn off the Use Schedule checkboxes as shown in **Fig. 8**. Just remember to index your drives every few days if you want to keep your searches fast. Use the Create Index button in the same dialog box and then go get a snack, because it takes a while. If you want to get fancy, you can use the Mac's Energy Saver control panel to wake up the computer for a few hours every day at a time when you won't be around; then, schedule indexing to coincide with that period. You can also index individual folders by Control-clicking on them.

Tales from the script. AppleScript, a simple programming language, is the secret weapon of many a Mac-savvy cheap bastard. Everything you need to use it is included on your system. You can create scripts that automatically do almost any process you could do yourself, step by plodding step. Most Mac applications respond to at least a few commands (an instruction to open a document, for

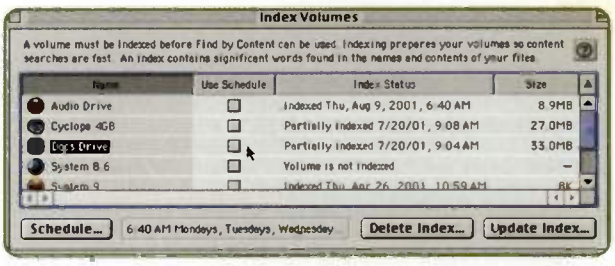


FIG. 8: To avoid spontaneous indexing heartburn, uncheck *Sherlock*'s Use Schedule checkboxes or schedule indexing for a time when you won't be recording audio.

share the freedom

The Web abounds with cool musical tools for the asking. Most of the following programs are freeware, but for cases in which the authors request a shareware donation, please remember to support their efforts and vote your enthusiasm with your wallet. (More great shareware and freeware is profiled in "No Money Down" on p. 54.)

analogx utilities (Win). You'll find a stupendous set of free music programs at www.analogx.com. Of particular interest is *DXMan*, which helps you manage DirectX plug-ins, and *TapTempo*, which calculates tempos and delay times (for creating echo effects) as you whack your Spacebar on the beat. Check out AnalogX's music while you're there.

groovelab (Mac/Win). This is one of those rare treats—a truly simple, fun, and useful online-only application. Click on boxes in a grid to whip up drum patterns in your Web browser and then download the audio result (www.artopod.se/groovelab).

MIDI-OX and MIDI Yoke (Win). These free MIDI utilities are useful, updated frequently, and stable. Use them for monitoring, troubleshooting, and routing your MIDI streams—to determine whether your hardware is sending controller messages properly, for example (www.midiox.com).

soundapp (Mac). Long a favorite of the Mac community, this free, AppleScript-savvy utility lets you audition and convert audio files within a variety of formats (www-cs-students.stanford.edu/~franke/SoundApp).

virtual audio cable (Win). With this free program, you have the ability to route audio streams (including material you're monitoring through Internet media players) to other applications such as recorders. Note that it may not work in Windows XP, still in development at press time, because Microsoft is working to close loopholes like these (www.ntonyx.com).

driving the web

You don't have to be cheap to appreciate the benefits of online storage. If your computer were stolen or burned to a crisp, your data would still be safe on a remote server, accessible from any computer with an Internet connection. That's the theory, anyway. Due to the dot-com crash, many online storage services have gone to that great 404 error in the sky. Still, a few free sites are left, and several offer a public area you can use to distribute files to friends and colleagues.

Freedrive (www.freedrive.com). Although reliable, this service bombards you with e-mail solicitations and ads and provides only 5 MB of storage in free mode.

iDisk (www.apple.com/itools). Part of Apple's iTools suite, iDisk gives Mac users 20 MB of free space.

Myplay (www.myplay.com). Get a whopping 3 GB of MP3 storage and listen to your collection online.

Yahoo Briefcase (http://briefcase.yahoo.com). Building on Yahoo's clean design, the Briefcase service offers 25 MB of storage and can restrict folder access to people you approve.

A few words to the wise: Internet companies can disappear abruptly, so always keep a local copy of items you place online. If you put something in a public folder, anyone who stumbles across it will be able to check it out. So if it's sensitive, encrypt it with a utility such as *StuffIt*, *WinZip*, or something stronger before uploading. Most important, be sure to read the usage terms for any service closely before signing up. You don't want to give away the copyright to your own files unwittingly when you click the inevitable "Yes, I agree" button. When you put your own MP3s on Myplay, for example, you grant it permanent rights to distribute your music royalty free. Not all services are scurrilous; most have outlandish terms mainly to ward off even more outlandish lawsuits. Remember to read everything thoroughly and know what you're doing.

If you have doubts, don't sign up.

example), and some make nearly every feature scriptable. **Fig. 9** shows a simple AppleScript included with Felt Tip Software's *Sound Studio*, a shareware audio editor (www.felttip.com).

AppleScript is particularly helpful for tasks you do every day or several times a month, such as backing up your current work to CD-R. You can run the scripts like baby applications, or you can attach them to folders so that they run when the status or content of the folder changes. For example, you could set up a "drop and burn" folder in which anything you put it in would be burned to CD

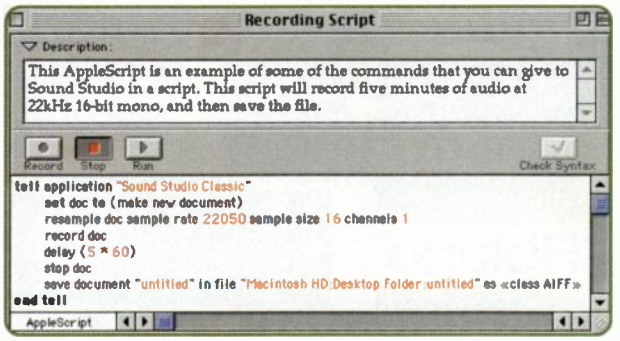


FIG. 9: AppleScript, a free programming language shipped with the Mac, enables you to write custom macros. Not a programmer? Simply click the Record button, and *Script Editor* (shown) will record your moves.

automatically. To attach a script to a folder, hold the Ctrl key, click on the folder, and choose the Attach a Folder Action command.

AppleScript's potential is too vast to cover here. For some basics, select Mac OS Help from the Finder's Help menu and search for "AppleScript." For more details, stop by the DMPG section of www.emusician.com to peruse some actual scripts as well as tutorial links.

CHEAP, MASTERED

Two of the most straightforward ways to pump up your computer's music performance—adding RAM and a dedicated audio hard drive—are now so inexpensive that you may wonder if it's worth the effort to try the cheap bastardizations I've mentioned. But time is money, too, so many of the tips have more to do with working efficiently than with making esoteric hardware tweaks. Of course, there's a lot more to know about your system, especially with updates to Mac OS X and Windows XP on the horizon. Visit www.emusician.com for links to more information. And remember—if you were a U.S. subscriber to *Electronic Musician*, you would have received this issue for free.

JIM RIPPIE, A BOSTON-AREA CONSULTANT, CURRENTLY APPLIES HIS TECHNICAL AND MARKETING EXPERIENCE FROM MUSIC-SOFTWARE AND OPERATING-SYSTEM COMPANIES TO TECHNOLOGY LICENSING FOR SONIC NETWORK AND OTHERS. THANKS TO DAVE YACKLEY IN MICROSOFT'S DIRECTMUSIC GROUP, *ELECTRONIC MUSICIAN* CONTRIBUTING EDITOR LARRY THE O, AND ADAM BURCH'S TECHNICAL SUPPORT CREW AT CAKEWALK FOR HELPFUL CONTRIBUTIONS.

Whoever decided music had to be hard? Thanks to a new crop of innovative software, making joyful noise is easier than ever—and the results can sound terrific. I uncovered seven easy-to-use programs that deliver an especially big sonic bang, and then teased some insider production tips out of the developers. Don't let the low prices fool you. Whether you're a "nonmusician" (no such thing) or a seasoned audio and MIDI veteran, you'll be surprised what you can do with these software "toys," all of which cost less than $120 on the street. Faster than Hot Wheels, more streamlined than Barbie, harder-hitting than a Rock 'Em Sock 'Em Robot, here are seven fun and affordable tools that put the "play" back into playing music.

play hard

By Randy Alberts

"Toy" music software proves you can sound good while having fun.

MAC $79.00

MES iSynth 1.2

With a Macintosh G3/300 MHz, any VST 2.0 host program, and $80 from this month's paycheck, computer-music enthusiasts and hardcore MIDI fiends alike can use *iSynth's* virtual analog bass; FM synth; effects; sequencer; and sample-based drum, loop, and player modules to make cool sounds right out of the can.

INSIDER TIP: COMPILING THICK DRUM-PAD SAMPLES

Open an eight-pad kit in *iSynth's* Tangerine Drums module; trigger its sounds with your mouse, computer keyboard, or MIDI keyboard; then use the Record Direct to Disk feature to create a short AIFF audio file of the groove. Repeat eight times, open another Tangerine kit, and finally load each drum groove into its own drum pad for one sick sample-based drum machine.

CONTACT: MES/Cycling '74 (distributor); tel. (415) 621-5743; e-mail info@cycling74.com; Web www.cycling74.com

WIN $39.95

Voyetra Hip Hop eJay II

Its infectious Groove Generator, drag-and-drop loop arranger, and ability to time-stretch and import almost any sound file are sweet, but *Hip Hop eJay's* niftiest noodling tool is its Scratch Generator. What's more, you seldom get loops of this quality for anywhere near this price. Desktop DATs (digital-audio turntablists) never had it this good.

INSIDER TIP: INTELLIGENT MOUSE SCRATCHING

Select a sound you'd like to scratch and open Scratch Generator. Move the squiggly line back and forth across the waveform with your mouse to "scratch" live to a song. Record (aka *automate*) the scratches as a new sample, then manipulate it during playback as your phantom self scratches away.

CONTACT: Voyetra Turtle Beach; tel. (800) 233-9377 or (914) 966-0600; e-mail info@voyetra.com; Web www.voyetra.com

Mixman DM² Digital Music Mixer

WIN $119.95

Speaking of scratching, nothing puts tactile digital audio at your fingertips like the DM², which connects to a PC through the USB port. Using a modified version of the slick *Mixman* program, you can scratch and remix up to 16 simultaneous sample loops while warping the sound in real time with the joystick. Export your creations in RealAudio, WMA, or WAV format or upload them to Mixman's Internet radio station to share with the world.

INSIDER TIP: SCRATCHING A VOCAL LINE

Set the Scratching option to Last Beat, plug in a mic and record a vocal, then load your new sample into the left turntable and lock it. Load and lock a drum loop into the right turntable, slide the crossfader hard right, then use the Transform button to bleed the locked vocal sample into the right turntable mix while scratching the left turntable.

CONTACT: Mixman; tel. (650) 295-2300; e-mail info@beatnik.com; Web www.mixman.com

IK Multimedia GrooveMaker 2.0

MAC/WIN/BEOS $79.95

Otherwordly controls aside, *GrooveMaker* is one of the fastest ways to generate backing tracks—and even complete pieces. It comes with great-sounding loops of basses, synths, drums, effects, and percussion sounds, but it also imports WAV, AIFF, MP3, and other sound formats in real time. Using the program is as simple as clicking on a single button to generate fresh combinations of riffs and grooves, then clicking on another button to store them. You can adjust the level and panning of each loop or lock it down for groove-to-groove flow.

INSIDER TIP: CREATING MELODIC SOLO RIFFS

With a groove going in the main screen, click the ARP button in the lower left corner to reveal a tiny keyboard. Click on the notes you'd like it to arpeggiate, hit the Mark button, and repeat up to 128 times. Then jam with the groove by hitting the numbered circles above the Mark button in time with the beat; each circle triggers a stored arpeggio. You can choose among 250 synth sounds for each of your 128 arpeggios for some huge multi-instrumental dynamics.

CONTACT: IK Multimedia; tel. (866) 243-1718 or (510) 434-1490; e-mail info@ikmultimedia.com; Web www.groovemaker.com

Cakewalk Plasma 1.0

WIN $69.00

Plasma will get your blood pumping with its *Acid*-format loop support, graphic MIDI editing, unlimited audio and MIDI tracks, instrument- and vocal-recording capabilities, automatable effects pad reminiscent of the Korg Kaoss, and DXi software-synthesizer support. (Audio Simulation's *DreamStation DXi* soft synth is included.)

INSIDER TIP: FROM WEB TO LOOP

Import a downloaded MP3 file and trim it down to a likable loop by dragging its edges between the loop points until it sounds smooth. Right-click to convert it into a *Plasma* Groove-Clip, then modify its tempo and pitch for use in other compositions.

CONTACT: Cakewalk; tel. (617) 423-9004; e-mail info@cakewalk.com; Web www.cakewalk.com

Magix Music Video Maker Generation 6 Deluxe

WIN $79.99

If Tchaikovsky were reincarnated this year, do you think he'd be mixing it up with 64 audio and video tracks and some software synths, tweaking effects knobs, and cutting a trippy AVI video of his new techno band all at once? Yep, especially if he had *Music Video Maker 6 Deluxe* installed on his new PC. If you thought playing with audio loops was fun, wait till you start making videos with the included clips.

INSIDER TIP: USING THE MEGA-EFFECTS RACK

Select an audio track, open the Audio FX Rack, and go nuts. Use the mouse to draw precise EQ curves to create unique voicings, then compress, delay, distort, vocode, surround, filter, gate, and time- or pitch-shift at will with the stacked onscreen effects rack. Pile on some DirectX effects plug-ins, then power up the sleek Silver Synth and its intuitive pattern generator for some killer bass lines.

CONTACT: Magix Entertainment; tel. (310) 656-0644; e-mail info@magix.com; Web www.magix.net

codemasters MTV Music Generator 2

PLAYSTATION 2 $49.99

Your dad, wife, or music teacher will have to take your PlayStation 2 a lot more seriously now. Even without the optional 3-D video glasses and $15 USB microphone kit for recording your jams with seven friends, *MTV Music Generator*'s massive onboard sample library and automatic tempo- and pitch-matching technology offer plenty of sonic potential.

INSIDER TIP: LIVE JAMS AND POST-PRODUCTION

Connect up to eight players to the optional USB audio interface and record their jams right into your PlayStation 2. To smooth transitions or remove any memory-hogging dead air after the jam (long pauses, amp noise, dog barks, belches, and the like), just open the track in the Volume Editor, use the mouse to draw out the offending audio, and save the song file.

CONTACT: Codemasters USA; tel. (212) 582-3522; e-mail support@codemastersusa.com; Web www.codemastersusa.com

RANDY ALBERTS WRITES ABOUT MUSIC AND RECORDING TECHNOLOGY FOR *MIX*, *REMIX*, *AV VIDEO MULTIMEDIA PRODUCER*, AND DIGIDESIGN. HIS BOOK *TASCAM: 25 YEARS OF RECORDING EVOLUTION* IS DUE OUT THIS YEAR.

GO DIGITAL WITH THE

Electronic Musician

DIGITAL Home Keyboard Guide™

The Complete Guide to Digital Pianos and Home Keyboards!

Electronic Musician's annual buyers guide now includes the exciting home keyboard market! The exclusive guide to digital pianos graduated to a comprehensive home keyboard resource with the 2001 issue.

Arm yourself with these exciting, educational features and essential buying data before you purchase your next keyboard or piano!

- 2002 Digital Pianos
- Piano Lessons
- Today's Amazing Acoustic Pianos
- The Computer Connection
- 2002 Portable Home Keyboards
- MIDI for Beginners

The *Digital Home Keyboard Guide 2002* is available at participating piano and organ dealers, and wherever *Electronic Musician*® is sold.

Thirty-seven offbeat ideas for enhancing your creativity.

By Frank Jones

Oblique Strategies

for Desktop Music

There's a great scene in the movie *Slacker* in which a spaced-out but kindly hippie amuses her friends by trying to solve their problems with a deck of cards. Upon greeting someone, the woman fans the deck and asks the person to select a card, each of which is inscribed with a Zen-like, ambiguous suggestion for approaching a dilemma. The results are some of the funniest moments in the movie.

Created in 1975 by producer Brian Eno and painter Peter Schmidt as a way to break through creative blockage, that deck of cards is called the *Oblique Strategies*. Over the years, the *Oblique Strategies* has developed a cultlike following of musicians and artists, largely because of the universal nature of the inscriptions. Although four editions have been printed, there are only a few thousand decks in existence, and those are highly prized by collectors.

Luckily, several digital versions of the deck are available online. If you have ever found yourself creatively blocked or feeling uninspired, the strategies just may be your ticket to summoning the muses—provided you can find the right interpretation.

Although inscriptions such as "Take away the elements in order of apparent non-importance" and "Just carry on" seem self-explanatory, others are not so obvious. To address this, I've compiled my favorite *Oblique Strategies* and added ideas for using them in desktop music production. These interpretations could serve as a starting point—or better yet, inspire you to come up with your own creative strategies. So let's shuffle those cards and begin.

Are There Sections? Consider Transitions

Is that verse-to-chorus transition sounding a bit rough? How about adding a two- or four-bar bridge to smooth it out? Does your song begin with an instrumental version of the verse? You may want to write an introduction that is more elaborate. Transitions are an excellent way to spruce up what is otherwise a traditional arrangement.

Turn It Upside Down

Vicki Sue Robinson had a major hit by advising people to turn the beat around, but this *Oblique Strategy* applies to more than just the beat. If you rely on musical notation or your sequencing application supports it, consider inverting the notes for a few measures (see **Fig. 1**).

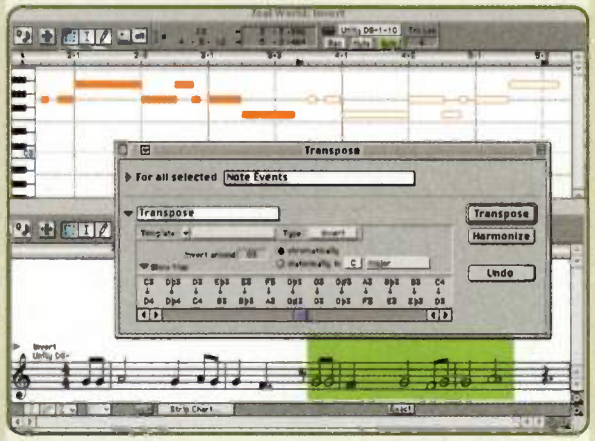


FIG. 1: Harmonically inverting the notes in a melody can suggest new melodies. Using the gone-but-not-forgotten Opcode *Studio Vision*, the second iteration of a phrase has here been mirrored around the pitch G3. Your sequencer likely offers other provocative ways to alter pitches.

Be Dirty

All those valuable recording techniques you've learned? Forget 'em for a minute. That old distortion pedal lying in the corner? Run the snare drum through it—even if it's broken. Take one track in your piece and use it as a textbook example of what *not* to do when recording. Keep the results.

Change Instrument Roles

Swap the bass and organ patches, assign the piano part to the string patch, and vice versa. This trick almost invariably leads to interesting results.

Emphasize Repetitions

Add a repeating figure, apply a digital delay, or repeat a lyric for dramatic effect. ("She loves you, yeah, yeah, yeah!") This strategy leaves a lot of room for exploration.

Breathe More Deeply

Oxygen is surprisingly useful when you're composing.

Honor Thy Error as a Hidden Intention

Probably the most famous of the *Oblique Strategies*, this thought should be kept in mind in all situations—creative or otherwise. Whenever possible, save your interesting mistakes. They may come in handy later in the composition process.

What Are the Sections Sections of? Imagine a Caterpillar Moving

Is your latest composition just a movement in a larger opus? It's something to consider.

Only One Element of Each Kind

This is a great way to clean up a track quickly. Are there two chordal parts—a pad and a piano comp, perhaps? Pick your favorite and delete the other one. Once the track has a bit of breathing room, you'll better be able to judge where you're headed.

Is There Something Missing?

Is there?

Emphasize Differences

In the mixing realm, it's important to give each element its own distinct identity. For example, if a highlighted flute passage has a bit of reverb on it, slather on more and then *remove* reverb from the rest of the instruments. Applying this strategy to the arrangement process, you might choose to make a legato string phrase even more

Odd Link Strategies

Here are some places on the Web that feature software versions of the *Oblique Strategies*.

Resource	URL	Description
The Oblique Strategies Web Site	www.rtqe.net/ObliqueStrategies	An extensive yet entertaining history of the decks.
EnoWeb	http://music.hyperreal.org/artists/brian_eno/obliques.html	Links to Oblique Strategies programs for Windows, Mac, and even WAP (for wireless inspiration).
MacOS	www.customline.com/oblique	Downloadable AppleScripts that do text-to-speech readings. Put one in your Startup Items folder.
Shockwave/Director	http://members.telocity.com/~bryrock2/eno/oblique.html	Get a strategy (or three) along with an ambient soundtrack.
Java	www.asahi-net.or.jp/~rf6t-tyfk/oblique.html	Click on the rectangle to pick a card with this fast-loading Java applet.
JavaScript	www.topix.com/~sean/oblique.htm	Pick a random card or scroll through 127 strategies.

flowing, while shortening the notes of a solo instrument.

You Don't Have to Be Ashamed of Using Your Own Ideas

Are you changing your song so it sounds more like something on the radio or by your favorite artist? Don't.

Tidy Up

"Tidy up" is one of my favorite strategies because I've never been able to determine whether it's a suggestion to reconsider the arrangement or an admonishment to clean my studio.

Do the Words Need Changing?

Nothing kills a song faster than an awkward couplet. Take a moment to evaluate your lyrics.

Use an Unacceptable Color

How about some jazz saxophone in that industrial dance track? Or polka accordion in your latest classical opus? Pedal-steel guitar might sound wonderful in a salsa piece, but you won't know until you try.

Make a Sudden, Destructive, Unpredictable Action; Incorporate

First, back up your song (just in case). Then, try one of the following: randomly highlight one or more tracks and hit Delete, randomly select a track and apply a radical effect to it, or (my personal favorite) randomly reassign MIDI program numbers to each track and continue from there. Live with the results for a while—no cheating with the Undo button.

Humanize Something Free of Error

Turn off the quantization every once in a while. Or, as an alternative, *sing* one of your favorite sequenced elements and record the results. What could be more human than that?

Look at the Order in Which You Do Things

Do you always start with a drum pattern or chords or lyrics? Next time, try beginning your composition with the bass line or a melodic riff.

Use Filters

Especially swept, resonant filters.

Fill Every Beat with Something

This doesn't have to be a note; try changing the panning, EQ, or effects-send level of a track on every beat. Or try spreading a 16th-note phrase among instruments on multiple tracks. The old Yamaha TX802 sound module had a cool feature that triggered a new sound on every note, rotating among eight sounds. This can be duplicated in a sequencer by repeatedly selecting every other note in a track, cutting and pasting the notes to a new track, and changing the new track's patch. (It's even easier if your sequencer has a "select every *nth* note" feature.)

Decorate, Decorate

A flute trill here, a wah-wah lick there. . . . Add a percussion fill and a piano gliss, or

an orchestral filigree. Remember, decorations don't have to be pretty.

Listen to the Quiet Voice

Too often we ignore our gut instincts. Sometimes it's necessary to give up on a piece that isn't working. Maybe that guitar riff you love so much just doesn't work on your latest ballad. Learn to trust your intuition.

Is It Finished?

Desktop musicians should ask this question *hourly*. It's far too easy to fall into the "it's almost there" trap. If you're not sure about a song's status, save a mix to tape or CD-RW periodically. (Be sure to note or save your current settings.) Wait a day, and before you begin your work again, review those rough mixes. You may be surprised at what you find.

Put in Earplugs

This is a neat trick because it forces you to listen differently. Alternately, listen to the mix from a different room or down the hall. Changing your acoustic environment can often give you a helpful perspective.

Abandon Normal Instruments

Are you using acoustic instruments (or realistic samples)? Switch to synth textures, or better yet, use an alternate controller. Using drum pads to play a guitar patch can open new directions.

Repetition Is a Form of Change

This classic Eno-ism might form the basis for most of today's electronica, but it's always an interesting approach. Rock 'n' roll and almost all its subsets are based on this principle. Can it apply to *your* composition?

Reverse

Back in 1975, when the *Oblique Strategies* were created, this feat required a bit of preparation. In today's era of sequencers and hard-disk recording, it's embarrassingly easy to do. Start experimenting with playing tracks or phrases backwards (see **Fig. 2**).

Distorting Time

This might include slowing the tempo, doubling (or halving) the durations of individual notes, or applying an unusual time-stretching algorithm such as granular synthesis to a sound or track. But it might also involve juxtaposing sounds or styles from different historical periods.

Discover the Recipes You Are Using and Abandon Them

Do you always compose in the studio? Take a small tape recorder to an unusual place and hum melodies into it. Do you frequently record in the late evening? Wake up early one Saturday and lay down a few tracks. It doesn't matter what it is; just do something to change your usual—and possibly limiting—approaches to creating.

Mute and Continue

If this trick isn't part of your mixing repertoire, consider adding it immediately. Muting various instruments periodically is a great way to shed light on which parts are enhancing a track and which are merely taking up valuable space.

Cut a Vital Connection

Delete a melody or the snare drum or the vocals. Don't look back.

Convert a Melodic Element into a Rhythmic Element

This is another trick that is made blissfully easy with MIDI. Simply reassign a melody or harmony track to a drum or percussion patch. It's sometimes helpful to add a synchronized echo effect to the resulting track. To do this, divide 60,000 by the tempo; the resulting number will give you the value in milliseconds for a quarter-note echo. Use 45,000 instead for a swinging, dotted-eighth-note echo.

Do Something Boring

Here's yet another delightfully ambiguous strategy; one interpretation might be to add a droning pad sound. Alternately, you could balance your checkbook and resume work later. Your call.

Emphasize the Flaws

It's been said that our flaws, more than our strengths, define who we are. Try this interpretation: select a track that contains a few flubbed notes, make a copy of that track and delete everything *except* the "mistakes."

OBLIQUE STRATEGIES

To this new track, assign that cool sound you've been meaning to use. Evaluate the results.

Left Channel, Right Channel, Center Channel

One of the most common causes of a cluttered mix is a lack of stereo placement for individual tracks. The next time you encounter a mushy sounding arrangement, consider the placement of the instruments. Is everything crowding the center channel? Try different pannings, and be radical if necessary. If you doubt that this will work, go back and listen closely to your favorite mixes. You'll probably be surprised.

Do We Need Holes?

Maybe so. Several bands, notably INXS and the Who, made stopping and restarting a song—and leaving a hole—part of their style. Think "Need You Tonight" and "My Generation."

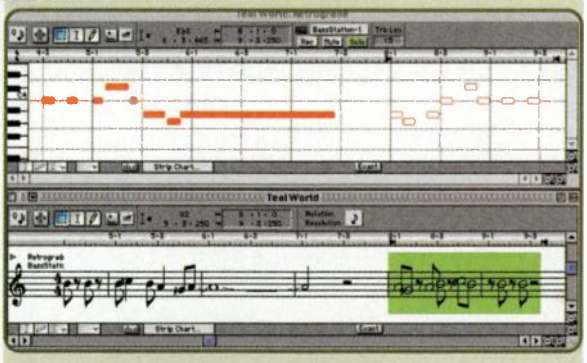


FIG. 2: Most desktop musicians have reversed audio clips to generate interesting effects, but some sequencers allow you to do the same with MIDI. Here the second iteration of an eight-note melody is played back in reverse order. Because changing the order caused the notes to overlap, I also shortened them.

Use an Old Idea

Unless you are just starting out, chances are good that you have a few older songs collecting dust because you were unable to finish them. Why not try recycling the hooks?

A Strategic Advantage Is Yours

If the approaches that are enumerated here do not fully address your creative endeavors, by all means, feel free to add your own strategies. The original decks came with several blank cards for just that purpose. The most important thing to remember when you're using the *Oblique Strategies* is that *you* are ultimately in control of your music; the cards are simply a way to highlight solutions that might otherwise not be immediately apparent.

Good luck—and happy summoning!

FRANK JONES IS A MUSICIAN, ENGINEER, AND WEB DESIGNER FROM BUFFALO, NEW YORK.

ad index

FOR FREE INFORMATION FROM ADVERTISERS, VISIT www.emusician.com/rs and click on reader service application. **EM**'s Online Reader Service is the quick and easy way to contact advertisers to receive **FREE** product information. Simply go to **www.emusician.com/rs**. From our Online Reader Service page you can then select the issues and the advertisers you are interested in. It's that simple. Your request is immediately e-mailed to the advertiser.

IMPORTANT NOTICE TO READERS:
Reader service inquiries are sent directly to the advertiser, who is solely responsible for sending product information. **Electronic Musician** can not guarantee a response from all advertisers.

Advertiser Name	Internet	Page No.
Applied Acoustics Systems	www.applied-acoustics.com	48
Audio Midi.com	www.audiomidi.com	39
Broadjam.com	www.broadjam.com	47
Cakewalk Music Software	www.cakewalk.com/homestudio	IBC
Cool Breeze Systems	www.coolbreezesys.com	91
Digidesign	www.digidesign.com	46
Discrete Drums Inc.	www.discretedrums.com	35
Echo Digital Audio	www.echoaudio.com	33
Edirol Corporation	www.edirol.com	5
Ego Systems	www.egosys.net	25
Frontier Design Group	www.frontierdesign.com	53
Full Compass Systems	www.fullcompass.com	67
Genelec Inc.	www.genelec.com	49
Glyph Technologies, Inc.	www.glyphtech.com	17
IK Multimedia (SampleTank)	www.sampletank.com	42
Interstate Musician Supply	www.interstatemusic.com	91
Kaysound	www.kaysound.com	71
Korg USA	www.korg.com	7
Masterbits	www.masterbits.com	34
Midiman/Maudio (Oxygen 8)	www.midiman.net/oxy8/remix	11
Midiman (Propellerhead)	www.propelleheads.se	29
MOTU	www.motu.com	BC
Musician's Friend	www.musiciansfriend.com	31
Musitek	www.musitek.com	90
Muska & Lipman	www.muskalipman.com	57
Net4Music (Finale 2002)	www.codamusic.com/em	13
Notation Technologies	www.notationtechnologies.com	85
Noteheads	www.noteheads.com	34
Primedia Business New Media	www.primediabusiness.com	59
Rick Latham Publishing Company	www.ricklatham.com/cd.htm	85
Shreve Systems	www.shreveaudio.com	79
Sweetwater Sound Inc.	www.sweetwater.com	23
Tascam/TEAC America, Inc.	www.tascam.com	IFC
TC Electronic USA (TC Works)	www.tcworks.de	3
Waves Ltd.	www.waves.com	19
Woodwind & Brasswind	www.rocknrhythm.com	85
X-Vision Audio US	www.xvisionaudio.com	43

FOR FREE INFORMATION

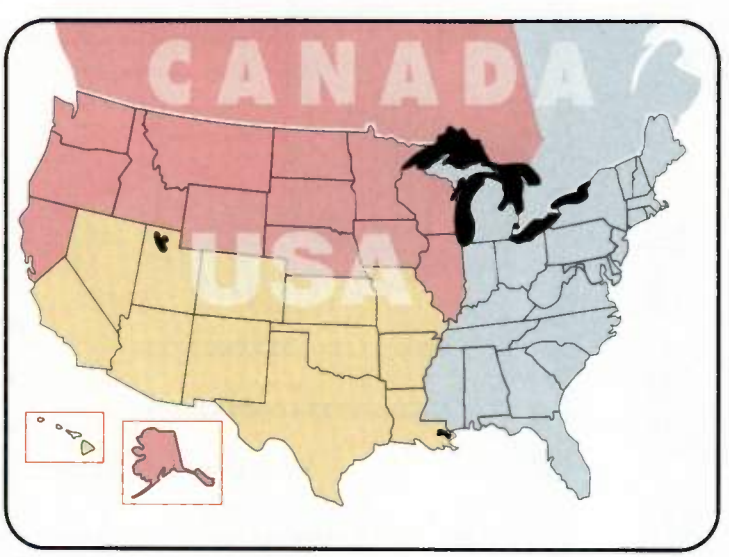
FROM OUR ADVERTISERS, VISIT

www.emusician.com/rs

Electronic Musician's Online Reader Service is the quick and easy way to contact advertisers to receive **FREE** product information. Simply go to **www.emusician.com/rs**. From our Online Reader Service page you can then select the issues and the advertisers you are interested in. It's that simple. Your request is immediately e-mailed to the advertiser.

IMPORTANT NOTICE TO READERS:
Reader service inquiries are sent directly to the advertiser, who is solely responsible for sending product information. Electronic Musician can not guarantee a response from all advertisers.

Electronic Musician's Advertiser Sales Regions and Representatives



Northwest
Stacey Moran (323) 782-2016
smorgan@primediabusiness.com

Southwest
Mari Deetz (323) 782-2011
mdeetz@primediabusiness.com

East Coast/Europe
Joe Perry (770) 343-9978
jperry@primediabusiness.com

Classifieds
Kevin Blackford (West Coast)
Jason Smith (East Coast)
(800) 544-5530 or (510) 653-3307
emclass@primediabusiness.com

PRODUCTS & SERVICES

ACOUSTIC PRODUCTS

EQUIPMENT FOR SALE

PRODUCTS & SERVICES

PRODUCTS & SERVICES

FURNITURE

INSTRUCTION

RECORDS, TAPES & CDS

PRODUCTS & SERVICES

SOFTWARE, SEQUENCES & SOUNDS

PRODUCTS & SERVICES

Sell Your Music!

Attention bands and musicians:

INDIE MUSIC CDs FOR SALE

Modus; The Twin Jade Sessions
Ground-breaking improv funk jazz from S.F.,CA. Check out samples at www.cdbaby.com/modus

Benny Rietveld; Mystery of Faith
Alt Jazz/Rock by Miles Davis/Santana bassist. $15 w/Carlos Santana, Barbara Higbie. www.bennyworld.com

Myles Boisen; Scrambledisc
A masterpiece of studio cutups and improvisation. Audio CD $15 mylesaudio@aol.com

Gino Robair; Singular Pleasures
Industrial Percussion Solo Performance CD $10. Audio Format www.rastascan.com/brd023.html

Are you an individual or band with self-released music for sale?
Now you can run an EM classified for $35 and sell your music to over 50,000 readers!

Tell Me More!

$35 includes Up to four lines of text (27-32 character spaces per line), and band name in **bold**. You must run a minimum of three issues in a row. Prepayment is required by credit card or check.

Please mail the following text (in order) to emclass@primediabusiness.com:
• Band Name (underline if bold type is desired) • Music Style/genre
• Price of your music product • Web address OR e-mail address (just one.)

Send your ad with the following required information: Your name, address and daytime phone number. Check or credit card information. We accept Visa, Amex, Discover and Mastercard. Include expiration date. We will charge the card once per month, for three months. No additional copy/text is allowable at this rate; this offer is only available for self-released, independent music releases. This is not applicable to production & sound effects libraries or sampling CDs. Send your ad and payment to: EM Classifieds, 6400 Hollis St., Ste. 12, Emeryville, CA 94608.

Ph. (800) 544-5530 Fax . (510) 653-9171 E-mail: emclass@primediabusiness.com

MAKE YOUR ADVERTISING DOLLARS WORK FOR YOU!

ITS AS EASY AS 1, 2, 3, 4.

1. Pick the magazines that fit your needs.
2. Call toll-free or e-mail to place your classified advertisement.
3. Acknowledge your keen marketing savvy.
4. Sit back and relax while your ad reaches over 240,000 buyers!

emclass@
primediabusiness.com

onstageclass@
primediabusiness.com

svc_class@
primediabusiness.com

remixclass@
primediabusiness.com

mixclass@
primediabusiness.com

CLASSIFIED ADVERTISING

GET YOUR COMPANY NAME INTO THE MINDS OF THOUSANDS OF CUSTOMERS.

West Coast Sales
Kevin Blackford
(510) 985-3259

For Classified advertising rates and deadlines please call: (800)544-5530 or contact your sales representative directly.

East Coast Sales
Jason Smith
(510) 985-3276

Take Control of

Your Music Now.

Ready to join the desktop music revolution? Cakewalk Home Studio 2002 makes it all possible. It gives you complete control of the creation and production of your music—from that first musical idea to your first CD.

That's why Home Studio is the first choice among musicians getting started with PC-based recording.

Everything you need to turn your Windows PC into a complete multitrack recording studio is right here. Record, edit and arrange digital audio and MIDI tracks all in one easy-to-use application.

Record all your instrument and vocal tracks. Drag and drop to add and combine loops with other tracks. Play and record live DXi software synths into your music. Mix with real-time DirectX audio effects. Print sheet music.

Even save your music as an MP3 or burn it to CD for the world to hear*.

All this from Cakewalk, the leading developers of Windows music software for more than 10 years in a row.

$139 U.S. (MSRP)

Take it Home.
Cakewalk Home Studio 2002 is available at music stores everywhere.

*Includes 30-day trial version of Cakewalk Pyro MP3/CD Maker software.

For more information, visit www.cakewalk.com/homestudio or call 888-CAKEWALK.

cakewalk®

firewire audio is here!

What's better than one 828? Two 828s. In fact, you can connect up to four 828s to a single FireWire-equipped computer with any standard FireWire hub. That's 72 simultaneous inputs and outputs (32 analog, 32 ADAT optical and 8 S/PDIF).

"Can you say Titanium and 828 in the same sentence without drooling?"
—Ernie Rideout, Keyboard Magazine

KEYBOARD KB AWARD KEYBUY

MOTU 828

The MOTU 828 audio interface connects directly to a FireWire port — no PCI or PC card required

• 8 channels of 24-bit TRS analog in/out with over 40dB of front panel trim • includes 2 mic/guitar-preamps with 48V phantom power • 8-channels of 24-bit ADAT optical in/out (switchable to optical S/PDIF) • RCA S/PDIF in/out • ADAT sync input for sample-accurate transfers and timecode synchronization • CueMix Plus™ no-latency monitoring of live inputs • separate front-panel volume control for main outs and monitor levels • Includes AudioDesk™ workstation software for MacOS and ASIO/WDM drivers for all audio software for MacOS and Windows 98SE/Me/2000 • $795

MOTU, Inc. • 1280 Massachusetts Avenue • Cambridge MA 02138 • 617-576-2760 • 617-576-3609 fax • www.motu.com

Make Your Studio a Successful Business

DECEMBER 2005

Electronic Musician

PERSONAL STUDIO | RECORDING | PRODUCTION | SOUND DESIGN

Expert Advice on the Art of Podcasting

How to plan, produce, and deliver the goods.

Unlock the Hidden Power of Pro Tools Beat Detective

Talking Shop with Leading Game Composer Jesper Kyd

REVIEWS

Native Instruments Reaktor 5
M-Audio Trigger Finger
Red Microphone Type B
Audio Ease Altiverb 5
and more

PLUS: CREATIVE USES OF NOISE

$6.99US $8.99CAN
12
0 09281 01816 2

WWW.EMUSICIAN.COM

AMAZING SOUNDS. ENDLESS POSSIBILITIES.

Dimension Pro is a powerful, new breed of software synthesizer that combines real instruments with advanced synthesis, giving you endless sound possibilities.

Preset lovers, take heart. An immense 7 GB library with over 1500 production-ready presets awaits you. Synth addicts, rejoice. Dimension Pro's deep editing and sound generation capabilities hold infinite potential for the chronically creative.

At Dimension Pro's core are powerful sample-playback and synthesis technologies, capable of covering every aspect of contemporary music.

Dimension Pro's library features superb bass, piano, electric keys, electric guitar, drum kits, a full orchestral suite, world instruments and more. Dimension Pro also explores the worlds of techno, trance and electronica, featuring a gripping collection of synth leads, basses, pads and atmospheres.

Dimension Pro is available for both Mac & PC, ready to rock your next track.
For more information and sound examples, please visit www.cakewalk.com.

cakewalk

DIMENSION PRO

Virtual Synthesizer for Mac & PC

Mac · Windows 2000/XP · Audio Units · VST · DXi

INSTRUMENTS

G-70: Music Workstation

Roland®

www.rolandus.com

ERFORMANCE

ENHANCED MIDI PROGRAMMING

Tracktion 2 features a fully revamped MIDI editor with faster note entry, quicker editing, more intuitive keyboard control, and improved viewing of notes and controllers simultaneously.

DRAG-A-FILTER

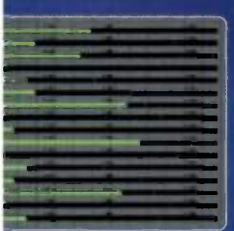
Wanna add a VST plug-in, pull up a VSTi instrument, route to an Aux send or add some EQ? Just drag a filter to the track you want to effect. It's really that simple.

EASIER RECORDING

Tracktion 2 lets you record your ideas as fast as they come. Just drag the audio or MIDI input icon to whatever track you like and hit record.

INSTANT INFO

Tracktion follows your every move with its Properties Panel. Click on an audio clip and see its fade-out curve; click on a MIDI clip and quantise away; click on a reverb plug-in filter and fine-tune the pre-delay. The relevant info is always at your fingertips.



IMPROVED METERING

When setting levels, T2 can turn the full screen into a giant meter bridge with the press of a button.

QUICKTIME SUPPORT

Tracktion 2 supports Quicktime™ video playback. Select a movie and start composing music, add effects, replace your dialog, and win your Oscar®.

QuickTime

EXTERNAL SYNC

In addition to Tracktion's ReWire host functionality for use with applications like Reason, T2 supports MIDI Time Code (MTC) and MIDI Machine Control (MMC) input/output, plus MIDI Clock output.

use 64-bit math when mixing tracks

SUPERIOR 64-BIT, 192KHZ MIX ENGINE

Much has been made about the "summing bus" in DAW software. Tracktion 2 features a new high-definition 64-bit mixing engine for uncompromising sound.

YOU CAN'T PUT A PRICE ON FREEDOM. BUT HOW DOES $199* STRIKE YOU?

*Amplitube LE, SampleTank SE, Linplug RMIV and Final Mix: just four of over **30 plug-ins** included with Tracktion 2.*

There's nothing like the creative freedom that comes with having a complete suite of music production tools at your fingertips. Unfortunately, most comprehensive music software packages come with steep learning curves and price tags upwards of $500. Until now.

Introducing the Tracktion 2 music production bundle. A complete, powerful production suite with everything you need to take your music from initial inspiration to final mixed-and-mastered CD—with as-good-or-better results than software costing several times its price.

Our acclaimed Tracktion 2 software represents the easiest way to record on your Mac or PC—with a clean single-screen interface, unlimited track count, a 64-bit mix engine, VST and ReWire support, and the ability to export your music to other audio software with ease.

With bundled Amplitube™ LE Guitar Amp Simulator and Sampletank™ SE Sample Player, the LinPlug RMIV™ drum machine, the reFX Slayer 2™ guitar and bass plug-in, and a full suite of Mackie Mixing and Mastering tools, you'll never lack the right software for the job at hand.

And with T2's list price of only $199 all this creative freedom won't break your budget.

Download the Tracktion 2 demo today at www.mackie.com/t2.

SIMPLE. POWERFUL. REVOLUTIONARY. TRACKTION 2.

MACKIE®

Connect.

ILIO.com

Connect with the world's most acclaimed Virtual Instruments and Sample Libraries, plus get the latest news, tips and info to keep your Virtual Studio on the cutting edge.

800.747.4546

SPECTRASONICS
VIRTUAL·INSTRUMENTS

VIENNA SYMPHONIC LIBRARY

UltimateSoundBank
instruments of simplicity

SYNTHOGY

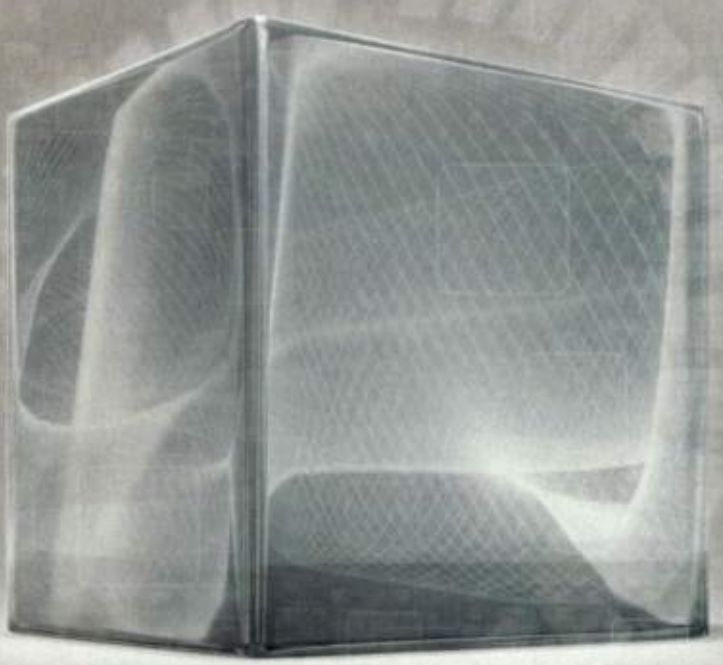
A|A|S
APPLIED ACOUSTICS SYSTEMS

ILIO

SOUNDSCAN

ILIO
exclusive distributors

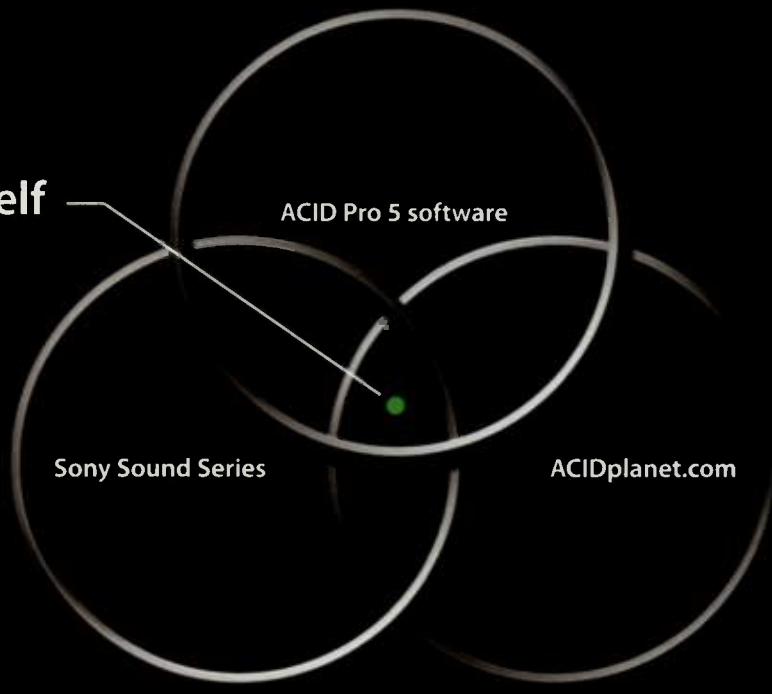
It's not a Dream.



Log on to www.vsl.co.at
November 26, 2005

VIENNA SYMPHONIC LIBRARY

Center Yourself



ACID® Pro 5 software, the industry's leading loop-based music creation tool, now includes an extended set of features and functionalities that make it more powerful and versatile than ever before. With Media Manager™ technology, Groove Tools, VST and ReWire™ support, and Native Instruments™ Xpress Keyboards VSTi soft synth bundle, nothing else comes close in helping you realize your musical visions.

Our ever-expanding collection of Sound Series™: Loops & Samples libraries offer an endless selection of royalty-free music and sound. The Premium Series debuts with arhythmiA, created by Nine Inch Nails drummer Jerome Dillon and sound designer Keith Hillebrandt. Diverse, dynamic, and eclectic – use Sound Series: Loops & Samples to compose, score and mix.

ACIDplanet.com is the Internet's leading community of digital musicians. ACIDplanet™ artists compose original music, remix major label artists, and collaborate on a wide range of audio and video projects. And the new ProZone™ gives you even more reasons to come to ACIDplanet. Vibrant and alive, ACIDplanet is the place to be.

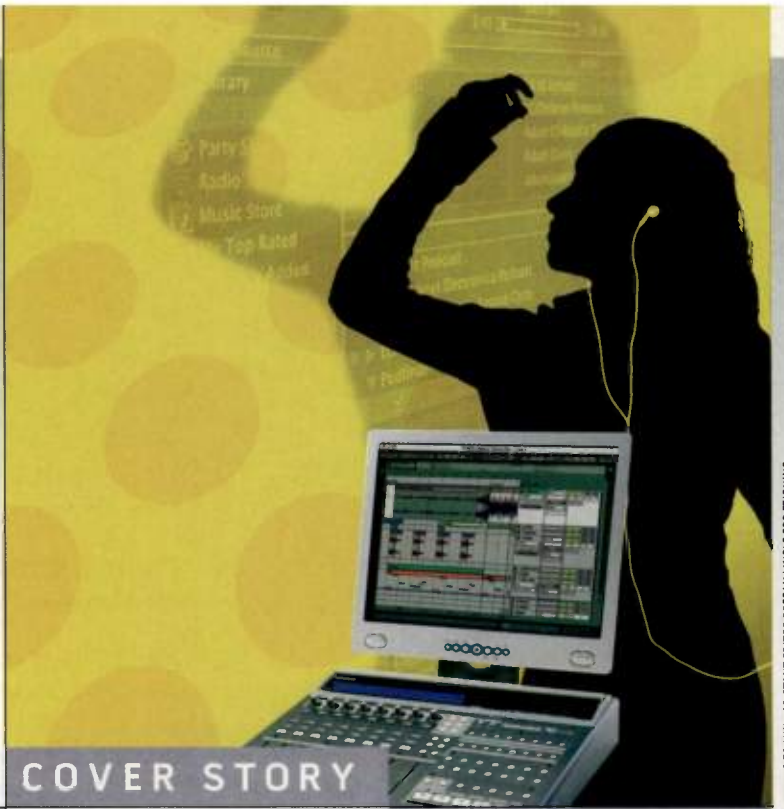
Put yourself at the center of technology, art and community with ACID Pro 5 software, Sony Sound Series: Loops & Samples and ACIDplanet.com.

LIKE NO OTHER™

Exclusively at Authorized Sony Resellers: the ACID Pro 5 software bundle includes Sound Forge™ Audio Studio™ software, a $69.95 value based on MSRP. Go to www.sony.com/mediasoftware for a list of Sony Authorized Resellers nearest you.

Electronic Musician
December 2005

INSIDE



COVER STORY

THANKS TO MIX ASSISTANT EDITOR BREEAN LINGLE FOR FEIGNING RHYTHM DURING THIS ISSUE'S COVER SHOOT.

FEATURES

37 8 GROOVY TIPS FOR BEAT DETECTIVE

Digidesign Pro Tools' Beat Detective is a powerful tool for beat slicing that lets you control the rhythmic characteristics of most audio files. We'll tell you how to get the most out of your grooves. By Erik Hawkins

42 THE ART OF PODCASTING

Anyone can tell you how to record and podcast a program; we show you how to do it well. Our intrepid reporter introduces the concept of podcasting, details the process, and discusses this cutting-edge form of content delivery in practical and artistic contexts. By David Battino

59 PRODUCTION VALUES: ON HIS GAME

Composer Jesper Kyd is equally at home with synthesizers and symphony orchestras. Combined with his abundant musical talent, that versatility has helped Kyd become a rising star in the game-music field. Kyd talks with EM about the art of game scoring, the difference between scoring films and games, and the gear he uses. By Maureen Droney

Electronic Musician® (ISSN 0884-4720) is published monthly by PRIMEDIA Business Magazines & Media Inc., 9800 Metcalf Ave., Overland Park, KS 66212 (www.primediabusiness.com). This is Volume 21, Issue 12, December 2005. One-year (12 issues) subscription is $24. Canada is $30. All other international is $50. Prices subject to change. Periodicals postage paid at Shawnee Mission, KS, and additional mailing offices. Canadian GST #129597951. Canadian Post International Publications Mail Product (Canadian Distribution) Sales Agreement No. 40597023. Canadian return address: DHL Global Mail, 7496 Bath Road, Unit 2, Mississauga, ON L4T 1L2. POSTMASTER: Send address changes to Electronic Musician, P.O. Box 640, Mt. Morris, IL, 61054 USA.

DEPARTMENTS

12 FIRST TAKE

16 LETTERS

20 EMUSICIAN.COM TABLE OF CONTENTS

24 WHAT'S NEW

125 AD INDEX

126 MARKETPLACE

130 CLASSIFIEDS

Electronic Musician
December 2005

34

INSIDE

COLUMNS

32 TECH PAGE **It's All in Your Head**
More-convincing surround headphones are on the way.

34 PRO/FILE **Across the Centuries**
Niyaz brings ancient poetry and music to life with electronic production.

68 MAKING TRACKS **MIDI for LANlubbers**
Send MIDI data between Macs and PCs over Ethernet.

72 SOUND DESIGN WORKSHOP **Random Bursts**
Noise is a great modulation source for synthesists and sound designers.

74 SQUARE ONE **Taking Control**
Learn how control voltages work in analog and digital instruments.

78 WORKING MUSICIAN **Taking Your Studio Pro**
Tips for transitioning your personal studio into a project studio.

138 FINAL MIX **Short Attention Span Theater**
Humanity is diminished by the increasing onslaught of information.

108

REVIEWS

82 **NATIVE INSTRUMENTS**
Reaktor 5 (Mac/Win)
software synthesizer

94 **RED MICROPHONES**
Type B
condenser microphone

100 **AUDIO EASE**
Altiverb 5 (Mac)
convolution reverb software

108 **KRK SYSTEMS**
V8 and RP10S
powered monitors and subwoofer

QUICK PICKS

116

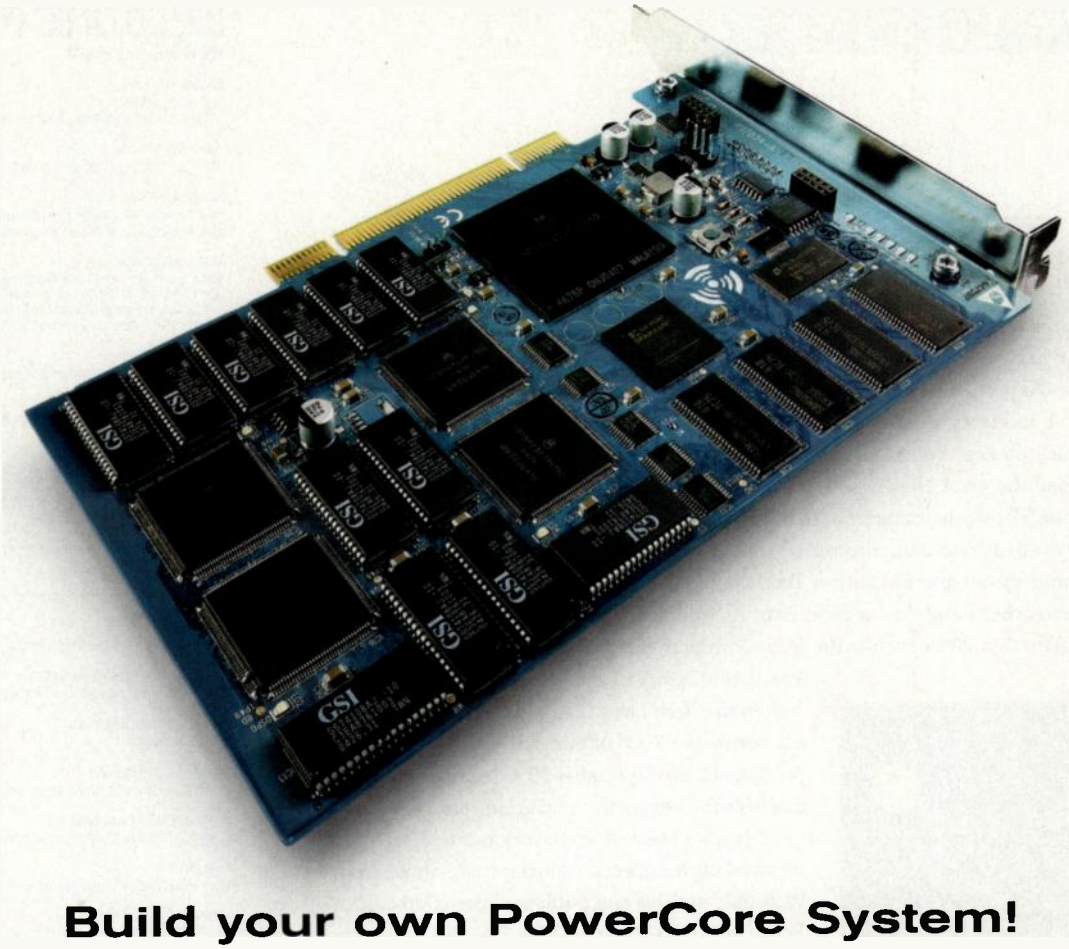
M-Audio Trigger Finger percussion pad controller

Doepfer R2M ribbon controller

Smart Loops *Pro Drum Works*, vol. 1 (Apple Loops Edition) sound library

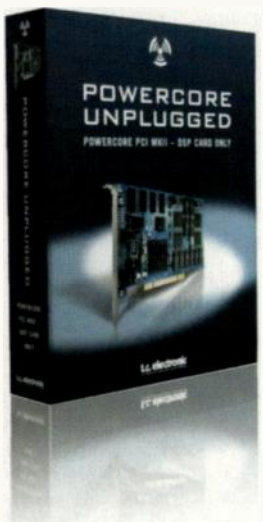
Behringer B-Control Nano BCN44 MIDI controller

POWERCORE UNPLUGGED



Build your own PowerCore System!

Now you can get the powerful new PowerCore PCI MkII DSP Card without the bundled plug-ins. It gives you the opportunity to tailor your PowerCore setup to your specific needs by choosing from a comprehensive selection of high-end plug-ins. With PowerCore Unplugged, you can also add extra hardware power to your existing PowerCore setup and experience the flexibility of running even more plug-ins simultaneously.



PowerCore
Superior plug-ins, tailor-made hardware

t.c. electronic
ULTIMATE SOUND MACHINES

TC ELECTRONIC A/S DENMARK ▸ ✆ +45 8742 7000
TC ELECTRONIC INC USA ▸ ✆ (818) 665 4900 ▸ MAIL: INFO@TCELECTRONIC.COM
WWW.TCELECTRONIC.COM

That Was the Year That Was

As we wrap up the final issue of 2005, I've been struggling to get a grip on all that has happened this year. War, natural disasters, problematic relief efforts, political divisions, and economic uncertainty are age-old problems, but we had a terrible and exceptional combination of them in 2005.

The music industry mourned its share of passing industry veterans in 2005, including electronic-music pioneer Bob Moog. The most dramatic natural disasters, Hurricanes Katrina and Rita, hammered the great New Orleans music scene, and while we can't change what happened, we can help our fellow musicians from the Gulf Coast. To that end, we've supplied special links on our Web site at http://emusician.com/mag/hurricane_katrina_relief_musicians. (Special thanks to New Orleans evacuee and EM author Todd Souvignier for the links.)

EM, on the other hand, had a good year. As well as the usual collection of good stories, we offered several firsts in 2005, such as the field-recorder roundup in our October issue and the "Art of Podcasting" story in this issue (see p. 42). We've updated our online Back Issue List and 2005 Article Index so you can review our 2005 offerings. The lists, and all EM articles published since September 1999 (except for this issue), are available for free on the emusician.com Web site.

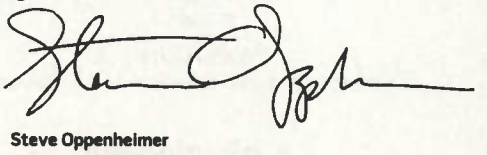
JULIE BIRUM

We also created an assortment of email newsletters and online special reports, trade-show reports, and Web-only articles and published the 2006 edition of our *Personal Studio Buyer's Guide*. The 2006 edition of our *Computer Music Product Guide* will reach newsstands and domestic (U.S.) EM subscribers this month and will also be available from our new online bookstore.

I'm proud to announce the first in our Personal Studio Series of special magazines, created in partnership with Thomson Learning Solutions. Each magazine in the Personal Studio Series will present focused information on one topic or product. The first in the series is *Mastering Pro Tools LE 7.0*, a start-to-finish guide to creating a project in the new version of Digidesign's popular DAW. This full-color magazine, designed by EM's talented art department, combines Thomson's step-by-step Pro Tools instructional materials and EM's broader recording stories for DAW-based personal-studio owners and features a CD with example sessions and more. It will be available this month wherever you find EM, including on our online bookstore.

Here's a bonus: the Webinar, or Seminar on Demand (SOD) that I mentioned in last month's First Take will be available starting this month for free viewing on our emusician Web site. This special streaming video features ace Korg USA sound designer Jack Hotop showing how to personalize a variety of sample-based synth sounds. Hotop is a master, and his tips apply to most hardware and software synths, so head for our site and check it out.

The fallout of the many tragedies of 2005 will be with us for a long time. Nevertheless, I am optimistic about 2006 and see it as a year of potential growth and recovery. To all who had a tough year, I trust that the joy of making music helped you to find strength, and I hope that we were able to help you along the way. Here's to a great 2006 for all!



Steve Oppenheimer
Editor in Chief

Electronic Musician
WWW.EMUSICIAN.COM

EDITOR IN CHIEF
Steve Oppenheimer, soppenheimer@primediabusiness.com

MANAGING EDITOR
Patricia Hammond, phammond@primediabusiness.com

SENIOR EDITORS
Mike Levine, mlevine@primediabusiness.com
Gino Robair, grobair@primediabusiness.com

ASSOCIATE EDITORS
Rusty Cutchin, emeditorial@primediabusiness.com
Dennis Miller, emeditorial@primediabusiness.com
Len Sasso, emeditorial@primediabusiness.com
Geary Yelton, gyelton@primediabusiness.com

ASSISTANT EDITOR
Matt Gallagher, mgallagher@primediabusiness.com

COPY EDITOR
Lori Kennedy, lkennedy@primediabusiness.com

CONTRIBUTING EDITORS
Michael Cooper, Mary Cosola, Marty Cutler, Maureen Droney, Larry the O, George Petersen, David Rubin, Rob Shrock, Scott Wilkinson

DIRECTOR OF NEW MEDIA
Tami Needham, tneedham@primediabusiness.com

GROUP ART DIRECTOR
Dmitry Panich, dpanich@primediabusiness.com

ART DIRECTOR
Laura Williams, lwilliam@primediabusiness.com

ART DIRECTOR, SPECIAL PROJECTS
Mike Cruz, mcruz@primediabusiness.com

INFORMATIONAL GRAPHICS
Chuck Dahmer

SENIOR VICE PRESIDENT
Peter May, pmay@primediabusiness.com

ADMINISTRATIVE ASSISTANT
Karen Carter, kcarter@primediabusiness.com

PUBLISHER
Dave Reik, dreik@primediabusiness.com

ASSOCIATE PUBLISHER
Joe Perry, jperry@primediabusiness.com

EAST COAST ADVERTISING MANAGER
Jeff Donnenwerth, jdonnenwerth@primediabusiness.com

NORTHWEST/MIDWEST ADVERTISING MANAGER
Greg Sutton, gsutton@primediabusiness.com

SOUTHWEST ADVERTISING MANAGER
Mari Deetz, mdeetz@primediabusiness.com

ONLINE SALES AND MARKETING MANAGER
Samantha Kahn, skahn@primediabusiness.com

LIST RENTAL
Marie Briganti, (845) 732-7054, marie.briganti@walterkarl.infousa.com.

MARKETING DIRECTOR
Christen Pocock, cpocock@primediabusiness.com

MARKETING COORDINATOR
Clarina Raydmanov, craydmanov@primediabusiness.com

MARKETING TRADE SHOW AND EVENTS COORDINATOR
Jennifer Smith, jsmith@primediabusiness.com

CLASSIFIEDS/MARKETPLACE ADVERTISING DIRECTOR
Robin Boyce-Trubitt, rboyce@primediabusiness.com

WEST COAST CLASSIFIED SALES ASSOCIATE
Kevin Blackford, kblackford@primediabusiness.com

EAST COAST CLASSIFIED SALES ASSOCIATE
Jason Smith, jasmith@primediabusiness.com

CLASSIFIEDS PRODUCTION COORDINATOR
Jennifer Kneebone-Laurie, jkneebone@primediabusiness.com

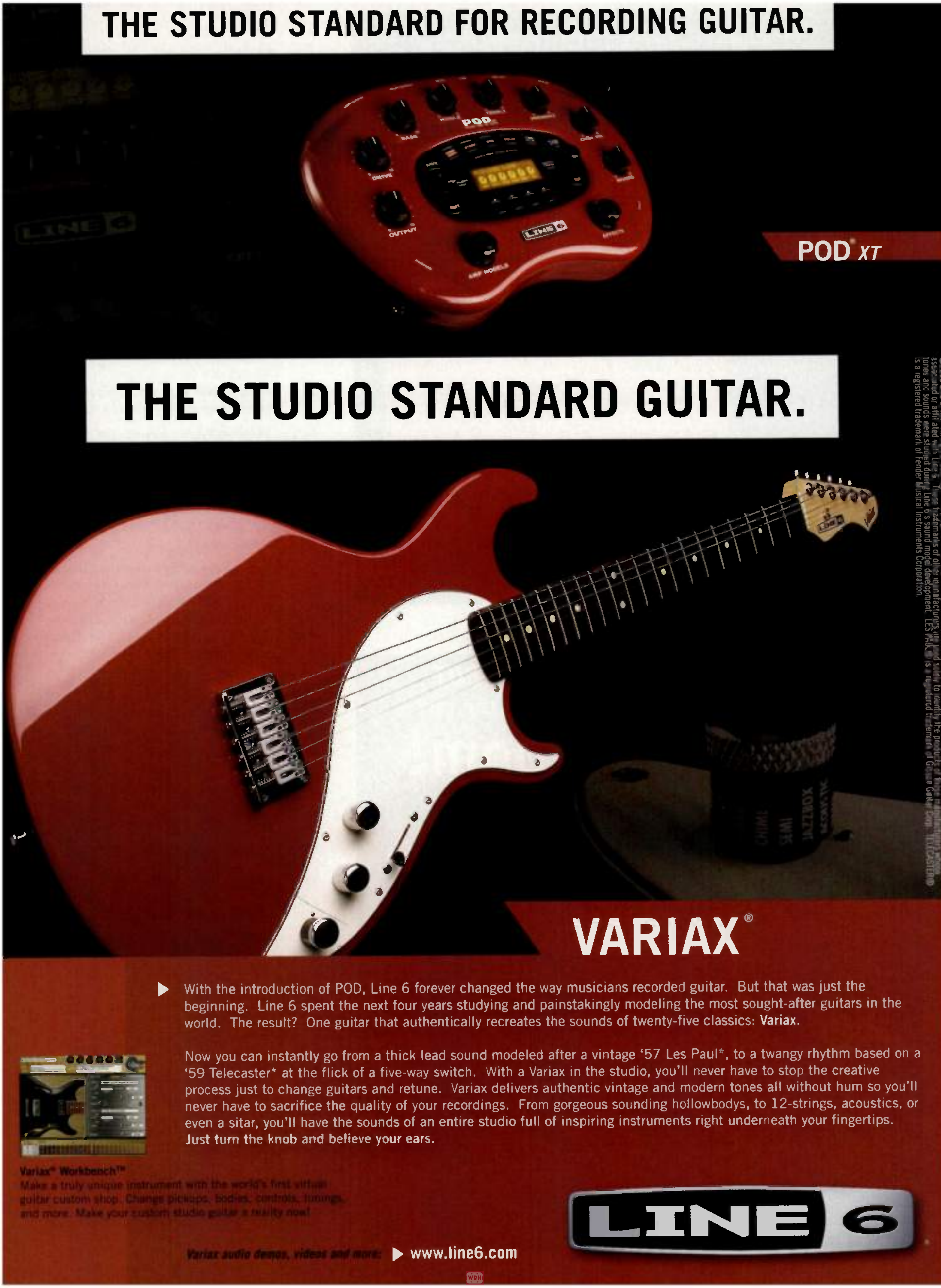
GROUP PRODUCTION MANAGER
Melissa Langstaff, mlangstaff@primediabusiness.com

ADVERTISING PRODUCTION COORDINATOR
Jennifer Scott, jhall@primediabusiness.com

GROUP AUDIENCE MARKETING DIRECTOR
John Rockwell, jrockwell@primediabusiness.com

DIRECTOR OF HUMAN RESOURCES
Julie Nave-Taylor, jnave-taylor@primediabusiness.com

OFFICE COORDINATOR/RECEPTIONIST
Lara Duchnick, lduchnick@primediabusiness.com


THE STUDIO STANDARD FOR RECORDING GUITAR.
POD® XT
THE STUDIO STANDARD GUITAR.
VARIAX®
With the introduction of POD, Line 6 forever changed the way musicians recorded guitar. But that was just the beginning. Line 6 spent the next four years studying and painstakingly modeling the most sought-after guitars in the world. The result? One guitar that authentically recreates the sounds of twenty-five classics: Variax.
Now you can instantly go from a thick lead sound modeled after a vintage '57 Les Paul*, to a twangy rhythm based on a '59 Telecaster* at the flick of a five-way switch. With a Variax in the studio, you'll never have to stop the creative process just to change guitars and retune. Variax delivers authentic vintage and modern tones all without hum so you'll never have to sacrifice the quality of your recordings. From gorgeous sounding hollowbodys, to 12-strings, acoustics, or even a sitar, you'll have the sounds of an entire studio full of inspiring instruments right underneath your fingertips. Just turn the knob and believe your ears.
Variax® Workbench™
Make a truly unique instrument with the world's first virtual guitar custom shop. Change pickups, bodies, controls, tunings, and more. Make your custom studio guitar a reality now!
Variax audio demos, videos and more: www.line6.com
LINE 6

PRESIDENT/CHIEF EXECUTIVE OFFICER
John French, jfrench@primediabusiness.com

CHIEF FINANCIAL OFFICER/CHIEF OPERATING OFFICER
Andrea Persily, apersily@primediabusiness.com

EDITORIAL, ADVERTISING, AND BUSINESS OFFICES:
6400 Hollis St., Suite 12, Emeryville, CA 94608, USA
(510) 653-3307.

SUBSCRIBER CUSTOMER SERVICE: To subscribe, change your address, or check on your current account status, go to www.emusician.com and click on Customer Service for fastest service. Or email ecmn@kable.com, call toll-free (800) 245-2737 or (815) 734-1216, or write to P.O. Box 640, Mt. Morris, IL 61054.

REPRINTS: Contact FosteReprints to purchase quality custom reprints or eprints of articles appearing in this publication at (866) 436-8366 ((219) 879-8366 outside the U.S. and Canada). Instant reprints and permissions may be purchased directly from our Web site; look for the RSiCopyright tag appended to the end of each article.

BACK ISSUES: Back issues are available for $10 each by calling (800) 245-2737 or (815) 734-1216.

PHOTOCOPIES: Authorization to photocopy articles for internal corporate, personal, or instructional use may be obtained from the Copyright Clearance Center (CCC) at (978) 750-8400. Obtain further information at www.copyright.com.

ARCHIVES AND MICROFORM: This magazine is available for research and retrieval of selected archived articles from leading electronic databases and online search services, including Factiva, Lexis-Nexis, and ProQuest. For microform availability, contact ProQuest at (800) 521-0600 or (734) 761-4700, or search the Serials in Microform listings at www.proquest.com.

PRIVACY POLICY: Your privacy is a priority to us. For a detailed policy statement about privacy and information dissemination practices related to Primedia Business Magazines & Media products, please visit our Web site at primediabusiness.com.

CORPORATE OFFICE: PRIMEDIA Business Magazines & Media Inc., 9800 Metcalf, Overland Park, KS 66212, (913) 341-1300 — primediabusiness.com

ABM

BPA WORLDWIDE

PRINTED IN THE USA.
ALSO PUBLISHERS OF MIX®, REMIX™, MUSIC EDUCATION TECHNOLOGY™, COMPUTER MUSIC PRODUCT GUIDE™, PERSONAL STUDIO BUYER'S GUIDE®, AND DIGITAL HOME KEYBOARD GUIDE™.

IF YOU NEED 8 MORE CHANNELS, THEN YOU NEED THIS

The NEW LOOK is just the begining!
You got your audio interface....
You got the software....
Now get another eight analog inputs..

* must have an ADAT input on your audio hardware

$149*

A08

8 x 1/4" unbalanced audio line inputs
1 x 24-bit 8CH ADAT® format output interface
Delta-sigma 24-bit/96kHz A/D converters
Internal or external Sync (Master or Slave)
Word clock BNC I/O connectors
Selectable Sample Rate (44.1- 48 kHz)
Rugged compact construction
External power supply included

Works with (amongst others):
Digidesign® 002
Digidesign® 002R
Digidesign® 001
M-Audio® ADAT® Input products
Motu™ ADAT® Input products

ALSO AVAILABLE from SM PRO AUDIO

PR-8 — 8 CHANNEL MIC PRE-AMP — $99*

PR-8 Mark 2 with ADAT option — PREMIUM 8 CHANNEL MIC PRE-AMP — $199* (Adat Option: $99*)

TB202. — TWO CHANNEL TUBE MIC PRE-AMP, EQ & OPTICAL COMPRESSOR — $249*

samash.com
The on-line musical instrument megastore!
www.samash.com

SM PRO AUDIO
WWW.SMPROAUDIO.COM

DISTRIBUTED BY
KAYSOUND
www.kaysound.com

zZounds.com
www.zzounds.com

Music123.com
www.music123.com

Musician's Friend
www.musiciansfriend.com

www.americanmusical.com

DMITRY PANICH

Letters

Field Day

It's been a long time since I've been interested in a magazine article enough to read it more than once, but I'm reading Nick Peck's cover story "Playing the Field" (October 2005) for the sixth time. I'm looking hard at field recorders for my own use, so I'm scrutinizing the text.

Peck's work represents a benchmark for this kind of article. It has tons of substance and does what any good article should do, telling me more about these machines than I thought I knew and introducing me to units that I didn't know about. I liked the substantial contributions from the audio professionals who tested these units, because that eliminates a one-sided perspective, which is the great weakness of product reviews. I hope that EM will base future reviews along those same lines. It's a great formula.

Your October 2005 issue is especially good. My only complaint is that it has nothing about microphones. However, I see that your November cover story will be about ribbon microphones ("Ribbon Revival," November 2005). I mainly record strings and was therefore thinking that I should add a ribbon mic to my stash.

Bob Spear
via email

Hearing Is Believing

I just read Steve Oppenheimer's tribute to Dr. Robert Moog (October 2005, "First Take: A Legend Passes into History"). It was very touching. I've used Moog's gear since the mid '70s.

My question is about iPod formats. Nobody seems to be able to tell me which compression format will give me acceptable quality. Apple Lossless Encoding produces huge files compared with the AAC encoder (MPEG-4) at 160 kbps, which is touted as near-CD quality. I burned several samples to CD and, to my dismay, was unable to casually discern any loss of sonic quality, even with the AAC set to 128 kbps.

That goes against all that we are taught. How can so much data be discarded without obvious degradation? How big an iPod do I need to carry as much of my library as I want?

I've enjoyed EM for what must be 20 years now, ever since I received a free copy with my Ensoniq Mirage.

Pete Wacker
Phoenix, Arizona

Pete—Although Apple Lossless Encoding produces the most accurate sound, AAC encoding does an admirable job, especially at high conversion rates. If you've been playing Moog synths since the mid '70s, you're old enough to have incurred some hearing loss, especially at the high end. If you can't hear the difference between uncompressed audio and AAC audio at 128 kbps, there's good news and bad news. The bad news is that your hearing loss is evident; the good news is that you can stuff more music on your iPod than I can.

I've compressed my entire music collection to 192 kbps AAC, both for my iPod and for listening to music streamed from my Mac to my studio monitors. I still hear a difference between that rate and higher rates, but the difference is so negligible that saving disk space is more important to me than hearing that extra 1 percent (or less).

I suggest that you do some critical listening before you commit to a conversion rate. Select at least three short musical passages with wide ranges in spectrum and dynamics (solo drums are good, because you'll probably notice the point at which drums lose their punch and cymbals lose their sizzle). Encode them at 128, 160, 192, and 256 kbps and compare them to the uncompressed versions. If you really can't hear a difference between uncompressed and compressed at 160 kbps, or if the difference is acceptable to you, there's no reason to go any further.

How can so much data be discarded without obvious degradation? Blame psychoacoustics: our brains fill in the blanks. If you were to compare compressed and uncompressed audio files in an audio editor, though, you would see a difference, even if you couldn't hear it. —Geary Yelton

Taming a Tiger

I hope that you will do another article like "Tracking the Big Cats" (September 2004) about optimizing Mac OS X for audio. I have a lot of junk on my hard drive that I don't need, but I know to ask the experts before putting it in the Trash.

David Bullock
via email

Critical Listening

It would be useful to see regular articles on how best to record for headphone listening. Because most people listen to music through headphones, it seems critical that recording engineers and producers who work in personal studios should know how to deliver the best

"As good as it gets"

AT2020
Cardioid Condenser Microphone

"The AT2020 comes from a company with an amazing list of great products for project and home studios, and will likely become a standard in that market."
Dave Jones Performing Songwriter March/April 2005

"If you want an affordable mic that will work on a wide variety of sources, the AT2020 is hard to beat. It sounds great, is quiet, and, sheesh, at that price, go out and buy a pile of them."
Mitch Gallagher EQ September 2005

"A budget mic with a big-ticket sound.... you'll get more than you pay for."
Scott Burgess Pro Audio Review June 2005

"With the AT2020, Audio-Technica has succeeded in bringing its standard of construction quality into the entry-level price range."
Nick Batzdorf MIX May 2005

"Not all inexpensive mics are the same. The AT2020 is proof. I don't know how Audio-Technica did it, but this mic is well built, comes with useful accessories, and offers solid performance at an amazing price."
Garrett Haines Tape Op September/October 2005

"The AT2020 allows (and even begs) you to try it in applications that you might not consider optimal for a condenser...You should be able to use this mic for everything from insect mating calls to jet propulsion testing."
Darwin Grosse Recording June 2005

"Judging by the price, (the AT2020) is aimed at project and budding home studios. But given the horizonlike frequency-response chart, this puppy may be aimed at more experienced studios, as well. Who couldn't use an extra studio condenser or, at this price, several?"
Doug Eisengrein Remix July 2005

"Simply put, the AT2020 is a fine mic at any price, but at $99 it's a value proposition you almost can't afford to refuse."
Michael Molenda Guitar Player April 2005

"If the $100 price range is your budget, then rest assured that the AT2020 is as good as it gets in a condenser mic that can handle vocal and instrument duties."
Steve Langer mojopie.com April 9, 2005

"With the introduction of the AT2020, Audio-Technica has broken the price barrier without sacrificing sound quality or rugged reliability."
Chris Gill Future Music June 2005

audio-technica.
always listening™

www.audio-technica.com

Next Month in EM

Editors' Choice Awards

EM's prestigious Editors' Choice Awards are given to the best new products tested by EM editors and authors in the past year. Get the lowdown on the good stuff!

COVER

FEATURES

Loud Amps in Small Studios

You can record real tube-amp tones without blasting out your walls. This article will show you how, examining options such as isolation boxes, baffles, and hardware and software speaker simulators.

Making Connections with ReWire

EM presents tips and tricks for using Propellerhead's ReWire protocol with Pro Tools LE and other popular applications.

COLUMNS

Making Tracks:
Get in the Apple Loop

Use ReWire to audition proprietary Apple Loops within other applications such as Ableton Live and Propellerhead Reason and then render the loops in Apple's Garage Band.

Sound Design Workshop:
Breakpoint Envelopes

Go beyond standard LFO and envelope modulation with looping and one-shot breakpoint envelopes.

Working Musician:
Be a Demo Producer

Learn the responsibilities of a demo producer, how to find clients, what to charge, what such work can lead to, and how the Web has changed the demo producer's role.

... and much more!

Letters

sound possible to products, such as Apple Computer's iPod and the like, through earbud headphones. Millions of these devices are sold and used regularly. You can't say that about any other consumer system.

Granted, writing about studio monitors, 24-bit converters, 192 kHz operation, and so on may cause technical writers to twitch with excitement. But for most personal studios, getting the best sound to iPods and knowing how to make great-sounding MP3s is much more useful.

I mostly record after 10 p.m., so direct recording is the only practical method for me to use. I need to know how to get the best sound and how to deliver that sound through headphones. My ears are stereo, not 5.1.

Mark
San Francisco, California

Mark—Despite the success of the iPod and other MP3 players, I disagree that most people listen only to MP3 files on headphones or earbuds. Many people also listen to CDs, radio, and MP3s through automobile sound systems and home stereos. Therefore, savvy producers prepare their music for multiple delivery systems and consider how their music will sound when played in a room or a vehicle.

The old-school solution is to mix on studio monitors, and then check those mixes on different systems and tweak until your mixes sound great on high-quality systems and sound as good as possible on low-fi systems. The new-school method is to create multiple mixes, including one for MP3 delivery. Either way, you need to check your mixes on several systems. You are not going to hear everything accurately if you mix only on headphones and don't check your mixes; the result is likely to be an inferior product.

For information on preparing MP3 files, see "How to Make Killer MP3s," which was originally published in the 2002 edition of our Desktop Music Production Guide. *You can download the story free from the Web Clips section of the emusician.com Web site (see* **Web Clip 1***). In addition, see this month's cover story, "The Art of Podcasting," on page 42.*
—Steve O

EM WEB CLIPS

We Welcome Your Feedback

Address correspondence to:

Letters
Electronic Musician
6400 Hollis Street, Suite 12
Emeryville, CA, 94608

or email us at emeditorial@primediabusiness.com.
Published letters may be edited for space and clarity.

Learning the Ropes

EM is extremely informative and useful. However, as a fairly new reader who is new to recording music, I have trouble understanding some terms that your magazine discusses.

Articles that mention equalization, compression, S/PDIF, AES/EBU, dual-VGA outputs, and so on, are confusing because they don't define these terms. I'm sure I'm not alone in this, and as your readership grows with new readers, it's important to inform them about these terms so they won't be lost.

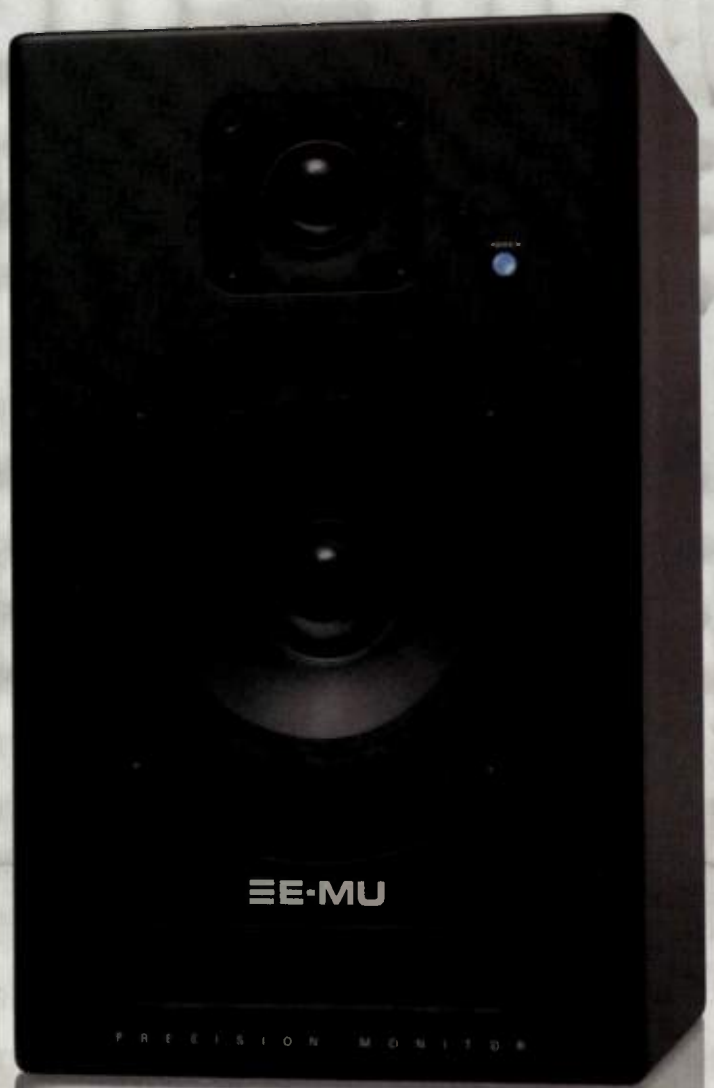
It would also be a huge help if EM created Web Clips that compare a song with EQ and without EQ so that those people who are just learning can hear the differences and understand what it's all about.

Walt Ribeiro
via email

Error Log

October 2005, "What's New," p. 28. The item about Sony Hi-MD Recorders states, "At summer NAMM, (www.sony.com) Sony unveiled a new digital storage format called Hi-MD." According to Sony, however, its first Hi-MD format product was the MZ-NH1 Hi-MD recorder, which began shipping in the spring of 2004. Sony introduced the MZ-M10 and MZ-M100 models at the July 2005 Summer NAMM show and began shipping those two products in August 2005. EM

You'll start hearing things



E-MU Systems and legendary amplifier/speaker designer Jun Makino have designed the new PM5 Precision Monitor from the ground up to reveal every detail of your mix. At $249.99* the PM5 offers superior imaging, hi-end transient detail and articulate bass with features rivaling compact nearfield monitors over twice the price.

- Custom 40W/40W bi-amplified power section with discrete Class-A input stage, MOSFET output stages, active crossover and overload protection
- World-class neodymium and glass fiber drivers offer linear frequency response from 67Hz to 20kHz (±2.5dB)
- Premium cabinet features radiused edges, flow-optimized port and one inch thick front baffle

Experience a new level of detail and clarity with E-MU's PM5 Precision Monitor – you'll start hearing things.

** estimated street price - monitors sold individually*

CREATIVE PROFESSIONAL

www.emu.com

Toll-free 888•372•1372

E-MU

Steven Meckler

@emusician.com

emarketplace | feedback | archives | buyer's guides

EMspotlight

The Possible Worlds of Steve Roach

For over 25 years, and on more than 80 releases, Steve Roach has created organic, slow-moving soundscapes that provide a seemingly endless variety of electro-acoustic timbres and textures. In this exclusive EM interview, Roach talks about his musical motivations, playing live, and his return to analog synthesizers on his latest release, *Possible Planet* (Timeroom Editions). By Gino Robair. emusician.com/em_spotlight

On the Home Page

EM Web Clips

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

EM 2005 Article Index

Ever wonder in which issue a specific feature, column, or review appeared? You'll find the answer in the 2005 Article Index, which is now online.

Show Report

The 2005 Audio Engineering Society (AES) show is one of the largest annual pro-audio expos in the U.S. Visit emusician.com for Senior Editor Mike Levine's report on the exciting new recording gear and music software unveiled at this year's show.

EM seminars on demand

The EM Seminars on Demand are an exciting way to see new products and learn new applications and techniques online and at your leisure. Korg USA's top sound designer, Jack Hotop, shows you how to customize a variety of synth sounds to suit your performing and compositional styles.
emusician.com/editorspicks

EM news

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

EM newsletter

Sign up for our free online newsletter, eMusician Xtra, for up-to-the-minute information about new products, software upgrades, and more.
emusician.com

YES! AUDIO PC BLISS CAN BE YOURS!

AC-1 from only **$1159**

FREE! WITH EVERY MACHINE $0!

FIX
We dial into your machine & fix problems before your very eyes! This system in use daily for over 3 years now and really does work.

RESTORE
Every machine we supply has a hidden partition which can automatically restore your machine to its former glory should the worst happen.

HELP
A custom-written on-screen multi-page manual for your system stuffed full of hints and tips. Solutions buyers get even more bang for their buck!

SOUNDS
$569 worth of SampleLab sounds, including Luscious Grooves, Drum Fundamentals, Discography, Analogue Archive & Spatial Awareness.

KEYCAPS
A full set of custom keycaps are supplied for your primary software of choice. Colour coded and featuring all the time saving key combinations.

SUPPORT
No premium rates, no long hold times, just the best support in the business bar none (check us out on the forums), plus free access to our dedicated support website.

PICK ANY CORE PC SYSTEM...

AC-1 LE — New improved spec!
- Intel P4/3.2GHz
- 120Gb SATA HD
- 512Mb DDR RAM
- DVDR/RW

only **$1159**

AC-1 LE+
- Intel P4/3.4GHz
- 120Gb SATA HD
- 1Gb DDR RAM
- DVDR/RW

NB: LEs do not have full silencing kit

only **$1399**

Core 1 — New low price!
- Intel P4/3.0GHz
- 120Gb HD
- 1Gb DDR RAM
- DVDR/RW

only **$1399**

Core 2
- Intel P4/3.2GHz
- 80Gb & 200Gb SATA HD
- 1Gb DDR2 RAM
- DVDR/RW

only **$1899**

Core 3
- Intel P4/3.4GHz
- 80Gb HD & 400Gb SATA Raid
- 1Gb DDR RAM
- DVDR/RW

only **$2299**

Core 4 — Now 1 Terrabyte system!
- Intel P4/3.6GHz
- 200Gb HD & 800Gb SATA Raid
- 2Gb DDR RAM
- DVDR/RW

only **$3299**

Dual Xeon Core 1
- Intel Xeon 3.0GHz x2
- 80Gb HD & 200Gb SATA Raid
- 1Gb DDR RAM
- DVDR/RW

only **$3299**

Dual Xeon Core 2 — Now 1 Terrabyte syste
- Intel Xeon 3.4GHz x2
- 200Gb HD & 800Gb SATA Raid
- 2Gb DDR RAM
- DVDR/RW Drive

only **$5279**

See website for full specifications.

Tower Core 1 — New improved spec!
- Intel P4/3.2GHz
- 120Gb Hard Drive
- 512Mb DDR RAM
- DVDR/RW

only **$1069**

Tower Core 2
- Intel P4/3.4GHz
- 80Gb & 120Gb SATA HD's
- 1Gb DDR2 RAM
- DVDR/RW

only **$1449**

Cube Core 1 — New improved spec!
- Intel P4/3.2GHz
- 120Gb HD
- 512Mb DDR RAM
- DVDR/RW

only **$1149**

Cube Core 2
- Intel P4/3.4GHz
- 200Gb SATA HD
- 1Gb DDR2 RAM
- DVDR/RW

only **$1449**

Centrino 1 14.1"
- Intel Pentium M 1.8GHz
- 60Gb 7200rpm HD
- 512Mb DDR RAM
- CDRW/DVD

only **$1899**

Centrino 2 14.1"
- Intel Pentium M 2.1GHz
- 60Gb 7200rpm HD
- 1Gb DDR RAM
- DVDR/RW

only **$2399**

Desktop Replacement 1 15"
- Intel P4/3.0GHz
- 60Gb 7200rpm HD
- 512Mb DDR RAM
- CDRW/DVD

only **$1979**

Desktop Replacement 2 15"
- Intel P4/3.4GHz
- 60Gb 7200rpm HD
- 1Gb DDR RAM
- DVDR/RW

only **$2479**

See website for full specifications.

ADD ANY SOLUTION...

In an unprecedented move Digidesign and M-Audio have got together to produce 'Pro Tools M-Powered', a version of Pro Tools LE designed to work with a selection of M-Audio's popular interfaces. We have years of expertise with both, so it is completely natural for us to be able to recommend an M-Powered Pro Tools solution. The Firewire 410 is a superb and powerful box featuring twin mic preamps for input and 8 outputs. Combine that with AC3 capable SPDIF and MIDI input and you have a complete recording device. Pro Tools M-Powered gives you 32 audio tracks, 256 MIDI tracks, virtual instruments, plug-ins, effects mixing and editing in one intuitive interface. All sessions are compatible with Digidesign's LE and HD systems.

Solution of the month!

M-Audio FW410 & Pro Tools LE

RRP $[illegible]

only **$799**

Huge range of other Solutions available:

Ableton Live 4 and E-MU 1212m	$699
Cubase SE and E-MU 0404	$139
Cubase SL3 and E-MU 1820	$669
Cubase SX3 and Presonus Firepod	$1329
Cubase SX3 and MOTU Traveller	$1829
Cubase SX3, Groove Agent 2, Guitar Rig, Presonus Firepod	$1999
Cubase SX3 and Yamaha 01X	$2099
Cubase SX3 and RME Fireface	$2149
Digi002 Rack	$1399
Digi002 and Pro Tools LE	$2699
GigaStudio 3 Orchestra and RME HDSP9652	$1119
Nuendo 3 and RME HDSP9652	$2949
Sonar 4 Producer and E-MU Emulator X Studio	$999
Sonar 4 Studio and Behringer BCA2000	$539

Solution packages only available at these prices when you purchase a Carillon PC. All prices include VAT.

Due to the ever changing nature of the personal computer industry, prices and specifications are subject to change without notice.

Please visit **www.carillonusa.com or call 866-4CARILL** for up-to-the-minute pricing and component info.

email: info@carillonusa.com Carillon Audio Systems 1141C Greenwood Lk Tpke Ringwood, NJ 07456

WRH

"WOW ...I MEAN WOW"

– Keyboard Magazine

OASYS

Open Architecture Synthesis Studio

The OASYS is blowing away musicians and critics alike, with stunning sounds, inspiring musicality, and its exclusive forward-thinking open architecture. Dream Theater's Jordan Rudess explains, "Sure it has lots of power, but OASYS brings it all together into a real musical instrument. Nothing else does that for me." Proud OASYS owner Herbie Hancock is also a believer. "The feel and touch of an instrument is first and foremost for me. The feel of the OASYS is just right. And I find that the onboard sounds are just SO playable!" Find more info, complete interviews, reviews and your local OASYS dealer at www.korg.com/OASYS. Experience OASYS for yourself. Prepare to be wowed.

EXi EXPANSION INSTRUMENTS

Making good on the promise of open architecture, the new STR-1's plucked-string physical models deliver realistic guitars, clavs, ethnic sounds and unheard-of textures and timbres. And this latest EXi is being offered free to current and future OASYS owners! Go online to check out STR-1 sound clips.

KORG
WWW.KORG.COM

KEY BUY

Superiority

Does Not Need To Be

Complex

Creating great music is difficult.
Recording it should be easy. Korg's D3200 is an
easy-to-use, professional-grade, 32-track digital studio.
It has all the features of a recorder three times the cost.
You make music. The D3200 makes it sound incredible.
It's that simple.

> Capture the mood and the music with twelve tracks of simultaneous 16 or 24-bit recording

> Navigate easily with Korg's intuitive ClickPoint™ and Knob Matrix controls

KORG

www.korg.com

> Create an entire drum track in real time using Korg's exclusive Session Drums™

> Charm your inner producer with modeling effects and automated mixing

By Geary Yelton

Digidesign Mbox 2

Digidesign (www.digidesign.com) has announced the Mbox 2 (Mac/Win, $495), the next generation of the company's USB-powered audio and MIDI interface. With support for 24-bit, 48 kHz audio, Mbox 2 has two analog inputs with balanced XLR and unbalanced ¼-inch jacks, two unbalanced ¼-inch analog outputs, stereo S/PDIF I/O, and 16-channel MIDI I/O. Its complement of software includes Pro Tools LE, Pro Tools Ignition Pack, and 44 DigiRack and Bomb Factory plug-ins.

Pro Tools LE delivers 32 audio tracks (with 128 virtual audio tracks), 256 MIDI tracks, ReWire support, and Beat Detective LE. Ignition Pack gives you scaled-down versions of Propellerhead Software Reason 3, Ableton Live 4, FXpansion BFD, IK Multimedia AmpliTube, and Celemony Melodyne. Available for $100 more, Mbox 2 Factory bundles the complete Mbox 2 with an iLok USB Smart Key preauthorized with additional plug-ins from Digidesign and Bomb Factory.

PreSonus Inspire 1394

PreSonus (www.presonus.com), a Louisiana-based company that's earned loads of respect making affordable studio preamps and audio interfaces, has taken the wraps off the Inspire 1394 FireWire recording system (Mac/Win, $229). Featuring two balanced XLR inputs, two high-impedance instrument inputs, and two switchable line and phono inputs, the Inspire can handle four simultaneous channels of 24-bit, 96 kHz audio. The unit's low-noise, high-gain preamps accommodate sources ranging from keyboards and guitars to condenser mics and turntables. Outputs include unbalanced RCA, stereo ⅛-inch line, and stereo ⅛-inch headphones.

The Inspire's small but powerful hardware interface is only half the story; a software control panel furnishes access to its zero-latency mixer. You control the input gain, preamp boost, sampling rate, phantom power, limiter, and main and headphone output levels from your computer screen. You can save and recall your settings from one session to the next. Because the Inspire has two FireWire ports, you can daisy chain as many as four units for a maximum 16 simultaneous inputs, all controlled from a single onscreen panel. The Inspire 1394 comes bundled with Steinberg Cubase LE (Mac/Win).

Native Instruments Akoustik Piano

Akoustik Piano (Mac/Win, $349) is an all-new virtual instrument from Native Instruments (www.nativeinstruments.de). It delivers the sound of a vintage Steingraeber 130 upright piano and three concert grands: a Bösendorfer 290 Imperial, a Bechstein D 280, and a Steinway Model D. A choice of 16- or 24-bit samples detail the full sustain and release phases of every note recorded at ten Velocity levels. Layer morphing ensures seamless Velocity switching, according to Native Instruments, and samples stream direct from disk.

Akoustik Piano simulates the action of soft, sostenuto, and sustain pedals and gives you precise control over sustain and release resonance and pedal and key noise. You can even adjust whether the piano lid is closed, open, or half open. Select from a variety of tunings, and the integrated convolution reverb lets you select from four sampled rooms. In standalone mode, a 2-track MIDI recorder lets you capture your performance. Akoustik Piano also runs as a plug-in and supports Audio Units, DirectX, RTAS, and VST plug-in formats.


FEEL IT. WRITE IT. HEAR IT. FEEL IT.
Intuitive notation.
Built-in sequencing.
Performance-ready playback.
Samples of the London
Symphony Orchestra.
One easy program.
REALIZE MUSIC.™
NOTION™
MUSIC COMPOSITION
AND PERFORMANCE SOFTWARE
WWW.NOTIONMUSIC.COM

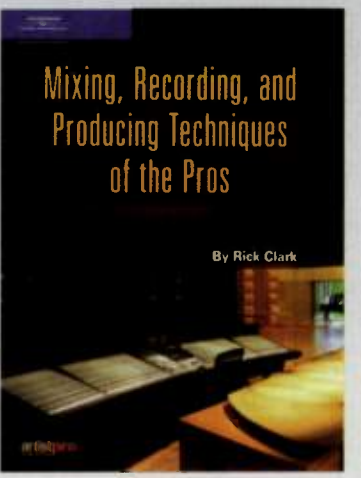
Get Smart

O'Reilly Media's **Pogue Press** (www.missingmanuals.com) has released *GarageBand 2: The Missing Manual* ($24.95), by best-selling Mac author David Pogue. In his witty and inimitable style, Pogue explains how to get the most from Apple's popular audio sequencer, from initial setup to advanced troubleshooting. Along the way, you'll learn how to edit software instruments and effects, split and join regions, import songs from iTunes, create your own Apple Loops, and accomplish many other useful tasks. An appendix offers a crash course in basic music theory, and another lists every keyboard shortcut in GarageBand 2. Helpful color diagrams appear throughout the 272-page softbound book.

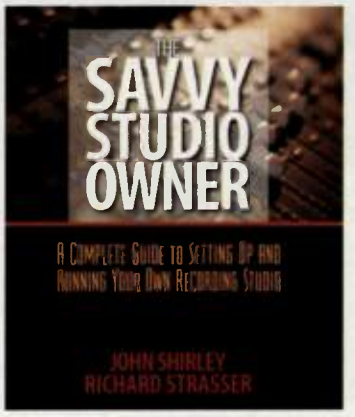
Also written by David Pogue from **Pogue Press** is *Mac OS X: The Missing Manual, Tiger Edition* ($29.95), a book that provides a comprehensive assessment of the latest Mac OS X 10.4. Over the course of 864 pages, Pogue explains Spotlight, Dashboard, Automator, VoiceOver, and other new technologies that Tiger incorporates. Ten pages are devoted to speech recognition and speech synthesis. Pogue also discusses how to use included programs such as Font Book, Terminal, and QuickTime Player Pro. If you're new to OS X, this book is an excellent place to start, and if you're an experienced user, it will teach you things about using Tiger that you may well never discover on your own.

Mix It Like a Record ($149) is a video DVD and Pro Tools–based mixing course published by **Kagi Media** (www.kagimedia.com) and taught by multiplatinum and Grammy Award–winning engineer and producer Charles Dye (Lauryn Hill, Ricky Martin, Shakira). Recorded in locations ranging from Seattle's Experience Music Project and Miami's Supersonic Studios to the Grand Canyon, the 7 GB DVD gives you three hours of video instruction and 40 sessions that run on any version of Pro Tools. Dye teaches his mixing philosophy and technique by dissecting a mix and explaining the reasoning behind every channel tweak, plug-in choice, and automation move. Chapters focus on topics such as how to mix each instrument, enhance mood with effects, and use automation to increase musical expression. Owners will also gain access to online QuickTime movies and additional Pro Tools sessions.

Producer and Nashville-based *Mix* editor Rick Clark takes a different approach to teaching studio skills in *Mixing, Recording, and Producing Techniques of the Pros* ($34.99). This 336-page book from **Course Technology** (www.courseptr.com) is a revision of his 2001 book, *The Expert Encyclopedia of Recording*. Clark conducted hundreds of interviews with a diverse assortment of well-known studio denizens such as Kenny Aronoff, Greg Calbi, Bob Clearmountain, Danny Elfman, Daniel Lanois, Eddie Offord, Norbert Putnam, and Elliot Scheiner. They address 23 specific issues such as acoustic ensemble recording, recording piano, radio processing, and room tuning, with a chapter devoted to each topic. A 102-page appendix lists discographies for each of the interviewees.



The Savvy Studio Owner ($19.95), published by **Backbeat Books** (www.backbeatbooks.com), is subtitled *A Complete Guide to Setting Up and Running Your Own Recording Studio*. Authors John Shirley and Richard Strasser describe the ins and outs of owning a commercial facility. More than half of the book covers subjects such as researching the market, financing your studio, acoustics and design, equipment and supplies, and other aspects of establishing your studio business. The second section deals with day-to-day operation and features topics such as marketing, bookkeeping, legal issues, and taking care of employees. Appendices provide various worksheets and a list of online resources.



Your Holiday Gear Is Here!

It's never too soon to start loading your sleigh with audio gear!

Guitars, keyboards, microphones, mixers… Sweetwater is your best source for everything musical this holiday season!

- Huge Selection
- Great Prices
- Best Service
- Amazing Technical Support

Make your holiday dollars go farther!

Apply today for your

90 days same as cash

Musician's All Access Card!

Season's Best

FREE

No Minimum Purchase

SHIPPING

Speedy FedEx Delivery • Most Orders Ship Same Day

GO ONLINE FOR GEAR REVIEWS, BUYER'S GUIDES, TIPS, AND MORE!

1-800-222-4700

www.sweetwater.com

Sweetwater

music technology direct

Korg Legacy Collection, Digital Edition

Legacy Collection, the acclaimed software emulation of classic synths and effects from Korg (www.korg.com), is a tough act to follow. Nevertheless, Korg recently introduced Legacy Collection, Digital Edition (Mac/Win, $199; $99 for previous Legacy Collection owners). The new suite resurrects the Korg M1—the first and one of the most popular digital music workstations ever made—and updates Legacy Collection's Wavestation and MDE-X software. In addition to Legacy Collection's previous support for Audio Units and VST plug-in formats, it now introduces support for RTAS.

Introduced in 1988, the original M1 blended sample playback with digital processing. Now its sound engine is available as a 256-note polyphonic, 8-part multitimbral soft synth with new features such as resonant filters and two insert effects for each timbre. In addition to the entire PCM, Program, and Combination data of the expanded M1EX and all 19 optional ROM cards, the software version supplies new data for more contemporary sounds.

Wavestation 1.5 adds the complete data from all six original Wavestation ROM expansion cards (including 150 wave sequences) and expands its preset library to 1,400 sounds. It also brings the MDE-X multi-effects plug-in to version 1.2, with enhanced CPU efficiency. Unlike the prior Legacy Collection, Digital Edition relies on an included USB key for copy protection.

Download of the Month

Quad Zamp 1.0 (Win)

Quad Zamp 1.0 (freeware) from Canadian software developer Les Productions Zvon (www.lesproductionszvon.com) is a sample player with a variety of unusual features geared primarily to percussive sounds. The VST plug-in for Windows (developed in SynthEdit) comes in single- and multiple-output versions. The multiple-output version has four outputs and is available only in conjunction with Les Productions Zvon's sample packs, which are all worth a listen. The Prepared Rhodes, a John Cage style mechanical preparation of a Fender Rhodes electric piano, is among my favorites (see **Web Clip 1**).

Quad Zamp has four identical Multi Wavplayers, each consisting of three WAV file players. Each WAV file player has its own page of controls, and individual players can be turned off to save CPU cycles. WAV file playback is triggered by MIDI notes between C2 and B2, and the same note can be assigned to different WAV files if desired. The Multi Wavplayers have a fourth page of controls for tempo-synchronized randomization of playback start position, direction, and pitch.

Each WAV file player has an AD (attack-decay) envelope for pitch, and an ADSR envelope for amplitude (Quad Zamp has no filters). Samples can be played in forward or reverse order and set to loop or play as one-shots. Handy *x-y* controllers, which are always visible on the control panel, allow you to set each WAV file player's level and pan position.

In addition to the one- and four-output versions of Quad Zamp, Les Productions Zvon has an even simpler sample player, Zamp 1.2, which is also free. Zamp 1.2 consists of a single Quad Zamp Multi Wavplayer, but it has an ADSR pitch envelope, monophonic and legato modes, and portamento. Zamp 1.2 also has the Quad Zamp randomizer.

All of these sample players are basic, and therein lies their charm. In spite of their simplicity, however, you can create lots of unusual sounds using either your own WAV files or the Les Production Zvon libraries.

EM CLIPS

—Len Sasso

WAVES

PRS PAUL REED SMITH GUITARS

Introducing the **professional choice** for **guitar amp** and **effects software**

G|T|R
Guitar Tool Rack

Designed in association with Paul Reed Smith Guitars

Waves Amp: a new standard for pro sound

Waves Stomp: Over 20 Virtual Stomp effects

Hardware interface delivers superior signal

Virtual Amp and effects that meet the highest professional demands for guitar tone and dynamics.

WAVES

Spectrasonics Stylus RMX 1.5

Now available from Spectrasonics (www.spectrasonics.net) is an update to its flagship groove module plug-in, Stylus RMX 1.5 (Mac/Win, $299). It features revised content with 500 new Multi grooves and 250 new kits, an expanded Groove Elements sound directory, and enhancements to the Core Library that add new categories and Example Groove Menus in various genres. Stylus RMX 1.5 is a free download for registered users, or you can order it on DVD-ROM for $15.

Stylus RMX 1.5's embedded help system lets you access a reference guide more than 68,000 words long, with compete cross-referencing to video tutorials. More than 4.5 hours of new video brings the total to nearly eight hours of bundled training. Chaos Designer's new Buzz parameters let you create real-time stutter edits and unusual effects. An improved SAGE Converter offers drag-and-drop batch conversion of REX file libraries and support for additional Groove Control libraries. Other changes include Windows RTAS support, expanded LFO sync, MIDI Learn functions, hardware controller templates, and as many as 16 active Edit Groups.

Wave Arts PowerSuite 5

Wave Arts (www.wavearts.com) has announced upgrades to all five plug-ins in its top-of-the-line bundle, Power Suite 5 (Mac/Win, $599). MultiDynamics 5 and FinalPlug 5 are available as of this writing, and MasterVerb 5, Panorama 5, and TrackPlug 5 should be shipping by the time you read this (each is also available separately). The five dynamics and effects processors cover essential aspects of sound design, tracking, mixing, and mastering. Wave Arts has redesigned the visual interface of each and added support for sampling rates as high as 192 kHz. Supported Windows formats are DirectX, RTAS, and VST, and Mac OS X formats are Audio Units, MAS, RTAS, and VST.

MultiDynamics 5 ($199) offers as many as six independent bands of either expansion and gating or compression. The update provides a selection of clean and vintage compression modes, new presets, and better preset management. FinalPlug 5 ($199) is a peak limiter and volume maximizer that's especially suited for mastering applications. It has extensive noise-shaping, dithering, and bit-depth truncation capabilities, and the new version features an improved limiting algorithm with automatic release control.

Yamaha Tyros2

Yamaha (www.yamaha.com) has replaced its flagship Tyros arranger workstation with the Tyros2 ($4,095). Features such as USB mass storage and a broadband Internet connection allow the Tyros2 to function as part of a computer-based music-production system. An external computer monitor can mirror the workstation's onboard VGA display. Onboard tools let you import WAV and AIFF files and design your own custom voices. You can expand the standard 4 MB of sample RAM to 1 GB and capture your performances with hard-disk recording. A new feature called Super Articulation lets you access real-time controls specific to the instrumental timbre you select, resulting in more realistic performances. The Tyros2 also has a redesigned keyboard action designed to be faster, smoother, and more responsive than its predecessor's. EM

Focusrite

Software-powered Hardware

PLUG IN[S]

Hardware-powered Software

ALL YOU NEED

everything you need to start recording, including a free award-winning Cubase LE

48 track recording/sequencing software from Steinberg

ENGINEER BUILT-IN

One-click recording solutions guarantee uninterrupted creative flow

Hardware-powered Plug-ins for tracking: EQ, Compression, Reverb and Amp Modeling – Zero impact on your CPU

SaffireControl: The most comprehensive yet intuitive Input/Ouput control software to date

Saffire Plug-in Suite: VST and AU format (PC and Mac) plug-ins also included for use in the mix

Cubase LE: Includes Steinberg's award-winning Multi-Track recording/sequencing software

Firewire: The ultimate audio/power interface guarantees true mobility and seamless audio communication

Two Focusrite Pre Amps: Class-leading pre amp quality from one of the most prestigious names in music recording

Multiple Outputs: Up to five unique stereo monitor mixes simultaneously

MIDI I/O: MIDI in, MIDI out and MIDI Thru

2 independent headphones outputs: Providing two artists with two unique cue mixes

$399 MAP

Saffire combines state-of-the-art hardware with advanced integrated software control and hardware-powered plug-ins, taking you one giant step closer to the professional studio experience.

Four inputs and ten outputs (including stereo digital I/O up to 192kHz) with unrivalled monitoring options, ensure you have all that's required to easily navigate through a recording session.

Focusrite Saffire

Professional Mobile Firewire Audio Interface

Take the Saffire tour at **www.focusrite.com/saffire.**

For more information email us at focusrite@AmericanMusicAndSound.com or call 1.866.FOCUSRITE

It's All in Your Head

By Scott Wilkinson

More convincing surround headphones are on the way.

Surround sound is becoming increasingly important for electronic musicians of all sorts. Movie and game soundtracks are routinely mixed in 5.1 surround, and studios often deliver multichannel music mixes for DVD-Audio and SACD. But installing a surround-sound speaker system is sometimes difficult, if not impossible, because of space and budget constraints. There's also the ire of family and neighbors when the volume gets too high. Finally, a surround system's sweet spot is very small, normally allowing only one person to occupy it.

To address those problems, several pioneers have tried to simulate surround-sound speaker systems using conventional headphones. Such simulations use mathematical algorithms called head-related transfer functions (HRTFs) to calculate the effect of sound waves diffracting around a human head from any given direction. The HRTFs are used to alter the amplitude, phase, and delay of an audio signal before it's sent to the headphones, and the listener perceives the sound coming from the desired "direction."

Unfortunately, most of these simulation systems suffer from a couple of drawbacks. For one thing, the HRTFs are generic, based on the average of many individual measurements, which means they are accurate for no one in particular. Furthermore, as a listener turns his or her head, the simulated speaker system turns with it, which sounds unnatural. If you were listening to a conventional surround speaker system, turning your head would change the relative orientation of your ears with respect to the speakers, resulting in plainly audible changes to the sound.

COURTESY SMYTH RESEARCH

FIG. 1: The SVS system creates custom surround simulations for each user and room, and it includes a head tracker that senses the wearer's head position, so that the virtual speakers appear to remain stationary as the head moves.

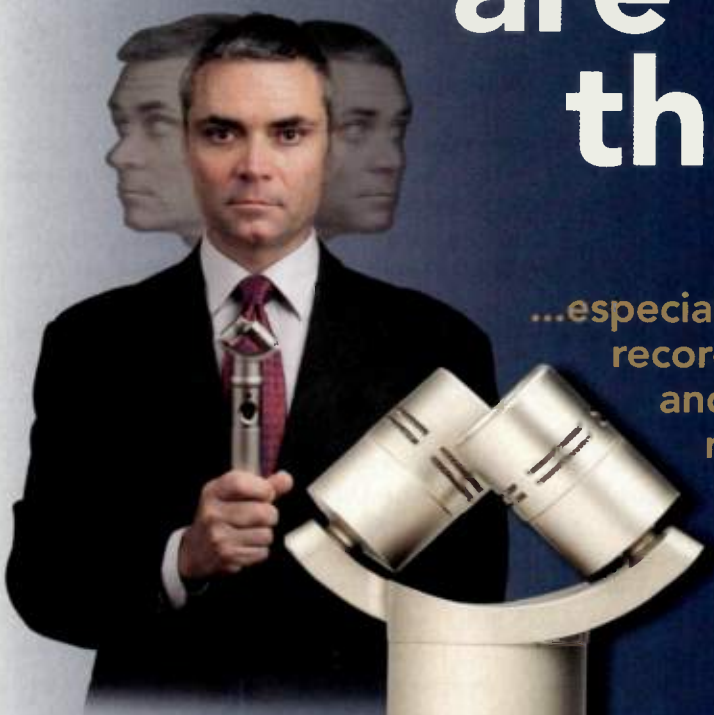
A company by the name of Smyth Research (mike@smyth-research.com) has come up with an ingenious solution to such concerns. Smyth Virtual Surround (SVS) is the brainchild of Stephen Smyth, who has been working on it for three years. Unlike other headphone-based surround-simulation systems, SVS starts by "capturing" the HRTF of an individual listening to a specific set of speakers in a specific room. The listener puts a small microphone in each ear, and a series of test signals are played from each speaker, which takes about two minutes for a 6.1-channel system. The resulting HRTFs are stored in a small file (roughly 1 MB) and used to simulate the effect of sounds coming from the modeled speakers.

As many as eight channels of audio are fed into SVS, which applies the selected HRTFs and sends them to headphones fitted with a small tracking device that includes motion sensors to gauge the wearer's head position at all times (see Fig. 1). That information is used by SVS to modify the HRTFs in real time so that the virtual speakers appear to remain in place as the listener's head moves.

For the pro-audio market, Smyth Research intends to introduce a standalone, dual-headphone processor with eight channels of balanced, analog I/O designed to be inserted into a mixer's bus. SD memory cards are used to load and transfer HRTFs from one unit to another. But the company's main goal is to license the technology to consumer-electronics manufacturers; in fact, they've successfully demonstrated SVS at various CE trade shows.

Among the potential applications is modeling any control room to which you have access. After spending a few minutes to capture your HRTFs in the selected room, using its speakers, you could then take the processor (or perhaps only a small SD card) to your bedroom or garage studio and hear your music as if you were in the original control room. How about monitoring in location trucks, where space is often way too tight for a surround speaker system? I'm excited by this technology, and I look forward to seeing it become commercially available. EM

Two heads are better than one!



...especially if you want to give your recordings or live mic'ing the depth and ambience only a true stereo microphone can deliver.

The NT4 is your one-shot stereo solution. No other mic delivers the performance and convenience of the NT4.

For the first time, without having to spend thousands, **RØDE** lets you change the way you record.

Overheads, guitar and piano, even group vocals the way they should be laid down.

Most recordings do not take advantage of stereo mic'ing techniques!

Yes, they are mixed as two channels, however they lack the ambiance and 'space' only a high-end stereo mic like the NT4 can deliver.

The NT4 is also perfect for location, effects and sampling direct to MiniDisc and DAT via custom stereo cables supplied.

For added convenience the NT4 can be powered from a 9V. battery or **RØDE**'s P48, P24 and P12 power supplies.

Overheads

FutureMusic PLATINUM AWARD

Location

Instruments

The NT4, Stereo made easy.

Proudly designed and manufactured in Australia

www.rodemic.com

RØDE® MICROPHONES

Across the Centuries

By Matt Gallagher

Niyaz unites traditional and electronic music.

Los Angeles–based trio Niyaz comprises vocalist Azam Ali of Vas, multi-instrumentalist Loga Ramin Torkian of Axiom of Choice, and producer and remixer Carmen Rizzo. The group's creative chemistry results in a virtually invisible fusion of ancient and modern sounds. For Niyaz's self-titled debut (Six Degrees Records, 2005) Ali and Torkian drew upon Sufi poetry and medieval, folkloric music from Iran, India, and Turkey. "We borrow quite a bit from all those traditions," says Torkian.

Ali and Torkian brought their initial tracks to Rizzo, who has worked with BT, Alanis Morissette, Seal, Ryuichi Sakamoto, and Cirque du Soliel, among others. "Azam and Loga wanted to do a hybrid type of project," Rizzo says. "They both have backgrounds in classical and traditional styles of Middle Eastern music. I wasn't interested in doing a traditional type of record; I was more interested in doing something a little darker and more cutting edge.

"They would give me elements that had voice, instrumentation, and maybe some percussion loops," Rizzo says. "Some songs were more developed than others. It was my job to bring in the electronic elements—the keyboards, beats, textures, and sound design—and present it to them. Then the three of us would finish [the track] together."

DOROTHY LOW

Niyaz/Niyaz

Torkian recorded vocals and most instrumental parts in his personal studio, Nandi Sound, to a PC running Steinberg's Nuendo. "I used a Neumann M 149 [condenser mic] going through an Avalon preamp," Torkian says. "The Neumann captures high frequencies really well. For percussion, I primarily used an AKG C 414." Rizzo brought his Mac G4 PowerBook, Digidesign Mbox, and AKG C 414 to Paris and recorded guest musician Arash Khalatbari in Khalatbari's apartment.

"We tried to keep entire performances to give [the music] that live feeling," Torkian notes. He says his biggest challenge for *Niyaz* was changing the way he records instruments such as saz, oud, tabla, and darbuka. "I've always used those instruments in an acoustic context," Torkian says. "I soon learned that the way that I used to record them may not apply in this context. Recording the saz was the hardest because of the nature of the instrument.

"We'd export files without effects and take them to Carmen's studio," Torkian says. Rizzo's Studio 775 is based around a Mac G5 and Pro Tools|HD 2 Accel system. "They would give me raw files from bar 1," Rizzo says. "I would import them into Pro Tools. I used Native Instruments' Absynth, Battery 2, FM7, and Reaktor to create a lot of my parts. Most of the EQs were Focusrite plug-ins. I use the Digidesign limiter called Smack. The main reverb was Digidesign's ReVibe.

"Reaktor is wonderful for audio effects," Rizzo says. "I used a lot of the delays and filters. I'll process a vocal with effects, print it on a separate track, and then blend them together. Often we chose not to make the instruments sound as best as they could. 'In the Shadow of Life' is a beautiful piece that has no rhythm. I tried to make Loga's [Jonathan Wilson Designs] GuitarViol [an electric bowed guitar based on a 14th century European instrument] sound like something you've never heard before, manipulating it with plug-ins and various things. I would loop some of Loga's saz parts. He'd play a riff and I would reverse it, filter it, or auto-pan it.

"Many electronic world-music records sound manufactured," Rizzo observes. "We wanted to pay respect to the poetry and the wonderful instruments. That's why it sounds like it all meshes. Electronic music is not just dance music." EM

For more information, go to www.niyazmusic.com.

New Loops & Sounds

Some sample companies will try to sell you 100 megs for $49. An average Big Fish Audio product contains over 600 megs of samples from today's award winning producers. Big Fish Audio products have won just about every industry award out there. Established in 1986, Big Fish Audio is the oldest and most critically acclaimed sample library company in the world.

Come browse over 600 titles on-line at www.bigfishaudio.com

First Call Horns

$299.95
Kontakt Player Plug-in (VSTi/RTAS/AU/Dxi2)

$299.95
GigaStudio

Finally, multi-sampled horns. No more having to rely on orchestral brass for your modern horn needs. Pop, Latin, jazz, big band, rock n' roll horns are all here with unprecedented sound quality and programming. Trumpets, soprano, alto, tenor & baritone saxes, trombones, flugelhorn & French horn are also here. Each instrument contains solo and section chromatic multi-samples, plus riffs, combinations & improvisations. Over 2 gigs of playable horns!

Roots of South America 2

$99.95
WAV/REX/Apple Loops

From the celebrated "Roots" series comes the next installment of South American Loops and Hits. Produced and recorded in Argentina, Roots of South America 2 continues in its authenticity while adding a more contemporary sound. This library comes with a huge assortment of instrument loops including, Congas, Bombo Shells, Cascaras, Quijadas, Cabasas, Timbas, and much more, played by the best musicians and recorded in 24-bit.

Brain: One Stroke Done

$99.95
WAV/REX/Apple Loops

$199.95
WAV (with ProTools/ OMF Sessions)

Bryan "Brain" Mantia has toured worldwide with bands like Primus, Guns&Roses, BT, Vanessa Carlton, and Tom Waits. Now, Brain offers a killer collection of drum performances in 24bit, multi-track, ProTools sessions. From Funk and Hip Hop, to Rock, Soul, Alternative and Underground, twenty years of his sweat and toil are all here for you in binary code. Over 8 Gb of material here in a wide range of tempos and styles, so if you need to add a unique drum part to your music, Brain's got you covered.

Rotation

$99.95

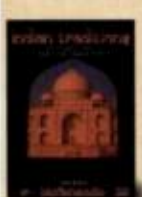
WAV/REX/Apple Loops

Britney, Christina, Justin, Janet...any of those names sound familiar? Of course they do, because they're on top of the charts and in heavy rotation on the radio. The whole world knows who they are! And if you're looking to produce tracks that the whole world is hearing, this is your secret goldmine of loops. These aiff/wav/rex loops are in Construction Kit format so you can use as much or as little of the track as you want, and mix and match with other material to create something that's ready for radio.

Greg Adams' Big Band Brass

$99.95
WAV/REX/Apple Loops

Put the power of a Big Band Brass section to work in your music! Performance Loops® producer Stephen Sherrard teams up with legendary trumpeter, composer, and arranger Greg Adams (Rod Stewart, Elton John, Linda Ronstadt, Lyle Lovett) to bring you over 4600 Big Band Brass loops and samples, ready to bring a new level of realism to your production. Thousands of loops and samples from Greg's big band arrangements, recorded with his Jazz Orchestra featuring a 14 piece horn section.



Indian Traditions

$99.95

WAV/REX

The ancient musical traditions of India run very deep and have survived relatively untouched for thousands of years. To capture the true essence of this music, we went straight to the source. From the widely known Tabla and Sitar to the rare Khamak and Tar Shehnai, Indian Traditions will fill whatever your need. In total, there are 28 different vocal, percussive and melodic instruments to choose from. Bring home the sounds of this beautiful and intoxicating music to your library.

Funk City

$69.95
WAV/REX/Apple Loops

Like a blast from the past the legendary Funk Soul Brothers return to bring you FUNK CITY: a collection of funked-up construction kits featuring slammin' drums, groovin' percussion, slappin' bass, greazy funk guitar, slippery synths, vocal bits, and one big-ass horn section! If you're looking for old school and nu school Funk & Soul, you've come to the right place: FUNK CITY.

Raging Guitars

$299.95
Kontakt Player Plug-in (VSTi/RTAS/AU/Dxi2)

This is the guitar onslaught you've been waiting for! A guitar virtual instrument done right, with over 11 gigs of multiple amps and levels of distortion, mono and stereo files. Loops that can be time stretched to match the tempo of your tune automatically, Sustained notes, chugs, hammer-ons, bends and lots more, so you can create your own guitar parts.

Big Beat 2: Nu Skool Breaks

$99.95
WAV/REX/Apple Loops

Get in, sit down, and shut up because you're about to embark on the ride of your life. Matt Buschbacher is at it again with the latest in the Big Beat series. "Big Beat 2" takes no prisoners as it shoves its way into the mainstream. These back-breaking beats and crazy construction kits will pound new life into your music. With nearly 2 gigabytes of loops and sounds, with everything from drums, bass, synths, atmospheres, guitars, you'd be a fool not to bite into this one. "Big Beat 2" takes it to the next level.

Hybridizer 2

$99.95

WAV/Acid/REX/NNXT/Kontakt

Hybridizer 2 has awakened within your nightmare and promises to never allow sleep again. Bunker 8 Digital Labs has taken the reigns off this 4.3 GB insane creation, lord knows what's in store. With over 6500 different pieces of sonic inspiration, Hybridizer 2 transcends all musical genres, creating the chimerical soundtrack of the modern. Even more journeys of a basstic nature, distended nuclear rhythms, more manic metal guitar licks and scrapes than you ever though possible.

Jazz Quartet

$99.95
WAV/REX/Apple Loops

With over 75 Construction kits of the most useable jazz you'll find anywhere, this collection is simply beautiful. The sophisticated, satisfying sounds of piano, bass, drums and guitar, come together in perfect harmony. Whether you need a cozy and intimate setting, or a grand concert hall feel, these recordings will give you an authentic jazz environment. Kits from 52 to 148 bpm, completely broken out. Seek a new level of artistic expression with the diversity of these timeless performances.

800.717.3474 — **bigfishaudio.com**

NI ESSENTIALS fuels your creativity. This professional starter kit contains all the fundamental instruments for music production. Delivering everything from percussion, bass and rhythm sections to strings, pads and keyboards, it is a key ingredient of any quality-conscious music studio. Two extremely versatile samplers, two highly advanced synthesizers and a stunningly authentic sounding guitar combo emulation cover an incredibly diverse spectrum of sound and offer a wide range of instantly playable instruments. The sophisticated NATIVE INSTRUMENTS software technology guarantees unrivalled sound quality and versatility. From classical to contemporary – NI ESSENTIALS injects high octane sound.

INSPIRED BY MUSIC www.ni-essentials.com

ABSYNTH 3 – Synthesizer with unrivalled sonic potential

BATTERY 2 – The pioneering drum sample expert

KOMPAKT – Streamlined sampler with over 200 instruments

PRO-53 – The perfect emulation of an analog synth classic


ABSYNTH 3

BATTERY 2


GUITAR COMBOS

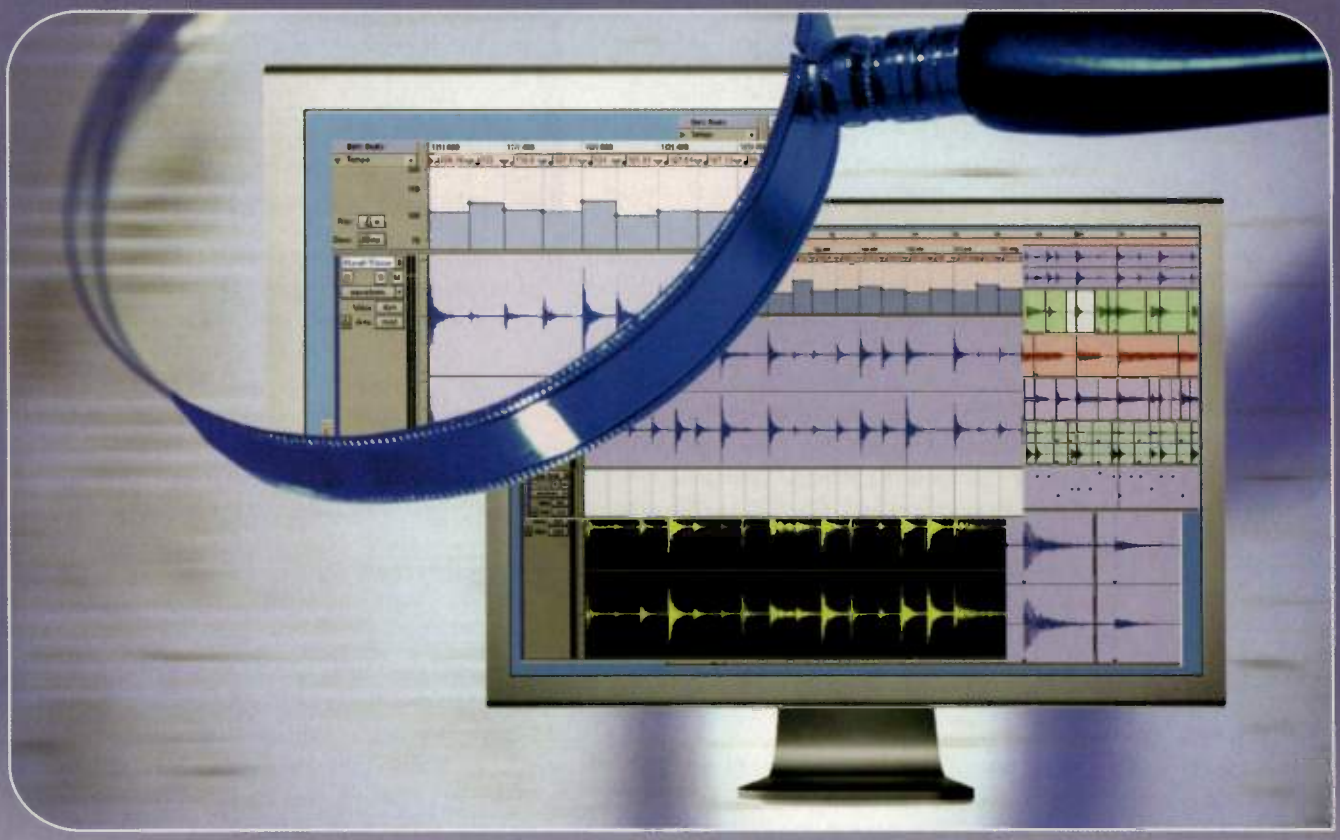

KOMPAKT


PRO-53*

*Originally awarded to PRO-52

NATIVE INSTRUMENTS
SOFTWARE SYNTHESIS

GENERATE THE FUTURE OF SOUND



LIZABETH HEAVERN

8 Groovy Tips for Beat Detective

By Erik Hawkins

Unlock the hidden power of Pro Tools' groove feature.

Using Beat Detective to slice up a loop into a series of individual beats is so simple that one hardly need glance at the Pro Tools manual. But there's more beneath the surface of Beat Detective than meets the eye. With a little of your own detective work, you'll see that slicing up loops is just one of the program's many tricks.

Combined with tick-based audio tracks, which were first introduced in Pro Tools 6.7, Beat Detective is like having Propellerhead ReCycle and a sampler built in to Pro Tools. Now, just like a MIDI event on a MIDI track, your separated audio regions that are on ticks-based audio tracks will retain their bar, beat, and tick positions—even when a session's tempo is changed. Beat Detective is consequently more useful than ever as a tool for loop-based production and remixing.

Originally, Beat Detective was only available in Pro Tools TDM. As of version 6.4, however, Beat Detective LE was added to Pro Tools LE (and is also a part of M-Audio Pro Tools M-Powered). The primary difference between the TDM and LE versions is that Beat Detective LE doesn't enable you to edit multiple audio regions at the same time, whereas the HTDM version of Beat Detective allows you to edit several selected audio regions simultaneously. If, however, you typically edit only one loop at a time, that difference will be relatively minor and you won't miss it if you are using Beat Detective LE.

Marking Your Beats

At times, Beat Detective does not catch a transient until you've pushed the Sensitivity control all the way up. If you're editing a simple waveform that has well-defined transients, the beat markers will be placed right where you want them. If, however, the waveform is complex, with lots of tiny, smeared transients, then you will end up with more beat markers than you need. In that case, when you slide the Sensitivity control back down again, the markers you do want will usually disappear, along with the erroneous markers.

Instead of painstakingly deleting the markers you don't want, lock down the markers you want to keep. That is called promoting a marker. Using the Grabber tool, Control + click (on the Mac, use Command + click) on the markers you want, and then slide the Sensitivity control down to 1 percent. Only the beat markers that you promoted will remain.

If pushing the Sensitivity control all the way up still doesn't catch a particular beat, you can drop a beat marker in manually with the Grabber tool by clicking in the selected audio region. You can also use the Grabber tool to slide the marker around and fine-tune its position.

If you have an HTDM system, you can use the Collection mode, in the Detection section, to collect beat markers from different audio regions to create a single, composite beat map. For example, you could collect beat markers from each track of a multitrack drum session, and then use the composite beat map to slice up all of the drum tracks at the same time.

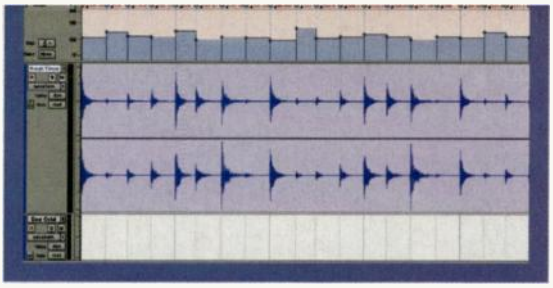
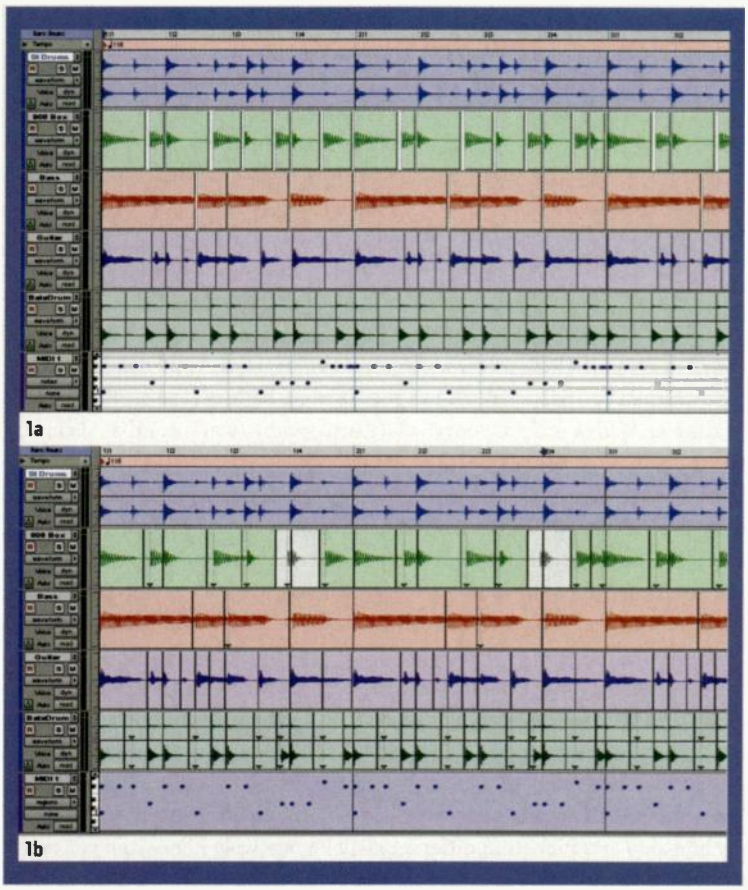


FIG. 2: This screen shot shows an example of a tempo map generated by a live percussion groove. The tempo for each 16th-note grid division can be seen next to each tempo-change marker.



FIGS. 1a and 1b: Here are several audio regions that have been edited using Beat Detective, with the groove from the Stereo Drums track (track 1) applied to all of the separated audio regions.

Groove Extraction

An important production skill for making parts groove well, particularly when working with elements from disparate sources—such as found loops, step sequencers, and live performances recorded at different times—is the ability to create and apply custom groove-quantize templates. Beat Detective allows you to lift the groove from one performance, save it as a template, and then apply it to other performances, giving you complete control over the feel of each track.

After you've set the beat markers for an audio or a MIDI selection, switch to the Groove Template Extraction mode in Beat Detective's Operation section. You don't need to perform a region separation beforehand, because the groove template is based on the position of the beat markers themselves, rather than on audio region start times. When you press the Extract button, you can either save the template temporarily to the clipboard or archive the groove template to disk in the Pro Tools Grooves folder.

From the Region Conform mode, you can apply the groove template to a selected audio performance, as long as its beats have already been separated into individual regions. Select Groove as the Conform mode, choose your groove template from the Grooves menu, and then press the Conform button to quantize the start of each audio region to the nearest beat or sub-beat of your groove template (see **Figs. 1a** and **1b**, and **Web Clips 1a** and **1b**). To apply a groove template to a MIDI performance, you will need to use the MIDI Groove Quantize window. Any groove template created in Beat Detective will appear in the MIDI Grooves menu as well.

The Region Conform mode and the MIDI Groove Quantize window provide a Timing parameter for setting the strength of the groove template, which determines how strongly the selected events will be pulled toward the groove. That control is essential, because performances that are too tightly locked together can sound unnatural. By using the Timing control, you can play with different percentages of the groove across

TASCAM's DM-3200. The 32-channel digital center of your universe.

32 channels and 16 aux returns for 48 total inputs @96k/24-bit 16 busses or two 6.1 surround busses 8 aux sends 16 analog mic/line inputs with inserts Powerful automation with 100 mm touch-sensitive motorized faders Dedicated DAW control surface layer for Pro Tools®, SONAR®, DP™, Logic, Cubase® and Nuendo® EQ and dynamics on each channel 2 built-in effects engines with TC® reverb Per-channel LED ring encoders for pan, aux sends, EQ and more 24 channels of TDIF and 8 channels of ADAT® built in 2 expansion slots for FireWire®, Surround Monitoring, ADAT®, AES/EBU, TDIF and analog cards TASCAM Mixer Companion software (Win®XP/OSX) with driverless USB connection to computer for back-up/restore of mixer data Get the whole DM-3200 story on-line @www.tascam.com or visit your TASCAM dealer today.

TASCAM®
www.tascam.com

FIG. 4: From the pop-up menu next to a track's name, you can create and recall duplicate versions of the track.

different tracks to create a performance that pushes and pulls the beat just like a live jam.

Tempo Map to Grid

A live performance that isn't recorded to a click track won't have beats that line up neatly to the grid in Grid mode. As a result, editing and MIDI sequencing is more difficult. No matter how carefully you nudge the audio region into sync with the grid and adjust the session's master tempo, the variations in tempo will cause the track to drift out of time. The solution: don't try to make the performance line up to the grid; instead, use Beat Detective to make the grid line up to the performance.

With Beat Detective, you can generate a tempo map based on the position of the beat markers (see Fig. 2). First, set your beat markers in the Bar | Beat Marker Generation mode, and then press the Generate button to deploy a series of Tempo Change markers in the Tempo Ruler. The grid will follow the tempo changes, with each bar and beat division tied to the bars and beats of the live performance. With the grid all lined up, on-beat edits are easy and MIDI events can be snapped to the grid for sequences that are perfectly in time.

Smooth Edits

After slicing up a loop and then changing the session's tempo, you may hear pops and clicks between some of the audio regions. That occurs when a region's waveform isn't separated at its *zero-crossing point* (the point where the waveform crosses the x-axis.)

In Edit Smoothing mode, there are two ways of silencing those annoying pops and clicks: Fill Gaps and Fill and Crossfade. Fill Gaps extends a region's leading edge to meet the ending edge of the region directly in front. That option can work well when there is silence between the beats, because in extending a region's edge, you'll probably land on a zero-crossing

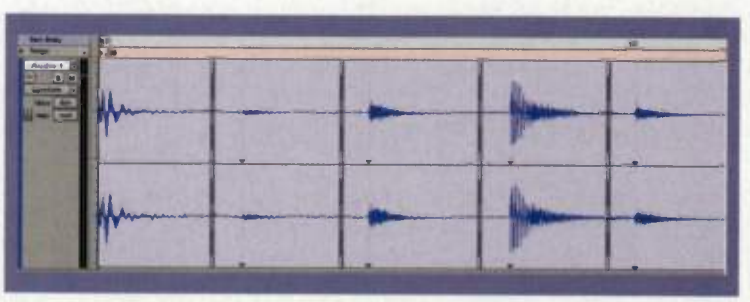


FIG. 3: After a Fill and Crossfade operation, you can see the crossfades between each region and the sync point for each beat within the regions.

point. When there's a lot of audio between the beats, however, landing on a zero-crossing point is unlikely, and you'll need to use a crossfade to smooth out the transition between the regions. Fortunately, the Fill and Crossfade option can perform the fill, and then automatically crossfade the regions in one step (see **Fig. 3**). Fill and Crossfade usually works like a charm (see **Web Clips 2a** and **2b**).

Both Edit Smoothing options offer a bonus—a sync point at the beginning of each beat. Because the fill process extends a region's edge in front of the beat, the sync point now acts as a marker for the actual start of the beat instead of the region's leading edge. Consequently, an audio region with a sync point will snap to the grid at its sync point rather than its leading edge. Even quantize and groove quantize will pull a region by its sync point. That makes rearranging beats in Grid mode an absolute joy, enabling you to cook up breakbeat and drum-and-bass style grooves in no time.

Consolidate Your Regions

After separating and crossfading lots of regions, you can end up with a processor-intensive session because of all your edits. To ease the burden on your CPU and hard drive, use the Consolidate Selection command to merge groups of separated regions into new contiguous audio regions.

To make sure that you don't lose any of your edits, create a duplicate track by clicking on the arrows next to the track name in the Edit window and choosing Duplicate. Next, consolidate the regions on the copy (see **Fig. 4**). Leave the original track hidden, beneath the duplicate track, in case you need to adjust any of its regions (that is, to nudge a beat or shorten a crossfade).

Birth of the Groove

Beat Detective is easy to use and can be used in many ways. Its variety of functions will allow you to realize the hidden groove potential in almost every audio region in a Pro Tools session. EM

EM WEB CLIPS

Erik Hawkins has written several books, the latest being The Complete Guide to Remixing: Produce Professional Dance-Floor Hits on Your Home Computer *(Berklee Press, 2004).*

The Art of Podcasting

By David Battino

Just when it seemed that commercial radio couldn't possibly become more corrupt or boring, along came podcasting—Internet radio by and for the people. And with it comes unprecedented opportunities for electronic musicians and music fans.

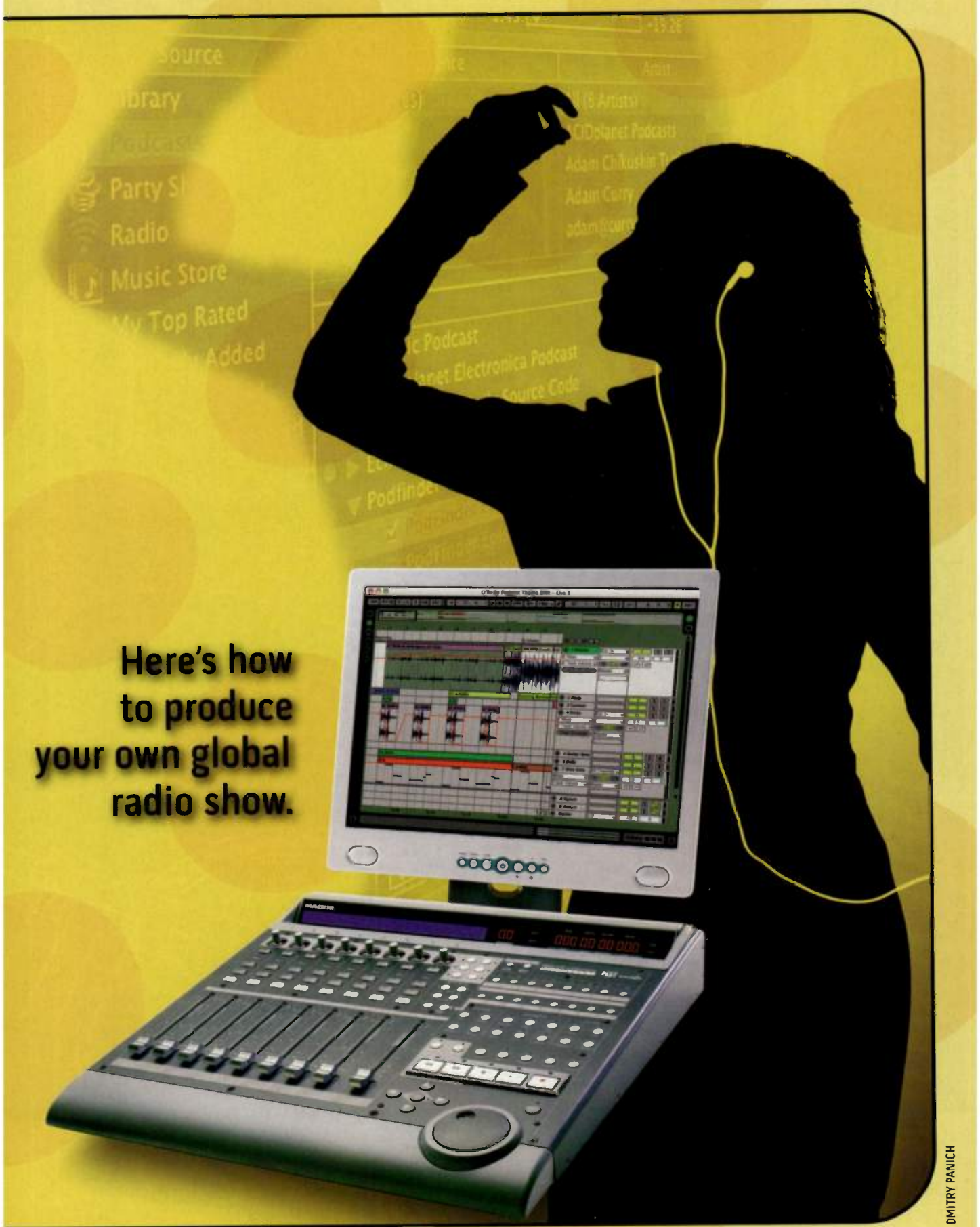
The word "podcasting" is a combination of "iPod"—the ubiquitous portable music player—and "broadcasting." But you don't need an iPod to participate, and the listening experience is more like subscribing to an Internet radio show with a TiVo (if that were possible) than dialing in a broadcast.

Podcast producers upload audio files (usually MP3s) to the Web, along with a text file containing background information about the show and links to the audio files. When listeners load the URL of the text file—for example, http://www.example.com/joes-show.rss—into a program called an *aggregator* or a *podcatcher*, they're given the option to subscribe to the series of audio files.

Once the listeners subscribe, the podcatcher software checks the online text file once a week or so for new links. If it finds some, it downloads the corresponding audio files automatically. The listeners can then play the files on their computers or transfer them to portable players like the iPod. Additional data in the text file allows the player to display enhancements such as cover art, the producer's URL, and extended comments about the episode.

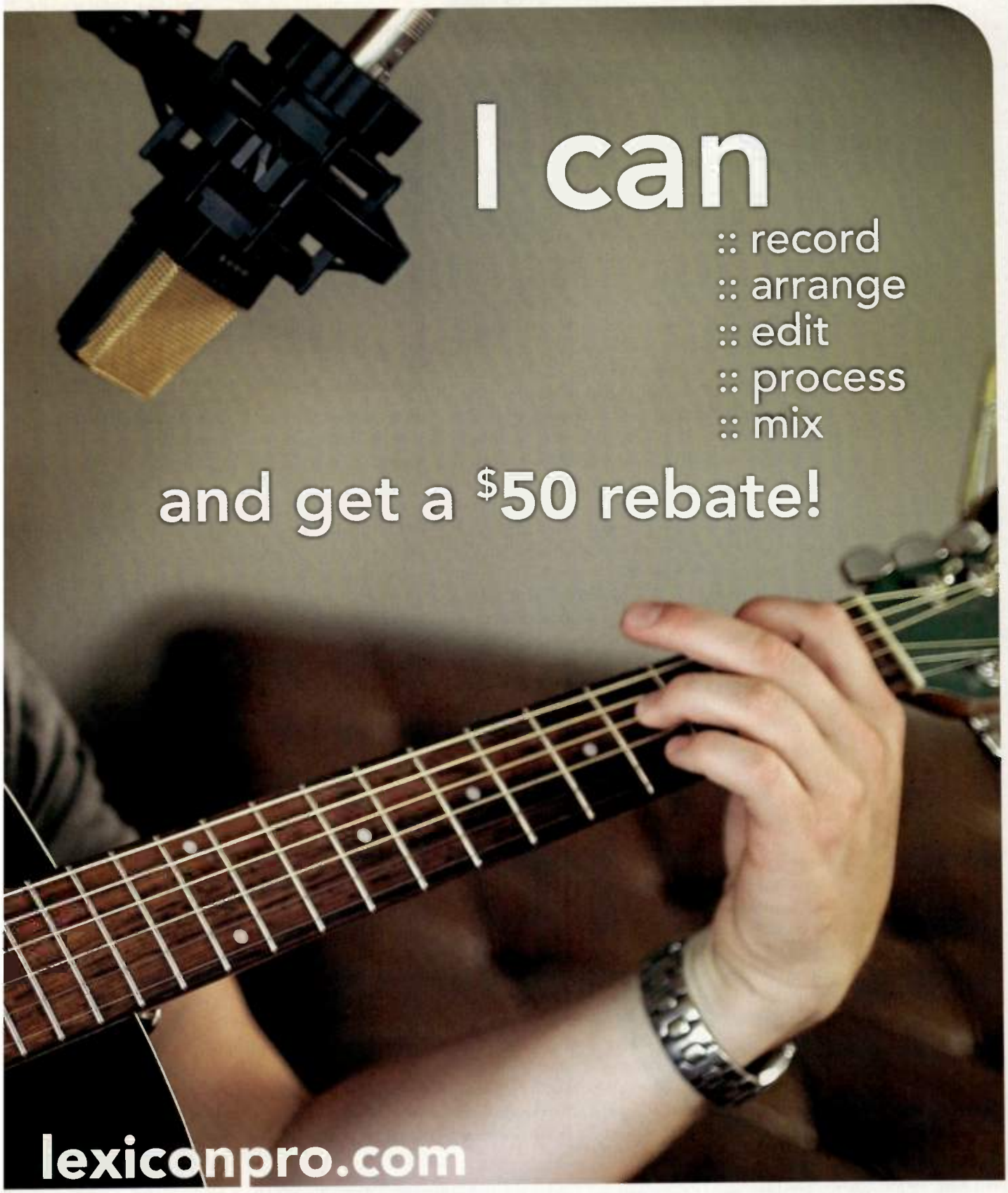
Just as TiVo ensured that there'd always be something to watch when you get home, podcatchers fill your computer with interesting music and radio-style talk shows from around the world. Unlike TiVo, though, podcast subscriptions and podcatchers are still free, and anyone with an Internet connection can create a show.

Indeed, searching Google for the phrase "how to" plus "podcast" returns more than 12 million hits—phenomenal for a field that's barely a year old. As with many crafts, the technical steps are relatively simple; artistic success comes from learning what works aesthetically. In other words, there are 12 million sites that can tell you how to record and distribute a podcast; in this article, I'll concentrate



DMITRY PANICH


ΩMEGA
DESKTOP RECORDING STUDIO
$50
LIMITED-TIME
REBATE
Lexicon
ΩMEGA
DESKTOP RECORDING STUDIO



The Omega Desktop Studio™'s 8x4x2 USB I/O mixer coupled with Steinberg® Cubase® LE 48-track Recording/Editing software and the world-class Lexicon® Pantheon™ reverb plug-in turns your PC into a studio. Wherever you want it, whenever you need it — YOU CAN. Let thirty years of recording history and number one hits be your inspiration. Buy an Omega Studio by Dec. 31st, 2005 and get a $50 rebate directly from Lexicon.

* Visit www.lexiconpro.com for rebate offer details...and to find out how YOU CAN.

Lexicon

A Harman International Company

on the fun part: doing it well. That said, I devoured a significant number of those 12 million sites. Visit www.emusician.com for helpful links (see Web Clip 1).

Finding and Listening to Podcasts

Before jumping into podcast production, grab a podcatcher program and take some time to check out what other producers are doing. Three leading podcatchers are iTunes (Mac/Win), iPodder (Mac/Win/Linux), and iPodderX (Mac/Win). (See the sidebar "Contact Information" for URLs of all software, podcasts, and other resources mentioned in this article.) iTunes is the most popular, netting more than a million subscriptions within two days of adding podcatching capability in version 4.9. It also lets you preview podcasts before deciding if you want to subscribe. (That's an important reason to make sure the beginning of your audio file is enticing.)

All three programs contain podcast directories with scads of entries, but there are numerous Web sites with podcast directories as well. Podcast Alley, Podcast.net, Audio Weblogs, and Yahoo are good starting points. If you find a link you like on a directory site, you can simply copy and paste the link into a podcatcher program to set up a subscription. The link is usually attached to a small button labeled RSS or XML. In iTunes, you access the subscription entry form in the Advanced menu.

One of my first stops was at the Daily Source Code podcast, hosted by "podfather" Adam Curry, the former MTV VJ credited with inventing podcasting. This is a podcast about podcasting, so you'll pick up lots of tips.

Curry's production values are head and shoulders above the ones in the typical mumbling podcast talk show. He makes extensive use of background music and sound effects, and has a voice that sounds confident yet personal. Although Curry obviously feels comfortable with the mic, his recordings don't have the polished sound of a traditional radio show. Background noises creep in, he rambles at times, and the bright, compressed sound makes me think of a Finalizer cranked a few notches too high. But that informality adds to the personable vibe. One could argue that the overpolished sound of commercial radio is part of the reason it feels so sterile.

Podcasters can learn a lot from radio, so I interviewed several accomplished radio producers for this article. (See the sidebars "Take Me to Your Leiderman" and "Hitting the Posts," as well as Web Clip 2.) Ironically, I discovered one such producer through his show's podcast. Echoes, at www.echoes.org, is a beautifully crafted interview show featuring electronic music.

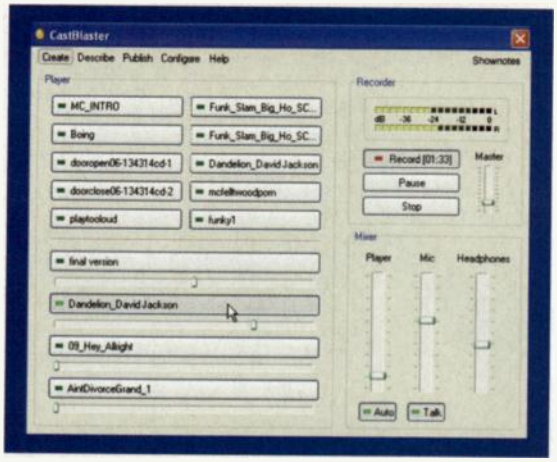


FIG. 2: CastBlaster is a Windows podcast-creation program based on triggering clips in real time rather than arranging them on a timeline.

Another electronic-music podcast I like is called Spacemusic, which delivers an hour of smoothly cross-faded indie music every week. The host, TC, has a great time presenting the music and interviewing other artists (in his thick Dutch accent). He actively solicits original tracks from listeners.

Independent musicians have another outlet in Slashdot Review. That podcast juxtaposes a spoken recap of hot topics from the popular News for Nerds site with a full track from a non-RIAA band.

Give the world an open mic, and you'll get other strange juxtapositions as well. One podcast I found (www.rocket15.com) featured a guy named Chaz driving around Louisville in a VW Bug, muttering into a digital voice recorder. Film composer Fumitaka Anzai (www.anz123.com/English) found a way to stuff so many images into his podcast feed that it turned into an animated movie.

Gearing Up to Podcast

To make a podcast, all you need is an audio file and an Internet connection, but additional gear offers more flexibility and sound quality. For example, it sounds as though Chaz the "Bugcaster" simply dragged the WMA file off his voice recorder, converted it to MP3, and uploaded it. For a more polished vocal, you'd want to use a higher-quality microphone, a pop filter, a compressor, and a USB or FireWire audio interface on your

FIG. 1: HHB's new portable recorder, the FlashMic, is well suited for remote recording. The unit includes 1 GB of flash RAM and a Sennheiser mic capsule.

computer. For remote recording, a battery-powered digital recorder such as the Edirol R-1 or the M-Audio MicroTrack would be a cleaner choice. HHB just announced an intriguing portable recorder that combines a gigabyte of flash RAM memory with a quality Sennheiser mic capsule (see Fig. 1).

For recording telephone interviews (interviews are a popular podcasting genre), I use a JK Audio QuickTap. This tiny device connects between my phone's handset and base, providing an output jack to my Korg PXR4 flash RAM recorder. I have to do a lot of cleanup on the recordings, though, because of the abysmal sound quality of the United States telephone system. Many podcasters use Skype or iChat telephony instead, though routing the audio signals to your recorder requires some fancy virtual cabling. There's a comprehensive tutorial at ITConversations.com, a leading tech interview site.

Speaking of voice-overs (see Web Clip 2), here's a tip from producer Spencer Critchley: "Match your vocal sound to the aesthetic identity of the program. Be aware that the big, booming DJ voice has become a cliché; I think it grew out of the fact that people tend to associate authority with big chests and deep voices (it's an ape thing), the availability of compressors and equalizers to exaggerate the effect, and the tendency DJs have to be vain. I'd suggest starting with a good mic, good mic technique, and moderate compression to achieve a more natural sound that still stays forward in the mix."

And don't forget the cleanup. Echoes producer John Diliberto reveals, "That seven-minute feature that has three minutes of talking in it? That's edited down from an hour or so of interview material."

Soft Focus

On the software side, a multitrack audio sequencer such as Pro Tools, Acid, Sonar, Live, or GarageBand will help you create and lay out the sonic elements in your show. Another benefit of those programs is that they come with royalty-free audio loops. As a podcaster, you're not allowed to distribute copyrighted material without permission.

FIG. 3: If you encode your podcast audio in AAC format, you can insert colorful bookmarks in the file that show up in iTunes and compatible iPods. Few other portable players handle the AAC format, though.

FIG. 4: Podcast producer TC adds a cue list inside the <description> tag in his RSS file, separating the lines with <br> tags. When you click on the Info button in iTunes, the items line up.

One podcast I found, called the Overnightscape, has an interesting work-around to that limitation, using a MadWaves algorithmic synthesizer (www.madwaves.com) to generate royalty-free background music in real time. There are also many artists who will allow you to play their music in exchange for promotion. Three places to find them are the Association of Music Podcasting, Creative Commons, and the Podsafe Music Network. It's easy to submit your own music at these sites as well.

Dedicated podcast-creation programs are springing up all the time. For Windows, there's CastBlaster (see Fig. 2), Propaganda (see the sidebar "Podmeisters Sound Off"), and ePodcast Creator. The latter is also being ported to the Mac. In addition to organizing or triggering audio clips, those programs export MP3s and the specialized text file that defines the podcast. They can also assist with file upload.

Compressing the Audio File

Your next step is to create the data-compressed audio file. For voice-only programs, consider using mono and a bit rate of 64 or even 32 kbps instead of the standard 128 kbps. Because of the way data compression works, mixing a stereo signal to mono doesn't shrink the file size as it would with uncompressed audio; the bit rate determines the file size. That means a 64 kbps mono MP3 will sound similar to a 128 kbps stereo one, except for the lack of

spatial information. If you have a choice of sampling frequencies, stick with integer multiples of 11.025 kHz (22.05 and 44.1 kHz, for example). Some players "chipmunkize" files at other rates.

Also experiment with filtering out high and low frequencies before compressing the file so that the encoder doesn't squander bits on sounds that your listeners won't hear anyway. For example, analog telephone lines in the United States top out at 3.2 kHz, so you could prefilter phone interviews heavily. For music podcasts, try joint stereo encoding and a 128 kbps rate. Daily Source Code encodes at 96 kbps and sounds reasonably crisp.

Make sure to fill out the ID3 tags for your MP3s so that listeners and podcatchers can organize them. You should specify at least the title, artist, album name, and comments. Ideally, you should also include a contact URL in one of the fields. Adding the show number or date to the name field helps.

In iTunes 4.9, Apple added a slick feature that lets producers add chapter markers to audio files (see Fig. 3). The drawback is that you need to save your file in AAC format (M4A) rather than MP3, and AAC playback support is not nearly as common. Spacemusic host TC reported that 30 percent of his listeners unsubscribed after he switched to AAC, so he switched back. If you do opt to use AAC (perhaps in parallel), check out the shareware program ChapterToolMe, which is the easiest way I've found to add chapter graphics.

CONTACT INFORMATION

PODCASTS	
Daily Source Code	www.dailysourcecode.com
Echoes	www.echoes.org
Overnightscape	www.theovernightscape.com
Slashdot Review	http://slashdotreview.com
Spacemusic	www.spacemusic.nl
PODCAST DIRECTORIES AND HOSTING	
Audio Weblogs	http://audio.weblogs.com
Liberated Syndication	http://libsyn.com
Odeo	www.odeo.com
Podcast Alley	www.podcastalley.com
Podcast.net	www.podcast.net
Yahoo	http://podcasts.yahoo.com
RESOURCES, READINGS, AND ORGANIZATIONS	
Association of Music Podcasting	www.musicpodcasting.org
Creative Commons	http://creativecommons.org/find
Podcasting Hacks (free chapter)	http://digitalmedia.oreilly.com/2005/09/07/hosting-podcasts.html
Podsafe Music Network	http://music.podshow.com
SOFTWARE	
Apple Computer iTunes	www.apple.com/itunes
BoKu Communications CastBlaster	www.castblaster.com
Industrial Audio Software ePodcast Creator	www.industrialaudiosoftware.com
iPodder (open source)	http://ipodder.sourceforge.net
iPodderX (open source)	http://ipodderx.com
MixMeister Technology Propaganda	www.makepropaganda.com
NotePage, Inc. FeedForAll	www.feedforall.com
Reinvented Software Feeder	www.reinventedsoftware.com
Romain Bossut ChapterToolMe	http://rbsoftware.net

FIG. 5: This screen shot shows the most basic RSS file you can use to publish a podcast. Note that the URL for the MP3 is bogus, but when I changed it to point to an actual MP3 and uploaded the RSS file, iTunes was able to find the audio.

Just Say Yes to RSS

After switching back to MP3, TC found a clever way to restore a table of contents to his podcasts: he added it to the text file that accompanies them, inside the <description> tag. Given the format of his show (an hour of seamless music from independent artists), that was invaluable for helping listeners zoom in on individual songs (see Fig. 4).

The step that gives podcasting its unique characteristics is its companion file. That companion file is what transforms an ordinary audio file into a podcast. It's written in a format called RSS (Really Simple Syndication), a "dialect" of the XML language. As I mentioned, there are tools that will generate that file for you, so you don't need


THE ONLY BETTER EQUIPMENT
is attached to the sides of your head.
SHURE
Your ears are what got you here. The trick is making sure the sound that gets to them is as pure, rich and detailed as possible. That's what Shure KSM studio microphones are for. The KSM44 provides a bright full presence for critical studio tracking. The KSM32 gives you the most articulate reproduction of the original sound source.
Shure KSM studio microphones are the result of 40 years of pioneering studio technology. So while we can't replace your ears, we can help you hear better.
SHURE
It's Your Sound
www.shure.com
©2004 Shure Inc.

to know the inner workings of XML, but it is instructive to see how it works. Bart Farkas's book, *Secrets of Podcasting* (Peachpit Press, 2005), has the clearest explanation of RSS for podcasting that I've found.

Fig. 5 shows a basic RSS file. If you've ever selected View Source on a Web page, the syntax should look familiar. Note that this example podcast has only one episode, denoted by the <item> block. To add a new episode, you'd add a new <item> block and modify the dates. For maximum utility in podcatchers, especially iTunes (which has its own RSS tags), you'll need to add additional tags. Take a look at some of the RSS feeds online for ideas. The Spacemusic feed, for example, is at http://spacemusic.libsyn.com/rss. You can check your RSS files for proper syntax at http://feedvalidator.org.

Although the easiest way to create the RSS file is to use a dedicated podcasting program like Propaganda, there are some alternatives, such as FeedForAll and Feeder. While I was learning the concepts of RSS, it was useful to take an experimental approach. I uploaded some 5-second MP3s to my site, created a simple RSS file in my HTML editor, uploaded the RSS file, pasted its URL into iTunes, and then subscribed to the podcast to see what happened. I then added or changed parameters in the RSS file and uploaded it again. That process let me see quickly what effect the RSS data had on the way iTunes displayed the podcast, because I didn't have to wait for long MP3 downloads.

Hosting and Promotion

If your podcast becomes popular, you could get hammered for bandwidth fees, so it's prudent to figure out where to host your audio files. (They don't have to be in the same location as the RSS file.) There's a good summary of the current options in *Podcasting Hacks* by Jack Herrington (O'Reilly, 2005). Fortunately, that chapter is free at http://digitalmedia.oreilly.com/2005/09/07/hosting-podcasts.html. Be sure to check out the links at the bottom of the page called "Ten Tips for Improving Your Podcasts" and "What Is Podcasting."

Speaking of freebies, Ourmedia.org provides free podcast hosting, although you'll have to license your music under a Creative Commons license. For more control, try Liberated Syndication, which currently offers unlimited bandwidth for $5 a month. People with .Mac accounts can use them to store audio files; Apple deals with bandwidth excesses on a case-by-case basis. If you're an Acid user, check out the ProZone membership at www.acidplanet.com. For $49.95 per year, you get unlimited bandwidth and other goodies.

Once your podcast is online, you can promote it by submitting it to directories such as Podcast Alley, Audio Weblogs, Odeo, and iTunes (through the iTunes program itself). Be sure to add an RSS link to your site as well.

Creating a Podcast Soundtrack

As fate would have it, I recently had the chance to write the theme music for O'Reilly Media's new podcast Distributing the Future. The company—where I work as editor of the Digital Audio site—requested an intro, an outro, and a collection of "interstitials" to use for transitions. I started by asking some questions:

1. What are some topics that you plan to cover in the show?
2. What style of music are you looking for?
3. What emotions do you want the music to convey?
4. What duration should the segments be?
5. When do you need them?
6. Do you also need a background loop that could be extended indefinitely? (Think of a traffic report on the radio.)

The show's producer and host, Daniel Steinberg, is also an editor at O'Reilly, but he used to be an on-air personality at a top-rated Cleveland radio station. He surprised me by giving open-ended answers, which I've paraphrased here:

1. Science and technology.
2. Your choice, but make it accessible.
3. A range, from excitement to worry.
4. I'd like 30 or 60 seconds for the intro and the ending, and 10 to 20 seconds for the interstitials.
5. Whenever's convenient, but the sooner the better.
6. I like this idea.

To begin, I developed a few themes on the portable keyboard in my living room; I didn't want to get distracted by computer editing. Back at the computer, I launched Ableton Live 5 and reperformed the theme using piano and horn samples from the Garritan Personal Orchestra. I also made a more aggressive theme with drum loops and an echoing sine-wave melody inspired by the *X-Files* theme.

Producer Steinberg liked the second theme better. He recorded a rough version of his introductory monologue over it using Apple Soundtrack and sent me an MP3. I noticed that the musical intro (called a *ramp* in radio) went on too long before the bombastic drums came in. I also noticed some weird sonics. (I'd mixed the theme on headphones late at night—bad idea.)

Comparing the new mix with my previous version, I realized that I liked the first one better in some spots. It sounded cleaner, because I'd overdone the effects

in the second version. So I reduced or eliminated the reverb using automation envelopes, added a few more transition sounds (an extra snare hit here and there), and shaped the volume of individual tracks with envelopes to make them swell and ebb (see Fig. 6). I was reminded of the line from *The Little Prince:* "Perfection is achieved not when there is nothing more to add, but when there is nothing left to take away."

I then made 20 variations of the theme using different instruments. I also created some submixes of the rhythm tracks to use as loops. When Steinberg sent me the next iteration of the show, I was reminded of those PowerPoint presentations that use every possible transition. I suggested he pick just one or two of the theme variations and use it throughout. I also made some suggestions about balancing the voice levels and cleaning up the audio in the interviews.

After the project wrapped up, I asked Steinberg to reflect on what he'd learned in his long journey from radio to podcasting. He sent some thoughtful comments, which you can read at www.emusician.com (see **Web Clip 3**). To hear the Distributing the Future podcast, visit www.oreillynet.com/future. Notice how it follows a tried-and-true format: during the ramp (intro), Steinberg announces the name and the focus of the show. That section will stay the

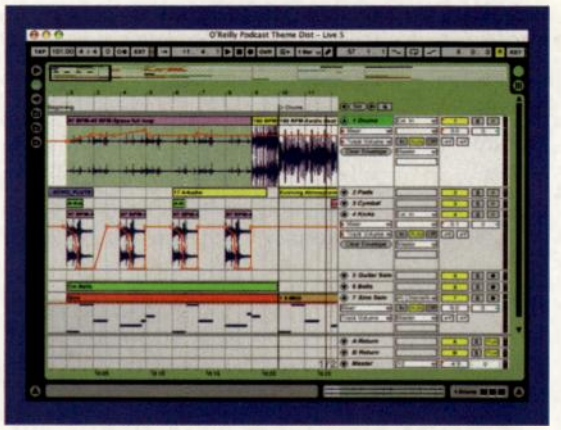


FIG. 6: My podcast theme used just eight tracks, but I still did substantial carving with volume and reverb envelopes to avoid overwhelming the announcer.

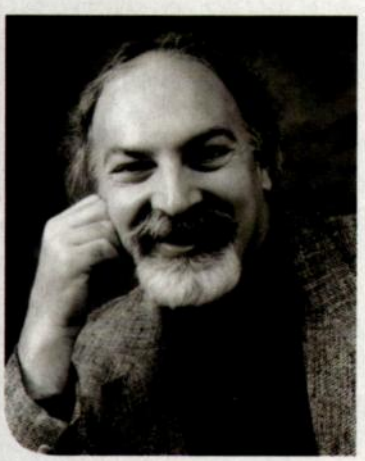
HITTING THE POSTS

Echoes is a national radio show about innovative music and musicians, and it makes elegant use of music to weave the narrative elements together. (The show is also available in condensed podcast form at www.echoes.org.) I asked producer John Diliberto and engineer Jeff Towne how they structure their shows.

"The whole idea is to create an underscore," says Diliberto. "It's almost like doing a movie. Yes, we're talking about the music, but the music itself is also an underscore to what's being said."

Towne adds, "And that might be a little show-offy, but it sounds better. It's not like, 'Oh, the voice stopped, so I'll turn up the music.' I always get a little frustrated when I hear that on other radio shows, when there's an opportunity to say something with the music underneath the narration and then make a dramatic statement once the music's in the clear."

"We do try to hit those posts," Diliberto continues. "The music's building underneath, the person's talking about it, and then suddenly—boom!—it's out there. We spend a lot of time trying to hit that right moment when it's going to have the biggest impact after somebody's talking."



Renowned interviewer John Diliberto produces the elegant Echoes podcast and its radio show heard nationwide on FM stations and XM satellite.

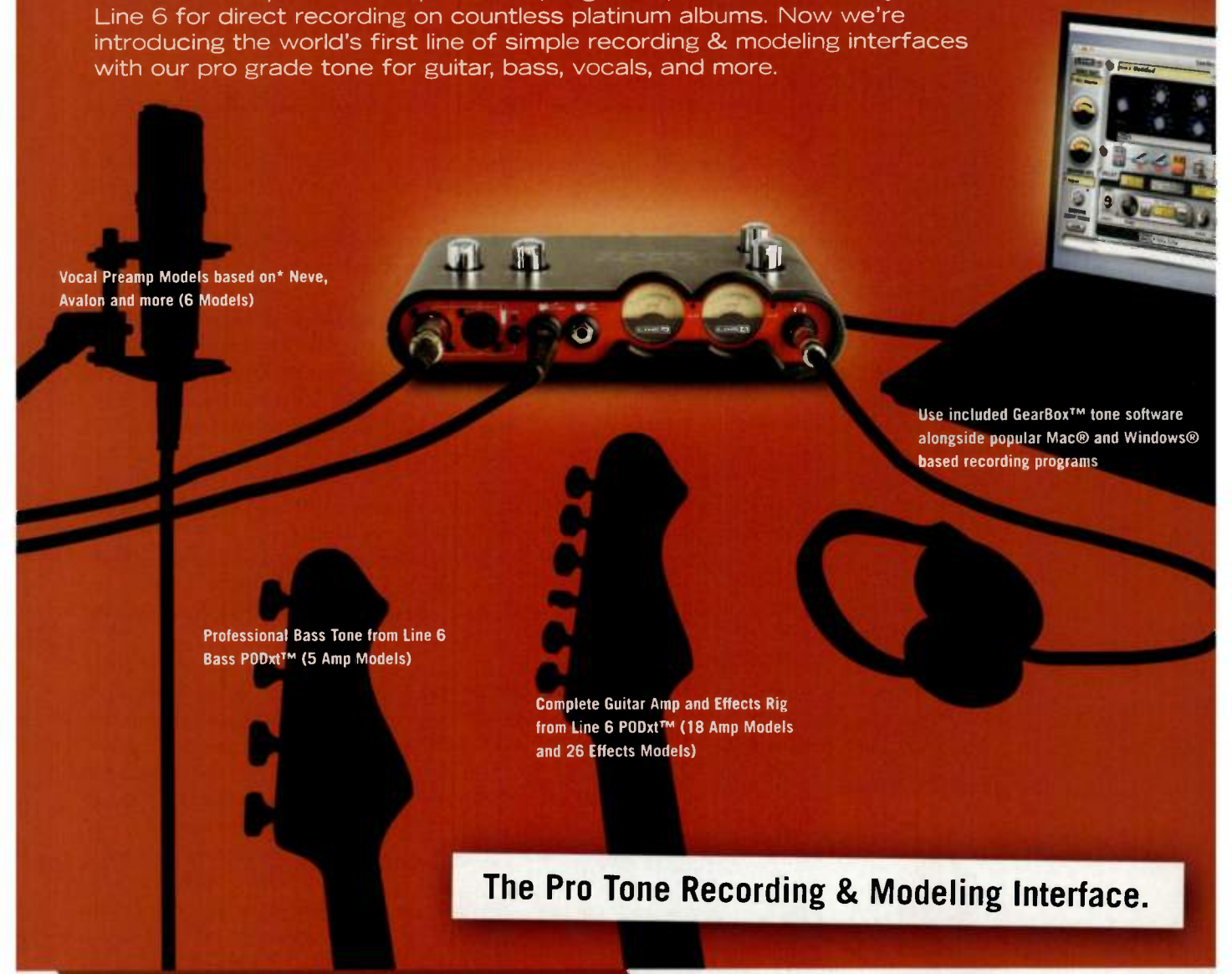
"It actually takes a little time and energy to arrange that," Towne laughs. "It's not quite as simple as, 'We'll start the track and move it around till it comes up right.' There's often a lot of pushin' and shovin' and clippin' and twistin' and trimmin'. But that's what you should do. At least, that's what we want to do."

I asked how *Echoes* got away with using copyrighted music in its podcasts. "We're covered under Fair Use," Diliberto explained, "because we are commenting on the music. You'll notice there is rarely a music track in the clear that's more than 30 seconds long; in fact, I'd say 20 seconds is probably the average. So we're never playing a whole track on the podcasts."

Towne adds, "We have an online service that we do indeed pay performance royalties on. But obviously podcasting is a little murky. And that's the reason we don't podcast the [entire] show."

PRO TONE FOR YOUR DESKTOP.

Thousands of professional producers, engineers, and musicians rely on Line 6 for direct recording on countless platinum albums. Now we're introducing the world's first line of simple recording & modeling interfaces with our pro grade tone for guitar, bass, vocals, and more.



Vocal Preamp Models based on* Neve, Avalon and more (6 Models)

Use included GearBox™ tone software alongside popular Mac® and Windows® based recording programs

Professional Bass Tone from Line 6 Bass PODxt™ (5 Amp Models)

Complete Guitar Amp and Effects Rig from Line 6 PODxt™ (18 Amp Models and 26 Effects Models)

The Pro Tone Recording & Modeling Interface.

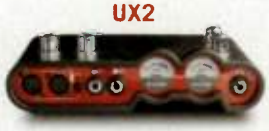
TONEPORT™

Learn more about TonePort UX1 and UX2: ▶ **www.line6.com**

UX1

- Microphone Input (XLR) with preamp
- 1/4-inch Instrument Input
- Dual/Stereo Line Inputs (2 x 1/4-inch)
- USB-powered
- 44.1/48KHz, 16/24 bit recording
- 96KHz mode, 32 bit processing

UX2



- 2 Mic Inputs with Phantom Power
- Normal & High Gain Instrument Inputs
- Stereo Line In/Out & S/PDIF Digital Out
- USB-powered
- 44.1/48KHz, 16/24 bit recording
- 96KHz mode, 32 bit processing

LINE 6

TAKE ME TO YOUR LEIDERMAN

Emmy Award–winning composer BJ Leiderman (www.bjleiderman.com) has written the theme music for National Public Radio's *Morning Edition, Weekend Edition,* and *Car Talk;* Public Radio International's *Marketplace;* and countless jingles for Coca-Cola, General Mills, HBO, MTV, and more. Soon he will release a career-spanning CD called *Life at the Bottom of the Dial.* I spoke with him about radio, podcasting, and the art of theme music. You can listen to the full interview in podcast form at www.emusician.com (see **Web Clip A**).

What's involved in making theme music for a radio show?
Usually clients think of it in terms of a package. They think of a main theme, which usually has talking on top of it now *[laughs]*; a closing theme, which is usually a longer variation of the main theme so they can talk right up until the end-melody statement; and a whole package of *bumpers,* which are short 2-second, 5-second, or 10-second things—they're also called *stingers*—based on the main theme.

Jay Kernis, who was one of the original producers of *Morning Edition,* invented something called the *bleeble,* which is nothing more than a longer stinger, but it's a repeating phrase. He probably invented the original loop; it was way before sampling. And usually the local stations talk over that, too. The same idea can be applied to podcasts, if you want to make your podcasts sound more professional and radio-like.

What is it that makes your themes so catchy?
I used to say that I hate to say it, but . . . it's the melody. Let's face it—when clients want a theme, they want something that brings listeners back and has an identity. And it's usually the melody that does that. If not, then it's an aggressive rhythmic structure or a sound effect. For example, with *Marketplace,* which starts with just that bell—that's all they'd need to play. It's so identifiable now.

When you're working on a melody, how quickly do you have to state your theme?
It's got to be on the short side, because someone's got to start talking soon. And that's been my biggest pet peeve about the whole thing. It's not simply because I want people to hear three minutes of my music. I do, but there's a different place for that—my CD.

It's the music that sets up the emotion of the show. Good producers realize that even if they have to cut 15 seconds of voice-over, they can really sock it to the audience emotionally and put something in their heart that does a lot more than a voice-over. One of the famous jingle-writers in New York once said, "Nobody hums the announcer." And it's absolutely true.

What are some ways to use sound to connect the elements of a story and make it flow?
One of the best examples of how to do a radio show, not necessarily a music show, is *This American Life.* That show is a work of art from start to finish. And using music in an unexpected way—that's what I love most of all.

There's an art to picking a piece of music that does a lot more than simply reiterate the emotion of the story. A great producer is one who will pick a piece of music that will take the feeling the listener has from that story and not only turn it up a notch, but also make it take a right turn. It should take the audience somewhere else, in their heads and in their hearts.

NPR pioneered that, so you've got to give them credit. Say you're sitting in your car, listening to a story. The story comes to an end, and the piece of music that's played blows your mind so much that you're left there in a puddle of mush in your car seat. It's like a tidal wave. You've got all these emotions at the top of that wave, and it's incumbent on that piece of music whether that wave goes forward and crashes to the shore or just settles back and becomes a little ripple.

BJ Leiderman's home studio contains mostly midline gear. His motto: "It's the music, stupid!"

PODMEISTERS SOUND OFF

Here are some expert podcasting tips from Aaron Higgins and Dave Sampson of MixMeister Technology (www.mixmeister.com), a developer of beatmixing and podcasting software.

- Don't try to record your whole show all in one take. Your odds of getting a high-quality recording of high-quality content, organized in a high-quality manner are very low.
- Musical interludes between topics can be great mood setters, but if they go on for more than 30 seconds, you can lose the momentum of your show.
- If your first minute isn't fabulous, nobody will ever know about all the great stuff that comes later. Try to devote half your production time to making that first minute spectacularly interesting.
- Include a brief table of contents near the start of your show, so listeners know what to listen for and when.
- Give a preview of upcoming podcasts at the end of each recording to give listeners something to look forward to.
- Include a list of relevant keywords at the end of the text summary on your podcast page. That will help interested people find your show.
- If you have content with questionable production quality—a location recording with a lot of background noise, for example—don't use it. New listeners won't fight to hear those parts; they'll stop listening altogether.
- Make your podcast as short as you reasonably can. Most amateur podcasts drone on three times longer than they need to. Since skimming is much harder to do when listening to a podcast, make every single word count. Record your topics again and again until they are as tight as possible.

MixMeister Propaganda is a complete podcast production system for Windows, designed for ease of use. It handles everything from audio recording to RSS creation and upload.

same in every episode. After the drums hit, he uses the remainder of the minute to list what the episode will cover. Audio *stingers* delineate sections of the show, then the outro comes in. While it plays, Steinberg reads the credits, invites commentary, and looks to the future.

Radio Your Way

Podcasters can pick up many tips from well-produced radio shows. In turn, I asked Echoes podcast producer John Diliberto what radio could learn from podcasting. "Well, it's not what radio can learn—it's what radio is going to have to do to compete with podcasting," he replied. "Because it's going to get to a point where people don't want to wait until 10 o'clock at night to hear *Echoes*. They'll want to hear it whenever they want. The best way to do that would be a podcast. And radio is probably going to be heading that way in many regards."

Echoes engineer Jeff Towne agrees, "I don't bother to try to find *Le Show* on the radio anymore. I download the podcast and listen to that. But at the same time, when you get in the car, it's so much easier to turn on the radio than try to hook the iPod up to the stereo and find the podcast you want to play. So, it's a mixed bag. There's still an appeal to being surprised by radio, too."

Playing with that element of surprise is one of the great rewards of being a musician. Whether you're producing podcasts, promoting your music on them, writing theme music for them, or simply collecting them for rainy-day listening, you're sure to enjoy the dramatic opportunities they bring.

Podcasting will likely bring musicians new revenue opportunities too. "I don't think it's a coincidence that there are 'Buy It' buttons in the podcast section of the iTunes Music Store," says Towne. "Everything's free right now, but it couldn't be too hard to have a podcast aggregator that would hold passwords so that you can sign up and pay for the subscription. I don't think people would mind that if it were relatively affordable."

For years, the ultimate goal of many musicians was to get on the radio. Thanks to podcasting, we now have the power to produce our own radio shows and send them out to a worldwide audience. So give it a try—all you need is an Internet connection and an audio file. **EM**

EM WEB CLIPS

David Battino (www.batmosphere.com) is the coauthor of The Art of Digital Music *(Backbeat Books, 2005) and the editor of the O'Reilly Digital Audio site (http://digitalmedia.oreilly.com).*

FINGERS TO FINAL MIX.

The Spike Powered Recording System from Mackie puts so many professional tools in the hands of musicians, it's nothing less than inspirational. Based upon our popular Tracktion 2 Music Production Software and the sleek, portable XD-2 interface, the Spike system gives you killer Mackie mic preamps, unlimited tracks (as many as your computer can handle), 24-bit sound quality, a high-resolution 64-bit mix engine, VST plug-in and Quicktime video support, and bundled Final Mix mastering tools for creating polished, professional-sounding CDs. Better still, it's all controlled with a simple, single-screen interface that keeps the music flowin'. Visit mackie.com/spike to get inspired.

Spike now includes a full version of our popular Tracktion 2 Music Production Software and Final Mix CD Mastering Tools.*

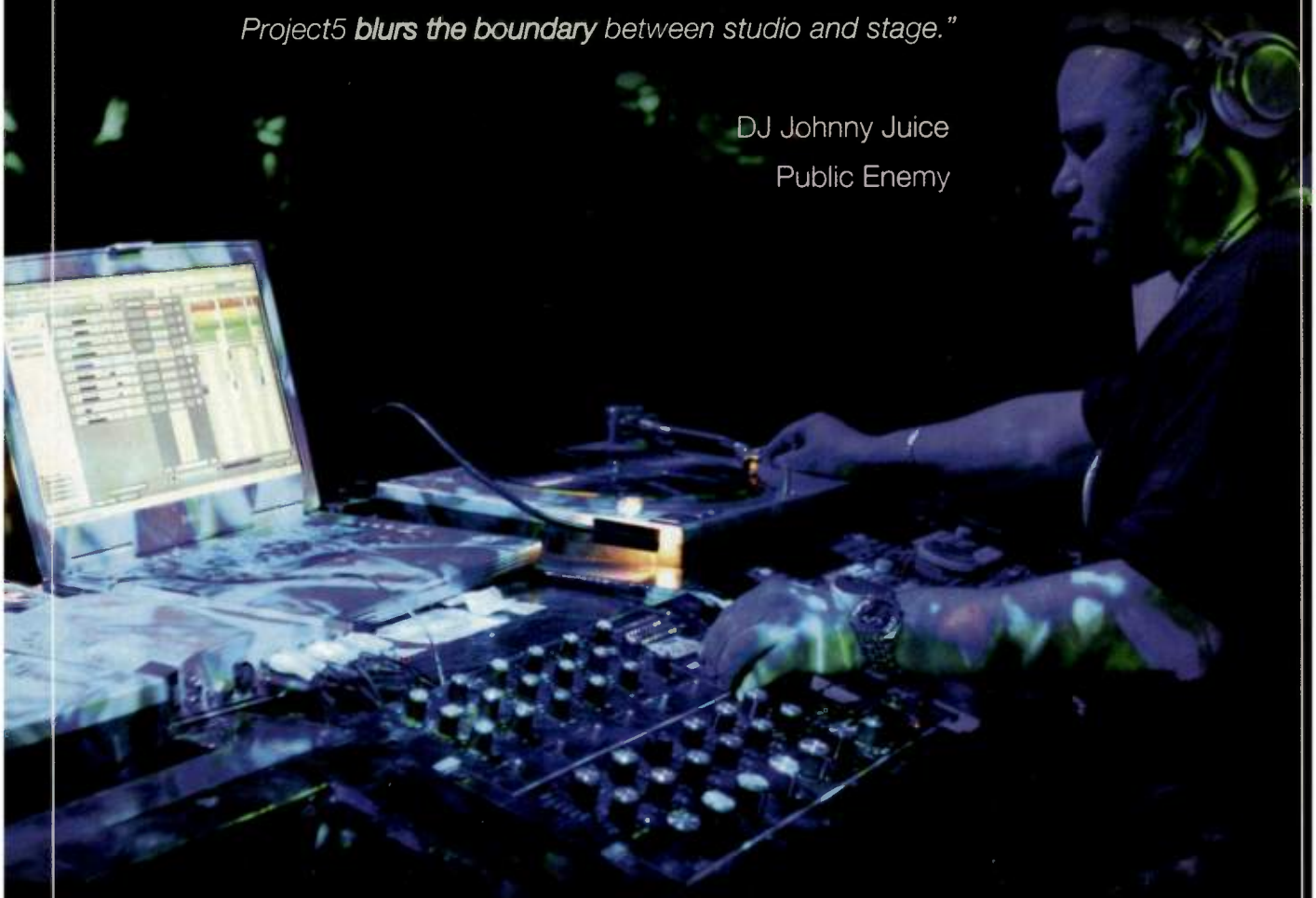
SPIKE POWERED RECORDING SYSTEM: THE INSPIRING INTERFACE FOR MAC OR PC. PLUG IN AND PLAY.

www.mackie.com ☎ 425 487 4333 (Outside U.S.) ☎ 800 898 3211 (Toll free within U.S.)

MACKIE.

"No matter where I am, with Project5, I always have the inspired feel of making music, rather than using software. Project5 ***blurs the boundary*** *between studio and stage."*

DJ Johnny Juice
Public Enemy



project5

MUSIC.INSPIRED VERSION 2

Project5 Version 2 is simply everything you need to create and perform today's music. Straight out of the box, you get a complete set of superb quality instruments and effects; powerful recording, looping, sequencing, and arranging; dynamic creation tools; and the ultimate open synth host. And Project5 is expandable with support for DirectX and VST plug-ins and instruments, industry standard sample formats, and as both a ReWire Host and Client.

Download the demo and watch the videos at www.project5.com.

cakewalk

MICHAEL HOLM

On His Game

By Maureen Droney

Talking shop with game composer Jesper Kyd.

Most people go to great lengths to ensure that their recording studios are quiet. But not so with composer Jesper Kyd. Sirens, car alarms, and traffic noise permeate his downtown Los Angeles loft studio, which has floor-to-ceiling windows that open to the symphony of the city several floors below.

That his studio feels like Manhattan is no accident. Kyd (www.jesperkyd.com), though a native of Denmark, is a recent, somewhat reluctant transplant from the Big Apple who has managed to locate himself on one of the few street corners in L.A. that has tall buildings, outdoor cafés, foot traffic, and a big-city feel.

Kyd (whose first name is pronounced "YES-per") is best known for his work done on aggressive action adventure games such as IO Interactive/Electronic Arts *Freedom Fighters* and the IO Interactive/Eidos *Hitman* franchise—for which he composes music that gets inside the head of a brutal assassin. In contrast to the violent subject matter of many of the games he scores, Kyd's personality is polite, serious, and somewhat shy; he has an almost bookish demeanor—a dichotomy that makes sense when you delve into his rich body of music. His roots are in the dance scene, and he can turn out action cues with the best of them. But he's also a serious composer in the classical sense, as comfortable with live orchestras and Eastern European choirs as he is with synthesizers, computers, and the latest software.

People are starting to take notice of Kyd's music, now found in many best-selling titles and in promotional videos for game companies including Activision, Microsoft, and Konami, among others. His score for *Freedom Fighters* won a Best Original Music Award from the respected GameSpot Web site (www.gamespot.com) and was voted a finalist for the Billboard 2004 Digital

Entertainment Award. *Hitman 2: Silent Assassin* received critical acclaim for Kyd's immersive soundtrack, including award nominations from the Internet Gaming Network (IGN), GameSpot, and GameSpy. His evocative blend of electronica, dark symphonic themes, and choral grooves in the Hitman: Contracts soundtrack has been called groundbreaking, and it won the award for Best Original Music in the 2005 BAFTA (British Academy of Film Television Arts) Games Awards (see **Fig. 1**).

The game-sound world—often compared to the Wild West, with no boundaries and an anything-goes mentality—is growing by leaps and bounds. Kyd, who has been working in the genre for more than 12 years, came in on the ground floor. Now also working in film, he brings a unique perspective to both mediums.

Were you originally a gamer, or were you just looking for a place to get your music played?

Actually, those things happened at the same time. As a kid, playing video games, I was always fascinated by the music.

Really? Wasn't it just beeps and blings then?

No—it was different and very experimental. I like to make music that you can listen to many times without getting tired of it, which is what you need to do with games. With an unsuccessful game soundtrack, people mute the music. That happens quite a bit, and it's what I try to avoid. My goal is to make the kind of music that will draw an audience to the game.

You're originally from Copenhagen. Did you study music there?

I'm very much self-taught, but I also studied classical composition on piano, guitar, and even choir. I wasn't a music major, but I had years of note reading. I also had a strong passion for film, and I've made and directed short films. I tried to go to film school, but we have only a couple in Denmark and it's very difficult to get in.

So instead?

I had a band with my friend Mikael Balle, and we were also in a "demo" group called Silents Denmark. We toured and got involved in the demo-scene events in Europe. A *demo* is a computer-generated audio-video presentation, in which there's an artist who does graphics, a musician who does the soundtrack, and a programmer who puts it all together into a demonstration of everybody's abilities. It's like a video game, except you can't play it. You just sit back and watch. [For more information on demo scenes, go to http://www.theprodukkt.com/demoscene.html.]

We did tons of them, then we started doing concerts as well, playing for 3,000 to 5,000 people. It peaked for us around 1993. We felt we'd done something really good, and we decided that the next step was games. So, with a group of other people, we started a game company, and came to the United States. We were in Boston, then Hollywood, and then New York. At that time, I decided to stay on in New York and launch my studio, and they went back home and started the *Hitman* games.

COPYRIGHT © 2005, EIDOS

FIG. 2: Kyd's score for the upcoming *Hitman: Blood Money* is pretty evenly split between symphonic and electronic elements.

But you stayed involved as the composer.

Yes. Now, not only do I compose, but I also work with game developers to come up with the systems to implement the music. I do much more than just make the music, because I have a passion for creating the best soundtrack possible—and the best interactive music experience.

What does your experience tell you about the effects that music has on a game?

I've been shouting for a long time: we need better game music! The effect that a good soundtrack can have on a title is huge, but too often, it's still secondary. A rich, entertaining soundtrack creates a deeper, more connective experience. It makes the game more addictive; you actually want to go into the game world to be immersed in the music. The *Grand Theft Auto* series music is a good

BAFTA games awards

FIG. 1: Kyd was honored with the 2005 Best Original Music Award from the British Academy of Film Television Arts (BAFTA) for his work on the *Hitman: Contracts* soundtrack.

Peak Pro™ 5

Edit. Process. Master. Burn. In ways your DAW can't touch.

www.bias-inc.com • 1 [800] 775-BIAS

In this age of "do-everything" digital audio workstations, it seems they all forgot something big. Namely, true professional-quality CD mastering.

Fortunately, your own mastering lab awaits you: Peak Pro 5. Along with award-winning editing and sound design tools, now you also get the world's very best mastering solution. With advanced playlisting. Superb final-stage processing. Disc burning. Plus subcodes, DDP export, and other 100% Redbook-compliant features.

Need even more power? Check out our Peak Pro XT 5 bundle — with over $1,000 worth of additional tools, including our acclaimed SoundSoap Pro, SuperFreq, five new plug-ins, and more.

So, when you're ready to master, Peak Pro 5 has everything you need. It's the perfect complement to your DAW. Or, perhaps we should say, it's the perfect finishing touch.

Peak Pro XT 5 comes with these five new plug-ins — plus SoundSoap Pro (a $599 value) & more!

Sqweez-5™
5-band compressor/limiter with linear-phase performance

Reveal™
Professional 7-tool audio signal analysis suite

GateEx™
Top-performing gate/expander plug-in

Repli-Q™
EQ matching, with astounding results

PitchCraft™
Super natural pitch correction

Limited Time Offer: Buy Peak Pro 5 or Peak Pro XT 5 & get even more extras — up to $399 in value!

www.bias-inc.com/peak 5

bias
sound creative™

example. Sometimes I play those games just to be in that world and listen to the music. That's a successful soundtrack.

What do you mean by "implementing" the music?
That means deciding when the music should play, how many times it should play, how it should fade in and out, which events in the game trigger what music, and when to have silence. It's building the atmosphere and the emotions of the game so that it's cohesive and entertaining instead of being annoying. It's a very important part of the process. If it's not implemented correctly, even a very good soundtrack won't be as effective as it could be.

So some composers just hand in their music and let other people implement it. But you prefer to be directly involved.
Yes. Because no matter how good your music is, if someone loops it 20 times in the wrong place, it won't sound good.

How do you work with people to implement your music?
With the *Hitman* games, I'm very involved with the team at IO in designing the way the music should play. We test, level by level, to see which ideas are good and which need to be changed.

I often go to Denmark to work with them, but we also email and talk on the phone. A lot of time is spent just playing the game, and then coming up with new ideas to tweak the music and make it as interesting as possible. New ideas always come to mind when you're playing the game over and over. Fortunately, I enjoy playing the games.

Do you feel that your music is part of the overall sound design?
Although I do lots of orchestral music, my roots are in electronic music. And in electronic music, the sound design always comes through.

Your music is very emotional, but some of it is also groove- and dance oriented.
Yes. Those are the extremes that I like to mix together.

How would you describe the score for your latest game, *Hitman: Blood Money*.
That was a big one, because it was a combination of electronic music and symphony. There was a big, wide spectrum of musical styles. It's difficult to mix the two in a progressive way. The orchestra is usually the main musical style, with a little electronic in the background. Or the electronic is the main component, and you have a bit of strings on top. I wanted to even it out to 50-50 (see **Fig. 2**).

It's a mix of different elements, with a 90-piece orchestra and a 60-piece choir, both of them recorded in Budapest, Hungary. The orchestra there has awesome players. They're not as precise as the players in Hollywood, but they are very expressionistic. They have their own kind of sound.

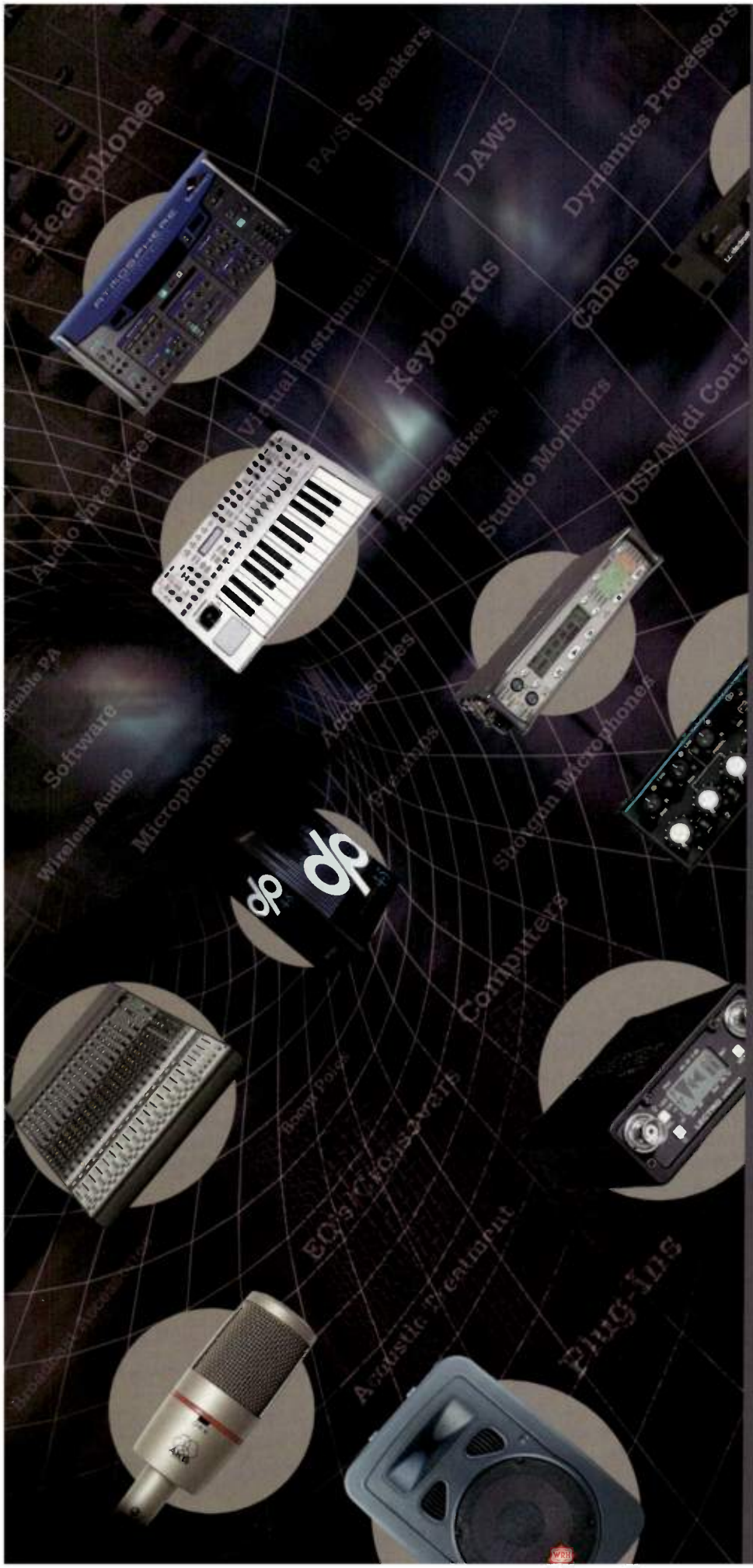
MAUREEN DRONEY

FIG. 3: Kyd in his L.A. studio, which features six computers, numerous keyboards, and a Yamaha 02R as its nerve center.

For the orchestra, do you work with an arranger and a copyist?
Yes. Arranger, copyist, conductor, translator. For big performances, I gather a team. On *Freedom Fighters*, for example, the lyrics are sung in an ancient language called Russian Latin. I used a French poet to write the lyrics, which she did in beautiful poems. Then we had them translated into Russian. For *Robotech: Invasion* and *Hitman: Blood Money*, we had a lot of Latin. I wrote all the lyrics and had them translated into Latin.

Do you know Latin? Did you know how it would sound?
No, not much. *[Laughs.]* The translator had to move things around to make sure it all made sense.

Are you nervous when you work with orchestras and choirs?



BROAD SCOPE AUDIO

- Desktop Audio
- Live Sound/PA
- Pro Recording
- Broadcast/ENG
- Electronic Field Production

B&H Pro Audio...
is uniquely positioned to meet the diverse needs of today's Audio Professional.
Our 30,000 sq. ft. Superstore, comprehensive Website, and experienced sales staff provide real world solutions for the increasingly specific requirements of Pro Media's converging technologies.
Our huge inventory and prompt worldwide shipping make B&H a true one-stop source for every pro-audio need.

800-947-5509
212-444-6679
420 Ninth Avenue
New York, NY 10001
visit B&H Online at
www.bhproaudio.com

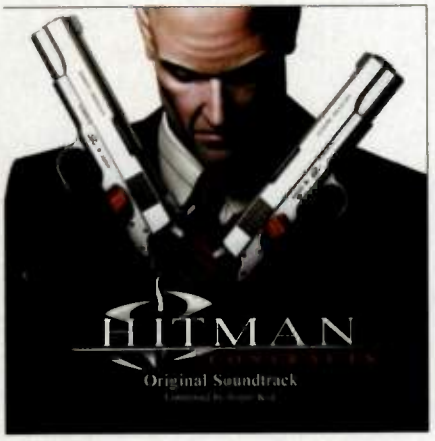
The Professional's Source

B&H
PHOTO - VIDEO - PRO AUDIO

Freedom Fighters was nerve-wracking, because it was electronic music mixed with dance music mixed with a Latin choir. That made me nervous because, with electronic music, you can't tweak things—it has to work on the spot; the music just plays, and the vocalists have to sing to it.

Composing the scores for the *Hitman* series has helped establish Kyd as a top-level game composer.

With the *Hitman* games, you show the personality and thoughts of the main character, Agent 47, through the music. You show what he's thinking and feeling internally, rather than using music that only gives the audience an external sense of what a character is about.



Yes, I score more for the personality and the spirituality of the character. And the *Hitman* series is more about a mood setting and about how the main character feels rather than how we perceive him.

In games, you have the opportunity and the creative freedom to do those kinds of things. You can do it in film, of course, but then sometimes you're a slave to the image, and every frame has to fit with a little cue here and there. With a video game, every time you play it, you can play it differently, maybe four or five different ways. Of course, to do that, you can't score 30 hours of music. Even if you did, you can't make music that will fit every single element. There's always a new way for the player to do something, and when you're scoring, you have to keep all of that in mind.

In the *Hitman* series, there are always lots of different ways you can complete the game. So I decided to pull back and score with the emotion and atmosphere of the game. That way, if a player does something different, it won't sound like something is wrong, or missing. It will still have the *Hitman* feeling.

Obviously, you have action moments, tension, and suspense. You have to move around and be interactive. But in general, it's important to follow the path of the music that gives the correct atmosphere.

You've just finished scoring a horror movie called *Stranger*. How is scoring for a film different than scoring for a game?

JESPER KYD: SELECTED CREDITS

Hitman: Blood Money (Eidos, 2006)
Splinter Cell: Chaos Theory (Ubisoft, 2005)
Robotech: Invasion (Take 2, 2004)
Hitman: Contracts (Eidos, 2004)
Freedom Fighters (Electronic Arts, 2003)
Hitman 2: Silent Assassin (Eidos, 2002)
Hitman: Codename 47 (Eidos, 2000)

When you're scoring for a movie, it's more specific. Because you have a finite picture, you know what works and what doesn't. With games, you're never quite sure. In movies, you do a lot of small bits and pieces for specific scenes. With games, you do more general, atmospheric tracks and try to convey moods.

How do you start composing for a game project?
I play the game a lot, and I think about what the developer is trying to express with the game. I'm looking for what that core is.

What are you composing to?
Most often to very early versions, which have minimal graphics and no sound—sometimes only skeletal structures. I just have to imagine everything and what would be appropriate. That's different than working on films, in which you can see how the movie is going to look. Also, a film often has temp music, or at least some kind of direction, because the music needs to follow the scene.

In video games, sometimes you barely have anything to refer to. For the first *Hitman* game, I wrote the entire score without seeing a single screen shot. I had only a background story and a few character sketches, nothing that gave me an idea of what the game was going to look like.

So the more material you have, the easier it is?
Well, when you have more to sink your teeth into, you can tell if the music fits or not. With a movie, you know if it's completely off. With a video game, you have to be more abstractly creative.

What do you write first?
I like to get the themes right. That sets the mood of the track, and you can follow that mood.

How long are the pieces?
It depends. With games, people sometimes ask you for a 30-second suspense cue here or a 15-second stinger there. But for the *Hitman* games, we always focused on making music that was longer. There are a lot of 6- or 7-minute tracks. I think that's a good way to do it. When everything is short, you never get to enjoy the music. And what can you say in 30 seconds? In *Hitman*, we have progressions that start somewhere, go through A and B themes, and come back with a big choir on top.

That's what I like to listen to, so that's the perspective I take. I'm always in the perspective of the game player. It has to fit the game, of course, but it has to be enjoyable to listen to.

Do you have to deal with the memory issues, or is that someone else's department?
I do have to think about that, but not so much anymore. With all the different compression formats these days, you can have big soundtracks. It was different when soundtracks were chip based. Obviously, there were a whole set of limitations then. But now that music is CD based, the challenges are more about the way the music interacts within the game, and the way the tracks change and fit together.

A game usually takes anywhere from 10 to 15 hours [for the player] to complete; Sometimes it can take 60 to 100 hours. When you start a project, you have to think about that. If gamers are spending 100 hours, and 10 of those are in the shop buying weaponry or upgrading a weapon, you don't want to have a 30-second cue playing there. They'll turn that off very quickly!

So you maybe want to do a 5-minute piece, with 10 variations that are 30 seconds each taken from it. A lot of it is figuring out how much music is needed for how much game time.

Your music manages to squeeze a lot of powerful low end into computer-size speakers.
That's the sound designer in me. I'm always aware of the entire EQ spectrum; it's there to be filled and enjoyed. When you write music, it's important to be thinking about where, physically, the emotion is coming from. Is it the stomach? The head?

You can do a lot of interesting stuff with EQ. My experience with dance music helps me with that, where you often have your hi-hat on the high end, your low bass, and in the middle is the dynamics. That's a good approach, and I use it with my orchestral tracks, too. It can make you feel things that you don't necessarily hear.

Reverbs are very important to your music.

I'm a big fan of effects. I use the Kurzweil KSP8 a lot, which is a standalone unit from the flagship Kurzweil 2500 series made into an effects unit. It has a joystick remote, and it's easy to move things around in the field and to program. I also like a lot of the convolution reverb software, such as Waves IR-1, with simulated rooms and environments.

A lot of pop music today is very dry, but I like its big atmospheric sound. Themes are great, and fun to write, but it's more important to get the atmosphere right. A lot of games and movies have too many themes. You just need a couple; the rest is atmosphere. That doesn't mean it has to be boring. Atmosphere doesn't necessarily mean ambient. It can have depth and be entertaining.

What do you record to?

A Digidesign Pro Tools Digi 002. And I do most of my work in Steinberg Cubase. When Amiga went away, I started with Cubase VST 3, and then VST 5, which I still love. I'm using SX2 now, but I still have a soft spot for 5. And I use a [MOTU] MIDI Timepiece AV.

For me, it's important for MIDI to be perfect. A program may have great new audio features, but it has to be kick-ass MIDI or I'm not interested.

People used to complain because MIDI time wasn't perfect. Well, if you want to make a perfect tight beat, don't do it in MIDI. For me, MIDI adds a little funkiness. I don't think everything has to be that tight, and I rarely quantize anything I record. I just play it and leave it. If I don't like it, I play it again. I don't like to edit for timing unless I'm doing something that has to have a lot of really tight, on-the-beat rhythms. Then I do a lot of programming. But generally, if it's music that needs to sound real, I would rather not program it at all.

What keyboard do you compose on?

It's a weighted keyboard, a Pro Mega 3. It's a piano really, with beautiful sounds, made by the Italian organ company GeneralMIDI.

I was surprised to see so many keyboards here.

My philosophy is the more the better. You like what a certain keyboard does, and you use it just for that. Then you come across another keyboard that does the same kind of thing, but it sounds completely different; suddenly you need both. That's kind of how it started. Like the Yamaha VL1, which is very interesting and does acoustic modeling—mostly brass and flutes. Or my Yamaha CS80, which is like the one used by Vangelis in the '80s. It's like an old organ. It has no real memory, just latches that you can use to duplicate and save four custom sounds. And it weighs 250 pounds! Another old one I like is the Oberheim OBX-A.

I see you have a lot of hardware synths as well as software synths.

I like to do both. I have a lot of computers; five PCs and one Apple G5 (see Fig. 3). I keep up-to-date with software. I enjoy Native Instruments Reaktor 5 and Kontakt 2, and, of course, Cubase. There are certain things the software can do that hardware just can't. And software has almost limitless possibilities.

For some people, limitless possibilities are a problem. They like to narrow the playing field.

Not me; I use it all. My computers are basically like synthesizers.

Do you mix in the computer?

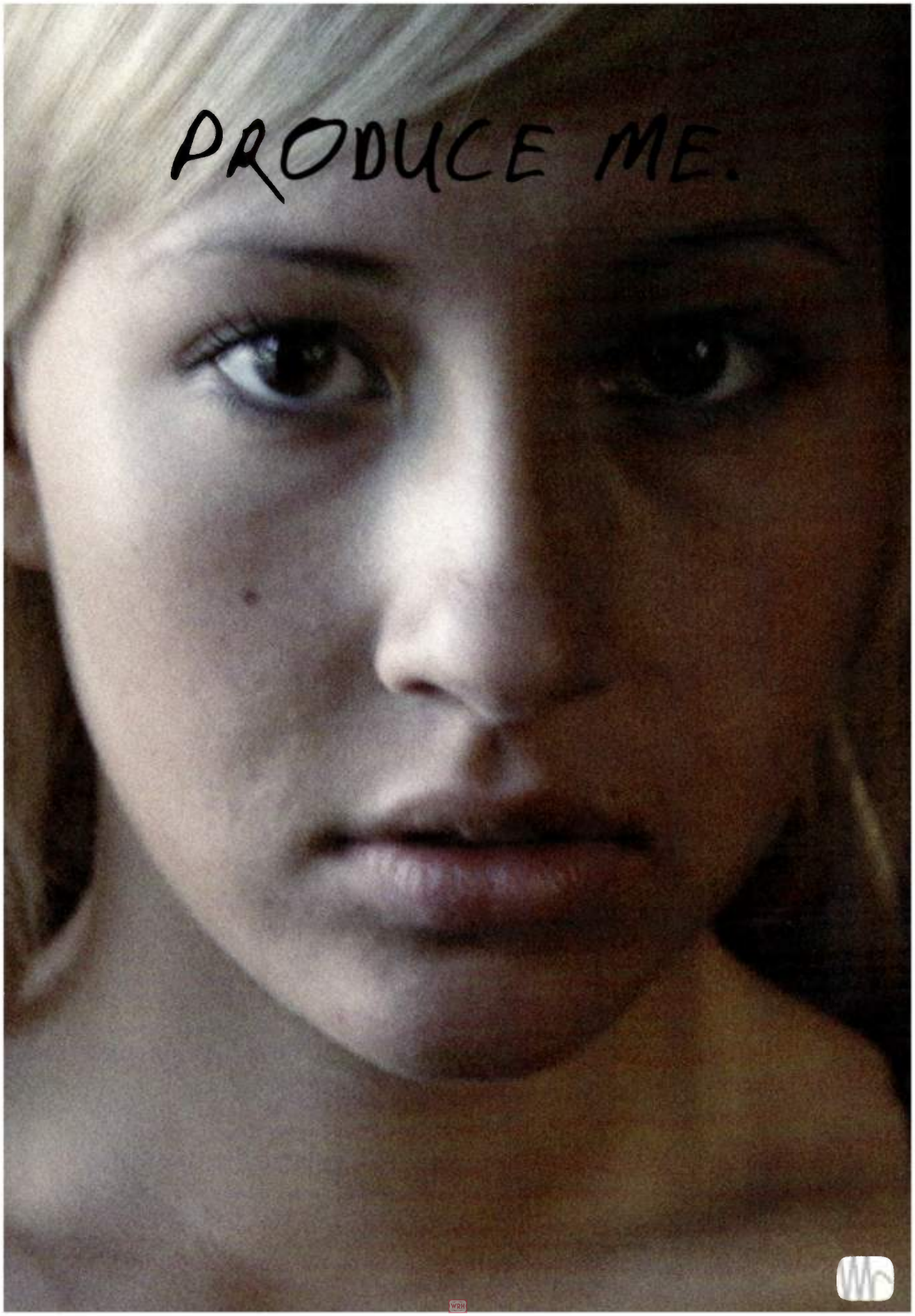
No, I use my Yamaha O2R; everything goes through it. I'm not happy with my mouse for mixing. Some of my friends do everything on their laptop. They sit there staring at the screen and the mouse. But I can't imagine making good music that way. If it's just that little screen and mouse, where does the inspiration come from? This whole setup makes me want to do good music. I find it inspiring to tweak knobs.

Of course, there are lots of things I do with a mouse. But if I'm programming an instrument, after ten minutes, that gets really boring and I may decide to move on. But if you sit with a keyboard, or knobs, you can tweak a lot longer and it's fun. Hardware is the thing for that. It's definitely not going away.

What's coming up next for you?

Well, *Hitman: Blood Money* is coming out soon. And I'm working on my first album, which is very exciting. It's electronic music with beats, but not necessarily for the dance-music crowd only. I'm doing it in New York, with a producer and live musicians, which is different for me. I've also just finished scoring a really cool short film called *Impulse*. It's tough to explain, but it's about a guy planning his own death in very careful, technical detail. **EM**

Maureen Droney's engineering credits include Carlos Santana, Aretha Franklin, Kenny G, and Tower of Power, among many others. Currently, she is the Los Angeles editor for Mix *magazine and general manager of House of Blues Studios.*


PRODUCE ME.

FIREPOD – 24Bit/96k 10x10 FireWire Recording System

- Eight PreSonus microphone preamplifiers
- Two instrument inputs, eight analog line outputs
- SPDIF and MIDI input / output
- Free Cubase LE 48-track recording software
- $599*

TEC 2005 NOMINEE

FREE for a LIMITED TIME

buy a FIREPOD between October and December 2005
and receive a free HP4 - four channel headphone amplifier.

FIREBOX – 24Bit/96k Professional Compact FireWire Recording System

- Two PreSonus mic/instrument preamplifiers
- Two instrument inputs, six analog line outputs
- Zero latency mixer/control panel
- SPDIF and MIDI input / output
- Free Cubase LE 48-track recording software
- NEW LOWER PRICE: $299*

Electronic Musician 2005 EDITORS CHOICE

FREE for a LIMITED TIME

buy a Eureka between October and December 2005
and receive a free AD192 digital card.

EUREKA – Professional Recording Channel

- Class A transformer coupled microphone/ instrument/line preamplifier
- Selectable input impedance and "saturate" tube warmth control
- Fully variable ultra fast compressor w/ separate make-up gain
- 3-band Parametric EQ with bandwidth "Q" control
- $499*

AD192 – Optional Digital Output Card for the Eureka

- 24-bit resolution, up to192K sample rate
- Simultaneous SPDIF and AES outputs
- Analog Line Input enables one AD192 for2 Eurekas
- $199*

FREE for a LIMITED TIME
buy a Central Station between
Oct. and Dec. 2005
and receive a free CSR-1.

CENTRAL STATION – Studio Control Center

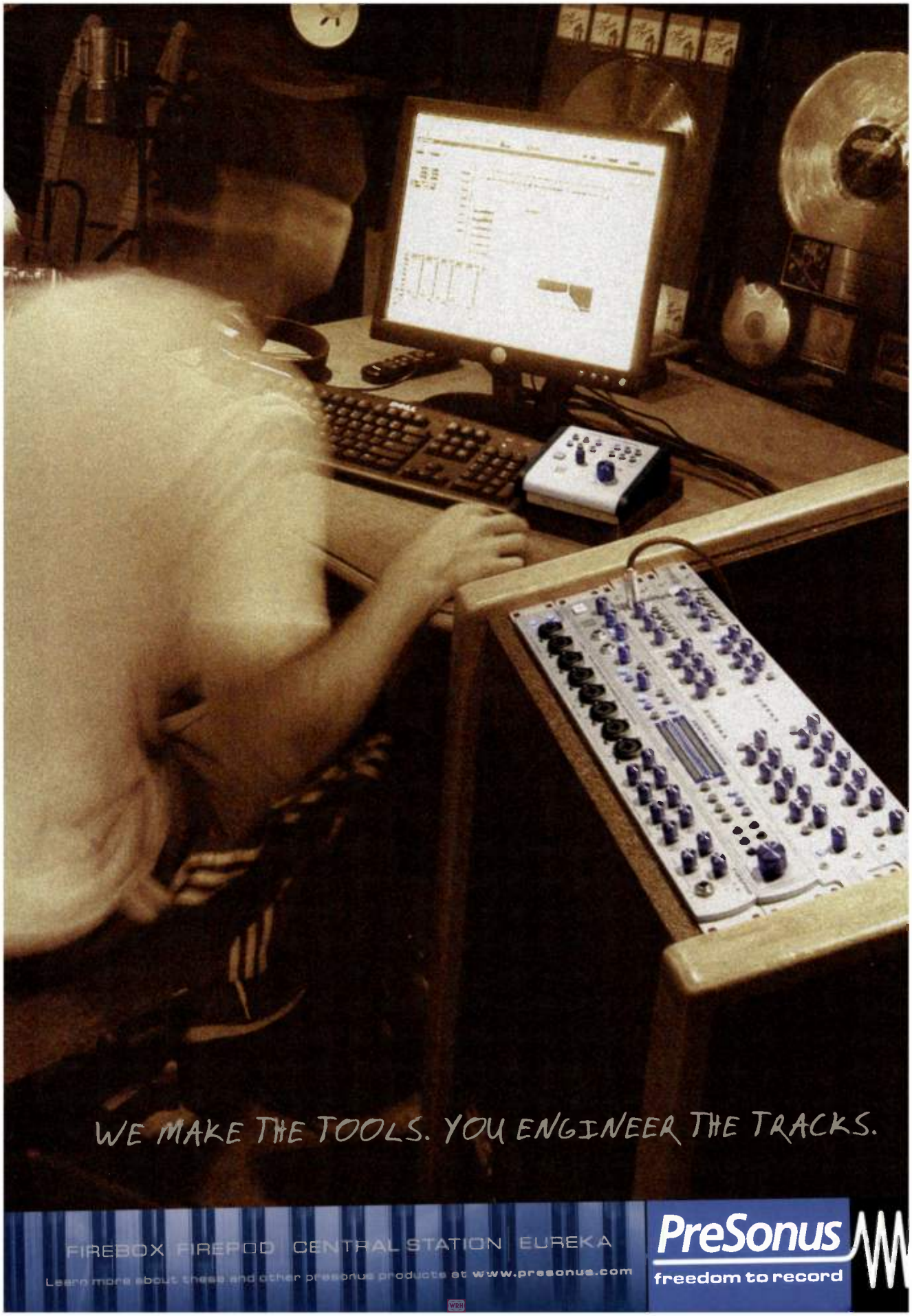
- Flexible stereo input/output switching & routing
- Talkback, mute, dim, mono; separate cue and main outputs
- 24-bit AD192K A to D converters (SPDIF and Toslink)
- Passive signal path (no op-amps) for ultimate stereo imaging and depth
- 499*

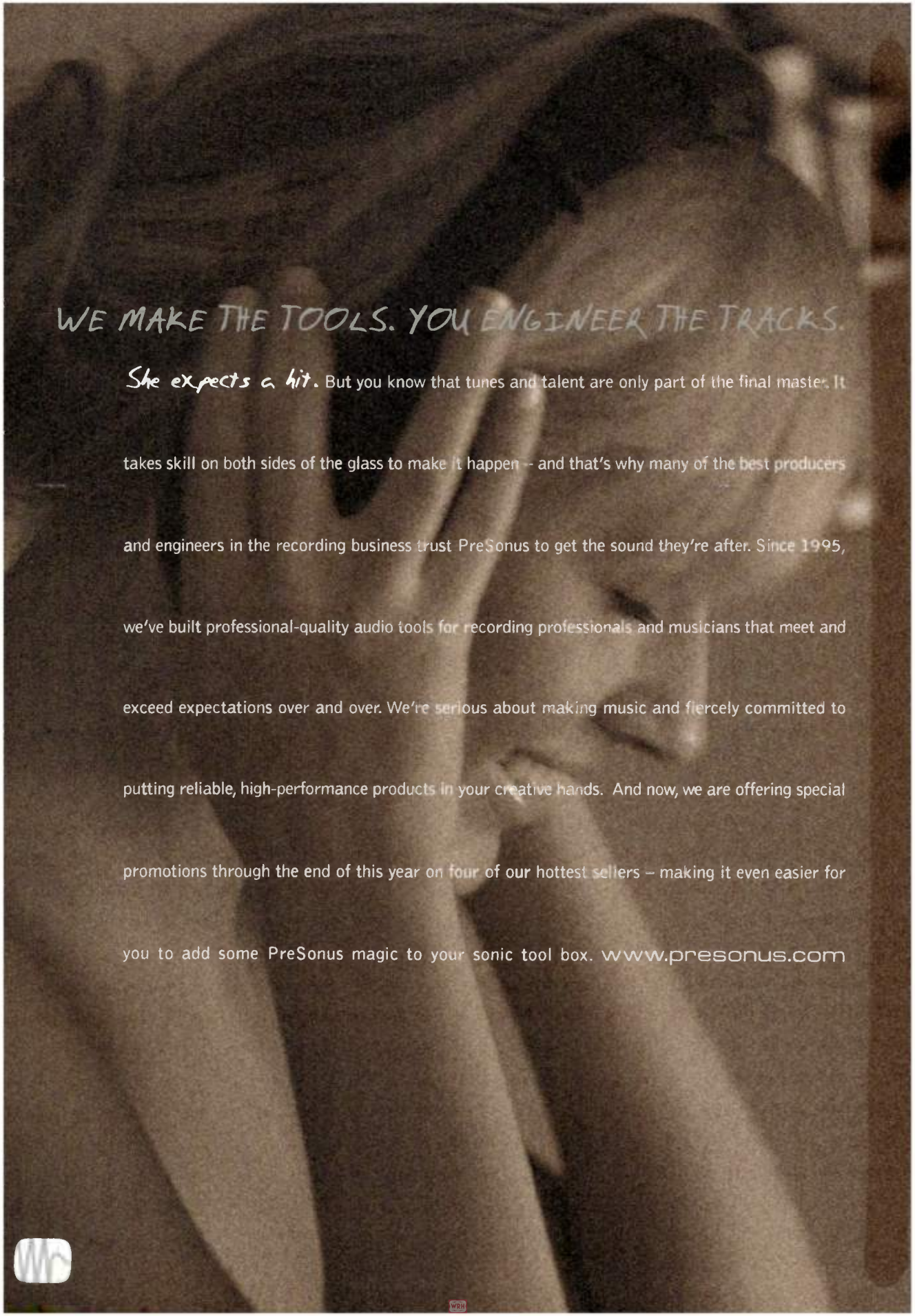
TEC 2005 NOMINEE

CSR-1 – Optional Remote Control for the Central Station

- Main volume, input/output switching, dim, mute, mono
- Talkback microphone on remote
- Ergonomic design
- $149*

*Estimated street price in the USA. Note: See your local retailer for details on all promotions.


WE MAKE THE TOOLS. YOU ENGINEER THE TRACKS.
FIREBOX FIREPOD CENTRAL STATION EUREKA
Learn more about these and other presonus products at www.presonus.com
PreSonus
freedom to record


WE MAKE THE TOOLS. YOU ENGINEER THE TRACKS.
She expects a hit. But you know that tunes and talent are only part of the final master. It takes skill on both sides of the glass to make it happen -- and that's why many of the best producers and engineers in the recording business trust PreSonus to get the sound they're after. Since 1995, we've built professional-quality audio tools for recording professionals and musicians that meet and exceed expectations over and over. We're serious about making music and fiercely committed to putting reliable, high-performance products in your creative hands. And now, we are offering special promotions through the end of this year on four of our hottest sellers – making it even easier for you to add some PreSonus magic to your sonic tool box. www.presonus.com

Electronic Musician AND THOMSON COURSE TECHNOLOGY PRESENT

PERSONAL STUDIO SERIES

Featuring Digidesign Pro Tools LE™ and Pro Tools M-Powered™

COMING IN NOVEMBER!

Electronic Musician magazine and *Thomson Course Technology PTR* ve joined forces to create the first volume of their new *Personal udio Series* magazines, *Mastering Pro Tools LE™* and *Pro Tools -Powered™*. This high-powered publication will focus on getting up speed quickly with Digidesign®'s powerful digital audio sequencer. addition to Thomson's easy-to-follow, step-by-step color graphic amples for Pro Tools LE™ and Pro Tools M-Powered™, you get:

- EM's famous in-depth applications stories and interviews
- Software compression basics
- Creative uses of DAW automation
- Time-stretching and pitch-shifting tips
- Making digital synchronization work
- diting, mixing, and mastering secrets of the pros
- -ROM packed with bonus material, Pro Tools sessions, and more!
- line support at emusician.com

ted and produced by the staff of *Electronic Musician*, this will only be a must-read for users of Pro Tools LE™ and Pro Tools Powered™, but will deliver essential information for users of any gital audio sequencer or DAW.

GET YOUR COPY WHEREVER ELECTRONIC MUSICIAN IS SOLD – THIS IS A MUST-HAVE, ONE-OF-A-KIND RESOURCE FOR ALL PERSONAL STUDIO RECORDING ENTHUSIASTS!

MIDI for LANlubbers

By Babz

Send MIDI data between Mac and PC over Ethernet.

The use of multiple computers has become common in studios today, because the power required for multiple tasks such as multitrack recording, signal processing, and working with virtual instruments (VIs) can quickly exhaust the resources of a single computer. People also use multiple computers to run applications that have been written for a single platform. A typical system might consist of a Mac running an audio sequencer such as MOTU's Digital Performer (DP) and a PC dedicated to virtual-instrument applications such as Tascam's GigaStudio or Steinberg's V-Stack. The PCs in such setups function just like hardware sound modules, and so each computer usually requires a separate hardware MIDI interface and dedicated MIDI cables. You can avoid that duplication of accessories, however, by transmitting MIDI data over a Local Area Network, or LAN.

Apple's OS X now includes a MIDI-to-Ethernet driver in Tiger (OS X 10.4 and higher) for connecting newer Macs. For cross-platform networks, however, you'll need a product such as MusicLab's MIDIoverLAN CP (available at www.musiclab.com).

Net Gains

Setting up MIDI communication over a network differs from traditional hardware MIDI setup, but many concepts will be familiar to anyone experienced with MIDI, and one needs to have only minimal network-setup skills. The following example shows how I configured my system for MIDI transmission over a network. These steps and principles should apply to other systems. My own network has the following system components:

FIG. 2: In OS X's Audio MIDI Setup window, the MIDIoverLAN C Driver appears along with any attached hardware MIDI interfac Click-and-drag to make the connection between the MIDIoverl CP driver and your external PC.

- A Mac G4 running OS X (10.3.9) and MOTU Digital Performer 4.52 sequencing software.
- A Pentium 4 PC running Windows XP with Ser Pack 2 and V-Stack 1.2 to host various VSTi softw instruments.
- MIDIoverLAN CP Platinum Edition v. 2.2.1.
- A broadband router (D-Link DI-604 4-Port 10 and Ethernet cables to connect the computers.

MIDIoverLAN CP requires a 500 MHz Pentiu PC with 128 MB of RAM running Windows 2000 Service Pack 4 or Windows XP with Service Pack 1. M users will need a 400 MHz G4 with 128 MB of RA running OS X 10.2.4.

Step 1: Install MIDIoverLAN on your Mac an your PC. Install and register your software. Installati requires manually dragging-an dropping items on the Mac a launching an installer program the PC. MIDIoverLAN CP includ drivers for both platforms.

Under Windows XP SP you need to open an Excepti in the Windows Firewall to allo MIDIoverLAN to pass through (th step is unnecessary under SP 1).

Go to the Start→Control Pane and double-click on the Windows Firewall icon. Select the Exceptions

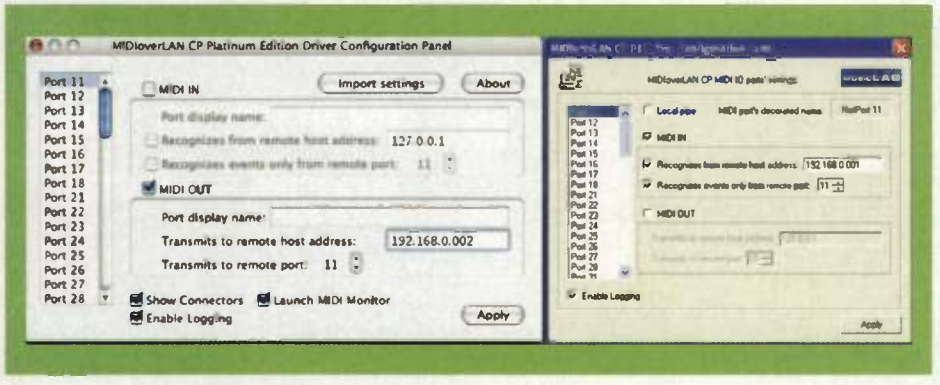


FIG. 1: To transmit MIDI data over an Ethernet connection with MusicLab's MIDIoverLAN, enter your PC's IP address in the MIDI Out section on your Mac, and your Mac's IP address in the MIDI In section on your PC.

What more do you want?

Fireface 800

56-Channel, 24-Bit 192 kHz FireWire Audio Interface

- 4 Discrete Balanced XLR microphone inputs with class-A stage and 48 V phantom power
- 4 Discrete Line Inputs
- Hi-Z Instrument Input with Speaker Emulation, Soft Limiter and Distortion
- 8 Balanced TRS 24bit/192kHz AD/DA Converters
- 2 ADAT I/O with S/MUX, SPDIF I/O, MIDI I/O, Word Clock I/O
- Headphone/Line Output with dedicated volume control
- 2 Firewire 800 & 1 Firewire 400 connections
- Up to 35 signal sources can be connected and recorded onto 28 separate tracks!
- Time Code Option (TCO) for LTC, video and VITC can be added
- Several Fireface 800s can be used in parallel and at the same time on one FireWire port
- Latencies down to 48 samples!!!!
- TotalMix and DIGICheck software included

TEC 2005 NOMINEE

MIX CERTIFIED hit

The World's Most Powerful FireWire Audio Interface!

samplitude studio V8 and Guitar Center

Electronic Musician 2004 EDITORS CHOICE

You've been hearing about Samplitude and its astonishing sound and features now you can get into the best Native Mastering, Editing, Mixing and Recording for only $299, only at Guitar Center... starting in October!

That's right, ONLY $299! Ask your Guitar Center salesperson today.

contact us today and get it all!

synthax .com

Guitar Center

5111 Market St.
Boardman, OH 44512
ph. 330.259.0308
fx. 330.259.0315

tab, and click on the Add Port button. Enter MIDIoverLAN in the Name field, and enter 11000 in the Port Number field. Click on the UDP radio button, and click on OK. The Windows Firewall Exceptions tab now displays your newly added MIDIoverLAN entry with a check mark next to it. Click on the OK button.

Step 2: Determine each computer's IP address. Under OS X, go to System Preferences→Network, and you will find your Mac's IP address listed next to "Built-In Ethernet." To find your IP address under Windows XP, go to Start→Control Panel→Network Connections. Right-click on your network adapter's icon and choose Status; then select the Support tab. Write down each of your computers' IP addresses for use in the next step. For this example, we'll assume the addresses 192.168.0.1 for the Mac and 192.168.0.2 for the PC (your IP addresses may be different).

Step 3: Configure NetPorts. MIDIoverLAN uses NetPorts, which are software equivalents of the physical MIDI ports you would have on a hardware MIDI interface. You use them to route MIDI data between your computers. The MIDIoverLAN Standard Edition offers 16 In/Out NetPorts, while the Platinum Edition provides as many as 64 ports (in 8 groups of 8). Just as each device in a hardware MIDI setup requires its own port and MIDI I/O cables, each NetPort requires a unique IP address. Here is the setup for our example using a Mac running DP, and a virtual instrument host PC running V-Stack.

On the Mac, launch MIDIoverLAN and select the first port from the list displayed at left (Port 1 on MIDIoverLAN Standard Edition, Port 11 on the Platinum Edition). Check the MIDI Out box, and enter the IP address for your PC (192.168.0.002 in this example) in the "Transmits to remote host address" field.

The procedure is the same on the PC, except you check the MIDI In box and enter your Mac's IP address (192.168.0.001 in this example) in the "Recognizes from remote host address" field (see **Fig. 1**).

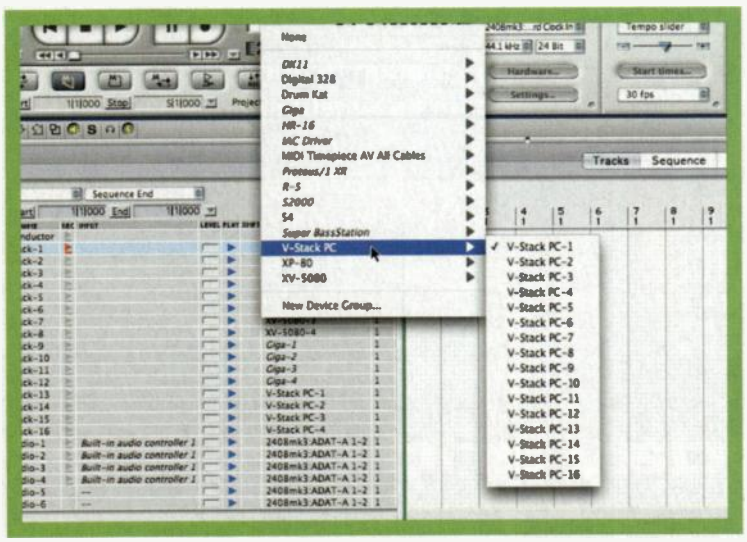


FIG. 3: When the connection is made successfully, you can assign an external PC sound source to a track in DP.

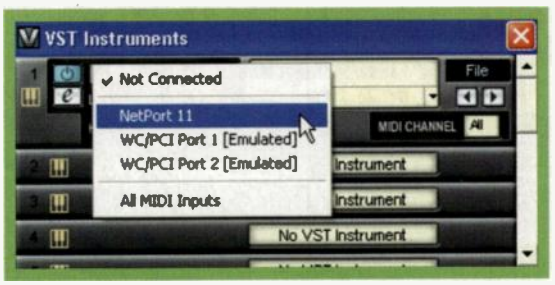


FIG. 4: To make V-Stack respond to incoming MIDI data on the external PC, select the NetPort as your MIDI input source.

Click on Apply, and close MIDIoverLAN on both computers.

Step 4: Make Connections in OS X. The final step is to make a MIDI connection between MIDIoverLAN and your external PC in OS X's Audio MIDI Setup. Launch Audio MIDI Setup. You will notice that the MIDIoverLAN CP Driver appears in the window next to any hardware MIDI interface you may have attached. If you haven't already, create a new MIDI device for your external PC by selecting MIDI Devices→Add New External Device. When the new device appears in the window, double-click on it to set its properties, give the device a name, and choose an icon. Click on and draw a line from the Out port on the MIDIoverLAN icon to the In port on your external PC icon to complete the connection (see **Fig. 2**). Congratulations, you are now ready to test your system.

Launch DP on the Mac and V-Stack on the PC. In DP, record-enable a track and assign V-Stack as its output device (see **Fig. 3**). In V-Stack on the PC, load a VST instrument, pull down the MIDI input pop-up window, and select NetPort 11 (see **Fig. 4**). The choice will be NetPort 1 if you're using MIDIoverLAN Standard Edition. The PC running V-Stack should now receive MIDI over the Ethernet connection from the Mac running DP. To add additional computers to your system, simply repeat those same steps, using another NetPort.

Future Net

MIDIoverLAN won't completely eliminate the need for MIDI hardware, because you'll need at least one MIDI interface to input MIDI information from your keyboard or other controller. But it can be a cost-effective solution if you are setting up a new system with multiple computers. Some users even claim they get better timing by using Ethernet for MIDI data. The network can also serve as a conduit for more than MIDI data alone. An emerging crop of applications such as Plasq Wormhole2 (http://plasq.com) and FX-Max FX Teleport (www.fx-max.com) are designed to transmit audio over a LAN. Who knows? With the ever-blurring distinction between instruments and computers, we may even see more Ethernet ports on tomorrow's keyboard workstations. EM

Babz is a composer/multi-instrumentalist and a freelance music-technology writerp based in New York City.

Everything for the Musician...

Just A Click Away!

Whether you're a beginner, a pro, or anywhere in-between, we're your ultimate source for music gear. Visit our website today and find out for yourself!

Free Shipping!

On most orders over $99, see our website for details.

The Lowest Price Guaranteed!

We'll meet or beat any verified competitive offer for 45 days.

Total Satisfaction Guaranteed!

Take 45 days to be sure you're totally pleased or your money back.

PLUS!

- Over 40,000 Products!
- Totally Secure & Easy To Browse!
- Huge Savings In Our Clearance Center!
- Weekly Newsletter!
- VIP Concert Sweepstakes & Weekly Gear Giveaways!
- Thousands Of Soundbites!
- Customer Product Reviews!
- And More!

Musician's Friend

The Best For Less Shipped To Your Door

Get Your **FREE** Catalog at www.musiciansfriend.com/free or 1-800-436-6976

Source Code: EMEM

Random Bursts

By Peter Schwartz

Noise is a powerful synthesis and sound-design tool.

Although recording engineers view noise as something to avoid, it has great creative potential for the synthesist and sound designer. Wind, thunder, surf, bomb blasts, snare drums, and hand claps are all easily created on any synthesizer that has a noise generator. But in addition to that, noise can be used to enhance pitched sounds in a variety of interesting ways.

Color Me Noise

You're probably familiar with the use of colors to describe different types of noise: white, pink, red, and more rarely, blue. *White noise* is a collection of randomly occurring frequencies equally weighted over the audible frequency spectrum. *Pink noise* is essentially white noise that has been lowpass filtered, so it rumbles along with muted high-frequency content (see **Web Clip 1**).

As you continue to lower the boom on the high-frequency content of noise, the signal eventually becomes inaudible; however, it is still usable as a randomly fluctuating control signal. (On some synths, that is called *slow random* to distinguish it from *audio-range* noise.) Slow random imparts a wobbly, nervous character to whatever parameter it modulates (see **Web Clip 2**).

Noise as a Modulation Source

Minimoogs aren't known for creating grungy sounds, but you can take this classic synth in new sonic directions by modulating the filter cutoff with audio-range noise. The effect of noise modulation on filter cutoff is similar to distortion: grunging up notes when the cutoff frequency is low, and emphasizing the resonant quality of the filter when its cutoff is higher.

FIG. 1: This Arturia Minimoog patch uses noise to modulate the filter cutoff frequency. The amount of modulation is controlled by the Mod Wheel.

I created the example in **Web Clip 3** using the Arturia Minimoog (see **Fig. 1**). As with its hardware predecessor, the OSC3 Mix pot determines the mix of control sources for pitch and filter modulation. This control pans between the Mini's noise source and its third oscillator, traditionally used in its LO range to act as an LFO. In my patch, the OSC3 Mix pot is fully clockwise (noise only), Oscillator Modulation is turned off, and Filter Modulation is turned on. You can vary the modulation amount to get just the right level by using the Mod Wheel.

Adding Noise to the Mix

The effect of modulating a filter's cutoff frequency with audio-range noise differs decidedly from adding noise to the audio signal. **Web Clip 4** demonstrates a Korg OASYS patch in which white noise is mixed with the oscillators as the audio source. That emphasizes the sound of the enveloping of the filters without creating the pseudo-distortion effect heard in Web Clip 3.

I suggest dialing in some noise to enhance sharply enveloped, resonant-filtered bass sounds. The only downside to this technique is that the patch can become noisy. You can often tame the undesirable side effects of added hiss or rumble with some creative equalizing. (None of the Web Clips associated with this article have been equalized.)

FM-eral Uses of Noise

You can use noise as the modulator in FM patches to produce eerie, atmospheric sounds such as submarine sonar pings and vocal choir impressions. Because noise is a complex modulator, it is best used to modulate a sine wave or some other low-harmonic-content waveform. Noise modulation adds an evocative dimension to the sound, giving it a mysterious reverb quality (see **Web Clips 5** and **6**).

My favorite way to use noise is an effect I call ripping vibrato. I use white noise and triangle LFO to modulate pitch, and I route the Mod Wheel to control the amount of modulation. Adding noise gives the vibrato a distinctive chorusing and ripping character (see **Web Clip 7**).

On basic synths, noise modulation is typically limited to frequency and filter cutoff. But if you have access to a modular synth such as Arturia's Moog Modular V or synth construction software like Native Instruments' Reaktor, try using noise to modulate other parameters. For example, using enveloped *red noise* to modulate amplitude produces a typical brass-instrument-style spit tone. EM

EM WEB CLIPS

Peter Schwartz is a composer, arranger, and keyboardist living in upstate New York. His analog synth programming is featured in the factory patches of the new Korg OASYS.

Taking Control

By Jim Aikin

An introduction to control voltages.

All musical instruments give musicians some types of control, including control over which notes are played as well as what sounds the instrument produces. With electronic instruments, control signals can be sent from one place to another—either within the instrument or from one instrument to another. When a control signal is received, the sound of the instrument will change in some way.

Today, most electronic instruments are digital, so digital control signals, which are often automated, are the norm. MIDI (the Musical Instrument Digital Interface) provides a widely used method for controlling instruments digitally.

Early electronic instruments, however, were analog, not digital. In an analog synthesizer, the audio signals within the instrument and the control signals are in the form of analog voltages. (A voltage is a type of electrical signal.) The control signals used in an analog synth are called *control voltages*, often abbreviated as CV.

A number of companies still make control-voltage-based instruments, but they have become specialty items as other types of synthesis are more versatile and affordable. In addition, manufacturers of some digital instruments use the word *voltage* to refer to digital control signals. (Propellerhead Reason, for example, has rear-panel control jacks that are labeled "CV.") Though the latter usage is incorrect, it's easy for musicians to understand. In this column, I'll explain the concept of CV, which you should find useful, even if you're using only digital synths.

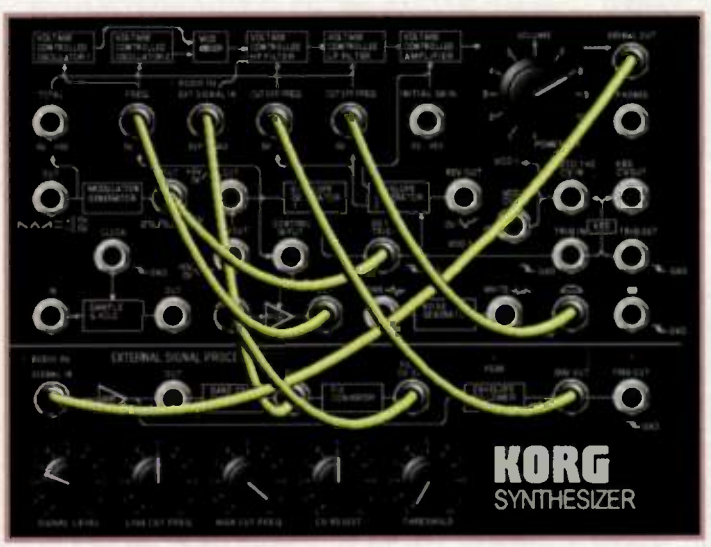


FIG. 1: The Korg MS-20 monophonic synth had a patching matrix, which is reproduced here in Korg's new software version of the same instrument.

Turn the Knob

With modular analog synthesizers, separate modules (oscillators, filters, envelope generators, and so on) perform unique tasks yet work together to create the sound we hear. The oscillators generate raw audio signals, the filters filter out portions of the audio signal, and so forth. Audio signals and control voltages are typically routed from one module to another using patch cords. A cord is plugged into an output jack on the front panel of one module and into the input jack on another module (see **Fig. 1**).

In addition to input and output jacks, most modules have one or more control knobs. For example, the oscillator has knobs for controlling its pitch and waveshape, and the filter has cutoff and resonance knobs for adjusting the filter characteristics. A good way to think of control voltages is that the voltage "turns" the knob for you while your hands are busy doing something else. Although the knob isn't motorized and therefore doesn't physically rotate, the musical result is the same.

For instance, when the voltage level at an oscillator's pitch CV input increases, the oscillator's pitch rises just as if the pitch knob had been turned. When the voltage level drops, the pitch falls. If the module being controlled is a voltage-controlled amplifier (VCA), increasing the level of the CV will cause the amplifier to open further, thus increasing the amplitude of its output. Assuming that an audio signal is passing through the VCA, the output signal will get louder as the voltage increases.

With real analog hardware, a voltage can change smoothly from one value to another. As it increases from 1 to 2V, for instance, it will pass through all of the intervening values—theoretically, an infinite number of them. With digital music systems, signals are always *stepped* rather than continuous. Because of that, if you turn a knob on a digital synth, you may hear a grainy digital artifact called *stair stepping*. One reason that musicians prize real analog synths is that their response to control signals can be absolutely smooth.

Nonstandard Standards

As with MIDI, you can use control-voltage signals to connect equipment from different manufacturers. The

The best just got better.

Electronic Musician 2005 EDITORS CHOICE

Best Digital Audio Workstation/Audio Interface of 2005

E-MU's Digital Audio Systems have won numerous awards for delivering premium 24/192 converters and powerful DSP processing rivaling the most expensive systems in the world at a price that every musician can afford. E-MU now offers you more features and software than ever before, with new version 1.81 software and an over-the-top software bundle that gives you everything you need to record, mix, master and burn your projects at a professional level.

Check out E-MU's Digital Audio Systems and see how the best keeps getting better.

$499.99*

$399.99*

$199.99*

$99.99*

New E-MU Production Tools Software Bundle included

SONAR LE
Cubase LE
WAVELAB lite
live lite 4
AmpliTube le
T-RACKS EQ**
BRONZE**
SFX machine
ProteusX LE

New Version 1.81 Software

- 64-bit driver support
- New sample rates supported
- New optimized ASIO and WDM drivers
- Improved effects and session management

CardBus Digital Audio Systems for Laptops now shipping!

NEW!

$499.99*

$399.99*

MASTERING GRADE 24-bit/192kHz 120dB SNR-measured A/D & D/A Converters

POWER FX

Works with Windows 2000 & XP

* Estimated street price
** not included with the 0404

CREATIVE PROFESSIONAL

www.emu.com

Toll-free 888•372•1372

E-MU

standards for interfacing weren't as well developed in the 1960s as they are now, but many analog synths use a system known as *one volt per octave*, or 1V/oct. If the CV is applied to an oscillator's pitch-control input in a 1V/oct instrument, increasing the voltage by 1V will raise the frequency of the oscillator by one octave. In other words, the frequency will double. Most new analog synths built today use the 1V/oct standard, but the Buchla 200e system is calibrated to 1.2V/oct so its modules can interface more easily with older Buchla modules, which use that value.

To control the operation of envelope generators, analog synthesizers use voltage signals that are called gates and triggers. A *gate* is a signal that starts when a key is pressed and ends when the key is released. A *trigger* is a short, sharp spike in the voltage. In practice, the leading edge of a gate signal can usually function as a trigger, so we need to talk only about gates. An envelope generator such as an ADSR is controlled by a gate (see Fig. 2).

Two different standards are used for gates. Instruments from ARP and other companies use a gate signal of 5 to 10V to indicate that a key has been pressed; when the key is released, the voltage falls back to 0. That type of signal is called a *voltage trigger*. Moog synths use a competing system called *switch triggers*, or *S-triggers*, which works the other way around: a continuous signal of 5 or 10V drops to 0 with each key press, and rises when the key is released. As a result, using a Moog keyboard with an ARP envelope generator or vice versa requires an extra piece of hardware—a voltage inverter.

Getting Hooked Up

Three types of cables are commonly used for patching voltage-controlled synths. Some have ¼-inch phone plugs, some have ⅛-inch miniplugs, and some have unshielded banana plugs (see Fig. 3). If you have hardware that uses two different connectors, you may be able to link the modules in a larger system by using adapter jacks, but you'll need to look into grounding and other issues, such as whether you need to convert voltage triggers to S-triggers.

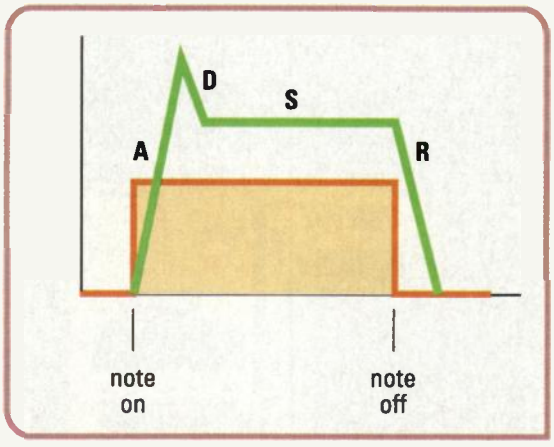
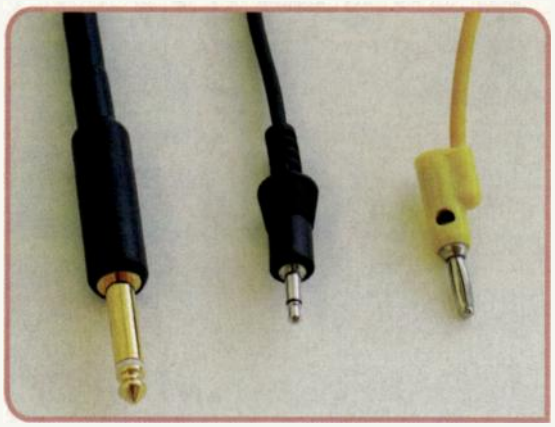


FIG. 2: A gate signal is used to start and stop an ADSR envelope generator.



DMITRY PANICH

FIG. 3: The three types of connectors most often used for control voltage are ¼-inch, ⅛-inch, and banana connectors (L to R).

In many voltage-controlled synths, the distinction between control voltages and audio signals is arbitrary: A low-frequency oscillator, for instance, would normally be used as a CV source, but after cranking its frequency up into the audio range (higher than 20 Hz), you could just as easily plug its output voltage into the audio signal path and listen to it. When working this way, it's advisable to keep an eye on whether your synth is introducing a DC offset into the audio signal path. A DC offset is a voltage that rises above or falls below 0V and stays there rather than fluctuating back and forth between positive and negative values. If you send a signal with a DC offset to your speakers, they may not work efficiently, and the dynamic range of your synth will be reduced.

More often, analog synthesists use audio signals for control purposes, rather than using control signals for audio. Modulating the pitch of an oscillator with the output of a resonant filter, for instance, can create an unstable, organic sound that might be perfect for a special effect.

Analog modular synthesizers are large, heavy, and expensive, and they lack such modern refinements as programmable memory. But there's a thrill in creating your own sound by plugging in a bunch of patch cords and twiddling a few knobs. Control voltages threw open the doors of sonic exploration in the 1960s, and when that happened, the world of music changed forever. EM

Jim Aikin is the author of Power Tools for Synthesizer Programming (*Backbeat Books, 2004*) *and* Chords and Harmony (*Backbeat Books, 2004*). *His first synthesizer, purchased in 1980, was a Serge Modular, but these days his favorite instrument is his Jensen 5-string electric cello.*

Instant Pro Studio

Just add creativity.

LOGIC PRO® — THE PROFESSIONAL'S CHOICE FOR CREATIVE AUDIO PRODUCTION

Logic Pro has long been the professional's choice for creative audio production. Pair it with a **dual processor Power Mac® G5**, and you've got an unbeatable combination of power, flexibility and expandability. With 34 software instruments, 70 effects and distributed audio processing, all that's missing is a way to get high-quality audio into and out of the Mac...

ROSETTA 800 — THE PROFESSIONAL'S CHOICE FOR AUDIO I/O.

...which is where the **Apogee Rosetta800** comes in. A name synonymous with top-notch digital I/O for two decades, more professionals get audio in and out of their DAWs through Apogee converters than any other standalone pro A/D/A converter.

- 8 channels of balanced analog I/O
- 8-channel digital I/O via AES/EBU & ADAT/SMUX
- Up to 24-bit/192kHz resolution
- Ultralow-jitter Intelliclock
- SoftLimit clip protection
- Plug-in play FireWire connectivity*

APOGEE SOUND AMAZING

Sweetwater puts it all together for you. Our Apple® Certified sales engineers can answer any and all questions you may have about building the perfect Apple audio system, and our computer audio install techs have built more systems than any other retailer on the planet. Let us help you design the perfect system for the way you like to work. We'll build it, configure it, test it, and ship it straight to you. All you've got to do is unpack it, plug it in, and start making music.

*Optional XFireWire card required.

CALL SWEETWATER TODAY!

(800) 222-4700

www.sweetwater.com

Sweetwater®

music technology direct™

Authorized Reseller

Taking Your Studio Pro

By Jeffrey P. Fisher

Planning is key to a successful transition.

There's more to transitioning from personal to project studio than just opening the doors and collecting the cash. Embarking down this road means setting up and operating a small business, which involves research, planning, and answering a few tough questions. I'm going to touch on an assortment of possible issues to get you thinking in the right direction. From there, you will need to do more research and consider each issue carefully.

First, you have to decide what to sell. Are you going to record bands, songwriters, game audio, ringtones, radio commercials, or some combination? Next, examine your resources. What do you already have, and what do you need before you begin? Knowing how to engineer well is obviously important, but so are an adequate room, equipment, and entrepreneurial savvy.

When you apply for a business license, you must decide whether to file as a sole proprietorship, partnership, C or S corporation, or limited liability corporation (LLC). You may need to file a fictitious-name statement, or a "d/b/a" (doing business as), and secure a business tax ID from the federal government. You might also need a special sales tax ID. The Small Business Administration (www.sbaonline.sba.gov) offers free advice on all of those matters.

What to Charge

To determine your daily and hourly fee, consider what the studio's expenses and overhead (including your salary) are, and find out the going rate for similar studios in your area. Inexperienced studio owners/engineers should price themselves at 80 to 85 percent of the market rate, and then raise their rates as their skills grow. Experienced engineers can match the market rate or price their services somewhat higher.

It doesn't matter what you charge if you can't collect. Billing COD is the best policy. Ask for a deposit on larger projects. Some corporate clients may ask for 30 to 60 days before paying the bill. If that doesn't work for you, offer to bill half now and half in 30 days.

Open a business account at your bank so that you can keep your studio and personal finances completely separate. Keep good records of your expenses so that you can deduct the maximum at tax time.

Equipping for Business

You do not need to have everything in place before opening your doors to the public. Start with the basics and grow with the business. Don't forget about necessary gear that's unrelated to music recording, such as a business telephone line, a fax machine, and voice mail. Design and order letterhead and consider purchasing software to help with scheduling, contact management, and bookkeeping.

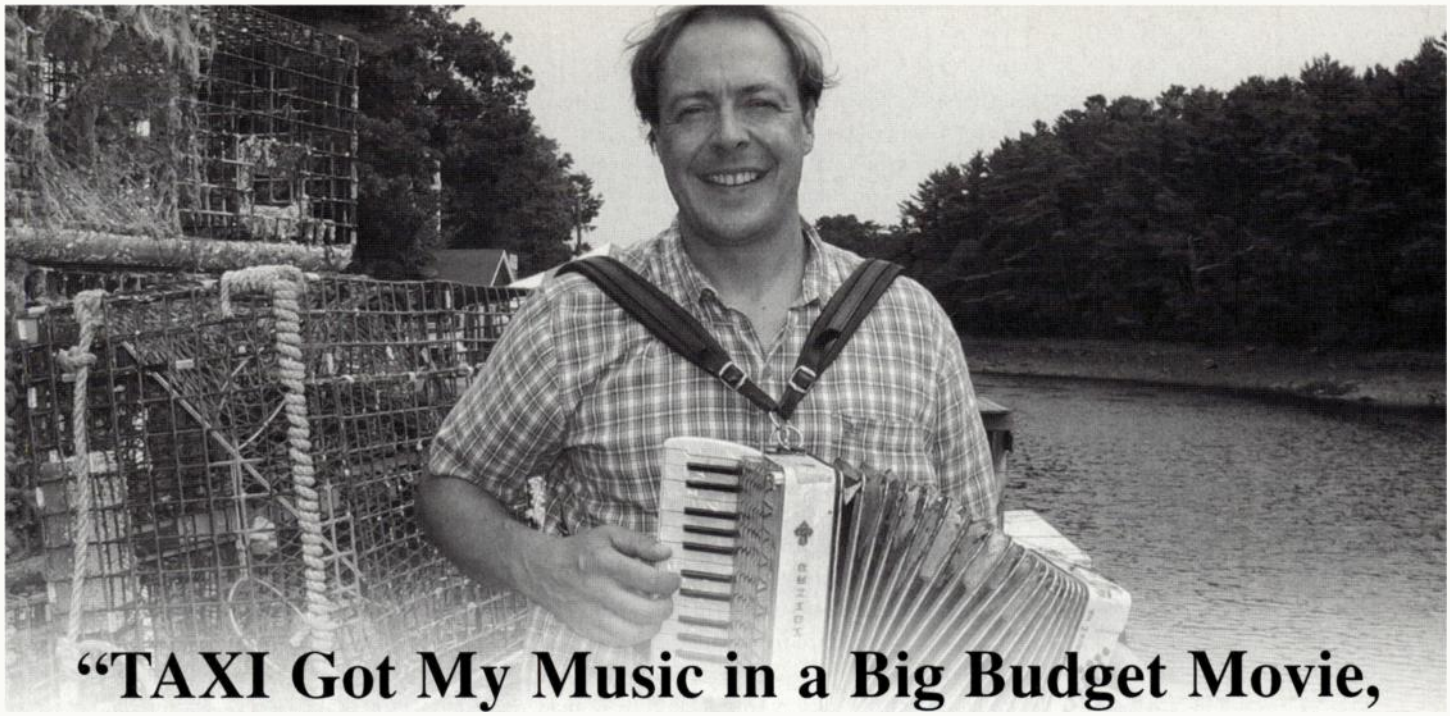
It's increasingly important to have a clean, business-like Web site that can serve as a primary information source for potential clients. Register a Web domain name for your studio; it's inexpensive and worthwhile. Use that domain name for business email and for the site URL.

Safety Zones

Having a studio in your home comes with its own set of potential troubles. Do you really want strangers traipsing through your living room? Consider separating the studio from the living quarters, especially if there are others in the household. A separate entrance and bathroom are essential. Residential areas usually aren't zoned for business, and your local government probably

TEN TIPS FOR GOING PRO

1. Decide in advance what the focus of your studio business will be.
2. Determine your rates based on your experience and on the market in your area.
3. Establish a billing policy that you can live with.
4. Keep accurate and complete financial records.
5. Make sure you have such necessities as a business line, voice mail, and letterhead.
6. Set up a Web site to promote your studio.
7. Make sure your studio is comfortably furnished. If possible, provide a lounge area where musicians can hang out during downtime.
8. Take security precautions and consider installing an alarm system.
9. Make sure your studio's acoustics have been sufficiently treated before opening your doors for busines
10. Promote your studio consistently and creatively.



"TAXI Got My Music in a Big Budget Movie, Imagine What They Can Do For You"

Gary Sredzienski – TAXI Member – www.garysred.com

My name is Gary Sredzienski, and I live in Kittery Point, Maine – about as far away from Hollywood as you can get in the continental United States. And, as you can see in the photo above, I play the accordion.

That's how I earn my living – playing the most misunderstood instrument in the world.

I play it at weddings, retirement homes, Bar Mitzvahs, and in my surf-rock band, 'The Serfs'.

Could this be you?

It was *extremely* unlikely that my music would ever be heard by anybody in Hollywood, let alone, get used in a major motion picture. But that's exactly what happened, and it's all because I joined TAXI.

A friend of mine at a local studio told me about TAXI. Soon after I joined, I saw an opportunity for accordion music.

I sent in my music, but didn't really expect that anything would happen. And for quite a while, nothing did.

Then I got a call from a music editor in Hollywood who got my music from TAXI. He told me he liked what he heard, and asked me to send him everything else I had ever recorded.

Billy Bob Thornton & me!

He called back again, and told me to expect a call from a music supervisor in Hollywood. A few days later, someone from Paramount Pictures called to ask if they could use two of my songs in the remake of 'Bad News Bears' with Billy Bob Thornton.

I tried to be cool about it, but I could barely contain myself. We agreed on a deal, and a few months later, I found myself in a theater watching my name scroll by at the top of the music credits.

I can't really find the words to tell you what an amazing feeling that was. I'll remember it for the rest of my life.

What's your story?

Are you one of those people who have been reading these ads and hearing great things about TAXI for years, but never got around to joining? Do you think your music isn't mainstream enough?

You might be surprised by the opportunities TAXI will bring to you no matter where you live or what you play. If your music is really top notch, and somebody needs what you've got, then TAXI can change your life.

Make the call. If they can help me get a deal, just think about what they can do for you!

TAXI®

The World's Leading Independent A&R Company

1-800-458-2111

has rules regulating home businesses. Contact your local county clerk's office for more information.

If you have the wherewithal and can get permits, you could construct a separate building for the studio. Alternatively, if a large garage can be spared, you can redesign its interior and build the studio there. The best solution, however, may be to rent a commercial space and build your studio somewhere other than in your home. That could solve many problems at once, although it will give you a bigger financial issue to deal with every month.

Don't neglect aesthetics and client comfort. Make sure you have sturdy furniture for equipment and comfortable chairs in the control room (assuming there is a separate control room). If you work with corporate clients, consider adding a desk, a phone, and a computer for clients to use.

A separate, comfortable lounge area with computer, TV, and even a few video games can speak volumes to some clients. Bands appreciate having a place to go while you and the drummer spend hours perfecting the kick drum.

Install a dependable security system and lock up supplies, microphones, and so on. Hiding what you do from those who don't need to know is another way to minimize problems. Leave the address off of literature, giving only your telephone number and email address, and give directions only to serious clients. (For more on security, see "Working Musician: Don't Get Ripped Off" in the February 2004 issue of EM.)

Acoustics

For the sake of your business, don't neglect your studio's acoustics when planning your transition to project-studio status. In the best-case scenario, the sound in your tracking room should enhance recordings, but at the very least, it shouldn't detract. Your control room shouldn't color a mix to the point that you can't make good mix decisions. If your mixes don't translate to the outside world, you're unlikely to get much repeat business.

Beyond getting the sound right inside your facility, you'll need to soundproof your studio so that inside sounds can't get out and the outside sounds can't get in (especially if you're in an urban or suburban environment with neighbors close by). If you have to stop your session every evening when the freight train passes or when the planes at the nearby airport take off and land, you won't stay in business long.

Put aside part of your gear budget toward acoustic treatments. Get your space analyzed by a qualified acoustician and go with the recommended treatments. It's probably going to be a steep initial investment, but it will pay off over the long term. Although you might think you can't afford to do it, the reality is that you can't afford not to.

Maintenance

As you should do in any studio, learn all you can about keeping your gear in top running order or hire a technician to do it for you. Institute a routine maintenance plan and fix any failures immediately. Clean and "zero out" your gear after every session. Avoid temperature and humidity extremes, and steer clear of disastrous spills by keeping food and drink in the lounge only.

When you're in a session, you don't have time to run to the store for supplies. Stock up on basics such as blank media, batteries, and guitar strings. It's prudent to have backups of important microphones, cables, adapters, and anything else that might help your session survive a breakdown.

If your studio is computer based, file all software updates in case you need to reinstall them. Take notes about all of your special tweaks to keep your computer system fine-tuned. Power conditioners and a UPS are essential investments.

Design a backup procedure for all of your session files, and execute it religiously. The last thing you need is a hard-drive failure to wipe out a critical recording. Use established backup software and reliable backup drives. Consider saving incremental copies of session data so that you can go back to a previous version in case the latest file becomes corrupted.

Work out an archiving strategy in the event your clients want you to maintain copies of their session files and mixes after the project is over. Consider charging for that service.

Promo Pro

Promoting your studio is crucial because without a steady stream of customers, all the work that you put into the studio is pointless. Prepare a flyer or a simple brochure and distribute it to music stores, clubs, colleges and universities, and anywhere else potential clients hang out. Approach corporate marketing departments, ad agencies, video production companies, and local radio, TV, and cable stations and pitch your services to them.

Nurture your word-of-mouth by asking for referrals and rewarding those who send business your way. Become friendly with the workers at local music stores. They can be a good source for referrals. Sponsor a contest, such as a battle of the bands, and give away studio time to the winners. Follow up with all the "losers" to generate more business.

Reality Check

The recording business is a tough way to make a living, but it can be done. If you are serious about taking your studio pro, start by making a realistic business plan. Make sure you have all the bases covered and that when all is said and done, you have a clear path to profitability. Otherwise, you're courting financial disaster. If you plan ahead and put good business practices into place, you will be ready to make your dream come true. EM

Jeffrey Fisher has written six music and sound books, including Profiting from Your Music and Sound Project Studio *(Allworth Press, 2001). Get more help from his Web site at www.jeffreypfisher.com.*

OVER 40 WORLD LOCATIONS

SAE INSTITUTE

SEE IT FROM THE OTHER SIDE

training for a career in the audio industry

1-877-27-AUDIO • WWW.SAE.EDU

DIGIDESIGN SPONSORED SCHOOL

AMS-NEVE – OFFICIAL TRAINING

JOB PLACEMENT ASSISTANCE for all diploma GRADUATES

SSL – APPROVED TRAINING

INDIVIDUAL STUDIO TIME

New York City 212-944-9121 • 1293 Broadway, 9th Floor, New York, NY 10001

Los Angeles 323-466-6323 • 6565 Sunset Blvd., Suite 100, Los Angeles, CA 90028

Miami 305-944-7494 • 16051 West Dixie Highway, Suite 200, North Miami Beach, FL 33160

Nashville 615-244-5848 • 7 Music Circle North, Nashville, TN 37203

Nashville offers federal financial aid for those who qualify

New York City and Nashville Accredited by The Accrediting Commission of Career Schools and Colleges of Technology

Every new student enrolling in our Audio Technology Program at SAE Institute in the US receives their own Apple iBook, iPod Shuffle, and Pro Tools LE digital recording system!

Subject to change without notice; terms and restrictions apply.

NATIVE INSTRUMENTS Reaktor 5 (Mac/Win)

More power, more possibilities come your way.

By Dennis Miller

Native Instruments has released version 5 of Reaktor, a major upgrade to an already powerful sound-synthesis toolkit. The new version sports enhancements in many areas, from new Ensembles, flexible interface elements, and streamlined displays to the biggest update of all: an entirely new set of DSP processes called Core modules.

EM has reviewed Reaktor several times in the past, most recently in the December 2003 issue, so in this review I'll focus primarily on its new features. For those readers who haven't yet entered the Reaktor universe, here is a quick overview.

FIG. 1: Reaktor 5 has a wide range of new display elements. Almost every parameter control—knobs, sliders, and pan pots, for example—can have its own skin.

From the Top

Reaktor is a sound-synthesis and sound-processing toolkit that offers dozens of modules for designing software instruments and effects. It has a variety of sound-generating elements such as oscillators, sample players, and noise sources, as well as math and audio-routing functions, graphical user-interface elements, and signal-processing routines. You build structures by wiring modules together, and the type and number of modules that you can have in a design is almost unlimited (though for real-time playback, your CPU is the main determining factor).

But Reaktor isn't just a tweaker's paradise; you can avoid all custom construction and use the numerous Ensembles and the 2,000 user-contributed files that are on the company's Web site. Those resources cover a vast range of approaches and techniques, and it would be tough to find a synthesis method or sound-processing function that wasn't available from the collection of Ensembles you have access to.

Reaktor 5 runs under Windows and Mac as a stand-alone application and as an Audio Units (Mac only), VST, RTAS, and DXi (Windows only) plug-in. As with any

NEW!

Award-Winning Audio Unbeatable Value

Pros everywhere know that the Studio Precision 8 has become the monitor of choice for the musicians and engineers who make a difference—otherwise known as multi-platinum *Grammy* award winners. Now that same prized "mixes you can trust" sound is available in a new smaller format. Introducing the **Studio Precision 6**. Same system design philosophy as its famous big brother. Same amplifiers. Same crossover. Same high frequency driver. Same dual port configuration. Same classy Event logo. The only difference: a 6.5" woofer that delivers more low end punch than you ever thought possible from a small format monitor. Oh yes, and all at a price point that will put a *big* smile on your face.

The wait for the perfect small studio monitoring system is now officially over.

Studio Precision™ 6

Biamplified Direct Field Monitor System

MADE IN U.S.A.

EVENT ELECTRONICS

P.O. Box 4189 · Santa Barbara, CA 93140 · Voice: 805-566-7777 · Fax: 805-566-7771 · Email: info@event1.com · Web: www.event1.com

software instrument, the more RAM and CPU power you have, the better the performance will be. Native Instruments recommends a minimum of a Pentium III/1 GHz or Athlon XP 1.33 GHz processor with 512 MB of RAM running Windows XP, or a G4/1 GHz with 512 MB of RAM running Mac OS 10.2.6. I tested Reaktor on a Windows XP (running Service Pack 1) machine with dual Pentium 4/3.06 GHz processors and 2 GB of RAM with an E-mu 1812m interface, and I had no problems.

Crank It Up

When you first load Reaktor 5, you won't notice any major differences, other than a new color scheme, fewer tools in the main toolbar, and some minor tweaks to the Instrument panel. Registration (challenge/response) is unchanged, and you can still configure many aspects of the program.

Once you load one of the new Ensembles, however, you'll see some of the program's more dramatic changes. A range of new interface elements give Reaktor Ensembles a more modern look. For example, SpaceDrone, a new sound generator, uses custom skins that you can apply to almost any panel element, such as faders and knobs (see **Fig. 1**). As you'd expect, SpaceDrone and other new additions to the Library are not compatible with older versions. Moreover, some Ensembles created in Reaktor 3 won't open in Reaktor 5 unless you have your Reaktor 3 dongle installed.

When you right-click on a Structure window to access the module library, you see a reorganization of the menu offerings and an entirely new set of modules called Core Cell. That category expands into a number of other categories, including Audio Shaper, Control, EQ, and Oscillator, each of which has additional entries of its own. The already crowded modules menu gets even busier with the addition of those new modules. Although you can use the Browser to quickly access Ensembles, Instruments, and Macros, it would be great if the modules appeared there as well.

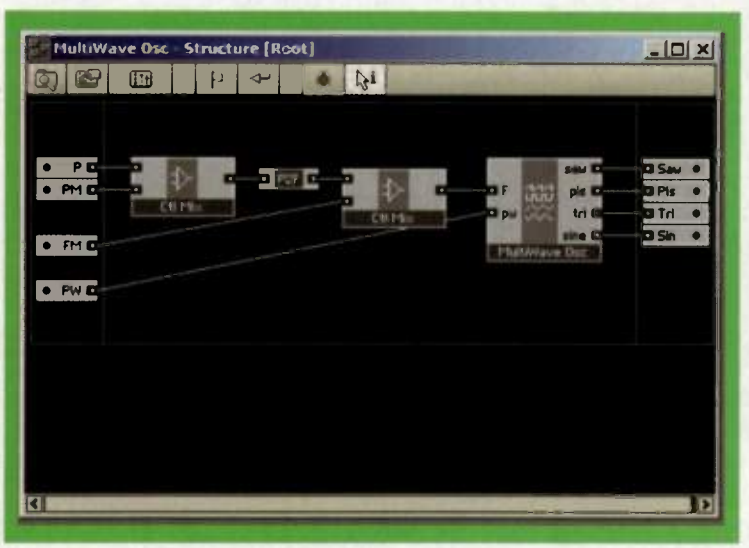


FIG. 2: Core modules are one of the most important new additions to the Reaktor arsenal. You can edit those modules at a very low level, for example, disabling components of their structure that you don't need.

FIG. 3: Newscool is a patch modeled after John Conway's Game of Life, in which cells can "live," "die," or multiply," depending on the conditions that you set up for the patch.

Instrument designers will appreciate a number of new design capabilities and tweaks to existing functions. Among those is the Bookmark feature, which lets you place a marker on any one Structure window and jump to it from any other Structure window in your Ensemble. That is a good start, but even better would be a feature that allowed you to bookmark multiple windows, view a list of them all, and jump to the one you want. (Because you can't name Structure windows, however, some new type of identification scheme would have to be devised for multiple bookmarks to work.) Moving among the main work areas is easier than in the past—new icons in the Structure window give you direct access to the Browser and the Structure's Parent and Properties windows.

Removing wires in a Structure is easier; just click on a wire at its destination and drag it to any blank area of the workspace, and the wire will disappear. When editing Core structures, you'll find a new feature called Compact Board, which helps you keep your designs organized (see **Fig. 2**).

The Panelsets feature expands on the capabilities of Screensets by allowing you to save the position, view, and visibility settings for all Instruments in an Ensemble. You could, for example, have a slimmed-down layout for use in a live-performance setting, and another layout to use while composing in the studio.

If you work with samples, you'll appreciate the ability to preview sounds off your drive from the

Pro Tools | Live | Logic | Cubase | Digital Performer | Sonar

One for all.

PROJECTMIX I/O

control surface | audio interface | 8 mic preamps | LCD display | total compatibility

Today, more professional music is produced at home than ever before–and the new ProjectMix I/O delivers what you need to take your computer-based studio and productions to the next level. Seamless integration with all major DAW software. The ability to record directly into industry-standard Pro Tools sessions. Faders so you can feel the mix with your fingertips instead of dragging a mouse. On-board display of critical parameters for intuitive operation. Motorized control to craft more accurate mixes. And professional multi-channel I/O including mic/instrument preamps, Lightpipe and S/PDIF. ProjectMix I/O is the universal solution that combines the best of the hardware and software worlds for a new standard in streamlined production.

- **record audio directly into Pro Tools M-Powered** > industry-standard format
- **10-bit touch-sensitive motorized faders** > totally intuitive mixing and editing
- **built-in 18 x 14 FireWire audio interface** > no additional hardware required
- **8 phantom-powered mic/line preamps** > pro input right on board
- **assignable rotary encoders** > control mixes, effects and synths
- **LCD display** > full track & parameter readout
- **dedicated transport controls & jog/shuttle wheel** > seamless session flow
- **ADAT lightpipe, S/PDIF & word clock I/O** > total digital connectivity
- **$1295 MSRP**

See it now!
www.m-audio.com/projectmix

GET M-POWERED

M-AUDIO

recording interfaces | USB keyboards | studio monitors | microphones | preamps | sound libraries | music software

www.m-audio.com

Sample Map Editor and the Browser, though not from a File Open window. (In Windows, you can use the right mouse button to play the file using your default sound application.) If you enable the Browser's Auto feature, sounds play automatically when you first select them.

More Core

Perhaps the most important enhancement in Reaktor 5 is Native Instruments' new Core technology. Core supplies signal-processing capabilities that were previously unavailable and that allow users to create modules at a lower level than before. Core modules operate at the level on which actual samples are written into a buffer for playback or processing; you could therefore create, say, your own custom oscillators or filters (assuming your DSP chops were up to the task). Native Instruments provides an entire printed manual devoted to working with Core elements.

In addition to the new Core modules included with Reaktor 5, a number of existing Ensembles have been updated with Core components. Core modules are fully portable and easy to add to your toolkit. Without much effort, you can upgrade your favorite Ensembles by substituting Core modules for existing ones. A simple example would be to substitute a Core Multiwave LFO for the simple LFO used in many earlier Ensembles, which would give you a greater choice of LFO shapes. I also expect to see a large number of user-created Core modules online soon.

Ensembles created with Core components don't necessarily run faster or more efficiently. In fact, I did a simple comparison of the original SteamPipe with the Core-enhanced version, and the original used about 5 percent less CPU power. But that's not the whole story—you can make edits to Core modules to increase their speed, which is something that was not possible previously. For example, the new Multiwave Oscillator module outputs four waves simultaneously. With just a few clicks, you can limit its output to three, two, or even one signal.

PRODUCT SUMMARY

NATIVE INSTRUMENTS Reaktor 5

software synthesizer
$579

OVERALL RATING (1 THROUGH 5): 4

PROS: Huge range of sound-design and sound-processing modules. Improved display and user-interface elements. Excellent collection of included Ensemble examples. Core modules bring new capabilities for low-level programming.

CONS: Some features not well documented. Bookmark feature could be more robust.

MANUFACTURER
Native Instruments
www.native-instruments.com

Sonic Implants
Complete SYMPHONIC Collection

The Ultimate in beauty, elegance, and power

Powerful New Features include :

- ★ **Dynamic Expression Filter (DEF) :** phase accurate frequency morphing between dynamics rather than a simple crossfade. Uses less polyphony and gives you dynamic realism never before possible.
- ★ **New Legato Technology :** using GigaStudio3.0 we were able to create legato instruments with intervals that are not limited by range or tempo, additionally the increase in system resources is nominal.
- ★ **Portamento Reshaping Filter (PRF) :** provides a phase corrected, 7th order, morphing filter for shaping formants dynamically as the pitch changes. This filter is utilized to simulate slides from one note to another.
- ★ **Custon GigaPulse Halls :** Larry Seyer has been on the cutting edge of development of rooms for GigaPulse. He has graciously provided several custom halls designed especially for SISC allowing Sonic Implants Complete Symphonic users to put their orchestra in many different environments.

Enjoy the freedom to just compose

TASCAM GIGA STUDIO 3.0

To Purchase or to find a Dealer near you contact Sonic Implants at >>> 888.769.3788 WWW.SONICIMPLANTS.COM

REVIEW

Out of the Box

Native Instruments has always been generous with the number of example files it includes, and that hasn't changed with version 5. Almost 100 Ensembles ship with the software, each of which has dozens of Snapshots (typically 30 to 40, but often as many as 90). The collection is a fascinating assortment of unique sound-design tools, algorithmic-compositional processes, live-performance instruments, unusual visual elements, and great-sounding patches for almost any style or musical taste. Native Instruments provides a printed Instrument Guide containing usage tips and an explanation of many of the included Ensembles.

SteamPipe 2, for example, is an update of the original SteamPipe that appeared in Reaktor 4. It's one of the most unusual physical-modeling Ensembles in the entire collection, and I've always loved its sound. I dug into the Ensemble's Structure and found that a Noise source creates the steam effect that is fed into the pipe model. I replaced the Noise source with a sampler so that any file on my system could become the exciter in the network (see **Web Clip 1**). There are more than 80 Snapshots, ranging from acoustic-instrument emulations (Flute, Bell, and Harp, for example) to ambient, evolving timbres (SteamGhost and Bowed Bell are two of my favorites), and each creates a unique effect on samples or on the default Noise source.

Oki Computer 2 is another Ensemble that has been updated with Core modules. It uses wavetable synthesis as the basic sound engine and provides a collection of 50 waves (16 can be loaded at once) for the oscillator to scan through. You can alter waves individually using a number of different parameters, and several of the presets morph through all the waves that are loaded. There are two assignable envelopes, an LFO, a filter section, and a clever scheme for loading and selecting waves. I altered the patch so that the LFO scanned through the wave tables, lowered the LFO speed, and set the second envelope to control pitch. You can hear the results on the EM Web site (see **Web Clip 2**).

Loop Meister

If you work with loops, Reaktor will be your little bit of heaven. A number of the new Ensembles are geared directly toward looped-based music production.

The default preset in Newscool, for example, has a sound and rhythmic quality vaguely reminiscent of Paul Lansky's Idle Chatter series. The Ensemble uses a cellular-automata procedure to determine what events the sequencer will generate (you can draw your own patterns on a graphic display or use the supplied presets), and a second display mirrors the activity coming from the sound engine (see Fig. 3). For example, there's no way to save the output of the graphics to an uncompressed AVI or Quick Time movie file, so for the most part, you are left with some very tasty eye candy.

WE DEVELOPED OUR FIRST DIGITAL LIVE CONSOLE WITH TWO THINGS IN MIND.

As the world's first affordable digital console designed exclusively for live use, the Mackie TT24 lets you route and control audio in ways which would have been impossible just a few short years ago. We're talking instant recall of levels, EQ, onboard effects, routing, matrix mixes, and virtually everything else—all within reach of two hands and a modest budget.

Unlike other mid-sized digital desks, the TT24 was designed by folks who actually mix live sound. So it has gobs of standard I/O and places every major feature within an intuitive, "two-touch" range. For monitor mixing, the TT24's "Aux Mode" function flips it into an instant monitor console at the touch of a button. Want more control? Just plug the TT24 into your laptop PC, and use the included TT Control software's brilliant graphic interface to make complex mixes a snap.

Finally, digital live mixing is within easy reach of your own two hands... which should be dialing your friendly, knowledgeable Sweetwater Sales Engineer right about now.

t24 DIGITAL LIVE CONSOLE

THE POWER OF DIGITAL LIVE MIXING, FINALLY WITHIN REACH. PLUG IN TO LIVE DIGITAL.

www.mackie.com

Sweetwater music technology direct

www.sweetwater.com

MACKIE.

Speaking of graphics, the sound generator Skrewell has an amazing display that shows a real-time Lissajous pattern. (In the analog world, you can produce Lissajous patterns by using a sound to vibrate a mirror, then bouncing a laser or some other light source off the mirror. If you use two or more interacting sound sources, a vast range of animated patterns can be produced.) The sound source that drives the display is a bank of eight oscillators, and you can either control them with great detail or let the Ensemble run in random mode. There are also a number of adjustable parameters to control the display itself, including its size and the types of graphics it uses (lines, crosses, rectangles, and particles, among others).

Though the examples that ship with the software would keep you busy for many days, it is impossible to overlook the many outstanding files that are available from the Native Instruments online User Library. EM contributor rachMiel's cloudMaker, for example, is a versatile and well-documented Ensemble that, according to its creator, was inspired by Curtis Roads's writings on granular synthesis. At the core of the Ensemble is a Grain Cloud sample player and an effects component that combines two filters and a delay. The Ensemble automatically generates a continuously changing sound by constantly moving through different portions of your sample(s) and changing the values of the numerous parameters. Using the effect on many of my samples made them sound unusual and compelling (see **Web Clips 3** and **4**).

In Transition

Native Instruments deserves kudos for aggressively upgrading and improving its software. There are many other tweaks and usage enhancements in version 5, and although I can't mention them all because of space constraints, Reaktor users will appreciate the subtle modifications and fixes in this version. There's no other software-based modular synthesis toolkit that's as powerful as Reaktor; Applied-Acoustics Tassman physical-modeling software comes to mind, but Reaktor is clearly the more general purpose of the two (though there's no reason why they both wouldn't fit nicely on the same desktop, especially in a professional musician's toolkit).

Reaktor, a hugely popular music-production platform, is useful for any type of composition or sound design, and is well-suited for live performance, installations, and other settings. With the new Core technology, it is an even more powerful application for designing custom signal processing and performance tools. If you haven't yet looked into Reaktor, try out the free demo version. EM WEB CLIPS

Associate Editor Dennis Miller has been known to overReakt to excellent software.

To restrict the artist is a crime.

Striking the perfect balance between passion and precision, SONAR 5 shatters the limitations found in ordinary digital audio workstations. Offering a complete spectrum of creative technologies, fully integrated with cutting edge engineering and mixing tools in a native-powered, open host environment, SONAR 5 inspires your artistic expression.

Out of the box you get powerful multitrack recording and editing, an arsenal of 31 effects and 8 instruments, loop-based creation features, and one of the most flexible mixing configurations available. Version 5 offers enhancements throughout the program including Roland® V-Vocal™ VariPhrase technology for amazing vocal edits and Perfect Space™ Convolution Reverb. At the heart of SONAR 5 is a groundbreaking 64-bit double precision floating point mix engine that sets new standards for digital mixing through dramatic increases in dynamic range. And SONAR 5 is expandable with native support for VST, DirectX, and ReWire instruments and effects, and any Windows compatible control surface or audio interface (even M-Box or Pro Tools | HD).

Grammy and Emmy Award winning musicians, producers, composers, and engineers turn to SONAR to fire their inspiration and deliver professional results. Whether you are one of these select few, or are aspiring for greatness, choose SONAR 5 and set your music free.

SONAR 5

PRODUCER EDITION

cakewalk.

For more information visit www.cakewalk.com/SONAR

Sound Advice

When the band Run Don't Walk decided they were ready to move up to a Digidesign® Pro Tools® system to produce their album, they smartly chose the experts at Sweetwater to help guide their purchase decisions. While they were excited to hear that Pro Tools LE™ systems include over 40 Digidesign and Bomb Factory® plug-ins, the band was really amazed to find that all Pro Tools LE systems also include the new Pro Tools Ignition Pack™—adding several great tools to help them professionally produce their music.

Their friendly and informative Sweetwater Sales Engineer also told them that by investing a little more money, they could get the Pro Tools LE Factory bundles—arming them with even more professional plug-ins. They jumped at the opportunity.

The band now uses BFD Lite on nearly every song to build super-realistic drum tracks. Green loves how the BF-3A compressor sounds on her vocals. Tiffany can't get enough of the Tel-Ray® Variable Delay on her guitars. And Richard digs the backing tracks he's been creating with Reason Adapted 3, Live Lite 4 Digidesign Edition, and SampleTank 2 SE. Run Don't Walk has never sounded better.

INCLUDED FREE!

Pro Tools
Ignition Pack

REASON ADAPTED · live lite 4 · BFD · SAMPLETANK SE

FIG. 1: Because it supports interchangeable capsules, you can expand the sonic palette of the Red Microphones Type B with Blue Microphones Bottle Caps or vintage capsules from Neumann.

RED MICROPHONES Type B

A bottle microphone priced for the personal studio.

By Rich Wells

Red Microphones (a division of Blue Microphones) was originally created to serve as a source for vintage mic parts. The first branded mic from Red Microphones is the Type B, which combines a transformerless, Class A, discrete solid-state preamp with a large-diaphragm, lollipop-style cardioid capsule. The capsule on the Type B is removable, allowing you expand your tonal palette with more specialized capsules.

The standard Type B capsule has a 6-micron, gold-sputtered Mylar membrane that is designed to be a versatile, multipurpose pressure-gradient condenser. The Type B package also includes a Blue Cranberry mic cable and a shockmount.

Lock and Load

Though the Type B is a full-fledged condenser microphone in its own right, its raison d'être is its ability to use interchangeable capsules. The Type B supports spring-loaded, bayonet-style capsules (as opposed to the threaded capsule found on mics such as the original AKG C 451). To attach the capsule, simply line up the cylindrical housing at the capsule bottom with the key on the mic-body mount, push down, and twist to lock it in place. The manufacturer says that capsules can be exchanged even while the mic's power supply is on.

The Type B design is compatible with capsules such as the Neumann M7, M8, M9, and 55k, which fit older Neumann and Gefell mics, including the CMV 563 and the line of mics Neumann made for the state agency RFT before German reunification. More importantly, because they're easier to get, the Type B supports Blue's series of Bottle Caps. As the name implies, those capsules were initially designed for the company's Bottle microphone. Among the Bottle Caps are medium- and small-diaphragm cardioids, a large-diaphragm figure-8, large- and small-diaphragm omnis, and three large-diaphragm cardioids with different characteristics than the standard Type B capsule.

Red Microphones, through its Web site called Vintage Microphone (www.vintagemicrophone.com), lets you rent the Type B mic. If you decide to purchase it, the rental amount is deducted from the sale price.

A Little Rise

I first tried the Type B on a male vocalist. Because I received two mics for review, I was able to test them through two different preamps simultaneously: one was a transformer-based, solid-state model designed

EXPANDABLE
4 CHANNEL FIREWIRE
computer recording system

INSPIRE 1394

ANYPLACE | ANYTIME | ANYONE

WHEREVER

HOWEVER

WHATEVER

WHOMEVER

The INSPIRE 1394 is the perfect computer recording solution, ready to go anywhere, anytime, and connect with anyone. Microphone, instrument, keyboard, and phono (turntable) inputs as well a complete suite of recording software included with the INSPIRE 1394 gives you everything you need for easy and professional-quality computer recording.

The first truly collaborative recording system, the INSPIRE 1394 is super affordable and designed for easy interconnect. Each member of the band can have one for personal recording, and when the band gets together they can daisy-chain up to four units for a total of sixteen simultaneous inputs.

The computer audio experts at Sweetwater have put together more computer recording systems than any other single retailer. Give them a call today and get INSPIRE'd!

FEATURES:

- Firewire (IEEE 1394) 24-bit / 96k audio interface
- 4 simultaneous recording channels
- Two microphone / instrument inputs
- Switchable analog limiter
- Switchable line or phono (turntable) input
- Speaker and headphone outputs
- Software mixer/ control panel
- Daisy-chain up to 4 units for 16 inputs
- Powered via FireWire bus or externally
- Windows and Macintosh compatible
- Cubase LE audio production software
- PreSonus ProPak software suite

Street Price - $199

www.presonus.com

Sweetwater
music technology direct™

call: 800-222-4700
www.sweetwater.com

PreSonus
freedom to record

to exhibit some coloration at certain settings; the other was a clean, quiet tube preamp. I placed the mics in front of the vocalist with the capsules about an inch apart, pointing slightly downward, and somewhat toward his chest. The singer sang toward the opening between the two capsules.

The Type B responded well through both preamps. The sound was clear but without too much of the upper-mid presence peak that is often found in cardioid condensers. It's there, of course, as the frequency response graph showed—a somewhat surprising rise of about 8 dB centered at 6 kHz, spanning from 3 to 10 kHz.

In the studio, the 8 dB rise sounded more gentle than I would have expected. That could be attributed to the low-frequency peak centered around 50 Hz, and the 4-foot by 8-foot sheets of rigid insulation that were fanned out behind the singer to dampen high-end reflections. Nonetheless, I was pleased that the Type B yielded a pleasant sound from the singer's voice through both types of preamps.

Red Mic, Blue Mic

I was also curious to test the Type B on vocals and acoustic guitar in combination with a Bluebird, Blue's similarly priced multipurpose cardioid condenser mic. For that test, I ran the mics through two channels of the same preamp, each at the same settings. Even though the mics have similar specs, the Bluebird sounded brighter, with slightly less low-end response. It also seemed to have a slightly hotter output than the Type B.

There were a lot of mids present when I tried the Type B on acoustic guitar. Again, the mic's sound isn't overly peaky, and it doesn't overrepresent the top strings. If you are looking for something sparkly to put on top of a mix, you'll want a brighter microphone. The tone of the guitar itself, however, sounded nice through the Type B.

Used as a distant mic for an upright bass placed approximately six feet away, the Type B nicely captured a full sound while capably representing the airy upper

PRODUCT SUMMARY

RED MICROPHONES Type B

condenser microphone
$449

OVERALL RATING (1 THROUGH 5): 4.5

PROS: Great sound on a number of different sources. Lacks spiky upper-mids common to many modern cardioid condensers in its price range. Ability to change capsules.

CONS: Physically a bit long and bulky for some applications.

MANUFACTURER
Red Microphones
www.vintagemicrophone.com

FOR MOST FOLKS, ANY FIREWIRE INTERFACE WILL DO.

FOR SWEETWATER CUSTOMERS, THERE'S ONYX 400F.

Ordinary FireWire audio interfaces are fine for capturing your musical ideas on the go. But if you're the typical Sweetwater customer who won't compromise quality, then you need to contact your Sales Engineer about the Onyx 400F Studio Recording Preamp with 192kHz FireWire I/O.

This professional 10-channel premium mic preamp and audio interface features four boutique-quality Onyx mic preamps, with superior headroom, sonic detail and clarity vs. the competition (123dB dynamic range and .0007% THD, measured in the real world). The Onyx 400F also offers TRS inserts for plugging your favorite outboard gear into the signal path before sending it to your Mac or PC. And an internal 10 x 10 DSP Matrix Mixer with 64-bit floating point processing and full recall—a feature not found on any other FireWire interface, at any price.

With mastering-grade 24-bit/192kHz AKM® audio converters, true 192kHz operation at full channel count, a powerful standalone operation mode, as well as robust aluminum and steel construction, the Onyx 400F boasts fanatical attention to every last detail. Not to mention exceptionally open, natural and revealing sound worthy of your finest projects. Contact your Sweetwater Sales Engineer to learn more today.

MACKIE ONYX 400F: FOUR BOUTIQUE MIC PREAMPS W/ 192KHZ FIREWIRE I/O. PLUG IN TO ONYX.

www.mackie.com

Sweetwater music technology direct

www.sweetwater.com

MACKIE.

TYPE B SPECIFICATIONS	
Capsule	1", pressure-gradient, gold-sputtered
Polar Pattern	cardioid
Frequency Response	20 Hz–20 kHz
Output Impedance	50 Ω
Noise Level (A-weighted)	<7.5 dB
Maximum SPL	138 dB (0.5% THD into 2.5 kΩ)
Sensitivity	200 mV/pa (1 kHz into 2.5 kΩ)
Dynamic Range	130 dB (2.5 kΩ load)
Power Requirement	+48V phantom power
Size	7.87" (L) × 1.77" (D)
Weight	1.04 lbs.

registers and ambience. I also used the Type B as an overhead mic for drums and on the kick drum. The mic didn't display any problems handling the sound pressure when placed one foot in front of the bass drum, which was the maximum distance I could afford at the time. As an overhead mic, at a height of 7.5 feet and directly above of the drums, the Type B sounded great, even when compared with the single small-diaphragm condenser I often default to for that job.

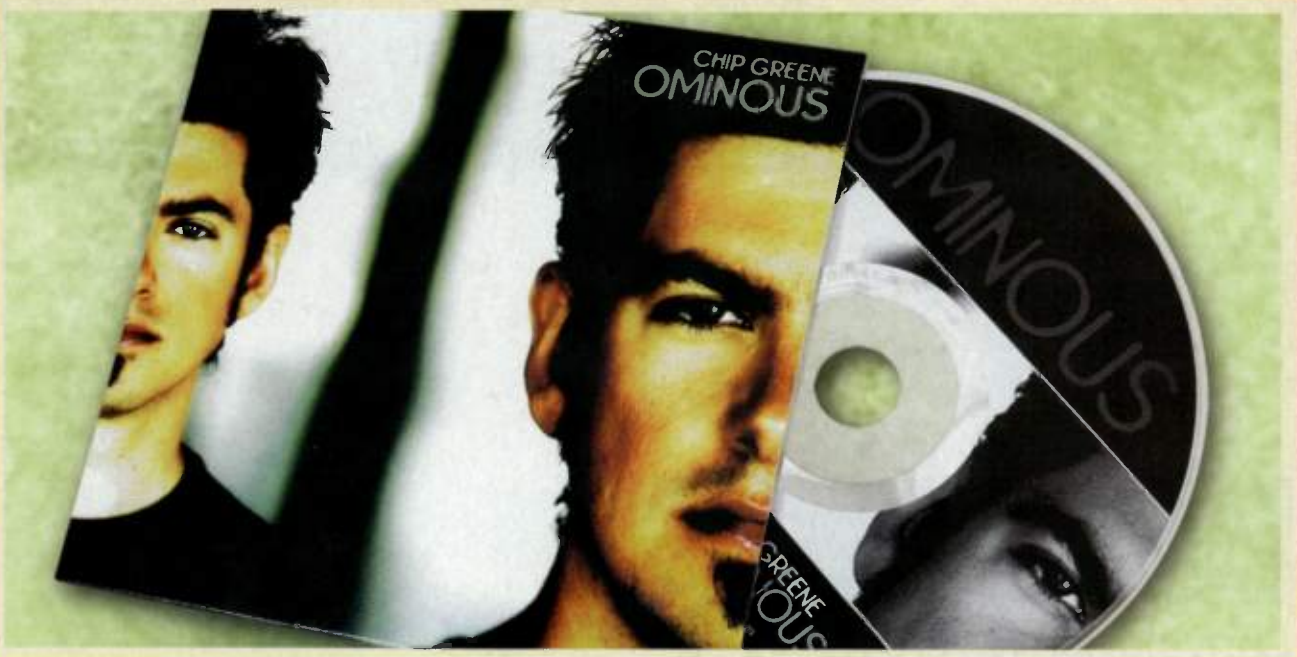
Because of its long neck, the Type B can be difficult to place in a tight spot. Other than that, I wouldn't hesitate to use the Type B in most situations.

Lollipop, Lollipop

If you stick with the basic cardioid capsule that comes with the Type B body, you will have a great-sounding, versatile mic at a great price. In fact, it is a bargain when you consider that many of Blue's Bottle Caps cost more than the entire Type B system itself, making it tempting to purchase a second mic rather than a more specialized capsule. Either way, you can't go wrong: the Type B is a very good buy.

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

So affordable you can give them away.



CDs IN FULL COLOR JACKETS JUST 99¢ EACH!

Perfect for singles, EPs, or full-length albums, CDs in jackets really pack a wallop. They're like those cool LP jackets, just smaller. Plus, they're ready in just 12 days and so unbelievably affordable, you could give them away. Not that you need to. Our jackets look so great you can sell them at full price any day. That's because we're the only place that throws in high-gloss UV coating for FREE with every jacket order – a $200 value! What else do we throw in? All our exclusive promotional tools, like six months' free web hosting, free online distribution, a free UPC bar code, a review from TAXI, and much more. So, if you're looking to save money on CDs without sacrificing quality, there's no better deal than CDs in jackets from Disc Makers. You can take that to the bank.

Package includes 1,000 replicated CDs in full-color jackets, three-color on-disc printing, and poly wrap for $990.

DISC MAKERS®

CD AND DVD MANUFACTURING MADE EASY

FREE CATALOG! Call 1-866-294-9013 or visit www.discmakers.com/em.

FIG. 1: This figure shows a waterfall display in the IR view and mic positioning in the Info window. It also shows Damping & Gains parameters.

AUDIO EASE Altiverb 5 (Mac)

Convolution reverb rises to a new level.

By Larry the O

Audio Ease, the first manufacturer to release a real-time convolution-reverb plug-in, started the convolution revolution in earnest with Altiverb. Initially available as a plug-in for only MOTU Digital Performer, Altiverb leveraged the Mac's Altivec vector-processing engine to produce very dense and realistic reverb. I reviewed version 1.4 of Altiverb in the May 2002 issue of EM and was quite impressed by its sound and its staggering processor demand.

Audio Ease has introduced Altiverb 5, a major upgrade that maintains the reverb's outstanding sound quality, adds a raft of new features, and has an extensive collection of impulse responses. Altiverb 5 remains for Mac only, but it's available in HTDM, VST, MAS, RTAS, Audio Units, and AudioSuite formats. Like most professional audio software, it is copy protected, but you can choose either iLok or challenge-response authorization.

Now with Parameters

Altiverb's most significant addition is variable parameters. The variable parameters available in Altiverb 1.4 were the reverb decay time, which could only be shortened; predelay time; and wet- and dry-level controls. By version 4, Altiverb had added only basic bass and treble EQ. After Altiverb 4's release, however, Waves introduced IR-1, a convolution reverb with variable parameters. Altiverb 5 is Audio Ease's answer to IR-1, and it's a substantial one.

Altiverb 5's user interface maintains the basic look of the original interface. It has the large virtual knob for decay time as well as the Info window, which shows photos of the space being emulated and an illustration of where the microphones were placed when the impulse response was captured (see Fig. 1). Altiverb 5 adds a drop-down menu for presets, buttons that trigger internal test sounds, a size control, and more-extensive level controls. There's also a parameter-adjustment area, a snapshot section (added in version 4), and enhanced displays.

The display section is now divided into the IR view and the Info area. The IR view has input and output metering and shows either a rotatable waterfall display representing the reverb characteristics or a multichannel display that shows the decay per output channel. In the Info area, you can cycle through screens that show the placement of sources and microphones, photos of the space, recording information, and a rotating virtual-reality movie of the space (see Fig. 2).

The parameter section has four pages—Damping & Gains, Stage Positions, EQ, and CPU—which you access using the radio buttons to the left of the parameter controls. Damping & Gains offers three bands of damping and gain controls for Direct Sound, Early Reflections, and Reverb Tail.

BAND-IN-A-BOX®

Program for Windows® & Macintosh®

2005 FOR WINDOWS® IS HERE!

Attention Macintosh Users: Band-in-a-Box 12 for OSX is HERE!

Electronic Musician EDITORS' CHOICE

INTELLIGENT MUSIC SOFTWARE FOR YOUR PC OR MAC® IS HERE!

Band-in-a-Box 2005 for Windows® is here—Automatic Accompaniment has arrived!

The award-winning Band-in-a-Box is so easy to use! Just type in the chords for any song using standard chord symbols (like C, Fm7 or C13b9), choose the style you'd like, and Band-in-a-Box does the rest... automatically generating a complete professional quality five instrument arrangement of piano, bass, drums, guitar and strings in a wide variety of popular styles.

NEW FEATURES IN BAND-IN-A-BOX 2005 FOR WINDOWS®

There's a new fully-featured **Piano Roll Window**, similar to the type found in many sequencer programs. This allows you to edit the Melody or Soloist tracks with greater ease and precision.

The Guitar window is enhanced, and now supports **Alternate Guitar tunings,** including DADGAD, Drop D, Double Drop D, Open G and 11 others, including Nashville High Strung tunings! Guitar bends now show up in real-time on the guitar fretboard.

New 3, 4, and 5-part Jazz Harmonies are added with voicing in Fourths.

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

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

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

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

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

"...one of the few music products that sits in the 'must-have' category." Sound On Sound

"...repeatedly surprises and delights you." PC Magazine

NEW! Styles Sets for Band-in-a-Box... only $29 (each)

NEW! Styles Set 44: Unplugged 2... only $29
Styles Set 44 includes twenty new styles featuring acoustic and electric guitars.

NEW! Styles Set 45: Southern Rock... only $29
This great new set features 20 brand new Styles based on the feels of the great Southern-Rock bands such as SteveE, Alab, LynrydS, AllmBro, Creedence, LosLob, LFeat, and more.

NEW! Styles Set 46: Requested 4... only $29
This set features more great styles suggested by our customers along with new fretboard styles that take advantage of the new Fretboard Tunings available with Band-in-a-Box 2005.

NEW! Styles Set 47: Contemporary Country 2... only $29
Features 20 great new crossover styles with live drums, live MIDI guitar, driving bass, and contemporary keyboard sounds. Includes: Country, Folk, Gospel, Soul, R&B and more.

"an incredible program" Jazz Education Journal

"4-Star Rating" MacWorld

"Editor's Choice" Electronic Musician

"Technical Excellence Finalist" PC Magazine

NEW! Soloist Sets for Band-in-a-Box... only $29 (each)

NEW! Soloist Set 16: Saxophone... only $29
Create an unlimited number of Swing and Modern solos specifically for the nuances of the saxophone.

NEW! Soloist Set 17: Trombone... only $29
Older Swing and Modern trombone soloing. Instantly generate a Trombone solo in the style of the 30s and 40s players or choose a contemporary Jazz approach with some inside-outside playing.

BAND-IN-A-BOX PACKAGES...

Band-in-a-Box Pro ONLY $88
The latest version of Band-in-a-Box, includes 150 Styles, Soloist Set 1, and Melodist Set 1.

SPECIAL VALUE PAKS...

Band-in-a-Box MegaPAK ONLY $249
This is "the works," a premium value Band-in-a-Box package!
Includes the latest version of Band-in-a-Box **PLUS** Styles Sets 0–47, Soloist Sets 1–11, 16 & 17, Melodist Sets 1–5, and The Band-in-a-Box Video Tutorial PAK.

Video Guitar Lessons—"PLAY LIKE THE PROS"... only $19 (each)

Each volume of this series features hours of video instruction by master guitarists. Each program includes on-screen video guitar fretboard, transcribed notation, tab and complete printout. Lessons include riffs, songs, tips, techniques and guitar settings—everything you need to learn to play like the pros.

- ✔ **NEW! Essential Blues Guitar Vol. 1: 101 Riffs** 5 hrs. video
- ✔ **NEW! Essential Blues Guitar Vol. 2: 20 Tunes** 2 hrs. video
- ✔ **NEW! Essential Rock Guitar Vol. 1: 101 Riffs** 5 hrs. video
- ✔ **NEW! Essential Rock Guitar Vol. 2: 20 Tunes** 2 hrs. video
- ✔ **NEW! Essential Jazz Guitar Vol. 3: 20 Tunes (Comping)** 2 hrs. video

Other Add-ons for Band-in-a-Box

- ✔ **Styles Set 4–43: Various** ..... only $29 (each)
- ✔ **Soloist Sets 2–11** ..... only $29 (each)
- ✔ **"Artist" Soloist Sets** ..... only $29 (each)
- ✔ **Melodist Sets 2 & 3** ..... only $29 (each)
- ✔ **NEW! Video Guitar Lesson Series: Various** ..... only $19 (each)
- ✔ **101 Essential Phrases for Band-in-a-Box: Various** ..... only $19
- ✔ **Band-in-a-Box Video Tutorial PAK** ..... only $29

Features listed are for Windows® version. **Macintosh®** users: for a full list of features, please visit **www.pgmusic.com/band.htm**

PG music

PG Music Inc. • www.pgmusic.com

DOWNLOAD IT NOW !!!

29 Cadillac Ave., Victoria, BC V8Z 1T3 CANADA
Phone (250) 475-2874 • (800) 268-6272
(888) PG MUSIC
www.pgmusic.com • sales@pgmusic.com
Fax (250) 475-2937 • (888) 475-1444

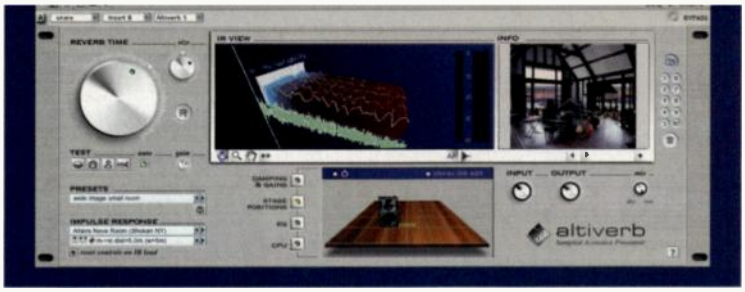


FIG. 2: The Info window shows a photo of the space in which the impulse response was recorded. Note the illustration of the stage positioning at the bottom of the screen.

The Stage Positions feature resulted from research conducted by Audio Ease on the effect that stage position has on a room's impulse response. That feature allows you to place a virtual source (represented as one or two loudspeakers for mono and stereo sources, respectively) on the soundstage. You can move mono sources left to right and stereo sources closer or farther apart. Front-to-back placement is possible for mono or stereo sources (see **Web Clips 1, 2, 3, and 4**).

The EQ page has two fully parametric bands and bass and treble shelving EQ, with ±24 dB of gain on each band. A noneditable graphic display shows the resulting curve.

The CPU page has a meter showing how hard Altiverb is hitting the CPU, and it has several settings designed to allow the CPU load to be lightened in some situations. For instance, there is a decay knob that sets the level to which the reverb must decay before it is cut off. That control won't be much help for delicate or exposed material, but in dense mixes the cutoff level can be raised considerably without adversely affecting your audio.

More New Features

Altiverb now accepts multichannel inputs up to 5.1. The reverberator, however, is still only mono or stereo input, so the multichannel input is mixed down and then fed to the reverberator. Although it is always possible to instantiate two stereo Altiverbs for quad input, that still doesn't sound quite the same as a true multichannel input reverb. (The sonic difference could be noticeable for orchestral and post-production applications, but not for most forms of popular music.) Of course, the computational demands with more than two input channels would be huge. The Input/Output gain section changes its configuration with the output configuration, adding pots for multichannel output.

A new snapshot area allows you to capture as many as ten snapshots and recall them manually or through automation. The snapshots are easy to use and are especially useful for post-production applications. Transitions from one snapshot to the next are seamless if they use the same impulse response; if not, the output mutes briefly while changing. Though presets are stored in an Altiverb data folder, snapshots are stored with your DAW session.

You can now use the large decay knob to lengthen and shorten decay time, and the knob has gained a Reverse-Reverb button and a Size pot. The Size pot shifts room modes and affects decay time.

Altiverb comes with several built-in test sources. You can also add your own. The default setting triggers a test sound whenever you finish tweaking a parameter, letting you hear the reverb without having to start playback. That is a useful feature.

A new Presets menu contains applications-oriented presets. You can still go directly to the Impulse Response menu and select one from the large collection of impulse responses.

Hearing Is Believing

I evaluated Altiverb 5 using the same G4/800 MHz Mac that I used for the Altiverb 1.4 review. This time, however, I ran OS 10.3.8 and DP 4.5.2. Though considered a muscle machine when I first reviewed Altiverb, by current standards, this Mac is only a couple of notches above the minimum platform required for Altiverb 5.

Audio Ease significantly reduced Altiverb's CPU demands in version 4, and the difference is noticeable. Instantiating a single stereo-in, stereo-out reverb still made DP's Audio Performance meter jump from about 10 or 15 percent to just under 50 percent, but that's a lot better than when I ran it under version 1.4 on the same machine.

When I added a surround master and inserted a 5.1 Altiverb on it, the Audio Performance monitor started flashing red and green. But the overload light never went on, and Altiverb's CPU meter showed just under 50 percent. You'll need a Power Mac G5 to do real surround work with Altiverb.

Altiverb's sound is still great: very dense, smooth, and spectrally balanced. The EMT 140 emulation is the best plate sound I have heard from any digital reverb. The EQ and damping are useful and provide powerful shaping options. Add the color changes wrought by the Size pot, and it is clear that Altiverb offers tremendous tonal control. You can adjust almost all parameters with little or no interruption in the sound.

PRODUCT SUMMARY

AUDIO EASE Altiverb 5

convolution reverb software
$595 (MAS/RTAS/VST/Audio Units)
$895 (adds HTDM)
upgrade from version 4, $169

OVERALL RATING (1 THROUGH 5): **4.5**

PROS: Superb sound. Useful selection of parameters. Extensive impulse-response collection. Many powerful new features.

CONS: CPU hit, though improved, is still not to be taken lightly.

MANUFACTURER
Audio Ease
www.audioease.com

SOUND LIKE A MILLION BUCKS
AND SAVE BIG ON THESE PLUG-IN BUNDLES!

TDM Trio A
EQ
Dynamics
Inflator

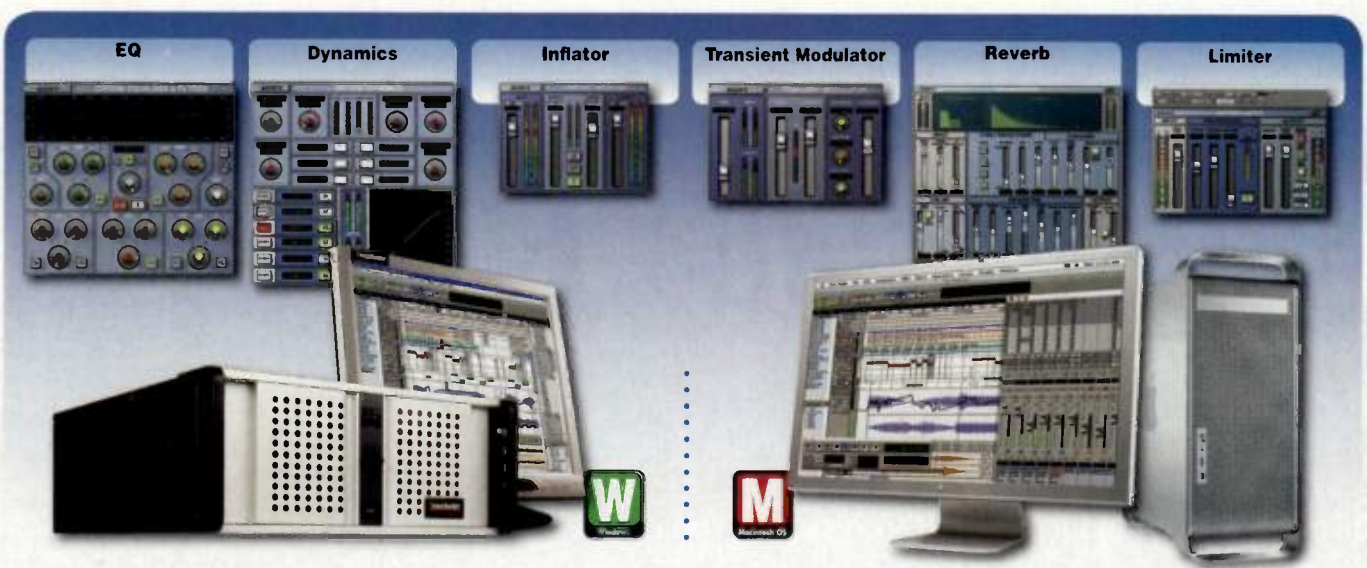
TDM Trio B
EQ
Dynamics
Transient Modulator

TDM Trio C
EQ
Inflator
Transient Modulator

TDM Trio D
Dynamics
Inflator
Transient Modulator

SOxBox TDM
Equaliser & Filter
Dynamics
Inflator
Transient Modulator

OxRestorLE
Denoise
Debuzz
Declick



Oxford Plugins

Sony absolutely redefined the world of professional music production with the Oxford OXFR3 digital console. Known for its surgical precision, pristine sound and musical character, the OXFR3 quickly became the console of choice for many of the biggest names in the business.

The Sony Oxford Series of Pro Tools plug-ins delivers the essence of that million-dollar console to your desktop. No mere emulations, the EQ and Dynamics plug-ins use the same DSP code developed for the original OXFR3, while the rest of the Oxford line was developed by the Oxford team to provide astounding control over every aspect of your audio productions.

Fully compatible with Pro Tools for OSX and Windows, Oxford plug-ins will transform your system whether it's based on a Macintosh or one of the incredibly powerful Sweetwater Creation Station audio PCs.

The Pro Tools experts at Sweetwater are often asked for their recommendation on the most essential Pro Tools plug-ins available. Time and time again, their answer comes down to one word. Oxford.

Sweetwater
music technology direct™

www.sweetwater.com
(800) 222-4700

SONY®

On an Impulse

The collection of impulse responses that comes with Altiverb is huge and includes many European churches, auditoriums, and recording studios, as well as a few from New York (see **Web Clip 5**). There's also a healthy selection of sampled hardware, such as the plate mentioned earlier, the AKG BX20E spring, the Lexicon 480, the EMT 250 digital, and many more. Each of them has a handful of impulse responses, adding up to a very rich assortment. With a convolution reverb, the key to sound quality is well-engineered impulse responses; Audio Ease constantly adds good impulse responses to its site, so you'll always have a large collection of reverb colors to work with.

Altiverb enables you to make and use your own impulse responses, as it has since the program original release. The Altiverb disk includes the Sweep Generator and Altiverb IR Preprocessor, with appropriate instructions, to facilitate the process of creating impulse responses in Altiverb's proprietary file format.

I have only a few minor quibbles: the lack of multichannel inputs is one, but given how difficult convolution is computationally, it might not be practical to expect that feature. Also, none of the parameters are displayed numerically until you click on a knob. Although that arrangement is workable, I prefer being able to take in all of the settings at a glance.

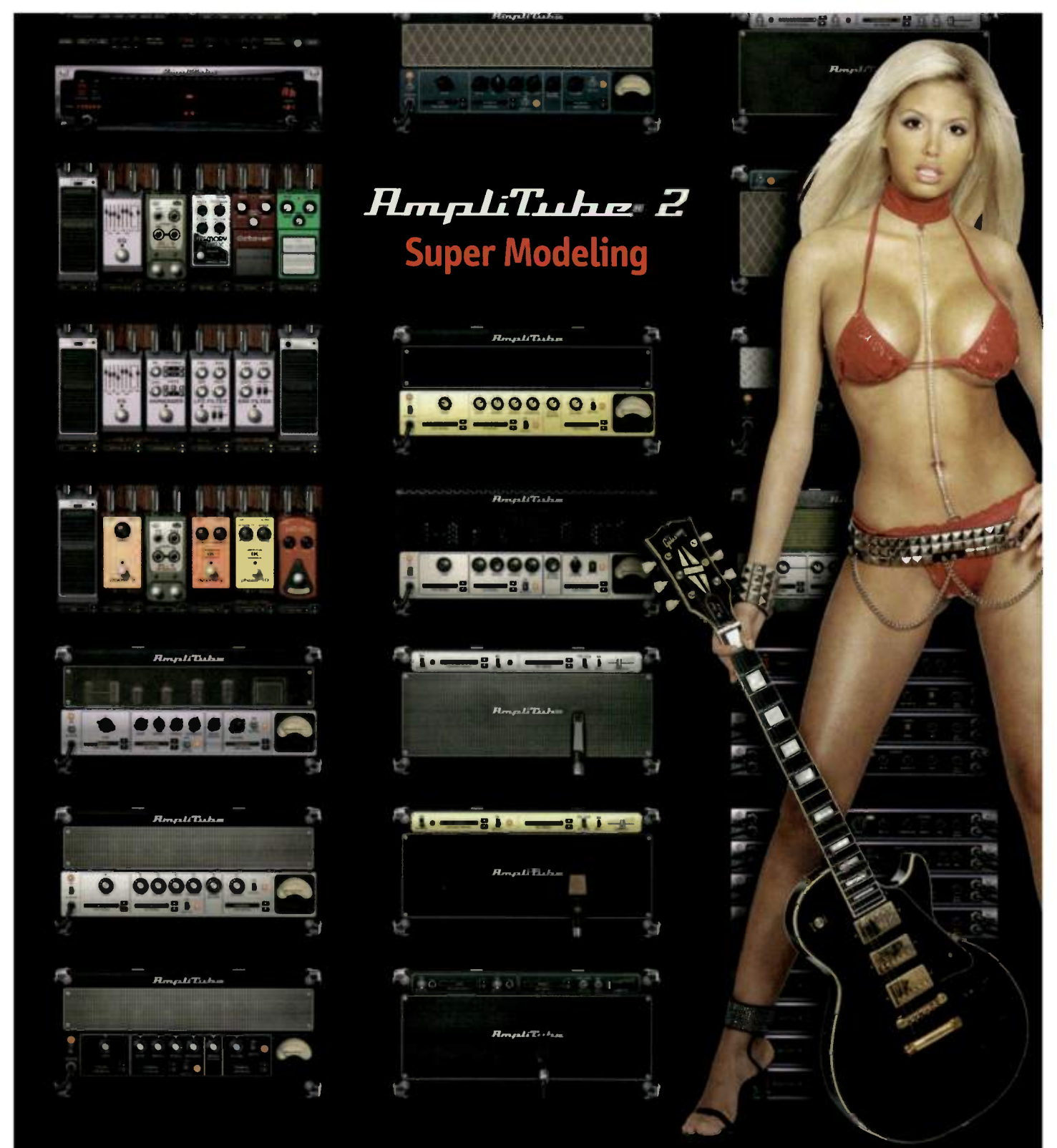
Audio Ease had a winner with the sound of the original release of Altiverb. Now the company has brought the product's features up to the same high level. Audio Ease did an excellent job of choosing parameters that will get used all the time, rather than going for the glitz appeal of things that you would use only occasionally.

Altiverb gives you flexibility and variety, is straightforward to use, and has good presets, all at a reasonable price. The sound of the EQ and damping is superb, and the user interface is designed well. The addition of test sounds and application presets adds useful functionality that will come in handy. The recording information and photos help give a feel for the space.

In short, Altiverb 5 is unquestionably at the top of the digital-reverb heap—a first choice for everything from post-production to jazz or classical, and from rock 'n' roll to hip-hop.

EM WEB CLIPS

Larry the O's San Francisco–based company, Toys in the Attic, provides a variety of musical and technical services. He is also a contributing editor to EM. As if that weren't enough, he has a day job, too.



Plug-in all the Amps and Effects you've ever wanted

AmpliTube 2 is the ultimate amp and effects modeling plug-in for Mac and PC and one of the best sounding and most powerful guitar effects systems ever made. Experience the power of 20,000 amp combinations with separate PRE, EQ, AMP, CABINET and MIC modeling for a unique custom amp tone, up to 30 simultaneous stomp and rack effects, ultra-accurate new analog emulations of classic vintage guitar gear, 2 series/parallel guitar rigs and much more... Coming soon on **www.amplitube.com**

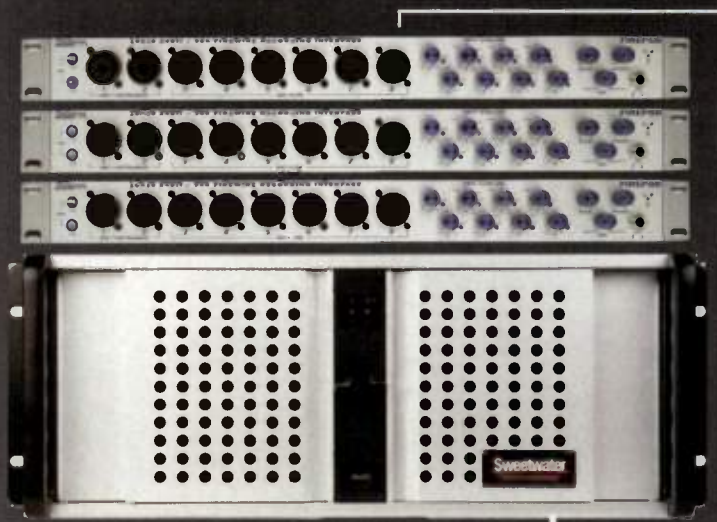
IK Multimedia. Musicians First

www.ikmultimedia.com

TOTAL RECORDING STUDIO

for the road

Sweetwater and PreSonus have taken all of the technology and capabilities of a professional recording studio and packed it into a fully transportable system complete with twenty-four microphone preamplifiers and rock-solid audio computer. Perfect for recording live gigs.



PreSonus FIREPOD The FIREPOD is the most affordable professional FireWire recording interface on the planet with eight pedigree Class A PreSonus microphone preamplifiers, eight balanced outputs, MIDI/SPDIF I/O, and free Cubase LE 48-track audio production software. Up to three FIREPOD's can be daisy-chained together for 24 simultaneous microphone/line inputs for professional multi-track recording in the studio or at a live show. The FIREPOD has been tested and approved by Sweetwater for use with the Creation Station so that you can be confident your recording system will work flawlessly and efficiently from day one!

Creation Station Rack When Sweetwater set out to build the perfect audio PC, we put our 26 years of experience with computer audio to work, and developed a series of machines that are unmatched in audio performance, reliability and value. Whether you're composing music in your home studio, recording your next live album on the road, or scoring to picture at a major post facility, there's a Creation Station for you. Starting at under $1000, the Creation Station machines are whisper quiet and built to withstand the demands of professional audio production, through the use of components like Auralex acoustic treatment and Glyph hard drives. Available in both tower and the rackmount configuration shown here, the Creation Station is sure to be the centerpiece of your PC studio for years to come.

SKB Roto Shock Rack When you're recording on the road, you can rely on SKB. The Roto Shock Racks feature a "road ready" roto molded tough shell with an integrally molded valance that eliminates the need for a metal valance on the outside of the case. Standard rack depth front to rear rail is 20" with a standard 19" rack width per EIA standards. The efficiently redesigned frame with threaded steel rails and aluminum cross components are factory equipped with 8 HM-245 elastomeric, high damping, wide temperature range shock mounts. Additional shock absorbers can be easily field mounted in each corner to handle heavier loads. Removable front and rear doors are fitted with rubber gaskets for water resistant protection. Easy-grip molded handles make transport convenient and recessed heavy-duty spring loaded twist latches allow these cases to meet ATA flight specifications.

featured band: Woven - www.wovenmusic.com

Cubase SX3

Cubase SX3 takes music production to an entirely new level. SX3 adds more than 70 new features including Audio Warp - a high-quality real-time, Time Stretching and Pitch Shifting algorithm that automatically adopts a project's tempo. Also new in SX3 is External FX Plugins. This function allows for direct integration of external hardware effects processors into the VST audio mixer just like software! The first step in the Steinberg/Yamaha collaboration is called Studio Connections "Total Recall". This modular editing system builds a powerful bridge between the virtual and physical studio. Opening a project can not only recall an entire studio setup within seconds but allow full graphic editing right inside Cubase SX3.

FIREPOD owners can UPGRADE to Cubase SX3 and SAVE $100!

Pro Co Professional Audio Cables

Pro Co cables, all 12 million of them, have helped to reliably hook up musicians, studios, live concerts, churches and stadiums, night after night, year after year – for the past 30 years. If you want your cables to last for a very, very long time and give you at least the number of years of service as the gear between your cables, buy a Pro Co. Designed for use "on stage with the best" with an ironclad "any excuse, even abuse" warranty, Pro Co makes the most reliable cables on the planet.

Shure KSM32

The KSM32 cardioid condenser microphone has an extended low frequency response and is designed to provide an open and natural reproduction of the original sound source. Flexible enough to handle a variety of demanding sound sources, the KSM32 has a 15dB attenuation switch for handling extremely high sound pressure levels associated with drums, percussion, ensembles and wind instruments making it equally useful at home in the studio or on stage. To achieve extended low frequency reproduction, the KSM32 features an embossed, ultra-thin, high-compliance diaphragm. This gold-layered, low-mass Mylar® diaphragm provides the excellent transient response necessary to faithfully reproduce any sound source.

Sweetwater
music technology direct
800-222-4700
www.sweetwater.com

PreSonus
freedom to record

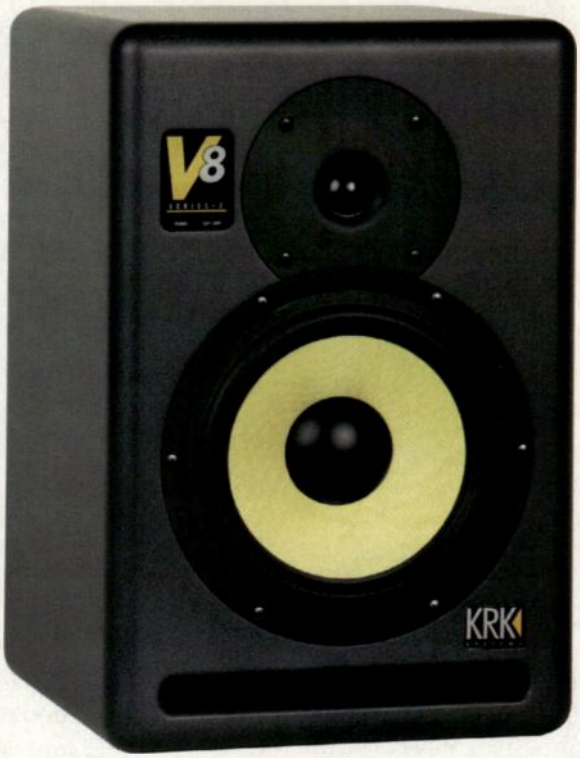


FIG. 1: KRK's updated V8 powered monitor features an 8-inch Kevlar woofer, a 1-inch domed tweeter, and a 180W amplifier.

KRK SYSTEMS V8 and Rokit RP10S

A 2.1 powered-monitor system for discerning ears and eyes.

By Eli Crews

With so many high-quality and affordable studio monitors available, choosing a pair can be difficult. Although personal preference can be a guide, the monitor must provide an accuracy that lets you see into your mixes and decide what will help them sound faithful when played back in different environments. Along with KRK Systems' new Rokit RP10S powered subwoofer, the company's new V8 powered near-field monitors make up a 2.1 system that offers accuracy and value.

Yellow Bellied

The updated V8 (see **Fig. 1**) is one member of KRK's V Series 2 line of 2-way active powered monitors. The V8 features an 8-inch Kevlar woofer and a 1-inch soft-dome tweeter. (The other members of the V Series, the V4 and V6, offer 4-inch and 6-inch drivers, respectively.) KRK's speakers stand out in a crowd: the yellow Kevlar woofer cones of the V8s are instantly identifiable.

The V8s are large for close-field monitors, almost venturing into midfield territory. They have attractive, soft-looking beveled corners. The V8s are sturdily built, and each has a slotted port at the bottom of the front baffle. According to KRK, the slotted design is more effective than are round openings in reducing port turbulence (distortion). The V8's amplifier provides 120W to the woofer and 60W to the tweeter.

The V8s, available for a reasonable price (street price is around $500 each), are loaded with little extras that add value to the monitors. The power switch's Auto position detects audio passing through the speaker and turns on the integrated power amplifiers in each monitor. If the speaker sits idle for 20 minutes, it powers itself down. A yellow LED glows on the front of each monitor whenever the amplifiers are powered up. Other switches on the rear of the speaker include a high-frequency-adjust switch, which boosts or cuts highs by 1 dB at 1 kHz, which, in my opinion, is a low point for an HF adjustment. The low-frequency adjust switch has settings for the internal highpass filter, allowing you to roll off the low end at 45, 50, or 65 Hz with slightly different

The professional palm-size recorder.

insert CompactFlash and record

MicroTrack 24/96

record | transfer | edit | share

palm-size

The MicroTrack 24/96 is the new palm-sized 2-channel recorder that lets you record professionally on your terms–anywhere, anytime. This rugged device delivers all the sound quality of our critically acclaimed audio interfaces and preamps–all the way up to 24-bit/96kHz. There's even phantom power for your favorite condenser microphones. Use CompactFlash cards to record song ideas, practice sessions, jams, gigs, field samples and board mixes. Then drag and drop your files to your music app or post them right to the Web. The MicroTrack 24/96 is smaller, lighter and records longer than any 2-channel recorder on the market.

- 2-channel WAV and MP3 recording up to 24-bit/96kHz
- records to convenient CompactFlash or microdrives
- immediate USB 2.0 file transfer to PC/Mac
- balanced ¼" line/mic ins with phantom power
- S/PDIF digital in; RCA and 1/8" headphone monitor outs
- record up to 8 hours per battery charge

GET M-POWERED

M-AUDIO

recording interfaces | USB keyboards | studio monitors | microphones | preamps | sound libraries | music software www.m-audio.com

curves, which are indicated by a frequency graph next to the switch. Those two adjust switches give you minimal but effective ways of tuning the speaker to your room and setup.

A gain pot, adjustable only by screwdriver to prevent accidental tweaks, lets you set the sensitivity of each monitor independently (the default setting is +6 dB). The final control on the rear panel is the Clip Indicator/Limiter switch. With it, you can enable a red LED indicator on the front of the speaker. The LED glows when you have reached clipping levels or when the onboard limiter circuit is switched in. The circuit protects the speaker from damage caused by overloading. The limiter also reportedly activates a green LED when it kicks in, but I couldn't get either LED to light up, despite pushing my mixes up to face-melting levels. The amplifiers appeared to stay clean, even with signals way above my usual control-room working levels.

Beefed Up

My first sonic impression of the V8s alone was a positive one. Words such as "meaty" and "thick" immediately came to mind, because these speakers have a healthy dose of midrange in them. The 8-inch drivers are slightly larger than either of my own close-field pairs, so my perception of the hefty low mids is based partly on what I am used to hearing. KRK's V8 literature acknowledges that the speakers aren't flat and explains that a flat frequency response isn't what makes a good studio monitor. I agree with that assessment, and the V8's tuning was flattering to my trusty reference discs.

Adding the Rokit RP10S powered subwoofer (see **Fig. 2**), which was included in my review package, enhanced the sound substantially. The subwoofer features a 10-inch composite woofer with a 225W (peak) amp. The RP10S has an internal highpass filter set at 80 Hz. You can run your monitor mix through the RP10S's XLR, TRS, or RCA connections on its way to your stereo speakers, a common and convenient way to deal with the crossover frequencies between your subwoofer and your main monitors. The RP10S

FIG. 2: The Rockit RP10S subwoofer uses a 10-inch composite driver with a 225W (peak) amp.

THE BOOKSHELF IS BACK!

Your favorite trio of audio mags now offers online shopping access to top titles in the biz like *MIM Pro*, *Mix*'s *Master Directory*, EM's *Personal Studio Buyer's Guide*, coveted Remix Hotel t-shirts and *Remix* CDRoms, Thomson Guide publications and more.

Remix Bookshelf

Electronic Musician Bookshelf

Mix Bookshelf

Online at:

mixonline.com/mixbookshelf
emusician.com/embokshelf
remixmag.com/remixbookshelf

To order by phone, call

800-262-1954

has two knobs: one for adjusting the subwoofer's lowpass filter to a value between 80 Hz (the correct setting for use with the V8s) and 130 Hz, and another for setting the gain of the subwoofer's integrated amplifier.

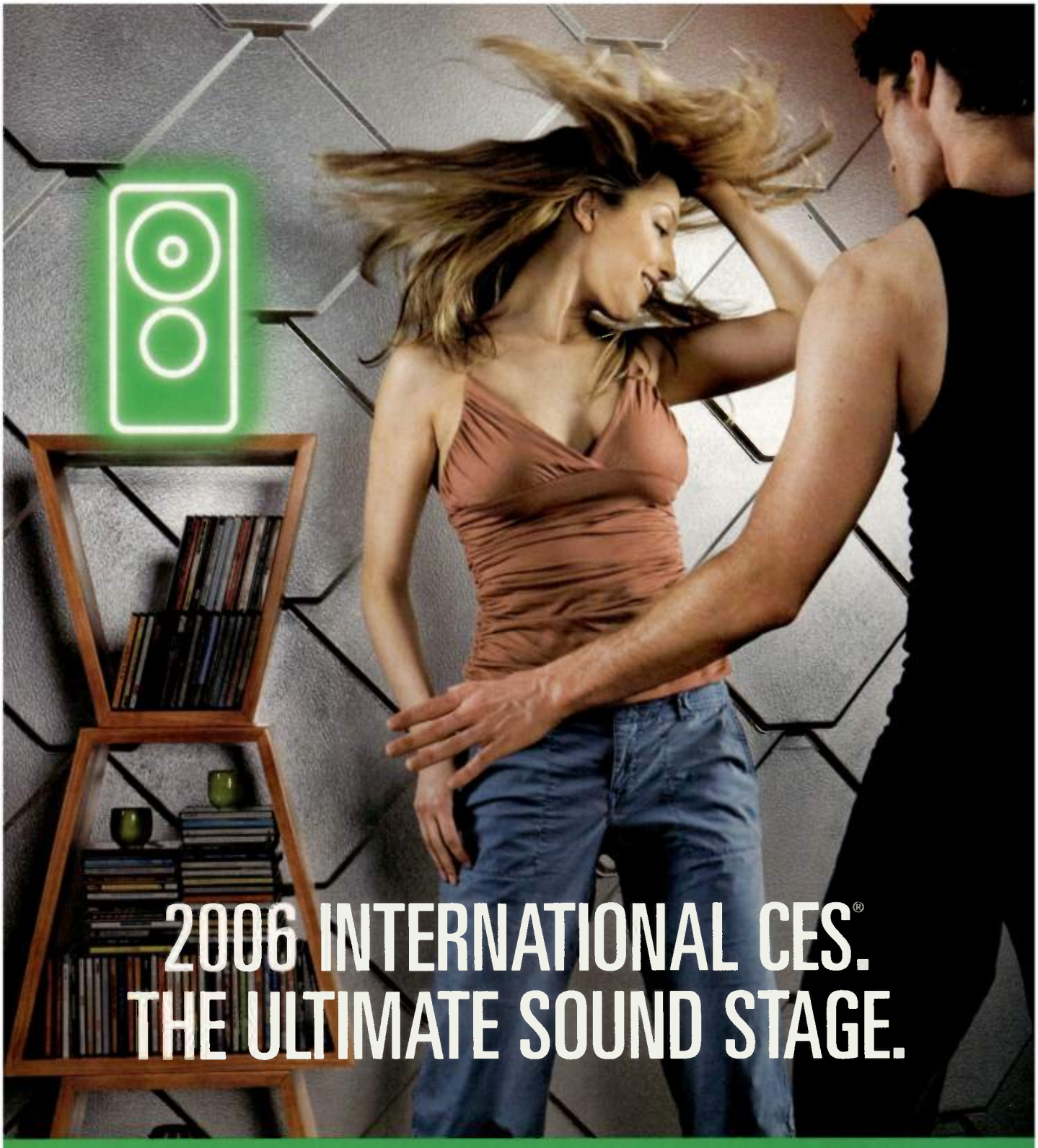
A Phase Switch is also included to help correct phase problems due to placement and room reflections. (The phase switch flips the polarity of the signal in the subwoofer 180 degrees; it doesn't alter the phase.) The manual gives some helpful hints for setting the three controls to get the best results from the subwoofer in your monitoring space. I found settings for the subwoofer that gave me the low frequencies to which I've grown accustomed, and the system didn't sound unnaturally woofy or sloppy. My only complaint with the subwoofer controls is the lack of any detents on the pots, which would greatly facilitate reproducing a previous setting.

V8 SPECIFICATIONS

Drivers	8" woven Kevlar woofer; 1" soft-dome tweeter
Analog Inputs	(1) balanced XLR/¼" TRS combo jack
Input Impedance	10 kΩ
Input Sensitivity	+6 dB to –30 dB variable
HF Adjust Control	+1 dB, flat, or –1 dB
LF Adjust Control	–3 dB @ 42 Hz, 50 Hz, or 65 Hz
Amplification	LF: 120W; HF: 60W
Frequency Response	42 Hz–20 kHz, ±1.5 dB
Maximum SPL	109 dB average, 111 dB peak
Dimensions	11" (W) × 16.7" (H) × 12" (D)
Weight	35 lbs.

The Skinny

Many engineers believe that the most important factor in choosing a monitoring system is how well their resulting mixes translate to the real world. Whether any one



2006 INTERNATIONAL CES®. THE ULTIMATE SOUND STAGE.

Audio technology will surround and surprise you at the 2006 International CES. From stand-alone products to integrated components and systems, experience the difference audio can make for your business at the world's largest tradeshow for consumer technology.

HOTTEST PRODUCTS PEOPLE PLACE JANUARY 5-8, 2006 LAS VEGAS, NV www.CESweb.org

EMERGING TECHNOLOGY | MOBILE ELECTRONICS | AUDIO | DIGITAL IMAGING | WIRELESS | GAMING | HOME THEATER/VIDEO | HOME NETWORKING

Look for these icons to navigate CES.

2006 International CES®

DEFINING TOMORROW'S TECHNOLOGY

PRODUCED BY CEA®

REVIEW

RP10S SPECIFICATIONS

Driver	10" glass aramid composite woofer
Analog Input	(2) balanced XLR, (2) balanced ¼" TRS, (2) unbalanced RCA
Analog Output	(2) XLR, (2) balanced ¼" TRS
Highpass Filter	80 Hz fixed
Lowpass Filter	0–130 Hz variable
Input Impedance	10 kΩ
Power Rating	150W RMS, 225W peak
Signal-to-Noise Ratio	98 dB
Total Harmonic Distortion	.05%
Frequency Response	36 Hz–150 kHz, ±1.5dB
Dimensions	14" (W) × 15" (H) × 15.7" (D)
Weight	42 lbs.

monitoring system can work well in every environment is doubtful; nonetheless, the environment in your control room should function so that your mixes sound good on various systems, such as audio in cars, boom boxes, and home stereos. My studio partner John Finkbeiner and I agreed that the combination of the V8s and the RP10S gave us an above-average representation of how our mixes would sound in those other environments. The KRK system sometimes even edged out the systems that we have used regularly and with which we have grown familiar over the years.

Overall, I like these speakers. They complement my other monitors in a way that I will miss when the KRK system is gone. If I were in the market for a new pair of close-field monitors, I would seriously consider buying them, especially because the entire 2.1 system costs about $1,300, which is about the same price as my main subwoofer alone. There is a slight emphasis in the low- and high mids compared with my other monitors, making the V8s a little tubby and somewhat harsh sounding on certain material. But I found those qualities helpful in making my mixes come across more smoothly on other systems. I recommend giving the V8s a listen if you are in search of a new monitoring system.

PRODUCT SUMMARY

KRK SYSTEMS V8 and Rokit RP10S

powered monitors and subwoofer
V8 monitor
$999 each

Rokit PR10S subwoofer
$599.99

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

PROS: Clean signal even at very loud levels. Subwoofer has flexible I/O. Mixes tend to translate well. Concise, informative manual.

CONS: No detents at landmark frequencies or levels on subwoofer controls.

MANUFACTURER
KRK Systems
www.krksys.com

Eli Crews has his face melted off on a regular basis at his Oakland, California, recording studio, New Improved Recording, www.newimprovedrecording.com.

Expand your creativity with a blast from the past

minimoog V

CS-80V

moog modular V

ARP 2600 V

YAMAHA

Distributed in the US by Yamaha Corporation of America

www.arturia.com

QUICK PICKS

M-AUDIO

Trigger Finger

By Orren Merton

M-Audio's Trigger Finger ($249) joins a growing a number of USB keyboards and other MIDI controllers that offer Velocity-sensitive MIDI pads. MIDI pads are ideal for triggering rhythmic sounds and samples that don't require a tradit onal keyboard layout to play. The Trigger Finger is multiplatform, portable, and suitable for stage and studio. And, like many M-Audio products, it is affordable.

Aim and Squeeze

Although the Trigger Finger's main feature is its bank of 16 Velocity- and pressure-sensitive pads, it offers much more. Eight rotary knobs are located above the pads, and an LED display, four function buttons, and four sliders are on the left. The first two buttons let you select, edit, and save presets to 16 memory locations. Another button toggles between Control Mute and Note Mute modes, and the remaining button toggles between a user-determined locked Velocity and full Velocity. All the knobs, sliders, and pads are fully user-assignable.

M-Audio's Trigger Finger is a USB-powered MIDI controller that gives you 16 Velocity- and pressure-sensitive pads, 4 sliders, and 8 knobs—all of them user-assignable to transmit an assortment of MIDI messages.

On the back of the Trigger Finger are its USB port, MIDI Out port, and power connection, as well as a Kensington lock slot. Though the Trigger Finger is bus powered, an optional 9V DC adapter lets you use it as a standalone MIDI controller without a computer.

The Trigger Finger is a USB-class-compliant device, meaning it harnesses the built-in MIDI support of Mac OS X or Windows XP. Simply route a USB cable from your computer to the Trigger Finger, and you can immediately use the unit—there aren't any drivers to install. I tried hot-plugging and unplugging the Trigger Finger to and from my Apple Power Mac G5 and Dell Inspirion 6000, and my OS and audio applications always recognized it.

Unlike Mac OS X, Windows XP doesn't offer driverless multiclient USB support. Consequently, if you run Windows XP and want to use the Trigger Finger with more than one application simultaneously (using ReWire to connect Reason to Live, for example), then you will need to install the included multiclient Windows XP driver. Thankfully, M-Audio's MIDI Controller Series Wizard makes installation quick and intuitive.

Using the Trigger Finger is equally intuitive. The unit supplies numerous presets for Live, Reason, and iDrum, as well as for GM- and XG-format drums. To use any of those applications or formats, simply launch your application, select the preset, and start triggering sounds immediately. The package also includes Ableton Live Lite 4.

Trigger Happy

The Trigger Finger is surprisingly deep. Striking a pad with your fingertip will transmit an assigned MIDI Note, Velocity, and a user-definable MIDI Control Change (CC) value (but not Aftertouch) that responds to pressure. With the Velocity Lock feature, you can set up all the pads to trigger the same MIDI note at a different Velocity level. Twisting knobs and moving sliders will also send MIDI CC values. You can send Program Change or Bank Change messages by pressing the Program/Bank Change button and a corresponding pad. To minimize parameter jumps, pressing the Control Mute button lets you move sliders and knobs within the ballpark of your onscreen parameters without sending any values.

You can create your own pad, slider, and knob assignments using either the hardware's user interface or the included Enigma editor software. Because the Trigger Finger has only a 3-character LED for visual feedback, I recommend using Enigma, which offers convenient, graphical, drag-and-drop editing.

I enjoyed using the Trigger Finger. It is simple enough to get up and running quickly, and yet deep enough for even advanced MIDI tweakers. I used the built-in Live and iDrum presets, and I also used the unit to trigger Apple Logic's Sculpture plug-in. I wish it had a better display and perhaps some LCD windows above the sliders and knobs, but those features would increase its cost. In addition, instead of settling for Control Mute mode, I'd rather be able to move a knob or slider without changing its assigned parameter until it reached the current value. Even without those extras, though, you will have a blast with the Trigger Finger.

Overall Rating (1 through 5): 4
M-Audio
www.m-audio.com

DOEPFER

R2M

By Gino Robair

Horizontal control surfaces—ribbon strips in particular—have always been popular on electronic instruments. Doepfer based the design of its ribbon controller on the Trautonium, an early German electronic instrument that used a string manual to control pitch and volume. The Doepfer manual is a horizontal position sensor, played with the tip of a finger, that includes a conductive rubber strip to sense pressure.

Doepfer's first version used an analog-synth-style module as the interface and offered two control voltage (CV) and two gate outputs. To power it, you needed an A-100 frame and power supply.

In contrast, the R2M ($299) is a standalone system consisting of a ribbon manual and a tabletop hardware interface. Unlike its predecessor, the R2M (which stands for ribbon-to-MIDI)

New Soundware for the Holidays!

Jazz & Big Band

The world's first Jazz and Big Band sample library features over 50 individual instruments including: a comprehensive saxophone collection (16 different saxes), 5 trumpets (with various mutes plus scream trumpet), 5 trombones (with various mutes), a complete rhythm section, guitars, a jazz piano, electric piano, woodwinds, acoustic and electric basses, vibraphone, Latin percussion and more. The integrated Native Instruments Kontakt Player supports VST, DXi, RTAS & AU, and supports popular notation programs, Mac or PC. $259.

Stradivari Solo Violin

A Stradivari Violin for $199! A virtual instrument that can sound like the best violin ever made! Revolutionary "sonic morphing" technologies make it possible bringing new levels of realism and expression to sampling. Users can seamlessly morph between aligned dynamics and hear authentic timbre changes as notes become louder or softer. Control onset, rate and intensity of vibrato, change articulations in real-time, and more. A unique Kontakt 2 library created by Giorgio Tommasini, Stefano Lucato and Gary Garritan. $199.

Personal Orchestra

The orchestral library that started the revolution! A complete orchestral sample collection for your computer. It includes all the major instruments of the orchestra - strings, brass, woodwinds, and percussion - integrated with the NI Kontakt Player. GPO has won more awards/nominations than any other orchestral sample library. The highest-quality collection of orchestral instruments ever sampled. Easy to use, intuitive real-time controls; create ensembles, duos, quartets, sections, etc. with Individual Instruments. Compose and orchestrate on a single computer or laptop.

"GPO IS, SIMPLY PUT, A REVOLUTION" MUSICIANS MAGAZINE

"A THOROUGHLY COMPREHENSIVE ORCHESTRAL LIBRARY..." SOUND ON SOUND

Experience our website and listen to hundreds of demos, learn about news, tune in to our Internet Radio Station, view over 70 tutorials, watch videos, find out about Competitions, subscribe to podcasting, hear a comparison with a real orchestra, play the 'Audition'. Join us and be a part of the Garritan online community!

SEE US AT NAMM BOOTH 6721

GARRITAN

GARRITAN Leading the Sample Revolution

www.garritan.com 1.360.376.5766

interface offers simultaneous MIDI In and Out, two CV outputs, and a gate output, giving this controller greater versatility for studio and stage use than its predecessor.

On the Horizontal

The ribbon manual is just over 23.5 inches long, with a playing area of about 19.5 inches. It feels weighty and well built, and its size and shape allows it to sit above the keybed of your favorite controller. You can use Velcro to keep it from sliding around or use the small holes on the bottom and ends of the ribbon manual for permanent mounting.

The diminutive control box has a 2 × 16 LCD and ten buttons. In addition to Preset, Store, and increment and decrement, there are six dedicated menu buttons: CV Parameter, MIDI Event, MIDI Parameter, Mode, Arpeggiator, and Start/Stop. Programming the controller is straightforward once you get the hang of it, and none of the menus are more than five pages deep. Once you get a performance setup established, you can easily save it in one of the 16 nonvolatile memory slots.

Besides the MIDI Out port, the R2M has a MIDI In port, which is used to transpose notes and control the internal 6-step arpeggiator. An external MIDI controller is required to use the R2M's arpeggiator. Running the arpeggiator with analog and digital synths simultaneously provides hours of fun (see **Web Clip 1**).

The CV/gate behavior reflects whatever the MIDI settings are, and you will need to set the R2M's pitch-bend range to match the destination device's range. That's easy to do with the control box.

The CV outputs have a range of 0 to +5V. The voltage level of CV 1 is determined by horizontal finger position on the manual, and it is typically used to control pitch using the 1V/octave standard. The level of CV 2 is determined by finger pressure.

The R2M lets you invert the polarity of each controller axis independently. For example, you can use left-to-right motion to lower the pitch, or vice versa, while using pressure to raise or lower a filter's cutoff frequency.

The gate output sends a 0V (closed) or 5V (open) signal, and you can set the polarity so that the gate is open when the ribbon manual is touched or vice versa. Owners of vintage Moog synths will appreciate that the R2M can be used with instruments that need S-triggers. Unfortunately, that mode requires you to remove a jumper inside the control box—not the most elegant solution, but it's available.

The R2M system comprises a control strip that is connected to a control box using a USB-style cable.

Slippin' and Slidin'

You can also use the R2M melodically. You can set the range from 1 to 5 octaves and select one of 15 pitch quantizations, from chromatic to chordal (including chords built on fourths, fifths, and sixths), allowing you to play melodies and arpeggios. You can't set up your own pitch set, however, and the controller doesn't give you the final octave note (for example, with a major scale, your highest note will be the major 7th, never the octave), except in 1-octave mode.

There are seven performance modes: simple note triggering, three ways to add pitch bend once a note is triggered, and modes for sending Control Change, Aftertouch, and Program Change data. The user manual points out that the ribbon's pressure axis is not as accurate as the positional axis, so if you want exact control over a parameter, you're better off using the horizontal axis. The pressure strip offers a large degree of sensitivity, however, and it works well with most CV and MIDI parameters.

The R2M does have one flaw. The horizontal sensor sometimes introduces a subtle and erratic noise into the audio signal, causing a variation in timbre, especially the harder the ribbon is pressed. (It doesn't matter whether the pressure sensor is on or off.)

If I could add anything to the R2M, it would be a bipolar response (10V peak to peak) and a zero-point mode. That way, no matter where you touch the ribbon, you can bend in either direction from your original note (as with the Yamaha CS-80). Having more notes in the sequencer would also be a welcome addition.

Under Full Control

Overall, the R2M is a very useful controller that covers a number of performance needs. It's simple to program, works well with MIDI- and CV-controlled instruments, and is a joy to use.

EM WEB CLIPS

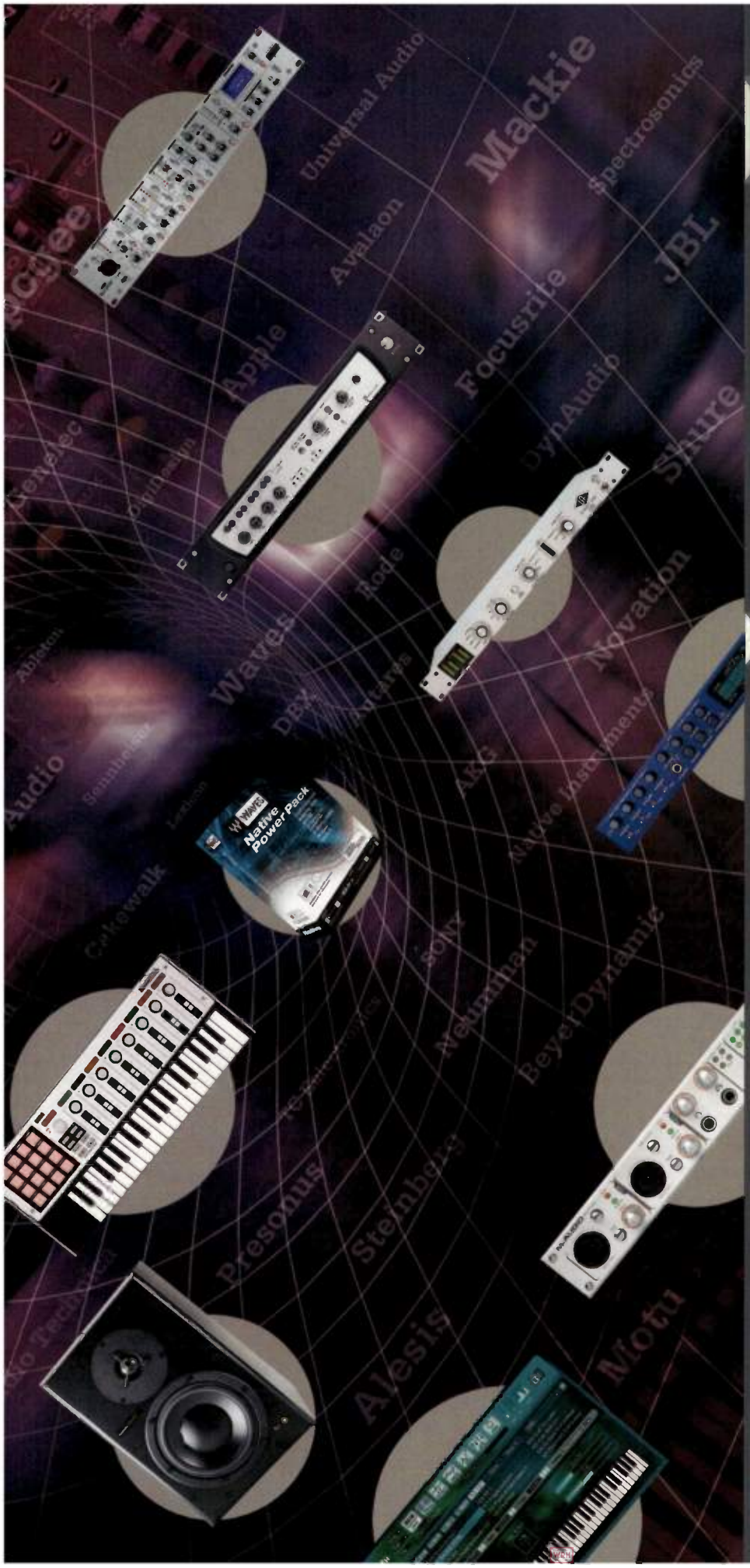
Overall Rating (1 through 5): 3.5
Doepfer Musikelektronik
www.doepfer.com

SMART LOOPS

Pro Drum Works, vol. 1

(Apple Loops Edition)
By Mike Levine

With all the drum-loop collections on the market, making the right



DESKTOP AUDIO

- Stand-Alone Software
- Audio Interfaces
- Plug-ins
- Virtual Instruments
- Computers
- Computer Peripherals
- USB/MIDI Controllers
- Sampling Libraries

PRO RECORDING

- Microphones
- Preamps
- Mixers
- Processors
- Studio Monitors
- Digital Recorders
- Duplicators
- AD/DA Converters

800-947-5509
212-444-6679
420 Ninth Avenue
New York, NY 10001
visit B&H Online at
www.bhproaudio.com

The Professional's Source

B&H
PHOTO - VIDEO - PRO AUDIO

purchasing decision can be tricky. Beyond just a product's stylistic focus, you need to consider such factors as its performance or programming, and its recording and mix quality. Another issue is its organization: how easy is it to find what you're looking for? You also need to take into account how much variety is offered, and whether the loops are in multitrack format in addition to stereo.

Smart Loops' new collection, *Pro Drum Works*, vol. 1 ($249), scores highly in most of those areas. You get solid playing, great mixes and sound quality, and a huge selection of content focused mainly on rock and pop styles. Multitrack loops are not offered.

Loops of Plenty

The Apple Loops edition of *Pro Drum Works*, vol. 1, comes on a single DVD-R disc (an Acidized WAV version is also available). I tested the loops out on Logic Pro 7.1, Soundtrack Pro 1.0, GarageBand 2.01, and Digital Performer 4.6. I didn't experience problems importing loops into any of those applications. I also didn't notice any sonic problems when changing tempos within the large range specified in the *Pro Drum Works* documentation (75 to 150 bpm).

Every loop, fill, and one-shot is offered in three drum-kit sounds. The Acoustic Kit gives you a natural sound; the Thunder Kit offers big-sounding, heavily compressed drums (great for rock); and the Trap Kit was recorded with a smaller drum set with a resonant kick drum. It's aimed more at hip-hop, R&B, and acid jazz.

The loops in *Pro Drum Works* are generally one measure in length, though some fills are shorter. There are 3,000 unique loops, fills, or one-shots in the collection. Because each is repeated for the three kits, there are actually 9,000 elements in all.

Getting Organized

To handle such a large assortment, Smart Loops has devised its own system of categorization. It takes some getting used to, but once you grasp its structure, finding what you want is easy.

The loops are separated according to the three drum-kit sounds. They're then classified according to their kick-drum patterns. Loops in the Basic category have simple eighth-note kick patterns, while Funk loops have syncopated kick parts. Reggae loops have kicks on beats 2 and 4, and Double-Kick loops feature eighth-note, 16th-note, and 32nd-note kick parts. Loops in which the snare hits on beats other than just 2 and 4 are given the letter designations of A through D, which correspond to differing levels of complexity.

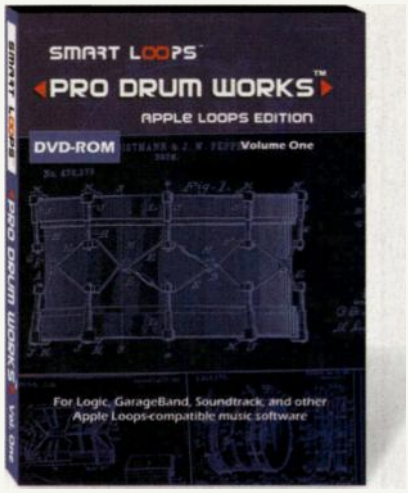
The loops are arranged in folders representing combined categories of loop types for each drum sound (for example "Basic + Funk" or "Basic C + Funk C"). Within those folders, the loops are divided further by cymbal pattern (eighth-note or 16th-note) or cymbal type (open or ride). There's also a category for floor-tom-oriented patterns. Once you've drilled down to the type of loop you want, there are plenty of variations available.

Pro Drum Works offers loops in a wide range of pop, rock, funk, and reggae styles. There's even a good selection of cut-time, double-time, and train beats. One type of groove that's completely missing, however, is shuffles. (At press time, Smart Loops released *Pro Drum Works*, vol. 2, which consists completely of shuffle grooves.)

Had My Fill

A global folder for fills is located in each of the drum-kit folders. You get numerous fill variations, categorized mainly by the drums used (Snare-Tom, Kick-Snare, and so on). Unlike many loop collections I've seen, the fills are offered separately from the grooves with which they were originally played. That "generic" approach allows a lot more fills to be available, and for much of the material, mixing and matching the grooves and fills works fine (see **Web Clip 1**).

Inevitably, not every fill fits stylistically with every groove. In addition, many of the fills are a full measure long, which is overkill for a lot of musical styles. I often shortened fills and grooves and edited them together.



***Pro Drum Works* from Smart Loops features a wide range of stereo loops, fills, and one-shots in three drum-kit sounds.**

The Works

Once I got the hang of its organizing scheme, *Pro Drum Works*, vol. 1, turned out to be an excellent resource for well-played and consistently good-sounding stereo drum loops. It allowed me to quickly assemble authentic, song-length drum parts. The collection offers so many different drum grooves and variations that, unless you're looking for shuffles, you're likely to find just what you need for your pop and rock productions.

EM WEB CLIPS

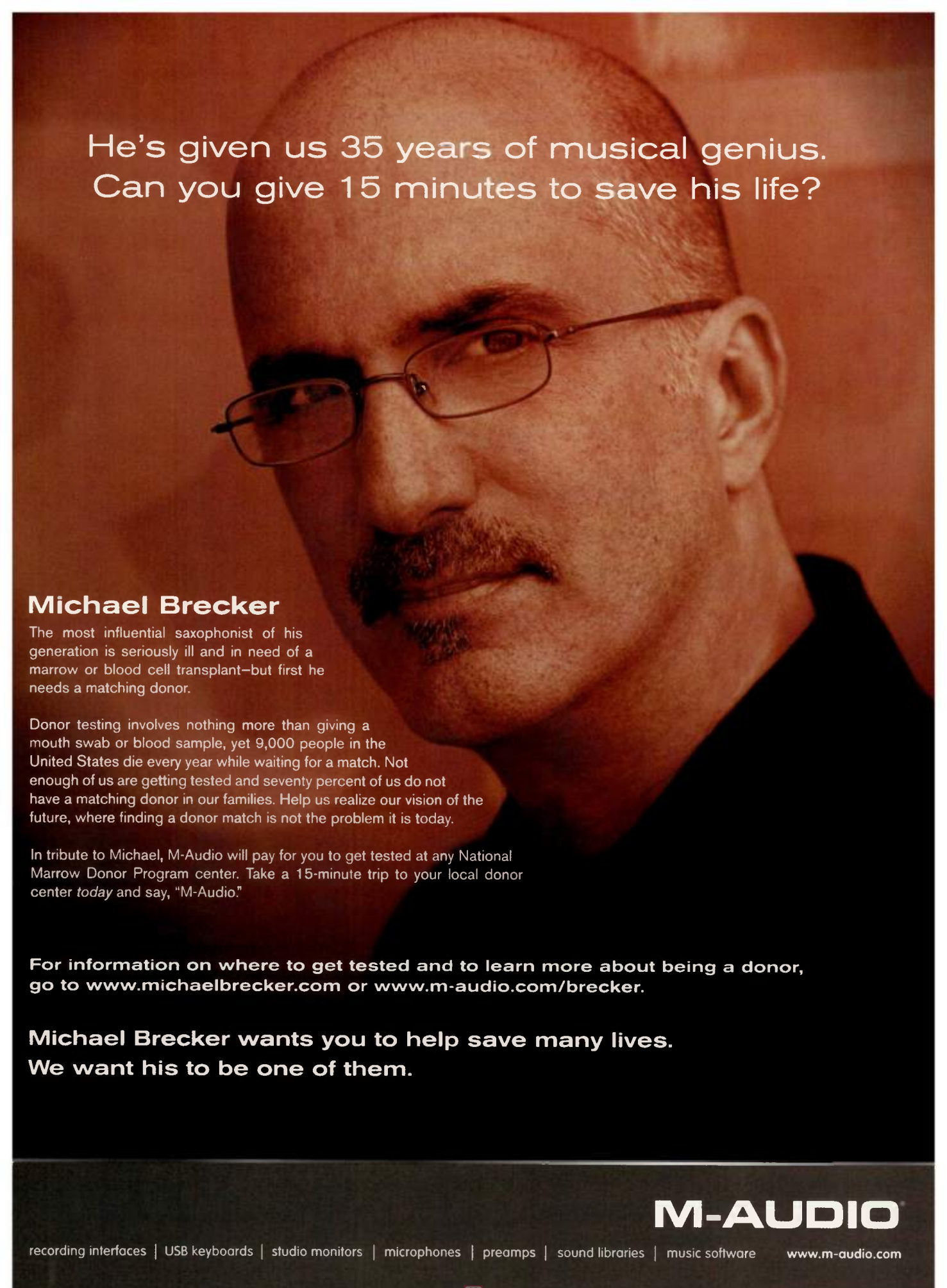
Overall Rating (1 through 5): 4
Smart Loops
www.smartloops.com

BEHRINGER

B-Control Nano BCN44

By Rusty Cutchin

Behringer's B-Control series consists of several desktop hardware MIDI controllers that can be interconnected to provide a complex modular control surface for digital audio applications. Like other control surfaces, the B-Control series makes life easier for software-dependent musicians by providing tactile solutions to problems associated with mousing around in audio applications. MIDI controllers such as those give the user real knobs and buttons to use instead of graphical ones,


He's given us 35 years of musical genius.
Can you give 15 minutes to save his life?
Michael Brecker
The most influential saxophonist of his generation is seriously ill and in need of a marrow or blood cell transplant–but first he needs a matching donor.
Donor testing involves nothing more than giving a mouth swab or blood sample, yet 9,000 people in the United States die every year while waiting for a match. Not enough of us are getting tested and seventy percent of us do not have a matching donor in our families. Help us realize our vision of the future, where finding a donor match is not the problem it is today.
In tribute to Michael, M-Audio will pay for you to get tested at any National Marrow Donor Program center. Take a 15-minute trip to your local donor center *today* and say, "M-Audio."
For information on where to get tested and to learn more about being a donor, go to www.michaelbrecker.com or www.m-audio.com/brecker.
Michael Brecker wants you to help save many lives.
We want his to be one of them.
M-AUDIO
recording interfaces | USB keyboards | studio monitors | microphones | preamps | sound libraries | music software
www.m-audio.com

which can be cumbersome to control with a mouse. The Nano BCN 44 ($64.99) is the newest B-Control unit, and it provides a dependable low-cost control surface that takes up minimal desktop space and is ideal for field use with a laptop. The unit comes with a 9 VDC adapter and also runs on three AA batteries.

Fireplug

The Nano as its name implies, is a small (½U) unit designed as a tabletop device, but it's just the right size for a rack tray with a second unit for a second computer. The Nano's surface holds eight buttons, four large knobs, and a Spartan LED display. When pressed, the knobs—marked Channel, Parameter, Value 1, and Value 2—activate small accompanying LEDs along with the knob's assigned function.

On the upper-left side of the unit's surface, two buttons marked Panic send All Notes Off commands to any connected sound-generating devices. Those buttons double as Preset increment and decrement buttons for stored MIDI configurations. The presets can total 99, but the buttons don't allow you to move quickly from a low-numbered preset to a higher-numbered one. Holding down one or both buttons doesn't make the displayed preset number change rapidly. Cycling power to the unit brings up the most recently chosen preset.

On the upper-right side are twin buttons marked Global. Holding both down puts the unit into Global mode, in which you can use the pots to designate the MIDI receive channel, device ID, SysEx dump mode, and merge status. Those buttons also serve as Store and Edit/Exit controls. Used with the Learn button on the bottom right side of the panel, those buttons allow the Nano to memorize commands fed to it from another MIDI device, usually a keyboard or a sequencer, making the unit a time-saver for storing complex command setups.

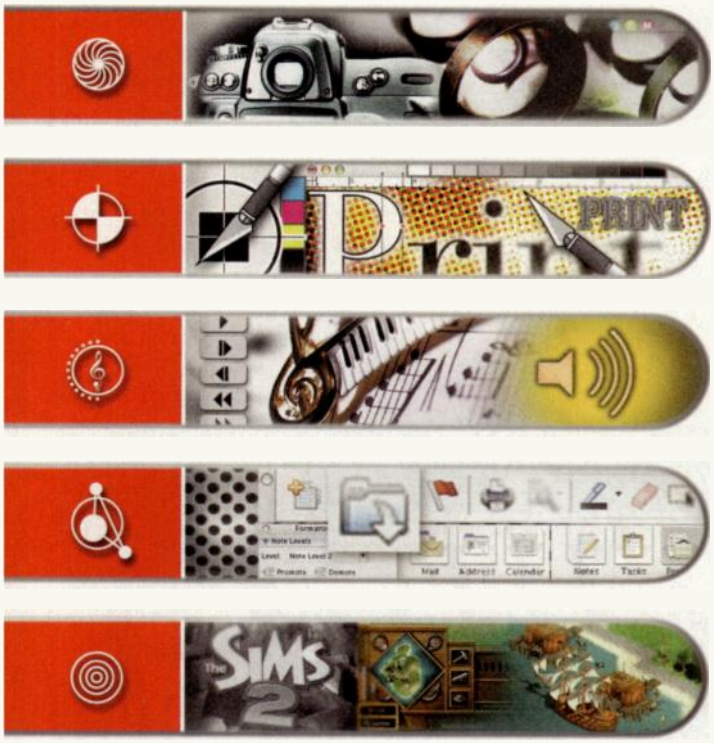
The Nano's rear panel houses a power switch, the power-adapter receptacle, and single MIDI In and Out ports. A merge function lets the Out port function as a MIDI Thru. That allows you to connect a keyboard to the Nano's MIDI In connector and use either the Nano or the keyboard to trigger sounds or to adjust settings on sound modules.

Quick and Dirty

The Nano couldn't have been easier to set up. I plugged the unit into a power source and connected it to a Roland Fantom-S keyboard to confirm that the unit could advance presets smoothly without additional programming. The Nano's buttons and knobs felt sturdy, and the old-school LED display provides enough information to let you know where you are at all times. (Bear in mind, however, that when running on battery power, the Nano's display will not show the current preset. You must hit a button, and it will display briefly.)

I then connected the Nano's MIDI In to the output of the Lexicon Omega USB audio/MIDI interface that was attached to my Mac G5 running Digital Performer (DP). I wanted to test the Nano's Learn function for a

Macworld
Conference & Expo®



Macworld Conference & Expo is the #1 event for the Mac Community. Attendees can find the latest, newly announced products and learn to run their Macs more efficiently no matter what their needs are.

Macworld Conference & Expo San Francisco 2006 has your next Mac solution with training to boost your Mac abilities on OS X Tiger, music and audio, video, graphic design, photography, digital imaging, gaming, and more. Recognized industry experts provide professional and comprehensive information, networking opportunities abound and you'll get to meet hundreds of companies supplying the Mac products, innovations and applications that you want to see.

CONFERENCES: JANUARY 9-13, 2006
EXPO: JANUARY 10-13, 2006

THE MOSCONE CENTER
SAN FRANCISCO

M
SF

Flagship Sponsors:
Macworld Macworld.com

macworldexpo.com
Register online using Priority Code: D15Ø1
by December 9, 2005 to take advantage
of Early Bird Pricing!

IDG WORLD EXPO

control-surface task I've often had a need for over the years: correcting misplaced or mangled sustain pedal data (controller 64) on keyboard parts. I manually entered a pedal-on command onto a track in DP.

I set the Nano to Learn mode by holding down the Edit/Exit button, activating one of the four buttons at the bottom of the unit, releasing the Edit/Exit button, and then pressing Learn. I played back the DP track briefly, and the button became a sustain controller. I duplicated the sequence to put a sustain-off command on another Nano button. Then I could strip out all controller 64 messages from tracks and manually replace them using the Nano's newly programmed "sustain" buttons. I stored that basic preset to use later.

The Nano worked flawlessly in Learn mode, and for me that was the fastest way to customize the unit for my purposes. I was able to use the Nano to replace a sustain pedal and increment buttons, as well as for tasks such as volume control of plug-ins and adding continuous-controller information in real time. Although I generally had no need for a small, limited MIDI controller, I found the Nano to be convenient in ways that I hadn't anticipated, such as for recording real-time, random-panning data to tracks.

Behringer's B-control Nano BCN44 is a low-cost MIDI controller that stores 99 presets and can run on either an AC adapter or three AA batteries.

Control on the Cheap

The B-control Nano BCN44 is not for everyone, but its no-nonsense functionality and low price make it a serious option for those who need a lot of presets for various controller tasks and easy (if compromised) portability. And if you find you run out of buttons, knobs, and presets too quickly, there's an easy solution: buy two or three more units. EM

Overall Rating (1 through 5): 3
Behringer
www.behringer.com

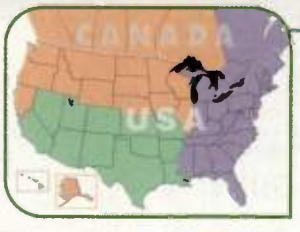
ADVERTISER INDEX

ADVERTISER	INTERNET	PAGE
ADK Microphones	www.adkmic.com	98
Apogee	www.apogeedigital.com	65
Arturia	www.arturia.com	115
Audio-Technica	www.audio-technica.com	17
Auralex	www.auralex.com	14
B&H Pro Audio (Broad Scope Audio)	www.bhphotovideo.com	63
B&H Pro Audio (Desktop Audio)	www.bhphotovideo.com	119
Berklee Music	www.berkleemusic.com	14
BIAS	www.bias-inc.com	61
Big Fish Audio	www.bigfishaudio.com	35
Cakewalk (Dimension Pro)	www.cakewalk.com	2
Cakewalk (Project 5)	www.cakewalk.com	58
Cakewalk (Sonar 5)	www.cakewalk.com	91
Carillon (Media Tools)	www.carillonusa.com	21
Carvin	www.carvin.com	50
CES	www.CESweb.org	113
Cycling '74	www.cycling74.com	51
D'Addario (Planet Waves)	www.daddario.com	40
Disc Makers	www.discmakers.com	99
EBlitz	www.eblitzaudiolabs.com	139
E-mu Systems (Digital Audio Systems)	www.emu.com	75
E-mu Systems (PM5 Precision Monitor)	www.emu.com	19
Event Electronics	www.event1.com	83
Focusrite	www.focusrite.com	31
Frontier Design Group	www.frontierdesign.com	64
Full Sail	www.fullsail.com	96
Garritan Orchestral Strings	www.garritan.com	117
Graph Tech Guitar Labs	www.graphtech.com	114
IK Multimedia	www.ikmultimedia.com	105
Ilio (Ilio.com)	www.ilio.com	6
Ilio (Vienna Symphonic Library)	www.vsl.co.at	7
Joemeek	www.joemeek.com	104
Kaysound	www.Kaysound.com	15
Korg (D3200)	www.korg.com	23
Korg (OASYS)	www.korg.com	22
Lexicon	www.lexicon.com	44–45
Line 6 (TonePort)	www.line6.com	53
Line 6 (Variax)	www.line6.com	13
Mackie (Spike)	www.mackie.com	57
Mackie (Tracktion 2)	www.mackie.com	4–5
Macworld Conference & Expo	www.macworldexpo.com	123
Mark of the Unicorn	www.motu.com	140
M-Audio (Michael Brecker)	www.m-audio.com/brecker	121
M-Audio (MicroTrack 24/96)	www.m-audio.com	109
M-Audio (ProjectMix I/O)	www.m-audio.com	85
M-Audio (TimewARP 2600)	www.m-audio.com	55
MusicXPC	www.musicxpc.com	112
Musician's Friend	www.musiciansfriend.com	71
Musicians Institute	www.mi.edu	122
Native Instruments	www.ni-essentials.com	36
PG Music	www.pgmusic.com	101
PreSonus	www.presonus.com	66 a–d
Rode Microphones	www.rodemicrophones.com	33
Roland	www.rolandus.com	3
Rolls Corp.	www.rolls.com	86
SAE Institute	www.sae.edu	81
Shure	www.shure.com	49
Sibelius Software	www.sibelius.com	110
Sonic Implants	www.sonicimplants.com	87
Sony Pictures Digital Media	www.sonymediasoftware.com	8
Submersible Music	www.drumcore.com	90
Sweetwater Sound	www.sweetwater.com	27
Sweetwater Sound (Apple/Apogee)	www.sweetwater.com	77
Sweetwater Sound (Digidesign)	www.sweetwater.com	92–93
Sweetwater Sound (Mackie/Onyx 400F)	www.sweetwater.com	97
Sweetwater Sound (Mackie/TT24)	www.sweetwater.com	89
Sweetwater Sound (MOTU Studio)	www.sweetwater.com	134–135
Sweetwater Sound (MOTU Studio)	www.sweetwater.com	136–137
Sweetwater Sound (PreSonus)	www.sweetwater.com	95
Sweetwater Sound (PreSonus)	www.sweetwater.com	106–107
Sweetwater Sound (Sony)	www.sweetwater.com	103
Synthax.com	www.synthax.com	69
Tannoy	www.tannoy.com	88
Tascam	www.tascam.com	39
Taxi	www.taxi.com	79
TC Electronic	www.tcelectronic.com	11
VirtuosoWorks Inc.	www.notionmusic.com	25
WaveMachine Labs (Drumagog)	www.drumagog.com	41
Waves	www.waves.com	29
Woodwind & Brasswind	www.wwbw.com	124

ELECTRONIC MUSICIAN MARKETPLACE ADS

AEA	www.ribbonmics.com	126
Bayview Pro Audio	www.bayviewproaudio.com	129
C&C Duplicators	www.candcmusic.com	127
Crystal Clear Sound	www.crystalclearcds.com	129
ELS Productions	www.elsproductions.com	126
Florida Music	www.floridamusicco.com	128
Josephson Engineering	www.josephson.com	126
Lonely Records	www.lonelyrecords.com	126
Media Services	www.mediaomaha.com	126
Omega Studios	www.omegastudios.com	127
Omnirax	www.omnirax.com	128
Phonic	www.phonic.com	129
Play-It Productions	www.play-itproductions.net	127
Rain Recording	www.rainrecording.com/element	127
Tritium Electronics	www.triphazer.com	127
Ultra Disc	www.cdsfast.com	129

Electronic Musician's Advertiser Sales and Representatives



Associate Publisher: Joe Perry (770) 343-9978 jperry@primediabusiness.com

NORTHWEST
Greg Sutton
(847) 968-2390
gsutton@primediabusiness.com

SOUTHWEST
Mari Deetz
(818) 567-4907
mdeetz@primediabusiness.com

EAST COAST/EUROPE
Jeff Donnenwerth
(770) 643-1425
jdonnenwerth@primediabusiness.com

CLASSIFIEDS
Kevin Blackford (West Coast)
Jason Smith (East Coast)
(800) 544-5530 or (510) 653-3307
emclass@primediabusiness.com

EM Marketplace

EM Classifieds

ELECTRONIC MUSICIAN CLASSIFIED ADS are the easiest and most economical means of reaching a buyer for your product or service. The classified pages of EM supply our readers with a valuable shopping marketplace. We suggest you buy wisely; mail-order consumers have rights, and sellers must comply with the Federal Trade Commission as well as various state laws. EM shall not be liable for the contents of advertisements. For complete information on prices and deadlines, call (800) 544-5530.

ACOUSTIC PRODUCTS

AUDITIONS

ANALOG SYNTHS

CABLES

CASES

EQUIPMENT FOR SALE

COMPUTER SYSTEMS

FURNITURE

EMPLOYMENT

INSTRUCTION & SCHOOLS

MASTERING & PRODUCTION

RECORDING SERVICES

RECORDS, TAPES, CDS

For Extreme Native Recording

Lay down extreme track counts with this native recording powerhouse

The Apple Power Mac G5 is capable of recording over 100 tracks simultaneously — even to the second internal serial ATA drive. Make no mistake: G5-based native systems can handle today's most demanding multitrack recording scenarios via multiple FireWire and PCI MOTU audio interface configurations. And the modest cost of these systems gives you plenty of room in your budget for the additional gear you've always dreamed of.

Massive I/O

Connect up to four MOTU FireWire interfaces — that's up to 80 inputs at 44.1 or 48kHz sample rates — on the internal FireWire bus and more via FireWire expansion cards. The MOTU 896HD provides 8 mic/instrument inputs with preamps, individual 48V phantom power and individual front-panel trim control. Quickly adjust input levels via luxurious 10-segment front panel LEDs. The MOTU 828mkII and Traveler interfaces provide 2 and 4 mic/instrument inputs, respectively, along with 8 quarter-inch TRS inputs each. All three models provide 8-channel optical digital I/O, along with either AES/EBU or S/PDIF digital input/output.

A new studio standard

The flagship of the KSM line — and the new must-have mic for any large multitrack studio, the Sure KSM44 multi-pattern condenser microphone has an extended frequency response specially tailored for critical studio vocal tracking. Its ultra-thin, externally biased, large dual diaphragms provide precise articulation; extremely low self-noise (7 dBA) ensures that the KSM44 captures only the sound of the performance. Inside, the three polar patterns — Cardioid, Omnidirectional, and Bidirectional — offer greater flexibility and uniformity in a wide variety of critical recording applications.

Class A, transformerless preamplifier circuitry provides extremely fast transient response and no crossover distortion for improved linearity across the full frequency range.

Call the MOTU system experts.

Removable storage

The Glyph GT103 offers many advantages for large-scale multitrack recording, including hot-swap portability and convenience. Specifically designed recording scenarios that require multiple drives, the GT103 can be configured with three FireWire hot-swap GT Key drives of any capacity. Using Glyph's proprietary Integrity™ hot-swap technology, you can easily shuttle content to other GT Series enclosures. To keep your studio quiet, GT Keys incorporate sound-dampening composite metal technology in their frames. Includes three-year warranty, plus overnight advance replacement warranty in the first year for GT Keys.

On-demand plug-in processing.

How do you conserve precious CPU cycles for the demands of multitrack recording, but also run all of today's latest plug-ins and virtual instruments? The Muse Research Receptor is a dedicated hardware-based plug-in player for your favorite VST software. With 16 channels to run virtual instruments or effects, a built-in MIDI interface and a versatile complement of digital and analog I/O, Receptor is the ideal way to run plug-ins while keeping your host computer running smoothly. Control everything from the front panel, or simply connect a monitor to the back. Visit museresearch.com to view demos by Dream Theater's Jordan Rudess and to learn about Receptor's new UniWire™ technology, which provides MIDI, audio, and remote control between Receptor and your computer via a single Ethernet cable. Receptor provides the ultimate in performance, stability, and sonic performance.

Waves distributed processing.

For large-scale multitrack recording systems, it is good practice to offload plug-in processing from you host computer. The Waves APA-44M delivers on-demand Waves processing to your MOTU native desktop studio via standard Ethernet. Open your existing Waves plug-ins as usual in Digital Performer via the new Waves Netshell™. But now you can run up to 6 Waves IR-1 Convolution reverbs at 44.1kHz at once, and save your CPU power. Need more Waves processing? Just add another APA-44M with the snap of an RJ45 Ethernet cable. It's that simple. For extreme processing needs, connect up to 8 units to your network. The APA-44M is equally at home connected to a laptop, desktop or both. Just transfer your Waves authorized iLok. You can even share a stack of APA-44M's among several computers across the Waves Netshell network. The APA-44M ushers in a new era of state-of-the-art, distributed-network Waves processing for your MOTU multitrack studio.

Power conditioning

A large-scale multitrack studio is an investment. Protect that investment — and get the best possible performance from it — with the Monster Pro 2500 and Pro 3500 PowerCenters. Much more than just a "surge protector", both devices use Monster's patented Clean Power™ filter circuitry (U.S. Pat. No. 6,473,510 B1) with separate noise isolation filtered outlets for digital, analog and high-current audio components. The result is high quality sound that's free from hums, buzzes and other power line artifacts, revealing all of the rich harmonics and tone in your recordings. Get All the Performance You Paid For™.
Get Monster Pro Power.

Authorized Reseller

(800) 222-4700

www.sweetwater.com

NO MINIMUM FREE SHIPPING

Sweetwater
music technology direct®

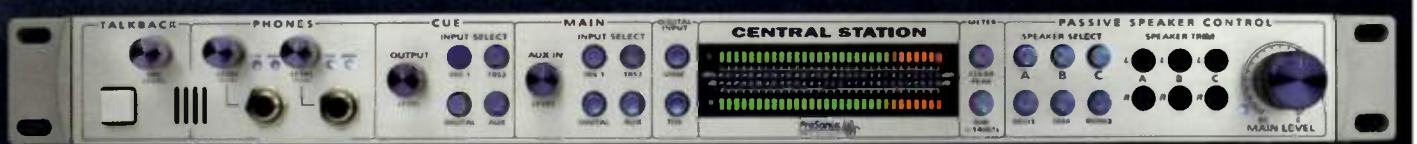
For Extreme Native Recording

The groove.

Spectrasonics Stylus RMX v1.5, the award–winning "groove standard", gets better and better with new features like "Chaos Designer™ Buzz" for stuttering edits, 590 incredible new categorized Multi grooves and 250 slamming new Kits. It's even easier to learn RMX now with the new Reference Guide/Help System and hours of brand new tutorial videos – including one specifically for Digital Performer users!

The controller.

Digital Performer captures every nuance of your MIDI performance. The M-Audio Keystation Pro 88 is an 88-key hammer-action USB powered MIDI controller delivers fine-tuned response to satisfy even the most demanding players. Add four zones, a stunning set of MIDI-assignable controllers all in a compact 40 pound package, and you have the most comprehensive product of its kind!



The control room.

The PreSonus Central Station™ is the missing link between your MOTU recording interface, studio monitors, input sources and the artist. Featuring 5 sets of stereo inputs (3 analog and 2 digital with 192kHz D/A conversion), the Central Station allows you to switch between 3 different sets of studio monitor outputs while maintaining a purely passive signal path. The main audio path uses no amplifier stages including op amps, active IC's or chips. This eliminates coloration, noise and distortion, enabling you to hear your mixes more clearly and minimize ear fatigue. In addition, the Central Station features a complete studio communication solution with built-in condenser talkback microphone, MUTE, DIM, two separate headphone outputs plus a cue output to enhance the creative process. A fast-acting 30 segment LED is also supplied for flawless visual metering of levels both in dBu and dBfs mode. Communicate with the artist via talkback. Send a headphone mix to the artist while listening to the main mix in the control room and more. The Central Station brings all of your inputs and outputs together to work in harmony to enhance the creative process and ease mixing and music production.

Mastering & restoration.

Your DP mastering and processing lab awaits you: BIAS Peak Pro 5 delivers award winning editing and sound design tools, plus the world's very best native mastering solution for Mac OS X. With advanced playlisting. Superb final-stage processing. Disc burning. Plus PQ subcodes, DDP export (optional add on), and other 100% Redbook-compliant features. Need even more power? Check out our Peak Pro XT 5 bundle with over $1,000 worth of additional tools, including our acclaimed SoundSoap Pro, SoundSoap 2 (noise reduction and restoration), Squeez-3 & 5 (linear phase multiband-compression/limiter/upward expander), Reveal (precision analysis suite), PitchCraft (super natural pitch correction/transformation), Repli-Q (linear phase EQ matching), SuperFreq (4,6,8, & 10 band parametric EQ) and GateEx (advanced noise gate with downward expander) — all at an amazing price. So, when you've ready to master, Peak Pro 5 has everything you need. It's the perfect complement to DP. Or, perhaps we should say, it's the perfect finishing touch.

Call the MOTU system experts.

The faders.

Imagine the feeling of touch-sensitive, automated Penny & Giles faders under your hands, and the fine-tuned twist of a V-Pot™ between your fingers. You adjust plug-in settings, automate filter sweeps in real-time, and trim individual track levels. Your hands fly over responsive controls, perfecting your mix — free from the solitary confinement of your mouse. Mackie Control delivers all this in an expandable, compact, desktop-style design forged by the combined talents of Mackie manufacturing and the MOTU Digital Performer engineering team. Mackie Control Universal brings large-console, Studio A prowess to your Digital Performer desktop studio, with a wide range of customized control features that go well beyond mixing. It's like putting your hands on DP itself.

The monitors.

The Mackie HR-Series Active Studio Monitors are considered some of the most loved and trusted nearfield studio monitors of all time, and with good reason. These award-winning bi-amplified monitors offer a performance that rivals monitors costing two or three times their price. Namely, a stereo field that's wide, deep and incredibly detailed. Low frequencies that are no more or less than what you've recorded. High and mid-range frequencies that are clean and articulated. Plus the sweetest of sweet spots. Whether it's the 6-inch HR-624, 8-inch HR-824 or dual 6-inch 626, there's an HR Series monitor that will tell you the truth, the whole truth, and nothing but the truth.

Your personal Sweetwater Sales Engineer offers much more than just a great price. They do the research, day in and day out, to ensure that you'll fine-tune your system to fit your exact needs.

Authorized Reseller

(800) 222-4700

www.sweetwater.com

FREE SHIPPING

Sweetwater
music technology direct

Short Attention Span Theater

By Larry the O

It seems that ever since MTV popularized quick-cutting as the dominant editing paradigm for video, the attention span of the general public has been getting shorter. Of course, MTV was just the vanguard of what has become a relentless torrent of information and entertainment blasting from cable TV, the Web, RSS feeds, email, cell phones, and so forth. It is almost impossible to keep current, even with things that are of direct interest.

With so much to see and hear, yet with so little time, it is understandable that people feel increasingly pressured. Consequently, there is less tolerance for anything that takes time to consume. That, combined with economic pressures, has resulted in magazines running shorter articles. One editor (not from *Electronic Musician*), speaking about article length, said, "If it's longer than a 'toilet read,' it's too long." And so was born the Short Attention Span Theater (SAST).

The swelling attendance at the SAST is not a good trend. There are a great many flowers that require tending before they will bloom. That applies especially to anything involving a point of view or a way of thinking: consideration and rumination are needed to grasp those. But reflection does not do great box office at the SAST; quick digestibility does. One result is a mighty dumbing-down, in which a thought or a fact might be mentioned, time and space permitting, but it cannot be explored. I'm not referring to the need to introduce a "hook" early in order to catch the audience's interest, but rather, a narrowing of scope and a shallowness of detail. There are still places where one can find stories with depth, but decreasingly so in the mainstream media.

With so much to see and hear, yet with so little time, it is understandable that people feel increasingly pressured.

Hollywood, finding SAST shows to be standing room only, has responded by focusing on eye candy, such as digital effects and nonstop action sequences, since viewers seemingly lack the concentration and the patience for plot or character development. It even could be argued that the popularity of loops in today's music, while not inherently bad, is a sign that people find it faster and less taxing to sample a bunch of existing sources and assemble them into layers and sequences than to build textures of their own from scratch.

Popular culture has always been shaped by pressures of the least common denominator, but the success of the SAST has pushed thoughtfulness further underground than ever before, leaving us informed but not enriched. In the larger picture, that diminishes humanity. The silver lining is that today's prodigious communications capabilities make available explorations that are more expansive, whether it be text- and graphics-oriented information on the Web or the ability for independent musicians to create with low-cost, accessible tools.

But one must actively seek out depth. News sites like Slashdot and boingboing display news bites that are a single paragraph in length. Getting more information is as easy as clicking on a link accompanying the paragraph, but many people never do. Their grasp of news stories comes from reading a series of single paragraphs. Legitimate sites for downloading music often take a similar approach, forcing one to make a purchasing decision that is based on auditioning a snippet less than a minute long.

I see signs that regular attendance at the SAST is leading some people toward a view of the world that is based on the broad generalizations that constitute "all the news that fits." This path leads to a less critical view of the arts, as well as of the world in general.

I don't want to see the pace of life make us into vapid people, experiencing the world superficially. Read the long story. Make time to listen to music so that it is a focused activity, rather than just an accompaniment to some other activity. Walk out of the Short Attention Span Theater. You and the world will be richer for it. EM

IS IT POSSIBLE to get the protection of a hard shell and the convenience of a soft shell in one case?

Cases and covers available for Keyboards, Cymbals, Bass, Mics, Accessories and more

All Body Glove instrument case products use water resistant, luggage grade nylon. Dual-sided high density plastic and heavy gauge zippers keep your instrument safe from the elements as well as the rigors of the road.

Proprietary Hybrid Hard/Soft shell case design for maximum protection and maximum convenience

Universal sizes available for all standard Acoustic, Bass, Classical, and Electric guitars

Oversized storage compartments

Four Point Backpack with lumbar support and waist anchor

Removable Amp Wallet: Take everything that you need on stage, or in the studio, with you! Mounts to the top of your amplifier.

Limited Lifetime Warranty

IT IS...
if it's a Body Glove case.

MORE INFO AT WWW.EBLITZAUDIOLABS.COM/BODYGLOVE

Distributed By

eBlitz AUDIO LABS

615 N. Nash St. Suite 206-B • El Segundo, CA 90245
310-322-3333 Phone • 310-322-3334 FAX • contact@eblitzaudiolabs.com

BODY GLOVE
PROTECT THE CORE

The Traveler is dope.

It goes with me on stage in front of thousands of people at gigs all over the planet, from Australia to Miami. With stellar performance and incredible sound.

— BT
Laptop Symphony
World Tour 2005

TRAVELER

BUS-POWERED HIGH-DEFINITION FIREWIRE AUDIO INTERFACE

MOTU
motu.com