Affordable Solutions for Studio Acoustics

MAY 2005

Electronic Musician®

PERSONAL STUDIO | RECORDING | PRODUCTION | SOUND DESIGN

Get It Done Faster and Better

6 TOP ENGINEERS AND PRODUCERS REVEAL THEIR STUDIO STRATEGIES

LOOP microsurgery

Matt Wallace

DOUBLE-PLATINUM PRODUCER PUTS FEEL FIRST

REVIEWS

Spectrasonics Stylus RMX 1.2.1
Tascam GigaStudio 3 Orchestra
Universal Audio LA-610
and 7 more

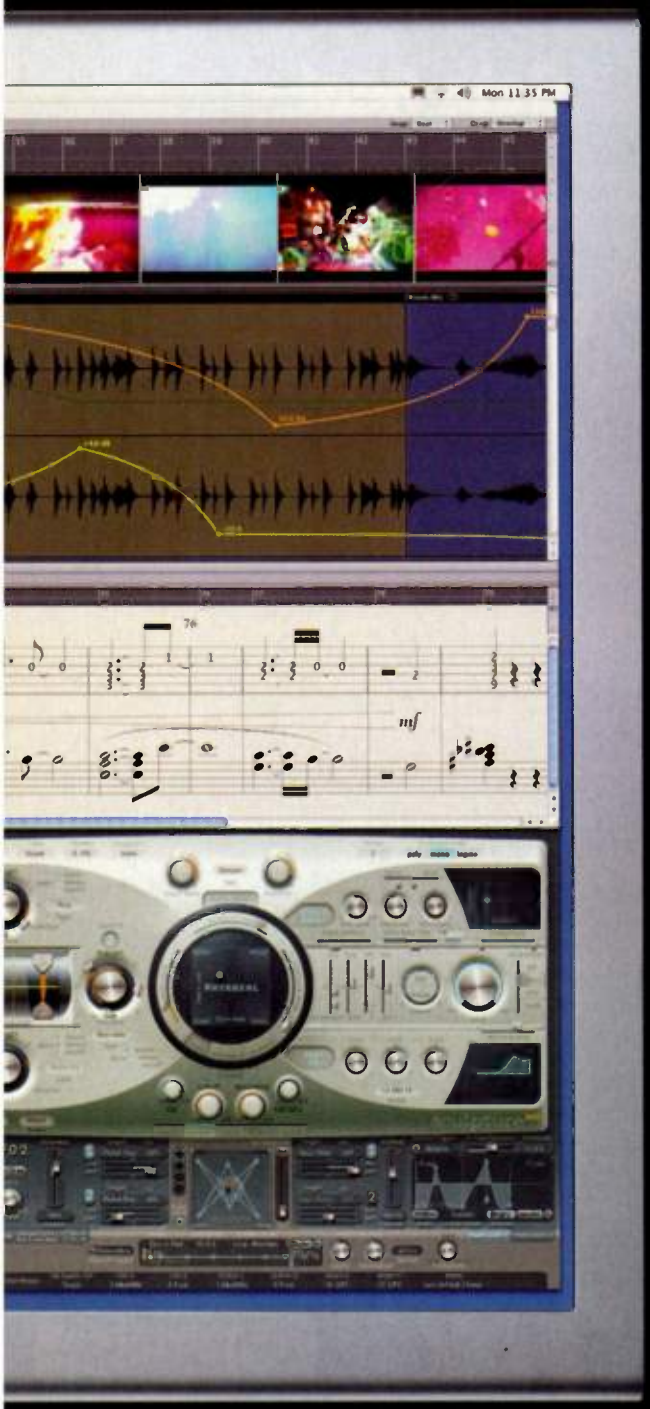
A PRIMEDIA Publication
$6.99US $8.99CAN
05
0 09281 01816 2

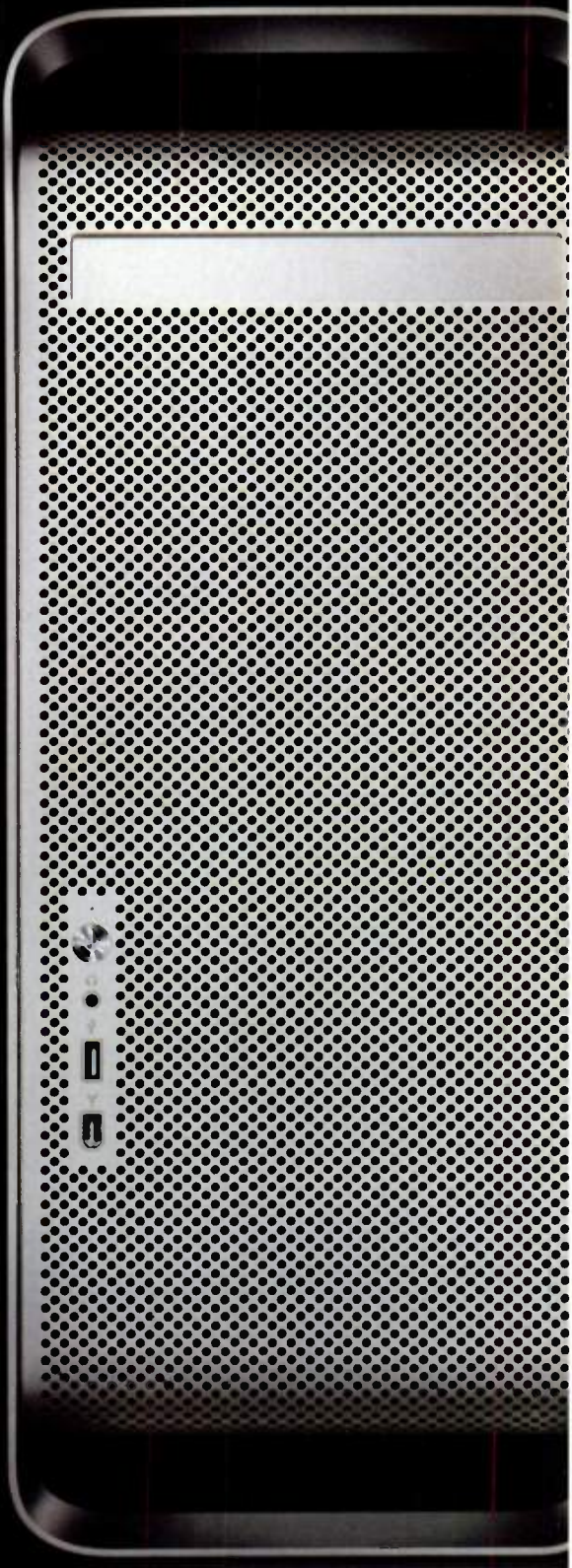
Logic Pro 7

Half studio. Half instrument. Total creative freedom.

More of a suite than an application, Logic Pro 7 sets a new standard in music creation and audio production. New Apple imaginable and Sculpture lets you synthesize anything naturally via component modeling. The 70 effect plug-ins, 34 software

Images are of the band Kid Galahad making the film *Hello You*. For more information, visit kidg.net.





Loops let you produce instant sound beds, Ultrabeat delivers endless drum-machine permutations, Guitar Amp Pro models any tone instruments and expandable DSP processing power, thanks to Distributed Audio Processing, will make the $999* price tag music to your ears.

www.apple.com/logic.

When Virtual Gets Real

"The Motif ES series is the perfect companion in a virtual studio environment. For me, the smooth dynamic feel of Yamaha keyboards and the immediate availability of quality sounds and great features make it a staple in my studio."

Dave Kerzner
CEO and main sound designer for Sonic Reality, Inc.

Whether Dave Kerzner is at work in the studio developing new sounds for VST plug-ins like Halion or Sonik Synth™, producing legendary drummer Danny Gottlieb or setting up custom Sonic Reality samples for the Motif ES synths on Beyonce's concert tour with Alicia Keys and Missy Elliott, this virtual synth sound developer has only one choice in hardware, the Motif ES. If your company is called Sonic Reality, you demand the best in sound quality, the most flexibility in features and the tightest integration with your PC and virtual instruments. That's why Dave always keeps it real with his Motif ES music production synthesizers.

YAMAHA

www.yamahasynth.com www.motifator.com www.esoundz.com

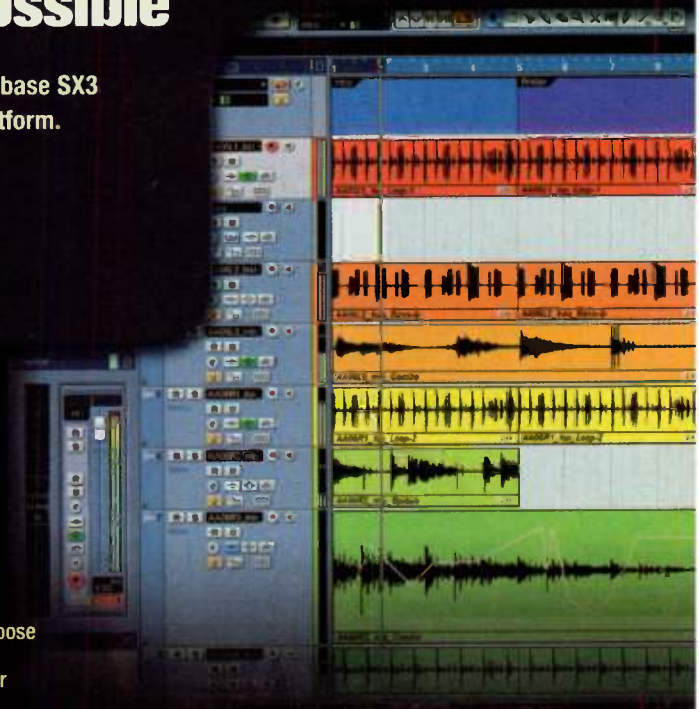
MOTIF ES

Music Production Synthesizer

The Motif ES is not just the best sounding synth workstation on the market, it also sets a new standard for computer integration. Use the ES for hands-on control of DAW parameters and simultaneously edit your ES directly inside your Steinberg software via Studio Connections compatible Voice and Multi-Part editors. For the ultimate in total computer integration, add the mLAN16e mLAN Firewire card and turn your ES into a multi-channel ASIO sound card.

Virtually Anything Is Possible

Creating music these days is all about making choices. Cubase SX3 gives you more freedom of choice than any other DAW platform.



Want to add loops of different tempos to your music? SX3's new Audio Warp feature lets you twist and stretch audio any way you want. Have friends who like working on a different OS than you do? No problem, SX3 is the only cross platform DAW on the market. So whether you choose XP, OS X or both, SX3 is right there with you. Want to add outboard gear into your virtual environment? SX3's new features for integrating external hardware—including FX return channels, advanced latency compensation and Studio Connections Recall—lets you decide what external studio gear you use and how.

Cubase SX3 features the same 32-bit VST 2.3 audio engine as Nuendo 3.0, so it's not only fully VST and 5.1 surround sound compatible, it sets a new standard for audio quality.

Cubase SX 3

Music Creation & Production System

ASIO VST

Cubase SX3 takes music production to the next level by adding more than 70 new features that give you the freedom to be creative and the power to be productive. With seamless integration of external audio and MIDI hardware, Cubase SX3 re-defines virtual studio technology.

www.steinberg.net www.steinbergusers.com www.studioconnections.org

steinberg

Creativity First

Hear the Difference

Version 1.6 Software now available! Includes E-MU Power FX hardware-accelerated VST effects

All audio interfaces are not created equal. Your microphones, outboard gear and software all affect your sound, but you ultimately depend on your audio interface to translate your music between the analog and digital realms with the greatest accuracy possible. E-MU's Digital Audio Systems have caused shockwaves in the music industry by offering converters and audio performance previously only found in the world's most expensive systems (the same converters as the premium ProTools HD192 Interface costing thousands of dollars) – at a fraction of the cost.

And that's just the half of it. E-MU's Digital Audio Systems also provide you with hardware-accelerated VST plug-ins (over 600 presets) and zero-latency monitoring for spot-on timing. Best of all, E-MU's Digital Audio Systems work with all of your favorite audio and sequencing programs from Steinberg, Cakewalk, and more. Hear for yourself why E-MU's Digital Audio Systems have won accolades from customers and press around the world.

The difference is clear.

$499.99*

$399.99*

$199.99*

$99.99*

192 kHz Drivers
free download now available at
www.emu.com

MUSIC RUN

computer music PERFORMANCE

computer music VALUE

CREATIVE PROFESSIONAL

24-bit/192kHz

Works with Windows 2000 & XP

POWER FX
Hardware Accelerated VST Effects

E-MU

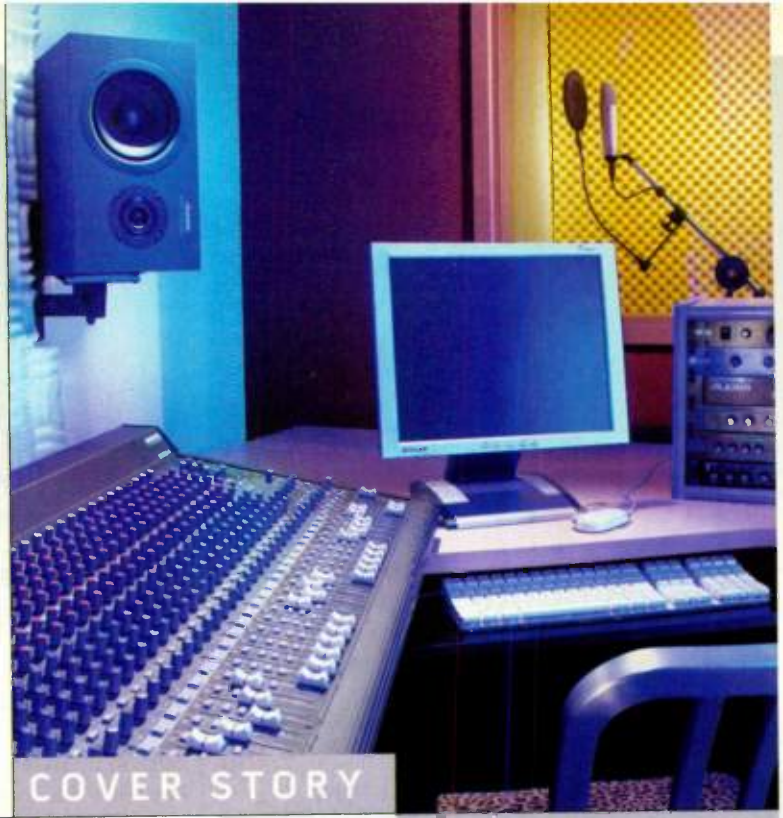
*Estimated Street Price

www.emu.com

Toll-free
877.742.6084

Electronic Musician
May 2005

INSIDE



ROBERT PERRY

COVER STORY

FEATURES

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 5, May 2005. One-year (12 issues) subscription is $24. Canada is $30. All other international is $50. Prices subject to change. POSTMASTER: Send address changes to *Electronic Musician*, P.O. Box 640, Mt. Morris, IL 61054. Periodicals postage paid at Shawnee Mission, KS, and additional mailing offices. Canadian GST #129597951. Canada Post International Publications Mail Product (Canadian Distribution) Sales Agreement No. 40547023. Canada return address: DP Global Mail, 7496 Bath Road, Unit 2, Mississauga, ON L4T 1L2.

DEPARTMENTS

Electronic Musician
May 2005

34

INSIDE

COLUMNS

94

REVIEWS

134 QUICK PICKS

M-Audio FireWire 1814 FireWire audio interface

Edirol PCR-M1 keyboard controller

Pigtronix EP-1 envelope phaser

Discrete Percussion: the Eric Darken Collection percussion library

US-2400

Total hands-on command of your Pro Tools® empire.

CO-DEVELOPED WITH SANE WAVE

Now you can use your mouse and keyboard for what they're good at... dealing with on-screen graphical interfaces — and use the wide-body US-2400 for what *it's* good at — mixing and hands-on control.

LED ring encoders give you hands-on "analog" of your DAW's pan and aux sends. Special channel strip and meter modes are provided for DAWs that support these functions.

For a fraction of the cost of a ProControl® or Control | 24™, you can make Pro Tools® snap to attention.

Our US-2400 features twenty-five, 100mm touch-sensitive, high-resolution motorized faders and twenty-four complete channel strips with rotary encoders plus Mute, Solo and Select buttons.

Joystick for surround sound panning.

Assignable Function keys can be set to Autopunch, Record arming, Undo, etc.

Recessed jog/shuttle wheel and solid-feeling transport controls.

Mute, Solo and Select buttons on every channel beat the heck out of trying to mouse and click on-screen icons.

With 24 hands-on channel faders, bank switching is kept to a minimum. But for *really* big projects, the US-2400 is ready to control up to 192 channels!

Touch-sensitive motorized faders have 10-bit resolution — FOUR times finer than many competitors' control surfaces. You get ultra-smooth, big-console-quality fades. Hit the FLIP button and the faders can be used for writing automated pan or aux send moves while channel levels remain accessible on the LED rotary encoders.

- Footswitch jack for punch-ins
- In/Out point buttons
- Mac® OSX and Windows® XP compatible

- Adjust DAW software parameters such as 4-band EQ via the rotary encoders

For more info on the first *affordable* DAW controller with enough faders to handle typical recording sessions without lots of bank-switching, e-mail us for a brochure at *tascam lit@teac.com* or visit a TASCAM dealer.

The US-2400 is compatible with Digidesign® Pro Tools®, Steinberg Cubase® and Nuendo®, MOTU Digital Performer®, Emagic Logic®, and Cakewalk Sonar®.

TASCAM®

WRH

CONTRACTOR

www.tascam.com

DJ AND PRODUCER

PERSONAL CREATIVITY

You Better Mess Around

When working on a deadline-driven project, wasted effort can be at the least annoying and potentially a serious impediment. In the long run, time invested in preparing your materials in advance, developing templates for your sequencer or DAW, programming macros, and generally developing more efficient ways of working will pay big dividends. That's why I asked Mike Levine to research and write this issue's cover story, "Efficiency Experts" (see p. 50).

And yet, at the risk of appearing to be contrary, I also advocate occasionally throwing all of that to the winds and just puttering around in the studio. Of course, you can't do that when a client is paying for your time or when a project is on deadline, and those with successful full-time studios are often especially hard-pressed. But if you can occasionally shake free of your scheduled recording and maintenance work, I suggest you take time to mess around.

After years of touring and doing session work full time, I realized I was getting stale. Having to be concerned about commercial viability sometimes made it too much like having a day job (ironic, since I now have a day job). So I got off the road in order to play what I pleased. I started programming some wild synth sounds, too, the type I probably wouldn't have created for a specific project. I got back to the reasons I started playing when I was a small child and that I started programming my first synth: because it was emotionally satisfying and totally engrossing. Sure, it's great when people enjoy the music, but the real thrill is in losing myself in the process. By returning to those first principles, I could recapture a freshness and satisfaction that I thought I had lost. Since then, I have periodically taken a break from serious work and made time to mess around.

JULIE BIRUM

A practical advantage to goofing off in the studio is that you are likely to discover a sound or a musical passage that inspires you in a way that would not have occurred had you been looking for it. I have since worked in a number of successful sessions where most of my sounds came from discoveries I made previously when messing around. I have also developed techniques and discovered features in my gear that I never had a chance to explore when working on the clock.

Admittedly, messing around is terribly inefficient. It isn't how you want to run most sessions, although some artists might perform better in such a low-pressure environment. Nevertheless, I highly recommend occasionally making some time to mess around in the studio. When it's time to get back to work, you can return to being an "efficiency expert" with fresh ears and new ideas.

****

On a completely different subject, although we love EM's new look, we had to agree with those who complained that the main text font was too light and consequently was hard to read. In response, we've switched to a darker version of the font. Thank you for your suggestions, and we hope that the darker type increases your reading pleasure.

Steve Oppenheimer
Editor in Chief

Electronic Musician
WWW.EMUSICIAN.COM A PRIMEDIA PUBLICATION

PATHBREAKING

Even a casual glance at the new Genelec 8000 MDE™ series bi-amplified monitors tells you they are extraordinary. While looks are indeed important, form *and* function must co-exist in harmony and complement the true task at hand.

These new systems are in countless ways - pathbreaking - enabling a more revealing, natural and accurate sound.

Sure, lots of technical terms abound, but the simple truth is the 8000 MDE™ Series monitors *are* better. It wasn't an easy task, but at Genelec making the best monitors is what we are all about.

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

Contact us for system specification and a demonstration using the complete range of Genelec 7000 and 8000 Series monitoring solutions in your room.

8000 Series

www.genelecusa.com

International inquiries: Genelec Oy, Olvitie 5, FIN-74100, Iisalmi, Finland
T +358-17-83881, F +358-17-812267 Email genelec@genelec.com
In the USA: T 508.652.0900, F 508.652.0909 Email genelec.usa@genelec.com
In China: T +86 10 8580 2180, F +86 10 8580 2181 Email genelec.china@genelec.com

GENELEC®

PRIMEDIA
Business Magazines & Media

CHIEF OPERATING OFFICER
Jack Condon, jcondon@primediabusiness.com

EXECUTIVE VICE PRESIDENT
John French, jfrench@primediabusiness.com

PRIMEDIA INC.
745 Fifth Ave., New York, NY 10151

CHAIRMAN
Dean Nelson, dean.nelson@primedia.com

PRESIDENT AND CHIEF EXECUTIVE OFFICER
Kelly Conlin, kelly.conlin@primedia.com

VICE CHAIRMAN & GENERAL COUNSEL
Beverly Chell, beverly.chell@primedia.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 (740) 382-3322.

LIST RENTAL: Please direct all inquiries to Marie Briganti at marie.briganti@walterkarl.infousa.com.

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

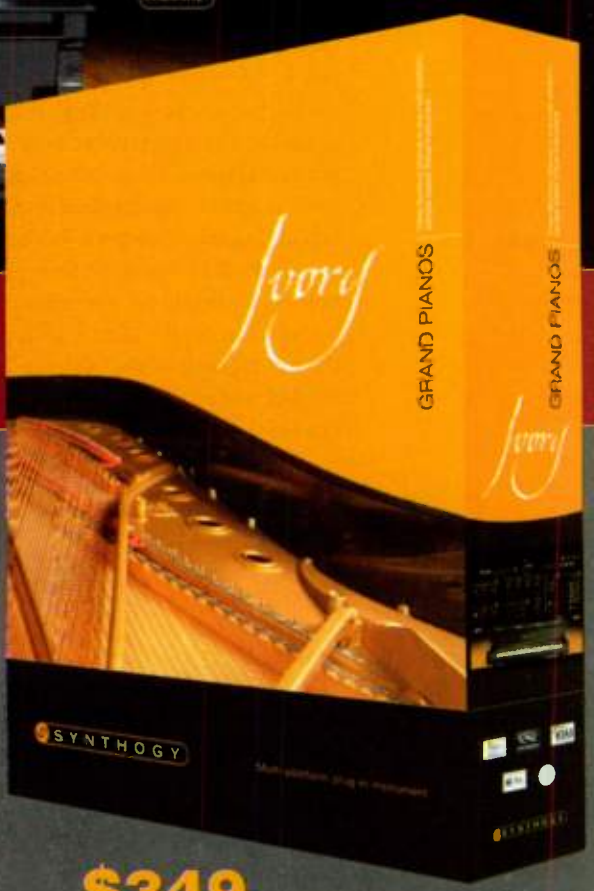
BPA WORLDWIDE

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™.

Ivory GRAND PIANOS

This groundbreaking sample-based Virtual Instrument was conceived and crafted to bring out the resonance, response and character of the world's finest Concert Grands. The largest piano plug-in ever.

"The playability of Ivory is breathtaking. We couldn't help getting utterly carried away with it... The sound is phenomenal, the dynamics are both natural and responsive, and the control parameters innovative. At present, nothing can touch it!"
--COMPUTER MUSIC,
winner CM Performance Award



Three Glorious Grands, One Custom-Built Piano Engine

- Bösendorfer® 290 Imperial Grand, German Steinway® D 9' Concert Grand, Yamaha® C7 Grand (Each piano can be installed separately).
- Over 30 GB of phase-perfect stereo samples in 32 bits!
- All 88 keys individually sampled in up to 8 dynamic levels (plus Bösendorfer extended low octave).
- Full length sustain samples, no loops.
- Real Release and Soft Pedal samples.
- World class digital FX including Real Ambience, Chorus and EQ.
- Optional synth pad layer for modern/pop combinations.
- Synthogy's exclusive, powerful 32 bit Sample Playback and DSP engine, engineered specifically for recreating the acoustic piano.
- Sympathetic String Resonance DSP for realistic Damper Pedal response.
- Incorporates sample interpolation technology used for ultra-smooth velocity and note transitions.
- Customizable with User controls for Timbre, Stereo Width and Perspective, Velocity Response, Mechanical Key Noise, Tuning and more.
- Dozens of user-adjustable presets.

RTAS · VSTi Instruments · Audio Units · Mac · X

$349

ILIO
Exclusive distribution

800.747.4546 www.ilio.com

SYNTHOGY
synthogy.com

LAURA WILLIAMS

Letters

Subtle Corrections

In his article "Subtle Gestures" (March 2005), David Pedergnana demonstrates an amazing grasp of what takes place at the molecular level when real live instrumentalists do their thing. Even better, he is able to communicate those concepts to the reader in concise language. However, I would like to call attention to several factual errors.

Under the subhead "One from Column A," Pedergnana says the violinist *pulls* the bow (toward the body) when up-bowing and *pushes* away when down-bowing. Actually, the opposite is true in both instances. First of all, the body is not the best reference for explaining bow direction. It's better to discuss the direction the bow hand travels to and from the instrument itself. If you look at the photograph of the violinist at the beginning of the article, you can see that the bow hand *pulls* the bow down (away from the instrument) and *pushes* it up (toward the instrument).

Incidentally, that's easier to see when the violinist is bowing the highest string (E), because the bow is nearly vertical (as shown in the photograph) and does in fact move up and down. But when the lowest string (G) is bowed, the bow is more horizontal, and the terms *up-bow* and *down-bow* become less descriptive of what happens.

Under the heading "Bowed Tremolos," the definitions of *tremolo* and *trill* were reversed. A tremolo is not the same as a trill, which uses two notes a half step or a whole step apart, whereas the bowed tremolo consists of back-and-forth bow strokes on a single note. That should not be confused with the fingered tremolo, in which the player rapidly fingers back and forth between two notes at least a minor third apart. Both notes are played on the same string, on which the bow travels in long, continuous strokes.

Then there was the overtone chart (Fig. 4). It applies to the trombone or euphonium but not the B♭ trumpet, for which it needs to be one octave higher.

Under the subhead "Winds of Inspiration," the author discusses methods of woodwind vibrato production. Included was one called *mechanical vibrato*, involving "changing the orientation of the mouthpiece to the lips." I have been a professional woodwind player for more than 40 years, and I've never heard of anyone doing vibrato that way except, many decades ago, on trumpets. While I cannot conclusively say Mr. Pedergnana is in error on this point, my left eyebrow is arched to the point of discomfort.

Notwithstanding all this pickiness, I congratulate Mr. Pedergnana on an exceptionally well-done and informative article.

Lee Brooks
via email

"No publication can entirely escape the cynicism of its readership."
—*Bret Schneider*

Author David Pedergnana replies: *Lee—Thanks for your thoughtful, professional letter. Your feedback improves the original article.*

The suggested bow directions are actually reversed. Down-bows are pulled across the strings with the heavier end of the bow touching strings first, creating accented notes. In up-bowing, the weaker part of the bow (closer to the tip) is on the strings, and the player pushes until the heavier heel (or "frog") of the bow approaches the instrument.

The original text of my tremolo description states that bowed tremolos are played on a single pitch (trills involving a major or minor second), not on a single note. Somewhat misleadingly, I also wrote that tremolos are played quickly. When I wrote this article, I was thinking of the rapid, unmeasured tremolo samples typically found in high-end sample libraries. Slow, measured tremolos are as possible as fast, sloppy ones.

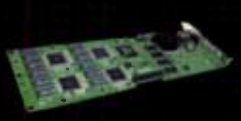
As you correctly note, I failed to transpose the overtone illustration up an octave. A good trumpet player can play every note in the chromatic scale from B♭ below middle C up two and a half octaves. The lowest and

Legendary Reverb now for your DAW

System 6000 Reverb powered by PowerCore

VSS3, the legendary reverb from System 6000 is now available for PowerCore, TC's hardware powered plug-in platform. Arguably the first truly high-end VST/AU reverb available for DAWs, the Virtual Space Simulation (VSS) process uses chaotic response algorithms and sophisticated modulation patterns to create the most realistic reverbs. We've even ported over the industry-standard preset package, so you'll be up and running in an instant.

Reverbs from System 6000 can be heard on thousands of albums and films. Now with PowerCore, they can be heard on yours.



PC

The Innovation Continues...

t.c. electronic

TC ELECTRONIC A/S DENMARK ▸ ✆ + 45 8742 7000
TC ELECTRONIC INC USA ▸ ✆ (818) 665 4900 ▸ [MAIL] INFO@TCELECTRONIC.COM
WWW.TCELECTRONIC.COM

Next Month in EM

COVER STORY

The Lost World Rediscovered

Can virtual synths truly re-create the sounds of the great dinosaurs? We compare eight soft synths with their hardware equivalents to find out.

FEATURES

Ten Essential Online Resources for Electronic Musicians

Tap into the best of the online newsgroups and mailing lists about audio, MIDI, and sound design.

***Production Values:* Tony Shepperd**

Working mostly in his L.A.-based personal studio, Tony Shepperd has engineered for an assortment of major artists. Shepperd offers advice on the recording process and discusses some of his favorite techniques.

COLUMNS

Making Tracks:
Sequencer Power Tips

Tips for using your sequencer's playlists, takes, and virtual track features.

Sound Design Workshop:
Creating Guitar Effects with Software Instruments

How to process recorded guitar parts using virtual-instrument plug-ins.

***Square One:* Some Like It Hot**

Learn the differences between normalizing and maximizing, and when to use each process.

...and much more!

Letters

highest five or six notes are difficult to play and sound weak, so try using small amounts of Pitch Bend and fewer note Velocities to simulate those awkward pitches.

Alfred Blatter describes mechanical vibrato as a woodwind technique in his book Instrumentation and Orchestration *(p. 76). He writes that this effect sounds "inferior," which is why most performers don't even consider it. It's only used in experimental music.*

Spring Cleaning

I've worked with digital audio on the Mac for a number of years. I'm fairly new to Mac OS X, and I typically defragment my hard drive using Symantec's Norton Utilities in OS X's Classic environment. I found out that Symantec will no longer support disk utilities in OS X after version 8 (the current version) of Norton Utilities. As a result, I'm hesitant to buy into that product line when no upgrade path is available.

Which utility is everybody using for defragmenting disks under OS X? Thanks very much for a great magazine.

Jim Campbell
via email

Jim—According to EM*'s Mac-using technical editors, Alsoft's DiskWarrior (www.alsoft.com) is a popular choice. Geary Yelton uses Symantec's Norton Speed Disk but is contemplating a switch to DiskWarrior.*

Apple Computer claims that there is little need to defragment in OS X. Apple's support document on this subject is at http://docs.info.apple.com/article.html?artnum=25668. —Matt Gallagher

Top-Notch Musician

I briefly met Steve Oppenheimer at Winter NAMM 2005, where he bowled me over with his mastery of the keyboard. Wow! What technique and soul! I coaxed him into revealing a bit about his rich history of doing professional gigs. When asked why he doesn't let EM's readers know about his skills and experience, he replied that EM's readers don't care about his playing—they just care about reading quality articles. I respectfully disagree.

We live in a world where review articles written about newly released CDs are suspect at best, more often than not written by people who understand little about music. Likewise with magazines. Although EM has earned a well-deserved reputation for its knowledgeable writers and integrity of journalism, no publication can entirely escape the cynicism of its readership.

Experiencing Steve O's playing was more than enough for me to read EM with a new level of confidence and enjoyment. Thanks for all the reading and listening pleasure.

Please tell EM readers about your experience as a musician.

Bret Schneider
Outbreak! Music Systems

Bret—I still think that our readers are (and rightly so) more concerned with reading quality articles than with what an ex-pro keyboard player did in what seems like another lifetime. But thank you for your kind words.—Steve O

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.

Error Log

March 2005, "Sound Choices: Powered Monitor Specifications," p. 59. The correct MSRP for the Phonic P8A monitors is $499.99.

PREMIUM ANALOG MIXING GOES DIGITAL

ONLY ONYX LETS YOU PLUG IN 16 MICS AND STREAM THEM DIRECTLY TO YOUR MAC OR PC.

ONYX

Mackie's new Onyx series premium analog mixers don't just raise the bar—they completely change the game. That's because, once equipped with the optional FireWire card, Onyx mixers let you plug in up to 16 mics and record them as individual 24-bit/96kHz tracks directly to your Mac or PC with a single FireWire cable... Not to mention being able to mix and EQ a live show in the process.

And what about sound quality? Glad you asked. Built upon our new flagship Onyx mic preamps, warm "British" style 3- and 4-band Perkins EQ, and premium analog circuitry, the Onyx series easily makes the best-sounding analog-to-digital interface at anywhere near its price.

To get you going, we also bundled a fully licensed copy of our acclaimed "no-fuss" Tracktion music production software, so you can be up and running on your latest smash-hit in no time at all.

Sure, you can opt to spend your cash on dedicated FireWire I/O boxes, outboard studio mic preamps, outboard British-style EQ processing, plus a mixer and recording software. Or you can just visit your local Mackie dealer and check out the much simpler Onyx solution.

Onyx—it's superior sound quality, single-cable FireWire connectivity and a powerful recording application, all packaged into a premium analog mixer.

info@mackie.com 425.487.4333 (Outside U.S.) 800.898.3211 (Toll free within U.S.)

MACKIE.

www.mackie.com

emusician.com

emarketplace | feedback | archives | buyer's guides

EMspotlight

Studio to Go

Sugarcult lead singer and songwriter Tim Pagnotta talks about recording the band's latest CD, *Palm Trees and Power Lines*. He also discusses the reasons why bringing his portable Pro Tools–based rig into commercial studios aids in songwriting and maximizes downtime. By Senior Editor Mike Levine.

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 Guides Online

Get detail specs on thousands of music-production products with our free online Computer Music Product Guide and Personal Studio Buyer's Guide.

Show Report

Frankfurt Musikmesse is the biggest annual musical-instrument expo in Europe. Visit emusician.com for Senior Editor Gino Robair's report on the exciting new recording gear, music software, and electronic musical instruments unveiled at this year's show.

editor's picks

Associate Editor Len Sasso has chosen his favorite EM articles about using plug-ins. The topics include an in-depth look at de-essing, how to choose an EQ plug-in, and how to creatively use common plug-ins.

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

cakewalk

SONAR 4

"In this business, we don't care what a program says it does, we care about how it sounds—And let me tell you, SONAR 4 sounds great. One example that I'm absolutely floored with is the MPEX Time Scaling for correcting vocal tracks. It's as if the vocalist just nailed the take, you can't hear the processing and I couldn't find any artifacts."

Terry Howard Producer/Engineer
Ray Charles, Norah Jones, Duran Duran, Michael McDonald, Slash, Percy Mayfield, Ellis Hall, Jimmy Scott
Grammy Winner in 2005 for *Genius Loves Company*:
Record of the Year, Album of the Year, Best Engineered Album

precision engineering

SONAR 4 offers world-class functionality at every level of the application—from access to leading algorithms like MPEX 3, POW-r, and Windowed Sinc; total flexibility in configuration; accurate visual display of waveform information; smooth responsive metering with configurable ballistics; and under the hood processing power. SONAR 4 ensures your projects retain their professional polish from inception to final delivery.

Learn more about SONAR 4's precise engineering technologies at **www.sonar4.com/precision**

EXTREMELY

PACKED

Buy an Extreme, get a **FREE** Korg Legacy Collection.*

Sooner or later, it all comes down to sound, and no keyboard on the planet is loaded with as much sonic firepower as the jam-packed TRITON Extreme. With 160MB of samples and thousands of new and classic patches—including a breathtaking new piano—the Extreme overflows with an unprecedented depth and variety of sounds. But it's not just the quantity of sounds that makes Extreme...well, so extreme. It's the quality. Every sound is a gem that's sure to inspire. And our unique tube-driven Valve Force technology adds amazing analog character to each and every one.

The Extreme is also packed full of innovative features. With 120-note polyphony, dual USB ports, a powerful sequencer, our easy-to-use Open Sampling System, dual arpeggiators, cool Touchview interface and much more, it's everything TRITON taken to the Extreme!

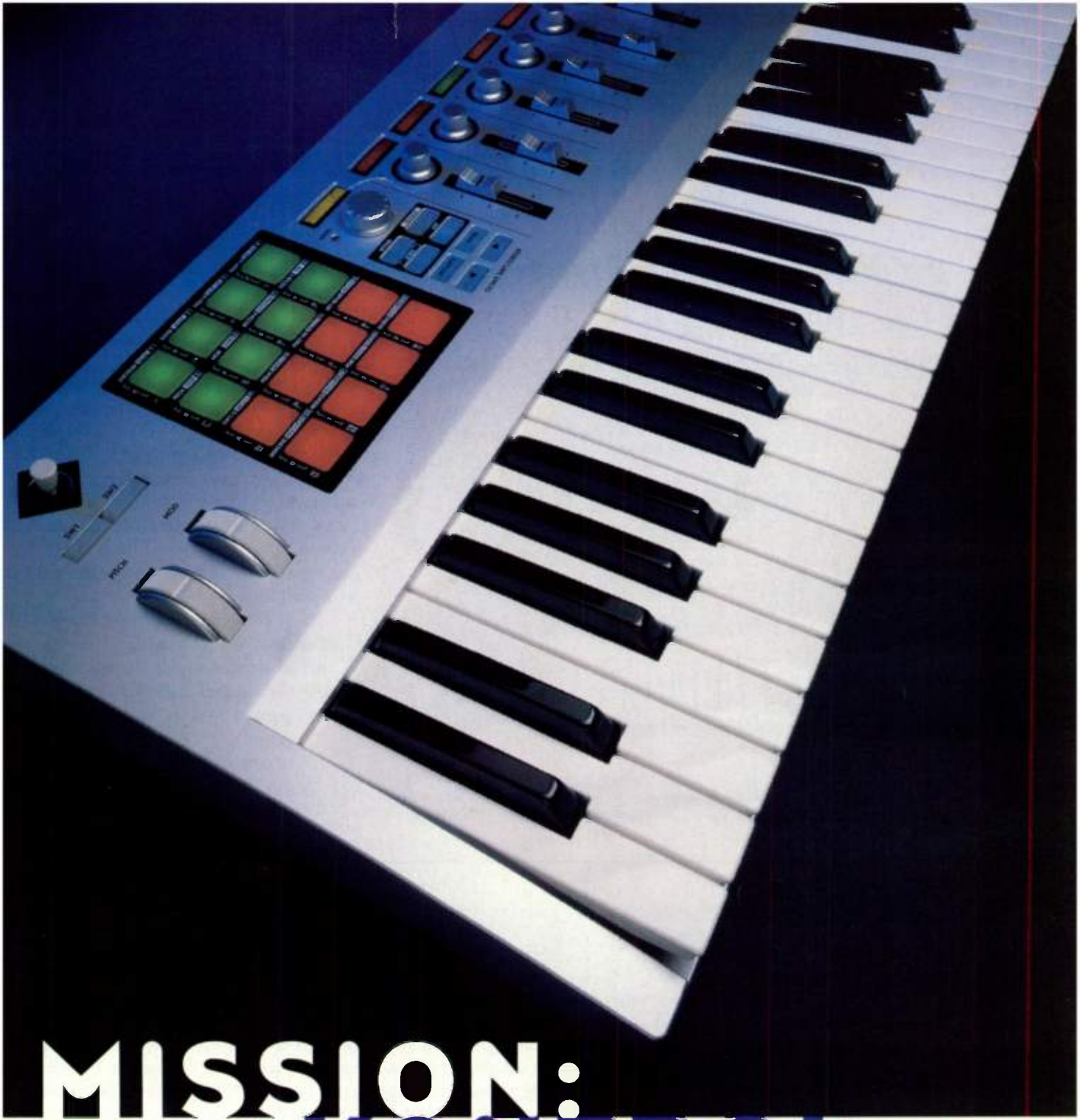
TRITON LE | TRITON EXTREME | TRITON STUDIO

*see korg.com/extreme for details

Check out and buy TRITON accessories at www.korg.com

KORG
www.korg.com

Register your TRITON Extreme warranty online at www.korg.com and get an extra year of coverage at no additional cost!



MISSION: KONTROL

Take command with the most powerful, most versatile keyboard controller around: KONTROL49. With 49 great feeling full-sized keys and Korg bullet-proof reliability, KONTROL49 is a sound investment for any serious computer-based musician. It bristles with an array of 40 assignable control elements including illuminated velocity-sensitive drum pads, rotary encoders, faders, a vector joystick, and classic pitch and mod wheels. Nine individual color-coded displays make the KONTROL49 the most user-friendly, intuitive controller ever. KONTROL49 also comes with a CD-ROM packed with demo versions of popular software, featuring the Korg Legacy Collection.

When music is your passion, creative control is critical. Get the KONTROL49 from Korg.

Check out www.korg.com for additional Korg accessories and register your KONTROL49 online for an extra year on your warranty. Korg microKONTROL with Creative Kontrol Pack also available.

KORG
WWW.KORG.COM

By Geary Yelton

Tascam DM-3200

Tascam (www.tascam.com) recently rolled out the high end of its digital mixer line: the 48-channel DM-3200 ($3,799). Compared with the DM-24, it has more of everything, including 32 channel inputs, 16 return inputs, 16 mix buses, 8 aux buses, and support for 6.1 surround panning. Nineteen touch-sensitive motorized faders and 16 rotary encoders with LED rings allow you to see mixer settings at a glance. The DM-3200 has two stereo effects processors, and each of the 32 channels has 4-band parametric EQ and dynamics processing. In addition to 16 balanced analog ¼-inch and XLR inputs with phantom power, the DM-3200 offers extensive digital I/O that has 4-channel AES/EBU, 4-channel S/PDIF, 8-channel Lightpipe, and 24-channel TDIF.

The DM-3200 comes with Mixer Companion software (Mac/Win) that handles project management and displays timecode and meter values. USB 1.1 connectivity is standard. An optional FireWire card ($499) facilitates exchanging 24-channel audio data with your computer. Other options include the MU-1000 meter bridge ($999) and the IF-SM/DM surround monitoring interface card ($699).

Korg OASYS

Korg (www.korg.com) has unveiled the OASYS (Open Architecture Synthesis Studio), an all-new instrument that encompasses and builds on numerous Korg technologies. The OASYS features multiple sound engines, user sampling, 16-track audio recording, 16-track MIDI sequencing, second-generation KARMA functionality, and maximum 172-note polyphony. It has a 10.4-inch color touchscreen display, eight drum pads, a user-configurable control surface, a CD burner, and four USB 2.0 ports. Performance controllers include an *x-y* joystick, a vector joystick, and a ribbon controller. The 76-key model sells for $7,999, and the 88-key, hammer-action model is $8,499.

The OASYS ships with three types of synthesis, and additional types will be available in the future. HD-1 PCM synthesis boasts a 627 MB waveform ROM (more than any previous hardware instrument), as well as enhanced wave sequencing and advanced vector synthesis capabilities. AL-1 virtual-analog synthesis uses physical modeling to emulate an 84-voice analog synthesizer. CX-3 tonewheel modeling gives you a virtual organ with dual drawbar sets, EX mode, and rotary-speaker simulation. The OASYS has 1,664 Program, 1,792 Combi, and 152 Drumkit locations, all of them user-programmable. It also lets you use 12 insert, 2 master, and 2 output effects from a selection of 185 algorithms.

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

Black Grand

$199.95
EXS24/Halion/Kontakt/Giga

The magnificent Steinway D, recorded in a concert hall for the true grand experience. Three perspectives, Close, Ambient and Medium Ambiance gives you three different instruments to choose from. Each perspective has ten different patches, each one providing you with a different set or subset of the full sample set. The Black Grand library is over 18Gb! (16 bit version is only 12 Gb) An incredible 48 samples/note (36 for Gigastudio), makes Black Grand a sampling masterpiece.

FOUNDATION

$299.95

VSTi/AU/RTAS/Plug-in

Following the success of Smokers Delight, Foundation is your next Hip Hop hit waiting to be created. e-Lab products are an industry standard and the IGNITION series loop libraries are the biggest and best libraries to date. 11 Gigs of loops, sounds, construction kits and the IGNITION multitrack REX player. Kick, snare, hihat, bass, guitar, keys, etc. all on individual stereo tracks. Play and edit eight REX files simultaneously, creating millions of beats. And it doesn't stop there, Big Fish Audio has over 100 compatible REX libraries available for the IGNITION engine.

Brain: One Stroke Done

$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.

London Solo Strings

$399.95
Kontakt Player/Plug-in (VSTi/RTAS/AU/DXi2)

$399.95
GigaStudio

This is, hands down, the most playable string library available. Violin, Viola, Cello & the oft-omitted Double-Bass like you've never heard them before. 24 bit, multiple microphone positions, played by world class performers with top of the line instruments. Articulations include: arco, marcato, spiccato, sul tasto, ponticelli, pizzicato, harmonics, snap pizzicato, FX & more. This library delivers realism & flexibility packaged in the most creative programming to date.

Funk City

$69.95
AIFF/Apple Loops/REX/WAV

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.

Neo Soul

$99.95
Audio/WAV

Reminiscent of 70's soul music combined with new millennium Hip Hop, Jazz & R&B, Neo-Soul has been conquering clubs the world over. Veteran producers, songwriters & artists heat up this simmering cauldron of construction kits, oozing Hip Hop & R&B at an ethereal level & celebrating soul music's resurgence. Enhance your library with just the right amount of sweat, longing and passion.

LA Drum Sessions

$99.95
WAV

LA Drum Sessions is just that: session drummers laying down phat, thick, luscious beats, in about every style you can think of. All divided up into folders of related loops by style & tempo; different recording setups; 3 versions of each performance: dry, room-mic only & mixed. Over 80 categories of styles; over 6000 loops; Jazz, Rock, Disco, 60's Fun, Funk, Punk, Country, Blues, Texas Shuffle & more.

Hip Hop Philosophy

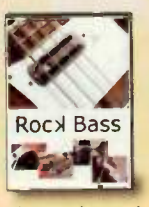
$49.95
AIFF/Apple Loops/REX/WAV

At Big Fish Audio we've come up with a philosophy of our own, "Hip Hop Philosophy," our newest product for all you producers/composers looking for the newest in hip hop. Rooted in abstract hip hop, we've put together hot new construction kits with beats, bass lines, synth, fx and more. With over one Gig of the fresh stuff, these construction kits are ready to go, just load em' up and loop em' out. In addition we've included a drum loops section and a stabs section.

Greg Adams' Big Band Brass

$99.95
WAV/REX/AIFF/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.



Rock Bass

$49.95
AIFF/Apple Loops/WAV

You may have other bass sample CD's to choose from but none will compare with the precision and character of this library. This isn't just your standard "no hook" bass library, in fact many different elements went into this product from Underground Rock to Brit Rock it's all here for your sampling pleasure. If you desire a pro rock bass player who never fails to come to a session with a fresh new hook or groove then look no further. BPMs range from 80-120.

Jazz Quartet

$99.95
AIFF/Apple Loops/REX/WAV

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**

Waves Q-Clone

Waves (www.waves.com) has introduced Q-Clone (Mac/Win, $1,000), a plug-in that captures the sound of your favorite outboard equalizer and turns that sound into a matching software preset. You can sample EQ curves from even the most expensive hardware device to create a preset that you can insert on multiple channels. To change EQ settings, simply change the settings on your hardware, capture the new settings, and apply the plug-in to your track.

Q-Clone consists of two plug-ins, Q-Capture and Q-Clone. After Q-Capture sends a test signal to and from your equalizer, Q-Clone creates an impulse response from that signal, applies the captured curve to your track, and graphically displays the curve. Apply additional instances of Q-Clone to chain together as many EQs as you like. You can use the Add feature to equalize a track that's already been equalized, effectively turning a 2-band EQ into a 4-band EQ. The Q-Clone system captures the linear sound of any system to which it's connected, reproducing a filter's phase responses, but not its distortion or noise. Although Q-Clone captures only mono devices, it can be applied as a stereo plug-in.

Q-Clone has a library of more than 200 EQ curves from well-known, top-shelf analog equalizers. It supports RTAS, HTDM, AudioSuite, VST, DirectX, MAS, and Audio Units plug-in formats. Q-Clone is available only as a standalone product and is not included in any Waves bundle.

Download of the Month

HARPTIME AND MICROROCK (Mac/Win)

HarpTime Pro (Mac/Win, $59.90), HarpTime Fun (Mac/Win, $29.90), and MicroRock Pro (Mac/Win, $46.90) from LiqihSynth (http://nusofting.liqihsynth.com) are physically modeled emulations of a folk harp and a synth with electric-guitarlike sounds. All three plug-ins are available in VST format for Mac OS X and recent versions of Windows, and in Audio Units format for OS X. Demo versions (which beep periodically) and MP3 audio examples are available for all products from the LiqihSynth Web site.

The HarpTime plug-ins model the sound of a plucked folk harp. Twelve strings are modeled to allow for simultaneous sympathetic resonance. By default, its 12 virtual strings are tuned to equal temperament. The plug-ins differ in polyphony (8 notes for Fun, 12 notes for Pro) and controls. HarpTime Pro features individual string tuning, excitation, pick position, and brightness. Both models have a unique Shaping control that selects among 12 presets for string type, attack and decay behavior, and braypin model. In a nice touch, MIDI Mod Wheel is used to generate a multioctave glissando.

MicroRock is a monophonic synth with three playing modes: Lead, Bass (which doubles string length), and PowerChord (for which the oscillator and suboscillator are doubled a fifth above the played note). It has a complement of built-in effects for emulating the pedal-effects-laden sounds of early psychedelic bands such as Pink Floyd. In short, it's nasty.

The heart of MicroRock is its string emulator, which has controls for plucking energy (Exciter), string stability (Modulation), pick tone, and pick position. Additionally, a suboscillator can be mixed in to add gravitas. The string emulator feeds a Tone section offering distortion, overdrive, saturation, and color. Effects include a retriggering ADSR envelope generator, auto-wah, chorus, vibrato, and tempo-synced delay.

—Len Sasso

Magic Wand

The cold, hard facts of room acoustics challenge every studio, large and small. JBL engineers thought it was time for a little magic. Introducing the LSR6300 Studio Monitors, the first reliable solution for tackling the real-world problems inherent in every room. Featuring the exclusive JBL RMC™ Room Mode Correction system, you can accurately measure boundary-induced low frequency modes with the included hand-held acoustic analyzer and then adjust each speaker's 1/10th octave parametric equalizer to correct problems in your room. Designed from the ground up, the LSR6300's uncompromising specs and features give you total control of your music production. See your JBL Dealer today and experience the power of LSR6300 Studio Monitors with RMC - magic you can really put your hands on.

LSR6300 Studio Monitors –

Mix Without Boundaries.

TEC 2004 WINNER

Learn more about the power of the LSR6300 Studio Monitors and RMC at www.jblpro.com/LSR

Quantum Leap Colossus

If you've been waiting for an excuse to buy a new hard drive, EastWest (www.soundsonline.com) is doing all it can to end your procrastination. Quantum Leap Colossus (Mac/Win, $995), produced by Nick Phoenix and based on Native Instruments' Kompakt sound engine, is a 256-note polyphonic virtual instrument with 32 GB of sampled content that encompasses a wide variety of musical genres and instruments. Sound categories include orchestra, choir, ethnic, drums and percussion, guitars, and keyboards—160 instruments in all. About half the content provides all-new sounds, and the other half comes from previous EastWest and Quantum Leap sample libraries. Colossus even supports General MIDI.

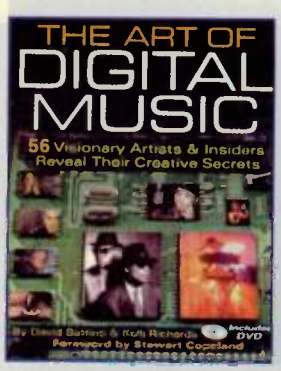
Cycling '74 Hipno

Nobody challenges your preconceptions about music software like Cycling '74 (www.cycling74.com). The San Francisco–based company has announced Hipno (Mac, $199), a new suite of effects and instrument plug-ins designed by Electrotap. (A Windows version is expected later this year.) The collection features granular, spectral, and delay-based plug-ins, each with the unique Hipnoscope user interface, which lets you create, control, explore, and morph between complex presets and interpolations.

Hipno has more than 40 plug-ins. Morphulescence, for example, is a cascaded bank of LFO-modulated filters. Deluge delivers four granular processors, and Shypht is a pitch shifter with filtering, pitch quantization, and feedback looping. VcolorTrack and Modulator Vmotion are modulator plug-ins for controlling other Hipno, Pluggo, or Mode plug-ins using real-time video input. Hipno supports VST, Audio Units, and RTAS formats.

Get Smart

Frequent EM contributor David Battino collaborated with veteran music- and computer-industry executive Kelli Richards to write *The Art of Digital Music: 56 Visionary Artists & Insiders Reveal Their Creative Secrets* ($27.95), published by **Backbeat Books** (www.backbeatbooks.com). In the course of 260 pages, the authors weave together insights and anecdotes from performers, producers, programmers, and provocateurs ranging from Herbie Hancock and Mark Isham to Dave Smith and David Zicarelli. The virtual roundtable offers expert advice on studio setup, sequencing, sound design, and other topics of interest to electronic musicians, followed by appraisals of the current and future state of music distribution. Bundled with the book is a DVD filled with audio excerpts from interviews, music and video clips, samples, essays, and recommended Web links. If you're interested in music technology, *The Art of Digital Music* is an absolute must-read.



Assistant Engineer Handbook ($19.95) is a unique and invaluable resource for anyone who aspires to break into the recording business. Written by *Mix* features editor Sarah Jones and published by **Schirmer Trade Books** (www.musicsales.com), the 176-page text is packed with practical advice on how to acquire skills, develop a career strategy, get your foot in the door, and find and keep a paying job. The author explains the assistant engineer's responsibilities, reveals networking opportunities, and discusses career options. She even tells you how to deal with rejection and set realistic goals. Following several chapters are case histories, in which industry insiders disclose how they got started. The appendix lists dozens of useful resources such as trade organizations and schools, and provides sample cover letters and résumés.

In *The Recording Engineer's Handbook* ($34.95) from **Course Technology** (www.courseptr.com), author Bobby Owsinski covers many technical aspects of recording-studio work. The book focuses on tracking instruments and vocals rather than on mixing or mastering. Subjects include mic selection and placement, stereo- and surround-miking techniques, drum-booth preparation, and the role of the studio engineer. Owsinski discusses specific equipment and offers detailed information on many individual microphones. A third of the 384-page softbound book is devoted to interviews with accomplished engineers, who divulge the secrets of their recording success.

Expert Sales Staff,

Toll-Free Tech Support

and Great Prices?

Only at Sweetwater!

Ever notice how most music retailers' ads have begun to look like supermarket ads ...special on aisle five and so forth? Musicians need to save money. We get it. But buying audio gear also requires highly specialized knowledge and very special service. We get that too, and that's what makes Sweetwater different. So different, in fact, that thousands of people turn to Sweetwater every day for their music needs.

What is the Sweetwater Difference? It's giving you the care, support, and expertise of a neighborhood music store with all the advantages of a national dealer, plus features that even the biggest chains can't provide like:

HUGE SELECTION

Great prices, special package deals, rebates, and FREE SHIPPING on almost everything we stock.

An enormous inventory means whatever you want, chances are we have it in stock.

EXPERT SALES STAFF

The most knowledgeable and qualified Sales Staff in the industry — a one-on-one relationship with an audio professional.

FREE unlimited tech support and award-winning Service Center.

FACTORY-AUTHORIZED REPAIR CENTER

The largest website in music retail with online buying guides, in-depth product information, 24-hour online tech support, and more.

We do whatever it takes to keep you happy. That's what the Sweetwater Difference is. When you think about it, the Sweetwater Difference isn't about us...

It's all about YOU!

AWARD-WINNING TECH SUPPORT

Sweetwater

music technology direct™

(800) 222-4700

www.sweetwater.com

e-Lab Foundation

Foundation (Mac/Win, $299.95) is the newest instrument plug-in from e-Lab (distributed by Big Fish Audio, www.bigfishaudio.com). Built on the same Ignition Virtual Instrument (IVI) sample-playback engine as e-Lab Obsession, Foundation's specialty is hip-hop loops with an emphasis on multitrack drums, as well as bass and other instruments. Its 3.7 GB sample library features more than 3,000 loops and 5,000 individual drum samples. All the loops were recorded live at 90-, 100-, or 110 bpm, and they play at any tempo in sync with your sequencing program. Each instrument appears on one of eight separate tracks, with individual level and panning controls. You can load one track at a time to build your own grooves. Foundation also loads REX2 files into any of its eight tracks, as well as content from other IVI plug-ins.

Foundation's sound-processing capabilities expand its versatility by giving you hands-on control of tuning, overdrive, and other parameters. Its modulation matrix lets you assign six sources to control any of a dozen destinations. Other features include a resonant multimode filter, two ADSR generators, a multiwaveform LFO with delay, MIDI-assignable controls, and full-host automation. Foundation is compatible with VST, RTAS, and Audio Units hosts.

Dave Smith Instruments Poly Evolver Keyboard

The Poly Evolver Keyboard ($2,699) is the third product from Dave Smith Instruments (www.davesmithinstruments.com). It is also the first new keyboard instrument introduced by pioneering synth designer Smith in several years. Alongside DSI's tabletop Evolver and rackmount Poly Evolver, the Poly Evolver Keyboard offers many features that make it exceptional among 21st century synthesizers.

Like the Poly Evolver, the keyboard model is 4-note polyphonic and 4-part multitimbral. It has analog oscillators that are based on the ones for Sequential Circuit Prophet 5, and its digital oscillators are based on the ones for Prophet VS. Each voice has its own 16-step-by-4-event sequencer and individual stereo outputs. The Poly Evolver Keyboard adds a hands-on user interface for real-time performance control, incorporating 78 knobs, 59 buttons, and a 61-note keyboard with Velocity and Aftertouch response. If you want more polyphony, an overflow mode lets you link together additional Evolvers or Poly Evolvers.

Sound Advice

UK–based **Homegrown Sounds** (www.hgsounds.com) recently added two new titles to its impressive stable of unique sample discs. For those occasions when you want that authentic '60s psychedelic sound, Homegrown Electric Sitar ($49) is a DVD-ROM containing samples of the Jerry Jones reissue of the classic Coral electric sitar. In addition to 1 GB of loops in WAV and REX formats, the disc supplies individual samples and preset instruments for Kontakt, HALion, EXS24, and Reason NN-XT.

Also new from Homegrown Sounds is Radiance ($39), a CD-ROM of ambient pads and textures. Radiance contains 200 evolving WAV files that you can import directly into your audio program. Dozens of presets support all the same software instruments as Electric Sitar.

Discovery Sound (www.discoverysound.com) has introduced two updated titles in its Sound Effects CD series. *Life* ($23) features the sounds of everyday events and activities. The 40-minute audio disc comprises six sections: The Body, Emotion, Kitchen, Household, Sports, and Festivals. *Industry* ($23) provides 56 sounds divided into two categories. Science includes rockets, motors, robot voices, and space music, and Works is an assortment of factory and construction sounds.

Discovery Sound's CD-ROM *This Is Vietnam* ($55) contains 277 Acidized WAV and 122 REX2 files. It provides six instrument programs each for MachFive and Kontakt and two for Battery. Recorded in Ho Chi Minh City, the disc supplies samples of traditional and modern music, instruments, speech, and sound effects—even Vietnamese rap.

sweetwater

creation station™ series

Finely Tuned PCs for Powerful Audio Performance

Professionally optimized to deliver maximum track counts and plug-in muscle!

Who will you trust to build your next system?

When you make a major investment in an audio PC, you need to know that it's powerful, dependable, and trustworthy. There's one name in the business that audio pros have learned to trust — Sweetwater.

Built by Audio Professionals with Audio Pros in Mind: NO ONE has designed, installed, configured and tested more audio computer systems than Sweetwater! We took all of that experience and built it into the perfect audio workstations. We carefully selected every component — right down to the drive mount grommets — to squeeze every drop of audio juice out of your system.

Certified "Whisper-Quiet" by Auralex: Nothing is more important in your studio, and Sweetwater's 10-point Sound Dampening Technologies lead the way! Creation Stations are so quiet you may not even know they're on. In fact, they've been lab-tested and certified by Auralex as "Whisper-Quiet," with the lowest dB levels on the market.

Compatible with Virtually All DAW Hardware and Software: You can confidently run any Windows audio app on your Creation Station. They're Digidesign-approved for Pro Tools LE and HD. Plus, we've tested and certified Creation Stations to work with virtually all popular software and hardware including SONAR, ACID, GigaStudio, Nuendo, E-MU, MOTU, M-Audio, RME, TASCAM, and more!

Rock-Solid GLYPH Hard Drives Plus Intel, ASUS and More: Creation Stations feature an industry first — Glyph hard drives, backed by Glyph's amazing overnight replacement guarantee! All models also include components by Intel, ASUS, NVidia, and Zalman.

The Most Affordable Quiet PCs on the Market: While other companies sacrifice quality for price, Sweetwater worked to bring you the best machines at the lowest cost. We encourage you to compare Creation Stations to any other brand — Sweetwater gives you more computer for your money!

Included FREE with every PC

The World's Best Tech Support Staff: You can actually TALK to the people who built your Creation Station! No one knows more about audio computing than Sweetwater.

SweetCare Remote Service: Our technicians can log directly on to your computer if you should ever need help.

Pro Audio Keyboard and Mouse: Even at these low prices, Creation Stations don't come "stripped." They include a custom 110-key Media Station Keyboard and a 3-button Optical Mouse.

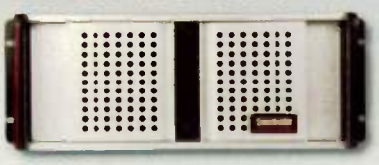
Pro Audio Software Suite: Every Creation Station is loaded with useful music and audio applications including utilities, educational software and samples.

Professional Audio Optimization: Your PC is ready for audio, right out of the box! Our technicians perform a 40-point hardware and OS optimization procedure to ensure that your hardware and software will work glitch-free.

My new Creation Station Audio PC is the cat's meow. I like the CPU speed, fast bus architecture, default RAM, dual drives, and ultimately its quietness. There have been times when I've had to check if I left it on because I couldn't hear it running! — *Dave C.*

SWEETWATER EXCLUSIVE! Buy your audio hardware and software from us and we'll install and configure it for you to get you recording right out of the box!

Choose your pro audio dream station!



creationstationrack
- Intel P4 3.2GHz
- Glyph 80GB & 200GB SATA HD
- 5 Available PCI Slots

$2149.97

creationstationpro
- Intel P4 3.2GHz
- Glyph 80GB & 200GB SATA HD
- 5 Available PCI Slots

$1999.97

creationstationcube
- Intel P4 3.0GHz
- Glyph 80GB & 120GB SATA HD
- 2 Available PCI Slots

$1849.97

creationstationtower
- Intel P4 2.66GHz
- Glyph 80GB ATA HD
- 2 Available PCI Slots

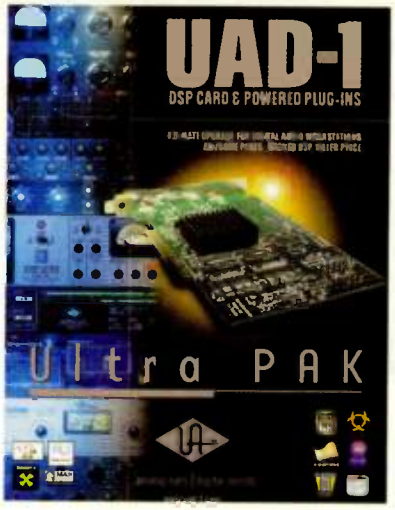
$999.97

All models feature ASUS Motherboard, Zalman CPU Cooling System, Optical Drive, Media Station Keyboard, Optical Mouse, Music Technology Media Reader, and Sweetwater's Ironclad Two-Year Warranty.

Sweetwater
music technology direct™

Get the Whole Creation Station Story
(800) 222-4700 www.sweetwater.com/pc

Universal Audio UAD-1 Ultra Pak



Studio hardware and software manufacturer Universal Audio (www.uaudio.com) is shipping the mother of all hardware-hosted plug-in bundles, UAD-1 Ultra Pak (Mac/Win, $1,495). In addition to the UAD-1 DSP expansion card, Ultra Pak features Universal Audio's entire collection of 24 dynamics and effects plug-ins, representing a significant savings compared with buying each plug-in separately.

Ultra Pak's processors range from standbys such as the CS-1 channel strip and the Nigel guitar-amp simulator to the new Plate 140 reverb and the Precision EQ mastering equalizer. Several plug-ins use proprietary modeling techniques to emulate vintage analog units such as the Pultec EQP-1A, Fairchild 670, UA 1176LN, and UA LA-2A.

Ultra Pak supports sampling rates as high as 192 kHz and as many as four UAD-1 cards per system. The plug-ins run in software hosts that support VST, RTAS, MAS, DirectX, and Audio Units formats.

GForce Minimonsta

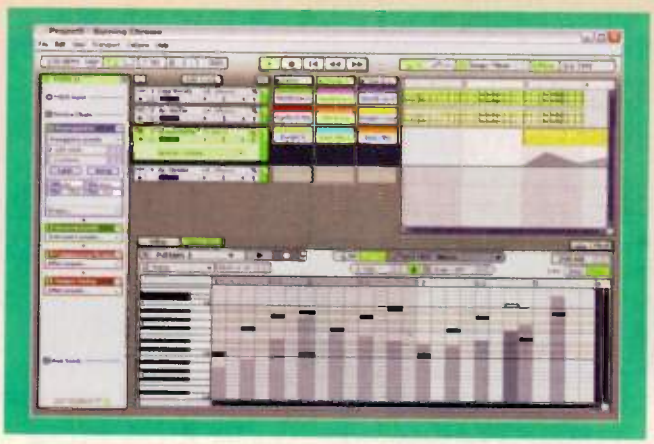
The virtual Minimoog wars rage on: the most popular analog synthesizer of all time has spawned the greatest number of software emulations. The newest is the GForce Minimonsta (Mac/Win, $199.95), developed by GMedia and distributed by M-Audio (www.m-audio.com). Like the original Minimoog, Minimonsta has three virtual VCOs, a 4-pole filter, a noise generator, and an external input. It also has an additional LFO, an extra ADSR, a delay effect, and more than 2,500 factory patches. It offers monophonic or polyphonic operation and has legato and unison trigger modes.

Minimonsta lets you map any dozen presets to an octave on the keyboard, and then morph between them by playing notes in that octave. You can assign all parameters to MIDI Control Changes, allowing you to use assignable knobs and buttons for real-time control or to automate changes by recording them into your sequencer. Minimonsta runs either standalone or as a plug-in for hosts that support VST 2.0, RTAS, or Audio Units.

Rev Up

CAKEWALK PROJECT5 2

Cakewalk (www.cakewalk.com) has upgraded its virtual synth studio workstation Project5 (Win, $429) to version 2. Featuring a revised user interface and an enhanced audio engine, Project5 now offers audio recording and editing tools that provide track automation, track freeze, tap tempo, and a track-inspector view. New loop features let you control the pitch, pan, and gain of individual beat slices, and Project5 can now export loops in Acid format. A performance-oriented arpeggiator includes hundreds of patterns and classic algorithms. Version 2 also has MIDI-assignable pads to trigger MIDI and audio patterns in real time.



A new sampling synthesizer called Dimension (a product of Cakewalk's recent acquisition of software developer rgc:audio) features waveguide and virtual analog synthesis. It also has four multilayer elements, graphic modulation, a variety of effects processing algorithms, and more than 2 GB of samples. The analog-modeling PSYN II soft synth has new delay, overdrive, and modulation effects. Project5 supports DirectX and VST, and it operates as a ReWire host and client. Current owners of Project5 1.0 or 1.5 can upgrade to the new version for $79. EM

COMMAND 8

Command | 8

Introducing Command | 8,™ the new compact control surface designed specifically for Pro Tools® TDM and LE systems. Featuring analog monitoring and a single USB connection to your PC or Mac, Command | 8 puts you in touch with your mix effortlessly and affordably.

- Fully-featured control surface for Pro Tools TDM or LE systems
- Simple USB connection to your PC or Mac
- Eight touch-sensitive motorized faders
- Eight rotary encoders for panning/plug-in control
- Easy-to-read display for common track parameters
- Focusrite onboard monitor system
- Onboard 1-IN/2-OUT MIDI interface
- Stand-alone MIDI controller mode — Works with your favorite MIDI software

Focusrite digidesign

For more information on Command | 8, visit www.digidesign.com.

Hermode Tuning

By Scott Wilkinson

Synths can finally play in tune.

One of my strongest areas of musical interest is microtonality. Many musicians think that word refers to intervals that are smaller than a semitone, but that's only part of the story. More important for Western music, microtonality can be applied to the familiar intervals by retuning them a few cents away from their equal-tempered prison and toward purer just intonation. In fact, wind and string players in orchestras and chamber ensembles retune constantly, "shading" notes up or down to bring them more in tune with the other notes being played at the same time.

It has long been a dream of mine to have a system that automatically retunes synthesizer notes in the same manner. Now, such a system is finally on the verge of becoming widely available. Developed by German musician Werner Mohrlok and his computer-programmer son, Herwig, the system is called Hermode Tuning, or HMT (www.hermode.com). To hear what this system can do, listen to the excellent audio examples on the Hermode Web site.

HMT has a database of predefined intervals and chords of up to six notes, which allows it to quickly identify intervals and chords as they are played. It then retunes the notes to bring them closer to pure just intonation. In some modes, each chord is analyzed only for the intervals it has, but in at least one mode, the harmonic center is also taken into account by keeping track of the last ten chords played. In that case, chords near the harmonic center are closer to pure than chords that are more distant, much like the well-tempered tuning systems of the baroque era. Unlike those systems, however, HMT is dynamic, shifting the temperament according to the harmonic center.

One of the most amazing aspects of HMT is its compatibility with equal temperament, which is crucial when wind and string instruments play with a fixed-intonation instrument, such as a piano or harpsichord. Instead of identifying the root of each chord and retuning the other notes while leaving the root at its equal-tempered pitch, all notes are adjusted so that the average detuning from their equal-tempered pitches is as close to zero as possible.

One problem that arises in any such system is pitch drift. As notes are retuned, they are then used to calculate the pitches of the next notes, and so on, which can eventually lead to notes that are far from the original pitch center. Another problem is the need to retune notes that are common from one chord to the next because they occupy different positions in each chord. Depending on the pitches and timbres being played, changes of as little as three or four cents can be heard.

To overcome those problems, HMT's equal-temperament reference (that is, the set of all 12 equal-tempered pitches) is shifted up or down as needed to minimize pitch drift and the amount by which notes common to sequential chords must be retuned. To keep things from getting out of hand, the reference is shifted by no more than 15 cents in either direction from the default level, and the system strives to return to the default level whenever possible. As you can see in **Fig. 1**, the top example requires no reference shifting because it stays squarely in one key center, while the bottom example shifts the reference because it contains wide-ranging modulations.

HMT is currently available in the latest operating software (OS6) for Access Virus synths as well as Apple's Logic Pro 7, and it's expected to be implemented in software synths from Native Instruments and others. I'm excited about this technology, which finally allows synthesized music to play in tune like never before. EM

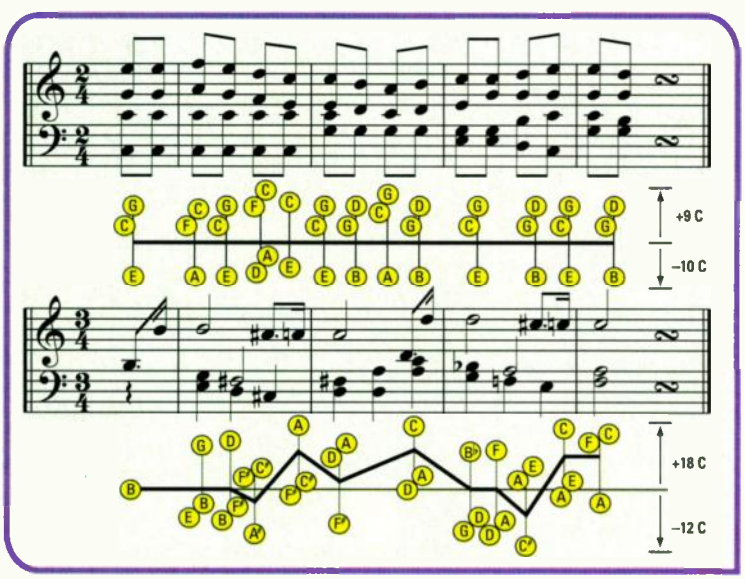


FIG. 1: In the lower portion of these two examples, the heavy, horizontal line represents the equal-temperament reference level, and each circled note name indicates how far above or below its equal-tempered pitch it has been retuned. Notice how the same note must sometimes be retuned differently depending on its position in each chord.

Put your outboard EQ inside your DAW

Presenting Q-Clone

Software that turns your hardware equalizer into a plug-in—in real time

You know there's no substitute for the sound of a classic hardware equalizer. You also know hardware can't match the flexibility of a plug-in. But what if you could have both?

Not an emulation—it's your EQ only better

Let's be clear: Q-Clone isn't an emulation. You tweak the knobs on your equalizer just like always. Q-Clone captures the exact sound of your equalizer as you adjust it.

Presets recall your hardware sound

Save your sounds as presets, and you can instantly A/B between them. Or get your signature hardware sound—without the hardware.

Add EQ on top of EQ

Once you've equalized a track, you can equalize that equalization—like chaining two of your EQs together! Or make your four-band EQ into an eight-band! There is no end to the possibilities. Finally, a way to get hardware "inside the box."

Put your outboard EQ on multiple tracks at different settings—simultaneously

Tweak one track, click Q-Clone's "Hold" button, and the sound stays just as you set it. Move on to equalize another track and another—as many as your computer can handle.

WAVES

(North & South America) 306 W. Depot Ave.
Suite 100, Knoxville, Tennessee 37917
Phone: 865-909-9200
Fax: 865-909-9245

7-Day Demo available at your Waves dealer and at www.Waves.com

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.

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 click record.

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.

OVER $500 OF BUNDLED PLUG-INS

T2 gives you all your basic music-making and mixing tools right out of the box — including Amplitube LE Sampletank SE the legendary LinPlug RMIV drum sampler and a full suite of Mackie Mixing and Mastering plug-ins.

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 a plications 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.

800.898.3211 (Toll free within U.S.) 425.487.4333 (Outside U.S.) info@mackie.com

Put your outboard EQ inside your DAW

Presenting Q-Clone

Software that turns your hardware equalizer into a plug-in — in real time

You know there's no substitute for the sound of a classic hardware equalizer. You also know hardware can't match the flexibility of a plug-in. But what if you could have both?

Not an emulation—It's your EQ only better

Let's be clear: Q-Clone isn't an emulation. You tweak the knobs on your equalizer just like always. Q-Clone captures the exact sound of your equalizer as you adjust it.

Presets recall your hardware sound

Save your sounds as presets, and you can instantly A/B between them. Or get your signature hardware sound—without the hardware.

Add EQ on top of EQ

Once you've equalized a track, you can equalize that equalization—like chaining two of your EQs together! Or make your four-band EQ into an eight-band! There is no end to the possibilities. Finally, a way to get hardware "inside the box."

Put your outboard EQ on multiple tracks at different settings—simultaneously

Tweak one track, click Q-Clone's "Hold" button, and the sound stays just as you set it. Move on to equalize another track and another—as many as your computer can handle.

WAVES

(North & South America) 306 W. Depot Ave.
Suite 100, Knoxville, Tennessee 37917
Phone: 865-909-9200
Fax: 865-909-9245

7-Day Demo available at your Waves dealer and at www.Waves.com

Laws of Gravity

By Matt Gallagher

Artemis creates cinematic electro-pop.

San Francisco–based songwriter, vocalist, and electronica artist Artemis gained widespread notoriety with her 2001 debut album, *Undone*. Her follow-up effort is *Gravity* (Magnatune, 2004), which further refines her approach to producing lush, intricate trip-hop and electro-pop. For *Gravity*, Artemis collaborated with longtime bandmates Keith Crusher and David Earl, among others. "We use sampled sounds and live instrumentation," she says of their production process.

Artemis began composing songs for *Gravity* in 2002. "Everything starts from software synths and loops," she says. "But I don't have one formula. In the summer of 2003, I rented a flat in northern Scotland to focus on the album. I brought my PowerBook G4, a Novation Remote 25 keyboard controller, an SE Electronics Z5600 [condenser mic], and a hard drive." While in Scotland, Artemis exchanged ideas with musicians Kolin Fraser of Scotland and Michael Jordan of Germany.

Gravity/Artemis

COURTESY MAGNATUNE

In 2004, production moved into Earl's home in Oakland, California. Earl's project studio has a dual-processor Mac G4/867 MHz machine running Apple Computer's Logic Pro 6, a MOTU 828 mkII audio interface, a Mackie Universal Control control surface, a Roland SH-101 synth, and an M-Audio Keystation Pro 88 keyboard controller. "I use virtual instruments such as Native Instruments Komplete 2, Propellerhead Reason, GMedia M-Tron, and Apple EXS24," Earl adds. "I use Spectrasonics *Liquid Grooves* a lot, Logic's native plug-ins, and Waves' Gold Native Bundle."

For *Gravity*, Earl needed to bring certain sessions from 2001 into the present. "In 2001, I started converting songs to stems, or submixes," Earl says. "Now I can open [those] sessions." In addition, Artemis says, "We all migrated from OS 9 to OS X during this [production]. In the transition, we lost some plug-ins. Some songs turned out differently—and much better, I think. But it took a leap of faith." Earl adds, "Sometimes I had to manually reassign plug-in settings and instruments."

Good file management was critically important. "File transfers aren't a problem," Earl says. "We all work in Logic. I have files on my hard drive of the original sessions, the stem mixes, and the final mixes. All our songs have version numbers that are created every time there's a major change."

The music on *Gravity* is heavily reliant on sound design. "In 'Prayer,' we have rattlesnakes, wolves, wind chimes, campfires, and more," Earl says. "For 'Sync or Swim,' we recorded an old Parker Brothers Merlin [computer] game from 1978," Earl says. "I used strip silence in Logic to create regions for the bloops and bleeps. I imported them into the EXS24 and used them for a melody. 'Beautiful Life' has clocks, crickets, birds, machine shops, and other sounds. The intro to 'Inception' [includes] the conning tower of an aircraft carrier, some ham radio noise, and jets. There are atomic bombs, M16s, marching [soldiers], sirens, grenades, and other devices."

The group recorded cello, guitar, kora, and vocal tracks at Pyramind, a school for music and media production where Earl teaches Logic courses. "Controlled environments are still needed when recording some instruments," Earl says. They felt that the Z5600 mic was especially well suited for Artemis's voice. "My voice has a bump in it around 500 Hz," Artemis says. "It's tricky finding a mic that adds presence without losing that warmth."

Earl and Crusher mixed the album in Logic at Pyramind. "I brought in my CPU, my 828, and my Mackie control surface," he says. "The room is tuned really well. Also, Pyramind has a Genelec 5.1 system, and using a subwoofer makes all the difference in the world." EM

For more information, go to www.artemis.fm or www.magnatune.com.

Fantom-X7: Workstation Keyboard

Roland®

www.rolandus.com

FLEXIBILITY

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.

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 click record.

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.

OVER $500 OF BUNDLED PLUG-INS

T2 gives you all your basic music-making and mixing tools right out of the box — including Amplitube LE Sampletank SE the legendary LinPlug RMIV drum sampler and a full suite of Mackie Mixing and Mastering plug-ins.

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.

800.898.3211 (Toll free within U.S.) 425.487.4333 (Outside U.S.) info@mackie.com

IF YOUR MUSIC SUCKS, IT WILL STILL SUCK.

YOU'LL JUST MAKE IT A WHOLE LOT FASTER.

If you enjoy clicking through layers of windows to create music, then Tracktion software is definitely not for you. It won't pretend to be a mixing console... It doesn't have cute 3D racks or patch cables... It doesn't contain a single instrument icon.

Instead, Tracktion lets you get right to the business of making music using a single screen for everything from audio recording and MIDI production, to mixing and mastering. It's simple-yet-powerful software, with thousands of fervent users and dozens of glowing reviews.

And now with Tracktion 2, we've added more than 100 new features and a full suite of high-quality plug-ins — while maintaining the original's legendary simplicity and a reasonable price.

Visit the left hand page, then visit mackie.com for your free Tracktion 2 demo. It won't make better music for you, but it will sure let you make it faster and easier.

SIMPLE. POWERFUL. REVOLUTIONARY. TRACKTION 2.

For a limited time, get a FREE artist website and 6 months of hosting from www.broadjam.com when you buy and register Tracktion 2.

MACKIE.®

www.mackie.com

LETHAL COMBINATION

PADS | KNOBS | FADERS

TRIGGER FINGER

Trigger Finger's fusion of pads, knobs and faders delivers a lethal combination for expressive hands-on control of revolutionary music production software like Ableton Live. With its unbeatable feature set and unprecedented control, Trigger Finger has what you need to take your music to the next level.

- **16 velocity- and pressure-sensitive pads** > trigger loops, samples and video clips
- **individual assignable pressure on each pad** > unprecedented expression
- **8 MIDI-assignable knobs** > control filters, effects, pan and more
- **4 MIDI-assignable faders** > control channel/bus levels and more
- **pre-programmed maps for popular software** > easy to use
- **16 onboard presets plus Enigma librarian** > unlimited storage
- **powered via USB** > mobile operation

See it now!
www.m-audio.com/trigger

Where do you want to take your music?

M-AUDIO

audio/MIDI interfaces | USB MIDI controllers | studio monitors | microphones | preamps | sound libraries | music software www.m-audio.com

MIKE CRUZ

Special Treatment

By Carolyn Heinze

Affordable solutions for taming your studio's acoustics.

Have you ever recorded and mixed a project in your studio only to find that what sounded great in your control room sounds completely different on other systems in other places? This common scenario is the bane of personal-studio operators, and is often due to working in a room that has received no (or improper) acoustical treatment. Obtaining quality audio has as much to do with acoustics as it does with purchasing the right gear.

The trouble is that, as most personal-studio owners will attest, acoustical design and treatment can cost just as much, if not more, than good equipment. What's more, many personal studios are located in spaces that are less than ideal, such as old garages, converted bedrooms, basements, living rooms, dining rooms, and commercial offices. These rooms present personal-studio operators with a number of challenges that aren't an issue at multiroom commercial facilities, which typically have many more resources, both financially and in terms of space.

Maximizing your studio's acoustics is not an insurmountable task and can be accomplished without breaking the bank. As with most endeavors, the trick is to do your homework, devise a realistic plan, and make the right decisions along the way.

Assessing Your Space

Unless you are in a remote location where there are no neighbors nearby, you must account for how the sound behaves within your studio (or within a particular room in your studio), and how much of it is escaping beyond the studio walls (see **Fig. 1**).

Russ Berger, president of the Russ Berger Design Group, an acoustical and audiovisual consulting firm based in Addison, Texas, explains that acoustical consultants analyze a number of different issues when making an initial assessment. "Sometimes there are problems in multiple areas: you may have poor energy in the room, and for some reason the low-frequency energy does

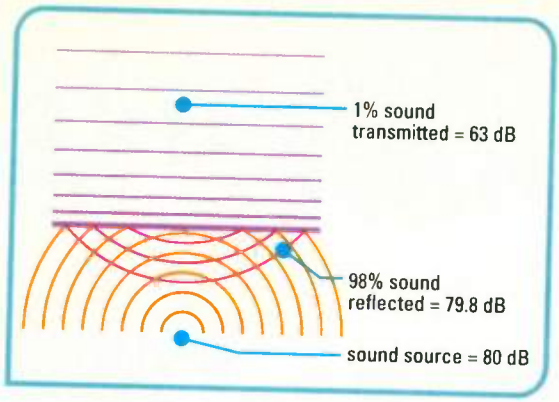


FIG. 1: This graphic shows how sound reacts when it hits a wall made of sheetrock. Most is reflected back, but enough gets through to cause potential problems with neighbors and others on the outside. (Special thanks to Auralex Acoustics, Inc.)

not sound right." In some cases, things sound entirely different when panned from left to right. "Perhaps we can fix that second problem," he explains, "but we may have to knock out a wall and build it back differently."

The problem might be as basic as silencing a noisy air-conditioning unit.

"Sound isolation is one of the first areas that might be addressed for acoustical performance," says Richard Schrag, principal at Russ Berger Design Group. Noise and vibration control is an important aspect. "This generally has to do with the noise that comes into the room from air-conditioning systems, HVAC [heating, ventilation, and air conditioning] systems, or in building vibrations that would be induced into that room structure," says Schrag. "The key is getting the room quiet so that you can capture a clean signal within the recording studio or, in the case of a monitoring environment, to be able to clearly hear what you have in terms of your program signal versus what you have in your room."

Don't, however, confuse sound isolation with the acoustic treatments used within a room. "There are those who think that the materials that are placed on the walls or the ceiling to absorb the sound within the room will help to reduce the noise that leaks out to other spaces," points out Schrag. "Those are separate issues, and what you do to control the sound from getting out or getting in does not help what is going on inside the room and vice versa."

What methods are used to achieve sound isolation? "Stopping the sound with mass would be number one," says Bob Hodas, engineer, acoustic expert, and consultant. Mass is particularly effective for stopping low frequencies. "Lead-impregnated vinyl, cement walls, sand-filled cement block, or a combination with air spaces in between, are all effective but expensive," Hodas explains. He offers this suggestion for those on a relatively tight budget: "The most basic and cheapest method is a couple of layers of sheetrock that are applied with the seams offset so that you don't have any possible air leakage. Stagger the seams."

Another relatively inexpensive approach is to cover any windows with a layer of thick Plexiglas. "That's a cheap method that buys you another layer," says Hodas. "Windows are notoriously bad in inexpensive houses. So you could still get light, but have an extra airspace, with an extra windowpane for isolation. If you can't afford to buy triple-layer windows, go to the plastic store and buy some Plexiglas."

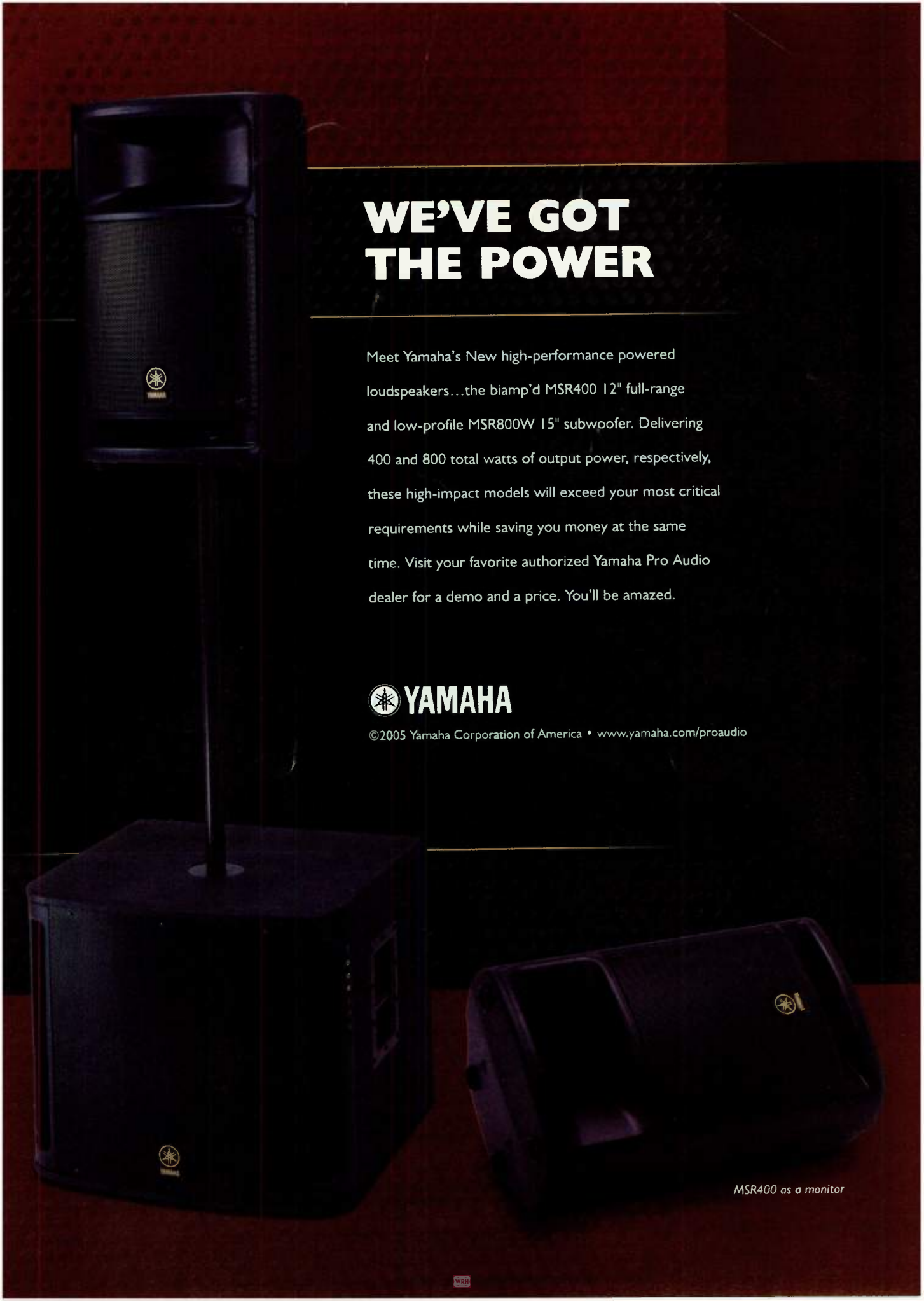
The ideal approach is to "float the room." Hodas explains: "The walls would be hung on resilient channel [a metal framing for hanging sheetrock in a way that adds to sound isolation] so that the inner structure would be completely isolated from the outer structure." Unfortunately, this method is more likely to be practical and economically feasible in commercial or high-end project studios, rather than in typical personal setups.

Diffuse and Absorb

Once you've isolated your space as much as possible, the next step is to treat the inside acoustics. "Within the room, you need to have a monitoring environment or a recording environment where the room acoustics support that activity," says Berger. For monitoring purposes, achieving clean imaging is the goal; for tracking,

COURTESY MSR, INC.

FIG. 2: This photo, from Studio Jory in Fairfax, California, shows a recording room with dual-purpose panels (from StudioPanel), hung from hooks. One side is a diffuser and the other an absorber, allowing for custom tailoring of the room acoustics for specific projects.


WE'VE GOT
THE POWER
Meet Yamaha's New high-performance powered loudspeakers...the biamp'd MSR400 12" full-range and low-profile MSR800W 15" subwoofer. Delivering 400 and 800 total watts of output power, respectively, these high-impact models will exceed your most critical requirements while saving you money at the same time. Visit your favorite authorized Yamaha Pro Audio dealer for a demo and a price. You'll be amazed.
YAMAHA
©2005 Yamaha Corporation of America • www.yamaha.com/proaudio
MSR400 as a monitor

studio operators want a room that simply sounds good."

But what happens if your tracking room is the same space in which you monitor? There are answers, as long as you're willing to compromise a bit. "If you are recording yourself in there, you are on headphones anyway," says Berger. But if other musicians are being recorded, a little bit of trial and error is required to achieve good sound. "If you have a drum kit sitting six feet away from you, obviously you can't turn your monitors on; you must monitor on headphones. But headphones do not behave the same way as monitor speakers." The secret lies in clever microphone placement, and plenty of time for playback and adjustments.

Anthony Grimani, president of Performance Media Industries (www.pmiltd.com), an acoustical and audiovisual consulting company based in Fairfax, California, suggests that studio operators equip dual-purpose spaces with adjustable acoustics. "What you can do in a project studio," he explains, "is to set up an acoustic-treatment scheme that you can move around. Instead of screwing and gluing treatment panels to the wall, you can have things that clip on to the wall that you can take off," (see Fig. 2).

Those working in multipurpose spaces must accept that compromises need to be made. "It makes it even more challenging when you are trying to do both things out of the same room," Berger says. "You must know what it is that you are trying to accomplish. What are you willing to live with? Every project is a compromise. There are always constraints—either with your building, your budget, the schedule, or your expectations."

STUDIO ACOUSTICS DOS AND DON'TS

- Don't confuse sound isolation (keeping out external sounds and keeping internal sounds from escaping) with acoustic treatment. They're separate issues that must be addressed as such.
- Do find and treat the first-reflection points. Controlling first-order reflections is key to a better sounding room.
- Do treat the low-frequency energy in your studio. Controlling bass is key to a room that will yield accurate mixes.
- Don't devote your entire studio budget to gear. Save a sizeable portion for acoustical treatment.
- Do find the optimal speaker and listener positions. You have several options, depending on budget: consult an acoustical expert, take advantage of the companies offering free room analysis, or consider a software solution such as RPG's Room Optimizer.
- Don't expect guerilla treatments to be as effective as dedicated acoustical treatments. That said, items such as a full bookcase (diffuser) and drapes (absorber), when properly placed, can have some effect.

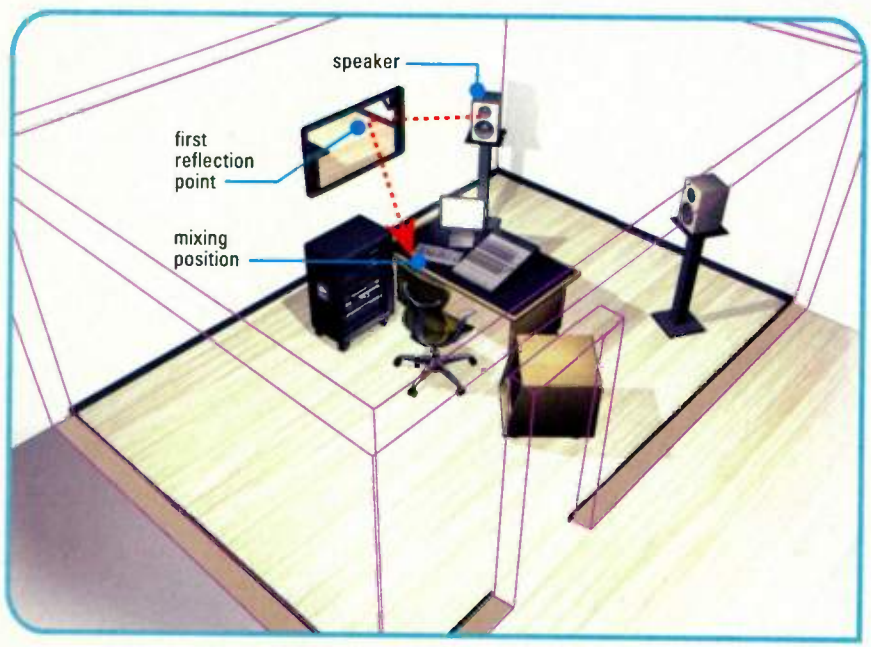


FIG 3: Sit at the monitor position and have someone move a mirror along the wall. Where you first see the face of the monitor is the first-reflection point. Repeat for other side, the back wall, and even the ceiling, if possible. (Special thanks to MSR, Inc.)

Acoustics First

Before going further, it's important to define the basic types of acoustic treatment. As its name implies, absorption utilizes absorptive materials to deaden or control specific frequency ranges. Diffusion takes a specific reflection and breaks it up in time or frequency. The sound waves are dispersed, and reflect off the diffuser at different angles. The net result is to alter the character of the original reflections by breaking them up into smaller, diffused sound-energy fields. That can make the room sound larger and give the sound a smoother, less fatiguing character. (Note: not all diffusers are the same. Some are broadband and some are narrowband.)

Although the term bass management is often used in reference to surround-sound systems, in the acoustical-treatment world, it refers to the extremely important task of controlling the bass frequencies. That is primarily achieved with bass traps, which are absorbers for specific low-frequency ranges.

Finally, room optimization refers to finding the optimal speaker/listener

YES! AUDIO PC BLISS CAN BE YOURS!

AC-1 from only **$1099**

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
- Intel P4 3.0GHz
- 80Gb HD
- 512Mb RAM
- CDRW/DVD

Intel 865 Chipset Motherboard, 32Mb Graphics, Windows XP, 56k Modem, Optical or Wireless Kbd & Mouse, Firewire, USB 2.0, LAN

only **$1099**

AC-1 LE+
- Intel P4 3.2GHz
- 120Gb HD
- 1Gb RAM
- DVDR/RW

Intel 865 Chipset Motherboard, 32Mb Graphics, Windows XP, 56k Modem, Optical or Wireless Kbd & Mouse, Firewire, USB 2.0, LAN

only **$1299**

Core 1
- Intel P4 3.0GHz
- 120Gb SATA HD
- 1Gb RAM
- CDRW/DVD

Intel D865PERL Motherboard, ATI Radeon 9200 128Mb Graphics, Windows XP, Zalman 7000 Cooler, Silent Drive Enclosures, 56k Modem, Optical or Wireless Kbd & Mouse, Firewire, USB 2.0, LAN

only **$1399**

Core 2
- Intel P4 540/3.2GHz
- 80Gb & 160Gb SATA HD
- 1Gb RAM
- DVDR/RW

Intel D915PBL Motherboard, ATI X300 128Mb Graphics, Windows XP, Zalman 7000 Cooler, Silent Drive Enclosures, 56k Modem, Optical or Wireless Kbd & Mouse, Firewire, USB 2.0, Gigabit LAN

only **$1899**

Core 3
- Intel P4 550/3.4GHz
- 80Gb & 320Gb SATA RAID
- 1Gb RAM
- DVDR/RW

Intel D915PBL Motherboard, ATI X300 128Mb Graphics, Windows XP, Zalman 7000 Cooler, Silent Drive Enclosures, 56k Modem, Optical or Wireless Kbd & Mouse, Firewire, USB 2.0, Gigabit LAN

only **$2269**

Core 4
- Intel P4 560/3.6GHz
- 80Gb & 500Gb SATA RAID
- 2Gb RAM
- DVDR/RW

Intel D925XCV Motherboard, ATI X300 128Mb Graphics, Windows XP, Zalman 7000 Cooler, Silent Drive Enclosures, 56k Modem, Optical or Wireless Kbd & Mouse, Firewire, USB 2.0, Gigabit LAN

only **$3249**

Tower Core 1
- Intel P4/3.0GHz
- 80Gb Hard Drive
- 512Mb DDR RAM
- CDRW/DVD Combo

only **$969**

Tower Core 2
- Intel 540/3.2GHz
- 80Gb & 120Gb SATA HD's
- 1Gb DDR2 RAM
- DVDR/RW Drive

only **$1429**

Cube Core 1
- Intel P4/3.0GHz
- 80Gb HD
- 512Mb DDR RAM
- CDRW/DVD Combo

only **$969**

Cube Core 2
- Intel 540/3.2GHz
- 200Gb SATA HD
- 1Gb DDR2 RAM
- DVDR/RW Drive

only **$1420**

Desktop Replacement 1 15"
- Intel P4/3.0GHz
- 60Gb 7200rpm HD
- 512Mb DDR RAM
- CDRW/DVD Combo

only **$1939**

Desktop Replacement 2 15"
- Intel P4/3.4GHz
- 60Gb 7200rpm HD
- 1Gb DDR RAM
- DVDR/RW Drive

only **$2429**

Centrino 1 14.1"
- Intel Pentium M 1.8GHz
- 60Gb 7200rpm HD
- 512Mb DDR RAM
- CDRW/DVD Combo

only **$1779**

Centrino 2 14.1"
- Intel Pentium M 2.0GHz
- 60Gb 7200rpm HD
- 1Gb DDR RAM
- DVDR/RW Drive

only **$2349**

Dual Xeon Core 1
- Intel Xeon 3.0GHz x2
- 80Gb & 200Gb SATA HD
- 1Gb DDR RAM
- CDRW/DVD Drive

only **$3249**

Dual Xeon Core 2
- Intel Xeon 3.4GHz x2
- 80Gb & 800Gb SATA Raid
- 2Gb DDR RAM
- DVDR/RW Drive

only **$5499**

ADD ANY SOLUTION...

If you are looking for a solid base onto which to build your creative career, then this Foundation package is the answer! Cubase SE provides the recording and music making facilities with 48 tracks of audio recording, loads of MIDI tracks for creating accompaniment with up to 16 VST instruments including synths, drums, samplers and other noises, and 6 effect inserts and 8 sends for each track. We've included a bundle of cool and useful plug-ins to give you an amazing palette of sounds. Your inputs and outputs are provided by the first class Emu 0404 soundcard offering blistering quality up to 192KHz, along with an on-board DSP giving a wide range of killer effects, with absolutely no hit on your CPU!

For a great way to start making music, look no further.

Solution of the month!

Steinberg Cubase SE & E-MU 0404 card

RRP $575

only **$199!**

Huge range of other Solutions available:

Ableton Live 4 and Emu 1212m	$699
Cubase SL3 and Emu 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	$2099
GigaStudio 3 Orchestra and RME HDSP9652	$1119
Nuendo 3 and RME HDSP9652	$2949
Sonar 4 Producer and Emu 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

VRH

placement, and, if you're able to construct your space, the best dimensions for a given purpose.

Factoring It In

When designing a space for recording and monitoring, acousticians take several factors into account: the volume of the room, its shape, angles, and the finishes that are on the walls, ceiling, and doors. Acousticians try to ameliorate any problems with solid acoustic design.

A misconception is that you can compensate for bad acoustics with gear alone. "People think that they are going to be able to overcome acoustics with equipment, and you just can't," says Berger. "By the time you get a foot or two away from the monitor, all of a sudden the room has a larger impact on what you are hearing than the speakers do because you are listening to the reverberant energy and decay." To avoid problems, Berger advises studio owners to invest in acoustics first before making large equipment purchases. "That will probably save you the greatest amount of money in the long run," he says.

It should be noted that equalization is an important aspect of tuning a room, but it must be done in conjunction with acoustical treatment to be effective.

As a general rule, square rooms tend to cause more acoustical problems such as standing wave resonances, which can cause peaks and dips in the frequency response and long bass-decay times. Rooms that have dimensions that are multiples of each other—for example, 8 × 16 feet—can also be problematic. Rectangular and irregularly shaped rooms are generally better.

Location Is Key

When treating a room's acoustics, figuring out the right acoustical materials to purchase is only half the battle: once you have them, you must determine where to put them.

> Invest in acoustics first before making large equipment purchases.

"Dealing with acoustical problems has as much to do with where you put the materials as how much you use or what the materials are made of," Schrag explains. "Do-it-yourselfers can sometimes get into trouble—they might have the proper materials, but they are putting them in places where they are not going to be effective."

In general, the most important place to put acoustical treatments is at the first-reflection point (also known as first-order reflection), which is the point on the walls and the ceiling that directly reflects your monitors' sound back to your ears. Hodas describes the first-order reflections as "a reflection that's short enough that your brain can't separate it out from the direct sound of the speaker. Let's say a reflection that arrives no more than 18 to 20 ms after the direct sound. For frequencies above 400 Hz, it's like billiards—it's simple geometry."

Grimani and Hodas recommend the same procedure for figuring out the first-reflection point. Sit in the mix position, and have somebody walk back and forth along the walls on your left and right while holding a large mirror flat against the wall. The points on each wall at which you see the speaker face in the mirror are the first-reflection points (see **Fig. 3**).

There isn't universal agreement as to what is the best way to treat a first-reflection point. "You're going to find some people who think you should diffuse first-order reflections," says Hodas, "and then there are others who think you should absorb first-order reflections. That's just the way it is. People have different philosophical approaches. I like to absorb the front reflections and diffuse the rear reflections."

"You want to make sure something's there, either an absorber or a diffuser," says Grimani. "And you want to put the same thing on the back wall because the reflection off the back wall can be just as strong as the the one coming from the side wall. So you want to make sure there's something on the back wall. That's the wall that's behind the listener, not behind the speaker." You can do the mirror trick to locate reflection points on the back wall and even the ceiling.

Taking Control

While most audio professionals recommend enlisting the services of a qualified acoustical consultant, reality dictates that that isn't financially feasible for many personal-studio owners. A less expensive solution is to use one of the increasing number of acoustical kits that are available on the market.

The Maryland-based acoustical-treatment manufacturer RPG Diffusor Systems, Inc., offers modular packages that start the customer off with

RECOMMENDED READING

Building a Recording Studio, by Jeff Cooper (Synergy Group, 1984)
Master Handbook of Acoustics, by F. Alton Everest (McGraw-Hill/TAB Electronics, 2000)
Project Studios: A More Professional Approach, by Philip Newell (Focal Press, 1999)
Sound Studio Construction on a Budget, by F. Alton Everest (McGraw-Hill/TAB Electronics, 1996)

VIENNA SYMPHONIC LIBRARY

HORIZON SERIES

Vienna Classics

exs 24 mk II | KONTAKT | The VST-Sampler HALION | GIGA COMPATIBLE

OPUS-BUNDLE: OPUS 1 & OPUS 2 • $1,295

OPUS 1 – ORCHESTRA Strings, brass, woodwinds, percussion – An introduction to the world of professional orchestral sounds. This comprehensive collection, hand-picked from the Pro Edition, includes our exclusive Legato Performances! If you want maximum orchestral impact with a single computer system, this is the library for you!

25 GB • New reduced price: $895

NEW: **OPUS 2 – ORCHESTRA** Expand the potential of OPUS 1 and the FIRST EDITION with new articulations (quick string runs, muted brass, etc.) and further instruments (such as marimba, vibraphone, waterphone). OPUS 2 also includes basic articulations of instruments from other Horizon Series titles, like Solo Strings, Epic Horns or Woodwind Ensembles.

9.3 GB • $495

WOODWIND ENSEMBLES These groups of flutes, oboes, clarinets and bassoons, each performed by three musicians, live up to the supreme standards of our critically acclaimed solo woodwinds.

6.1 GB • $455

CHAMBER STRINGS From Baroque to Pop – 6 violins, 4 violas, 3 cellos, and 2 double basses shine in small ensembles or split string groups, delivering delicate nuances when mixed with big string ensembles.

17.8 GB • $895

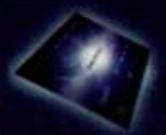
EPIC HORNS Subtle atmospheres, majestic moods, bombastic bursts: From Romantic styles to big cinematic orchestrations, these 8 double horns offer a vast range of expression. A moving blend of power and purity.

2.7 GB • $395

VIDEO TUTORIALS on DVD! Paul Steinbauer, Vienna Symphonic Library's Chief Editing Engineer, explains the Performance Tool in meticulous detail. First-hand tips and practical examples for beginners and professional users.

$39

VIENNA SYMPHONIC LIBRARY
www.vsl.co.at

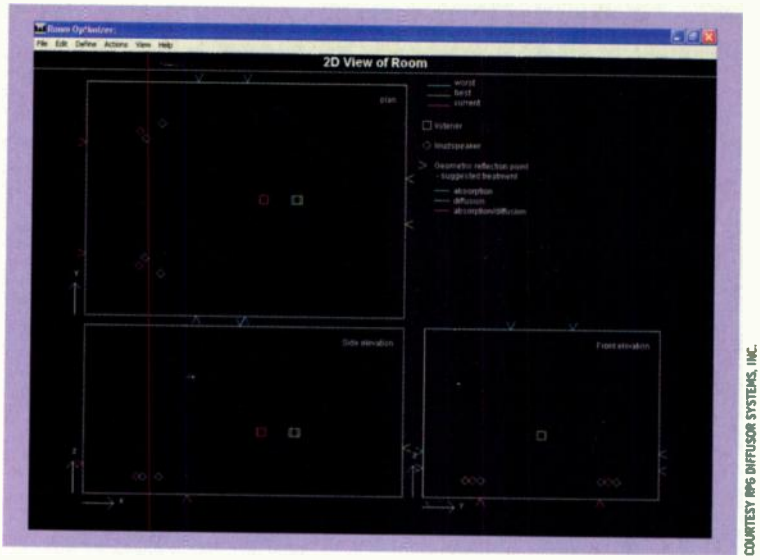


Order the new **free Demo DVD**! 2.1GB of samples, demo versions of the Performance Tool, audio demos and a great new video: Paul Steinbauer walks you through the Performance Tool and Vienna's complete product line.

ILIO
ilio.com

a base configuration, allowing for expansion as budget allows. The company also sells software packages, such as Room Sizer and Room Optimizer (see Fig. 4) that enable studio operators to model their spaces before purchasing treatments.

Developed by Performance Media Industries and distributed through Media Specialty Resources (MSR), Inc., StudioPanel is a kit system that was specifically designed with personal and project studios in mind. Customers enter their room information into a form on the MSR Web site to determine which configuration best suits their needs. A number of accessories are optional, including acoustical measuring devices and an audio CD featuring test tones.



COURTESY RPG DIFFUSOR SYSTEMS, INC.

FIG. 4: RPG Diffusor's Room Optimizer software (Win) can calculate the optimal listener and speaker placement based on your room dimensions, speaker type, and other variables.

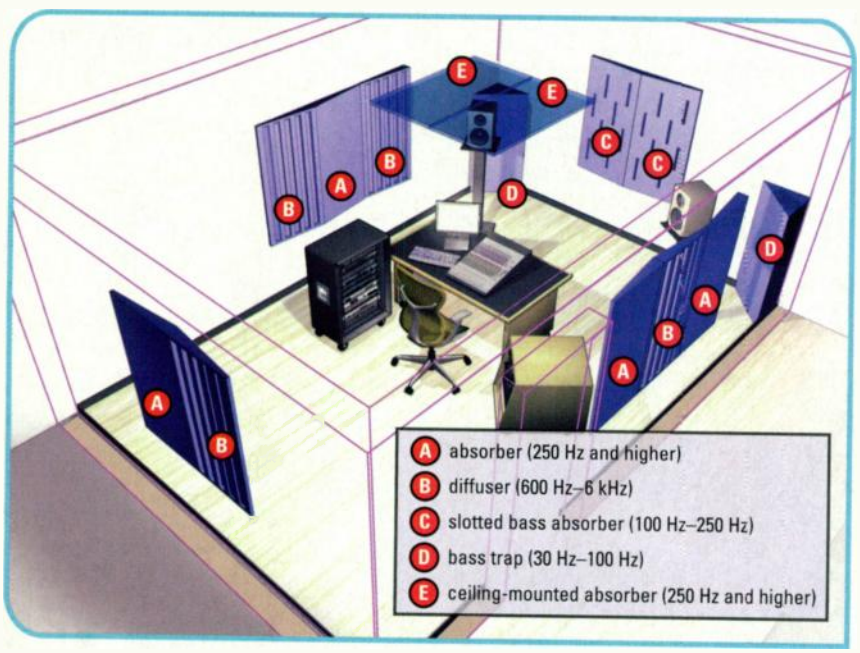
At Indianapolis-based Auralex Acoustics, Inc., acoustical-treatment systems are designed to provide quality while remaining affordable. Through a form in its catalog, the company offers free room analysis: customers submit information such as budgetary constraints, measurements, layout, and the make and models of their loudspeaker systems (if available). Once the information is submitted, an Auralex acoustician will suggest a suitable product or kit.

FIG. 5: Best results are usually achieved with a mixture of treatments. This graphic shows a room with absorbers, diffusers, and bass traps. (Special thanks to MSR, Inc.)

Setting Your Budget

There are many opinions regarding how much money should be invested into properly treating a space. Schrag suggests that the dollar amount that is spent on acoustics and interior design should be equivalent to what is spent on the actual recording equipment.

Jeffrey S. Madison, director of the pro audio division of RPG Diffusor Systems, advises studio operators to apply "the weakest link" concept: "If you are saving money in one area—for example, in preamps or acoustics—to buy nicer microphones or monitors, you should reevaluate your budget and try to strengthen the chain at all the links," he notes. "Otherwise, the system is compromised by that one link that got left behind." A stronger overall chain will produce better results.



Jeff Szymanski, chief acoustical engineer at Auralex, pegs the average investment at around $1,000. "Some people can get away with—or settle for—around $400 or $500 worth of treatment, and it's not perfect, but the room is much more usable," he explains. "Then there are people on the other end of the scale that might be spending $1,500 to $2,000 to get a more complete package."

At the same time, there is no hard-and-fast rule on how much acoustical treatments should cost. "People can spend $8,000 on their gear and still need $2,000 worth of treatment; other people can spend $50,000 on their gearand need only $1,000 worth of treatment," Szymanski points out. "There are so many variables: the shape of the rooms, the surfaces, the speakers you are working with, your budget, and the placement of everything in the space."

UNIVERSAL AUDIO

Tube & Solid State Class A Mic Pres · Channel Strips · Classic Compressors · 192K A/D & D/A · DSP & Plug-Ins

- *610 Mic Pre/EQ*
- *LA-2A based T4 Compressor*
- *Breakthrough Price*

NEW! LA-610 *Classic Tube Recording Channel*

- *Discrete Class A – 80dB gain*
- *Modern/Vintage/Saturate modes*
- *4 channel 4110 available*

NEW! 8110 *Precision 8 Channel Microphone Preamplifier*

- *Classic filters and controls*
- *Upsamples to 192kHz*
- *A/B audition, band mutes*

NEW! UAD-1 Ultra PAK

NEW! Precision Mastering Equalizer *for UAD-1*
Included with the Ultra PAK

analog ears | digital minds

www.uaudio.com • toll-free: 1-866-UAD-1176

330 Encinal St. • Santa Cruz, CA • 95060-2101 • USA voice: 831-466-3737 • fax: 831-466-3775

In many instances, the best solution combines bass traps, absorption, and diffusion in a coordinated acoustical strategy (see Fig. 5).

Low-Budget Solutions

Bearing in mind that every space and circumstance is different, several of the experts were asked to generalize what they would prioritize if the budget for acoustic treatment was limited to about $500.

"If you have only that much money to spend, you want to treat the first-order reflections, and you want to make sure that your speakers and your listening position are in the optimized position," says Hodas. Proper positioning, he says, "can eliminate at least half the problems that everybody has. That's something that you could pay a professional to consult with you about. An acoustics professional could get you that information without breaking your budget. Hodas says that you can also use a program such as RPG's Room Optimizer to try to determine optimal speaker/listener positioning.

Grimani gives the following advice. "If you have limited funds, then it's really important to treat the room with either absorption or diffusion. You also want to get rid of slap echoes [sound reflecting back and forth between parallel walls]. You have to figure out what things are affecting the sound the most. First reflections are one, strong slap echoes are another. And the third thing is bass resonance, which is when you get this really loud, whompy bass. If you're mixing for what sounds right in your room, you might end up making it bass shy because you have a strong peak in the bass. What do you deal with first? That's kind of difficult. I think it all depends on what's the worst problem. If you need to get a good bass trap, you're pretty much going to spend your $500 right there."

Szymanski concurs on treating the low frequencies first, especially if customers have structured their budgets to allow them to phase in acoustical treatments as finances allow. "Treating the low frequencies is probably the biggest challenge in any room, so where we tend to start people off, if they have [only] a few hundred dollars to spend, is with the low frequencies," he says.

> Maximizing your studio's acoustics is not an insurmountable task.

No-Budget Solutions

But what if you don't have extra money to spend on acoustic treatment? It then becomes necessary to rely on the materials you already have on hand, although improvements will be minimal compared to what you could get from dedicated acoustic

MANUFACTURER AND CONSULTANT CONTACTS

Auralex Acoustics, Inc.
www.auralex.com
www.acoustics101.com

Bob Hodas-Acoustic Analysis
www.bobhodas.com

Media Specialty Resources (MSR), Inc.
www.msr-inc.com

Performance Media Industries
www.pmiltd.com

RPG Diffusor Systems, Inc.
www.rpginc/proaudio
Listen at: www.rpginc.com/listen/index.htm

Russ Berger Design Group
www.rbdg.com

treatments. Furniture; old, folded-up packing blankets; and careful placement of well-stocked bookshelves have all served those who needed to improve the acoustical behavior of their recording spaces for next to no money.

"A bookcase with books at all different depths placed behind you, or at the first reflection point off the left wall or the right, could be a diffuser," says Grimani. "Not a great one, but better than the flat surface of the wall."

Depending on what they're made of, drapes can be used as improvised absorbers. "Sometimes they don't absorb at all, so you have to be careful," warns Grimani. According to Hodas, natural fabrics are superior. "The best materials to use are heavy wools or velvetlike theatrical curtains." He warns that you don't want to use drapes with plastic backing or extremely tight weaves.

In some cases, it's advisable to weigh the cost savings involved in treating your space on your own versus the time it might save to hire a professional acoustician. "Very often, what you are trading off is the efficiency by which you can get the work done within the space—especially if you are talking about having the control room and the recording environment in the same space," notes Schrag. "It requires a lot more back-and-forth, trial and error, and experimentation to achieve the end results that you are looking for."

A Complete System

Berger emphasizes that acoustics should be regarded as a system like any other in the professional audio field. "[Studio operators] need to think about it as a system of materials and techniques, so that they can create an environment that works."

One of the best ways to do that, according to Szymanski, is to treat everything as evenly as possible. "Don't over-absorb the highs or lows or anything in between—just get even, broad-based control," he advises. "You want to make the sound even across the board so that what you are hearing from the speakers is what is coming from the speakers, and the room is not adding anything to that." Unless, of course, you want your recordings to feature a bit of the room's ambience.

Ultimately, dealing with acoustics is something that personal and project studios cannot avoid—or solve by integrating different audio equipment into their setups. "One of the biggest mistakes I see people making is that they just ignore acoustics completely," Szymanski observes. "They are constantly upgrading their gear and trying out new electronic solutions to something that is not an electronic problem." EM

Carolyn Heinze (carolyn@carolynheinze.com) works from her office in Vancouver, British Columbia, Canada.

Six studio pros share their secrets for working faster and better.

Efficiency Experts

By Mike Levine

In the recording studio, time has always been the enemy. In commercial studios, the ever-present ticking clock motivates musicians, producers, and engineers to keep moving, lest the project go over budget. In the personal studio, where there is no hourly charge, the dilemma is a different one: how do you use the time available in the most productive manner?

Whether you spend 8 or 80 hours in your studio each week, there's no question that there's a direct relationship between the efficiency of your setup, systems, and work style and the level of productivity that you experience. To find out more about studio efficiency, I spoke with a cross-section of pros who have their own studios, and for whom efficiency is an imperative. I picked their brains about the systems and methods they've developed that have helped them flourish in the ever-competitive music business.

Mike Bradford (www.chunkystyle.com) works from a Los Angeles-based project studio and has produced, recorded, mixed, and remixed a variety of artists including Uncle Kracker, Kid Rock, and Deep Purple.

Michael Cooper is the engineer, producer, and owner of Michael Cooper Recording and Attention Span Music in Sisters, Oregon. He is also a contributing editor for *EM* and *Mix*.

Matthew Gerrard is a producer, engineer, musician, and songwriter whose clients include Jessica Simpson, Lindsay Lohan, Paris Hilton, and Eden's Crush.

Larry the O is a Bay Area–based engineer and musician whose TV and film credits include *Gumby*, *Bump in the Night*, and *Vampire Hunter D*, and whose music projects include Keepers of the Flame by the Phoenyx. He's also an *EM* contributing editor.

Mike Lorello (www.mikelorello.com) is a keyboard programmer, arranger, composer, and remixer from New York who has worked with Michael Jackson, Cher, Donna Summer, Whitney Houston, and Gloria Estefan, among many others.

PHOTOGRAPHY BY ROBERT PERRY

Producer, engineer, and mixer Ben Wisch's (www.benwisch.com) clientele includes many prominent artists in the New York folk scene such as Marc Cohn, Patty Larkin, David Wilcox, and Lucy Kaplansky.

All six interviewees work mainly in their own studios, which range from home-based personal setups to larger project facilities. All six record on DAW systems, so their observations are heavily weighted to that style of recording. Much of the advice that they give, however, is also applicable to those using portable digital studios (PDSs) and standalone multitrack recorders.

Everyone offered a wide range of suggestions on ways to be more efficient in the tracking and the mixing phases of the recording process. They also had much to say on the subjects of studio setup and session preparation, which is the opening topic for this article.

MIKE LEVINE

Ben Wisch likes to make sure his gear is set up and working before the session starts so he can concentrate more on the aesthetic aspects of producing.

Setup for Success

Before you record note one, you should take a look at the physical layout of your studio and ask yourself if it is setup as logically as possible. "Available space determines a lot of your logistics," says Larry the O. "Look at the space that you have, and figure out how your equipment can be put in there and laid out in the most efficient fashion."

Even if you're unwilling or unable to completely reconfigure your current studio, you might be able to reposition some key items to make your setup more conducive to your working style. All interviewees agreed that it's important to position the gear that you use most frequently closest to your fingertips.

TODD TYLER

Matthew Gerrard's main mic preamp is within reach of where he sits at the computer so that he can make on-the-fly adjustments to compensate for the wide-ranging dynamics of the singers he records.

For instance, Lorello's home studio is centered around a Mac G5 running MOTU Digital Performer and a Yamaha O2R digital mixer. "I have the computer station in between my master keyboard and my 02R so I can access either one," he says. "I'm not facing either one of them, I'm always facing the computer."

In Larry the O's studio, his Panasonic DA-7 digital mixer is positioned in front of him. "Keyboard is not my primary musical controller, and I don't need to have one directly in front of me," he says. "I have a couple of different racks of processing gear—one of them I have very close at hand—and I try to put the stuff that I need to set and tweak most intimately in that rack."

Gerrard often records vocalists in his studio, so for him, easy access to his main mic preamp is critical. "I have a [GT Electronics] Vipre preamp in the rack to my left so my left hand can reach it," he explains. "While I'm recording a vocal, I can turn the input gain up and down, which sounds kind of minor, but it's hugely important. I do it on every vocal session, all the time, because singers always sing quiet in the verses and belt in the chorus."

Gerrard mounts his flat-panel display on a movable arm, which adds to the flexibility of his setup. "I can move the screen around fairly close to me or far away. When I'm mixing I can push it back so it doesn't get in the way of my speakers."

Clearly, there are many factors that come into play when configuring your studio (such as studio size, acoustics, type of gear, type of music, proximity of neighbors, and so on). But whatever the circumstances, the main idea is to set up your studio so that it helps, not hinders your workflow. For a more in-depth look at studio-setup

REASON 3.0

It has arrived.

Reason 3.0 is here. With one-step loading of complex, customizable instruments and effect setups, a new expanded soundbank, instant integration with hardware control surfaces, a new intuitive file browser and a set of class A mastering devices, this upgrade is extra loud, extra large and extra live-friendly.

More Reason 3.0 info at:
www.propellerheads.se

New in Reason 3.0:

The Combinator

The Combinator lets you create and save combinations of multiple Reason devices, allowing you to load up huge chains of instruments and effects in one single click.

Create instruments splits and layers. Build intricate instrument and effect combinations. Create complex routings with CV control over any parameter. Then save it all as an instantly loadable playable Combinator patch. Only with the Combinator. Only in Reason 3.0.

MClass Mastering Suite

MClass – a suite of expensive sounding, professional mastering tools – adds punch, sheen, width and volume to your mixes. The MClass package includes:

- **MClass Equalizer** – a parametric mastering EQ for surgically precise frequency adjustments
- **MClass Stereo Imager** – for fully controlling the stereo width of your mix
- **MClass Compressor** – gives your tracks bite and definition
- **MClass Maximizer** – a high-quality loudness maximizer designed to make your Reason tracks sound as loud as you intended them to.

Remote – Thanks to the Remote technology, Reason now integrates even more seamlessly with external MIDI controllers, with full support for motorized faders and control surface displays – right out of the box, no configuration needed. **The Reason 3.0 Sound Bank** – the new sound bank adds a huge selection of multi-sampled instruments as well as fresh synth patches, loops, samples, and combinator patches to Reason's already massive library. **The Reason 3.0 Browser** – surf through Reason's massive soundbank in new intuitive ways, easily locate, audition and organize sounds and patches from all over the library. **Line Mixer 6:2** – 6-channel stereo line mixer for easy sub mixing. Use with the Combinator or insert anywhere in Reason. **Record automation on multiple tracks.** **Warp speed sample loading.**

Ready to upgrade?

If you already own a previous version of Reason, go to www.propellerheads.se/get3 for more info on how to get this massive upgrade at a ridiculously low price.

Distributed in the US by Line 6 → www.line6.com

propellerhead SOFTWARE

issues, see "Planning Your Ideal Recording Space," in the February 2004 issue of *EM*.

Tip Sheet: Studio and Session Prep

- Maximize your studio layout so that the gear and accessories you use most often are close at hand and well organized.
- Prepatch your input devices so that you can get a signal in quickly and easily.
- Set up a template for your sequencer or PDS (and digital mixer if you have one) that customizes tracks and I/O to match your typical projects.
- Study your owner's manuals so that you know your gear as thoroughly as possible. Learn and use key commands for your software.
- Implement a consistent backup strategy to guard against data loss.
- Prepare in advance for a session. If other musicians are involved, ascertain how many and what instruments and make sure to set up the appropriate gear and check it (and the headphone mixes) before anybody arrives.

Always in Reach

Another important concept is to keep often-used accessories such as cables, connectors, and sample CDs close at hand and well organized. "I have an entire wall in my control room that has various types of cables sorted by wiring and connector types," Cooper says, "and they're hanging on hooks, with labels on the wall next to each hook. "

Bradford likes to keep his sample CDs within easy reach, and has familiarized himself with their contents so that he can quickly find what he needs. "My CDs are all on a shelf right next to my computer," he explains. "If I want a certain sound, I know which library it would come from."

Lorello says that he makes sure to go through his sample CDs in advance so that he doesn't have to hunt through them during a session. "As soon as I get a new library or a bunch of samples, I go through them pretty quickly," he says. "I'll write some sort of characterization on the disk, such as 'clean,' 'murky,' 'good for hip-hop,' 'good for dance,' 'good for rock,' 'reverby drums,' 'good for mixes with other samples,' that sort of thing. When a producer plays me a record and says, 'I need something like that,' I pretty much know where to go to get that sound."

JANET HUERTA

Michael Cooper stresses the importance of studying your software and equipment manuals on a regular basis to make sure that you get the most from your gear.

Cooper also likes to systematically preview his sounds. "I have lists of favorites," he says. "When I get a new sample library or a virtual instrument, I will go through all the patches and make up a list on computer sheets—according to their category or application—of my favorite stuff."

Larry the O often starts his projects with MIDI tracks, which he later replaces with real instruments. As a result, he's developed a small set of decent-sounding MIDI sounds that he'll use when his projects are still in the early stages. Keeping that limited sound set allows him to work more quickly and avoid the time-consuming exercise of searching through large sound libraries. "I've evolved a relatively small set of synth sounds that I use for rhythm tracks, and a slightly larger set that I use for effects and all," he explains. "I just find one decent-sounding [MIDI] drum kit, and I use it for all my demos."

Let's Get Normaled

There was general agreement among the interviewees that one way to save time is to prepatch your input devices so that you don't have to mess with patching each time you record a track.

"I have everything wired and normaled through the console and through the patch bay," says Bradford. "If I want to pick up a certain instrument or a certain keyboard, it's readily available."

Wisch also has his gear set up so that he doesn't have to change patching for many of his everyday recording tasks. "My studio is patched up in a way that's just set to go. From overdubbing to mixing, it's all happening all the time. The signal path is consistent," he says.

"All of my outboard preamps are hardwired to specific rooms, where I consistently set up drums, guitars, etcetera," says Cooper, whose studio includes a control room and several live rooms. "I've got tie lines in each room, and they go up the walls, across the ceiling, and then down the walls for the control room. Those tie lines come out to XLR fans that go directly to the mic preamps. That way, when I've got ensemble recordings happening, I can just bring up gain pots on the preamps, and then bring up faders on my board that I use for playback in the control room and also to feed cues to the musicians. I plug in to the tie lines, set the levels, and go. I don't have to patch."

Templates Are Us

There was also near-universal agreement among the studio pros that setting up a basic session template (or templates, if you do several types of sessions on a regular basis) in your DAW, PDS (if it has the capability), or digital mixer can save you time during the session. A template, in combination with prepatched input

Put your toys aside and enter the realm of the Pro.

"Get it right from the start" - the mantra of professional engineers the world over, and for good reason. It's also at the heart of the Platinum Pro philosophy - providing predominantly digital set-ups with an essential front-end analog injection.

The New TrakMaster Pro™

Whether tracking the perfect vocal, capturing the full-bodied zing of an acoustic guitar, or providing some much needed latency-free monitoring, the Platinum Pro range bring you one step closer to that elusive professional production.

And now, with the new Trak Master Pro, entering the realm of the professional engineer has never been so affordable. A Focusrite Preamp, switchable impedance, instrument DI, mid-scoop EQ, an intuitive custom optical compressor and latency-free monitoring, all for less than $350.

So now you've no excuse - clean up your digital playroom and start to act like a pro.

TwinTrak Pro™

"This really is one serious piece of kit that's been well thought out to make sense in the real world of desktop recording."

Paul White, Sound on Sound

VoiceMaster Pro™

"Verdict: Sound/results - 10/10. A serious overhaul of the VoiceMaster and another cracking addition to the Platinum range."

Jon Musgrave, Future Music

It takes the right toys to play like a Pro

PLATINUM pro

Focusrite

For a demonstration, call toll-free 1-866-FOCUSRITE or for further information, simply visit **www.focusrite.com/pro**

devices, allows you to open a new session and get up and running very quickly. Having such a standardized setup also minimizes those frustrating moments when you can't figure out why no signal is getting through.

Bradford, who works in Digidesign Pro Tools, extols the virtues of templates. "I have a basic session template that I bring up whenever I'm about to start up a new song," he says. "Things are laid out the same way. The drums and the basic inserts are all part of a template so that when I get started on a song, I don't have to manually create that setup each time."

Cooper has templates setup in Digital Performer for the various types of sessions that take place in his studio. "I've got these templates for different types of projects: small demo, large band, etcetera, with tracks already assigned generic names such as kick, snare, bass, and generic I/O."

He also has developed templates for his O2R mixer. "I have default scene memories in my 02R for different applications. For example, I've got one for tracking, one for mixing, one for mastering, and one for outputting tones to calibrate my converters, depending on whether I'm tracking or mixing."

Gerrard, who records into Apple's Logic Pro with Digidesign hardware, has refined his Logic Autoload (Logic's version of a new template). "It has everything I need. There are Environments in Logic. I make sure that I have 96 tracks of TDM in the Environments, because I know that sooner or later I'm going to end up at 96 tracks. And there's nothing worse than being in the middle of a session and then having to create an Environment and add more tracks."

In a DAW setup, the template offers you the chance to customize your workspace in a way that matches your hardware setup and your working style. You could set it up so that edit windows are where you want them, the number of measures you want in the count off is set (with the metronome sound you prefer), the virtual instruments you use constantly are set to open at the beginning of every project, and your software's mix window opens with a basic reverb on one of the auxes. The possibilities are almost endless. Go beyond the default settings, make the workspace your own. Whatever time you spend in setting up your template will be saved during future sessions.

FIG. 2: This graphic shows a portion of a vocal comp sheet. In the grid area, you can check off the takes that you like for each line (or circle individual words) as the singer is singing them, using symbols of your choice to represent different levels of quality. In this example, a plus means "excellent," a check means "okay," and a slash means "don't use."

The University of Gear

The better you know your tools, the faster you'll be at using them, and that will translate into greater productivity. By devoting yourself to thoroughly learning your gear and software, you'll undoubtedly save time in the long run.

If you want to be a power user, learn to operate your DAW with key commands. "The more things that you can put on the keyboard," says Larry the O, "the more you can just fly. If you watch real Pro Tools wizards, most of their time is spent on the keyboard for exactly that reason."

Larry the O takes it beyond key commands and programs his own macros using Startly Technologies' QuicKeys, which is a cross-platform application. Macros allow him to automate frequently accessed tasks that would normally take a number of separate keystrokes. "I'll put three or four different things in one QuicKey stroke. And a lot of times, the QuicKey strokes are calling up multiple shortcuts in Digital Performer. I'm just stringing together shortcuts," he says (see Fig. 1).

There are so many key commands in a typical sequencer that it's virtually impossible to memorize them all. The best approach is to try to learn them gradually through use. When you're working on a noncritical project with no particular time pressure and you find yourself accessing a menu or a command with the mouse, stop what you're doing and look up the key equivalent in the manual. Then try to use the key command for that action from that point forward.

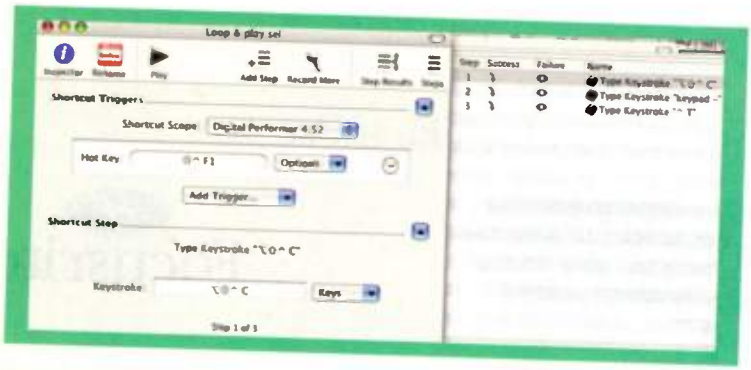


FIG. 1: This relatively simple QuicKeys macro copies the selection to memory and enables looped-memory playback. The screen to the right shows the three steps that happen when the macro is triggered.

Great Ideas!
The Right Price!

SM PRO AUDIO

WWW.SMPROAUDIO.COM

M-Patch

*$99

Now you can easily control your active monitors volume level directly from your desktop! A/B from two different inputs with separate volume controls, have 2 sets of speakers plugged in, MUTE, MONO/STEREO switch and a host of other features which will make monitoring your work and patching your speakers as simple as pressing a button! High tensile steal construction with included rack mount adaptors for 19" racks.
An affordable high-quality problem solver for mixerless DAW and nonlinear video production environments.

PR8

*$99

Get 8 channels of Balanced XLR Mic inputs into your recording system! Perfect for Vocals, Drums, Brass and any other multiple microphone setup where extra pre-amps are needed. An ideal solution for your multi I/O sound card and HD recording system. With a full range of gain control from -20dB to +40dB and Phantom power for every channel this single rack unit can now solve many of the connectivity issues which are raised in a large range of situations, whether in the Studio, home, club installation or other live sound applications. Enjoyed by thousands in the US!

PR8 MK2

*$199

Optional Adat Output *$99

The PR8MKII is a 2U 19" rack-mount preamplifier with a brand new design utilizing features never before possible at this price range! With eight discrete high-quality microphone preamps, Detented gain control, Combo connectors, Separate switches with LED indicators for Phase and Phantom, Insert points on every channel, XLR balanced and 1/4" Unbalanced outputs and with the addition of an optional ADAT™ light pipe output, the SM PR8 MKII seamlessly fits into many digital audio workstation configurations.

TB202

*$249

TB101 Single Channel Version *$149

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

OC8

*$499

The Amazing OC8 is a rack-mount optical compressor. With eight discrete high-quality optical compressors. Optical compressors are sought after for the distinctive musicality they give to vocals, guitars and other instruments. The OC8 's adjustable ratio, attack, release and output controls are calibrated to generate a distinctive soft, rich character while providing magnificent control over dynamics. Fantastic for use as Inserts on your multi-channel recording or live tracks.

PR4 value *$79

4 Channel Mic Preamp

HP4 value *$79

4 Channel Headphone Amp

DI8 *$99

8 Channel DI/MIXER

IN5 *$199

Multi IO Interface

Available at:

zZounds.com

Musician's Friend
www.musiciansfriend.com

www.americanmusical.com

Music123.com

Distributed by

KAYSOUND
www.Kaysound.com

*Estimated Selling Price

All specifications are subject to change without prior notice.

Beyond the key commands, you should learn the ins and outs of your software or gear. There are so many features available to you that it's wise to carefully read your manuals; you're sure to discover many useful items that you didn't even know existed.

"I make it a point to spend one or two days a month sitting down and reading my owner's manuals," says Cooper. "If you want to be a speed demon in the studio, you have to study, study, study. Be the perpetual student because it will pay off in spades. Part of being an engineer these days is having a firm grasp on the technical aspects of your gear."

Save Me, Please

When you're in the heat of recording, arranging, or producing in a DAW- or PDS-based studio, it's easy to forget to save for long stretches of time. Unfortunately, neglecting the save button can have disastrous consequences. Getting into the habit of frequent saving is highly recommend. "I save after everything. If I change one note, I hit save," says Lorello. "And I usually do it without even thinking. Sometimes I'll check and I will have done it without even realizing."

Incremental saving—saving new versions of your song files as you go along—is a very prudent tactic, as well. It gives you greater safety, because if a particular file later becomes corrupted, you can go back to one from the day before or—depending on how frequently you increment—the hour before.

"I keep saving in increments," says Lorello. "Everything is 'Another Smash 1,' 'Another Smash 2,' 'Another Smash 3.' Every time there's a major change, I save a new version."

Gerrard agrees. "Every time I do something significantly different, I change the name of the Logic song itself," he says. "I've noticed that some people don't do that, and they end up with one or two files that read 'the name of the song and Pro Tool's. And I think, 'What happens if you want to go back five days to the point in which you did the guitars?' You may have already consolidated, cross-faded, or glued it. I can go back and say, 'that's approximately the point in which I worked on that guitar part,' open up the file, and get that little snippet of audio that I want. The more files you have the merrier, as long as you have organized folders."

FIG. 3: In Pro Tools, as in many other sequencers, the track comments window lets you make notes about instruments and gear used as well as take status.

Better Safe than Sorry

Frequent saving is not enough to protect your data. You should also have a backup strategy in place before you record a single note. Despite its many advantages as a recording medium, a hard disk is much more volatile than tape ever was. It's absolutely essential that you backup regularly. If there's anything that will put a major crimp in your productivity, it's losing a song or even an entire drive's worth of data and not having a backup.

I asked the pros what their strategies are, and found a pretty wide variation in media and methods. All have a clearly defined system, however, that they follow religiously. Some use tape-based backup systems, while others back up to hard drives. Most also use multiple backup sets, such as Larry the O, who backs up to a VXA tape drive.

"I always maintain duplicate backup sets, and I pretty much checkerboard back and forth between them—meaning, I backup to one, and then the next time I backup to another," he says.

"A lot of people recycle tapes, but I do not. I just keep them. And I have backups going back years and years and years, which would be difficult with a hard drive. You eventually have to wipe it. What it comes down to is this: my backup medium also serves as an archive medium."

What you use for a backup medium has a lot to do with factors such as budget (tape drives require a much larger initial investment than hard drives), the need for speed, and your personal preference. As long as you have a consistent backup strategy, you should be in good shape. And consider supplementing your regular backups with DVD backups of individual projects as an extra precaution.

Get Ready

It pays to be as prepared as possible before a session. Even if you're working by yourself, things will go more smoothly if you write a chart or at least a sketch of the arrangement.

If the session involves other musicians, it's imperative to be prepared. Wisch works out pre-production details with his out-of-town clients over the phone. "They send me copies of the songs that they're considering, and then we narrow it down. We talk about arrangements, we talk about ideas—anything that we can do ahead of time. So when we do get to the studio, we've already covered it."

Thorough preparation helps ensure that a session won't turn into a glorified (and expensive) rehearsal. The

www.mindprint.com

Plug In–Sound Pro

All Essential Studio Recording Features In One Box:

- Class A Mic Pre
- Analog Compressor
- Analog Vocal EQ
- Hughes & Kettner® Instrument Input
- Compact Mixer
- Dual Headphone Amp
- Mixer Master Section
- 24/96 Digital Interface

T.R.I.O.
TOTAL RECORDING SOLUTION

Hughes & Kettner Inc., Mt. Prospect/USA
Phone: (847) 439-6771
www.guitaramps.com

mm music marketing, Toronto/CA
Phone: (416) 646-0900
www.musicmarketing.ca

MindPrint®
ADVANCED RECORDING DEVICES

Naming tracks is not only important for organization, but in many sequencers—such as Pro Tools and Digital Performer—it also impacts the naming of the audio files that are created when you record on those tracks. If your tracks are left with their generic names, such as "Audio 1" and "Audio 2," the resultant audio files will carry those names as well, and it will be a lot more confusing to deal with later on. Make it a rule of thumb: always name a track as soon as you create it, and give it a descriptive name.

Another helpful habit is to regularly use your sequencer's track comments feature to enter pertinent details about your session. "One of the advantages of Pro Tools is that it's a self-documenting system," says Bradford. "For every track in Pro Tools, there's a little scribble strip under the track where you can type in 'I used a Pod' or 'I used a Big Muff π fuzz or a wah-wah pedal,'" he says. "You can type all of that in, and when you've saved that, you've saved it as part of the session." Having those details handy is a lifesaver if you have to revise a track and get the same sound that you had previously (see **Fig. 3**).

After Lorello names a track in Digital Performer, he puts in comments. "If it's a synth, I tell it which synth I'm using, and I also tell it which patch I'm using. What is great is that most producers are happy that I do that because many times you have to recall things, and they [the producers] are demanding—they want it exactly the way you had it the last time. So I always use the comments function."

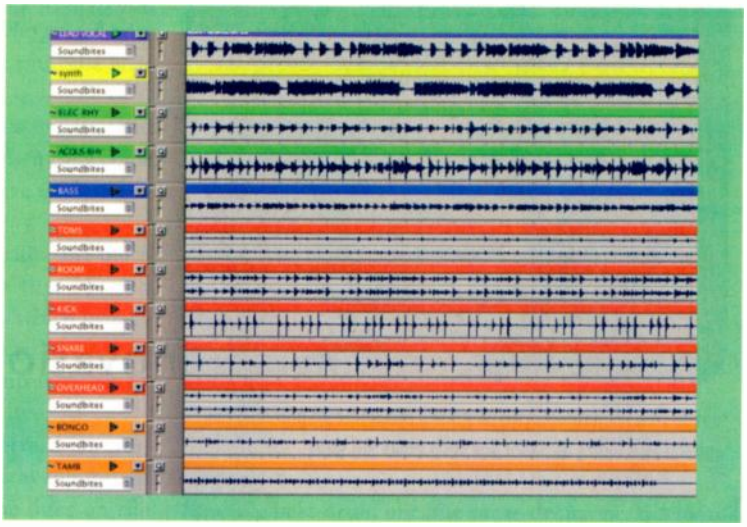


FIG. 5: If you get in the habit of consistently color coding your tracks, you'll find it easier to comprehend the content of your editor screens at a glance.

Take That

A sequencer's track comments section is also a good place for writing down take information. Cooper makes the most of that feature. "I'll makes notes that read 'take two best,' 'nice ideas on take three,' things like that. Because sometimes you'll change the take, and then you can't remember which one was the keeper."

Some programs, such as Digital Performer and Pro Tools, make it easy to enter comments. Surprisingly, Apple's Logic Pro doesn't have a dedicated comments section for each track, although you can put a minimal amount of information in the track name itself. Gerrard describes a work-around for putting more detailed notes into a Logic sequence. "You set a locator [marker] at zero that is called Notes, and then you click on that [command+shift+double-click on or use the key command Open Marker Text], and a whole page comes up so that you can write lines and lines of notes," he says.

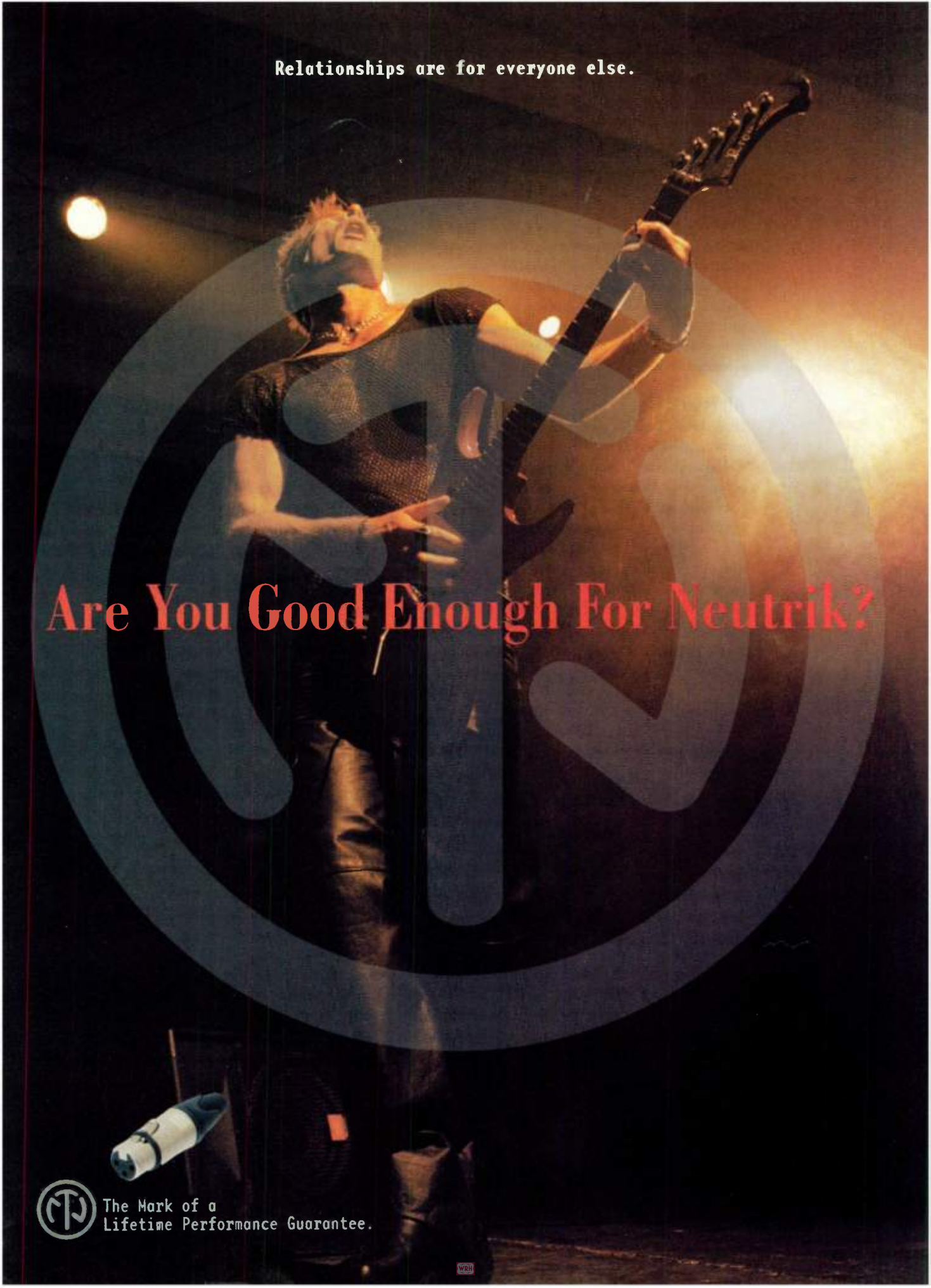
If you're recording to a PDS or other standalone multitrack for which you don't have note-taking capacity, you should still find a systematic way to document your session. "I think it's a good idea to take some sort of notes," Bradford says. "If you're working with 2-inch tape or some other medium, you should use a laptop [for note taking]." He doesn't, however, recommend writing down notes on paper. "Paper gets lost, thrown away, or written on the back of if you're ordering pizza. Too many things can happen to it."

Mark My Words

Another important tool is the marker feature in your DAW or PDS. Once you have the first track or tracks recorded, use enter markers for all the significant sections of the song (see **Fig. 4**). "When I'm tracking basics," says Cooper, "the first time a take is played back, I'll place markers in Digital Performer for verses, choruses, bridges, intros, and coda."

Having those markers makes it easy to see, at a glance, where you are in a given section, and most sequencers have a feature that lets you jump quickly to a particular marker. That makes it possible to, say, quickly move to the guitar solo when you want to hear or edit it.

"I save after everything. If I change one note, I hit save."
—Mike Lorello


Relationships are for everyone else.
Are You Good Enough For Neutrik?
The Mark of a
Lifetime Performance Guarantee.

The Color of Sound

Another helpful organizing tool in a DAW's arsenal is the ability to assign colors to tracks (see Fig. 5). Color coding can make it easier to pick out a particular track or track type from a crowded mixer window or tracks window.

"All my tracks are assigned colors according to their category," says Cooper. "At a glance, I can identify drums, to which I always assign a red color; hand percussion, which is orange; bass, which is blue; guitars, which are green; vocals, which are violet; keys, which are yellow, and so on. It makes it quicker to find a track that someone wants to punch in on or edit. I can find it much more quickly by virtue of having them all assigned colors consistently."

All Mixed Up

One of the most gratifying and difficult parts of the recording process is mixing. If you aren't careful and methodical, you can waste many hours on sonic wild-goose chases. Mixing can be the most obsessive part of the recording process.

There was general agreement among the interviewees that a good way to streamline the mixing process is to get a lot of it done during tracking. "I'm kind of mixing while I'm recording," says Bradford. "I'm already setting up pans, effects with plug-ins, reverbs, and inserts. All that kind of stuff is going on while I'm recording. So by the time I get to the mix, I'm pretty much 70 percent of the way there."

Bradford's philosophy is clear. "You should be setting up the sound of the record as you're recording it. You shouldn't treat it like two separate processes."

Larry the O finds it helpful to get his mix started along the way. "More often than not, yes, I do mix as I go along. And when I get all the tracks in final condition, I do a big mixing pass during which I might make pretty significant revisions. But I at least keep the baseline."

According to Lorello, mixing while tracking also helps with other aspects of the process. "It helps you to arrange properly, if you're thinking from a mix perspective. I think it also helps that I've been a mix engineer, because I approach making sounds that way. And even when you're playing parts, you think about the clarity in the arrangement."

Despite the advantages of mixing on the fly, there are times when you might want to take a different approach. "If I'm producing, by the time I'm ready to mix," says Wisch, "it may already be mixed. Or, it could be a situation where I think, 'you know what, let me start from scratch and re-create this thing.'"

Scratch Mixing

If you are starting your mix afresh, what is the most efficient method to build it? Without going too far into the complex topic of mixing, here are some observations from the interviewees.

"It makes sense to me to start with those instruments that have the greatest dynamic range and also take up the most headroom," Cooper says. "Those are instruments that have a lot of deep bass. With lower frequencies, more headroom gets taken up. So it makes sense to me to define where the top of the mix [in terms of amplitude] is going to be with bass and drums, and get within 2 to 4 dB of cresting, giving myself a little room in case there's a C section that's particularly loud. Then start filling in stuff from there."

"I have two different methods of mixing," says Gerrard. "One method I use is I think about the mix carefully—that means pulling all the faders down, starting with the drums and the important instruments and then maybe the bass and the important instruments. The other method I use is to fiddle with the mix all along. I'll say 'this mix is fairly close,' and I go with my gut instinct and just turn things up and down.

"The trouble with that method is that sometimes there might be a problem deep in a track somewhere that you're not fixing and you're feeling your way around. Whereas if you pulled it down and said, 'hey, that kick drum's ringing, and that's the boomy in the bottom end that's screwing me up.' If you start the meticulous way from scratch, you'll catch those things. But then again, sometimes if you do it the meticulous way, you'll end up with a clinical mix where things aren't popping out."

Compare and Contrast

Another tactic commonly used in personal studio mixing is to A/B the song against a comparable major-label release. Doing so can give you perspective and guidance

Tip Sheet: Productive Tracking

- Put markers in your song files to delineate the various sections.
- Enter track comments into your sequencer as soon as you record a track (or onto paper or a word-processing program if you're using a multitrack that doesn't allow for comments).
- Color code tracks using a consistent scheme for easy recognition of instrument types.
- Save often. Become consistent with your saving habits to avoid data loss.
- Save incremental versions of your project ("My Project 1.1," "My Project 1.2," and so on) whenever you make a significant change. That will guard against corrupt session files and allow you to return to your work at an earlier point.
- Limit your options, and don't overthink your projects. The idea is to finish. Commit MIDI tracks to disk once you have a sound that you like. Don't save too much decision making for the mix.
- Mix as you go along. Add reverbs, equalize tracks, and set pans and volumes along the way. When you get to the mix, you might have much less to do.

FOR OVER 30 YEARS LEXICON HAS BEEN IN WORLD-CLASS RECORDING STUDIOS...

ΩMEGA™
DESKTOP RECORDING STUDIO

...NOW YOUR HOME CAN BE ONE OF THEM.

More than 30 years ago, when Lexicon invented digital reverb, most recording studios were multi-million dollar rooms occupied only by famous rock stars and big record labels. And while Lexicon still lives in that rarified air of stardom with the world's most sought-after reverbs, now you can find us a lot closer to home.

Now Lexicon brings you the Omega Desktop Recording Studio, a completely integrated recording system with everything you need to transform your computer into a full-on professional 24-bit digital studio, all in one box. In addition to Steinberg Cubase LE® recording and production software, you'll get an 8-input, 4-Bus, 2-output USB I/O mixer with inserts, instrument input, MIDI I/O and complete metering and monitoring functions. Record up to 4 tracks at once from 8 audio sources, and mix up to 48 audio and 64 MIDI tracks almost anywhere...with the lush, exquisitely rich reverbs that made Lexicon famous in a VST version of Lexicon's Pantheon® reverb plug-in.

Pick up an Omega Studio at your Lexicon Pro dealer today, and discover for yourself why that famed "Lexicon Sound" has been on the majority of hit recordings since 1971. Who knows? Maybe the next one will be yours.

Lexicon PRO

OMEGA DESKTOP RECORDING STUDIO™ INCLUDES:

Steinberg® Cubase LE® – Multi-Track Recording Software
Lexicon® Omega – 8 Input x 4 Bus x 2 Output USB I/O Mixer
Lexicon® Pantheon™ – World Class VST Reverb Plug-In

COMPLETE RECORDING SOLUTION

CONTAINS ALL THE COMPONENTS NECESSARY TO TRANSFORM YOUR COMPUTER INTO A PROFESSIONAL 24-BIT RECORDING STUDIO.

and can help you more quickly determine when the mix is close to being finished. Even with all of their experience in the studio, most of the pros I talked to said that they use A/Bing for their own mixes.

"I'll get started, and I'll get to a point where I'll say 'okay, now it's time to start A/Bing to make sure I'm still on the right track,'" says Lorello. I'll make sure that the top and bottom are alright, check how loud people are putting guitars in the music, that kind of thing."

Larry the O likes to find several reference tracks with which to compare his mix. "I'll have a track that stays muted most of the time that's just called 'reference,'" he says. "It will have different takes that will have three songs that I want to reference. In Digital Performer, there's a keystroke you can use that will mute all tracks but one. I can do that and listen to the references, and then mute that one and go back to the mix."

Cooper uses A/Bing to make sure his mixes are appropriate to the genre of the music. "I'll get the mix real close to where I want it to be, and then I'll compare it to a major-label release," he says. "Most often these days, I'll refer to [a major-label release] for stylistic purposes rather than for spectral balance and dynamics— for example, if it's a style of music I'm not too familiar with."

Boom Boxes and Clock Radios

Checking your mix on a variety of sound systems to see how it translates is a time-tested technique. It's especially helpful for those personal-studio operators who work in spaces that are not acoustically treated. Many engineers who work in acoustically treated studios (such as Cooper) even find it helpful.

COURTESY MIKE BRADFORD

Mike Bradford believes that a key to success in a personal or project studio environment is to limit your options.

Cooper says he listens to his mixes "in as many places as possible, and I always follow up with my clients to ask them how it sounds on the systems that they hear it on. I'll listen to it on a crappy stereo system that I've got, my wife's CD player boom box, and truck CD player system. I listen to it anywhere and everywhere that I can."

Larry the O has a couple of different sets of studio monitors on which he'll listen to mixes. Then he'll listen to them in some other areas around his house. "I just go upstairs to my living room. I sometimes burn a CD and listen to it on a cheap portable Sony CD player that feeds my clock radio, sort of the equivalent of listening to it in your car."

Bradford likes to switch over to small speakers in his studio. "When I'm done working on the record and concentrating on the final adjustments, I will listen on my Auratones for a long time," says Bradford. "Then I'll go back to using bigger speakers later.

"I spend a lot of time recording the record on big speakers and on near fields to get the tone that I want, and mixing is really more about the balance of the sound. I like to let my mixes sit overnight, because the next day, after your ears have taken a beating, you're always going to hear it a little different. If it sounds good the next day, then you did a good job," says Bradford.

Tip Sheet: Efficient Mixing

- A/B your mixes against appropriate reference music.
- Listen to your mix on a variety of speakers in a variety of spaces.
- Take breaks during your mixing session to let your ears rest.
- Let your mixes sit overnight, if not longer, and then revisit them.
- When it sounds good, stop. Don't obsess.

Take Five

Bradford's observation about ear fatigue begs the question: how often should you take breaks? It's important to be in tune with yourself and be aware of when you're starting to lose perspective. Sometimes a short break can get you back in the ballgame, but other times it's more efficient to shut down until the next day.

Lorello's experience as a mix engineer has helped shape his opinion regarding when to stop mixing and let it sit. "Back in the old days, you used to start and go until it was done," he says. "Now, it's so easy to recall things that I think it is good to come back to it later, when you're fresh. But I do like to get it done. I don't like to leave a day or two days in between. I'll go to bed, I'll get some sleep, and then I'll pick up where I left off."

"If I'm working on something where I'm really concentrating," says Larry the O, "I might take a break every 15 minutes, but it might only be a 2 or 3 minute break. If I'm working a very long session, I will typically take one really long meal break. And I will take multiple 5- to 15-minute breaks. It depends on the flow of the work."

Cooper likes to take breaks more frequently as the day wears on. "I may start out mixing for four, five, six hours or more if I'm really into it. I'll take a break, come

YOUR RESOURCE FOR ALL THINGS TASCAM

FULL COMPASS
WHERE THE PROS ARE.

DV-RA1000

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

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

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

DSD 2.822 MHz	1-bit	109 min.
192 kHz	24-bit	66 min.
172.4 kHz	24-bit	66 min.
96 kHz	24-bit	72 min
88.2 kHz	24-bit	133 min.
48 kHz	24-bit	267 min.
44.1 kHz	24-bit	290 min.

Naturally, the DV-RA1000 is your logical choice for creating master DSD stereo tracks for Super Audio CDs.

But it has far more uses than that.

Live two-track recording. Because the DV-RA1000 records in real time at ultra-high sample rates, it's perfect for audiophile location recording. In DSD mode, frequency response exceeds 100kHz and dynamic range is 120dB.

Wired remote control kit included.

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

Easy transfer to computer. The DV-RA1000 creates UDF discs, a standard format read by Mac®, Windows® and Linux computers. Or you can stream your data directly via the DV-RA1000's USB 2.0 port.

Mastering from any source. We have nothing against DAT and CD-RW recorders — TASCAM makes some of the best — but these formats simply cannot compare to the sonic quality of the DV-RA1000's 192 kHz/24-bit or DSD recording formats.

Get the details of this major recording advancement on our web site or visit your TASCAM dealer today.

- Up to 192kHz/24-bit recording
- Records to DVD+R/RW, CD-R/RW media*
- Multiband compression and 3-band EQ effects
- ±6% pitch control
- USB 2.0 port for use as DVD data drive
- Balanced AES/EBU I/O, running at normal, double-speed and double-wire formats
- Balanced XLR and unbalanced RCA I/O
- SDIF-3 DSD I/O for external conversion & DSD audio processing
- Word Sync In, Out, Thru
- RS-232C serial control
- PS/2 keyboard connector for title editing
- Records to standard CD-DA, Broadcast Wave & DSDIFF formats
- Headphone output
- Supports UDF disk format for cross platform computer compatibility
- Wired remote control

TASCAM

FULL COMPASS
WHERE THE PROS ARE.

www.fullcompass.com | 800-356-5844
REQUEST YOUR FREE CATALOG
¡Expertos que hablan español disponibles en x1178 y x1342.

CONTRACTOR | www.tascam.com | DJ AND PRODUCER | PERSONAL CREATIVITY

back and mix for another couple of hours, take another break, come back and mix for maybe another half hour, and then I'm done. After a while it becomes the law of diminishing returns."

"Mixing is like playing chess," says Wisch. "It's an intense mental state of listening to many things, looking at many things, and then coming up with something that will get you to reach your ultimate goal."

Stop, in the Name of Sanity

Knowing when to stop and recognizing the point of diminishing returns is an important issue that all the interviewees spoke about, both in reference to tracking and mixing. Because DAW systems (and PDS systems to a lesser extent) offer such a dizzying range of sonic options, the ability to self-limit is essential if you want to get your projects done in a timely fashion—or done at all.

"One of the things that people know me for," says Bradford, "is that I don't invite a lot of options, because it's just another way to get lost in a sea of choices that you don't have the time for in a project-studio environment. If you're trying to get something done, it's supposed to be short and sweet."

Gerrard echoes those sentiments. "There are too many options. You've got to get inspired and focus in on the sound in front of you, and if you like it, use it. If you said, 'I want to go through every kick drum so that I find the best one,' you'll be there for two hours, and you'll lose your objectivity. Sometimes limitations are good. If you had just one keyboard in your studio and you had to make it work, you would."

Larry the O frames it this way: "There is a large part of the creative process that comes from working against limitations. In the past, that was simply imposed by the available technology. Now, the technology doesn't impose those limitations, so the artists have to impose limitations themselves. It's so easy to get lost in all the options and to lose perspective."

So what to do? "Keep the big picture in mind," suggests Wisch. "Think about what you're trying to achieve. A lot of time can get spent on things that are ultimately insignificant. You have to know when the moment is the beginning of some seed that's going to make a difference, as opposed to something that's obsessive and anal. When you learn to differentiate, which sometimes is very hard, you can be more efficient in your work."

"There is a point where you're done, and you have to step away from it and leave it alone," says Bradford. "It's like a sculptor: you can only chip off so much from that rock to make it perfect. And if you hit that rock one more time, it'll turn into a pile of rubble."

Lorello says that knowing when that point is comes from experience. "I think that's something you learn over the years when you get feedback from people. When you doing that one last tweak on the hi-hat and nobody can hear it, you think, 'okay, I've gone far enough on that.' So I think it's just a learned thing."

LARRY THE O

Larry the O likes to compare his mixes to several reference tracks to get as much perspective as he can.

But if you do cross that line and turn that masterpiece into rubble, it's not necessarily the end of the world. Between a sequencer's undo history feature and your incremental file versions, you can probably go back to an earlier incarnation of the piece.

Letting the Light In

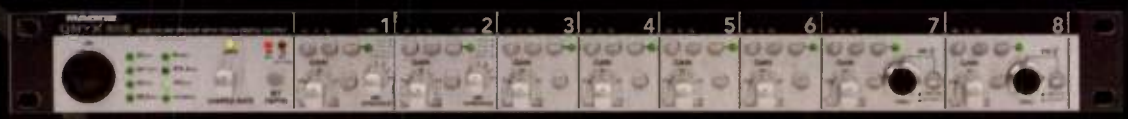
Although space doesn't permit a discussion of all the possible ways to increase studio efficiency, I've tried to hit the major ones. I hope these discussions will give you plenty of food for thought and fodder for action. By implementing some or all of the advice put forth by the experts in this story, you're certain to improve your recording habits and efficiency.

Finally, I'd like to offer some sage advice from Michael Cooper that all of us who spend countless hours in our studios should take to heart.

"Don't overwork. If you want to reduce your efficiency and productivity in the studio, make it your entire life. And if you want to be fresh and on the ball, get outdoors, get some exercise, and clear your head. Do something healthy for yourself, because control rooms can be unhealthy places. You're working sitting in a chair in an unnatural position all day, doing repetitive motions in a room that is closed off from the outside. It's good to get out every once and a while to get some sunshine and take breaks." EM

Mike Levine is a senior editor at EM.

We didn't mean for it to outperform tweaky mic preamps costing three times as much.



(Okay. That's a lie. We totally did.)

When you pay thousands of dollars for a "boutique" studio microphone preamp, you should expect tight, focused high-end, superior ambience retrieval, detailed lower bass octaves, and a highly articulated midrange. In short, it should give you the most from any mic you plug into it.

Not coincidentally, that's also what you get with Mackie's new Onyx 800R 8-Channel Premium Microphone Preamp — at a decidedly less than boutique price. The no-compromise Onyx 800R features new high-performance analog circuitry developed specifically for 192kHz audio, coupled with the finest A/D converters on the market, giving you impressive specs like 123dB dynamic range and an amazing 0.0007% THD. The 800R also gives you tweaky features like a Mid-Side Decoder and Variable Mic Impedance control, which lets you "tune" the preamp to any connected microphone.

So how does it sound? In the words of one our big-name studio beta testers, "The Onyx 800R brings a whole new dimension to classic mics we've used on countless records. This is by far the best mic preamp we've come across in years."

We couldn't have said it any better.
Visit your Mackie dealer to learn more.

Sam Luna proudly served on the engineering team for the Onyx 800R.

info@mackie.com 800.898.3211 (Toll free within U.S.) 425.487.4333 (Outside U.S.)

MACKIE.
www.mackie.com

WRH

Just exactly what *is* a Guitar Workstation™?

PLATINUM AWARD GUITAR QUALITY & DESIGN

"Truly, this do-it-all box beckons with enough loot to convince even old-school dudes to modernize their rigs."
– *Shawn Hammond of Guitar World*[1]

THE GNX4 GUITAR WORKSTATION™

What is a Guitar Workstation™? It's a seamlessly integrated guitar processor that combines everything you need to perform, practice, create and record. Because the Guitar Workstation works the way a guitarist thinks, it makes accessing advanced digital technology as simple as stepping on a pedal.

Perform: With quick, Hands-Free™ access to stomp box effects, guitar modeling and backing tracks. Interface with the PA system via a built-in direct box, dbx® mic preamp and built-in mixer.

Practice: By recording and playing back guitar, drum and vocal line note-for-note with endless looping. Record your whole band practice. Download lessons from guitar magazines and play along.

Create: With the ultimate guitar sketch pad. Any time inspiration strikes, you can record the moment directly onto digital media with one tap of your foot. You'll never lose that elusive lick again.

Record: Your own CD without a room full of complicated gear. Lay down eight tracks by tapping a pedal. Or stream your music directly to a computer and process it with sophisticated ProTracks Plus™ Digital Audio Workstation software.

Once you've used a guitar workstation you'll ask yourself how did I ever get along without it? Visit our website or call for your free Guitar Workstation Application Guide or head to your nearest DigiTech dealer for the ultimate music making tool.


Built-in Guitar Tuner


Built-in Jam Man™ Looper


Built-in Expression Pedal


Built-in 8 x 8 x 4 Mixer


Built-in GeNetX™ Multi-Modeling Processor creates unlimited amp and cabinet models


Built-in Direct Box with Active Speaker Compensation


Save a small fortune in cables


Ten Classic Distortion Stompboxes


Built-in 8-Track Digital Recorder (up to 6 hours using an optional 2 GB CF card)


Professional Multi-Track Recording and Editing Software, Lexicon® Pantheon™ Reverb Plug-in, Cakewalk® Pyro Express™ CD burning software; DigiTech® X-Edit™ Editor/Librarian


Built-in USB Computer Audio/MIDI Interface with 24-bit A/D/A Converters


Built-in USB Compact Flash Card Reader


Built-in MP3 Player


Built-in General MIDI Drum Machine


Built-in dbx® Mic Preamp with true 48V Phantom Power


Optional GNXFC Foot Controller adds dedicated control of recorder functions while the GNX4 footswitches can select presets or control stompboxes.

Designed in the USA by guitar-fanatic engineers ■ www.guitarworkstation.com ■ 801.566.8800

DigiTech
The Power to Create

[1] (Guitar World - February 2005 "Soundcheck" p.192-193)

ERIC MCNATT

PRODUCTION VALUES

The Feel Factor

By Maureen Droney

For Matt Wallace, there's more to producing than just getting a good sound.

Producer and engineer Matt Wallace isn't one to waste time; he thinks fast, talks fast, and moves fast. One result of this seemingly boundless energy is his mile-long discography. It ranges from early hits with the genre-bending funk-metal group Faith No More (including *Angel Dust* [Slash/Reprise, 1992], voted in May 2003 by *Kerrang* magazine as the "No. 1 Most Influential Album of All Time") to work with the Replacements, John Hiatt, and Train, among others, and the current multi-Platinum success of Maroon 5's *Songs About Jane* (Octone, 2002).

A graduate of the University of California at Berkeley, Wallace was on track to be an English professor when music recording intervened. His first studio was in his parents' garage; his second was in a funky Oakland, California, storefront. Since then he's labored in facilities from glamorous to grungy. These days he's most often found at Studio Delux, the personal studio that he carved out of a former rehearsal space in the Van Nuys area of Los Angeles. That's where I caught up with him one morning for a chat about the art and science of record production.

You never apprenticed in the music business; instead you learned on your own.

That's true. I made 30 or 40 records on 8-track before I even had a whiff of 24-track. I had to combine lots of stuff. And because I was already making records at my own place, I only assisted for a couple of months—which was kind of a shock, actually. My first session was with David Crosby—midnight to 8:00 a.m. That was horrendous for me; normally, I'm asleep by 1:00 a.m.! At the end of the session, everybody was leaving and there was this big mess. I was thinking, "Isn't anybody going to stay and clean up with me?" But no, that was *my* job. I had

no idea that was going to happen. It made sense to me to clean up my own studio, but somehow I hadn't realized that as an assistant I'd be cleaning someone else's bathroom!

You have your own studio again.
I have to admit I didn't want to open this studio. At one time, I had a studio in the Ocean Way complex in Hollywood. Creatively, it was great, but the hassle of keeping it booked when I wasn't using it and the amount of money I had invested in equipment was just too much. I didn't want another studio, but my manager suggested it, and he was right. With recording budgets as limited as they are now, it makes a lot of sense to have a place where I can work on projects without the time pressure of a commercial studio.


MATT WALLACE

Wallace shows off the Gold record he received for *Songs About Jane*. The CD has since gone multi-Platinum.

I just did a record for Warner Bros. with Caleb Kane, the kind of record where a lot of experimenting made sense. Because we were working here, we were able to stretch out. I don't recommend that style of working for every record, but for Caleb's, it was right.

Sometimes constraints are good.
Usually. *[Laughs.]* That's something I miss now that I use Pro Tools instead of 24-track analog. I believe that limitations are absolutely essential to making great music.

I love the idea of having a limited amount of space to work with; that way, you have to make decisions early on. If all 24 tracks are filled and you have another overdub idea, you have to decide what you can erase in order to make room. If you can't make a record on 24 tracks, you've either got a crappy song, the band doesn't know how to play, or something else is wrong. A hundred tracks in Pro Tools can work fine in some situations, but it prolongs decisions. Eventually, you still have to decide what to listen to. You have to know what the concept is.


MAUREEN DRONEY

FIG. 1: Among the outboard gear in Wallace's racks is a Teletronix LA-2A (left rack, bottom), a CBS Laboratories FM Volumax compressor (middle rack bottom), and an Altec 1567A tube mixer-amplifier (left rack, second from top).

Is that why you're such a proponent of pre-production?
I think that pre-production makes or breaks a record. You've got to have the song arranged correctly with the right parts, or you'll suffer in the studio and the end product won't be as good as it should be.

I tell bands all the time that I want to spend 30 to 40 percent of the pre-production time listening to the song on acoustic guitars. I don't care how heavy a rock band is—I want to sit down and get the right key for the singer, figure out how the chords go together, see how the riff works, and determine whether we have a song. Maybe it needs a bridge or a musical excursion. We need to know all of that before the band members even turn on their rock instruments. Because when you add volume and energy, anything can sound good.

You're talking about limitations again.
Yes, and focusing the concept of the song. Some bands are more riff oriented, so working this way is not as appropriate. But for most bands, if you can hear it sung and played on acoustic guitar, you can tell what you've got. A lot of times what bands actually bring in isn't a song, but an amorphous conglomeration of different parts. Okay, if it's a jam band, let's meander! Or if someone's trying to be experimental, like Yes or King Crimson, that's another

The String is the Thing

Presenting an Amazing New String Modeling Synthesizer
from the Creators of Ultra Analog, Tassman, and Lounge Lizard.

A|A|S
APPLIED ACOUSTICS SYSTEMS

String Studio

Get creative! AAS, the company that *Electronic Musician* recently called "the leader in the field of physical modeling on the desktop," has created a NEW kind of synthesizer. At the core of this powerful plug-in are cutting-edge String Models complete with picks, bows, hammers, fingers, frets, dampers, and soundboards. Check out the fabulous presets, or use String Studio's innovative tools to craft earthy, organic timbres and other-worldly instruments. With just a few intuitive parameters you can span a remarkable range of sounds with all of the smooth, transparent fidelity Applied Acoustics has become famous for.

Go to www.ilio.com and click hot spot to hear some amazing String Studio demos

VSTi instruments · AU Audio Units · RTAS · DXi · PC VERSION · X

Stand-alone version too!
Contact ILIO for specific format information and system requirements.

$249

ILIO
Exclusive distributors

800.747.4546 www.ilio.com

story. But most bands are trying to work within the pop milieu. So even if you're a heavy band, you have to have something resembling a chorus.

It's all about selling emotions. We're selling emotions to people who are going to part with their money to buy a song because of what it makes them feel. It moves them: "Oh my god, someone else felt what I felt. Someone understands my life." Or, "That's going to help me get through this terrible time." Or, "That's making me so excited I want to go out and party!"

So the emotion isn't necessarily created by the lyrics?

Sometimes you can get a feeling from the music even if you don't understand the lyrics. To me, though, good lyrics are essential; they're what connect me. But, of course, I'm a former English teacher.

I admit that for immediate impact, lyrics aren't crucial. But if you're talking about a song that will last, a song that's going to be covered [by others], it's got to have a brilliant lyric. By brilliant, I mean it could be a gorgeous pop ballad, or it could be "You Shook Me All Night Long" by AC/DC. Great lyrics do different things.

There are wonderful songs that have been around for eons that connect with people emotionally. People play them at weddings, or bands cover them. That's exciting. There aren't a lot of people writing that kind of music today, and that's why a lot of current artists are doing covers. Today, music is more lifestyle based.

Meaning?

People just get a vibe from a song. It's not better or worse; it's just the style, like a lot of the nu-metal

SONGS ABOUT JANE: A PRODUCER'S PERSPECTIVE

Wallace produced, engineered, and mixed Maroon 5's debut CD, *Songs About Jane* (see **Fig. A**), which became a Platinum seller, vaulted the band to stardom, and helped them garner the Best New Artist nod at recent Grammy Awards. Here, Wallace offers some insights into the recording of that CD.

Where did you record it?

It was recorded entirely at Rumbo Recorders, in the San Fernando Valley in Los Angeles.

What kind of budget did you have?

That record was done very inexpensively, by everyone involved. I had to rally the troops, and myself, to do that. I have a family, so it wasn't easy. But I wanted to make this record. It's easy to make records when you have a big, fat budget. On Maroon 5, we couldn't rent a bunch of great instruments, we had to work with what we had. Same on Faith No More [*Introduce Yourself*, 1987, Rhino Records], which we did with one electric guitar, one bass guitar and one guitar amp. When the chips are down, and your back's against the wall, that's when the really great stuff comes out.

FIG. A: Wallace's faith in Maroon 5's music paid off big-time when *Songs About Jane* defied the odds and became a huge success.

Talk about tracking the vocals.

We recorded a lot of the vocals in a little room, a singular room, no iso. I was right there at the computer, the singer was right there with me. There was no talkback button, so we weren't separated. I could ask a question like "What made you write the song?" The communication was immediate, and we could get more tied in to the emotion of the song.

The CD went through some changes along the way.

The first version of the album was very urban, very hip-hop, very loop driven, with lots of programming and drums that were sparse, chopped, and processed. Near the end of the project the direction changed, and, during mixing, we ended up recording a different kind of drums on a number of the songs. The recording space at the studio where we were mixing was extremely ambient, so we put the drums in a not-great-sounding booth in a back corner, and we hung lots and lots of blankets and deadening. Then we closed the door of the booth almost all the way. We did put room mics outside the booth so we could have that ambience if we wanted it; some of that room sound is on the song "Hard to Breathe."

Musically, what is it about *Songs About Jane* that has made it so successful?

Outstanding songs. That's it. When I got those demos, everything was stacked against them: a label that had never put out a record, an unproven manager, an unknown band. If you were betting, you would not bet on that record. But the songs were so good that I wanted to do the record. I thought, "If everyone pulls together and no one blows it, we're going to have a great record." I knew the potential from the moment I heard the songs. But it was still a big leap of faith, because at that time, their kind of music wasn't being heard on the radio. A lot of my friends and peers said, "Why are you doing this project?" And I said, "I think they're great songs."

Virtually everything you need.

KEY RIG

Universal Virtual Keyboard Rack

- SP-1 Stage Piano
- MS-2 Polyphonic Synthesizer
- MB-3 Electromagnetic Organ
- GM-4 General MIDI Module

DRUM&BASS RIG

Universal Virtual Drum and Bass Rack

- LC-5 Loop Creator
- BL-6 Bassline
- RD-7 Real Drums
- EB-8 Electric Bass

Hear it now!
www.m-audio.com/rigs

Building a music system around a computer typically means researching, buying and integrating a lot of hardware and/or software products—each with it's own price tag and learning curve. Now we've put everything you need for the average session or gig into two killer virtual racks costing about $100 each. Choose from our Key Rig with modules for pianos, poly synth, drawbar organ, and complete General MIDI palette, or our Drum and Bass Rig featuring real drums, electric basses, loop creation and step-sequenced bass lines. Use them at home or in the studio with your favorite host software or play them in stand-alone mode to gig with just a laptop and controller. Download your trial versions today.

M-AUDIO

recording interfaces | USB keyboards | studio monitors | microphones | preamps | sound libraries | music software

www.m-audio.com

stuff, the more aggressive music that's about angst and rebelliousness. There's a style to the shows and to how fans dress. Instead of being song based, the music is band based.

Niche music.

It can be disheartening when music is compartmentalized. Obviously, labels and artists are often going for a specific demographic, which can make a lot of money. But that makes it more difficult to cross-pollinate, which is part of what makes the music business interesting. Because if you're listening to different kinds of songs you might think, "Whoa, what if I wrote a country song that has a heavier edge?"

It's really radio that's compartmentalized. Downloading—legally, we hope—seems to be changing that, which is great. People download everything from old Frank Sinatra tunes to things that are contemporary and crazy. They're interested in finding music, not just being fed it. That's reassuring.

Most of the bands you work with write their own songs.

I help find material when I work with singer-songwriters, but, for better or worse, bands tend to be self-contained. I do think, sometimes, that if band members can relax their egos a bit about songwriting, they can gain a lot. Certainly, many of the best bands in the world start off by doing covers: the Beatles, the Rolling Stones, the Motown artists. I don't think you can expect someone to be both a great writer and a great performer all the time.

MATT WALLACE ON RECORDING VOCALS

What do you like in a recorded vocal sound?

I love the sound of vocals in early R&B or rock, like Led Zeppelin or James Brown. You can hear that the threshold of the mic preamp or of the compressor was set so that if the singer decided to lean into it, you got some "fur"—some harmonic distortion—on the vocal. It's great when a singer works the mic and uses it as part of his or her instrument. You can set it for high gain, and if they want to lean into it and whisper, it will sound really intimate. Then they can lean back if they're going to scream, or they can lean in if they want distortion. I want to hear emotion, but I also want to hear the equipment working. I like that sound of "It's so out of control they couldn't keep the distortion down." Obviously, the engineer is flying by the seat of his pants!

You've used devices such as the Altec 1567A or an Empirical Labs Distressor to get that kind of vocal distortion. How do you set them?

On the Altec 1567A I usually set the preamp gain to around 7 or 8. I then put the master at around 5, and adjust the high- and low EQ to taste. On the Distressor (see **Fig. B**), you can get distortion on pretty much all of the settings. Pushing the far right button to indicate either of the distortion settings, however, can work quite well.

FIG. B: One device that Wallace likes to use to get vocal distortion is the Empirical Labs Distressor compressor.

"You've got to let some rough edges in, some mistakes and some wild things."

Sometimes A&R people will tell a band they want them to write with someone else, and the band won't want to do it. I tell them that the worst that can happen is they'll waste a day or two. The best is that they'll write a great song. Or, they might get a different perspective and write their own different kind of song. It's really a no-lose situation, even though I understand that it can feel a little artificial. But, egos being what they are, it's often hard to get beyond them.

Speaking of egos, how do you feel when someone else mixes one of your productions?

This surprises some people, but I don't care as long as it's great. *[Laughs.]* I often mix by default because I think I'll ruin it less than somebody else. Seriously, I don't think I'm brilliant, but I can usually do a pretty darn good job. But if someone else can do a way better job, that's great. I'm the producer, so first and foremost I want the record to be brilliant.

Do you engineer your own projects?

I have a main engineer, Mike Landolt, and Posie Muliadi is our second in command. But I still do a lot of the Pro Tools work—because of budgets and because, although there's a very artistic, musical way to use Pro Tools, not many people use it that way. I don't use Pro Tools hard to the grid. If sections of the drums are leaning forward, I move the whole section back 10 or 20 ms until it feels good against the click. Within that, a certain kick or snare may be ahead or behind a bit, but that's okay. I want it to feel consistent but

DRUM SAMPLING GETS REAL.

Finally, you can create sequenced drums that are indistinguishable from live performances. Because the new 24-bit *Larry Seyer Acoustic Drums* library contains more live drumming variations and nuances than anything that's come before. And because it harnesses the creative power of GigaStudio 3's new features like unlimited stacked instruments on the same MIDI channel and convolving GigaPulse™ reverberation.

Playing left to right on your keyboard triggers samples taken from left to right on the drum heads. GigaStudio 3 makes it possible.

Add those nuances that make live drumming live. Map *individual strike zones* from the surface of each instrument to individual keys. Choose from two styles of attack: *Low Latency* has drum attack edited very tight to the sample start for sequencer composing or live performance. ***Full Attack*** retains all the pre-attack (you can hear the "wind of the stick") for sequencer playback a hair behind the beat.

5 YEARS IN THE MAKING.

Larry Seyer

Grammy-winning engineer Larry Seyer and drummer Pat Mastelotto (*King Crimson, BOMO, XTC, Mr. Mister*) collected hundreds of vintage and current drums for this library.

Using up to 6 mics per drum, they recorded 8,330 stereo 24-bit samples and then configured them as 115 drum kits using 13 new GigaPulse™ rooms created specifically for this library. Each of the 115 kits comes in 12 versions for a total of 1,380 drum kits!

But it's not just the sheer numbers that makes *Larry Seyer Acoustic Drums* a ground-breaking advance in drum sampling. It's also what TASCAM GigaStudio™ 3 lets you do with them. Now, for the first time, you have total control over:

- **what drums make up a kit**
- **which of 13 acoustically modeled rooms the drum kit is placed in**
- ***where* in each room the drum kit is placed**
- **what kind of mics are used**
- **how hard and *where* each drum is struck**

GS3 MAKES IT WORK FOR YOU.

It takes the advanced features found only in GigaStudio 3 to unlock the stunning reality of this drum library.

Unlimited instrument stacking lets you build a custom drum kit by assigning individual drums to a different GigaStudio MIDI sub-channel. Submix their levels; add effects...and yet control overall kit muting, tuning and level through a single master MIDI channel.

Demo the world's most powerful software sampler at your TASCAM dealer today.

Then use the *GigaPulse convolution interface*, included with all GS3 versions, to gain incredibly realistic control over mic and kit placement in each of the drum library's room environments including the soon-to-be-infamous "Trash Room" and "Dry Cleaner."

***Larry Seyer Acoustic Drums*, exclusively for GigaStudio 3:**

- 7 GB with 115 complete drum kits, 8,330 samples and 1,638 unique impulses
- 12 separate versions of each drum kit including General MIDI and EX; Low & Full attack latency; 2, 5 & 7-channels
- 13 new GigaPulse™ rooms
- Stick, rod and mallet striker variations
- Loop library with 1,444 MIDI files for a total of 1,992,270 loops that don't degrade with tempo changes
- 24-bit samples using premium multiple microphones and preamps
- Exhaustive illustrated manual
- Expandable with future drum kits and rooms

GIGASTUDIO™3.0

Hear samples from *Larry Seyer Acoustic Drums* at: http://www.globalfulfillment.net/gfsnet/giga/ioExpand.aspx?ProductCode=LSACDRUMS There you can also sample Larry's video tutorial. For more general GigaStudio information, visit www.tascamgiga.com

TASCAM
www.tascamgiga.com

not inhuman. I've had arguments with bands about that, about recording in general. You've got to let some rough edges in, some mistakes and some wild things. That's essential to creating great music.

You've said that one trick of production is choosing which mistakes to leave in.

Absolutely. I have a saying: timing and tuning are highly overrated. If you want proof, listen back to the music of the '60s, '70s, and even '80s. There are some mind-blowing, emotionally resonant performances that are out of tune or off time. But they move you. The Beatles, the Stones, Led Zeppelin—they all have wonderful mistakes left in. Or listen to Sheryl Crow's "Leaving Las Vegas." That vocal is "pitchy" as all get out. The story is that she sang it when she was drunk, and it was really emotive. The next day she sang it again, and it was perfect. But they used the take from the night before because it moved people. Most civilians don't know about sharp or flat, or on or off time. They either like the song or they don't.

> "Meticulous, insane attention to detail isn't what gets listeners off."

Where does sound come into play? Don't you need great sound for a great record?

Sound is important, but it's most important to the people making the records. It's our job, and that's what gets us all off. It's why we get into it. I'm not saying that you don't need the appropriate music for the song, but meticulous, pristine sound? I don't think it's that important. Nobody wants to admit this, but I don't think it's about sounding great; it's about sounding good enough. Don't take that the wrong way; I'm not talking about being mediocre. You want the *right* sound, but meticulous, insane attention to detail isn't what gets listeners off. It's what gets engineers, mixers, and producers off.

But isn't the sound part of creating that emotion you were talking about?

I'm talking about the process of recording versus the process of performing. If someone gives a great performance, you can have a sketchy recording that will still move people. In a perfect world, both the performance and the recording are great. But there are early—and recent—wonderful recordings that aren't technically great. For instance, check out Alanis Morrissette's *Jagged Little Pill*. Sonically, that is not a great-sounding record. Most of it was done as a demo on an ADAT. Things are harsh and distorted, and yet it sold 15 million in the United States and another 10 million overseas. Did it sell because it was a great-sounding record? Absolutely not. It sold because Alanis laid out some amazing vocal performances and some amazing lyrics that connected. It actually may have appealed more to people because it feels as though you are in the room, listening as it is happening.

When people agonize over sounds, they sometimes miss the big picture. I've done that. I've made the mistake of saying, "Let's try this microphone or that microphone," and finally you get this great sound, and you can see that the artist's energy is gone. One of the biggest difficulties in producing and engineering is to decide when to roll forward to capture the energy. Sometimes that's to the detriment of the sound. But I will always believe

MATT WALLACE ON RECORDING GUITARS

You like to have guitarists record while monitoring from wedges rather than headphones? Can you explain?

When you have headphones on, suddenly you're in studioland, and you're really aware of that. Most bands are more used to playing live and using monitor wedges. Also with wedges, they can feel the drums better.

MAUREEN DRONEY

Wallace, shown here at his Studio Delux, feels guitarists perform better when tracking if they monitor off wedges rather than through headphones.

How do you typically set it up?

I like to set up the guitar amp and put the guitarist's monitor wedge a little bit in front of it. Since you have the mic aiming at the guitar amp, the bleed from the monitor into the microphone is negligible. Or I'll put the monitor wedge up on a stand right near the player's ears. I'll put the guitars in separate rooms from the drums, but visual contact is very important. I'll sacrifice the best-sounding spot to have the drummer face the band members. I want everybody looking at each other so that they can get that intuitive thing going where they all know when something's going to happen.

Look and sound like a million bucks. Pay only $990.

DISC MAKERS® CD AND DVD MANUFACTURING MADE EASY

Now get 1,000 CDs in full-color jackets for the remarkable price of

$990

This complete package includes our award-winning, three-color on-disc printing, and full-color jackets with high-gloss UV coating.

1,000 CDs in jackets for only $990.

You'll be thrilled with how incredible your CDs look and sound when you choose Disc Makers. You get 1,000 CDs in full-color jackets for the remarkable price of only $990. And you get them super quick. Complete your package by adding our affordable award-winning graphic design, mastering services, and promotional resources such as posters and postcards.

MUSIC FILM BUSINESS DO-IT-YOURSELF

GET OUR FREE FACTORY-DIRECT CATALOG

1-866-294-9013 • www.discmakers.com/em

that the energy, the emotion, and the vibe are paramount. The sound is secondary.

And energy is why you like to have at least two band members recording at any given time.

There's this serial style of recording now, but when you're making singular overdubs and the rest of the band is playing video games or watching TV, you lose momentum. You lack the energy of the community and that sense of everyone being there, which includes, by the way, the engineer and the producer. When we recorded Maroon 5 and Sugarcult, we had a main room going with a Pro Tools rig as well as rigs going in two other rooms that were actually lounges. You get a great vocal in one room, play it in the other room where the guys are working on guitars, and they'll go "Whoa," and come up with another guitar part. There's momentum and energy.

On some records, we have a Pro Tools rig set up just to screw around on, with a microphone and a couple of guitars. If the drummer wants to play guitar or the singer wants to play tambourine, they can throw stuff down right there. We may use some of it. I'd much rather have them noodling and being crazily creative; at least the juices are flowing and people are getting inspired. Because that's what you want above everything else—to have fun and to be inspired. After that, it's easy.

What hours do you like to work?

I'd like to start at 10 a.m. and finish at 8 p.m. I've done that in the past and found that that way you get more done in a 10-hour day than most people do in 14. Bands initially hate it; but once we get going, it's great. I tell them to come in fed, primed, and ready to work, and we have really productive days. In actuality, we generally end up working 11 a.m. to 11 p.m.

Do you take a lot of notes while you're working?

During recording, yes, but not during pre-production. During pre-production, I usually run a DAT recorder and make CDs. Lately, I've been working at a place called Amp Rehearsal Studios—the best rehearsal place known to mankind. That studio has rooms with a CD burner and a microphone bolted to the ceiling, plugged into a preamp, and ready to go. You record, walk down the hall to the 10-CD burner, and everybody walks out with a copy.

I always make recordings at rehearsal so the bands can listen to arrangements. When you're working out arrangements, people tend to think they don't like them. Often, that's just because they're learning them and having to think about it. This way they get to listen later.

But for recording, I have binders full of notes. For example, on the drum takes: if I've edited things together and someone wants a different fill, I know where to get one.

SELECTED DISCOGRAPHY

Chantal Kreviazuk, *Under These Rocks and Stones* (Columbia, 1997); coproducer, engineer, mixer

Faith No More, *Angel Dust* (Slash/Reprise, 1992); producer, engineer, mixer

Faith No More, *The Real Thing* (Slash/Reprise, 1989); producer, engineer, mixer

Caleb Kane, *Go Mad* (Reprise, 2004); producer, engineer, mixer

Khaleel, *People Watching* (Hollywood, 1999); producer, engineer, mixer

Maroon 5, *Songs About Jane* (Octone, 2002); producer, engineer, mixer

Replacements, *Don't Tell a Soul* (Sire/Reprise 1989); producer, engineer

Sugarcult, *Start Static* (Ultimatum, 2001); producer, engineer, mixer

The Virginia Coalition, *OK to Go* (Bluehammock Music, 2004); producer, engineer, mixer

I'll have written: "great verse groove, good fill in chorus 2," and so on.

While they're recording, you're writing.

Pretty much for everything that goes down. I do my vocal comp sheets live; I don't sit back and listen to it [after it's recorded]. That's too time-consuming. I make notes while we're recording so I can put it together really quickly. I notate if the timing's off or if it's good, if it's flat or sharp. I'll also note the emotional content of a line.

Tell us about your console.

It's a 28-input Sound Workshop Series 34 that my engineer Mike Landolt found somewhere for about three grand. It works really well and I've mixed records on it, although the EQ, which is old, can be a little crackly. Having a decent analog console is important to us; I love the sound of it. Pro Tools is a fantastic medium for storage, but for getting sound into it we like to use tube gear or discrete Class A electronics if possible (see **Fig. 1**).

Also, it's tough when you're trying to jam all this stuff down a little stereo bus on Pro Tools. For mixing, I always fan the tracks out onto some kind of analog console so I can manipulate them in that domain. There are lots of great plug-ins, but you won't find anything like an old Gates limiter, old LA-2As, or our old Volumax FM compressor that has the sound of classic FM radio.

What do you recommend for a limited budget?

For readers out there with Pro Tools or other digital-recording setups, there are two great pieces of gear: the Altec 1567A is a tube mixer-amplifier for four mics, with line-in and a mono master out. It has EQ at 100 Hz and 10 kHz, and it does to the sound kind of what you get off analog tape—a little bit of squish. You have pre gain and master gain, and it's a gorgeous big sound for $350 to $700. I also recommend the [Empirical Labs] Distressor because, for about a grand, it's so versatile. It ranges from nice delicate compression all the way to "Nuke"—they've got a sense of humor. And you can actually add distortion. That's what we all like.

You do use plug-ins, though?

Yes, for processing on recorded material, if I want something quick. If I have time, I try to use analog gear. On the way in, decent mics and preamps are essential. I use my console preamps, and also I have the Chandler [LTD-1] Neve preamp reissue. But overall, I don't own a lot of gear now. Vintage gear is just too expensive, and so is repairing it.

You're in a good mood lately. Having a Platinum record helps, I'm sure.

I've also recently realized that I had to create time for myself. Making music for a living is enjoyable. It's creative; we all love it. But it's not easy. Most people live under a mountain of stress these days, and that's probably not going to change, so we have to find ways to deal with it. For me, it's important to spend time with my family and to get a couple of weeks off between projects. Otherwise, I'm unhappy in the studio, and it isn't good for anybody. Over time, you learn your limitations—what you do well, and what you have to keep an eye on. Sometimes there's no choice, and you just have to plow through. But you have to grab time off when you can. Otherwise, your life will go by and you'll be old and cranky, discovering that you've missed a lot. EM

Maureen Droney's engineering credits include Carlos Santana, Aretha Franklin, Kenny G, Tower of Power, and many others. Currently, she is Los Angeles editor for Mix *magazine and general manager of House of Blues Studios.*

Finding the Logic in MIDI Editing

By Jim Aikin

A world of tools for global tweaks.

When it comes to editing MIDI tracks, logical edit utilities are often used as a last resort. Because logical edit utilities are harder to understand and to use than, for example, a graphic editing window, many musicians avoid them. These powerful tools, however, enable you to tweak large amounts of data with a few quick mouse-clicks, rather than having to spend time massaging your MIDI data one event at a time in an event list.

Logical edit utilities go by various names in different sequencers. In Apple Logic, those functions are found in the Transform window. Steinberg Cubase provides a Logical Editor (see **Fig. 1**). In Cakewalk Sonar, the Process>Interpolate menu command brings up the Event Filter, which has two windows that are almost identical to each other: Search (see **Fig. 2**) and Replace.

Newer virtual-workstation multitrack programs such as Propellerhead Reason, Ableton Live, and Arturia Storm, which work primarily with audio files, usually don't have logical edit utilities; that is because logical edit utilities are considered to be a legacy feature that dates back to the earliest days of MIDI sequencing. Advanced MIDI editing was a necessity when computers weren't yet fast enough to handle CD-quality audio.

Details on how these utilities operate may differ wildly from one sequencer to another. Consult your owner's manual for specifics. In this column, we'll look at the underlying concepts that are common to logic-based MIDI editing.

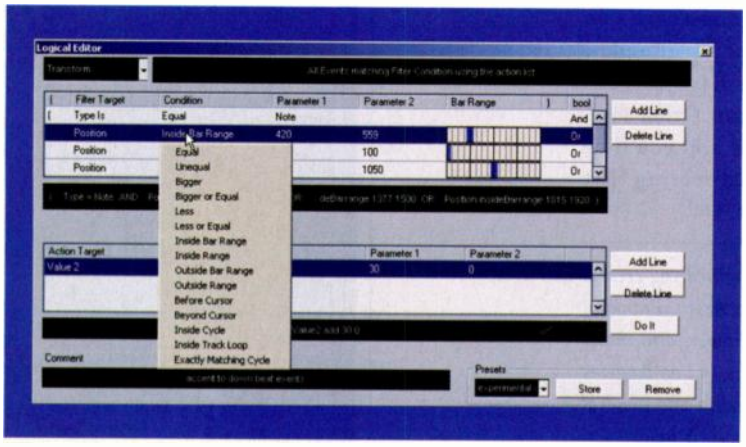


FIG. 1: Shown below is the Logical Editor in Cubase. The pop-up menu shows the tests that can be performed on events.

MIDI Two-Step

Logical editing is a two-step process: first you specify which events you want to edit, then you specify what will be done to those events during the edit operation. The criteria used for selecting events and the operations performed on them can be quite sophisticated. That is what makes logical editing powerful and tricky to understand.

Suppose you're using a MIDI guitar controller or a pitch-to-MIDI interface that sometimes outputs extraneous notes. Those notes will have extremely short durations or low Velocity values, and so they may not be very audible. Depending on the synth you're using for playback, however, they can still affect the performance in undesirable ways. Using a logical editor, you can select all of the notes within a MIDI track that are extremely short (only a few clock-ticks in length) or that have unusually low Velocity values. Having selected those notes, you can then delete them. With logical editing, you can select such notes throughout the track in a single operation rather than having to visually scan for them and Shift-click on each note.

Perhaps you're using a percussion-oriented synth to play a drum track, and you'd like the snare hits on beat 3 to be more laid-back. Logical editing lets you select only notes that are on or near beat 3, and then push their start times back by a few clock-ticks—without changing the timing of any other drums in the track. You may also choose to raise or lower those notes' Velocity values during the same operation.

What if your MIDI keyboard is sending out tons of Aftertouch or Channel Pressure data that's being recorded onto your tracks? Given the speed of today's computers, that may not matter. You may not even notice. But if you later change to a synth preset that responds to Aftertouch in some way, the Aftertouch data may create a sonic nuisance. With logical editing, you can select only the Aftertouch events in the track and delete them, without affecting the notes and other controller data.

A Select Group

Typically, logical edit utilities let you select events using most or all of the following criteria:

- Time position in the track as a whole (for instance, between bar 7, beat 1 and bar 19, beat 3)
- Time position within any bar (for instance, between beat 2, tick 117 and beat 3, tick 5)
- Event type (for instance, notes or Pitch Bend data)

Retro is So Now

The engineers at GForce have a passion for one thing—incredibly realistic emulations of vintage keyboards. These software instruments bring back the synths that defined an era—the Minimoog, ARP Odyssey, Oxford OSCAR and Mellotron. In addition to being authentic in sound and function, these incredible emulations have the advantage of modern features like memory, additional modulation and new performance modes the original designers never dreamed of (not to mention staying in perfect tune). Use them alone or with your favorite host software.

developed by

GFORCE™

an M-Audio partner

Hear them now!
www.m-audio.com/gforce

M-AUDIO

recording interfaces | USB keyboards | studio monitors | microphones | preamps | sound libraries | music software

www.m-audio.com

- Length (applies only to notes)
- MIDI channel
- Value 1
- Value 2

The meanings of value 1 and value 2 will change depending on the event type selected. If the event type is Note On, value 1 is the note value and value 2 is the Velocity. If the event type is Control Change, value 1 is the CC number and value 2 is the data value of a given CC message. If the event type is Channel Pressure, there is no value 2, because Channel Pressure is a 2-byte MIDI message and has only one data byte.

With parameters that have numeric values, such as note length and the two data values, you'll be able to apply various mathematical or logical tests to the events. The tests will include some or all of the following:

- Equal to
- Not equal to
- Less than
- Greater than
- Within a range of values
- Outside of a range of values

To use the last two types of tests, you'll need to specify two data values. For instance, you might choose notes within the pitch range of C2 to C4. If you select those two data values and then use the "within a range of values" test, notes only between C2 and C4 will be selected for editing. If you use the "outside of a range of values" test, then notes between C2 and C4 will not be affected by a subsequent editing operation, while higher and lower notes will be edited. In Sonar, you switch from inside the selected range to outside the range by clicking on the "exc" (exclude) checkbox.

If you've specified two or more criteria, you'll be able to connect them using logical AND or logical OR operations. (Also possible, though less likely, are NOR and XOR operations.) These are called *Boolean* operations, which is why the Cubase Logical Editor has a column labeled "bool." Here is how those choices operate:

- AND: The event is selected only if it meets both of the criteria that you've specified.
- OR: The event is selected if it meets either criterion.
- NOR: The event is selected only if it meets neither of the criteria.
- XOR: The event is selected only if it meets exactly one of the two criteria and does not meet the other.

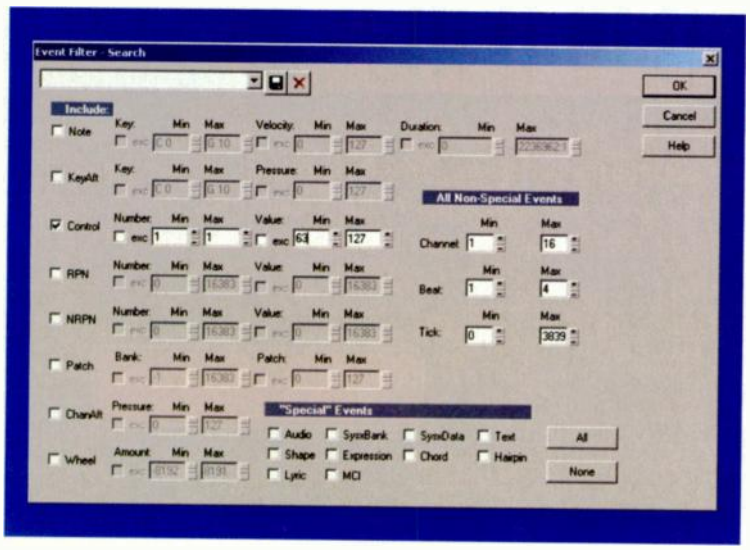


FIG. 2: Pictured below is Sonar's Event Filter. In this screen shot, the filter is set up to choose CC1 events whose value is between 63 and 127.

Operating Room

Now that you've selected some MIDI events, what would you like to do with them? The possibilities here are somewhat more visionary. Your sequencer may offer some or all of the following choices:

- Delete
- Copy
- Replace with another event type
- Move forward or backward in time
- Quantize time position
- Change event type (for instance, from Pitch Bend to Aftertouch)
- Change channel
- Operate mathematically on value 1
- Operate mathematically on value 2
- Reverse time position
- Invert around a center value

The options to perform mathematical operations on values 1 and 2 are very useful. By adding 12 to value 1 of a note event, for example, you can transpose it up by an octave. But addition and subtraction are just the beginning. By using multiplication or division with controller data, you can keep the contour of a controller sweep while reducing or expanding the height of the sweep. Other mathematical operations found in some sequencers include randomization and tapering (also called interpolation). With the latter, wild swings in controller data can be turned into a smooth ramp.

The Event Horizon

Logical editing isn't something most of us use every day, but if you're using MIDI tracks, it would be well worth your while to spend a little time getting familiar with this feature in your sequencer, so that you can take advantage of it when you need it. Most logical edit utilities allow presets to be stored, which makes it easy to create a library of the edits you use most often. The groundswell of interest in software-based synthesizers in the past few years has given new life to MIDI, making logical editing an invaluable weapon in the arsenal of any power user. EM

Jim Aikin is the author of Power Tools for Synthesizer Programming *(Backbeat Books, 2004) and* A Player's Guide to Chords & Harmony: Music Theory for Real-World Musicians *(Backbeat Books, 2004). Visit Jim online at www.musicwords.net.*

INTEGRATED

Pro Audio Solutions

Desktop Audio • Live Sound/PA • Pro Recording • Broadcast/ENG • Electronic Field Production

420 Ninth Ave., NYC 10001
www.bhproaudio.com

800-947-5509
We Ship Worldwide

B&H
PHOTO - VIDEO - PRO AUDIO

Loop Microsurgery

By rachMiel

Give your tired loops a new lease on life.

Microsurgical editing can enhance the musicality and groove quotient of your loops. All you need is an audio editor with a few standard effects (EQ, filtering, reverb, amplitude envelope, and reverse). I use Sound Forge, but any editor will do as long as it lets you zoom in on the sample level.

The basic process is simple: divide your loop into slices, and then edit them. Slices should be single events—a beat, a note, an impulse, for example. In essence, you'll be beat slicing, but you'll be doing it manually, and that will afford you greater editing flexibility.

Slice It Up

The first step is to divide your loop into slices, one for each audible event (see **Fig. 1**). Work through the loop from beginning to end, listening carefully for event attacks. At each attack, zoom in to a high resolution and locate the exact onset of the attack, which should show up as a sudden waveform change. Then zoom out to the sample level, find the nearest zero crossing before the event attack, and mark it to begin the slice. Continue that process until the entire loop is divided into slices. The beginning of each slice serves as the end of the previous one, so if you choose not to mark all slices, you may need to mark endpoints as well.

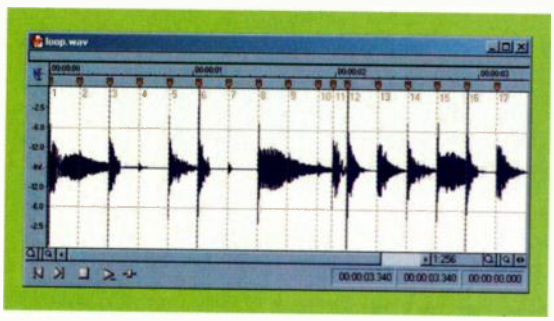


FIG. 1: Shown here is a loop that has been sliced up in Sound Forge and is ready for microsurgical editing.

Be sure to save a copy of the sliced-up loop, because it is the starting point for all your microsurgical editing. That will allow you to experiment without having to re-create slices.

Rearrange Your Slices

Once you've marked your slices, you can begin editing, and slice rearrangement is a great starting point. You can change the nature of your loop subtly or dramatically by rearranging its slices. You can move a slice to a different location in the loop. You can replace one slice with another from the same loop or from a different source. You can insert a slice or delete one. Finally, you can mute a slice by either replacing it with silence or, if that proves too musically jolting, with background noise, which you can often harvest from another part of the loop.

Before rearranging slices, it's important to decide whether to work destructively or nondestructively. Destructive editing alters the length of the loop. For example, if you insert two 8th-note events into a 4/4 loop, you'll end up with a 5/4 loop. Nondestructive editing leaves the loop length intact. For example, if you mute two 8th-note events in a 4/4 loop, you'll end up with the same 4/4 loop with two 8th-note holes (silences) in it.

Nondestructive editing (see **Web Clip 1**) leaves the meter, tempo, and pulse intact, making it well suited for fixed-beat styles such as house, trance, and tribal. Destructive editing (see **Web Clip 2**) changes the loop meter and, in some cases, tempo and pulse, which makes it more appropriate for polymetric, free-form, or experimental music.

Add Effects to Your Slices

You can also add effects to your slices (see **Web Clip 3**), either individually or in groups. For example, you might reverse one slice, apply a highpass filter to the next, a lowpass filter to the one after that, and then select all three as a multislice group and apply reverb. Or you might apply different flanging to a succession of contiguous slices, then select the entire group and apply an amplitude envelope.

You can use most effects nondestructively. Equalizing, filtering, amplitude enveloping, and short-delay-time effects (phasing, flanging, and chorus) leave the slice and loop length intact. Time-stretching slices will alter the loop length if you move the surrounding slices to accommodate the stretched slice's duration. The same principle applies to reverb, echo, and long-delay effects. For example, applying reverb to the last event in a loop will lengthen the loop by the duration of the reverb tail unless you truncate it unnaturally.

Any process that you apply to an audio clip as a whole is fair game for altering individual slices in your loops. The only thing you need to watch out for is the impact of that processing on slice length. EM

EM WEB CLIPS

rachMiel is a composer of experimental electronic and acoustic music. He can be contacted through his Web site at www.rachmiel.com.

1.5

NEW VERSION

"The **minimoog V**'s sound quality captures the magic of the original classic Minimoog. The graphic interface looks classy and responds smoothly, making it fun and easy to use. We at Moog Music are happy to lend our name to this fine product." **Bob Moog**

FREE UPGRADE

For All Registered Users

minimoog V

TAE® True Analog Emulation

arturia

www.arturia.com

What's in a Word?

By Mark Ballora

If bits and bytes leave you in a dither, read on.

Before digital signal processing (DSP) became the norm in music production, adding delay effects or compression meant running the audio through a hardware device that inevitably added noise. Things are different with digital audio, because plug-ins crunch tidy streams of numbers. Noise problems remain; they're in a different form, however, because digital audio processing cannot be performed with perfect accuracy. This article looks at why that is, and discusses what can be done to minimize the damage.

The Digital Ruler

In the PCM (pulse code modulation) audio found on CDs and DVDs, the precision of the measurement system used for sample values is always tricky. Imagine trying to measure the length of a coastline (a mathematical conundrum explored by fractal pioneer Benoit Mandelbrot). Measurements vary, because their accuracy depends on the size of the ruler being used. The smaller the ruler, the more precisely it accounts for tiny curves and inlets. Because there is no ruler small enough to capture every detail with perfect precision, there is always some estimation involved. In audio, the subtle changes in a signal's amplitude are no less intricate than the details of a coastline.

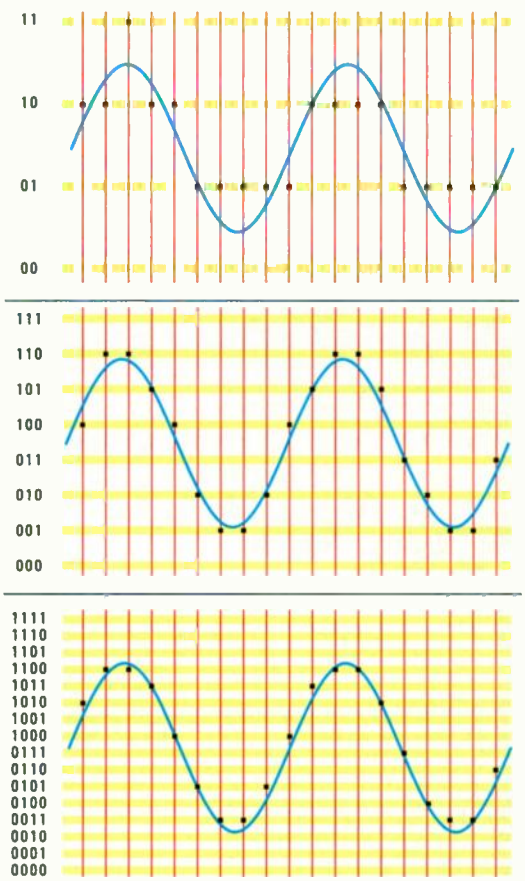


FIG. 1: When any digital recording is made, word size will limit the precision of the recording. When only two bits are used (top), a sine wave appears as a square wave when played back. Using three bits (middle) improves the precision, and using four bits (bottom) improves it even more.

Digital audio systems are only so precise, because they use a finite number of measuring increments (see Fig. 1). Like any type of computer data, sample values are stored as binary numbers, and the number of bits used to represent those numbers determines how precise they are. With more bits, smaller, more accurate increments between extreme high and low amplitude levels can be stored. Every instantaneous amplitude level is given the value of the nearest measuring increment—a process called *quantization*. (The term is from quantum physics, in which electrons orbit an atom's nucleus at fixed distances. An electron can orbit at distance *A* or distance *B*, but never anywhere between the two.) Working with a higher bit system is like working with a ruler that measures in 1/32-inch increments instead of 1/8-inch increments.

But no matter how many bits are used, sample measurements can never be fully accurate. Because there will always be differences between the actual infinitely variable amplitude level of a signal and the nearest available measuring increment, some degree of distortion, or quantization noise, is inevitable. The problem is compounded at low amplitude levels because the full range of sample values doesn't get used. That makes the error a greater percentage of the signal (see Fig. 2).

There are many names for the number of bits in a system, including quantization level, word size, and bit depth. CD audio uses word sizes of 16 bits (2 bytes), and high-end DVD audio uses 24 bits (3 bytes). Some argue that the superiority of DVD audio over CD audio is because of DVD's improved bit depth.

Oh, How They Multiply!

DSP operations perform arithmetic (usually multiplication) on samples. Some operations take averages from

Sonic Implants®

SYMPHONIC COLLECTIONS

The New Complete Orchestral Solution

From gentle to powerful, intimate to enormous, the new Sonic Implants Complete Orchestral Collection allows you to incorperate every nuance and detail of the greatest orchestral musicians ever sampled, bringing unmatched elegance and beauty to your music.

- > 24bit clarity & definition
- > Natural Ambience
- > Sample round-robin, alternation & legato play
- > Integrated surround sound via GigaPulse
- > Engineered by Grammy & RIAA award winning team
- > Unsurpassed playability

Percussion

Timpani
Orchestral Snare - Snares on & off
Field Drum - Snares on & off
Concert Bass Drum
Concert Toms
Tambourines
Crash, Suspended, Finger, & China Cym.
4 Different Types of Gongs
Crotales
Triangles
Metal, Glass, Wood, & Bamboo Chimes
Bell Tree
Glockenspiel
Xylophone
Marimba
Vibes
Tubular Bells
Temple Blocks
4 Wood Blocks
Claves
5 Cowbells
Shakers
And Over 25 Additional Essentials ....

Available in:
GIGASTUDIO3 & GS2.5 Formats

Woodwinds

Solo C Flute
1st & 2nd chair C Flutes
Alto Flute

1st & 2nd chair Bb Clarinets
Solo Bb Clarinet
Solo Eb Clarinet
Bass Clarinet 1st & 2nd Chair

1st & 2nd chair Bassoons
Solo Bassoon
Contra Bassoon

1st & 2nd chair Oboes
Solo Oboe

1st & 2nd chair Piccolos
Solo Piccolo

1st & 2nd chair English Horns

Available in:
GIGASTUDIO3 & GS2.5 Formats

Brass

French Horns
Solo Melodic French Horn
1st & 2nd chair section
1st through 4th chair section
1st through 6th chair section (prog)

Trumpets
Solo Melodic Trumpet
1st chair
2nd & 3rd chair section
1st through 3rd chair section

Trombones
1st & 2nd chair Tenor Trombones
1st through 3rd chair Trombones
1st chair Baritone Trombone

Tuba
C Tuba
E Flat Tuba

Available in:
GIGASTUDIO3 & GS2.5 Formats

Strings

1st Violins
8 Violin section

2nd Violins
6 Violin section

Violas
6 Viola section

Cellos
5 Cello section

Basses
4 Bass section

Ensemble programs

Available in:
GIGASTUDIO3, GS2.5
EXS24 & KONTAKT
Formats

To Purchase or to find a Dealer near you contact Sonic Implants at >>>

888.769.3788
www.sonicimplants.com

groups of samples, while others multiply all samples by a single value. Multiplication creates longer word sizes. Even a simple act—such as moving a volume fader—can add bits because of the multiplications used. That principle is as true in the decimal system as it is in the binary system. A simple multiplication problem such as 15 × 15 = 225 starts with two-digit numbers (15) but results in a three-digit number (225). If we're restricted to working with only the two leftmost digits, we'd have to chop off the ones column. That would leave us with the problem of whether 225 should be rounded to 220 or 230. Therein lies the quandary of digital audio: what is the best way to approximate sample values when you have limited precision available?

Most processors work with extralong word sizes to give DSP operations some breathing room. But at some point, you'll need to cut down the word sizes to 16 bits if you're mixing for CD. Say you're working in a system that offers 32-bit processing. You compress, add reverb, and then adjust the overall amplitude. Now it's time to prepare your final 16-bit mix, meaning it's time to reduce word sizes by one-half. Using decimal numbers as an example, imagine all your samples during processing are integers between 0 and 1,000; for the final version, however, you have to lose the ones column, leaving values only in increments of 10 (10, 20, 30, . . . 980, 990, 1,000). Truncating the samples rounds everything to the nearest increment of 10. That is a crude approach, because nuances in things such as stereo spatialization and reverb require very fine variations in the sample values. To get around that, most programs apply redithering (or dithering down) when word sizes are reduced.

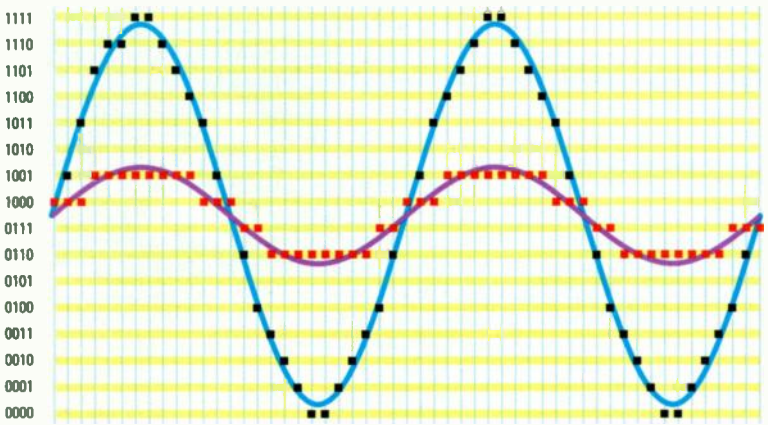


FIG. 2: The signal at full amplitude uses the entire range of sample values. The low-level signal, while equally complex, can use only the middle four sample values. Thus, a low-level signal can't be represented as accurately as a high-level signal.

Redithering is similar to the dithering process performed during recording, except that it's done at the back end (see "Square One: Dithering Heights" in the December 1996 issue of EM). Before the lower-valued bits get lopped off, noise (a random value within the range of the bits to be removed) is added to each outgoing sample. If we need to remove the ones column, adding a random number between one and nine to each sample leaves to chance whether we round up or round down to the nearest increment of ten. The result maintains traces of the activity between increments. The final output has greatly improved dynamic range, albeit with some degree of noise.

Proprietary redithering algorithms abound, from Waves IDR to Sony's Super Bit Mapping. (Sony also offers an alternative to PCM audio with its SACD format. See "Optical Wars: DVD vs. SACD" in the November 2004 issue of EM.) Visit http://audio.rightmark.org/lukin/dither/dither.htm for a comparison of those and other approaches.

Time to Get in Shape?

Adding noise is an imperfect solution. But its ill effects can be minimized through noise shaping, which is an advanced form of redithering that filters the quantization-error distortion, pushing it out of the audible range (and making it much less bothersome). The best noise shapers attempt to spread the error noise just below the hearing threshold by taking equal-loudness curves into consideration.

Ideally, you want to stay in the high-bit-depth arena during all preliminary processing and storage. For example, if you do your processing in a 48-bit environment, but between sessions you save your work to 16-bit DAT or as 16-bit AIFF or WAV files, you have to shorten the word lengths and redither every time you store your work. That essentially smudges the work of your session. Noise shaping is helpful, but you can never be sure where in the spectrum the error noise will wind up. If you try to work with files that previously had noise shaping applied to them, you might get some unpleasant surprises due to difference frequencies (also called combination tones). Consequently, noise shaping is something that you want to use only as the final stage of production.

For example, maybe you want to crossfade between two files that have been noise shaped. Individually, each file sounds great. What you may not realize is that one file had its quantization error pushed to, say, 18 kHz, while the other had its distortion pushed to 18.1 kHz. Nothing seems amiss until you try to crossfade the two, and the multiplications involved create sonic grit due a difference frequency centered at 100 Hz. Be sure to keep track of what files have had noise shaping applied, and consider making a backup of everything before you apply it.

The rule of thumb for audio word sizes is "bigger is better." Record at the highest bit depth that you can, process in big words, and mix to the highest quantization level available. EM

Mark Ballora teaches music technology at Penn State University.

WWW.PRESONUS.COM

the ultimate hook-up.

EUREKA

Professional Recording Channel

Class A transformer coupled
microphone/instrument/line preamp
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

Electronic Musician 2005 EDITORS CHOICE

AD192

Optional Digital Output Card for the Eureka

24 bit resolution, up to 192K sample rate
Simultaneous SPDIF and AES outputs
Analog line input enables one AD192 for two Eurekas
$199

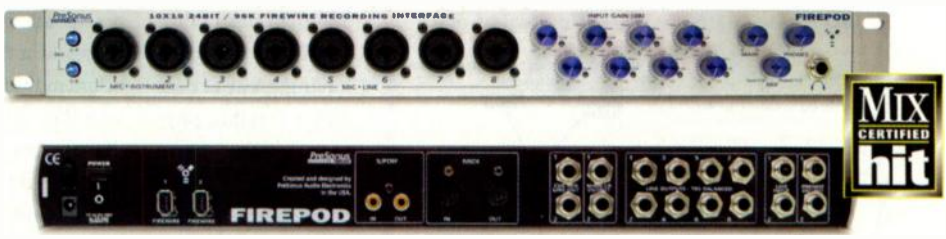
LIMITED TIME OFFER*
FREE AD192 with purchase of EUREKA

Hook-up two Eurekas to your FIREPOD via AD192 SPDIF output for the ultimate signal path. Hook-up your FIREPOD to your computer via standard IEEE1394 FireWire connection and use the eight onboard Class A preamps for recording drums, guitar cabs, pianos, ensembles, etc , for the ultimate FireWire computer interface. Need more inputs? Hook-up a second FIREPOD for eight additional microphone preamps Finally, hook-up your Central Station to your FIREPOD for ultimate communication and monitoring control.

FIREPOD

24Bit/96k 10x10 FireWire Recording System

Eight PreSonus microphone preamplifiers
Two instrument inputs, eight analog line outputs
SPDIF and MIDI input / output
Cubase LE 48 track recording software
$599



CENTRAL STATION

Studio Control Center

Flexible stereo input/output
switching & routing
Talkback, mute, dim mono,
separate cue and main outputs
24 bit/192K D to A converters
(SPDIF and Toslink)
Passive signal path (no op amps)
for ultimate stereo imaging and depth
$499

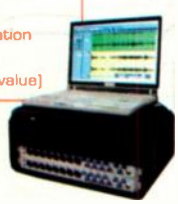
CSR-1

Optional Remote Control for the Central Station

Main volume, input/output switching, dim, mute mono
Talkback microphone on remote
Rack your Central Station with your gear
$149

LIMITED TIME OFFER*
Purchase a Central Station and get a CSR1 Remote for $99.95

LIMITED TIME OFFER*
Buy any two of the following:
Eureka, FIREPOD, Central Station
Get FREE: One Studio-2-Go
Travel Rack Case ($149.99 value)



GET THE ULTIMATE HOOK-UP ON PRESONUS GEAR FROM SWEETWATER!
CALL TODAY 800-222-4700

*Offer good from March 15 through June 15, 2005 For details, call Sweetwater at (800) 222-4700

Sweetwater
music technology direct™
www.sweetwater.com

PreSonus
WHERE ARTISTS CREATE AND TECHNOLOGY PERFORMS

Set It Free

By Strother Bullins

Giving away your music can prompt greater returns.

In today's increasingly communicative world, there is no shortage of ways to distribute audio-based intellectual property. As a result, there is an overabundance of music for consumers to buy and hear.

So how can independent musicians ensure that their work is heard, and therefore bought, in this competitive virtual marketplace? They can start by distributing free samples of their best work online. While the Internet can serve as a great equalizer for the independent artist, being an equal means that you are judged on merit commensurate with the best in your genre.

Giving away your music in order to generate sales is nothing new. "If you don't give away some amount of it, no one will hear it, and no one will buy it," says John Buckman, founder and CEO of Magnatune (www.magnatune.com), a fledgling Internet-based record label. The firm has built a good reputation by having great artists and a flexible payment plan—from $5 to $18—for what consumers choose to purchase.

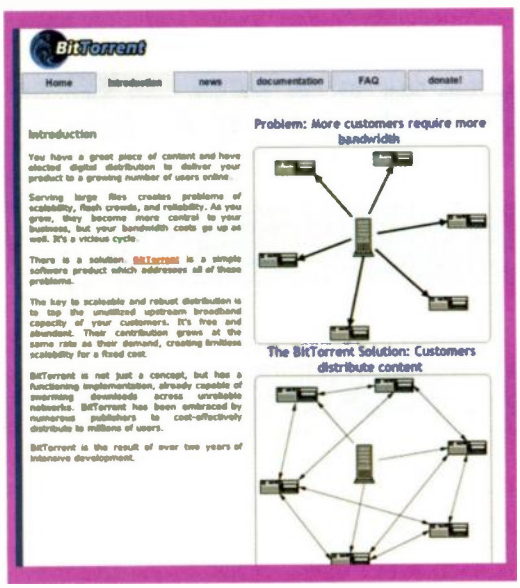


FIG. 1: BitTorrent permits lightning-fast transfers of large music and video files. The technology inherently requires users to share: you must upload file fragments at the same time you download.

In addition to indie CD sales sites such as CD Baby, MP3 sales juggernauts such as iTunes.com, and free-for-all file sharing and exchange protocols such as Gnutella or LimeWire, there are numerous new ways to distribute your music. Podcasting and BitTorrent file exchange technologies are growing exponentially, especially with fans of online music downloading.

Podcasting brings the convenience of TiVo to iPods and other MP3 players for lovers of Internet audio programming. Podcasting is an Internet broadcasting application designed for downloading audio-based programs, and receiving a Podcast is easy. Once online with an MP3 player connected to a computer, users can subscribe to a programming feed from any of the rapidly multiplying Podcasting aggregators such as Feeddemon.com, Bloglines.com, or the first aggregator, iPodder.com. The chosen content—ranging from music shows to just about any other audio-based entertainment imaginable—is then delivered to the subscriber's player via the aggregator from an original source provider.

BitTorrent, an amalgam of Internet and FTP technology, gives users the ability to download intellectual property with standard browsers via "torrent://" proceeded by a site address. BT, a free program available at BitTorrent.com (see **Fig. 1**), eliminates the bottlenecks associated with lightning-fast downloads of massive files via traditional file-sharing technologies. With BitTorrent, there are no users downloading without sharing, and everyone isn't accessing the same content provider simultaneously. BT requires each user to upload files while downloading through *swarming*, a process in which small pieces of a file are all shared by users. Etree.org, which offers musician-sanctioned concerts, is one of many great new Web sites that rely on BitTorrent technology for IP distribution. Trade-friendly artists include bands such as Drive-By Truckers, Phish, Grateful Dead, Aquarium Rescue Unit, Guster, and Howie Day. If so inclined, you can even submit your own concert audio, once you go through the site's sign-up/log-in process.

The everexpanding universe of file-exchange possibilities is exciting for consumers, and yes, it can be effective technology for self-touting musicians as well. Proceed and use these applications and programs with caution, though. Use new technologies for the purpose of self-promotion wisely, retaining ownership of your music while distributing your art in ways that can lead to financial compensation. "My advice to musicians is to absolutely keep control of the rights to your music and find as many outlets as you can to get your music heard that bring you a little money," says Buckman.

After all, "It's much worse never to be heard than to have your music stolen," he adds. So set your music free for promotional purposes, even if it's only a song or two. Done successfully, you may learn what your art means to the world while receiving monetary affirmation in the process. EM

Strother Bullins is a musician and freelance writer specializing in the audio, music, and entertainment industries.

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

Jenna Drey – TAXI Member – www.jennadrey.com

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

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

Who Hears Your Music?

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

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

A Record Deal With Lots of Zeros!

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

Madonna, Bowie, Jagger, and me!

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

1,200 Chances to Pitch Your Music

It seems like all the serious artists and writers are hooking up with TAXI. Where else could you find more than 1,200 high-level opportunities for your music every year?

You'd hire an accountant to do your taxes. Doesn't it make sense to hire the world's leading independent A&R company to make all the connections you need? Do you have the time to do all the leg work yourself?

It Worked for Me

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

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

TAXI®

The World's Leading Independent A&R Company

1-800-458-2111

SPECTRASONICS Stylus RMX 1.2.1 (Mac/Win)

It slices, dices, loops, grooves, and jams.

By Marty Cutler

Though spontaneity is not often associated with loop sequencing, the quasi-improvisational capabilities of Spectrasonics' Stylus RMX are only part of its many highlights. The plug-in has construction-kit-style loop layering and arranging, malleable playback features, a drum-kit mode with interchangeable kit pieces, and expandability. You can perform almost every edit and parameter change in real time and easily create animated, complex grooves within an ever-flowing context.

Spectrasonics' Stylus and Stylus RMX share some operational features, but RMX offers many new capabilities, such as an 8-part multitimbral engine, versatile built-in effects, and roughly three times the sample content of its predecessor. The program installer and sound content come on two DVDs, and a CD contains tutorials in QuickTime format. Once installed, the program will run in demo mode for four days before requiring a simple, Web-based challenge-and-response authorization.

The RMX Core Library expands on the theme of its predecessor with a concentration of highly processed (but adaptable) grooves suitable for dance, hip-hop, R&B, drum 'n' bass, funk, fusion, and even dramatic underscoring. Multis combine agile Groove Elements into textbook examples of layered, animated rhythms. The loops work well at a wide range of tempos—loops intended for tempos of 150 bpm take on new dimensions at 70 bpm, for

FIG. 1: A variety of options appear on the Edit page of Spectrasonics' Stylus RMX, one of which is its subtractive synthesis engine. Note the use of a synchronized triangle-wave LFO to modulate filter cutoff frequency on backbeats only, as shown in the Edit Group window.


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.

example—especially with the intervention of the Spectrasonics Advanced Groove Engine (SAGE).

I tested Stylus RMX on a dual G4 1.42 GHz Mac using Ableton Live 4.04, Granted Software RAX 1.2.2, MOTU Digital Performer 4.5, and Steinberg Cubase SX 3.0. Stylus RMX supports Audio Units, VST2, and RTAS under OS X 10.2.6 and higher, and VST2 hosts on Windows 2000 and XP machines. According to Spectrasonics, a Windows RTAS version should be ready by the time you read this review.

SAGE Pages

The Stylus RMX multipage interface is a model of efficient and intuitive design. Four main pages have controls to shape loops in different ways. The Edit page has assorted synthesis options (see **Fig. 1**); Chaos Designer creates and controls rhythmic, reverse-play, temporal, pitch, and dynamic variations; and FX hosts the plug-in's built-in DSP. The Mixer page lets you balance the parts, assign outputs, and control auxiliary effects. Each of the eight parts has its own Edit, Chaos, and FX pages.

Every page of every part shares the Footer area, whose parameters are common to all. Two rows of eight buttons appear at the bottom of the Footer—one is used to select a part, and the other enables or defeats playback of individual parts. Four larger buttons call up the Edit, Chaos, FX, and Mixer pages. In the Footer, you are never more than a click away from any page or part.

The Footer contains a stereo level meter and a Master fader that governs the plug-in's overall level. Master Start and Stop buttons control playback with or without benefit of the host. An informational display lets you monitor parameter values, the amount of RAM occupied by the loops, received MIDI Control Change messages, and more. Other options in the Footer govern each part's response to MIDI data, and a Utility menu offers additional program options such as copying and pasting parameters or assigning MIDI Control Change messages.

FIG. 2: The browser window is instantly accessible from any other page and lets you audition loops on the fly. Note the drag-and-drop MIDI file area and buttons that let you double or halve the speed of the loop.

FIG. 3: Chaos Designer uses probability to animate loops in numerous ways. You can add probability to pitch, dynamics, placement in a groove, and more.

To access core-, user-, or expansion-library sounds, click on the loop title or any folder icon (see **Fig. 2**). The browser offers more features than its name implies. Here you select Suites, which are collections of related grooves, and Elements, which are grooves that make up a Suite. Clicking on any Element engages its playback, and you can combine Elements from any Suites that you choose. The Speed section lets you multiply or divide any part's playback speed by two—because the grooves are sliced, there are no inherent time-stretching artifacts.

The MIDI File section holds the data that triggers individual loop slices, and you can easily edit that data by dragging-and-dropping it into one of your host's MIDI tracks (that process is unidirectional). The Settings button lets you audition and apply current synthesis, Chaos, and effects edits to a loop. From the Favorites section, you can create, edit, or jump to a list of frequently used grooves.

Grille of My Dreams

A click on the grille in the Edit, Chaos, or FX page opens the Edit Group section, which contains the program's most powerful features. An Edit Group is a user-definable loop region, which can be an entire groove, an individual slice, all upbeats or downbeats, or events landing on any rhythmic subdivision as high as a 96th note. CPU willing, every Edit Group can have its own synthesis, Chaos, effects, and other settings. On a single stereo loop, for example, you could apply reverb to snare hits on beats two and four, lower the cutoff frequency and raise the resonance of kicks on downbeats, add Chaos and synchronized-LFO panning to hi-hats, or reverse tom hits.

The upper Edit Group window offers access to Groups created from the Assign menu. Using utilities embedded in the Assign menu, you can create an Edit Group for every groove contained in a Suite and for each slice in an Element. You can also clear an Element from a Group. Individual Edit Groups can be toggled on or off or soloed or muted, and you can assign a Group to any of eight stereo outputs if your host supports that number.

The Edit page (as opposed to an Edit Group) hosts RMX's subtractive-synthesis engine (see Fig. 1).

Horizontal faders at the far left have controls for level and Pan Position. To the right are buttons for setting Amp, Filter, and Pan LFOs. You can control rate and depth for each LFO, and choose sine, triangle, square, pulse wave, up or down sawtooth, or sample-and-hold shapes. LFOs can run free or sync to your host's tempo, making bpm-based pan, filter, and tremolo effects a simple task.

The Power Filter section offers a choice of lowpass, bandpass, and highpass filters and a button that switches from a 12- to 24 dB slope. Along with cutoff frequency and resonance faders are controls for Width, which fine-tunes the filter's slope; Drive, for adding grit; and a Gain fader, for adjusting the filter's output.

To conserve CPU cycles, use the Master filter. Setting its Tone slider before the center notch engages a 2-pole lowpass filter, which becomes a highpass filter when moved right of center. AHDR envelope generators offer independent control of Amp, Filter, and Pitch. You can adjust each envelope's Velocity modulation and envelope depth. Small blue lights indicate when LFO- or envelope-depth parameters are active—clicking on them inverts the modulation value. At the far right, a button reverses loop playback, and a slider changes sample start time. Changing the sample start time affects individual slices and radically alters their timbres (see **Web Clip 1**).

To simplify editing, an Easy button pares the Edit page down to four faders, two knobs, and two switches, with Level and Pan faders on the right and the Master Filter's tone control and emphasis fader on the left. The left-hand knob controls pitch, and moving the switch to the right changes the knob's resolution to fine tuning in one-cent increments. To its right, another knob controls the Amp envelope, and its switch toggles decay and release parameters.

Controlled Chaos

The plug-in's centerpiece is Chaos Designer, which uses probability to affect loop variations (see **Fig. 3**). In nearly every instance, Chaos Designer produced surprising and

A SOUND INVESTMENT

Although my preference is for more traditional, acoustic-sounding loops (I'm not fond of overly distorted percussion or vinyl noise), the RMX grooves won me over. In most cases, the feels are interesting enough to override my concerns about the processing. Quite often, distorted loops blend in gracefully when integrated into some of the Multis.

A few of my favorite loops include Datalife Combo, which comprises traditional drum-kit and percussion sounds passed through a battery of filter, chorus, and other modulation-delay effects. Perilous Vocal Slicer uses processed voices and can demonstrate Chaos Designer's effect on melodic content. Valium Vinyl is a Multi that combines a couple of full-kit loops with congas and rhythmic noises into a relaxed, shuffling juggernaut. Ritualistic artfully combines a couple of hip-hop loops with a sustained, percussive drone and a rhythmic figure played on berimbau.

Notwithstanding some great hand-percussion elements, there are few natural and unprocessed-sounding loops in the Stylus RMX core library. Fortunately, Spectrasonics is supporting RMX with a series of SAGE Xpander sound libraries ($99 each).

I auditioned four titles: *BackBeat*, *Liquid Grooves*, *Metamorphosis*, and *Retro Funk*. A fifth collection, *Burning Grooves*, should be available by the time you read this. Ilio announced the release of several RMX-ready Sage Xpander collections: *Stark Raving Beats*, *Ethno Techno*, *Skippy's Big Bad Beats*, and *Skippy's Noizebox*.

BackBeat grooves have noticeable degrees of ambience, EQ, reverb, and dynamics processing and a focus on rock and pop; many loops, however, also work for funk, fusion, or smooth jazz. One-shot samples of cymbals and side sticks help to punctuate grooves and add interest. Despite its title, *Retro Funk* covers a multitude of genres. The focus is on acoustic drum kits that emphasize a vintage analog sound. The set adds a good selection of hand-percussion loops, including congas, bongos, shakers, and tambourines. *BackBeat* and *Retro Funk* are ideally suited for RMX Groove Menu song-construction techniques. Each Suite lays out basic grooves, fill bars, and isolated fills that you can lay end-to-end for a complete song form.

Drum kits mingle with Korg Wavedrum, slit drums, tablas, congas, and other ethnic percussion in *Liquid Grooves*, a globe-spanning collection suitable for film scoring, world music, and anything else that can benefit from an eclectic flavor. The set favors a layering approach with full mixes, remixes, and individual-instrument loops that you can add or subtract to vary the rhythmic intensity.

Metamorphosis throws in the kitchen sink with drum kits, synthesis from hardware and software sources, drum machines, ethnic percussion, and more. Extensively processed grooves create unique sounds and rhythms suitable for remixes, space funk, ambient music, film scoring, and the adventurous at heart in general. The Suites and Elements are gathered by bpm, with completely different elements under one Suite rather than the song-construction arrays of the previous three sound sets.

All four of those products combine their loops into rich, complex Multi presets that integrate Elements from the Core library and a bonus set of grooves culled from other titles, including *Bizarre Guitar*, *Distorted Reality*, and *Vocal Planet*.

useful results. Using it with Edit Groups, wherein you can select which loop regions should be altered and which remain unchanged, was particularly effective.

Chaos Designer's Pattern feature controls the probability of slices being moved to different locations in the groove. Small amounts of that parameter produce tasteful results, leaving the groove uninterrupted except for occasional variations. Full-bore Chaos applied to the Pattern parameter can turn simple grooves into busy Tower of Power-style syncopations. Reshuffling worked especially well with arpeggiator patterns, rhythm-guitar loops, and other melodic motifs (see **Web Clip 2**). The Repeat function controls the likelihood that a variation will recur, and Reverse regulates the chance that a slice will play in reverse. Because changes in the sound's envelope may not always suit the groove, Reverse works best in small doses. If needed, you can tweak reversed samples using the Edit page's Sample Start parameter.

The Timing section controls the probability that a slice will enter early or late and adds even more flexibility with its two knobs. Rush/Drag increases the chances that a hit will rush or drag, and Range governs the amount. Using those controls, you can change a groove's feel from rushed and edgy to relaxed or downright sloppy. To further alter the feel of a groove, you can edit its associated MIDI file within your host.

FIG. 4: The Insert rack is one of the many racks of effects in Stylus RMX. Four Aux racks and a Master rack each hold three effects. You can assign different effects for each Edit Group in the Insert effects and place effects in any order.

The Pitch section sports a slider for probability, a knob for the likelihood of upward or downward pitch change, and another knob to set the range of allowable pitches. Narrow settings effectively simulate the natural pitch changes that occur in drums and percussion. With probability and range set high, Pitch creates wonderfully twisted grooves, especially with cymbals and hand percussion. Note that Chaos parameters for pitch trigger discrete pitches as opposed to continuous Pitch Bend effects.

You can weigh the chances that an Edit Group will play louder or softer with the Dynamics fader—a knob to its right skews the odds in either direction. Finally, the Range knob compresses or expands the amount of modulation. At its loudest, the settings are conservative and protective of your speakers and tympanic membranes. At the low-amplitude end, slices can duck into silence, creating rhythmically interesting space in otherwise relentless grooves.

If you like what Chaos Designer is doing, click on the Capture button at the conclusion of the number of bars you want to retain, and you'll generate a new MIDI file that you can drag directly to a host track. Then, disable the Master playback and Chaos buttons, and the track will trigger RMX exactly as recorded. If you want to preserve the groove's MIDI data for use elsewhere, use Export to save it as a Standard MIDI File.

Most Effective

RMX's FX page supplies a rack of three insert effects for each of the eight parts (see **Fig. 4**). In addition, the eight parts can share four racks of auxiliary effects and a Master rack of effects, all of which offer three effects per rack.

Dynamics processors include compressors, limiters, a tape-saturation simulator, and an expander/gate. EQs are graphic and parametric and offer a couple of vintage models. The filter-based effects offer a wah-wah that is controllable with an envelope follower or a synchronizable LFO, a multimode version of the Power Filter, and a valve-radio simulator. There are four delays, including the Radio Delay, which combines independent left and right delays, a multimode filter, and a defeatable feedback loop. Other effects are an analog tape-echo simulator, a pair of phase shifters, a flanger, distortion, and three reverbs (including spring).

Version 1.2 adds several new processors. The update supports presets, which can have single FX or FX racks, and a nice assortment of factory patches are supplied with the installer. Effects are high quality, with buttery-sounding filters and smooth reverb tails.

PRODUCT SUMMARY

SPECTRASONICS Stylus RMX 1.2.1

real-time groove module

$299

OVERALL RATING [1 THROUGH 5]: **4.5**

PROS: Extremely intuitive user interface. Chaos Designer creates musical, animated content from static loops. Great-sounding effects with flexible routing. Edit Groups let you customize synthesis, Chaos, and effects for every slice. All edits are available during playback.

CONS: No owner's manual.

MANUFACTURER
Spectrasonics
www.spectrasonics.net

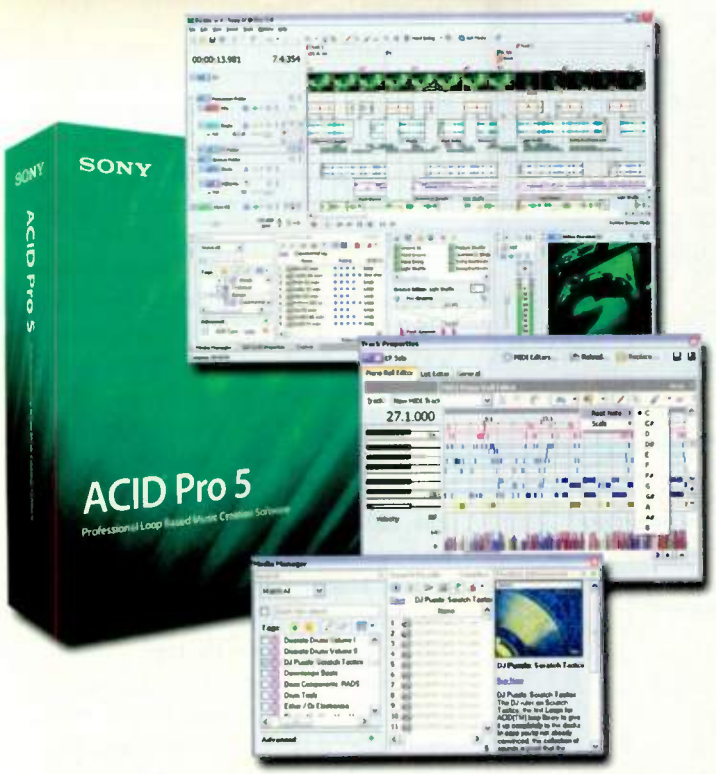
Create.

Finding that precise musical nuance to evoke your mood.
Nailing the exact phrase that gives voice to your feelings.
Searching for a tone that expresses your vision.
That's the creative process. And it doesn't come easy.

At Musician's Friend we have the tools to fuel your creativity. Our enormous selection of instruments, recording gear, software, and other music tools offers the building blocks to bring your musical inspirations into reality.

Visit us online to discover over 30,000 creative tools at the lowest prices anyplace, guaranteed. You'll also find countless product reviews, tips, articles, and fun stuff. Call us to receive our catalogs brimming with the gear to give voice to your ideas.

Find out what millions of musicians already know–when that moment of inspiration arrives, we're here with the tools to help you give it full expression.



You supply the inspiration. We'll supply the gear.

Musician's Friend
The World's Largest Music Gear Company

For Your FREE Catalogs
800-436-6976 • musiciansfriend.com/free
Source Code: EMEE

- Lowest Price Guarantee • Satisfaction Guarantee
- Free Shipping on Most Orders Over $199* • Call or Click 24/7
- Huge Inventory of In-Stock Gear Ready for Immediate Delivery

Limited to stock on hand; prices subject to change; standard catalog shipping rates apply.
*Some exceptions apply, call or go online for details; limited time only.

Mixing It Up

On the Mix page, you'll find all eight parts arranged vertically and controls for level, pan, and auxiliary effects-sends. The vertical orientation may briefly confuse those accustomed to a horizontal array, but it reinforces the concept of layering loops, and the controls are easy to grasp. At the top of the page are buttons for switching between Multi and Kit modes, and other controls let you mute or solo parts and assign them to your host's available outputs.

You can use RMX in Multi mode to pepper grooves with any of the thousands of single-instrument hits, but Kit mode changes RMX to a full-bore, eight-part drum-kit sound module. Drum kits adhere to General MIDI applications, but don't let that dampen your enthusiasm: the sounds are a diverse bag, encompassing roughly 10,000 single-instrument hits imbued with compression, filtering, vinyl simulation, distortion, and other processing. You can audition and exchange similar kit components in real time, without a hiccup in the groove. Kits can receive data on MIDI Channel 1 or 10, or you can play each Element over channels 1 through 8, keeping each on its own data stream. All of the FX- and Edit-page parameters can impact Kit components, and components also respond to the Chaos Designer's Reverse Dynamics, and Pitch functions.

Grooves at Work

Stylus RMX offers two modes for working with the MIDI files that control a groove: Slice Menu and Groove Menu. In Slice Menu mode, the MIDI file triggers each of the slices that comprise the groove in sequence. That allows the slices to be quantized, reordered, or otherwise manipulated directly in the host.

In Groove Menu mode, a single MIDI note triggers an entire groove. That mode facilitates polyphonic layering of loops and lets you start with a simple pattern, then change the groove's intensity by adding or subtracting loops while controlling Velocity.

Adjusting the plug-in's parameters from an external controller is easy: select MIDI Learn from the Utility menu, twiddle a hardware knob, move an RMX parameter, and it's under external control. (RMX lets you assign independent positive and negative modulation to the same knob or slider.) When I experimented with this feature, RMX responded smoothly, producing no zipper effects or discontinuities in the groove. Modulating Chaos parameters in real time produced sonic variations ranging from subtle to over the top.

Like other loop-oriented plug-ins, Stylus RMX locks to your host's tempo but doesn't respond to MIDI Start, Stop, Continue, or Song Pointer messages. Expanded System Real-Time capabilities would provide a powerful bridge between the plug-in's unique, on-the-fly editing features and the general stop-and-go nature of sequencing. Version 1.2 partially alleviates that limitation by adding MIDI Learn functionality to the Master Start and Stop buttons. That

offers the added benefit of letting you start and stop playback at any point in a song.

SAGE Advice

RMX's documentation consists of an installation guide and the tutorial CD-ROM. Registered users can access a PDF index of the video-tutorial topics, host-specific instructions, supplementary QuickTime tutorials, an FAQ section, and links to User groups from the Spectrasonics Web site. The QuickTime tutorials are a terrific illustrative resource, but there are gaps. Spectrasonics claims that a built-in reference guide will be available by the time you read this.

It will be a long time before you exhaust the Core Library's possibilities. In case you do, or if you wish to add more acoustic-sounding loops, Spectrasonics bundles the SAGE Converter, a miniapplication that can quickly adapt REX, REX2, and RCY files to SAGE format. In conjunction with Propellerhead Recycle, any sample is fair game, effectively making the Stylus RMX library open ended. The application can also convert some Akai and Roland Groove Control libraries. Most often, the conversion worked beautifully, although occasionally some sounds would play back with a stutter or unnaturally truncated slices. In every instance, that was the fault of poorly prepared third-party REX files (garbage in, garbage out).

Stylus RMX is a terrific multifaceted tool for sculpting unique grooves and brings a hefty quotient of fun and ease to the process. Chaos Designer in conjunction with the built-in effects, Edit Groups, and an uncomplicated MIDI control setup, bring extraordinary depths of animation and precision (see **Web Clip 3**). The elegantly designed user interface greatly simplifies potentially complex tasks.

Without a doubt, Stylus users should move up to RMX for $99. I also enthusiastically suggest that anyone else interested in groove construction give Stylus RMX a long, serious look.

EM WEB CLIPS

Marty Cutler teaches MIDI classes at Touro College in New York City, and freelances as a sound designer, MIDI consultant, and bluegrass banjo player. You can contact him at martycutler@mac.com.

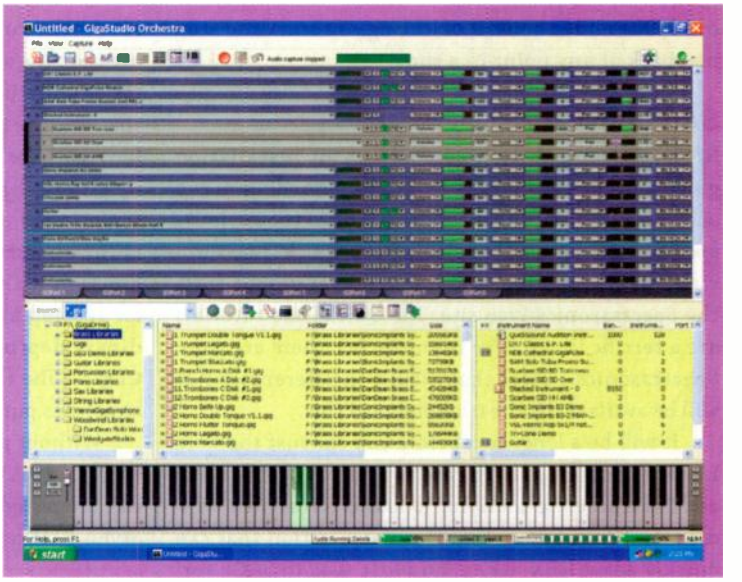


FIG. 1: On startup, GigaStudio's improved user interface displays the new MIDI Mixer (top), QuickSound area (center), and Keyboard (bottom). In this example, a stacked instrument appears in slot 4.

TASCAM GigaStudio 3 Orchestra (Win)

The sky's the limit with Tascam's latest software sampler.

By David Rubin

When GigaStudio debuted in the late '90s as GigaSampler, it soon spawned a plethora of gigantic multidisc sample libraries. Unfettered by the RAM restrictions of hardware samplers, developers began churning out stunningly realistic instruments for the disk-streaming software sampler and quickly established it as the new 600-pound gorilla in the world of sampling.

Nevertheless, GigaStudio was not without its shortcomings. Its user interface was often frustrating, the program supported only its own plug-in format, and various technical limitations forced developers to employ workarounds for complex instruments. Moreover, GigaStudio was more of a sample-playback instrument than a true sampler, because you couldn't actually record directly into the program. Standalone and plug-in programs from several other companies began to offer stiff competition to GigaStudio, and the sire of software sampling started to look a little long in the tooth.

> With a high-end Pentium 4, you can reasonably expect to get hundreds of notes of polyphony.

Finally, after what seemed like an interminable wait, the much-anticipated GigaStudio 3 (GS3) has arrived, and it's a doozy. Tascam has listened to its hardcore users and introduced an extensive redesign and expansion of the program. GS3 supports direct sampling; 24-bit, 96 kHz audio; VST plug-ins; and ReWire connectivity. What's more, the user interface has been vastly improved, and the program now boasts a number of sophisticated new features. In fact, thanks to its Audio Capture tool (which renders performances to disk), and other features that I'll discuss shortly, GS3 has blurred the line between sampler and digital-audio workstation.

For this review, I'll cover Tascam's top-of-the-line GigaStudio 3 Orchestra version, but keep in mind that two entry-level versions—GigaStudio 3 Ensemble and GigaStudio 3 Solo—are also available. (These versions lack several high-end features; see **Web Clip 1.**) It's also important to note that all of the GigaStudio versions

A DIFFERENT KIND OF DESK JOB

training for a career in the audio industry

Individual Lab Time
Hands-on Training
Over 40 Schools Worldwide
Full and Part Time Courses
Financial Assistance for Those Who Qualify
Job Placement Assistance for All Graduates

OPEN HOUSE

May 14th: Los Angeles, Miami, Nashville
May 15th: New York City

SAE INSTITUTE

New York City
1293 Broadway, 9th Floor
New York, NY 10001
212-944-9121

Los Angeles
6565 Sunset Blvd., Suite 100
Los Angeles, CA 90028
323-466-6323

Miami
16051 West Dixie Highway
Suite 200
North Miami Beach, FL 33160
305-944-7494

NashvilleΔ
7 Music Circle North
Nashville, TN 37203
615-244-5848

1-877-27-AUDIO • www.sae.edu

Δ accredited by ACCSCT, federal financial aid for those who qualify

support only Windows XP with Service Pack 1. As of this writing, Tascam does not recommend using GigaStudio 3 Orchestra with any other version of Windows.

Interface Remodeling

GS3's new user interface preserves many familiar elements and also introduces several important renovations. Longtime GigaStudio users should feel right at home with the program's three-part opening screen (see Fig. 1). At the top, the MIDI Mixer provides 16 slots for loading instruments into the corresponding MIDI channels. The eight Port tabs let you switch to additional groups of 16 for a total of 128 possible instruments loaded at once.

In the center section, the QuickSound area presents hierarchical drive/folder/file displays along with keyword and file-name search capabilities. You can load any instrument by simply dragging it into any MIDI Mixer slot. Or you can select a slot and double-click on an instrument in the QuickSound display to load it.

At the bottom of the screen, the Keyboard shows the selected Instrument's range in white keys and enables you to trigger notes by clicking on the onscreen keys. A slider on the left lets you specify a Velocity level for mouse-clicked keys, or with the Auto function active, you can change the Velocity on the fly based on where you click on the keys from front to back.

FIG. 3: GS3's revamped DSP Station functions like a mixing board with mute and solo buttons, faders, inserts, and level meters.

FIG. 2: The four-part QuickEdit window allows you to make a number of nondestructive changes that affect how an instrument sounds and responds.

GigaStudio's innovative keyswitching function is still available. It lets you switch in real time from one sample layer to another by playing specially programmed keys (they're now labeled and tinted green on the Keyboard) that are outside of the instrument's playing range. While performing with a multilayer violin patch, for example, keyswitching could let you quickly change from pizzicato to spiccato to tremolo without breaking your stride. Brass and woodwind libraries often use keyswitching to change from legato to staccato.

One of the things that I found most annoying about the old GigaStudio was that its confined user interface left me continually adjusting borders between sections in an effort to see what I needed to see. Fortunately, those problems have been largely banished from the current version, which offers substantially more flexibility in juggling various parts of the program.

For starters, the QuickSound and Keyboard sections can now be undocked and converted into separate, floating, resizable windows. Toolbar buttons let you instantly toggle any of the components on and off. That is especially great news for dual-monitor users, because they can drag windows onto a second monitor to spread things out. For example, you could drag the QuickSound window onto its own monitor and fill the screen with library listings and subdirectories for some really serious browsing.

Dedicated QuickSound toolbar buttons let you show or hide the window's three panes, which now include the Loaded Instruments list (a separate tab in the old GigaStudio). A handy Maximize button lets you temporarily expand the QuickSound window to full-screen size if you don't have the luxury of a second monitor.

More MIDI

Although its essential functions remain mostly the same, the MIDI Mixer has undergone substantial plastic surgery, and in the process, it has acquired considerable new powers. The 16 Instrument (channel) slots for each Port are now arranged in a single vertical column with

enough width to accommodate long preset names. Each instrument's parameters—such as mute, solo, volume, fine-tuning, panning, and output channels—are aligned in a single strip next to the Instrument slot. The Volume, Tune, and Pan controls have small horizontal sliders for making adjustments. Each control also supplies a tiny button that opens a large pop-up menu for reassigning the slider to other MIDI controller messages.

The new MIDI Mixer has a cleaner, more efficient design that makes it easier to correlate parameters with instruments. But the really big news is not immediately obvious: GigaStudio now lets you load more than one patch per MIDI channel for creating layered instruments. A button in the QuickSound window activates GigaStudio's new Stack Mode, which allows you to drag as many instruments as you want into any of the Instrument slots.

Each time you drag in a new instrument (or load one by double-clicking on it), the main channel slot expands downward, creating gray-colored subchannel slots to accommodate the added instruments. The original slot then becomes the master slot, and its parameter sliders control the layered sound as a whole. Each of the instrument layers has a complete set of its own sliders, which can be independently assigned as needed. You can mute and solo individual layers as well as the entire instrument. If you start running out of space, you can hide the subchannels by clicking on a button in the Master channel slot.

When I stated earlier that the new MIDI Mixer with its eight Ports could handle up to 128 instruments, that wasn't strictly accurate. With Stack Mode activated, the number could be in the hundreds, depending on your CPU's capabilities and your available resources. Stack Mode makes it easy to create (and keep track of) layered drum sounds, solo woodwind ensembles, doubled string sections, and many complex instruments. That is a major improvement to the program, and it has been implemented especially well.

To create layered sounds in GigaStudio 160 (without actually merging the sounds beforehand), you had to assign different instruments to the same MIDI channel on different Ports and then link the Ports so they would play together. That option is still available in the new GigaStudio, albeit with twice the number of Ports. By linking Ports and stacking instruments, you can create some monstrously convoluted setups with enough controls to keep you busy for days fine-tuning the mix. When you arrive at the perfect combination, you can save the whole extravaganza as a Performance file for instant recall in the future.

GigaStudio has always had the ability to save an entire environment as a GigaStudio Performance (GSP) file. But now the program offers another powerful option: the Instrument Performance (GSI) file. Instead of capturing the entire GigaStudio setup, GSI files apply only to individual instruments. That includes instrument layer combinations, controller assignments and settings, embedded plug-in effects, and so forth.

GSI files add an unprecedented level of flexibility to the program because you can save elaborate instrument configurations and combine them however you want in new GigaStudio setups. For example, if you create a favorite layered drum sound with the individual layers volume-adjusted and panned to various positions, you can now instantly load that instrument to any MIDI channel in any GigaStudio setup that you want. You can even combine multiple GSI files into a larger setup and save the whole shebang as a GSP file without losing the original GSI capabilities.

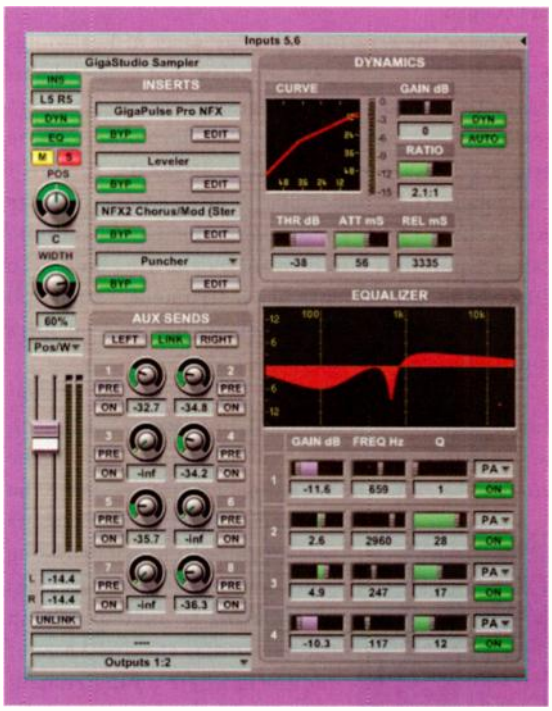


FIG. 4: Changing a channel strip to Wide View mode reveals a full set of dynamics and EQ controls with graphic displays.

Quick Access

Another major MIDI Mixer enhancement is lurking just beneath the surface. Clicking the green Q button in any selected instrument opens the new QuickEdit utility (see Fig. 2). The four-part QuickEdit window provides direct access to an assortment of parameter controls that affect how an instrument sounds and responds when played.

Click on a key in the dedicated Keyboard section, and the corresponding sample appears in the waveform display above. (Surprisingly, you can zoom in way past the single-cycle level, even for the top note of a piccolo!) Color-coded envelope, filter, and LFO curves with grab handles are superimposed on the waveform,

and you can adjust them by dragging with the mouse or by turning the virtual knobs in the Articulation section at the top of the window. (You can't, however, enter values directly into the display fields.)

The Articulation section comes fully stocked with sound-shaping tools, including global volume (attenuation), panning, and fine tuning; amplitude, filter, and pitch envelopes (AHDSR style with adjustable preattack level); a MIDI-controlled filter (lowpass, highpass, bandpass, or band reject) with a graphic display; and an LFO section with separate sets of frequency and depth controls for amplitude, filter, and pitch. GigaStudio also allows internal as well as external control over the LFO depth.

Above the waveform display, a set of horizontal bar-graph indicators lets you view and make adjustments to an instrument's programmed control sources (called Dimensions) such as Velocity splits, release triggers, keyswitch and pedal assignments, and MIDI controllers. GigaStudio 160 was often hampered by its paltry 32 available Dimensions. The new GigaStudio takes a quantum leap forward by allowing up to 256 Dimension assignments per instrument, which will no doubt make a number of sample-library developers much happier.

GS3's new QuickEdit utility should not be confused with the original built-in Instrument Editor, which still exists (with some improvements) in the current version. The Instrument Editor is where the various samples and controllers are organized and mapped along with specific parameter settings that define an instrument. In other words, the Instrument Editor is where an instrument is created (and altered), and the results are permanently saved as a GIG file.

The real-time changes made in the QuickEdit window, on the other hand, are totally nondestructive and are saved as part of a GSP or GSI file. QuickEdit adds an adjustment overlay that doesn't change the original GIG file and is readily available for modification. And you can have a QuickEdit window open for every instrument in the current session, including the individual patches in a stacked instrument.

PRODUCT SUMMARY

TASCAM GigaStudio 3 Orchestra

software sampler
$ 599

OVERALL RATING [1 THROUGH 5]: 4.5

PROS: Improved user interface. Flexible layering capability. Unlimited polyphony. Support for 24-bit, 96 kHz audio. Direct sample recording. Support for VST plug-ins and ReWire. Powerful real-time editing of patches. Built-in convolution-based reverb. Expanded mixer. Intelligent MIDI utility. Bundled collection of sampled instruments.

CONS: Supports only Windows XP with Service Pack 1. Cannot import most other sampler formats.

MANUFACTURER
Tascam
www.tascamgiga.com

Busy Station

Another part of GigaStudio that has been dramatically revamped is the DSP Station (see Fig. 3).

FIG. 5: The powerful new GigaPulse Pro brings convolution-based reverb to GigaStudio 3. In the Placement grid, you can configure from one to seven mic positions with various impulse-response placements.

It's the clearinghouse for all of the sampler's elaborate mixing, processing, and routing capabilities. With the default setup, you can toggle between the MIDI Mixer and the DSP Station by clicking on a button in the toolbar. You can also undock the DSP Station and make it a resizable floating window.

As with the previous version, the current DSP Station is designed to mimic a hardware mixing board replete with mute and solo buttons, faders, inserts, and level meters. The default setup supplies 16 stereo channel strips with linked faders, but you can unlink any of the faders to adjust the left and right channels separately, and you can display fewer channel strips if you want.

Compared with its predecessor, the new DSP Station has been greatly improved and sports a more refined look and feel with additional controls. For example, each channel strip now has a Position and Width knob for changing the perceived stereo spread of an instrument and for repositioning it within the mix. (Mono samples get standard pan controls.)

As with the new MIDI Mixer, the DSP Station has acquired several powerful features that lie just out of sight until needed. Clicking the tiny triangle at the top of any channel strip replaces the strip's default graphics with a large panel packed with knobs, sliders, graphs, and buttons (see Fig. 4).

This Wide View option includes the original channel-strip controls and adds an Insert section with slots for applying up to four stereo effects. An Aux Sends section lets you set up as many as eight pre- or post-fader aux busses per instrument. As with all of the controls in the DSP Station, right-clicking on an Aux Send level knob opens a MIDI Automation dialog box where you can assign an external MIDI controller for manual or automated control.

The Dynamics section adds a compressor/limiter to the channel strip. The Curve graph shows the gain response as you adjust the threshold, ratio, and output-gain controls. A 4-band equalizer with a graphic display lets you independently mix and match any of six types of EQ: parametric, notch, lowpass, highpass, low shelf, and high shelf.

The Wide View option can be applied to any or all of the channel strips, but because it takes up roughly the space of eight strips, it can easily make your DSP Station a bit unwieldy. Once you've set all of your controls, however, you can revert to Narrow View, where Insert, Dynamics, and EQ buttons let you turn those effects off and on without changing views.

Aside from the Input tab, three other tabs at the bottom of the DSP Station window let you view dedicated faders and controls for adjusting groups, aux sends, and the output masters. These other displays have similar Wide and Narrow View options.

Spatial Delivery

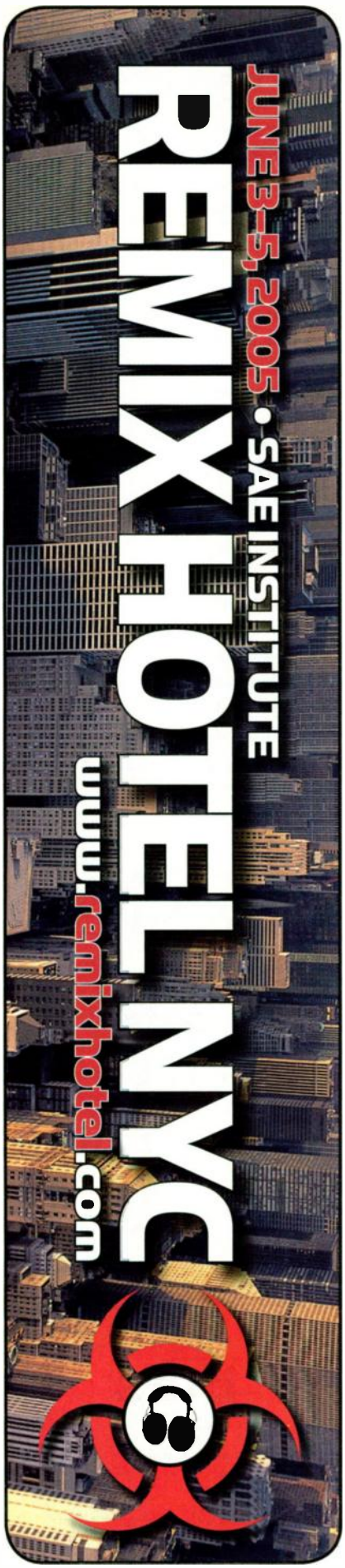
As I mentioned earlier, GigaStudio now supports VST plug-ins as well as its own NFX-format effects. GigaStudio 160 owners will be happy to learn that they don't have to abandon their old plug-in settings or Performances, because GS3 comes with the same Reverb, Chorus, Multi Tap Delay, and EQ Contour plug-ins as its predecessor.

The effects, which seem to have undergone only minor cosmetic changes, integrate very well with the program, delivering a tight performance and smooth response with little latency. The VST effects that I tried also worked fine, although I experienced noticeably more latency with those than with the NFX effects. As an added bonus, if you have a soundcard that supports GSIF-2, you can process the audio directly from any of the hardware inputs.

One of the things about GS3 Orchestra that has generated the most buzz in recent months is the addition of GigaPulse Pro, Tascam's new convolution-based reverb (see Fig. 5). GigaPulse Pro is an NFX plug-in that employs impulse-response recordings and microphone modeling to generate some pretty impressive reverb effects for stereo and surround-sound systems.

Much of the GigaPulse screen is devoted to a large Placement Selection display with an array of round and square buttons superimposed over a grid (for most studio spaces), a photo (for some interior spaces), or a front-panel graphic (for hardware emulation). For the acoustic spaces, the round buttons represent the microphone channels, and the square buttons represent different locations where the impulse responses were generated.

You can reconfigure the reverb's character and an instrument's placement in the sound field by clicking on a mic button and then selecting one of the numbered impulse-response placement buttons. Each time you



REV

select a new placement in the room, the photo in the Acoustic Space display on the left changes to show what the view in the studio is like from that position—a nice touch. In Multi-Select mode you can assign a different placement to each microphone in the array. The dots and squares become color-coded to show the mic-to-placement relationships.

To further refine your reverb configuration, you can use the Perspective sliders to simulate the effect of moving the sound source closer to or farther away from the mic. In essence, you can change the relationship between the direct signal versus the reverb without altering the phase alignment. This is in addition to the standard Wet/Dry slider.

Mode Matters

GigaPulse can run in one of two modes. Pure Mode relies entirely on convolution. It is very CPU intensive and is limited to impulse responses of no more than 3 seconds at 48 kHz (plenty of time for most types of reverb). Pure Mode delivers a great-sounding, pure-convolution reverb that may be required in some situations, but it doesn't make very efficient use of your computer's processing capabilities. That could cause performance problems with complex configurations.

Most presets, therefore, default to Turbo Mode, which uses convolution for the first 3 seconds of the reverb and then (after the sound has mostly faded away) blends the signal into a proprietary Tail Model algorithm that takes over for as long as necessary. Tascam developed the algorithm to maximize efficiency and extend reverb effects to 10 seconds and beyond. You can switch into Turbo Mode by clicking on the Enable button in the Tail Mode section, which also offers controls for fine-tuning the reverb-tail response.

Model Behavior

One of the most intriguing features in GigaPulse Pro is its microphone-modeling capability. In the lower right side of the window, two drop-down menus for each mic in the placement grid let you select from a long list of popular mic models, ranging from inexpensive and common to exotic and costly.

For many of the mic emulations, you can choose pickup patterns and roll-off settings. The SM-57 preset, for example, has options for flat and two different proximity effects. The U87 has options for omni, cardioid, and figure-eight patterns. The two menus are labeled Original and Replacement, and they have the same list of mic models.

The Original presets, however, are inverse impulse responses. In theory, you would use the Original presets to remove the character of the mic used for recording the sampled instrument, and then replace it with a different mic characteristic from the menu on the right.

Of course, this assumes that you either know or can deduce the type of mic used in the original recording. Barring that, you can still have a lot of fun trying out various combinations. And as you become familiar with the presets, you might even discover some practical uses for them. For example, in lieu of reaching for the EQ, you might try dropping in a replacement mic model to warm up a sample's high end in a more musical way. I found that many of the substitutions produced a rather subtle change in the sound, and it's hard to tell just how close to reality you can get with this part of the program. Nevertheless, if you like to experiment, this is an intriguing place to spend some time.

In the final analysis, how does GigaPulse sound? In a word: fantastic. The rich sense of ambience and spatial orientation is detailed and realistic. Long reverb tails diminish fluidly and cleanly down to zero without the harshness or muddled quality that the previous NFX Reverb sometimes exhibited. In short, this is a great reverb for all seasons, and

it should serve nicely as the primary processor for most projects. I only wish that the program had even more presets to choose from. (According to Tascam, a collection of new downloadable impulse response files is in the works.) Sample libraries (such as Larry Seyer's *Acoustic Drum Library*) are already being released with their own dedicated impulse responses to maximize the playback experience.

High Performance

In addition to GS3's support for 24-bit, 96 kHz sampling rates, the program now boasts unlimited polyphony. The polyphony is limited only by your CPU's horsepower and hard-drive speed. With a high-end Pentium 4 and a separate, fast drive for your samples, you can reasonably expect to get hundreds of notes of polyphony. (Tascam claims that many users have reported polyphony levels well beyond 400 notes.) That makes it feasible for the first time to assemble and play back large-scale orchestral arrangements on a single machine.

And speaking of orchestral arrangements, a feature that has become popular with several high-quality orchestral libraries has now been integrated into GigaStudio. The program's new Intelligent MIDI (iMIDI) utility enhances realism by applying performance-related algorithms (many of them based on the Vienna Symphonic Library Performance Tool) to specially programmed patches.

With iMIDI, you can filter MIDI data, create more-convincing legato lines, perform repetitions with changing samples, automatically alternate sounds (such as down-bow and up-bow), produce amplitude-matched release samples (for smoother and more realistic reverb tails), and apply various performance rules to incoming MIDI.

Tascam has also greatly improved GigaStudio's connectivity. Aside from its new support for VST plug-ins and its ability to convert Akai samples, the program now supports ReWire (slave mode) with as many as 64 channels. That makes it much easier to use GigaStudio on the same computer as your favorite sequencer or DAW. And if you drag a General MIDI file into the MIDI Mixer, GS3 can automatically load the appropriate instruments from a General MIDI library (such as Tascam's Conexant GM500). It can even launch your favorite sequencer for playback.

GigaStudio 3 makes it easy to import standard WAV files and map them across the keyboard, which makes it a viable tool for triggering Foley, sound effects, and music clips when working to picture. And GS3's new recording feature makes it a snap to record your own samples and assign them to keys and zones.

I found few things to complain about in GS3 Orchestra. The program's exclusive support for Windows XP (SP1) could be a problem for some users, and the 300-page manual is poorly edited and incomplete in some areas. The Instrument Editor window might also benefit from the kind of face-lift that the rest of the program has received, and I still wish that GigaStudio could import additional sampler formats. However, none of these complaints is of the make-or-break variety. On the plus side, GS3 Orchestra comes with a generous collection of instruments from various sample libraries (see Web Clip 2 for a description).

All in all, GigaStudio 3 Orchestra is an impressive package. Its high-end audio quality, flexible routing and processing capabilities, advanced performance features, sophisticated editing tools, powerful search functions, and streamlined user interface make it once again the indisputable gold standard in software samplers. EM WEB CLIPS

Having successfully sampled the sound of one hand clapping, contributing editor David Rubin is now trying to figure out where to position it in the sound field of life.

Mbox

Digi 002 Rack

Digi 002

Take it from the top... again.

This song rules!

Sound Advice

When the band Run Don't Walk decided they were ready to move up to Pro Tools® to produce their album, they smartly chose the experts at Sweetwater to help guide their purchase decisions. They didn't know that all Pro Tools LE systems — Mbox,™ Digi 002,™ and Digi 002™ Rack — include over 30 free plug-ins and applications. Richard particularly looked forward to creating cool backing tracks with Reason Adapted, Live Digidesign Edition, and SampleTank 2 SE.

However, their friendly and informative Sweetwater Sales Engineer also told them that by investing just a little more money, they could upgrade to the Pro Tools LE Factory bundles — providing them with a plethora of additional plug-ins from Bomb Factory and Digidesign.® They jumped at the opportunity. Green loves how the BF-3A makes her vocals sound. Tiffany can't get enough of the Tel-Ray Variable Delay on her guitars. Run Don't Walk has never sounded better.

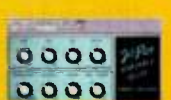


FIG. 1: Universal Audio's LA-610, a channel-strip unit, combines a 610 mic pre with a tube compressor, EQ controls, and multiple inputs.

UNIVERSAL AUDIO LA-610

A channel strip that is vintage quality.

By Myles Boisen

One company that's helping to keep tube technology alive is the reincarnated Universal Audio (UA), founded by the offspring of legendary engineer and original UA founder M. T. "Bill" Putnam Sr. One of UA's missions is to re-create products such as the Teletronix LA-2A tube compressor and Putnam designs such as the UREI 1176 solid-state compressor and the original Universal Audio 610 Tube Microphone Preamp.

The acclaimed 610 mic pre design has made its way into several of UA's reissued products, and now it has been combined with a tube compressor to form the LA-610 channel strip. Its leveling amplifier section offers the features of the pricey LA-2A, and with its EQ section, multiple inputs, and tube-based architecture, the LA-610 is a vintage-style console strip that you can tuck under one arm.

Modular Makeup

Although it is strictly a single-channel device, the LA-610 conforms to the layout of UA's 2-610 and 6176 two-channel processors. A pair of modules occupies the front panel of this 2-rackspace unit, with the preamp controls on the left (see Fig. 1). A five-position switch on the front panel's lower-left side determines the active input. The switch can be set to Mic (500Ω or 2kΩ), Line, or Hi-Z (47kΩ, or 2.2MΩ).

Above that control is the input-stage Gain knob, one of three gain controls on the LA-610. The input gain control can be adjusted in 5 dB increments (–10 to +10 dB). The large 1½-inch-diameter level knob in the center of the panel is a trim control that reduces the output of the LA-610's gain block before the signal reaches the compressor section. The level knob is encircled by calibration marks (not decibel measurements) ranging from 0 to 10.

In keeping with conventional gain staging practice, the cleanest preamp signal is achieved by setting the input gain as low as possible and keeping the level knob close to its maximum value. Keep this principle in mind when using the LA-610, because the preamp is always in the signal path, as is the compressor's makeup gain stage.

Between the two gain pots is a vertical row of three switches for –15 dB mic input pad, polarity reverse, and 48V phantom power. At the bottom of that row is a ¼-inch input jack for DI signals. High- and low shelving equalizers are on the right side of the module. Each shelf band has three switchable frequency settings: below 70, 100, and 200 Hz (low); and above 4.5, 7, and 10 kHz (high). Two EQ gain knobs provide a boost or cut in a range from –9 to +9 dB.

Welcome to LA

The compressor module of the LA-610 features the same simple leveling amplifier controls as those of the LA-2A and its solid-state offspring, the UREI LA-3A. One large knob governs peak reduction, and the other controls makeup gain. Behind both pots are indicators marked 0

to 10. A three-position mode switch offers a choice of compressor bypass (the makeup gain stage is always active), compression (lower ratio), and limiting (higher ratio).

Beyond those parameters, the characteristics of the LA-610's compressor are determined by the behavior of its T4 electro-optical sensing cell. That cell uses the light-sensing properties of a photoelectric cell paired with a luminescent panel to generate the compressor's control voltage. The T4, which is also the brain of the LA-2A and LA-3A, adds its own unique attack, release, and knee qualities to the compressor.

FIG. 2: The LA-610's rear panel has only +4 balanced XLR connections: one line output, one line input, and one mic input.

The three-position knob on the LA-610's compressor module selects the source for the meter on the faceplate's upper-right side. This meter can register the VU output of the preamp or compressor, or it can indicate gain reduction. The unit's AC power switch, purple jewel lamp, and logo reside below the meter, on the panel's lower-right corner.

Because any signal entering the LA-610 passes through the preamp and compression modules, the rear jack panel (see **Fig. 2**) contains only a mic input and +4 balanced line input and line output connectors (all XLR). There aren't any options for –10 dBV consumer-level operation, and inserts are not included.

A standard IEC power-cord connector and a fuse assembly are the only other rear-panel elements. The LA-610's housing is of sturdy all-metal construction and provides adequate venting for its five tubes (three 12AX7s, one 6072, and one 6AQ5).

Tube Testing

The two-channel UA 2-610 has been my favorite preamp for electric guitar since I reviewed it in the February 2002 issue of EM (available online at www.emusician.com). Detailed tests of the 610 module and comparisons with similar products can be found in that review.

The 610 preamp is tough to beat for adding harmonic richness, thickening the low end of the sonic spectrum, and subtly smoothing and compressing—all hallmarks of a quality tube sound. My main criticism of the 2-610 is its tendency to distort on high-gain mic input signals. UA addressed that problem on single-channel 610 versions by adding a -15 dB microphone input pad.

Because the preamp side of the LA-610 is implemented differently from the twin preamps of the 2-610, I wanted to compare the sound of both units. On a Fender bass (DI in, 47kΩ) the 2-610 had a rounder, mellower sound. The LA-610 brought more presence to the upper mids and was clearer as a result.

With a full-range mix applied to the line-level input, the 2-610 had more punch and depth in the low end, while the LA-610 favored upper-mid range elements such as tambourine and female vocals. I discovered later that this high-end emphasis—as mentioned in the LA-610 manual—is designed to compensate for treble attenuation within the T4 optical cell. Although the basic personalities of these two preamps are consistent, my ears told me that the 2-610 is richer and warmer overall, while the LA-610 exhibits more tube character and an upper-mid range edge.

In all trials I minimized excess coloration by keeping the final makeup gain at about 5.5, which is unity according to the onboard meter. Running the preamp at a lower level and taking care to keep the VU readings on the conservative side yielded

LA-610 SPECIFICATIONS

Analog Inputs	(1) balanced XLR (line); (1) balanced XLR (mic); (1) ¼" TS (instrument)
Analog Outputs	(1) balanced XLR (line)
Input Impedances	Mic, 500Ω or 2kΩ; balanced line, 20kΩ; Hi-Z, 2.2MΩ or 47kΩ
Maximum Microphone Input Level (at 2 kΩ, 15 dB Pad in)	+14 dBu
Maximum Output Level	+20 dBu
Frequency Response	20 Hz–20 kHz, ±0.5 dB
Maximum Gain	40 dB (Line), +77 dB (Mic)
Noise Floor (line in, unity gain)	–72 dBu, 20 Hz–20 kHz
Tubes	(3) 12AX7, (1) 6072, (1) 6AQ5
Power Requirements	115V, 230V operation
Dimensions	2U × 12"
Weight	12 lbs.

cleaner audio. The LA-610 should never run out of extra output gain, because the unit can boost line level signals by 40 dB and pump up mic levels by a whopping 77 dB.

The LA-610 got a thorough workout as the front end on a Pro Tools session by composer/multi-instrumentalist Fred Frith. The preamp imparted trademark tube tone to Kurzweil keyboard patches and was particularly creamy on slide guitar and rock chording. Frith's electric bass was rendered with especially rich overtones, drawing appreciative comments from the artist. Light peak compression applied to that DI bass part was transparent and clean, but the unit was prone to mild distortion and a thinning of the low end once constant gain reduction was applied.

I tried the Channel Strip again on sessions with several electric bassists (myself included), and the unit always required careful attention to gain staging and headroom. On the other hand, when a fellow engineer requested my help with a Digital Performer mix plagued by excessive mid range in the acoustic bass track, the UA made me look like a hero. Once levels and compression were set, this discerning client echoed a judgment I have made many times, remarking that the bass tone was better as soon as it passed through the 610.

Obstacle Course

During the course of a few months of sessions, the LA-610 proved its worth on a variety of instruments. It complimented ribbon mics beautifully at the 500Ω input setting, graced a sensitive jazz trumpet ballad, and deftly tamed an overly dynamic synth part. My studio partner Bart Thurber gave it the thumbs up for rock-guitar recording and confirmed that the LA-610 was a shade brighter in timbre than the 2-610. Both of us took a shine to the optical compressor for electric- and acoustic-guitar enhancement in mixing.

The LA-610 compressor stood up to the competition in a studio that included vintage UREI LA-series compressors and an LA-2A clone. With its multiple tube stages it can take some time to get the sonic seasoning just right, especially because the tubes do contribute their own compression flavor.

PRODUCT SUMMARY

UNIVERSAL AUDIO LA-610

tube channel strip
$1,749

OVERALL RATING [1 THROUGH 5]: 3.5

PROS: Vintage-reissue tube mic pre and tube compressor. Multiple-impedance mic input. Hi-Z DI input. VU meter. Significant tube coloration. Abundant output gain.

CONS: Mic pre and compressor cannot be accessed separately. Excessive input level, improper gain staging, or too much compression can cause distortion.

MANUFACTURER
Universal Audio
www.uaudio.com

In general, I preferred the LA-610's dynamic squeeze at moderate gain reduction settings which, given the unit's nonadjustable attack and release parameters, kept the compression effect smooth and transparent. On line-level input, steady gain reduction of 3 dB on the VU meter contributed overdrive grit, whether in the compress or limit mode. Switching between the bypass, compress, and limit modes produced no audible timbre change or switching noise in the audio.

With the 2-610, I have gotten some wonderfully rich results on vocals. On a few sessions with male singers using large-diaphragm tube mics, however, the LA-610 tube treatment turned to vintage vocal crunch. When partnered with a tubey Lawson L47MP or the low-coloration Blue Bottle, the LA-610 prompted comments such as "veiled," "slightly fuzzy," and "distorted, even with minimal compression." On a spoken-word session with female vocal talent using a solid-state Neumann U 87, the LA-610 delivered a pleasantly warm track.

On the Bright Side

With its combination of tube mic pre, DI, line-level input, 2-band EQ, and optical compressor, the LA-610 has the character and features to meet a broad range of studio needs. It does its job while providing vintage appeal, yet the sticker price is low for a channel strip with UA's handmade quality.

Even first-time tube-gear users will have no trouble hearing that the LA-610 is all about tube timbre. But no tube preamp or compressor is perfect for all applications. I still preferred the 2-610 for certain duties.

The addition of an input pad is a big improvement in terms of keeping microphone signals clean. During months of use, however, I learned to approach the LA-610 package with caution when setting gain and/or compression, especially with vocals, with widely dynamic sources, and when using it as a DI for electric bass. The compressor side worked best at low-impact settings and was particularly vulnerable to thinning or grittiness when pushed too hard.

With certain sources and microphones, the LA-610's sound is pure tube magic. Fortunately, the LA-610 incarnation of the 610 pre is still a knockout for electric guitar recording. I highly recommend the unit for use with solid-state condensers and ribbon mics. The LA-610 also makes a superb line amplifier capable of enhancing and gently compressing digitally recorded signals.

Myles Boisen can often be seen huddled over the warm glow of all-tube hardware during those long winters at Guerrilla Recording in Oakland, California.

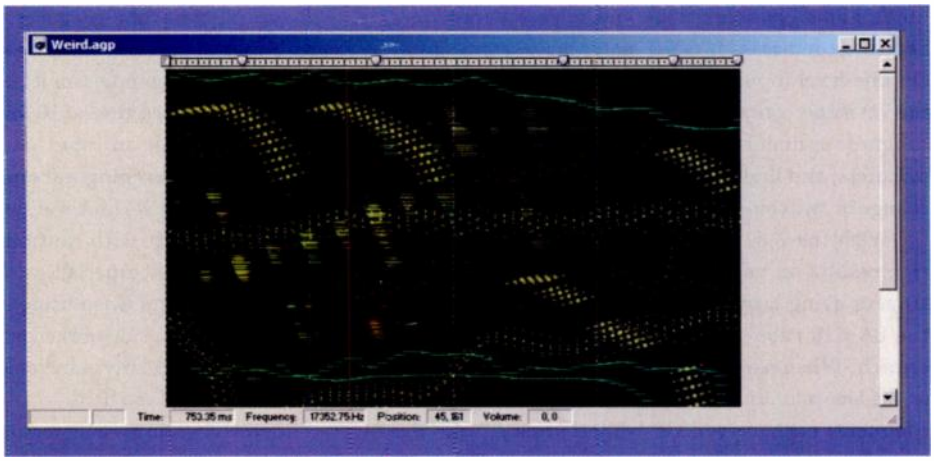


FIG. 1: Atmogen's project windows contain graphic images that control the generation of sound. Each row of pixels shows the frequency, amplitude, and stereo position of an individual oscillator.

SONOROUS CODES Atmogen 1.02 (Win)

Draw your way to fantastic new sounds.

By Dennis Miller

Sonorous Codes has brought MetaSynth-like capabilities to the Windows desktop with the release of its atmogen "visual additive synthesizer." The program gives you enormous sound-design potential, allowing you to use tools that are more closely associated with image editing in order to generate and process sound files.

Atmogen imports and exports bitmap and audio (WAV only) files. You can create an image from scratch using a large number of drawing tools. Individual pixels on the screen control the frequency, amplitude, and pan position of separate "global waveforms." By default, the global waveform is a sine wave, but you can make your own complex waveforms for that purpose using up to 32 harmonically related partials. Images can be up to 1,024 pixels in height, and there are numerous ways to change how the waveforms evolve over time—suffice it to say, there's a massive amount of pixel power here to manipulate.

Early Impressionisms

Atmogen is not a real-time instrument that responds to user input while it plays. Instead, you must render every new sound and all changes that you make before you'll hear anything. As a result, you need to have a very fast computer for working with the program. The manufacturer's minimum system requirements are Windows 2000 SP2 or Windows XP, a 1.4 GHz or faster processor, and 256 MB of RAM. You should also have a large hard drive, because you will generate lots of material in no time. You'll also need a free USB port for the copy-protection dongle.

I tested atmogen under Windows XP on a dual-processor Pentium 4/3.02 GHz with 2 GB of RAM and a single Pentium 4/2.2 GHz computer with 1 GB of RAM. There wasn't a single crash or any unexpected behavior during the test period.

Atmogen's interface combines one or more project windows and whichever Tool palettes you're currently displaying. The resizeable project windows contain the images that drive the oscillators which generate the waveforms (see **Fig. 1**). The program allows you to work on multiple projects at once, and you can freely copy and paste data from one project window to another. Though you can autoarrange or tile all open project windows, the Tool palettes can't be arranged automatically, and the screen can get cluttered quickly. There are, however, simple keyboard shortcuts to toggle the display of the Tool palettes.

Once you import a bitmap file, you can render it prior to any modification to hear what it sounds like. Atmogen uses the brightness of each pixel to control amplitude, color to control pan position (green is left, yellow is center, and red is right), and the vertical position of the pixel for frequency. The resolution of the

sound rendering is completely user adjustable. For example, an image can be "quantized" to produce just a few sine waves, or it can control up to 1,024 complex waveforms simultaneously.

When importing a WAV file, atmogen analyzes it based on analysis settings that you determine, and then displays a two-dimensional spectral plot ready for resynthesizing (see **Fig. 2**). You can improve the analysis by raising the FFT Length value, but that will add to the time the analysis takes. The other two settings are FFT Mode, which is the windowing type the analysis uses, and FFT Overlap, which determines how much the frequency ranges of the analysis bins overlap (see "Square One: Look Through Any Window" in the July 2004 EM for a good introduction to spectral analysis). The range of options, though limited, gives you enough flexibility to handle many types of audio.

Sounds can be as long as 60 seconds, and a project window can be as wide as 1,024 pixels. As a result, a very small window can represent a relatively long sound, and a very wide window can represent just a few seconds of time. In the latter case, you could draw a detailed curve or shape that lasts only a second, but then you could change the image's duration so that the sound it generated evolved over a 60-second time frame (see **Web Clip 1**). This capability, which is reminiscent of Xenakis's UPIC system, is quite powerful and can result in endless variations on the same basic material.

Magic Markers

One of the keys to creating unique sounds is atmogen's Markers feature. Markers, like keyframes in a video editor, define settings for specific points in the project; they are assigned to a project by clicking along the timeline that appears at top of the project window. Atmogen interpolates between those settings, insuring smooth transitions from one segment of the project to another.

Markers determine the frequencies of the oscillators that are used to render an image into sound. Clicking on the timeline brings up a screen that contains a frequency table. This table has the same number of entries as the number of vertical lines (up to 1,024) in your project, and has a variety of controls that affect the frequency values in the table (see **Fig. 3**). If you have the time, you can alter the default values (an exponential distribution from 20 Hz to 20 kHz) individually, but no doubt you'll prefer to use some of the table modifiers that atmogen provides.

Among the available tools for altering a table are Randomize, which offsets values by as many as 96 and one-half (50 cents) semitones, and Harmonize, which converts all the table entries to frequencies that are harmonic to a user-defined fundamental. Harmonizer will generate frequencies as high as only 22.05 kHz, so if you type in 1,000 Hz as the base frequency and you have, say, 200 frequencies, each harmonic frequency (1,000 Hz, 2,000 Hz, 3,000 Hz, and so on) up to the limit will be repeated multiple times.

In addition to altering the Frequency Table, Markers have another powerful feature: they let you set the duration of project segments, and can force the program to play through individual segments (or the entire project) in a nonlinear fashion. For example, if you enter a positive number in the Segment Acceleration field, playback will accelerate from one segment to the next. If you enter a negative number, playback slows down. Using this option changes just the individual segment you're editing, and not the total duration of the segment or of the entire project.

Some changes you make in one Marker can be applied to all Markers. For example, you can change the duration of all Markers simultaneously by specifying a duration in any open Marker and enabling the Imply All Markers setting. But you can't assign a set of random frequencies created in the Frequency Table to the table in other Markers. To do so, you'd have to save the Table to disk, then reload it in all the other Markers.

Tools of the Trade

Atmogen's workbench consists of 14 tools for editing project images. If you've worked with a program such as Photoshop, you'll be familiar with many of them. The Paint Brush, for example, is a nifty device that puts two colors at your disposal—one under the left mouse button and one under the right. You can choose from a variety of entry modes—adding to an existing image or overwriting, among others—and also set the opacity and pixel spacing for your drawings.

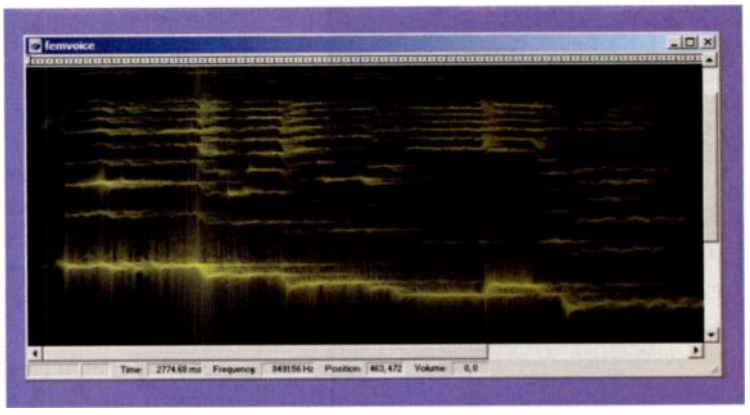


FIG. 2: When you import an audio file, atmogen does an FFT analysis and displays the resulting spectrograph. The image can be modified before it is used to resynthesize the sound.

The Paint Brush is quite useful for creating granulated textures. By setting the opacity to High and using a large pixel spacing, I could draw multicolored "grains" all across the screen (see **Web Clip 2**). The Spray tool, which can deliver up to three colors simultaneously,

FIG. 1: The TB202 front panel has two instrument inputs and switches for phantom power and the 20 dB pad.

SM PRO AUDIO TB202

A low-cost tube-based channel strip.

By Rich Wells

ustralian manufacturer SM Pro Audio, a relative newcomer to the world of low-cost recording equipment, has brought an impressively large list of solid-state products to market, such as microphones, an 8-channel optical compressor, and a variety of preamp-based products. To accommodate tube-based designs, SM Pro Audio has created the Red Valve series, which includes the single-channel TB101 ($199) and the dual-channel TB202 ($319) channel strips.

The TB101 and TB202 have the same basic setup: a channel strip consisting of a tube preamp with DI, an optical compressor, and a 3-band EQ. Each preamp features push-button switches for phantom power, phase reverse, and a 20 dB pad. While the TB101 is housed in a tabletop box, the TB202 is a 1U device (see **Fig. 1**). Both units have the same electronics, but for this review I'll focus on the TB202.

> The TB202 is worth considering if you are on a limited budget and don't already have a channel strip.

Record or Mix

When I looked at the retail price of the TB202, I was astounded at its affordability: it offers a lot of features for a low price. Overall, it looks and feels solid, with metal knobs that allow you to see their positions clearly at a glance.

A pair of low-impedance, ¼-inch instrument-level inputs, which can also be used as insert points, are located on the front panel. The rear panel has balanced XLR and ¼-inch inputs, and balanced XLR and unbalanced ¼-inch outputs (see **Fig. 2**). The TB202, which is powered by an ungrounded lump-in-the-line adapter, uses only one 12AX7 tube to cover both channels.

The tube preamp/DI combination—ostensibly the primary function of this device—does what

sound rendering is completely user adjustable. For example, an image can be "quantized" to produce just a few sine waves, or it can control up to 1,024 complex waveforms simultaneously.

When importing a WAV file, atmogen analyzes it based on analysis settings that you determine, and then displays a two-dimensional spectral plot ready for resynthesizing (see **Fig. 2**). You can improve the analysis by raising the FFT Length value, but that will add to the time the analysis takes. The other two settings are FFT Mode, which is the windowing type the analysis uses, and FFT Overlap, which determines how much the frequency ranges of the analysis bins overlap (see "Square One: Look Through Any Window" in the July 2004 EM for a good introduction to spectral analysis). The range of options, though limited, gives you enough flexibility to handle many types of audio.

Sounds can be as long as 60 seconds, and a project window can be as wide as 1,024 pixels. As a result, a very small window can represent a relatively long sound, and a very wide window can represent just a few seconds of time. In the latter case, you could draw a detailed curve or shape that lasts only a second, but then you could change the image's duration so that the sound it generated evolved over a 60-second time frame (see **Web Clip 1**). This capability, which is reminiscent of Xenakis's UPIC system, is quite powerful and can result in endless variations on the same basic material.

Magic Markers

One of the keys to creating unique sounds is atmogen's Markers feature. Markers, like keyframes in a video editor, define settings for specific points in the project; they are assigned to a project by clicking along the timeline that appears at top of the project window. Atmogen interpolates between those settings, insuring smooth transitions from one segment of the project to another.

Markers determine the frequencies of the oscillators that are used to render an image into sound. Clicking on the timeline brings up a screen that contains a frequency table. This table has the same number of entries as the number of vertical lines (up to 1,024) in your project, and has a variety of controls that affect the frequency values in the table (see **Fig. 3**). If you have the time, you can alter the default values (an exponential distribution from 20 Hz to 20 kHz) individually, but no doubt you'll prefer to use some of the table modifiers that atmogen provides.

Among the available tools for altering a table are Randomize, which offsets values by as many as 96 and one-half (50 cents) semitones, and Harmonize, which converts all the table entries to frequencies that are harmonic to a user-defined fundamental. Harmonizer will generate frequencies as high as only 22.05 kHz, so if you type in 1,000 Hz as the base frequency and you have, say, 200 frequencies, each harmonic frequency (1,000 Hz, 2,000 Hz, 3,000 Hz, and so on) up to the limit will be repeated multiple times.

In addition to altering the Frequency Table, Markers have another powerful feature: they let you set the duration of project segments, and can force the program to play through individual segments (or the entire project) in a nonlinear fashion. For example, if you enter a positive number in the Segment Acceleration field, playback will accelerate from one segment to the next. If you enter a negative number, playback slows down. Using this option changes just the individual segment you're editing, and not the total duration of the segment or of the entire project.

Some changes you make in one Marker can be applied to all Markers. For example, you can change the duration of all Markers simultaneously by specifying a duration in any open Marker and enabling the Imply All Markers setting. But you can't assign a set of random frequencies created in the Frequency Table to the table in other Markers. To do so, you'd have to save the Table to disk, then reload it in all the other Markers.

Tools of the Trade

Atmogen's workbench consists of 14 tools for editing project images. If you've worked with a program such as Photoshop, you'll be familiar with many of them. The Paint Brush, for example, is a nifty device that puts two colors at your disposal—one under the left mouse button and one under the right. You can choose from a variety of entry modes—adding to an existing image or overwriting, among others—and also set the opacity and pixel spacing for your drawings.

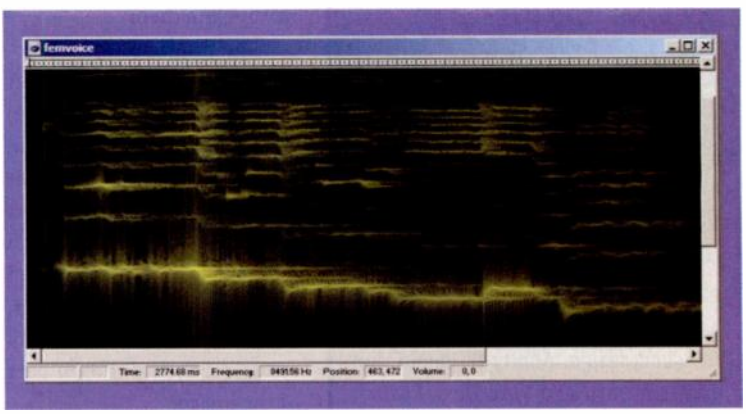


FIG. 2: When you import an audio file, atmogen does an FFT analysis and displays the resulting spectrograph. The image can be modified before it is used to resynthesize the sound.

The Paint Brush is quite useful for creating granulated textures. By setting the opacity to High and using a large pixel spacing, I could draw multicolored "grains" all across the screen (see **Web Clip 2**). The Spray tool, which can deliver up to three colors simultaneously,

adds a Density parameter to the mix. Like several other tools, Spray can use the program's global-envelope feature to determine some of its settings. As you'd expect, the envelope changes the value of a parameter as you're working with it. For example, if you assign the envelope to Density and draw a straight line, the line could become thicker or thinner as you draw it.

Other tools are meant to alter existing images. The Line Shift tool raises and lowers all the pixels in a defined area by a certain amount, effectively "transposing" the pitch of the resulting waveforms. It can also shift pixels left or right, changing their position in time. (The Move tool works in a similar fashion). The Pipette tool is used to capture the color value of any spot on the screen, and then assign it anywhere it might be needed. The Monitor tool lets you hear individual lines of pixels in real time as you move the tool over them.

Also on hand is the Filter tool, which selectively affects individual frequency regions by altering their color values. There are a large number of presets (Notch, LPF, Band Pass, and the like) that produce results comparable to their corollaries in other audio applications.

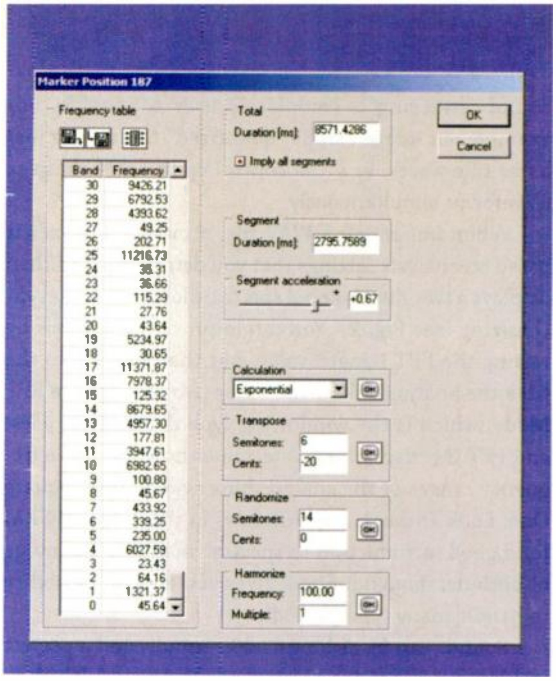


FIG. 3: The base frequency and waveshape of atmogen's oscillators are determined in the Frequency Table. The table in this figure contains over 400 oscillators, though only the first 30 are showing.

Lay It on Me

Atmogen supports layers, which can be used like "clips" in a sequencer. Once you define a layer using the Layer tool, you can move it freely around the project window horizontally and vertically. Using a layer, you can produce looping sounds that transpose with each repetition or build massively thick ambient textures. Many of the processing options that the program offers can be applied to a layer that is independent of the rest of the project, and a dedicated Layer menu adds even more ways to manipulate them.

The program won't automatically play just the layer you're working on, so when you make a change to a layer, you'd normally have to render the entire image to hear it. But if you switch to the Selection tool, you can play any part of the image, including a layer, separately. The Selection tool renders only the chosen part of the image.

PRODUCT SUMMARY

SONOROUS CODES atmogen 1.02

software synthesizer
$306

OVERALL RATING [1 THROUGH 5]: 4.5

PROS: Massive toolset for generating and processing sounds. Unique approach to sound design. Ability to import and export bitmap and WAV files. Custom tools for image processing.

CONS: Sound-rendering time can be extensive. Manual and documentation not thorough.

MANUFACTURER
sonorous codes
www.sonorouscodes.net

Abstract Expressionisms

Atmogen's Image menu gives you many ways to alter images and the sounds that they produce. Rotate, Flip, and Reverse produce the results that their names imply, and Dynamics is, in effect, a brightness control. The Transformation Matrix—which acts as a user-adjustable transfer function (think waveshaping) for the colors in your image, and serves as a good way to make dramatic changes to the spatial position of a sound—is also found here.

The Effects menu offers yet another set of options for tweaking images, some of which resemble common audio-processing features. EQ, for example, offers 100 adjustable bands, and Reverberation/Delay uses distance in pixels as the increment for its delay-time parameter. Rhythm/Gater and Rhythm/Shredder give you various chopping effects—as elsewhere, the duration for the step size is specified in number of pixels. Mosaic can turn a single sine wave into a set of closely spaced waveforms that beat in a variety of ways (see **Web Clip 3**), and Edges removes the center frequencies from an image and leaves only the outer frequencies intact (see **Web Clip 4**).

The three options under the Noise effect (Diffusion, Granulation, and Noise Generator) produce similar results on an image. Only Diffusion has any adjustable settings, and I had to use Granulation and Noise Generator several times in sequence to produce an impact on several images (your mileage will vary). Static Spectrum has four options for modifying a sound. All "freeze" the frequency content based on either the sound's most prominent frequency component (Frequency), the component with the highest amplitude (Amplitude), an average of all components (Average), or a frequency chosen at random (Hazard). The results are typically dramatic, though a sound with a frozen spectrum

probably won't hold your attention for long (see **Web Clip 5**).

Though the number and range of the Effects is impressive, most are not well documented, and no usage tips are given as a rule. But with a little trial and error, you can figure out their functions and how they might be useful.

Atmogen's Undo command is called Snapshots, and it makes returning to any point in a session easy. Snapshots records up to 128 user actions, and displays them in a list format. At first, I thought Snapshots would be similar to Photoshop's Actions, in which you can record a series of user actions and the program will replay them as needed, for example, on a new image. But such an option isn't available in atmogen.

Multipoint Perspective

Atmogen is a deep program, with layers and layers of controls. It's hugely adaptable to experimentation and can provide endless raw material for your sonic explorations. It will take some time to get past the all-too-frequent, additive-synthesis "signature" sound that results from many of the more basic procedures, but before long, you'll be developing custom techniques to produce the types of sounds you want.

There are a lot of enhancements I'd like to see, some of which I've already mentioned. Most importantly, however, would be additional documentation and tutorials that are more thorough. The included manual is slim and doesn't give many usage tips, and the short tutorials, while useful, don't get you very far along. (You'll find more information at the company's Web site, along with several dozen example files to get you started.) Also be prepared to wait while long and dense images render—there's a lot of math involved with the complex calculations the program requires, so if you're after instant gratification, better look elsewhere.

Yet for anyone on the PC who is interested in exploring a wholly new approach to working with sound, atmogen is a great resource. There are a few other image-to-sound programs available (Rasmus Ekman's Coagula comes to mind), but atmogen has far more power. The program is so ripe for interactive experimentation that you just might want to put away the manual and spend a few hours (make that, a few days!) uncovering atmogen's many treasures. EM WEB CLIPS

EM Associate Editor Dennis Miller is active both as a composer and animator. His motto is "Music and pictures play well together."

FIG. 1: The TB202 front panel has two instrument inputs and switches for phantom power and the 20 dB pad.

SM PRO AUDIO TB202

A low-cost tube-based channel strip.

By Rich Wells

ustralian manufacturer SM Pro Audio, a relative newcomer to the world of low-cost recording equipment, has brought an impressively large list of solid-state products to market, such as microphones, an 8-channel optical compressor, and a variety of preamp-based products. To accommodate tube-based designs, SM Pro Audio has created the Red Valve series, which includes the single-channel TB101 ($199) and the dual-channel TB202 ($319) channel strips.

The TB101 and TB202 have the same basic setup: a channel strip consisting of a tube preamp with DI, an optical compressor, and a 3-band EQ. Each preamp features push-button switches for phantom power, phase reverse, and a 20 dB pad. While the TB101 is housed in a tabletop box, the TB202 is a 1U device (see **Fig. 1**). Both units have the same electronics, but for this review I'll focus on the TB202.

> The TB202 is worth considering if you are on a limited budget and don't already have a channel strip.

Record or Mix

When I looked at the retail price of the TB202, I was astounded at its affordability: it offers a lot of features for a low price. Overall, it looks and feels solid, with metal knobs that allow you to see their positions clearly at a glance.

A pair of low-impedance, ¼-inch instrument-level inputs, which can also be used as insert points, are located on the front panel. The rear panel has balanced XLR and ¼-inch inputs, and balanced XLR and unbalanced ¼-inch outputs (see **Fig. 2**). The TB202, which is powered by an ungrounded lump-in-the-line adapter, uses only one 12AX7 tube to cover both channels.

The tube preamp/DI combination—ostensibly the primary function of this device—does what

TB202 SPECIFICATIONS

Channels	2
Inputs	(2) XLR; (2) balanced ¼"
Outputs	(2) XLR; (2) unbalanced ¼"
Output Impedance	51Ω
Dynamic Range	>100 dB
Frequency Response	10 Hz–20 kHz (±1.5 dB)
Gain	60 dB
Noise	–92 dB unweighted
THD	0.05%
Power Supply	lump-in-line, switchable 110/220V
Dimensions	1U × 6" (D)
Weight	2 lbs.

it's supposed to do. It fared best on electric guitar, an application for which you usually don't need much gain, and there isn't much in the way of high-frequency information. (Most guitar amps don't produce much above 5 kHz, so it is not as necessary for a mic preamp used in this application to have good high-frequency response, especially if you are close-miking the amp.) That is okay because while the TB202's preamps are rated as providing 60 dB of gain, I had to crank them up on quieter sources.

High frequencies were sometimes an issue with the TB202: it made cymbals sound a bit brash, and if male and female vocals tended toward sibilance, the TB202 emphasized it. The DI sounded fine on synthesizer and bass. For example, I plugged a 1975 Fender Precision into the DI using the onboard compression, which resulted in a nice low end and a lot of output before distorting. In general, the TB202 works well as a DI.

Except for the jacks, everything you need to reach is on the front panel, which, for a rackmount device, is very helpful. (If you've ever had to poke around behind a rack to find a switch, you're likely to understand what a hassle that can be.) Each preamp has dedicated buttons for the 20 dB pad, phantom power, and phase reversal. There is an LED indicator for the pad, but given that an LED was allocated for only one of the three buttons, I wish it had been used to indicate phantom power: it's reassuring to be able to look at a preamp from a distance and know the phantom power status if you're about to connect or disconnect a mic.

FIG. 2: The rear panel includes balanced, line-level ¼-inch inputs so you can use the TB202 for processing tracks.

The Art of the Channel Strip

With compressors and EQs commonly part of the package,

channel strips often come in handy for tracking and mixing situations. Many channel strips have mic- and line-level inputs, and the TB202 is no exception. Both inputs function simultaneously; if you plan to run a line-level signal into it for processing, however, be sure to unplug any mics that are connected to the TB202 or you may end up with more audio in the output signal than you bargained for. When you plug into the DI jack, the rear-panel inputs are disconnected.

With three fixed bands of adjustment, the EQ section is not as versatile as I had hoped. There are low- and high-frequency shelving filters at 80 Hz and 8 kHz, respectively, and there is a mid frequency adjustment centered at 1.8 kHz. Each filter has 16 dB of cut or boost, and the knobs have center detents with five levels marked on either side of the null point. The low-shelving filter is passable, but the mid frequency and high-shelving filters sounded harsh to my ears. The EQ section has a bypass switch, which is handy for performing quick A/B comparisons.

Dedicated buttons engage the optical compressor on each channel, and a colored LED indicates when compression is occurring. The compressor's controls include ratio (labeled Compression), which ranges from 1.5:1 to 10:1, and switches for fast/slow attack (1 or 5 ms) and release times (500 ms or 1.5 seconds). There is no adjustable control for threshold.

As far as I can tell, the compressor functions only when gain is applied to the preamp, and the effect that the compressor has on the signal depends on the amount of gain: the higher the gain, the more noticeable the compression. To use the compressor with line-level signals, you'll have to turn down the incoming signal at the source, increase the TB202's input gain, and adjust the output level until everything is just right. At high gain settings with a 10:1 ratio, the compression is relatively subtle, but it sounds good. It's neither transparent nor extremely dark and dirty, although it leans in the direction of the latter. The attack and release settings give you a bit of room to work, but again, any adjustments you make will produce relatively subtle changes in response. The lack of threshold and gain-reduction metering makes using the compressor a crapshoot.

PRODUCT SUMMARY

SM PRO AUDIO TB202

dual-channel strip
$319

OVERALL RATING (1 THROUGH 5): 2.5

PROS: Inexpensive. Two DI inputs.

CONS: EQ is harsh. No compressor threshold control. No gain reduction metering.

MANUFACTURER
SM Pro Audio/Kaysound (U.S. distributor)
www.smproaudio.com

TB or Not TB

Taking into account its price and feature set, the TB202 is worth considering if you are on a limited budget and don't already have a channel strip. Although the preamps are okay and the device provides a variety of functions, the TB202's overall sound is tempered by its poor-quality EQ and underfeatured compressors. Nonetheless, if you are just starting out, the TB202 could complete a bare-bones recording setup without breaking the bank.

Rich Wells oversees the Supreme Reality, a recording studio and band in Portland, Oregon

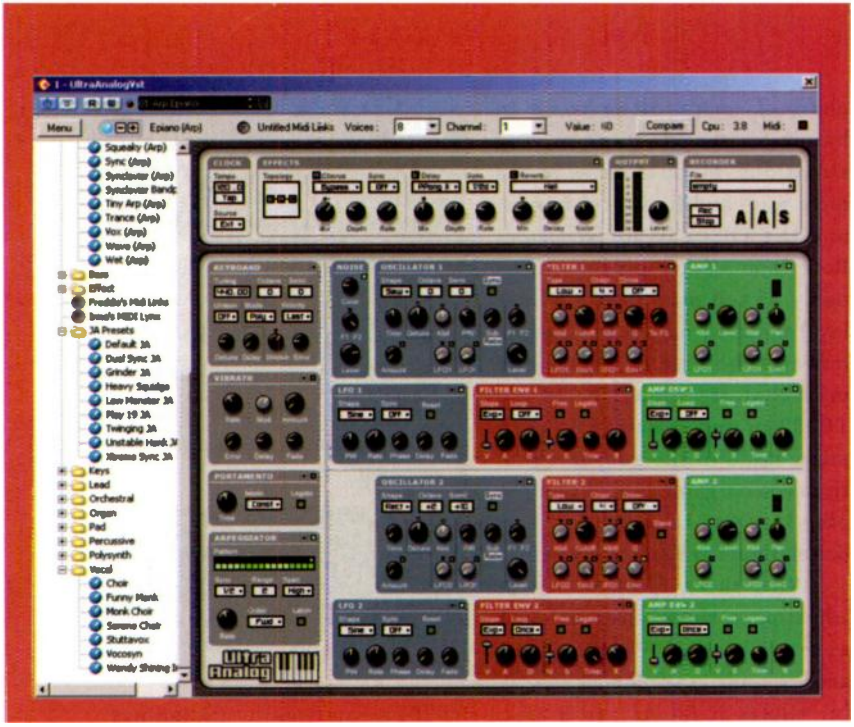


FIG. 1: Applied Acoustics' Ultra Analog is a straightforward emulation of a hardwired analog synthesizer. Although each of the two voice channels has its own oscillator, filter, envelopes, LFO, and amplifier, you can route the oscillators to either filter and route one filter to the other.

APPLIED ACOUSTICS SYSTEMS Ultra Analog 1.0.1 (Mac/Win)

Fat, versatile, and easy to use, this soft synth brings classic sounds to the desktop.

By Jim Aikin

The analog synths of yesteryear—the Minimoogs and Prophets and their dozens of cousins—have earned a permanent place in electronic musicians' hearts. Those synths had a great sound, but more than that, their voice architecture has become reassuringly familiar. There's comfort in being able to look at a front panel and say, "Oh, there's an ADSR, and there's the sawtooth wave."

Soft-synth designers have gone far afield in their quest for fresh sounds, so it's refreshing—in a retro way—to see a new soft synth that eschews such frippery. Ultra Analog, from Applied Acoustics Systems (AAS), sticks very close to the classic analog design. While it goes well beyond the Prophet and the Mini in power and features, Ultra Analog isn't a groundbreaker in any sense. I had to put it under the microscope to find a few minor innovations.

Hey, Look Me Over

When I first tried to install Ultra Analog from CD-ROM to my 3 GHz Pentium-based PC running Windows XP, the installation failed. The program's copy protection uses a challenge-and-response system; the installer refused to finish installing the program until I gave a response, but it gave me no opportunity to go out to the Web and get one. Fortunately, a file called unlock.htm had been tucked away on my hard drive (in the Program Files/AAS/Ultra Analog directory) before the installation aborted. By double-clicking on that, I was able to reach the AAS Web site, get a response, and then run the installer again. This time, the installation proceeded through to the end, and Ultra Analog was ready to roll.

As with hardware-based synthesizers, almost everything in Ultra Analog is immediately visible on the front panel (see Fig. 1). It has no hidden windows to trip up the unwary, and only a few pop-up menus for selecting waveforms, filter modes, and so on. At first glance, the panel looked so simple that I wasn't expecting much, so the power and sheer variety in Ultra Analog's presets took me by surprise. The program responds to Program Change messages; you can use MIDI to select timbres, and you can also specify the program numbers of any 128 presets (see Fig. 2).

"Slammin'!"

Anthony Roberts, Monitors - Tower of Power

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Gary Hartung, FOH - Crosby, Stills & Nash

AUDIX
PERFORMANCE IS EVERYTHING

FOR A DEALER NEAR YOU CALL: 800-966-8261
TEL: 503-682-6933 FAX: 503-682-7114 www.audixusa.com

Audix Corporation, PO Box 4010, Wilsonville, OR 97070
In Canada, C-Tec, Tel 604-942-1001, Fax 604-942-1010

Another pleasant surprise was how clean the high register sounded: when I selected a raw sawtooth wave and played notes in the range five octaves above middle C, I didn't hear a trace of aliasing. That trait is vital in a synth that strives to emulate analog technology.

Ultra Analog has a browser pane along the left side of the front panel, which you can use to access and organize the preset files. Operations such as creating and renaming folders are all supported from within the browser. The synth ships with more than 400 factory presets that are neatly categorized into folders such as Arpeggiator, Bass, Leads, Keys, and so on. Normally the presets are contained in a single database file on your hard drive (which makes backup a one-drag operation), but individual presets can be exported and imported if desired.

Using a pop-up box, you can set Ultra Analog's maximum polyphony to as high as 32 notes. Another convenient feature is that each panel module has its own little menu with commands that copy settings and restore defaults. Better yet, Ultra Analog has multiple Undo and Redo, a feature you won't find in all soft synths.

In my tests, Ultra Analog consumed a surprising amount of CPU bandwidth. With all of the modules (except the arpeggiator) turned on, an 8-note sustained chord caused a CPU hit of more than 40 percent of my 3 GHz computer, according to Ultra Analog's own readout and the VST Performance meter in Cubase SX 3. By contrast, Native Instruments FM7 used less than 10 percent of the CPU with 8-note chords. Even Camel Audio Cameleon 5000, which as an additive synth would be expected to require lots of machine cycles, was able to produce eight complex morphing voices with plenty of overtones without peaking above 30 percent.

FIG. 2: Selecting Edit Program Changes from the Edit menu opens a dialog box that lets you reassign presets to whatever program number you choose.

Voice of the Synth

Ultra Analog is a 2-oscillator, 2-filter synth. The voice design is based on two separate signal paths, one above the other on the panel. Each has its own oscillator, multimode filter, LFO, and pair of envelope generators. But that description is deceptive in its simplicity. Each oscillator's output can be routed to either filter or both filters using an output mix knob, and filter 1's output can be similarly panned between the synth's output stage and the input of filter 2. As a result, series and parallel filtering are available, and you can feed both oscillators into a single filter for vintage-type patches.

When it comes to modulation routings, however, the two signal paths remain separate. LFO 1 and the two envelopes in the upper half of the panel can modulate only oscillator 1, filter 1, and amplifier 1, whereas LFO 2 and the two lower envelopes can modulate only oscillator 2, filter 2, and amplifier 2—that is a major limitation. For instance, it's not possible to use LFO 1 to modulate the panning of both outputs while LFO 2 mutates the pulse width of both oscillators. Fortunately, there's an extra LFO for vibrato that modulates the pitch of both oscillators, so you don't have to use both main LFOs to get simple vibrato.

Each oscillator has a suboscillator that generates either a square wave or a sine wave one octave lower. Both oscillators will do hard sync, but the implementation is a bit different than on some synths: instead of one oscillator syncing to the other, each syncs to its own hidden master clock. Each oscillator also has its own single-stage ramp generator for creating pitch sweeps on note attacks, and it can be used for classic sync-sweep effects. The depth of the sweep can't be modulated by Velocity, unfortunately.

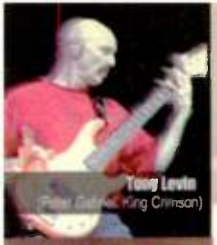
Though Ultra Analog has a dedicated noise source, either oscillator can also be set to generate noise instead of periodic waveforms. Sine, rectangular (pulse), and sawtooth waves are available—but, curiously, there is no triangle wave. Triangle waves are useful for certain types of patches and are a standard part of the classic analog synth voice, so it's hard to understand why they were omitted. Another limitation is that Ultra Analog doesn't support any type of FM or ring modulation. Nor can an audio-rate waveform modulate filter cutoff, which means that Ultra Analog can't reproduce certain special-effects patches that you can create with a Minimoog or a Prophet.

Ultra Analog's filters are powerful. Each filter has lowpass, bandpass, highpass, notch, and formant modes and can be switched to either 2-pole or 4-pole operation. Six overdrive settings are available for each filter. With overdrive and lots of resonance, the filters will *squidge* in a very satisfying way, adding fat overtones even to a sine wave input (see **Web Clip 1**).

Filter 2's modulation inputs can be slaved to those on filter 1, a convenient programming shortcut for certain types of patches. In that situation, filter 2's mod inputs remain active, so both LFOs or both filter envelopes can modulate filter 2 at the same time.

The LFOs offer sine, triangle, and variable-width pulse waves, as well as smooth and stepped random outputs. Here, the sawtooth wave was omitted. Admittedly, sawtooth LFOs are a specialized effect, but why not include the waveform? Start delay, fade-in time, and a switch allowing either monophonic (all voices) or reset (each voice played starts its own LFO cycle) are available. An LFO-start-phase knob is also provided—a welcome feature that many synths lack. The LFOs and the arpeggiator can sync to an external clock or to Ultra Analog's internal clock.

The envelope generators can be looped if you need extra LFOs. (They won't, however, sync to a system clock in loop mode.) Velocity can control attack time and sustain level, but other than affecting amplifier level, that's the only type of Velocity response in



Power Tools
for power players

One performance. Get it right.
Pros demand the best from the tools they use.
Power Tools... by Radial.

Radial JD7 Injector - suggested list $849 US
Guitar freaks rejoice! Drive up to 7 amplifiers at the same time without changing the original tone of the guitar and do it without buzz or hum caused by ground loops. Record a dry track with the built-in DI and send the signal back to the JD7 and re-amplify it to 7 amps and effect pedals. Addictive.

Radial J48 Active DI - suggested list $199 US
For great sound without choking, look no further than the Radial J48. Features a 48V phantom supplied active drive circuit with a unique DC-to-DC transformer isolated switching power supply to provide amazing headroom while eliminating hum and buzz caused ground loops. Radical.

Radial JDI Passive DI - suggested list $199 US
Jensen Transformer equipped, the Radial JDI has become the standard passive DI in the business. Exceptional noise rejection eliminates troublesome ground loops and virtually zero phase distortion at any level makes the JDI a must have for studio and stage. Available in single, stereo or 6-pack. Magic.

Radial X-Amp Re-Amplifier - suggested list $199 US
Ever wish you could go back and change the sound of a pre-recorded guitar track? Now you can with X-Amp. When tracking, record a spare dry track and play it back through the X-amp after the guitarist has gone home. Two outputs lets you drive amps and pedals to create thick new textures. X-plosive.

Radial JPC Stereo DI - suggested list $199 US
Designed specifically for PC sound cards, DVD players and all those cool consumer devices that cause nothing but havoc, the JPC is 100% transformer isolated to eliminate nasty ground loops and equipped with a 48V active drive circuit for long cables. Easy to use. Great sounding. Indispensable.

Radial JDV Super DI - suggested list $449 US
There is no finer DI than the Radial JDV. 100% discreet Class-A topology with a feed forward design that sounds so true, it'll make the hair on your arms twitch. Drag™ Control pick-up load correction, A or B inputs, 4 instrument amp outputs, hi-lo filters and amazing headroom combine for the most powerful DI ever made. Unbeatable.

Radial... The world's finest direct boxes

Radial™ engineering

www.radialeng.com

1638 Kebet Way, Port Coquitlam BC V3C 5W9 tel: 604-942-1001 email: info@radialeng.com

Ultra Analog. A switch labeled Legato prevents a new envelope from being retriggered until after all keys are lifted. I appreciated that each of the four envelope generators has its own Legato switch, so you can perform maneuvers such as having each new note retrigger one filter envelope but not the other one.

The Ultra Analog voice has a few other tricks up its sleeve, such as portamento, LFO-controlled panning, a switch for choosing linear or exponential envelope segments, a unison mode with detune, and keyboard loudness scaling of the two amplifier modules. Overall, I'd give the voice design a mixed review—it has plenty of excellent features but some odd omissions as well.

More Features

Ultra Analog's arpeggiator has most of the expected controls: up, down, and up-and-down modes; a Latch button; clock sync; and an octave range control. You can program 16-step patterns in such a way that a given step will be either a note or a rest (see **Web Clip 2**). The overall length of the play/rest pattern can be shortened, which is useful for polyrhythms. And here's a neat undocumented feature: the keyboard priority setting (High, Low, or Last), which is in a different module, will cause either the lower or the higher arpeggiated notes to be cut off—that is, to play monophonically—while those on the other half of the keyboard sustain to create a chord. You'll hear that only if you arpeggiate a patch that has long release times.

Three effects are offered: chorus/flange, stereo delay, and reverb. The parameters are basic, but each effect has from seven to ten algorithms from which to choose. In addition, four signal routings are available for the chorus and delay. By putting them in parallel, you can send one filter's output to the chorus and the other to the delay.

Controlling modulation using MIDI Control Change (CC) messages is well implemented in Ultra Analog. A single CC number can control as many knobs as you like, and you can individually specify each knob's maximum and minimum

PRODUCT SUMMARY

APPLIED ACOUSTICS SYSTEMS Ultra Analog 1.0.1

software synthesizer

$199

OVERALL RATING [1 THROUGH 5]: 4

PROS: Great sound. MIDI Control Change modulation is well implemented.

CONS: Could use more flexible routings for internal modulation. CPU hog. Oscillators don't generate triangle waves.

MANUFACTURER
Applied Acoustics Systems
www.applied-acoustics.com

levels. If you want, you can set the maximum lower than the minimum, which allows you to program crossfades by assigning two knobs to a single hardware wheel or slider and inverting the control response of one of the knobs. Editing MIDI modulation settings is handled graphically and is easy to manage. What's even cooler is that you can save separate sets of those MIDI Links for different projects or to use when you change controller hardware.

It has plenty of excellent features but some odd omissions.

If you are running Ultra Analog in standalone mode, you can take advantage of its handy built-in recorder to record your keyboard performance to the hard drive. Ultra Analog's recorder will not play back existing WAV files; all it does is capture Ultra Analog's output. Most users will probably prefer to use the synth as a VST, DXi, Audio Units, or RTAS plug-in, a scenario in which the recorder module would be redundant.

Is It Ultra?

If you use a computer to make music but you crave an analog experience, Ultra Analog won't disappoint. It sounds very analog and has a wide range of voicing options, as shown by the hundreds of cool factory presets. The filters' distortion modes are especially helpful for fattening up the sound, and the ability to route the two filters in series or parallel adds even more power.

The internal modulation routings could have been made more flexible, but only at the cost of cluttering up the panel. Because the idea behind Ultra Analog was to emulate the analog experience, maybe the one-knob/one-function paradigm was the right choice. I could also quibble about the lack of an audio triangle wave, but I'm going to be too busy making music with this synth to waste a minute worrying about a few missing features. Overall, Ultra Analog is a worthy addition to the soft-synth universe.

EM WEB CLIPS

Jim Aikin writes regularly for EM *and other magazines. To learn more about his varied activities, visit him online at www.musicwords.net.*

Thinking TAPCO?
Think Sweetwater.

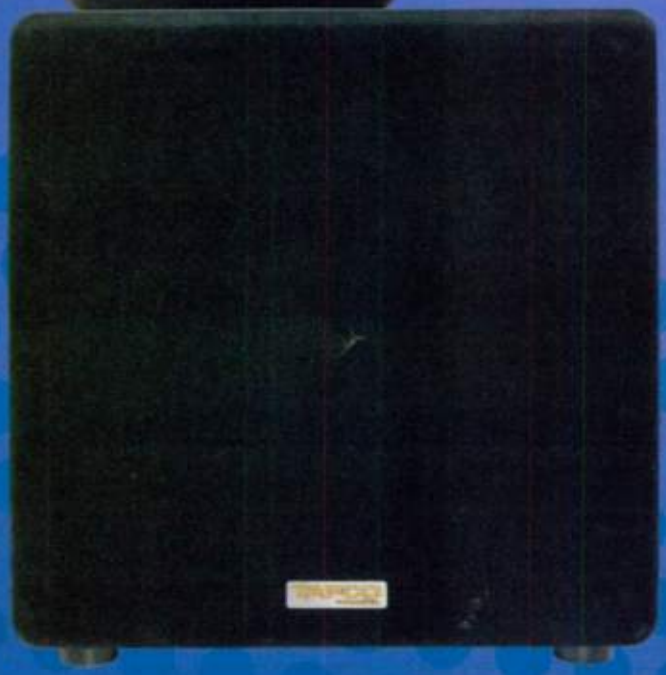
S•5 Active
Studio Monitor
$349.97 pair
MSRP $ 499.00

"Clear and focused."
– EQ

"Impressive evenness."
– Electronic Musician

SW•10
Active
Subwoofer
NEW!
Call for details

"Beautifully designed."
– Sound on Sound



S•8 Active
Studio Monitor
$499.00 pair
MSRP $ 749.00

Judging from recent magazine reviews, if you're thinking about buying a new set of studio monitors, you should be thinking about the TAPCO S-Series. With their genuine Mackie-designed pedigree and top-notch components, the TAPCO S•5 and S•8 nearfield monitors and new SW•10 subwoofer are being praised as the best in their class. Need a second opinion? Give your Sweetwater sales engineers a call and ask 'em what they think. That should say it all.

TAPCO by MACKIE.

Sweetwater
music technology direct

1-800-222-4700 • www.sweetwater.com • 5335 Bass Road, Fort Wayne, IN 46808

Get Serious.

Logic® Pro 7. Serious tools

34 software instruments. 70 studio quality effects. Total ed

GET YOUR INSPIRATION INTO LOGIC WITH THIS SERIOUS USB/MIDI CONTROLLER.

ALESIS

Photon X25

Making music is all about control. The new Alesis Photon keyboard controllers give Logic users unprecedented control! And thanks to onboard USB, the Photon X25 can be connected directly to your computer — no MIDI interface required!

- Revolutionary "AXYZ" infrared dome 3D controller
- 10 rotary encoders, 10 buttons
- Over 40 immediately accessible MIDI controls
- 20 editable, storable configurations
- LCD screen with dedicated encoder
- Template inserts for easy setup with your favorite softsynth

When musicians, engineers and producers want to get serious about computer recording, they turn to the company that has put together more computer-based recording systems han any other — Sweetwater. Our digital audio experts can help you design the perfect Logic system and we can even configure a turnkey system for you. Want to know more?

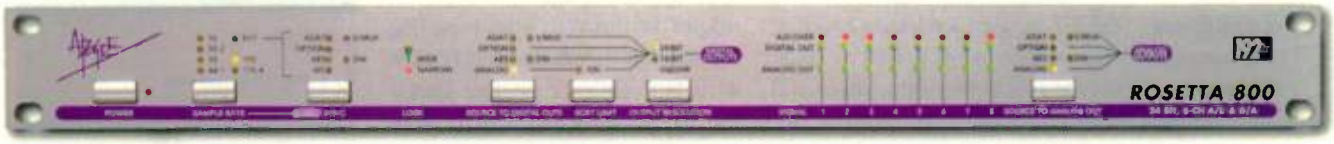
Call us today at (800) 222-4700.

Authorized Reseller

for creative professionals.

ıg flexibility. Synchronized video playback. Expandable DSP.

MAKE LOGIC SOUND AMAZING WITH THIS SERIOUS AUDIO INTERFACE.



Rosetta 800

Serious professionals have chosen the sound of Apogee converters for years. The Rosetta 800 faithfully captures your audio with warmth, punch and accuracy, and delivers that audio to Logic Pro 7 with a single firewire cable thanks to the optional X-FireWire card.

APOGEE SOUND AMAZING

- 8 channels of balanced analog I/O
- 8-channel Digital I/O via AES/EBU & ADAT/SMUX
- Up to 24-bit/192kHz resolution
- Ultra low jitter Intelliclock
- Softlimit clip protection
- Industry-leading UV22-HR word length reduction

CALL SWEETWATER TODAY!
(800) 222-4700
www.sweetwater.com

Sweetwater®
music technology direct™

QUICK PICKS

M-AUDIO

FireWire 1814

By Orren Merton

M-Audio, known for affordable products that deliver solid performance, recently introduced the FireWire 1814 as its flagship mobile interface. With eight analog inputs, two mic preamps, four analog outputs, two headphone outputs, SPDIF and ADAT digital I/O, word-clock I/O, and MIDI I/O, the FireWire 1814 is designed for those with a fairly sophisticated project studio. At $749.95, the FireWire 1814 is not as inexpensive as much of M-Audio's product line. It is less expensive than its competition, however, and fairly priced for its feature set.

Tailored to Fit

M-Audio understands that musicians with home- and project studios primarily record a single mono or stereo instrument at a time. To facilitate that, the front of the FireWire 1814 includes the features and controls most likely to be accessed during that process. First, there are two phantom-powered Neutrik combo XLR/TRS inputs, which are capable of 24-bit, 192 kHz operation and feature a mic/line selector. There is a button for a –20 dB pad and a mic preamp with a maximum of 40 dB gain, as well as clip and signal LEDs. Finally, there are two ¼-inch headphone outputs, each with its own volume knob.

The front panel of M-Audio's FireWire 1814 holds all the controls and jacks that are of primary importance in a home- or project studio.

The FireWire 1814 offers signal LEDs for each of the digital and analog outputs, but no front-panel metering. The front panel does have a level control that, in a very welcome touch, is software assignable to the outputs, auxiliary sends, inputs, and software returns. The front panel also has a button to engage phantom power for the two Neutrik inputs and an A/B button that can select between either headphone sources or direct monitoring sources, depending on how the software mixer is configured.

The rest of the inputs and outputs are located on the rear panel. There is a power-supply connector for the included 12V wall-wart power adapter; the FireWire 1814, however, can also be bus powered. A digital connector supports the included breakout cable, which carries the SPDIF, MIDI, and word-clock I/O. It can synchronize to word-clock signals with frequencies as high as 96 kHz.

Room to Expand

Two FireWire ports allow you to daisy chain other FireWire devices, such as hard drives. The rear panel also has optical connectors for ADAT I/O, which can be configured in software as optical SPDIF, if desired. The unit's four balanced/unbalanced ¼-inch TRS outputs are capable of 24-bit 192 kHz playback, and its eight unbalanced ¼-inch TS inputs are capable of 24-bit, 96 kHz operation.

Although the chassis itself has a solid feel, I wish that the connectors and jacks were firmly bolted to it. The digital breakout cable screws into the rear panel, but all other connectors are attached directly to the PC board. Only the Neutrik combo jacks didn't have noticeable play when a cable was wiggled. Furthermore, when unpacking the unit from its vacuum-sealed plastic wrap, both optical connector protectors, one of the mic/line buttons, and a gain control knob dislodged completely from the unit. They were easily reattached, however, and I had no problem with them or any other hardware component during the months I had the unit for review.

The FireWire 1814 drivers proved solid on my Mac (dual G5/2 GHz) and my PC (P4/1.8 GHz). M-Audio is to be commended for diligently updating its drivers—during this review, both OS X and XP drivers were updated to improve performance. One known issue is that the unit does not always connect properly when hot plugged. The manual warns users about that, and the drivers have onscreen dialog boxes describing the proper procedure.

Taking Control

The FireWire 1814 control-panel software is well designed. Its Ableton Live–style interface is very intuitive, and it offers you total control over I/O routing and mixing. It also allows for complete metering, which the device itself lacks. The unit comes with M-Audio's Maximum Audio Tools CDs, which are packed full of useful stuff, including light versions of Propellerhead Reason and Ableton Live, samples and loop libraries, and so on. It gives you all the software that you need to get started making music, and the developers of Reason and Live offer upgrades to full versions of their excellent applications.

The FireWire 1814 converters sound good, although perhaps a bit hyped in the mid range. The mic preamps are noisy at their maximum gain of 40 dB but sound clean and musical until about 30 dB. Overall, the M-Audio FireWire 1814 offers solid value and performance—just remember to be gentle with it. Home- or project studio musicians that need a fair amount of I/O should take a close look at this unit.

Overall Rating (1 through 5): 3.5

M-Audio USA

www.m-audio.com

EDIROL

PCR-M1

By Doug Eisengrein

The Edirol PCR-M1 ($249) is a USB/MIDI keyboard controller similar to the PCR-1 but without audio I/O. The beauty of this unit is its compact size: at just less than 18 inches wide, 9 inches high, and 1.12 inches deep, it is slightly wider than a notebook computer and incorporates 25 standard-width keys. Though they are shorter in height and have a shallower action compared with full-size keys, they feel surprisingly sturdy, as do all the front-panel controls. The PCR-M1 can be powered by the USB bus, four AAA batteries, or an optional AC adapter.

Key Elements

The PCR-M1's controls have an infinite-rotary encoder labeled Value and eight assignable knobs, each with a center detent. The Value encoder affects the selected parameter, and the assignable knobs send MIDI values to their assigned destinations. My only gripe with detented knobs is that, although they're useful for increasing or decreasing a parameter from a center value, they inevitably interfere with smooth, full-range control sweeps. Four buttons located next to the Value encoder let you perform various operations such as setting the MIDI channel, selecting banks, changing programs, and capturing snapshots. A 3-character LED display indicates current function values, USB connectivity status, hexadecimal values, and more.

To the left of the keyboard, nine buttons perform basic functions that include octave shift, transpose, enter, back, and cancel operations. Six of the buttons can be assigned to send MIDI messages, including transport control functions. A short, metal modulation bar sits below those buttons, and a hard-rubber pitch-bend control is below that. Both controls take some getting used to, as they are smaller than typical wheels or levers. Both are appropriately sensitive, however, and the pitch bender is especially comfortable to use.

Edirol throws in a few handy plastic template overlays for the eight rotary knobs and for six of the nine buttons on the left. One set is preprinted with common functions, and another set of blanks serve as strips for labeling your own assignments.

Flipping around to the rear, the PCR-M1 sports a DC in connector, a USB port, a three-way power switch, MIDI In and Out ports, and ⅛-inch jacks for a footpedal and a footswitch. Two ⅛-inch-to-¼-inch adapter cables are provided.

Edirol's compact PCR-M1 has a slim profile, standard-width keys, and an assortment of assignable controls. It can be powered by batteries, an AC adapter, or a USB connection.

Get Down with It

I used the PCR-M1 with a Mac G4 running OS X 10.3.7. In addition to drivers

for Mac OS X and OS 9, the installer disc provides drivers for Windows 2000, XP, 98, and ME. The user manual's directions were clear, and although the included PCR Editor software isn't covered in the printed manual, the software embeds HTML help files. Installing OS X drivers was a simple drag-and-drop procedure, and after a restart, my MIDI setup immediately recognized the bus-powered PCR-M1.

I launched Propellerhead Software's Reason and changed its MIDI input assignment in the Preferences pane. I played several instruments in Reason, and the PCR-M1's keys felt quite good—light but not flimsy. The timing response was excellent, even when I played with both hands as fast as I could. Although the keys transmitted Velocity, none of Reason's instruments would play any softer below a certain threshold. To determine whether that limitation was with the PCR or with Reason, I launched Apple Logic Pro and played a few of its synths. Sure enough, the Velocity ranged smoothly from 1 to 127.

PCR Editor's onscreen image doesn't entirely match the PCR-M1's control panel, of course, because the software is global for all PCR-series keyboards. Fortunately, the directions were easy to understand; once I had figured out which controls were relevant, I had no trouble setting custom controller assignments and transmitting them to the hardware. Using the MIDI Learn function, I quickly mapped the PCR-M1's controls to various parameters in Reason.

To use the PCR-M1 as a MIDI-only controller, I unplugged the USB cable, connected the AC adapter, and connected a cable from my MIDI interface. I launched Reason, reset the MIDI input assignment, and the PCR was once again instantly recognized. Its responsiveness was still good, and remote control worked just as well.

Smooth Sailing

Like other Edirol gear I have reviewed, the PCR-M1 is solid and user-friendly. It works as it should, and using it was fun and hassle free. Edirol should, however, consider adding some PCR Editor basics to the printed material. I'd also like to see different graphical user interfaces in the editing software for the various models. Other than the minor annoyance with the detented knobs, I was very pleased with the PCR-M1.

Overall Rating (1 through 5): 4
Edirol Corporation
www.edirol.com

Pigtronix's EP-1 features a trigger input that can be used to let input signals be phase modulated by external audio sources such as a drum machine.

PIGTRONIX

EP-1

By Alex Artaud

Pigtronix's EP-1 ($280) footpedal is a 4-stage analog phase shifter that offers envelope-controlled phasing and rotary phasing reminiscent of the classic Uni-Vibe pedal. A trigger input lets the unit accept a sidechain signal for effects such as rhythmic phase modulation. Several controls and an expression pedal jack let you tailor the EP-1's sound for multiple applications. The pedal sounds fat and expressive, and musicians should warm to its sound.

The EP-1 uses an asymmetrical relationship of capacitors to simulate the high- and low rotors of a Leslie cabinet. Most phase shifters are composed of a comb filter with symmetrical notches, so that phase shift occurs at a single crossover frequency. The EP-1 spreads the phase-shift crossover across the frequency spectrum, which can yield more dramatic lows, juicier mids, and clearer highs than symmetrical phaser designs. The unit also uses opto-isolators to create the phase-shift effect and contribute to the unit's clean sound.

Housed in an oblong-shaped, road-worthy metal chassis, the EP-1's main controls are divided into three sections. The Envelope Follower/LFO section has sensitivity and sweep knobs and an EF/LFO footswitch. The Phaser section contains knobs for resonance, speed, intensity, and character, along with an invert footswitch. The Engage section enables you to activate or bypass the main input of the EP-1.

The back panel sports ¼-inch unbalanced connections for In, Trigger, Out, and Expression. Trigger allows an external source, such as a drum-machine rhythm, to control the action of the envelope follower for tricks such as beat-synced phasing. Expression is designed for use with an expression pedal that controls the LFO speed. Pigtronix makes a hefty monophonic TRS expression pedal that's designed for the EP-1 and costs $50. (Other monophonic or TRS pedals may work with the unit.) The EP-1 gets power from an AC wall-wart cable. The unit doesn't accept batteries.

In the Mode

The EP-1 Phaser section is controlled by either the Envelope Follower (EF) or the LFO. The sound clearly indicates which

mode you're in, and the green LED acts as a visual reference. In EF mode, the LED responds to the strength of the signal at either the main Input or the Trigger input, while in LFO mode the LED flashes in time with the oscillator.

When EF is engaged, the Sweep and Sensitivity knobs adjust the range and responsiveness of the follower. In practice, you crank the Sensitivity knob until a phase effect is apparent. The Sweep knob is used to control the depth of the effect. The harder you play your instrument, the stronger the phase shift will be. The LED tracks that, getting brighter as you play harder.

When LFO is engaged, Sweep and Sensitivity are disabled, and the Speed knob in the Phaser section controls the LFO rate. Using that knob or the expression pedal, you can create the characteristic pulsing qualities of an LFO-modulated signal. If you want to run the EF and LFO at the same time, Pigtronix will customize the EP-1 with a "Marv" switch that allows all six knobs to interact and concoct more dramatic effects.

Phaser Set to Stun

In the Phaser section, Resonance corresponds to the amount of feedback in the phase-shifting circuitry, while Intensity is the blend of effect versus untreated signal. Both are active whenever the EP-1 is engaged. Those controls help shape the rich, tonal signature of the phaser, which never feels harsh.

While Speed varies the LFO rate, Character controls the amount of voltage going into the LFO and can actually alter the triangle wave so that it approaches a sine wave. Messing around with the Character knob, I discovered a couple of LFO sweet spots in which a warm phased sound seemed to bloom.

The Invert footswitch selects how the phased signal combines with the normal signal. When the accompanying LED is red, the phased sound is added to the normal sound and produces the classic whoosh. When the light is green, the phased sound is subtracted and yields a deeper sound. That mode was particularly useful for enhancing the bottom end in my bass lines.

No Analog Sty

There are a variety of applications for the EP-1. For rotating-speaker effects, I liked splitting the stereo output of my workstation, sending the left channel through the EP-1 before routing it to the mixer. You can also create a sidechain FX loop with a Y-cable by sending your clean signal to the Trigger and feeding the other branch through your other effects and into the EP-1's main audio input. That method creates unique textures—the envelope is controlled by your instrument's clean signal while the effects-laden signal is phase modulated.

The EP-1's sound and versatility justifies its price tag. The unit provides a rich, almost vowel-like quality to phasing effects, and speaks with a pleasing, chunky sound.

Overall Rating (1 through 5): 4
Pigtronix/Absara Audio LLC
www.pigtronix.com

DISCRETE DRUMS

Discrete Percussion: the Eric Darken Collection

By Mike Levine

When listening to the loops in *Discrete Percussion: the Eric Darken Collection* ($129), you quickly realize that percussionist Eric Darken is a master operator of the standard tools of his trade, and has an uncanny aptitude for turning everyday household objects into instruments. This two-disc collection seamlessly mixes reliable standbys such as congas, shakers, and tambourines, with the sounds of toilet seats, briefcase latches, computer-keyboard spacebars, egg cartons, watering cans, stick-bag zippers, and other improvised percussion.

A lot of creativity went into the construction of these loops, and they offer a fresh twist on the standard percussion repertoire. But don't get the wrong idea—this is no collection of *bonks* and *boinks*; these loops are very musical and will fit nicely into a wide range of pop styles. And, if you're producing music that's more "out there," you'll find fodder here, as well.

Darken Your Doorway

The collection consists of 40 multitrack loops in 16-bit, 44.1 kHz WAV format. Each loop has a separate main section and an ending hit.

The loops are also split into separate tracks (some stereo, most mono) for their various percussion elements, and each loop has a stereo drum machine track that accompanies it, programmed by Discrete's Rick DiFonzo. Taking all 40 loops into account, there are a total of 890 tracks on the discs, featuring 102 different percussion instruments.

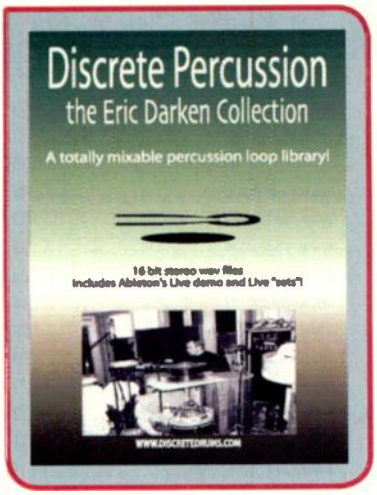
You also get a series of full mixes and alternates for each loop, including a dry full mix, a full mix with effects (generally reverbs and delays), and dry and wet full mixes without the drum machine.

The multitrack nature of *Discrete Percussion: the Eric Darken Collection* makes it possible to use as many or as few of the instruments from a given loop as you'd like. You could have a single percussion element, a series of elements, or the full complement—depending on your needs.

You also get individual hits of all the instruments (except for the drum machine), making it possible to, for example, load a sampler with bizarre percussion or augment the loops with a hit here or there. The sound quality is excellent.

Getting Loopy

Each loop is offered at a single tempo, and the collection features loops ranging from 69 to 175 bpm. The loops are composed of standard percussion instruments interspersed with nonstandard ones.



Discrete Percussion: the Eric Darken Collection **from Discrete Drums features multitrack loops that mix conventional percussion instruments with improvised ones such as watering cans, computer keyboards, toilet seats, and briefcase latches.**

For example, on a loop called The Cruise, the instruments include talking drum, shakers, cowbell, and a paint can. One of the more bizarre and amusing loops in the collection is called Throne Room, which features four different tracks of Darken drumming on various parts of a toilet, along with a spring-drum track that provides flushlike sounds (see **Web Clip 1**).

Overall, the loops offer an eclectic mix of percussion feels—there are Latin, African, and even Native American influences woven in and around pop/funk drum machine grooves. When you do include the drum machine track, the loops are full enough to support a song without additional drum tracks (see **Web Clip 2**).

Although the full mixes are fairly intense, you can include fewer tracks to achieve more subtle textures. I pulled out a single track of the loop called Carpal Tunnel, featuring Darken drumming on a computer keyboard, and used it to supplement some percussion from another collection on a song I was arranging. Mixing in Darken's loop brought new life to the track.

The one shortcoming of this collection, as seems to be the case with Discrete Drums products in general, is the lack of documentation. It's particularly noticeable here; there is no manual—only a list of loops on the back of the box. You do get an audio disc featuring the loops, which allows you to audition them. There are no track numbers listed on the box, however, which makes it difficult to keep track of which loop you're listening to. A numbered track list would add greatly to the audio disc's usefulness.

Percussive Thoughts

Documentation issues aside, this is a solid collection. Darken's chops and creativity, combined with Discrete's production values and additional programming, make it fun to listen to and very musical. If you're looking for bread-and-butter percussion loops, you may want to look elsewhere, but if you want different-sounding textures that will fit nicely into most pop-music styles, go to the company's Web site and give this collection a listen. EM WEB CLIPS

Overall Rating (1 through 5): 4
Discrete Drums
www.discretedrums.com

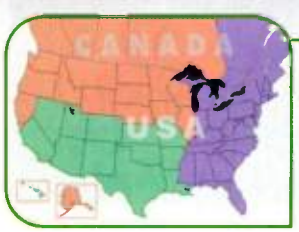
ADVERTISER INDEX

ADVERTISER	INTERNET	PAGE
Apogee	www.apogeedigital.com	81
Apple Computer	www.apple.com	2-3
Arturia	www.arturia.com	87
Audio-Technica	www.audio-technica.com	80
Audix	www.audixusa.com	125
Auralex	www.auralex.com	138
B&H Photo-Video (Integrated)	www.bhphotovideo.com	85
B&H Photo-Video (Integration)	www.bhphotovideo.com	121
Bag End	www.bagend.com	139
BIAS	www.bias-inc.com	107
Big Fish Audio	www.bigfishaudio.com	23
Cakewalk (Project 5)	www.cakewalk.com	101
Cakewalk (Sonar 4)	www.cakewalk.com	19
Carillon	www.carillonusa.com	43
Carvin	www.carvin.com	49
Digidesign	www.digidesign.com	31
DigiTech	www.digitech.com	70
Disc Makers	www.discmakers.com	79
Discrete Drums	www.discretedrums.com	12
Echo Digital Audio	www.echoaudio.com	155
E-mu Systems	www.emu.com	6
Focusrite	www.focusrite.com	55
Frontier Design Group	www.frontierdesign.com	119
Full Compass Systems	www.fullcompass.com	67
Full Sail	www.fullsail.com	114
Garritan Orchestral Strings	www.garritan.com	130
Genelec	www.genelec.com	11
Graph Tech Guitar Labs	www.graphtech.com	122
Ilio (AAS)	www.ilio.com	73
Ilio (Synthogy, Ivory Grand Pianos)	www.ilio.com	13
Ilio (Vienna Symphonic Library)	www.vsl.co.at	45
Institute of Audio Research	www.audioschool.com	12
JBL Professional	www.jblpro.com	25
Joemeek	www.joemeek.com	135
Kay Sound	www.Kaysound.com	57
Korg (Kontrol49)	www.korg.com	21
Korg (Triton Extreme)	www.korg.com	20
Lexicon	www.lexicon.com	65
Line 6 (Propellerhead Software)	www.line6.com	53
Mackie (Onyx 800R)	www.mackie.com	69
Mackie (Onyx)	www.mackie.com	17
Mackie (Tracktion 2)	www.mackie.com	36-37
Mark of the Unicorn	www.motu.com	156
M-Audio (GForce)	www.m-audio.com	83
M-Audio (Rigs)	www.m-audio.com	75
M-Audio (Studiophile BX5a)	www.m-audio.com	38
Music & Sales (MindPrint)	www.mindprint.com	59
Musician's Friend	www.musiciansfriend.com	99
Musicians Institute	www.mi.edu	100
Native Instruments	www.ni-absynth.com	115
Neumann USA	www.neumannusa.com	137
Neutrik	www.neutrik.com	63
Radial Engineering	www.radialeng.com	127
Remix Hotel NYC	www.remixhotel.com	108
Roland	www.rolandus.com	35
SAE Institute	www.sae.edu	103
Shure	www.shure.com	95
Sibelius Software	www.sibelius.com	128
Sonic Distribution (Z3300a)	www.sonic-distribution.com	48
Sonic Distribution (Z5600a)	www.sonic-distribution.com	109
Sonic Implants	www.sonicimplants.com	89
Sweetwater Sound	www.sweetwater.com	27
Sweetwater Sound (Creation Station Series)	www.sweetwatersound.com/pc	29
Sweetwater Sound (DigiDesign)	www.sweetwater.com	110-111
Sweetwater Sound (Mackie)	www.sweetwater.com	131
Sweetwater Sound (MOTU Studio)	www.sweetwater.com	150-151
Sweetwater Sound (MOTU Studio)	www.sweetwater.com	152-153
Sweetwater Sound (Photon X25, Rosetta 800)	www.sweetwater.com	132-133
Sweetwater Sound (PreSonus)	www.sweetwater.com	91
Tascam (GigaStudio 3)	www.tascam.com	77
Tascam (US-2400)	www.tascam.com	9
Taxi	www.taxi.com	93
TC Electronic	www.tcelectronic.com	15
Universal Audio	www.uaudio.com	47
USA Songwriting Competition	www.songwriting.net	129
VirtuosoWorks Inc.	www.notionmusic.com	61
Waves	www.waves.com	33
West LA Music	www.westlamusic.com	138
Yamaha (Motif ES, Cubase SX 3)	www.yamaha.com	4-5
Yamaha (Pro Audio)	www.yamaha.com	41

ELECTRONIC MUSICIAN MARKETPLACE ADS

AEA	www.ribbonmics.com	143
Cascade Microphones	www.cascademicrophones.com	143
Central Computers Systems	www.centralcomputer.com	142
Chameleon Labs	www.chameleonlabs.com	144
Crystal Clear Sound	www.crystalclearcds.com	143
Emulation Media	www.emulationmedia.com	142
Florida Music	www.floridamusicco.com	142
House Ear Institute	www.hei.org	142
Labworks	www.labworks.co	141
Lonely Records	www.lonelyrecords.com	143
Media Services	www.mediaomaha.com	144
Omnirax	www.omnirax.com	145
Paramount Technology	www.ptipc.com	144
PC Audio Labs	www.pcaudiolabs.com	144
Phonic	www.phonic.com	141
Play-It Productions	www.play-itproductions.net	141
Studio Cat	www.studiocat.com	145
Vancouver Film School	www.vfs.com	143

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

INDIE MUSIC CD'S

1. Tango
2. Jive/Swing
3. English Waltz
4. Chacha
5. Fox Trot
6. Viennese Waltz
7. Mambo/Salsa
8. Merengue
9. Polka
10. Quick Step
11. English Waltz
12. Rumba - Bolero
13. Samba
14. Chacha

Helmut Licht

Baltimore Dances #11
Fox Trot, Tango, Salsa, Merengue, Waltz, etc.
$14.00

www.ballroommusic.com

MASTERING & PRODUCTION

PARTS & ACCESSORIES

HOTWIRED!

Your Custom Cable House
Founded BY a recording professional, FOR recording professionals.
MOGAMI AND NEUTRIK
Custom Cable Assemblies
info@hotwiredcables.com
1-877-67WIRED!

MASTERING
Guaranteed to give you that "Big Label" sound.
$475 Complete Album Analog & Digital Mastering!
New York's Premiere Mastering Studio
Check Out Our Website...
www.musichousemastering.com
1-800-692-1210
Located in NY, Serving the US ... Since 1989

You should care who makes your CD.
WE DO.

- the best customer service in the business*
- instant online quote
- inhouse mastering, design & multimedia
- quality finished CDs, DVDs & vinyl

MUSIC MANUFACTURING SERVICES
www.musicmanufacturing.com
US: 1-800-293-2075
Canada: 1-800-667-4237
New York • Toronto • Montreal • St. Johns
*Read our client survey results to find out more.

all under one roof!
deal direct & SAVE
FREE CATALOG or CUSTOM QUOTE
Compact Disc Replication • Cassette Duplication • Complete Packages • Digital Mastering • Graphics and Printing
C&C MUSIC
You'll Hear & Feel the Difference
www.CandCmusic.com
OUTSIDE THE U.S. CALL: 631-244-0800
Toll Free: 800 ★ 289 ★ 9155

RECORDS, TAPES, CDS

Whitewater Studios
MASTERING · CDs TAPES
Complete CD Mastering $375.00
FREE BAR CODE! 500 Bulk CDs $349 FREE BAR CODE!
1000 CDs complete $999
Short-Run CD packages · Real-Time cassettes
We give you the best in service & price!
828-274-0956 9 Busbee View Rd Asheville, NC 28803
www.whitewaterrecording.com

For the best price in CD Replication ....
there is only one number you'll need!
1.888.891.9091
MEDIA SERVICES WWW.MEDIAOMAHA.COM

SWEET...
Almost 20 yrs. Experience
Buy Direct & Save $$
1000 Retail Ready CDs $1079
Includes: Manufactured 3 Color CDs • Full Color Inserts • Jewel Case • Shrinkwrap
100 Retail Ready CDs $199
Includes: Dupl. CDs (1 color on CD) • Full Color Inserts • Jewel Case • Shrinkwrap
EASTCO MULTI MEDIA
1-800-365-8273
www.eastcomultimedia.com

www.yourmusiconcd.com
100 BULK CDRS $59
includes cdr, and duplication
100 BASIC C... $99
Special 10 Free CDs with 100 or more package
300 FULL COLOR PACKAGE $549
100 FULL COLOR CDR PACKAGE $199
includes cdr, cd print, color cover(4/1) & tray card(4/0) assembly, jewel case, and shrinkwrap, from your artfiles
500 FULL COLOR PACKAGE $824
1000 FULL COLOR PACKAGE $1174
SNS DIGITAL INC
ATLANTA 678-442-0933
TOLL FREE 1-877-442-0933

HEY LOOK! WE'RE ON THE WEB!
Toll Free: 800-538-2336
NRS National Recording Supplies Inc.
All Formats! Best Prices!
www.tapes.com

CD, CASSETTE, CDR and CD-ROM
Complete Packages!
DDAI DIGITAL DYNAMICS AUDIO INC.
1-800-444-DDAI
www.4ddai.com
CD/CASS MASTERING
CD/CASS REPLICATION
CEDAR RESTORATION
GRAPHIC DESIGN
FILMS AND PRINTING
CD-ROM AUTHORING

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

ANALOG SYNTHS

CASES

EMPLOYMENT

FURNITURE

EQUIPMENT FOR SALE

INSTRUCTION & SCHOOLS

INDIE MUSIC CD'S

PARTS & ACCESSORIES

MASTERING & PRODUCTION

RECORDS, TAPES, CDS

TALENT

Want the ultimate studio-to-go?

Apple 17-inch PowerBook G4™

The most powerful PowerBook ever

More power. More speed. More Digital Performer. As in more tracks, more plug-ins and more virtual instruments. The breathtaking 17-inch PowerBook has just been speed-bumped. Again. To a blazing 1.67GHz. The PowerBook is the ideal platform for DP, the all-new Traveler, and a host of third-party plug-ins and add-ons.

MOTU Traveler™

Bus-powered high definition FireWire audio

The first bus-powered FireWire audio interface to offer four mic inputs and exceptionally high-quality high definition analog recording and playback. Just plug in the FireWire cable and power everything off the battery in your computer — you can operate your studio anywhere! Slides easily into your knapsack or bag, next to your PowerBook.

Alesis Photon™ X25

Portable 25-Key USB MIDI Controller / Audio Interface

Looking for the ultimate compact keyboard controller for your MOTU studio-to-go? The Photon X25 delivers the revolutionary Alesis Axyz controller dome and ten 360-degree rotary knobs, giving you powerful hands-on MIDI control of your Digital Performer studio and software plug-ins. Advanced features include 24-Bit 44.1/48 kHz USB audio I/O with balanced stereo audio inputs and outputs, 25 key, velocity sensitive keyboard, full-size pitch and modulation wheels, and an LCD screen with dedicated encoder for fast and easy set-up.

Call the DP 4.5 and MOTU experts.

Waves IR Convolution Reverb Series

Stunningly realistic acoustic environment simulation

The new Waves IR convolution reverb series brings unprecedented realism to your MOTU studio, while also offering the flexibility of traditional parameter control not found in other convolution reverb systems. IR-L lets you start with exact reproductions of well over 50 acoustic environments, and then tweak things like pre-delay and reverb time while maintaining the character of the original space. IR-1 V2 adds even more parameter control, plus the ability to sample your own acoustic spaces. No matter where you track, Waves can put you in control of your aural environment!

Native Instruments Komplete™ 2

Software Bundle with 11 Standalone or Plug-in Instruments/ Effects

For DP4 users who want it all: the legendary sound of the B4 Organ, the endless possibilities of REAKTOR 4, the incredibly unique ABSYNTH, the futuristic power of FM7T — KOMPLETE 2 delivers an infinite universe of sound, uniting every essential type of instrument and effect in a 10 gig sonic workstation for your DP4 desktop studio. Komplete 2 is also an amazing value: for less than the combined retail price of Kontakt 2 and Reaktor 4 you also get Absynth 3, Battery 2, B4, FM7, Pro-53, Kompakt, Intakt, Vokator and Spektral Delay. Expand your Digital Performer studio today!

Spectrasonics Stylus™ RMX

The power of groove production

Stylus RMX is the first product to offer the combined power of Groove Control™ with Spectrasonics Advanced Groove Engine (S.A.G.E.™) giving you dramatic new control over groove production. Dozens of new features include a completely redesigned interface, a new 7.4 GB core library of cutting edge grooves and sounds produced by Eric Persing, and the ground-breaking, always changing Chaos Designer™. Expand Stylus RMX with 9 new S.A.G.E. Xpanders, featuring live drums, percussion, remix elements, and more. The ultimate real-time groove module for DP!

IK Multimedia Sonik Synth™ 2.0

Synth Workstation Plug-in with 8.5GB Sample Library

Imagine creating new and unique sounds from a combination of traditional instruments, one-of-a-kind acoustic textures and classic synth sounds, all in a plug-in. Sonic Synth 2 gives you thousands of samples from its 8.5GB sound set developed by Sonic Reality which is powered by the flexible synthesis and effects capabilities of IK Multimedia's SampleTank engine. Includes orchestral soundscapes, ethereal vocal layers and wine glasses, plus traditional keyboards, guitars, drums and ethnic instruments and a comprehensive selection of analog and digital synth sounds. Sonik Synth is the perfect way to bring sound of a powerful synth workstation to your Digital Performer desktop.

(800) 222-4700
www.sweetwater.com

Authorized Reseller

Sweetwater
music technology direct

Want to expand your MOTU studio?

BIAS Peak™ 4.1

Mastering and Restoration Edition

Peak 4.1 plus SoundSoap Pro and SuperFreq. Imagine the world's most popular stereo audio editing, processing, and CD mastering program for the Mac, combined with unparalleled noise reduction and restoration technology — all at a jaw dropping low price. You get Peak 4.1 (including ImpulseVerb, Sqweez, Vbox SE, Jam 6, SFX Machine LT, and more), SoundSoap Pro (combines four state of the art restoration and noise reduction tools in a single plug-in), and the SuperFreq suite of mastering EQs all in one great package. Launch Peak directly from DP4 for more editing and processing power. Run SoundSoap Pro within DP4 or in Peak as an AU plug-in. For the very best in sample editing, batch processing, file conversions, loop creation, sound design, restoration, and Redbook CD mastering on OS X, pick up the Peak 4.1 Mastering and Restoration Edition today — the perfect mastering and restoration companion for DP4!

Glyph GT 051™

High Performance Desktop Hot Swap FireWire Hard Drive

Perfect storage for a PowerBook/Traveler-based studio, the GT 051 tabletop chassis works with highly portable, Seagate 7200 RPM-equipped GT Key hot-swappable drives, available in capacities up to 400GB. Using Integrity™, Glyph's proprietary FireWire hot-swap technology, you can swap drives without rebooting your computer or restarting drives. GT Keys are housed in sound-dampening metal for ultra quite operation. With a stainless steel fan-cooled enclosure, the GT 051 has a built-in power supply and is rack-mountable. The GT 051 comes standard with a three-year warranty, while GT Keys carry an additional overnight advance replacement warranty for the first year.

PreSonus Central Station™

A Console Master Section Without the Console!

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.

Gator GRC-Studio-2-Go™

Road-worthy case for your MOTU gear

The GRC-Studio-2-Go is a rack ready, ATA style 2U rack case constructed of rugged Polyethylene with an extra, plush adjustable laptop compartment with web strap tie-downs for extra protection. Permanently connect your PowerBook, Traveler and rack gear through an accessory hole between compartments — convenient!

Apple AppleCare™

Extend the life of your PowerBook

Of course, the tech support wizards at Sweetwater can help you with any operational issues you might encounter, but if you want complete peace of mind, the AppleCare Protection Plan is the perfect insurance policy. No matter what dangers may meet your portable rig on the road, with AppleCare, you're totally protected.

Call the DP 4.5 and MOTU experts.

Mackie Onyx Mixers with Optional Firewire Interface

High-quality compact mixers with direct connection to your studio

When you're on the road and looking to record a full band, the Onyx series of mixers from Mackie is the perfect complement to your MOTU Traveler. Whisper quiet and built like a tank, Onyx mixers feature an all-new mic preamp design capable of handling virtually any microphone. With the optional Firewire card, you can connect an Onyx mixer to your laptop with a single Firewire cable and have all the extra mic preamps and line inputs you need to capture every drum mic, vocal mic, individual synth output and DI the band throws at you. Since Digital Performer works seamlessly with multiple Core Audio devices, configuring a Traveler/Onyx system is a snap.

Mackie HR-series Active Studio Monitors

Nearfield monitors for your MOTU studio

Mackie's HR-Series Active Studio Monitors are considered some of the most loved and trusted nearfield studio monitors of all time, and with good reason. These award-winning bi-amplified monitors offer a performance that rivals monitors costing two or three times their price. Namely, a stereo field that's wide, deep and incredibly detailed. Low frequencies that are no more or less than what you've recorded. High and mid-range frequencies that are clean and articulated. Plus the sweetest of sweet spots. Whether it's the 6-inch HR-624, 8-inch HR-824 or dual 6-inch 626, there's an HR Series monitor that will tell you the truth, the whole truth, and nothing but the truth.

Mackie Control Universal and Extender

Automated hands-on control for the DP studio

Imagine the feeling of touch-sensitive, automated Penny & Giles faders under your hands, and the fine-tuned twist of a V-Pot™ between your fingers. You adjust plug-in settings, automate filter sweeps in real-time, and trim individual track levels. Your hands fly over responsive controls, perfecting your mix — free from the solitary confinement of your mouse. Mackie Control delivers all this in an expandable, compact, desktop-style design forged by the combined talents of Mackie manufacturing and the MOTU Digital Performer engineering team. Mackie Control brings large-console, Studio A prowess to your Digital Performer desktop studio, with a wide range of customized control features that go well beyond mixing. It's like putting your hands on Digital Performer itself.

Authorized Reseller

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.

FREE SHIPPING!

NO MINIMUM PURCHASE! NEARLY EVERY ITEM QUALIFIES

FedEx Ground

Sweetwater

music technology direct

Fax (260) 432-1758 • 5335 Bass Road, Fort Wayne, IN 46808

(800) 222-4700

www.sweetwater.com

WRH

Close to You

By Larry the O

The desire for intimacy is a natural human trait. If music is a means of communicating perceptions and feelings, then it is equally natural for musicians to want to express as well as experience intimacy with their audience during performances. Expressing and experiencing intimacy take very different forms.

The simplest way to experience intimacy with an audience is to be close to them in a literal, physical sense. Anyone who has ever played in a club has felt the energy that happens when a small space is packed with people ready to have a good time. The performers can pick out individual faces or watch one person dance. They breathe the same (often stale) air as the audience does, and can easily sense the level of interest and enthusiasm the crowd is feeling. That facilitates the feedback loop of energy that emanates from and flows back to the stage that often drives a good performance to be great.

Those musicians who attain large-scale success often express in interviews a wish to again play clubs, or even theaters, so that they can feel more in touch with their audience. Their real challenge, however, is finding a way to establish intimacy with the huge audiences to which they more commonly play.

Not all acts court intimacy with large audiences, of course. Elaborate stage productions do not tend to foster a sense of closeness, nor are they intended to; they are intended as spectacle, in which the audience is less a participant than an observer. But for those who are interested in creating an intimate atmosphere on a large scale, involving the audience is key. Sometimes it is achieved because of the nature of the material or the manner in which the performer speaks to the audience. Other times, it can be the onstage setting, which might suggest something closer to a living room than a circus. These efforts can be surprisingly successful when done sincerely.

Expressing intimacy in a recording is a much more difficult task, since there is no interaction through which to create it. Without a physical environment or the opportunity to talk to or to observe the audience, the tools available for creating intimacy are the material, the performance, and the production.

Intimate material most often deals with emotions and interior lives, but it can also be approached indirectly with songs referencing common touchstones and archetypes. "Penny Lane" is a good example of that approach. In instrumental music, intimacy can often be obtained by limiting the size of the ensemble; although a sextet can certainly achieve intimacy, a solo violinist or jazz trio can do so more easily.

Intimacy in performance rests largely in the "touch" that musicians use, both vocally and instrumentally. There is something in Joni Mitchell's voice or Yo Yo Ma's cello that drips emotion and reeks of humanity, and that establishes intimacy instantaneously. Sometimes a slightly flawed performance can feel more intimate than a letter-perfect one, as when a singer's voice breaks on a single note while singing a significant lyric. Hank Williams's music contains classic examples of that technique. In all of these cases, the artists must reveal themselves to make the feeling resonate.

It is a more subtle matter to consider how production of a recording serves to induce intimacy, because that is focused more on setting than content and, by its nature, entails considerable analytical thought. Still, production can be key in delivering an intimate message. For example, the use of reverb can instantly convey a sense of immediacy if it is used sparingly, simulating smaller spaces, or it can give a feeling of loneliness or interior expansiveness if it is used to bathe a solo guitar in a large space, such as was done on a number of John Fahey's albums.

Panning can be an even more subtle technique for suggesting intimacy. Sometimes eschewing wide panning and keeping the soundstage slightly smaller than a full spread brings a feeling of closeness, as though the musicians were in your living room. Keeping the production simpler by limiting the number of different instruments or tracks is another technique for invoking intimacy, and quiet productions often feel more intimate than loud ones.

Of course, all that is emotional or passionate is not necessarily intimate, but emotion and passion are things that, when shared between people, often build intimacy between them.

The beauty of music and sound is that they can so directly access a listener's feelings, and that is the basis for much of the most powerful artistic expression. Many statements can be made sonically, but none are more special than the closeness of getting deep inside a listener's heart by conveying intimacy. EM

AUDIOFIRE™

FIREWIRE RECORDING

AUDIOFIRE12

• 12 +4dBu Inputs • 12 +4dBu Outputs • 24BIT 192kHz Sampling • MIDI INPUT/OUTPUT • Word Clock Sync

AUDIOFIRE8

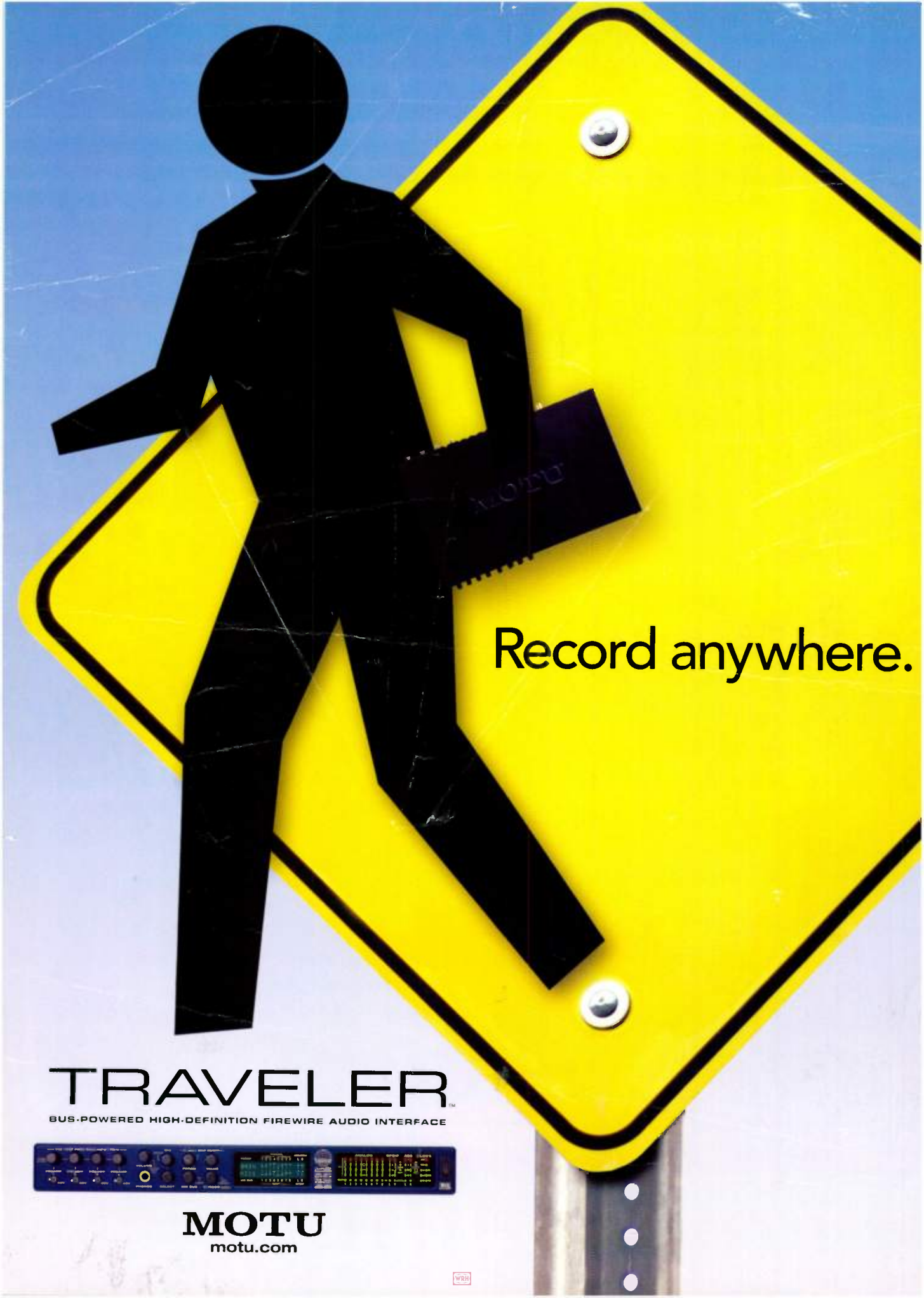
• 2 Universal Inputs with mic preamps, meters, trim, and channel inserts • MIDI input/output • Headphone Output
• 6 +4dBu Inputs • 8 +4dBu Analog Outputs • S/PDIF input/output • Word Clock Sync

ECHO

DIGITAL AUDIO

ECHOAUDIO.COM

6309 Carpinteria Ave. Carpinteria, CA 93013 Phone: 805.684.4593


Record anywhere.
TRAVELER
BUS-POWERED HIGH-DEFINITION FIREWIRE AUDIO INTERFACE
MOTU
motu.com