» FOUR ALTERNATIVE MIDI CONTROLLERS REVIEWED » UNDERSTANDING DITHER

JUNE 2008

em

ELECTRONIC MUSICIAN

NINE PORTABLE DIGITAL RECORDERS COMPARED

MORE REX TIPS FOR PROPELLERHEAD REASON 4

CREATE ROBO-VOCALS WITH FREEWARE SPEECH SYNTHS

Legendary Bassist Victor Wooten Produces His Latest Album at Home

MASTER CLASS:
REAL-WORLD SCORING WITH ORCHESTRAL LIBRARIES

A PENTON MEDIA PUBLICATION

REVIEWS
YAMAHA TENORI-ON
VIOLET AMETHYST VINTAGE OVERLOUD BREVERB
EUPHONIX MC MIX
AND 5 MORE

EMUSICIAN.COM

Should any human really be allowed this much power?

When it comes to musical power, enough is never enough! That's why KORG has packed the M3 Music Workstation with fantastic sounds from its OASYS-derived synth engine, delivering all the sonic breadth and inspiration you need. Abundant controllers and unique technologies fuel your expressivity, while seamless integration with computer DAWs ensures that the M3 will help you to realize your creativity with ease.

FREE SOUNDS: Still power hungry? Download over 500 new programs and double the sonic power of your M3 for FREE! Awesome classic keys, guitars, basses, brass, woodwinds and more deliver essential sounds for your music. The M3 that you thought you knew keeps getting better and better, and is now more affordable than ever. Check it out at your local Korg dealer today and unleash the power in you.

Check out videos, sound demos and more at www.korg.com/M3

KORG

Inspired to Create. Created to Inspire.

SONAR 7

Feature spotlight:

Active Controller Technology

What it is:

ACT puts you in the driver's seat to get the most out of any MIDI keyboard and control surface. Long gone are the days of frustrating and time consuming set-up. ACT does all of the hard work allowing you to focus on the music.

Why you'll love it:

- Total control when mixing, playing synths, or using FXs
- ACT remaps controls on the fly
- ACT remembers previously used settings so favorite controls are ready to go
- Start quickly with custom settings for popular hardware

This is just one of the thousands of features that makes SONAR 7 Producer Edition the smart choice for professional music production.

For more features and videos visit **www.cakewalk.com/SONAR**

Available at fine music retailers worldwide including:

Guitar Center · Sam Ash · Sweetwater

cakewalk by Roland

With sixteen inputs, the TASCAM US-1641 is the ideal choice for musicians to record the whole band to a computer. Eight mic/line inputs plus six line inputs gives you plenty of channels for a large ensemble, drumset, live recording or worship service. It includes Cubase LE4, Steinberg's latest version, for 48 tracks of 96k/24-bit recording power. Using the latest high-speed USB 2.0 technology, the US-1641 packs the interfacing power of a big console into only one rackspace. The well-connected TASCAM US-1641.....you're gonna need one.

TASCAM
MAKE IT HAPPEN

For more information about this jam-packed state-of-the art recording power box, visit
www.tascam.com

FROM THE KEYS TO THE CROWD: CONNECT.

Roland

You've practiced your set, and you know your songs inside and out. But to really deliver your performance, you need a serious stage piano. Meet the new **RD-700GX** and **RD-300GX** from Roland, and experience a whole new level of power and expression when you dig your fingers into the incredible PHA II **"Ivory Feel"** keyboard (RD-700GX) – a true extension of your creative voice. The pristine stereo-sampled pianos deliver that elusive high-end acoustic piano sound, and you can even custom-design your own piano voice with the Piano Designer feature. So don't just run your set; connect with your audience and get inspired with the new RD-700GX/-300GX. Because the ultimate stage piano performance starts with you.

To see the new RD-700GX and RD-300GX in action, visit www.**RolandUS.com**.

RD-700GX

RD-300GX

BRIAN CULBERTSON

#1 Billboard Contemporary Jazz recording artist, songwriter and producer

Joerg, BEHRINGER Germany Software Engineer and professional Mad Scientist, mutated groundbreaking DSP algorithms for our active speakers.

"CK" harnessed the power of the B412DSP's internal DSP engine for ultra-flat and musical frequency response.

Jason did the super-complex CAD/CAM mechanical design of the B412DSP enclosure.

Hua runs the machine that makes all of our speaker cones. All BEHRINGER transducers are made in-house for ultimate quality control.

Susan, BEHRINGER Speaker Engineer, helped design the high-resolution compression driver. You hafta hear it to believe it.

CROSSBREEDER **GOLDEN EAR** **BITMEISTER** **CONE HEAD** **NIT-PICKER**

These are some of the 3500 technicians, assemblers, designers, software programmers and engineers who are BEHRINGER.

B412DSP. 600 watts of whoop ass meets the ruler-flat precision of 24-bit digital signal processing.

Mega-expensive touring systems sound so good because their sound is processed through racks of sophisticated digital signal processing gear. We know. We're one of the companies that make those 24-bit outboard speaker processors.

Now BEHRINGER has applied a whole chain of DSP including crossover, dual mode limiters, dynamic equalization processing to super-affordable twelve and fifteen-inch active speaker systems. Powered by high-efficiency internal amplifiers with a hefty 600 watts total output.

Ulf Behringer supervised development of the B412DSP.

To hear the B412DSP is to be totally blown away. By keeping signal processing in the digital domain, it's able to deliver a whole new level of accuracy — as well as butt-kicking dynamics and smooth audience-wide dispersion.

Log on for the complete story or get your nether parts whooped at a BEHRINGER dealer today.

The new 600-watt B512DSP, B415DSP and B412DSP active systems. Each also includes a built-in 3-channel mixer with mic preamp!

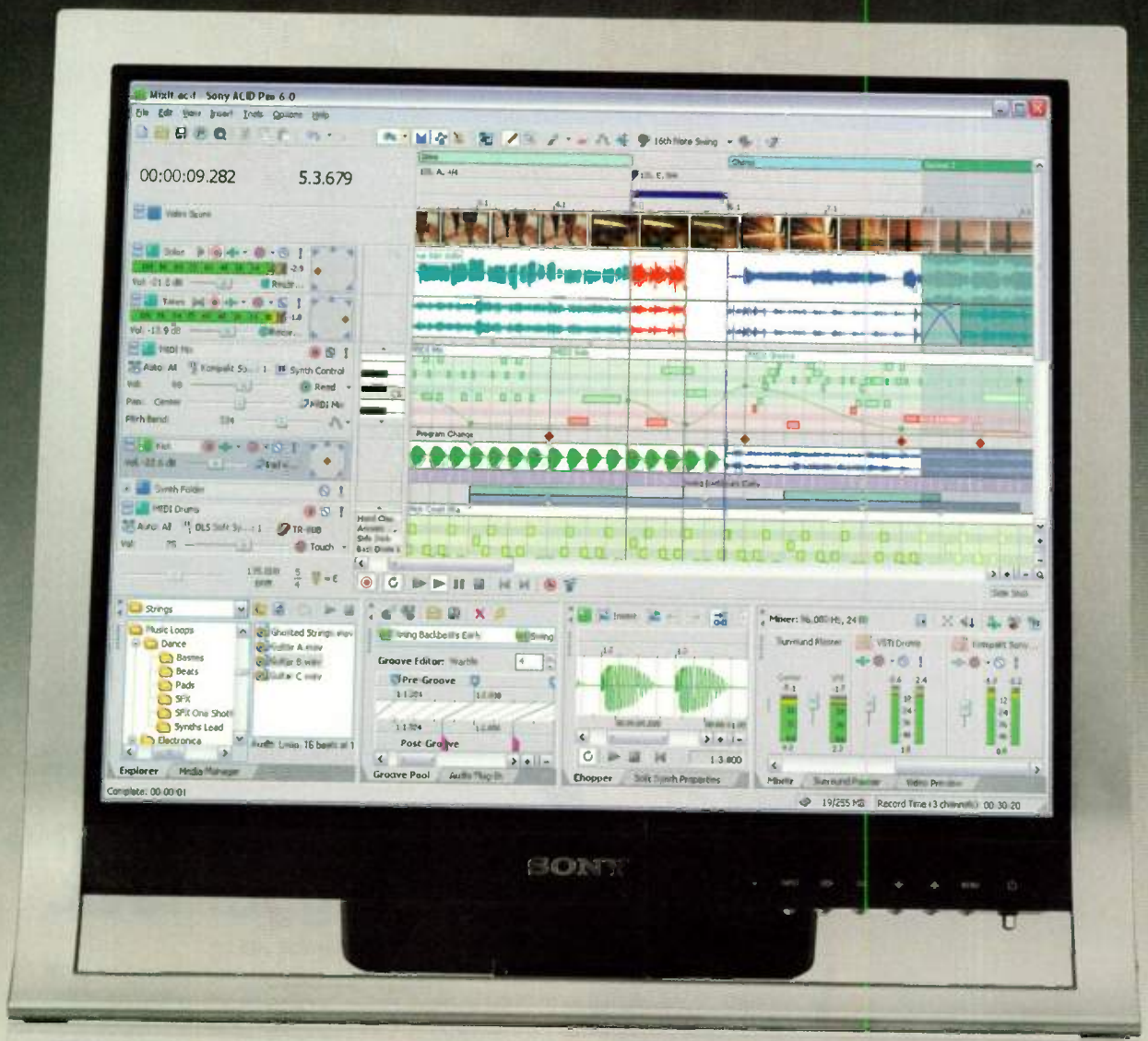
www.behringer.com

BEHRINGER

like.no.other™

SONY

ACID PRO 6



ACID® Pro 6 software is the ideal environment for composition, recording, mixing, and production. Its unique fusion of professional power and exceptional ease of use sets ACID Pro 6 software apart from all other digital audio workstations. With multitrack audio technologies, comprehensive MIDI sequencing, and legendary ACID looping functionality, ACID Pro 6 software will redefine the way you make music. **www.sony.com/acidpro6**

Multitrack recording • Real-time pitch and tempo matching • Inline MIDI editing • Unlimited media clips per track • MIDI track envelopes and keyframes • Drum grid editing • External control surface support • 24-bit, 192 kHz hard disk recording • Built-in DirectX® audio effects • VSTi parameter automation • 5.1 surround mixing • Frame-accurate video scoring • Groove quantization tools • Integrated CD burning • Over 1,000 loops

KOMPAKT

Includes Native Instruments™ KOMPAKT sample playback engine and custom sound library—**a $200 value**

+ + = 6

Reason Version 4
The bigger rack.

We know. It just doesn't add up.

How can the world's mightiest and most modular synth, a fresh sequencer, a revolutionary groove tool and a stunning arpeggiator unit all fit into your smooth, streamlined Reason rack? It's easy, they can't. That's why we made Reason version 4, the bigger rack. Big enough to house a stunning set of new features and devices, your new Reason rack will not only inspire you into making great music, it will provide you with whole new ways of making it.

propellerhead

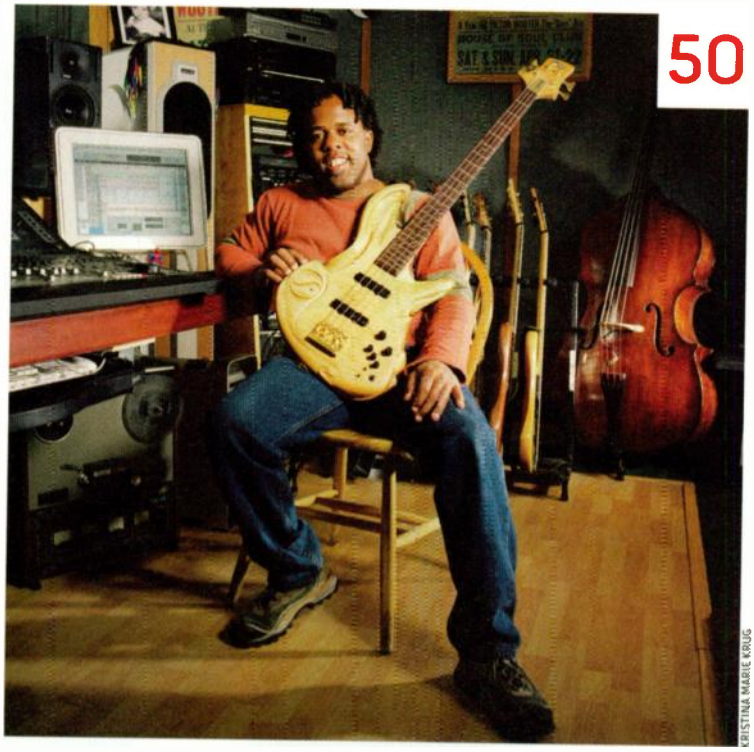
LINE 6 www.line6.com/reason

www.propellerheads.se/reason

em ELECTRONIC MUSICIAN

JUNE 2008 VOL. 24, NO. 6

FEATURES



KRISTINA MARIE KRUG

50

VICTOR'S HOME COOKING

From his early projects with his four musical brothers to his latest album, bass virtuoso Victor Wooten has been way into recording at home. His current studio, VixMix, is in his basement, and it's where he recorded and mixed *Palmystery*. Wooten tells us about how he put the studio together, his disdain of compression, and his thoughts on improvisation.

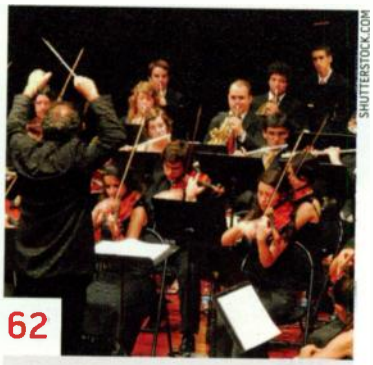
By Mike Levine

38

STUDIO IN YOUR POCKET

Pro-quality digital recorders are more plentiful and compact than ever. EM surveys the field and reports on nine pocket-size products worthy of your consideration.

By Geary Yelton



SHUTTERSTOCK.COM

62

MASTER CLASS: VIRTUAL ORCHESTRA VIRTUOSITY

We score the same piece of music using four of the best full-orchestra libraries to show you how a professional orchestrates on the desktop.

By Rob Shrock

DEPARTMENTS

EM (ISSN 0884-4720) is published monthly with an extra issue in October by Penton Media, Inc., 9800 Metcalf Ave., Overland Park, KS 66212 (www.penton.com). This is Volume 24, Issue 6, June 2008. One-year (13 issues) subscription is $24. Canada is $30. All other international is $50. Prices subject to change. Periodicals postage paid at Shawnee Mission, KS, and additional mailing offices. Canadian GST #129597951. Canadian Post International Publications Mail Product (Canadian Distribution) Sales Agreement No. 40612608. Canadian return address: Bleuchip International, P.O. Box 25542, London, ON N6C 6B2. POSTMASTER: Send address changes to EM, P.O. Box 15605, North Hollywood, CA 91615.

em ELECTRONIC MUSICIAN

COLUMNS

28

27

98

90

30

26

104

108

QUICK PICKS 102

- **Samplebase Satellite 1.0 (Mac/Win)** soft sampler and sound library
- **Euphonix MC Mix** control surface
- **Overloud Breverb 1.1.2 (Mac/Win)** reverb plug-in
- **Violet Design Amethyst Vintage** condenser microphone
- **Neyrinck Audio Mix 51 1.03 (Mac/Win)** RTAS surround panner plug-in

REVIEWS

Our most versatile band member

In our band, we like to choose instruments and parts as we go along. Bass, drums, guitars, even vocals; we all take turns playing everything.

But the most versatile member of all is **Samplitude® Music Studio 14**: It records our sessions in crystal clear sound on up to 64 tracks. It also mixes, arranges, masters and even publishes on CD, DVD or directly to the Internet – perfect for our live gigs, jams and recordings.

It's not only the most-purchased music software worldwide, but it's also a truly indispensable member of the band.

Oh... and it plays bass, drums and guitar too. :-)

Available at participating retailers, including:

BEST BUY
Fry's ELECTRONICS
MICRO CENTER computers & electronics

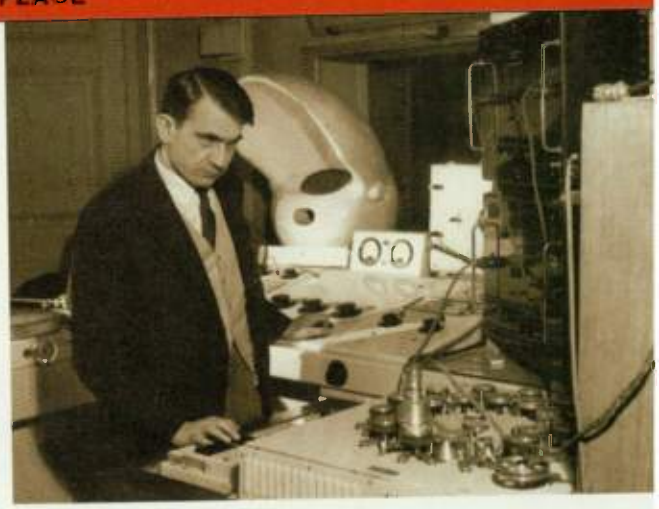
Come try it free for 30 days at:
www.magix.com/studio

MAGIX
the multimedia community

* See www.magix.com

Online @emusician.com

The Electronic Century
Part 2: Tales of the Tape



How much of an influence did the invention of magnetic tape have on the history of music? This article from the EM archives is the second in a 4-part series that explores the instruments, artistic ideas, musicians and entrepreneurs, and breakthroughs in music technology leading into the 21st century. This episode covers musique concrète and the groundbreaking work of Pierre Schaeffer, Karlheinz Stockhausen, Louis and Bebe Barron, and Iannis Xenakis. **emusician.com/tutorials/electronic_century2**

By Joel Chadabe

Raymond Scott: Circle Machines and Sequencers

You've heard Scott's playful jazz riffs in numerous Warner Bros. cartoons. But did you know he was also a pioneer in electronic-instrument design? Learn how Scott developed the Wall of Sound, the Clavivox, and the legendary Circle Machine in his personal studio, Manhattan Research Inc. **emusician.com/artists/emusic_circle_machines_sequencers/index.html**

By Irwin Chusid

EM Spotlight

Shoptalk with Youth (aka Martin Glover)

Youth pounded the bass for industrial punksters Killing Joke in the late '70s but turned to production and remixing in the following decades. In this archive interview, he shares some of the secrets that helped him make hits with U2, Crowded House, INXS, the Cult, Erasure, Siouxsie and the Banshees, and Faith No More. **emusician.com/em_spotlight**

By Michael Molenda

EM Cast

Our twice-monthly Podcast features interviews with Gina Fant-Saez of eSession.com, producer-engineer Michael Barbiero (Counting Crows, Ziggy Marley, the Allman Brothers), producer–music director Ray Chew *(Showtime at the Apollo)*, and sound designer Scott Sanders (Ear Candy studios). **emusician.com/podcasts**

Helping you choose the right gear...

Making sure it arrives on time...

Taking care of you after the sale...

That's our job...

SALES

"I'm all about the gear — how it works, why it does what it does, how it compares to other products. I spend time in my own studio and a lot of time each week before and after work training with manufacturers so I'm on top of what's new. This way I can quickly narrow down my customers, needs, and make sure they get exactly the right piece of gear."

SHIPPING

"As a musician with a home studio, I know what it's like to pick out just the right gear, and get excited waiting for it to arrive. When the box shows up on the day you expect it, and you open it up and see that everything's perfect — that smile comes across your face. I want every Sweetwater customer to have that feeling."

TECH SUPPORT

"Every customer's setup is unique to them, and I understand the challenges that come along with getting all those pieces to work together. For all of us, any technical issue can be such a creative roadblock. I like knowing that I'm helping customers get on their feet and right back into their projects."

Whatever project you're working on, whatever music you're creating — our job is to help you see it through. Call us today.

Sweetwater
Music Instruments & Pro Audio

sweetwater.com • 1-800-222-4700

It's How You Use It

There are numerous reasons why you record, and probably an equal number of ways. Whether you collect industrial sounds for a drum library, capture sound effects for a multimedia project, keep an audio diary of your songwriting or band rehearsals, or document environmental sounds for art or science, if you're like many of our readers, you carry some sort of audio-archiving device wherever you go, even if it's only your digital camera with its video capabilities. (Despite my camera's compromised omnidirectional mic, which often captures more of my breathing than the subject I'm filming, I've managed to document some unexpected sound events that wound up in my own musical projects.)

Although portable digital recorders have been around for a while, getting them small enough to carry everywhere, reliable enough that you don't have to worry that you might lose a take, and priced affordably has been a long time in coming. In the nearly three years since our last roundup of field recorders (October 2005), the number of portable digital recorders has grown, while the products have shrunk in size and price. Our newly minted senior editor, Geary Yelton, has been chomping at the bit to do a side-by-side comparison of these tiny trackers, and we finally let him loose in the field. As you'll see, some of the recorders include features tailored to the needs of the performing musician, such as a tuner, DSP effects, the ability to set loop points, and tempo- and pitch-changing capabilities.

JANE RICHEY

And speaking of musical activity, we've received a number of letters asking for articles that explore musical topics pertaining to technology. Although we have been steering our interviews in that direction, this issue includes a master class on using desktop orchestral libraries in real-world situations. Rob Shrock, a longtime EM contributor who has been the keyboardist-arranger with Burt Bacharach for many years, orchestrates one of his own pieces using four full-size orchestral sample libraries. His article demonstrates how a professional approaches this class of products, suggesting how you can solve the problems that occur when your project requires sounds that aren't provided in the library you're using.

We're also lucky enough to have an interview this month with one of the great restructuralists of the electric bass, Victor Wooten. Besides being one of the foremost masters on his instrument, Wooten has been honing his recording chops throughout his career, and his most recent release, *Palmystery*, was recorded in his home studio with an amazing cast of musicians (Dennis Chambers, Will Kennedy, Mike Stern, Keb' Mo', Alvin Lee, and numerous members of the talented Wooten and Woodard families, to name just a few). The music is rich with gospel-inspired melodies, solid funk grooves, and, of course, the fiery jazz fusion soloing that Wooten is known for.

An interview such as this reminds me that it's not the technology that makes a compelling record, but the talent of those involved. Sure, it's great to live in an age when we can collaborate with musicians around the world via the Internet; sample, slice, and dice sounds into a rhythm part that would be unplayable by a human; and synthesize timbres never before heard. But ultimately it comes down to the artistry of the people involved—musicians as well as engineers—not whether they used a vintage mic with a customized transformer or an analog or digital synth.

So whether you're using a cassette 4-tracker, an early version of a sequencer on a Mac Plus, or a state-of-the-art DAW, I hope the articles in this issue will inspire you.

Gino Robair
Editor

em ELECTRONIC MUSICIAN

EMUSICIAN.COM
A PENTON MEDIA PUBLICATION

THE BEAT GOES ON

Introducing the **SR18**

For more than 20 years, Alesis has dominated the world of drum machines.

The new SR18 extends that legacy by delivering all of the features you need in a drum machine at a price that can't be beat.

- 32mb high-resolution sound set
- Over 550 drum, percussion and bass sounds
- 32-voice polyphony
- Studio-quality reverb, EQ and compression effects
- ¼" guitar/bass input
- 12 velocity sensitive pads with dynamic articulation
- Battery or AC powered
- 100 preset & 100 user patterns

Great Sound. Great Feel. Great Price. The Alesis SR18

ALESIS
www.alesis.com

Penton Media

CHIEF EXECUTIVE OFFICER
John French, John.French@penton.com

CHIEF REVENUE OFFICER
Darrell Denny, Darrell.Denny@penton.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 electronicmusician@pubservice.com, call toll-free (866) 860-7087 (U.S.) or (818) 487-2020 (outside the U.S.), or write to PO Box 16886, North Hollywood, CA 91606.

REPRINTS
Contact Chris Cheuvront to purchase quality custom reprints or eprints of articles appearing in this publication at (888) 858-8851 (toll-free), (216) 931-9623, or Christopher.Cheuvront@penton.com. Instant reprints and permissions may be purchased directly from our Web site; look for the iCopyright tag appended to the end of each article.

BACK ISSUES
Back issues are available for $10 each by calling (866) 860-7087 or (818) 487-2020.

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 National Archive Publishing Company at (800) 521-0600 or (734) 761-4700, or search the Serials in Microform listings at www.napubco.com.

PRIVACY POLICY
Your privacy is a priority to us. For a full policy statement about privacy and information dissemination practices related to Penton Media products, please visit our Web site at www.penton.com.

CORPORATE OFFICE
Penton Media, Inc.
249 West 17th Street
New York, NY 10011

ABM BPA

PRINTED IN THE USA.

ALSO PUBLISHERS OF MIX®, REMIX®, MUSIC EDUCATION TECHNOLOGY™, COMPUTER MUSIC PRODUCT GUIDE™, PERSONAL STUDIO BUYER'S GUIDE®, AND PERSONAL STUDIO SERIES.

Elite Orchestral Percussion

More than 250 traditional, ethnic, and unusual orchestral percussion instruments.

Fully integrated humanizing engine for the ultimate in realism.

Sophisticated articulation and pattern generation engine.

visit vir2.com/eop

vir2 INSTRUMENTS

LETTERS

It's Easy Being Green

I really enjoyed your article on going green (see the May 2008 issue of EM). Excellent timing when energy costs are going sky high. I just thought I'd pass along a link for recycling CDs and DVDs: cdrecyclingcenter.com. If your local recycling center doesn't accept CD and DVD waste, you still have an option.

—ANDREW,
ST. LOUIS, MISSOURI

REMEMBERING STRANGE

I was checking my email when I got a forward from a certain Laurie Spiegel (with whom I have had correspondences through the years), in which she informed me of the passing away of my mentor, Allen Strange. To say the least, I burst into tears. I was able to visit Allen during the summer at his beautiful Bainbridge Island home in Washington, where we had good Mexican food, discussed music, and had a one-on-one teaching session in Max/MSP. It was a time I will always remember. After hearing about his passing, I posted in what forums I could find, recollecting memories and sharing with others his stories. I also found out about the far-flung influence he had on a lot of people, some of whom had not even had the pleasure to know him personally but were influenced by his writings. (His book *Electronic Music: Systems, Techniques, and Controls* is still available as a download from primisonline.com.)

Some stories I recall: I first met Allen at De Anza College (in Cupertino, California), where I took the electronic-music course. I went into the class not knowing a filter from an envelope. After a year, he recommended me as a tutor for the class. I also took private lessons from him. One of his methods was to bring me into his room full of Buchla synths, unplug all the patch cables, hand them to me, and then leave the room! Another neat fact was, although well known for his avant-garde compositions and techniques, he also taught


DOUGLAS DIRST

a class in country music. I also found it interesting that he played bass in a jazz ensemble with David Bristol, who was one of the main programmers for the [Yamaha] DX7 when it came out. When I got to visit him last summer, he told me all sorts of stories about Don Buchla and how he came up with the designs for his synths.

Through the years, I still kept in touch with him. After getting into sound design for soft synths and working with Camel Audio, I was able to interview him, in which he discussed his past work and what he was working on.

After opening this April's issue of EM, I was very surprised to see yet another influenced soul in the form of Gino Robair. I was thankful that EM had a touching write-up about Allen and his influences (see "First Take"). He has been a big influence on my own work, as well as on countless others, as he was a pioneer for electronic-music education and a composer for new music. May he continue to influence us all (in strange ways!).

TIM CONRARDY
VIA EMAIL

SHOW ME THE TITLE

I read with great interest the Brooke Wentz Q&A (see "Industry Insider" in the April 2008 issue of EM) on expanding opportunities for music licensing. It raised a question that I hope you can answer.

She suggested that we send our material to music supervisors on CDs. She gave instructions for labeling the CDs and said, "I hate . . . throwing a CD into my iTunes and then having to put the titles into the songs . . . The coding should be correct."

ITunes looks up the titles of songs from the online Gracenote CDDB database. This database is restricted to commercial CDs. Is there software that we can use to encode a home-burned, noncommercial CD so that the track titles will appear in iTunes?

BILL OCHS
NEW YORK, NEW YORK

EM executive editor Mike Levine replies: Bill—Fortunately, the Gracenote Media Database (formerly referred to as the CDDB) is not restricted to commercial CDs, so independent musicians can use it for their demos. Here's how to upload your CD's track info to the database:

1. Put the CD into your computer and open iTunes.

WE WELCOME YOUR FEEDBACK

Address correspondence to:

Letters
EM
6400 Hollis Street, Suite 12
Emeryville, CA 94608

or email us at emeditorial@emusician.com. Published letters may be edited for space and clarity.

MO6

MO8

- The sounds of the Motif ES
- Both a song and a loop-based pattern sequencer for everything from making beats to complete song arrangements
- All the hook ups to use the MO with your computer including a built-in stereo digital out, complete remote control of your computer software and even Studio Connections™ compatibility so you can treat the MO just like a VSTi software instrument
- A great price!*

STUDIO CONNECTIONS AUDIO

That's all there is to say and all there is to do now is—make MO' music.

www.yamaha.com www.yamahasynth.com www.motifator.com

*estimated street price: M06–$1199 MO8–$1599

YAMAHA

NEXT MONTH IN EM

JULY 2008

COVER STORY

Windows on the Mac

We describe the ups and downs of running Windows on a Mac—in particular, the tribulations of loading and running different audio applications and installing audio hardware.

FEATURES

Production Values: Bob Katz

Mastering engineer Bob Katz weighs in on the "loudness race" and the consequent loss of dynamic range in contemporary CDs.

Headphone Roundup

EM takes a look at seven pro-quality headphones for studio use.

COLUMNS

Making Tracks: Picking Up the Pieces

Learn new tricks to get the most out of creating MIDI drum tracks in Digidesign Pro Tools.

Sound Design Workshop: Guerrilla Pitch Correction

Misusing pitch-correction software often yields surprisingly musical results.

Square One: Podcasting 101

EM gets you started on building your own Podcast. We tell you which tools you'll need and give you ideas about how to configure your feed.

Industry Insider: Q&A: Alan Friedman

A CPA specializing in the music industry explains how incorporating can help self-employed musicians protect their assets.

. . . and much more!

LETTERS

2. Select all the tracks in the iTunes window.

3. Select Get Info (Command + I on the Mac or Control + I in Windows), and enter the common info (album name, artist, year, genre, copyright info, and so on).

4. Select each track individually, hit Get Info, and enter its correct name.

5. Go to Advanced→Submit CD Track Names. Your info will be uploaded to the Gracenote database. Once it's processed in their system, whenever somebody puts your CD into iTunes, all of your information will show up. (According to Gracenote, it can take up to 48 hours for a CD to process.)

Before uploading, be sure that you have everything correctly entered, including the song order and genre. If you submit the wrong info, it can be a hassle to change it. To do so, you have to contact Gracenote. It can take a while, and in the meantime, people will be seeing incorrect info when they put your CD into iTunes.

CLOCKING QUESTION

In EM's interview with Mike Barbiero (see the April 1 "EM Cast"), did you happen to notice how Mike had kept his [Digidesign] 192s in sync with his [Apogee] Rosetta? There has been much talk on forums and in the digital community in general regarding the use of a master clock versus an internal primary clock. In any case, when using multiple interfaces, there must be a master clock.

With Mike's setup very closely resembling mine in doing the same function (mixdown), I was curious as to whether he was using the internal Rosetta clock sent to the Digis that provide his multitrack (stem) output to the Dangerous Two Bus. In my setup, this is performed by the Lavry Blue clock to Digi and Apogee D/A.

J BOHRER
SO. ORANGE COUNTY, CALIFORNIA

The Gracenote Media Database is not restricted to commercial CDs.

EM executive editor Mike Levine replies: J—I recently asked Mike Barbiero about that issue, and he said, "I use the first 192 as the master, set to word clock."

WHERE'S THE JOKE?

As a longtime EM subscriber, I have always looked forward to the April issue because I could always count on there being at

least one article full of pomp and bloat extolling some impossible technology.

And then (usually in the following issue): April fools. It was always great fun to read the newbies' letters to the editor pointing out the flaws in the proposed gadget, and having the editor say, "Gotcha."

I searched from one end of the mag to the other: I found the pomp and bloat, but no farce. I fear that a time-honored tradition has fallen by the wayside.

Say it isn't so, EM.

DENNIS DOYLE
REDLAND, OREGON

Editor Gino Robair replies: Gotcha. April fools!

INDIE SPOTLIGHTS

I enjoyed your article on Derek Sivers of CD Baby (see "Industry Insider" in the May 2008 issue). I've known Derek for years, been a member of CD Baby for many years, and have attended a number of the seminars where he speaks. Derek is a fountain of incredible information on how indies can take their music forward.

My guess would be that many, if not most, of your subscribers are indies. I hope you'll consider featuring Derek on a regular basis in your magazine, as I'm sure his suggestions would be of great interest to virtually all the subscribers of your excellent magazine.

I've noticed that you're featuring an indie artist on a regular basis now in each issue, which I think is a wonderful addition to your magazine. Keep up the great work you do at EM, and I hope you'll take my suggestion under consideration.

GEORGE FINIZIO
MAJESTICSOUNDRECORDINGS.COM

TALKBACK

This month EM focuses on nine of the latest pocket-size digital recorders. What's the strangest or most interesting thing you've recorded with a field recorder? Email us at emeditorial@emusician.com. em

THANK YOU!

NEW:
OS X Leopard
Support With
Free Download

Over 100 members of the international press voted Rapture the best software instrument in the world by awarding it the 2008 MIPA.

It's no surprise. Rapture's brilliant design and stunning sounds have made it a favorite among professional musicians who have found it a sure fire way to add something unique to their productions. Experience Rapture today, only $199 at select music retailers worldwide.

For more information visit www.cakewalk.com.

Mac

cakewalk by Roland

INSTRUMENTS

FRONTPANEL

By Gino Robair

Bebe Barron (1925–2008)

Bebe Barron, the last of the great pioneers of early electronic music, died on April 20, 2008, at the age of 82. She and her first husband, Louis Barron, formed the composing team that did the first electronic-music score for a commercial film, *Forbidden Planet*, released in 1956.

Married in 1947, the Barrons began composing with a tape recorder they received as a wedding gift. In 1949, in New York, they set up one of the first private electronic-music studios, which became the center for John Cage's creation of *Williams Mix*, his first chance piece.

They designed their own circuits, which they viewed as cybernetic organisms, having been influenced by Norbert Weiner's work on cybernetics. The circuits, built with vacuum tubes, would exhibit characteristic qualities of pitch, timbre, and rhythm and had a sort of life cycle from their beginnings until they burned out. Unlike other electronic works of the time, the couple's music reveals long phrases, often stated in tape-delayed rhythms. They created a style that was uniquely their own yet married to the technology they were using.

The Barrons composed a variety of works for tape, film, and theater but are largely remembered today for the *Forbidden Planet* score, which has been available for decades as a soundtrack album. The score broke down the traditional line between music and sound effects because the Barrons' electronic material was used for both. This not only created a new type of unity in the film-sound world, but also foreshadowed by decades the now-common role of the sound designer in modern film and video. *—Barry Schrader*

OPTION-CLICK

By David Battino

Need more I/O? Use device aggregation to combine your audio interfaces into one logical device. (You may need to switch the master clock to avoid clicks.)

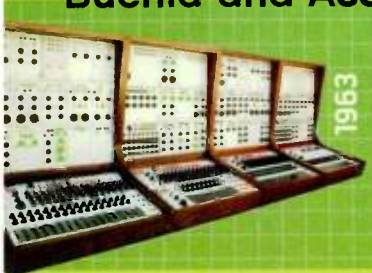
Build a Mondo Audio Interface—for Free

Discover cool features lurking inside popular programs and gear.

Got an extra computer audio interface lying around? If you're running Mac OS X 10.4 or later, you can *aggregate* the interface with other audio devices (USB, FireWire, PCI, or built-in) into one giant combination interface. I've used this trick to run two USB mics at once. I also created a quadraphonic speaker system by aggregating a Zoom H2 recorder (in USB interface mode) with my Mac's built-in audio output and making the H2 the master clock. That let me hear the H2's 4-channel recordings in glorious surround.

To aggregate audio devices, plug them all in and open Audio MIDI Setup. Select Open Aggregate Device Editor from the Audio menu. Click on "+" to create a new device, and check off the I/O you want. Windows users can explore device aggregation with the free Universal Driver from CEntrance.com, though it works only with CEntrance hardware. (For more about David Battino's work, visit batmosphere.com.)

Buchla and Associates Instruments from 1963 to 1987



1963
Series 100 Electronic Music System
A discrete modular analog instrument originally designed for the San Francisco Tape Music Center

1970
Series 200 Electric Music Box
This analog system packs a great amount of functionality into each module

1971–72

Series 500
Containing a microcomputer, this is Buchla's first digitally controlled analog synthesizer

THIS MONTH'S SOUNDTRACK

These albums encompass a diverse range of styles and composition methods.

1. Dr.Ox: *Dr.Ox* (c74)
2. Man Man: *Rabbit Habits* (Anti)
3. Dosh: *Wolves and Wishes* (Anticon)
4. Lisle Ellis: *Sucker Punch Requiem* (Henceforth)
5. Tim Fite: *Fair Ain't Fair* (Anti)


1.

DR.OX
Acousmatic composer Natasha Barrett processes Norwegian cellist Tanja Orning in this engaging and challenging suite.

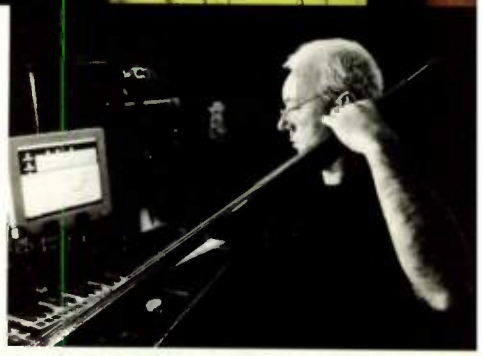
MAN MAN
Clever, energetic, and attractively goofy songwriting, orchestrated with horns, mallet percussion, and silly voices.

DOSH
Engaging instrumentals in a modern concrète style in the post-Tortoise/Stereolab continuum.

LISLE ELLIS
Composer-bassist Ellis's concrète masterwork features singer Pamela Z, Oliver Lake, and George Lewis.

TIM FITE
Tunesmith Fite combines folk instruments with urban and glitch sensibilities for an engaging hybrid songscape.


3.


4.


5.


2.

EM POLL What's your favorite operating system? a) Mac OS 9, b) Mac OS X, c) Windows (pre-XP), d) Windows XP, e) Windows Vista, f) Linux. Submit your answer to this poll and others at emusician.com. This is not a scientific poll but a tabulation of readers' responses and is just for fun!

1972
Music Easel
An analog instrument designed for "real-time instrument composition and performance"

1973
Series 300
A hybrid instrument that uses a microcomputer to establish connections and control Series 200 modules

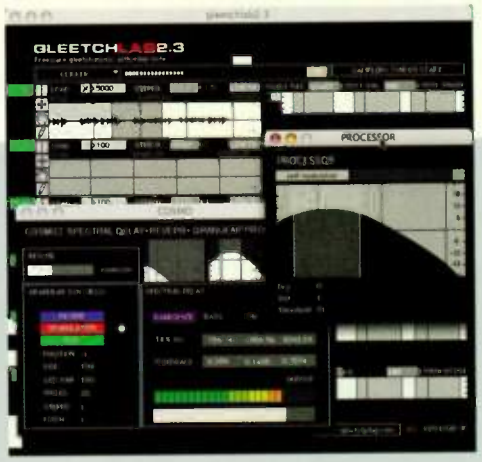
1978

Touché
Sporting a conventional keyboard, this 8-voice hybrid instrument offers wave synthesis, with 24 digital oscillators controlled by a 16-bit computer

Download of the Month

Tobor Experiment

Gleetchlab 2.3 (Mac) By Len Sasso



Gleetchlab (donationware) from Milanese software developer Tobor Experiment is a standalone application created in Cycling '74 Max/MSP. It is designed specifically for glitch music, a 1990s outgrowth of electronica, ambient, and IDM genres. In short, that means taking any kind of source material and subjecting it to a variety of disruptive processes reminiscent of damaged CDs, scratched vinyl records, unintended circuit bending, and other unhappy accidents. Here, you emulate those physical abrasions with looping sample players (Gleetchlab has six) and various DSP effects. You'll find Gleetchlab, along with downloadable audio examples of what Tobor Experiment has in mind, on the company's Web site (gleetchplug.com). While there, check out the two ambience generators OM Blue and OM Green; they provide nice sonic fodder for Gleetchlab (see **Web Clip 1**).

ONLINE BONUS MATERIAL

The heart of Gleetchlab is its 19-by-17 routing matrix. You start by connecting the active sample-player outputs to effects inputs or any of five stereo output-mixer channels. You can connect any output to any number of inputs, and you can route any module to any other to create complex effects chains. But simple is usually better, because the effects are often extreme, and Gleetchlab is CPU hungry on older PPC Macs.

The sample players loop continuously once you load an audio file, but you have real-time, automatable control of the playback speed and the loop boundaries. You can set the player to randomly change the loop boundaries at specific intervals, which is particularly useful for feeding the more extreme effects. Two of my favorites in that category are Cosmo, a combination granulation, reverb, and spectral delay effect, and Processor, an enigmatic filter-based distortion effect. These, together with random looping, will turn a guitar loop into an ethereal, ambient cloud (see **Web Clip 2**).

Gleetchlab strictly adheres to the philosophy of accidental music. You cannot save and reload setups, and there is no explicit provision to interface with your DAW, although you can use ancillary software such as Cycling '74 Soundflower for that. Alternatively, you can record Gleetchlab's output in two convenient ways: a built-in recorder saves the audio to disk in AIFF format, and you can record the output back into any of the sample players for reprocessing. With either method, the program captures changes you make to onscreen controls. Whether you use it to generate a whole piece or an ambient background, Gleetchlab is a worthy addition to your DSP arsenal.

Electro-Music 2008 Festival

Electro-Music.com has announced Electro-Music 2008, a conference and music festival to be held in Kingsport, Tennessee, from August 14 to 16. The event will focus on musical styles and topics ranging from musique concrète and modular synthesis to circuit bending and algorithmic composition. Anyone interested in electroacoustic or electronic music is invited to attend. The festival offers opportunities for participants to perform their music, present lectures, give demonstrations, take part in jam sessions, or simply watch and listen as others take to the stage.

For the past three years, Philadelphia has hosted the Electro-Music festival. This year's gathering is the first in Kingsport, and at press time, the schedule had not yet been announced. You can purchase a three-day pass for $50 at the Electro-Music.com Web site (electro-music.com/event2008).

—Geary Yelton

Buchla and Associates Instruments from 1963 to 1987

1978–79

Sili-Con Cello
An analog system designed to respond to a variety of performance gestures from acoustic instruments

1982

Buchla 400
A 6-voice integrated system that includes a score editor

Buchla 700
The company's first MIDI instrument is an analog-digital hybrid system with a waveshape editor to create and modify waveshape tables

1987

WWW.AUDIOFANZINE.COM

AUDIO FANZINE

TUTORIAL CONTEST

SHARE YOUR EXPERTISE WITH THE AUDIO COMMUNITY.

MORE THAN $3200 OF LINE 6 GEAR TO WIN

1 VARIAX® 700*
$1899,99

2 TONEPORT® UX8*
$500

5 TONEPORT® GX*
$70

* Actual products may differ. See rules on www.audiofanzine.com/contest

MORE INFORMATION ON
www.audiofanzine.com/contest

By Len Sasso

ACCESS MUSIC VIRUS TI SNOW
TIME TO CHILL

The much-anticipated Virus TI Snow ($1,350 [MSRP]) is out. This tabletop addition to Access Music's (access-music.de) Virus TI series sports 50 voices and 4 multitimbral parts and is fully compatible with all TI-series patches. It takes just 4 button pushes to call up any of its 1,024 patches and 64 Multis. You use the compact control panel or Virus Control software plug-in to create and store patches, and the panel's Easy Edit mode lets you access essential controls. The back panel houses stereo-audio and MIDI inputs and outputs, and a USB port provides three additional stereo outputs to Virus Control.

SOLID STATE LOGIC
DUENDE PCIe SSL SOUND

Solid State Logic (solid-state-logic.com) has followed the recent release of the Duende Mini with this equivalent of the 19-inch Classic Duende in PCIe card format (Mac/Win, $1,495 [MSRP]). The high-bandwidth, half-length card provides 32 channels of Duende plug-in processing at sampling rates up to 96 kHz. You can install two cards or pair one card with a Duende Mini or Classic for 64 channels. The package includes two plug-ins: EQ and Dynamics Channel, which delivers multiband EQ and sidechain compression, and Duende Stereo Bus Compressor, which emulates the classic SSL Master Bus Compressor.

MOTU DIGITAL PERFORMER 6

MOTU (motu.com) has released Digital Performer 6 (Mac, $795), which features a complete user-interface redesign and a host of new capabilities. For film composers, there's XML file interchange with Apple Final Cut Pro: edit in FCP, export XML edits report, import into DP 6, and conform the score. Full-featured comping lets you record multiple takes, slice across all takes, select the desired slices, and crossfade between them. The new GUI sports a vertically resizable tracklist, unlimited window tabs in any cell, and floating or tabbed inspector palettes. New effects include ProVerb convolution reverb and Masterworks Leveler, which models the Teletronix LA-2A. Many under-the-hood enhancements improve overall performance.

A TOP PERFORMER

BIAS Peak Pro 6

IN PEAK FORM

BIAS (bias-inc.com) has upgraded its flagship audio-editing software to Peak Pro 6 (Mac, $499; XT version, $999). A redesigned user interface, advanced playlist features, Perpetual Looper DSP, dither-cloning audio technology, and enhanced audio-editing tools figure prominently among the new features. You can author and upload Podcasts as RSS feeds directly from Peak Pro 6. It also exports playlists or audio documents directly to iTunes. The accompanying Peak Pro Production Pack DVD includes audio-restoration tools SoundSoap LE and Reveal LE, Ambrosia WireTap Pro for capturing system audio, SFX Machine LT, audio loops from PowerFX, and much more.

ALLEN & HEATH ZED-24 MIGHTY MIX

Allen & Heath's (allen-heath.com) new ZED series of USB-equipped small-format mixers combines desktop convenience with rugged construction: vertically mounted PCB boards, rotaries nutted down from the top, and 100mm Alps faders. The ZED-24 ($699) has 16 mono and 4 stereo channel strips, 2 additional stereo inputs, 10 outputs along with 4 aux sends, and a USB effects-send and -return bus for external recording of the main mix or for plug-in effects processing using the signal from any of the aux sends. Each channel has a 3-band, swept-mid EQ and a newly designed 2-stage mic pre for carefully controlled gain. The unit comes bundled with Cakewalk Sonar LE.

NATIVE INSTRUMENTS KORE PLAYER

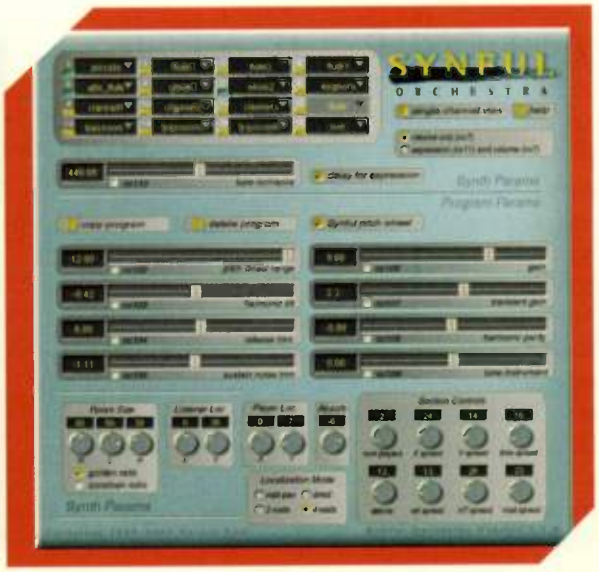
THE SOFT KORE

Native Instruments (native-instruments.com) Kore Player (Mac/Win, free) is a standalone and plug-in virtual instrument for playing Kore Soundpacks—collections of presets from a cross-section of NI virtual instruments. The download includes 300 MB of sample content to get you started, and additional Kore Soundpacks range in price from $59 to $79. Kore Player incorporates the same integrated sound engines used in the premium software-hardware workstation Kore 2. It is not capable of playing sounds from single NI instruments, but it does include Kore 2's sound morphing, automation, and host-recall features.

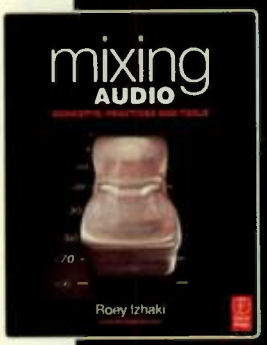
SYNFUL ORCHESTRA 2.4.4

SYNFUL PLEASURES

The upgraded Synful (synful.com) Orchestra 2.4.4 (Mac/Win, $479; upgrade, free) starts with a powerful new synthesis engine that supports a variety of full-string playing modes, such as pizzicato, col legno, and sul ponticello, using Synful's proprietary Reconstructive Phrase Modeling technology. Keyswitching gives you quick play-mode access from MIDI keyboards of all sizes, and the program now offers unrestricted MIDI controller mapping. Synful Orchestra is Vista/XP 64 and Mac OS X Leopard compatible, and it supports Digidesign Pro Tools (RTAS) on the Mac, Sibelius 5 on both platforms, and the latest versions of most DAWs.



Get Smart



Focal Press's Mixing Audio

Mixing Audio: Concepts, Practices and Tools ($49.95) aims to demystify the arcane art of mixing. Drawing on 18 years of mixing and teaching experience, author Roey Izhaki starts with the basic concepts of mixing, then moves on to a detailed analysis of the tools of the trade: monitoring and metering, software and hardware mixing, processing (EQ, compression, reverb, and more-exotic DSP), and automation. He then takes you through four sample mixes—rock, hip-hop/urban, techno, and drum 'n' bass—with extensive audio examples on the included DVD. Get the complete details from Focal Press (focalpress.com).

Course PTR's Reason 4 Power!

Reason 4 Power! The Comprehensive Guide ($39.95) is an extensive update of Michael Prager's original Reason guide that covers the many new features in Reason 4. It starts with a brief introduction to computer-music basics, then proceeds to creating your first Reason song. Individual chapters follow on the sequencer, each of Reason's modules, automation, synchronization, and connecting Reason with ReWire to all the major DAWs. Appendixes on ReBirth, ReCycle, and ReFills round out the topics. Some chapters include examples that you can download from the Course PTR Web site (courseptr.com).

BAND-IN-A-BOX®

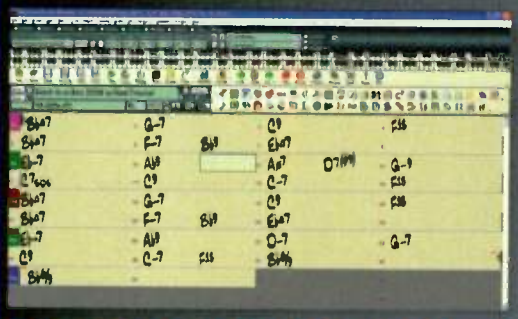
REAL Accompaniment is HERE!

Electronic Musician EDITORS' CHOICE

Band-in-a-Box 2008.5 for Windows is here!

(Band-in-a-Box for Macintosh OS X is currently at Version 12)

The award-winning Band-in-a-Box for Windows is so easy to use! Just type in the chords to any song (like C, Fm7b5, or C13b9), choose a musical style you like, and Band-in-a-Box does the rest, automatically generating a full backing arrangement including RealDrums and RealTracks—that's right... LIVE audio recordings of actual musicians!



Get to know the one-and-only Band-in-a-Box...

Band-in-a-Box automatically generates a full arrangement of piano, bass, drums, guitar and strings. With Band-in-a-Box you can enter a typical song in just minutes. Arrange, listen to, or play along with songs in hundreds of popular musical styles. You'll build up a huge library of your favorite songs in no time.

The popular Band-in-a-Box program is jam-packed with musical features and know-how. The Soloist and the Melodist are popular "intelligent" features that generate professional solos or even create whole new songs from scratch complete with chords, melody, an intro, and even a song title. The on-screen Notation window shows you the notation, tablature, chords, and lyrics of your song. Transpose your music to any key with a click of the mouse. Print out your complete song arrangement, and save your file for export. Work on your chops with Band-in-a-Box as your ever-ready backup band. Use the special practice features for sight-reading, ear training, and learning great new licks with the included song files.

PLUS... look at these amazing features in Band-in-a-Box 2008.5 for Windows!

- ✔ **RealDrums** – live audio recordings of top studio drummers that replace the MIDI drum track.
- ✔ **RealTracks** – live audio recordings of musicians playing instruments that follow the chord progression for solos or accompaniments.
- ✔ **Audio Chord Wizard** to automatically analyze, extract, and write chords from audio files.
- ✔ **Chord Window** for the Audio Chord Wizard. Play along with your MP3, WAV, and WMA files.
- ✔ **Small WMA files** for all Real Add-ons.
- ✔ **MultiStyles** make it possible to use up to 24 style variations in a single arrangement.
- ✔ **Section Paragraphs** delineate sections with a line marker, and start new sections on a new line.
- ✔ **MedleyMaker** creates Band-in-a-Box medleys with automatic key, style, and tempo transitions.
- ✔ **Karaoke MP3/CDG** file support for scrolling graphical on-screen lyrics.
- ✔ **Fixed Do** chord option added for Solfeggio notation.
- ✔ **Key Change at any bar**, support for multiple keys and key signatures in a single song.
- ✔ **PLUS hundreds more!**

World-Famous Band-in-a-Box!

The one-and-only Band-in-a-Box is the favorite of musicians, students, and songwriters the world over—in fifteen different languages. No matter what instrument you play, Band-in-a-Box has something for you! Visit www.pgmusic.com for a complete list of all the features of Band-in-a-Box for Windows and Macintosh.

"4-Star Rating" MacWorld | "An Incredible Program"
"Editor's Choice" Electronic Musician | "Technical Excellence Finalist"

Band-in-a-Box Prices

- ✔ **Band-in-a-Box Pro... $129**
  *(**Upgrades start as low as $49)*
  Includes Band-in-a-Box; Styles Sets 0–3; Soloist Set 1; Melodist Set 1; RealTracks Set 1; RealDrums Set 1.
- ✔ **Band-in-a-Box MegaPAK... $269**
  *(**Upgrades start as low as $69)*
  Includes Band-in-a-Box; Styles Sets 0–76; Soloist Sets 1–11 & 16–20; Melodist Sets 1–8; RealTracks Set 1; RealDrums Sets 1–3 & The Band-in-a-Box Video Tutorial PAK.
- ✔ **Band-in-a-Box SuperPAK... $369**
  *(**Upgrades start as low as $79)*
  Includes Band-in-a-Box; Styles Sets 0–76; Soloist Sets 1–11 & 16–20; Melodist Sets 1–8; RealTracks Sets 1–9; RealDrums Sets 1–20 & The Band-in-a-Box Video Tutorial PAK.
- ✔ **Band-in-a-Box UltraPAK... $499**
  *(**Upgrades start as low as $89)*
  Includes Band-in-a-Box; Styles Sets 0–76; Soloist Sets 1–20; Melodist Sets 1–8; RealTracks Sets 1–9; RealDrums Sets 1–20; all of the 101 Riffs and Phrases Series; all of the Fakebooks; all of the Master Solos Series; 50 Country Guitar Solos; 200 Folk songs; Copyme; Duets; & The Band-in-a-Box Video Tutorial PAK.

*** The upgrade price is based on your current version of Band-in-a-Box.*

Exciting NEW RealTracks Set... $29 each

RealTracks Set 2: Country Ballad
RealTracks Set 3: Swingin' Country
RealTracks Set 4: Modern Country
RealTracks Set 5: Rockin' Guitar
RealTracks Set 6: All Metal!
RealTracks Set 7: Jazz Bass & Rock Sax
RealTracks Set 8: Country Folk
RealTracks Set 9: Country Electric Guitar

30 DAY MONEY BACK GUARANTEE

DOWNLOAD NOW!

More great programs from PG Music...

The PG Music OmniPAK Hard Drive
This blockbuster collection includes over 50 GB of software developed by PG Music—ALL on a FREE USB HARD DRIVE. You'll have all the popular music software titles—the Band-in-a-Box UltraPAK, PowerTracks Pro Audio MultiPAK, the entire Pianist Series, the entire Multimedia Performance Series, and much more—complete with every software add-on, bonus, and accessory. From Jazz to Classical, Blues to Country, Rock to Pop, there's music for every music lover!

GuitarStar—Play Like the Pros!
The fun new way to become a Guitar Star in the comfort of your own home. By simply pressing different keys on your computer keyboard, you can play a unique, killer guitar solo complete with a rhythm section to back you up!

GuitarStar: Brent Mason Country... $49
150 guitar riffs taught by Country Guitar Star Brent Mason!

GuitarStar Volume 1: Rockin' Riffs... $39

GuitarStar Volume 2: Rockin' Riffs for the Beginner... $39

Oscar Peterson Multimedia CD-ROM... $79.95
Jazz piano legend Oscar Peterson brings an exciting new level of artistry to the Multimedia experience! This signature CD-ROM is a rich treasury of interactive audio/visual performances with on-screen piano display and notation. You can see and study exactly what the master is playing! Join Oscar for a musical journey through his life and career including a comprehensive multimedia autobiography loaded with audio and video clips PLUS exclusive photographs from Oscar Peterson's private collection.

PG music

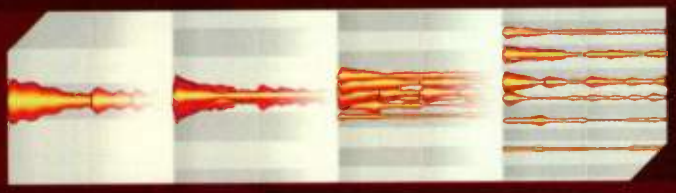
PG Music Inc. • www.pgmusic.com
29 Cadillac Ave.,Victoria, BC V8Z 1T3 CANADA
Phone (250) 475-2874 • (800) 268-6272
Outside the US & Canada (where available) + 800-4746-8742
(888) PG MUSIC
www.pgmusic.com • sales@pgmusic.com
Fax (250) 475-2937 • (877) 475-1444

ON THE HORIZON

Celemony Melodyne Plugin 2

Celemony Software has announced a major advance in pitch-correction software. Direct Note Access (DNA), which will debut in the fall of 2008 in Melodyne Plugin 2, is revolutionary technology that detects individual notes within polyphonic parts and lets you manipulate those notes just as you can now for monophonic parts in Melodyne. That lets you edit the harmonies within piano or guitar or vocal backing tracks, for example.

Once you've loaded a polyphonic part into Melodyne Plugin 2, the part is graphically exploded into the familiar Melodyne Blobs, but now there is a separate Blob for each note within the polyphonic part. You can adjust a note's pitch, pitch anomalies (vibrato, drift, and so on), time position, duration, volume envelope, and formant spectrum. If you



have a mixed part such as a combined piano and guitar track, you can still use DNA, but it will not separate the piano from the guitar—if they play the same note, it will appear as one piano-guitar Blob. Note detection on highly processed parts is less reliable, although it may lead to creative results.

Beyond part manipulation, DNA brings a new dimension to scoring and MIDI doubling. Melodyne will export the DNA results as a polyphonic MIDI file as well as output the MIDI data in real time for controlling virtual instruments and effects. Melodyne Plugin 2 will retail for $399 with a $129 upgrade path for Melodyne Plugin users and a free upgrade for buyers after March 12, 2008. DNA technology will appear eventually in the multitrack versions of Melodyne (Cre8 and Studio), but no release date has been set. You can find more information at the Celemony Web site (celemony.com).

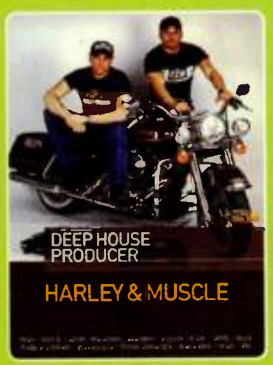
Sound Advice

TrackTeam Audio's Drum.Droid

If you're tired of the same old sampled drum-machine sounds, have a listen to TrackTeam Audio (trackteamaudio.com) drum.droid (Mac/Win, $29.99). This Live Pack for Ableton Live 7 starts with more than 500 original synthesized, drum-style samples; you won't find any TR-808, SDS, or other drum-machine samples, nor will you find sampled acoustic drums. TrackTeam has used these samples to assemble 40 Drum Racks with 16 pads each, intelligently mapped Macro controls, complementary insert and send effects, and over 200 Live Clips.

Loopmasters' Harley & Muscle: Deep House Producer

Harley & Muscle: Deep House Producer (Mac/Win, $69.95) is a 2 GB collection of deep house loops, riffs, and hits in WAV, REX, and Apple Loop formats, along with multisampled instruments for most popular samplers. With tempos ranging from 115 to 125 bpm, you'll find Rhodes chords, loops, and sampler Multis; drum loops and progressions; lead and bass lines; and lush string progressions. Italian producers



Harley and Muscle have been prominent in house music since 1985. You can order the DVD from Big Fish Audio (bigfishaudio.com).

PowerFX's Gabi Masso Oriental String Ensemble Sessions

PowerFX (powerfx.com), in collaboration with Swedish

composer Gabi Masso, has released a 3-volume library of string-section loops called *Gabi Masso Oriental String Ensemble Sessions*. The ensemble, consisting of 11 violins, 3 violas, and cello, is made up of top Turkish session players and was recorded in 24-bit, 44.1 kHz stereo. The sessions contain 420 loops divided into 3 downloadable CD volumes ($49 each, $199 bundled): B at 90 bpm, Db at 96 bpm, and D at 125 bpm. The sessions were performed to traditional Middle Eastern rhythms as well as hip-hop and house backing tracks, so they fit well in a contemporary framework while keeping their indigenous passion, power, and drama. em

It's all in the details.

Many companies make audio interfaces. Few make great ones.

7.4 Compatible with Pro Tools M-Powered 7.4 via downloadable update.
Check m-audio.com for details.

ProFire 2626

High-Definition 26-in/26-out FireWire Audio Interface with Octane Preamp Technology

In creating the ProFire 2626, our engineers pored over the details that add up to an exceptional recording experience. The eight mic preamps feature award-winning Octane™ preamp technology designed for optimal headroom–resulting in extremely low distortion through the entire gain range. The preamps have also been tweaked to offer a generous 75dB gain range and an extremely high signal-to-noise ratio, allowing you to accurately capture performances across a tremendous dynamic range. Careful selection of components–including high-end converters with low band-pass ripple and linear phase response–results in cohesive, detailed audio with a wide frequency response. Complete with low THD+N and preamp circuitry that follows the shortest possible signal paths, ProFire 2626 remains uncolored and true to any input source. We labored over these details so you can concentrate on what's most important: making a great recording. Read all the details at m-audio.com.

- **26 x 26 simultaneous analog/digital I/O**
- **eight preamps with award-winning Octane technology**
- **flexible on-board DSP mixer for multiple unique cue mixes**
- **user-assignable master volume knob**
- **doubles as 8-channel mic pre/ 8-channel A/D-D/A converter**
- **up to 24-bit/192kHz for pristine high-definition digital audio**
- **critically acclaimed JetPLL jitter elimination technology**

GET M-POWERED

M-AUDIO
www.m-audio.com
20 years

STEVE REID

Home base: Lugano, Switzerland

Recording medium: analog tape

Kieran Hebden's main instruments: three Boss SP-303 Dr. Sample phrase samplers

Web sites: www.steve-reid.com, dominorecordco.us

>> *Daxaar*

Electric Motherland

Steve Reid heads to Senegal for his latest plugged-in fusion opus

If anyone has been privy to all the nuances of the word *rebirth*, it is Steve Reid. A drummer since age 16, he first made his mark in Motown on the Martha Reeves and the Vandellas hit "Dancing in the Street," and in New York as part of the Apollo Theater's house band under the direction of Quincy Jones. In 1966 Reid embarked on a two-year sabbatical to West Africa, where he played with the legendary Fela Kuti. Upon his return to the United States, he was jailed for draft evasion, but by 1970 he had still managed to smack the kit behind everyone from Sun Ra to James Brown to Jimi Hendrix.

By Bill Murphy

Over the years, Reid has enjoyed a reputation as a musician's musician. But recently, thanks in part to a collaboration with Kieran Hebden (better known as glitch-hop innovator Four Tet) and a resurgence of interest in the string of experimental jazz albums he made on his own and with saxophonist Charles Tyler during the '70s, Reid is in the middle of another renaissance, the latest phase of which is *Daxaar* (Domino, 2008). In a sense, the project closes a circle that began back in 1966.

"It had to be done," Reid says. "Rhythm is at the root of all music, and to me that begins in Africa. So we decided we were just going to go to Dakar [Senegal] and get some musicians together to play. I didn't even know they were the real heavyweights in Senegal until I came back."

Consisting almost entirely of unrehearsed first takes that were recorded to tape at the home studio of Dakar-based guitarist Jimi Mbaye, the album opens with an invocation of sorts by Isa Kouyate on the harplike, multistringed kora. The sound then plunges into the psychedelic throb of the title track, followed by the gritty street funk of "Jiggy Jiggy"—a prime groove vehicle for Reid, bassist Dambel Diop, keyboardist Boris Netsvetaev, and percussionist Khadim Badji. While Mbaye and trumpeter Roger Ongolo solo, Hebden provides the sampled spice through a daisy-chained set of two Boss SP-303 Dr. Sample phrase samplers on one channel and a third SP-303 on the other, running the whole setup through a Pioneer DJ M600 mixer and playing it with his fingers.

"I don't use any sequencers when I do music with Steve," Hebden explains. "It's all done from hand triggering the samples. With one hand I'll play the rubber pads to get the bass line, and then with the other I'll get some noises or a melody off one of the other samplers to fit with it. I also use a laptop to trigger sounds on the fly with Cool Edit [the Syntrillium version, pre-Adobe]. But everything is pretty much done with the three Dr. Samples. From the beginning, I just wanted it to feel like I was playing quite a different instrument, so it's been a whole other world for me."

Reid agrees, citing his own drumming, which on *Daxaar* he played with a more wide-open approach than normal, miking only the kick, floor tom, and snare, while an overhead mic captured the band's room sound. "The basic thing is the feeling," he says. "I'm not playing the kit in a traditional way now. I'm churning the time up from the bottom, running the bass like I want to, so I don't have to keep those old rock or jazz clichés. But the drum has to make the other musicians feel relaxed in the rhythm, and that's its main responsibility—not to show off, but just to play the groove. When I come across good musicians, there's no need for me to push my stuff out—I let them work. This is the way new things can happen."

installs before you can say

PIANOTEQ

Electronic Musician 2008 EDITORS CHOICE

Remix

Pianoteq is a revolutionary physical-modeled piano instrument that is rewriting the rules on virtual pianos. It is expressive, adjustable, expandable and sounds and behaves like a real piano. This is because Pianoteq models each note and each velocity in real time.

Just as impressive as the vivid sound is the tiny HD footprint - just 15 MB required.

Get the ultimate piano experience now at www.pianoteq.com

DISTRIBUTED BY
mm music marketing
musicmarketing.ca
TEL: 866 273-4178

MODARTT
DATA & MODEL COUPLING

Mac Audio Units VST RTAS Windows

Requires Windows XP/Vista or MacOS 10.3.9 or later; 1 GHz CPU min., 2 GHz recommended; 256 MB RAM; and 15 MB of Hard Disk space.

KRASNER/TREBITZ PHOTOGRAPHY

SCIENCE FOR GIRLS

Home base: New York City

Sequencer of choice: Apple Logic Pro

Go-to synths: u-he Filterscape, Alphakanal Automat, Apple Logic ES1, GForce Minimonsta

Web site: scienceforgirls.net

Science for Girls

Chillin' and Thrillin'

Darren Solomon masterminds Science for Girls

Science for Girls is the brainchild of New York–based producer, bassist, and composer Darren Solomon. Though the band name may conjure images of young women training for careers in genetic cloning, Solomon's mission is anything but academic. Science for Girls' eponymous, self-released debut CD, which officially hit the market in March, mixes electronica, Brazilian, and pop influences and features a range of guest vocalists from the New York indie music scene. Solomon's music bridges the natural with the artificial: for example, the sound of a Fender Rhodes and a supple female vocal with Native Instruments Absynth and a Roland SVC-350 Vocoder.

By Ken Micallef

"I like really simple sounds like Wurlitzer electric pianos," Solomon explains from his studio at Big Foote Music, the busy Manhattan music house where he pursues his day job, composing and producing music for American Express, M&Ms, and Pepsi, among many other large brands. "Even when I use synths, I try to only use one or two oscillators and keep the tones really simple. Hopefully, the soul of the sound is interesting rather than it's got tons of effects and it's blasting. I want to keep things minimal and let a synth be a synth."

Solomon records in Apple Logic Pro through Digidesign Pro Tools HD hardware on an Apple Mac G5 desktop. To personalize his glistening electronica, he uses software tools such as the Alphakanal Automat synth, GForce Minimonsta Minimoog emulator, and Cycling '74 Pluggo Jr. On songs like "14 Days" and "Sleepwalking," he couples smooth organic sounds with nervous electronic energy.

"You can choose a certain filter or wave in Alphakanal Automat, and they will each sound different," Solomon says. "Then I pick the one that works best for the particular tune. The GForce Minimonsta is another favorite; it really has the soul of a Minimoog.

"The two [signal processing] plug-ins I really use are the Waves Renaissance EQ and the McDSP CompressorBank," he adds. "The McDSP is a great vintage-sounding compressor; you really hear the compression. Together, those are my salt and pepper. That's all I need to make a good mix."

From the fuzzy Vocoder effects of "You'll Never Know" to the drum 'n' bass agitation of "Sweet Life," Solomon creates chilled electronica that even non-club-goers can love. His svelte production is the result of choosing sounds that jell rather than sounds that shock.

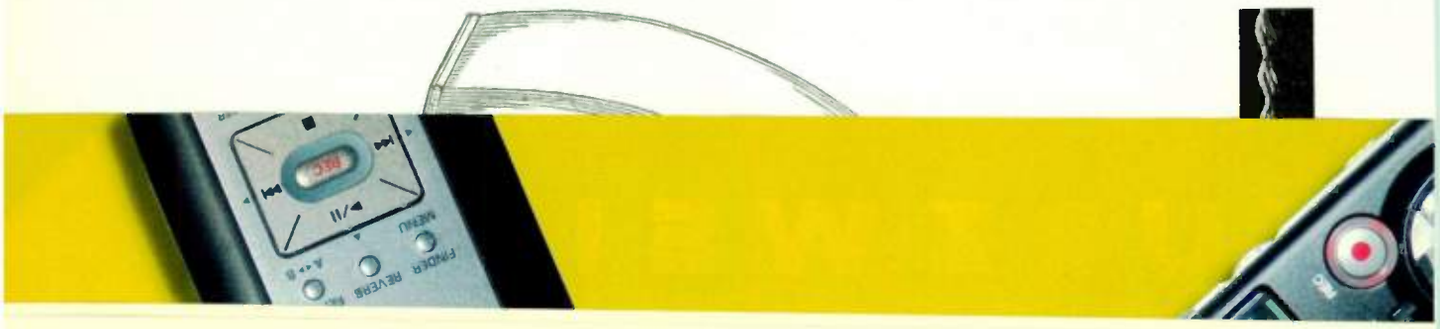
"The timbers and textures I chose share similarities," Solomon observes. "Like those between a Wurlitzer and a Rhodes and a sine wave. Not a lot of overtones—they are very mellow sounds. A lot of synth or electronic guys would rather see how wacky they can make everything sound. But if you are running something good, even one simple oscillator with a lowpass filter will sound like it has heart."

A Fender Jazz bass leans against one of the walls in Solomon's office, which is also crammed with a treasure trove of sealed action figures. Miniature molds of Public Enemy, Jimi Hendrix, Slash, Gorillaz, Beethoven, and Run-DMC seemingly watch over him as he works.

"When I listen to music, I want to hear Coltrane, Stan Getz, and Mozart," Solomon says, referring to his other heroes. "I don't hesitate to try something musically sophisticated, but I want to keep the mix accessible as well. The challenge is to find sounds that do what they do naturally and that have a heart—whether it's from texture or chords—and then combine them. And hopefully, they will fall nicely together." em

S/PDIF out, line out, or headphones. The R-09 records and plays 16- and 24-bit WAV files at 44.1 or 48 kHz, and MP3 files from

to press and hold a tiny switch to slide it the rest of the way open, and then flip it up to reach the batteries. Closing the panel is almost



STUDIO IN YOUR POCKET

FIG. 3: The latest in a long line of portable recorders from Marantz, the PMD620 is quick on the draw and offers the ability to save and name user presets containing setup parameters.

only describe its sound as remarkably tinny.

Despite a recent firmware upgrade, the PMD620's operating system is by far the least intuitive of the bunch. Simply enabling the unit's Record Level buttons, for example, requires that you hold down the Display/Menu/Store button for 3 seconds, scroll to Preset Menu and press Enter, select a Preset, scroll down nine items to Level Cont., press Fast Forward to switch from ALC (Automatic Level Control) to Manual, and then press Display/Menu/Store again to save your changes. And instead of being able to delete a file immediately after a bad take, you must go into the Utility menu and select it from a list. But for all its design eccentricities, the PMD620 is an outstanding performer. It can go from being turned off to recording in less than 4 seconds—an amazing feat for any recording medium.

Once you understand how the unit works, presets offer its greatest functional advantage. You can store and name three presets on an SD card, each containing settings for 23 parameters. For instance, you could set up a preset to record 24-bit WAV files at 48 kHz using an external stereo mic that relies on plug-in power with –12 dB attenuation. Another preset could specify 128 Kbps MP3 using the internal mic with the low-cut filter engaged, and that recording would pause whenever the level drops below a certain threshold and restart when it exceeds that threshold. A preset can even stipulate the battery type, OLED brightness, onscreen font size, and other seemingly global parameters.

M-Audio MicroTrack II

The MicroTrack II ($299) replaces the MicroTrack 24/96 introduced in late 2005 (see Fig. 4). Like the original, the updated model uses CompactFlash cards and Microdrives for storage (though none are included). In addition to 16- and 24-bit BWF at sampling rates from 44.1 to 96 kHz, it records MP3 at bit rates from 96 to 320 Kbps. It can record mono or stereo in either format. The recorder fits comfortably in and is easily operated with one hand.

Bundled with the MicroTrack II is a T-shaped stereo microphone that plugs into the top panel and has a foam windscreen on each diaphragm. The recorder has better I/O capabilities than any of its pocket-size competitors: along with the usual stereo mic input and headphone output on minijacks, it has two balanced mic/line inputs on ¼-inch TRS jacks, two line outputs on RCA jacks, and coaxial stereo S/PDIF I/O on an RCA jack. The TRS inputs, especially, maximize flexibility while minimizing the need for external adapters. The ¼-inch inputs supply full 48V phantom power, and you can monitor S/PDIF input through the headphone output. The MicroTrack II handles a wider range of signal levels than the MicroTrack 24/96, eliminating the previous model's boost setting and optional –10 dB pad.

You negotiate the menus and file structure with a combination of the Navigation Wheel (which operates like a small lever) and the Menu button. Rock the wheel up or down to move the cursor, press it to select an item, and press Menu to step backward in the menu hierarchy. Rather than knobs for controlling levels, the MicroTrack II has two buttons for recording and another for playback; pressing the button's top end increases the level and pressing the bottom end decreases it. You can specify

Yamaha Pocketrak 2G

Announced but not shipping in time to be evaluated for this article, Yamaha's new Pocketrak 2G ($349) is the slimmest and lightest pro-quality recorder yet—half an inch thick and less than 2 ounces (see Fig. A). Its WAV file recording is strictly CD quality (16-bit, 44.1 kHz), but it also records MP3 files and plays WMA files. Its 2 GB of internal memory can hold more than 3 hours of PCM audio, and the included rechargeable AAA battery delivers as much as 19 hours of MP3 record time. The recorder connects directly to your computer's USB port for transferring audio data and charging the battery. With features such as a tilting stereo mic, a built-in speaker, a retractable USB plug, and variable-speed playback, the Pocketrak 2G offers portability in the extreme.

FIG. A: Yamaha's new Pocketrak 2G is the smallest recorder yet to offer CD-quality recording, variable-speed playback, and up to 25-hour battery life.

Apogee, Apple, and Sweetwater... the Sweetest Sounding Symphony

The Symphony System
Up to 96 channels of I/O

Ensemble
Multi channel FireWire audio interface

Duet
Portable, Two channel
FireWire audio interface

From the Garage to the Studio, advanced audio for any application

Whether you're recording a simple guitar part or an entire orchestra, capture it all with the legendary sound quality of Apogee and with the power and ease of Apple. The combination of Apogee interfaces, Mac computers and Apple audio creation software offers unsurpassed professional recording solutions for any application.

Let the pros at Sweetwater configure your custom Apogee/Apple System.

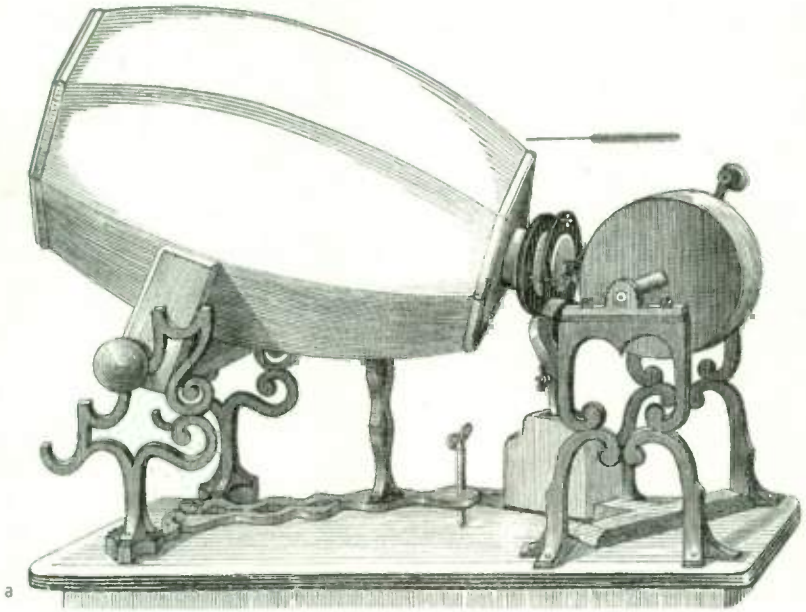
Authorized Reseller

Sweetwater
Music Instruments & Pro Audio

Apogee
Sound Amazing

(800) 222-4700

www.sweetwater.com/apogee



a b

COURTESY FIRSTSOUNDS.ORG

>> **FIG. 1:** Édouard-Léon Scott de Martinville's phonautograph consisted of a barrel-shaped horn and stylus that etched images of sound waves onto a rotating piece of paper coated with soot (a). The resulting phonautogram was intended to allow the recorded speech to be transcribed (b).

Credit Where Credit Is Due

A discovery uncovers sound recordings predating Thomas Edison. | By Scott Wilkinson

The "Tech Page" column usually focuses on emerging technologies that might be applied to music and audio in the future. This month, however, I'd like to profile something from the past that paved the way to the recording tools now used by electronic musicians every day. I'm not talking about the work of Thomas Edison, who is credited with inventing audio recording, but rather of Édouard-Léon Scott de Martinville, a Parisian typesetter who managed to capture sound nearly two decades before Edison's famous recording of "Mary Had a Little Lamb" on a sheet of tinfoil.

Interestingly, Scott did not intend to record sound for playback. Instead, he wanted to create a visual representation, much like a waveform display today. To that end, in the 1850s Scott invented a device he called the "phonautograph," which consisted of a barrel-shaped horn attached to a stylus (see **Fig. 1a**). Sound waves entering the horn caused the stylus to vibrate, which etched squiggles onto a sheet of paper covered with a layer of soot from an oil lamp (see **Fig. 1b**). The paper was mounted on a rotating drum that also moved horizontally along its axis as it turned, so the stylus traced a spiral, much like a wax cylinder.

Some of the images, called "phonautograms," survive to this day, stored in a Parisian patent office and at the French Academy of Sciences. But no one paid much attention to the images until recently, when audio historian David Giovannoni and his team decided to find as many phonautograms as they could and attempt to re-create the sounds represented on them.

After digitizing the images with a high-resolution scanner, Giovannoni took the files to Lawrence Berkeley National Laboratory in Berkeley, California. There, Carl Haber and Earl Cornell analyzed the traces using an optical-imaging technique originally developed for particle-physics experiments and later applied to restoring and archiving other forms of early sound recordings. (For more on this, see "Tech Page: In the Groove" in the November 2004 issue of EM.) The oldest phonautograms, dating from 1853 and 1854, yielded only squawks, but Giovannoni found one from 1860 in more pristine condition. On it, a vocalist could be heard singing a fragment of the song "Au Claire de la Lune" (see **Web Clip 1**).

ONLINE BONUS MATERIAL

This feat was accomplished by First Sounds (firstsounds.org), an informal organization of researchers dedicated to making humanity's earliest sound recordings available to all people for all time. Others working with Giovannoni, Haber, and Cornell include Richard Martin and Meagan Hennessey of Archeophone Records (archeophone.com), and Patrick Feaster, an expert in the history of the phonograph who teaches at Indiana University.

As mentioned earlier, Scott's aim was to represent sound visually, not record it for playback. As a typesetter and librarian who published a book on the history of shorthand, he apparently thought that sound recording might improve stenography, and that people could learn to discern what recorded voices were saying by looking at the traces left by the stylus. It's difficult to imagine how anyone could discern what was being said by looking at something like Fig. 1b, but the 19th century was the dawn of the Industrial Revolution, when mechanization seemed to be the answer to every problem.

The "Au Claire de la Lune" recording was made 17 years before Edison received a patent for the phonograph, though most historians do not believe that Scott's work obviates Edison's achievement. After all, the American inventor was trying to record sound for playback, a goal not shared by Scott. Still, hearing the scratchy, noisy reconstruction of the 1860 phonautogram transports us back to an era rife with potential that is only now being fully realized. EM

KURZWEIL

Excellence

When developing the world's best keyboard instruments, there has always been one concept which has remained foremost in our minds: EXCELLENCE. This high standard has allowed Kurzweil to release products that have transcended the trend-driven, typically short life-span of other keyboards. Kurzweil keyboards stand the test of time.

Kurzweil instruments are the product of something special - a blending of cutting edge technology, engineering and artistic achievement. The engineers and musicians at our Boston R&D facility are proud to offer professional products which sound amazing and last for years. No gimmicks to force a trade-up, just the best sounding instruments money can buy, designed to grow and expand in step with you and your music.

The PC3 Series

The PC3 Series does everything.... superbly. With a new 88-note hammer weighted action model or a 76-note semi-weighted action model, and over 1000 stunning sounds - the PC3 series not only offers the BEST sounding instrument but the largest on board library in the market - it's all in there, and it's the best you'll find anywhere.

MSRP PC3X $3,630.00 PC3 $2,830.00

The SP2 Series

Don't need 1000's of sounds for your gigs? The SP2 Series is available in an 88-note hammer weighted or 76-note semi-weighted action. The SP2 Series has 64 of the best sounding pianos, strings, voices, and brass for just about any live or recording gig. The SP2 will deliver the one thing for which Kurzweil is most famous - EXCELLENCE.

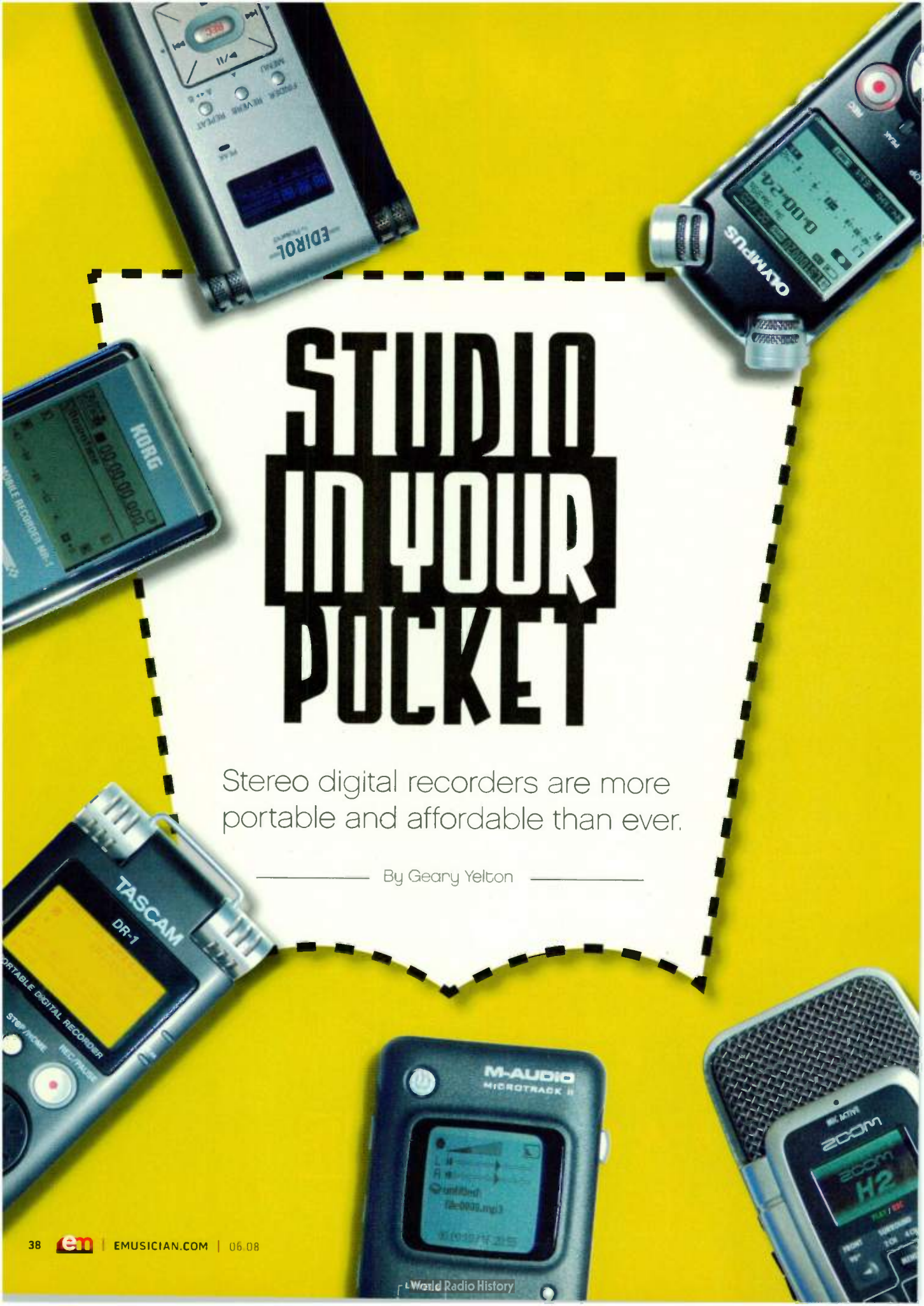
MSRP SP2X $1,390.00 SP2 $1,260.00

Never relinquishing the vision of "THE BEST SOUNDING INSTRUMENT" the latest Kurzweil keyboards remain true and committed to that vision today.

KURZWEIL... IT'S THE SOUND

Kurzweil Music Systems 19060 S. Dominguez Hills Dr., Rancho Dominguez, CA 90220

www.kurzweilmusicsystems.com



STUDIO IN YOUR POCKET

Stereo digital recorders are more portable and affordable than ever.

By Geary Yelton

The recent trend toward pocket-size stereo recorders has accelerated dramatically, with more than a few major manufacturers getting into the act. What began as a niche market for broadcast journalists and sound-effects collectors has exploded into a wealth of new and exciting tools for all kinds of musicians and audio professionals thanks to impressive advances in portable digital technology. It's been said that smaller is better, and that's never been truer than with the current crop of high-performance pocket studios.

Compact recorders have a broad range of uses, from archiving band rehearsals to recording birdsongs in your backyard. Nothing is more convenient for quickly capturing spontaneous song ideas and taking verbal notes. They can't be beat for recording interviews and lectures, and they're unobtrusive enough to make clandestine concert recordings with remarkable clarity. Today's pint-size products offer audio performance unheard of in previous generations, with fidelity and accuracy that blow away yesterday's analog mastering decks and digital audiotape (DAT) machines. They can store considerably more material than an analog reel or a DAT cassette. And some offer such pristine A/D converters and preamps that they're ideal for archiving your mixdowns.

A lot has changed just since October 2005, the last time EM surveyed portable tapeless recorders (see "Playing the Field," available at emusician.com). Most notably, recorders have gotten much smaller and less expensive. More of them include features designed for musicians, such as variable-speed playback and built-in tuners. CompactFlash was the preferred storage medium in 2005, but most pocket-size recorders now rely on Secure Digital (SD) cards.

This article looks at eight little digital recorders currently available and another one that should be shipping by the time you read this (for detailed specifications, see the **online bonus material** "Stereo Recorder Features Compared" at emusician.com). All of them have impressive storage capacity, and some have surprisingly long battery life. All record WAV files, most record MP3 files, and one records at rates as high as 2.8 MHz. Each is priced well under $1,000, and all can slip into a shirt or jacket pocket.

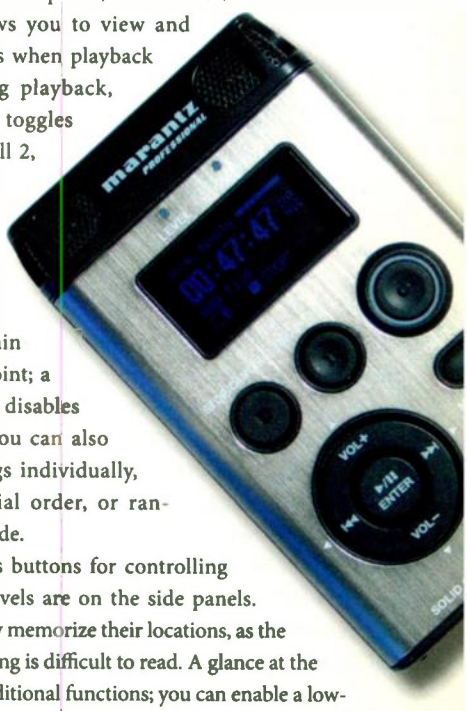
Edirol R-09

When Edirol introduced the R-09 ($399), it was the smallest digital recorder yet to target audio professionals (see Fig. 1). About half the size of the earlier R-1, the R-09 has a pair of fixed omnidirectional condenser mics in its upper corners, stereo mic and line inputs on minijacks, and a minijack that handles optical S/PDIF out, line out, or headphones. The R-09 records and plays 16- and 24-bit WAV files at 44.1 or 48 kHz, and MP3 files from 64 to 320 Kbps. It can apply onboard reverb to playback and has a button that loops playback between two user-defined points. It accommodates SD cards up to 16 GB and includes a 64 MB card.

The R-09 is easy to operate with one hand, and it packs a lot of graphical information into its small (128 × 64–pixel) but sharp organic light-emitting diode (OLED) display. In play, record, or stop modes, the display shows information such as song name and length, playback or recording time, and reverb and battery status, as well as level meters calibrated in decibels.

The transport controls, which also serve as cursor controls, are clustered around a central Record button. There's no mistaking when recording is armed; the area around the Record button flashes red in record-ready pause, and it glows steadily during recording. The Record button doubles as an Enter button for selecting menu items. I was pleased that I could begin recording less than 7 seconds after pressing the Power button.

Also on the front panel, the Finder/Menu button allows you to view and select recorded files when playback is stopped. During playback, the Reverb button toggles between Hall 1, Hall 2, Room, Plate, and Off. Pressing the Repeat button specifies a loop start point, and pressing it again specifies the end point; a third press disables the loop. You can also repeat songs individually, in sequential order, or randomly in Shuffle mode.



Plus and minus buttons for controlling input and output levels are on the side panels. You'll want to quickly memorize their locations, as the black-on-black labeling is difficult to read. A glance at the rear panel reveals additional functions; you can enable a low-cut filter and automatic gain control (AGC), specify a mono or stereo external mic, and switch mic gain from low to high.

The R-09 has the clumsiest means of replacing its two AA batteries I've ever seen on any device. After sliding the flimsy bottom panel halfway open (revealing the USB port and SD slot), you need to press and hold a tiny switch to slide it the rest of the way open, and then flip it up to reach the batteries. Closing the panel is almost

FIG. 1: Edirol's R-09 is small enough to operate with one hand, yet it offers pro-level features such as a digital audio out and support for SD cards up to 16 GB.

as awkward. I'd wager that replacing broken bottom panels is the most common R-09 repair.

As of this writing, Roland has just announced the Edirol R-09HR, a model slated to replace the R-09. Among its new features are 96 kHz recording, better mic preamps, a larger OLED display, a built-in speaker, an included wireless remote, variable-speed playback, and a much-improved battery-door design.

Korg MR-1

The MR-1 ($699) is the most expensive model surveyed here, but several features make it unique, not the least of which is its variety of recording formats (see Fig. 2). In addition to 16- and 24-bit PCM audio in Broadcast WAV Format (BWF) at rates as high as 192 kHz (twice that of any of the other recorders), it handles 1-bit audio at 2.8 MHz. It also records MP3 files at 192 Kbps and plays MP3s at all bit rates. The MR-1 is the only recorder in this roundup with an internal 20 GB hard disk rather than flash memory.

On the top panel, alongside stereo minijacks for a balanced line output and unbalanced headphones, the MR-1 has two mono balanced mic/line inputs on minijacks rather than the stereo inputs you'll find on the other recorders. Included with the recorder is the CM-2M, a compact external stereo mic made by Audio-Technica, as well as a solid-metal bracket that serves as a tiny mic stand and has threads that attach to a camera tripod. The CM-2M has a split cable with two mono plugs to accommodate the recorder's pair of inputs.

The MR-1's generous graphical LCD shows menus, level meters, file data, and parameter settings. You access the MR-1's user interface with the Menu button and data wheel (called the parameter dial), which are mounted on the side. Turning the wheel scrolls though menu items, and pressing on it selects them. Pressing the Menu button steps backward through the menu hierarchy, just as it does on an Apple iPod. Transport controls are mounted on the front.

The internal hard disk stores tons of data, but at the expense of battery life—typically 2.5 hours or less using the internal rechargeable lithium-ion-polymer battery. To double battery life, Korg includes an external battery pack that houses four AA batteries. The hard disk's presence also means that microphones must be mounted externally, because a spinning drive generates some noise, no matter how minimal.

The MR-1's ability to record and play Direct Stream Digital (DSD) and other 1-bit formats gives it a definite edge. In my experience, nothing sounds as accurate and lifelike. This audio superiority results from several factors, including the unit's high 1-bit sampling rate—64 times the sampling rate of a standard audio disc. Another has to do with the way A/D converters process PCM audio. Without getting technical, suffice it to say that the MR-1 sounds better than any other recorder in this lineup, making it suitable for archiving important recordings and mixdowns.

FIG. 2: The Korg MR-1 delivers the highest-quality audio performance of all the recorders in this roundup, and it's the only one with an internal hard disk.

For exchanging data between audio formats, the MR-1 is bundled with AudioGate (Mac/Win), an application that converts 1-, 16-, 24-, and 32-bit floating-point audio from any format to any other format (except MP3) supported by the MR-1. Although it isn't a waveform editor, it also allows you to split and join files, change gain, create fades, and perform other tasks.

Marantz PMD620

Marantz has a long history of making portable recorders for audio professionals and broadcast journalists. In fact, among the six recorders surveyed in EM's October 2005 cover story were two models from Marantz. The company's latest and most diminutive offering yet, the PMD620 ($399) easily fits in one hand, and I never used more than one hand to operate it. It records mono or stereo 16- and 24-bit WAV files at 44.1 and 48 kHz, and mono or stereo MP3 files at selected bit rates.

Like the Edirol R-09, the PMD620 has a small OLED that displays all user settings and file data (see Fig. 3). On the front panel, the Enter button doubles as the Play and Pause button, and it is encircled by a button that rocks in four directions; in addition to controlling the onscreen cursor, it controls fast-forward, rewind, and playback volume. Alongside the Stop/Cancel button are separate buttons for Record and Record/Pause—an unusual design that lets you go into record-ready pause or begin recording immediately. The Skip Back button rewinds playback by whatever increment you specify, from 1 to 60 seconds, every time you press it.

Two buttons that control Record Level are on the right side panel. On the left side are line in and out minijacks and another for the optional RC600PMD wired remote ($89). Two additional minijacks for headphones and an external mic are mounted on top, and two built-in mics are in the upper corners. On the bottom panel are small doors that open to reveal the SD card and USB ports, and a sliding panel in back accommodates two AA batteries. Also in back is a tiny monaural speaker; though it might be handy in some circumstances, I can

Introducing
StudioDock™

StudioDock™ USB Monitors.

Record, stream and sync with studio-quality sound.

Made for iPod

samsontech.com/studiodock

SAMSON

FIG. 3: The latest in a long line of portable recorders from Marantz, the PMD620 is quick on the draw and offers the ability to save and name user presets containing setup parameters.

only describe its sound as remarkably tinny.

Despite a recent firmware upgrade, the PMD620's operating system is by far the least intuitive of the bunch. Simply enabling the unit's Record Level buttons, for example, requires that you hold down the Display/Menu/Store button for 3 seconds, scroll to Preset Menu and press Enter, select a Preset, scroll down nine items to Level Cont., press Fast Forward to switch from ALC (Automatic Level Control) to Manual, and then press Display/Menu/Store again to save your changes. And instead of being able to delete a file immediately after a bad take, you must go into the Utility menu and select it from a list. But for all its design eccentricities, the PMD620 is an outstanding performer. It can go from being turned off to recording in less than 4 seconds—an amazing feat for any recording medium.

Once you understand how the unit works, presets offer its greatest functional advantage. You can store and name three presets on an SD card, each containing settings for 23 parameters. For instance, you could set up a preset to record 24-bit WAV files at 48 kHz using an external stereo mic that relies on plug-in power with –12 dB attenuation. Another preset could specify 128 Kbps MP3 using the internal mic with the low-cut filter engaged, and that recording would pause whenever the level drops below a certain threshold and restart when it exceeds that threshold. A preset can even stipulate the battery type, OLED brightness, onscreen font size, and other seemingly global parameters.

M-Audio MicroTrack II

The MicroTrack II ($299) replaces the MicroTrack 24/96 introduced in late 2005 (see Fig. 4). Like the original, the updated model uses CompactFlash cards and Microdrives for storage (though none are included). In addition to 16- and 24-bit BWF at sampling rates from 44.1 to 96 kHz, it records MP3 at bit rates from 96 to 320 Kbps. It can record mono or stereo in either format. The recorder fits comfortably in and is easily operated with one hand.

Bundled with the MicroTrack II is a T-shaped stereo microphone that plugs into the top panel and has a foam windscreen on each diaphragm. The recorder has better I/O capabilities than any of its pocket-size competitors: along with the usual stereo mic input and headphone output on minijacks, it has two balanced mic/line inputs on ¼-inch TRS jacks, two line outputs on RCA jacks, and coaxial stereo S/PDIF I/O on an RCA jack. The TRS inputs, especially, maximize flexibility while minimizing the need for external adapters. The ¼-inch inputs supply full 48V phantom power, and you can monitor S/PDIF input through the headphone output. The MicroTrack II handles a wider range of signal levels than the MicroTrack 24/96, eliminating the previous model's boost setting and optional –10 dB pad.

You negotiate the menus and file structure with a combination of the Navigation Wheel (which operates like a small lever) and the Menu button. Rock the wheel up or down to move the cursor, press it to select an item, and press Menu to step backward in the menu hierarchy. Rather than knobs for controlling levels, the MicroTrack II has two buttons for recording and another for playback; pressing the button's top end increases the level and pressing the bottom end decreases it. You can specify

Yamaha Pocketrak 2G

Announced but not shipping in time to be evaluated for this article, Yamaha's new Pocketrak 2G ($349) is the slimmest and lightest pro-quality recorder yet—half an inch thick and less than 2 ounces (see Fig. A). Its WAV file recording is strictly CD quality (16-bit, 44.1 kHz), but it also records MP3 files and plays WMA files. Its 2 GB of internal memory can hold more than 3 hours of PCM audio, and the included rechargeable AAA battery delivers as much as 19 hours of MP3 record time. The recorder connects directly to your computer's USB port for transferring audio data and charging the battery. With features such as a tilting stereo mic, a built-in speaker, a retractable USB plug, and variable-speed playback, the Pocketrak 2G offers portability in the extreme.

FIG. A: Yamaha's new Pocketrak 2G is the smallest recorder yet to offer CD-quality recording, variable-speed playback, and up to 25-hour battery life.

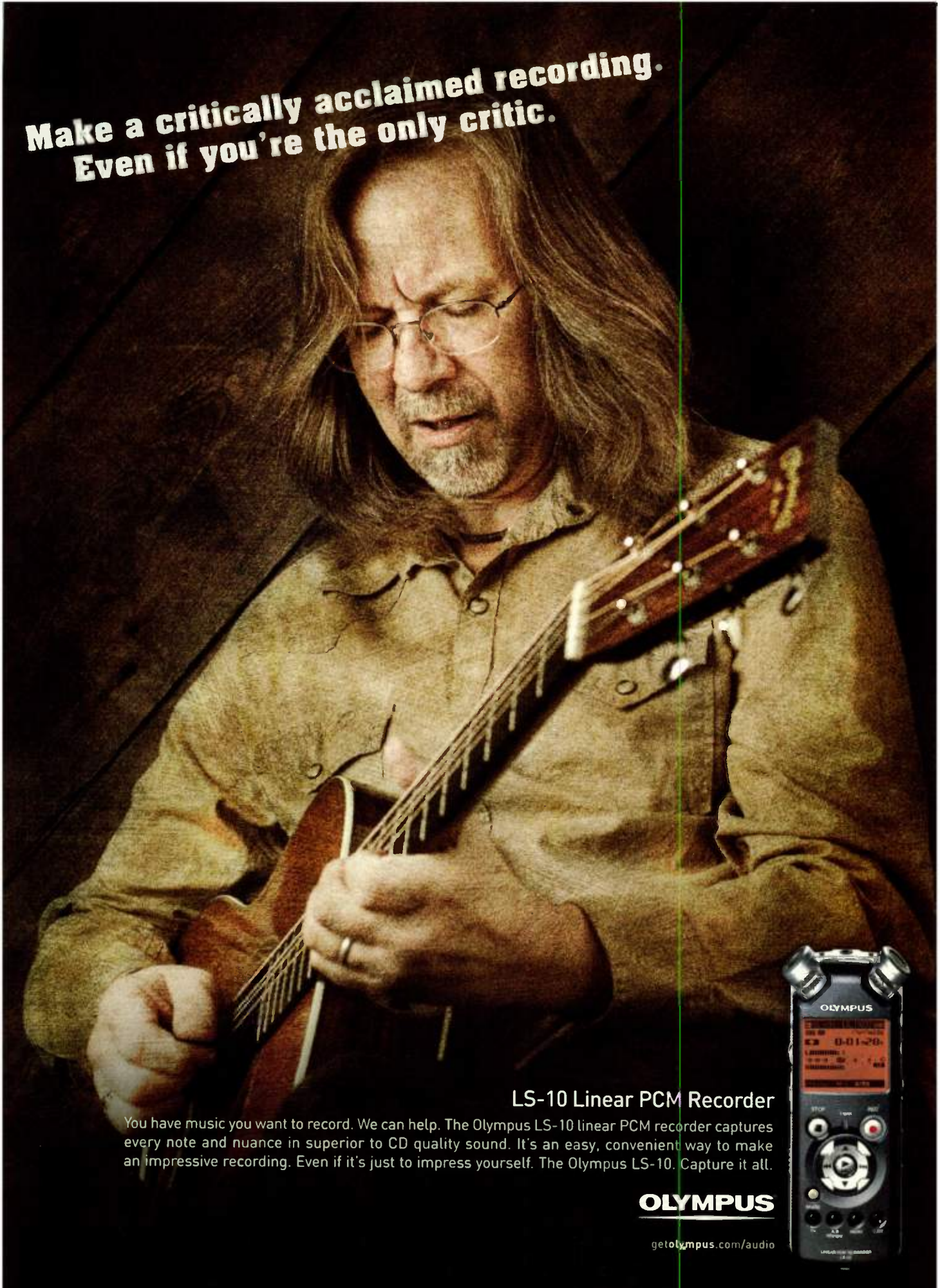


FIG. 4: M-Audio's second-gereration MicroTrack II has balanced ¼-inch inputs with 48V phantom power, as well as line outputs on RCA jacks and coaxial S/PDIF I/O.

whether pressing Record puts the recorder into record-ready pause mode or begins recording immediately—a great feature.

The rather large LCD graphically displays plenty of data, and a side-mounted switch lets you adjust the backlight's brightness. Onscreen graphics represent the battery level, output level, and left and right input levels. The meters aren't calibrated in decibels but give you a relative gauge of settings and transient levels. Also displayed are the file name, number of files recorded, record time, and time remaining.

To loop passages during playback, hold down the Menu button for more than 2 seconds to enable looping, then press Menu once to indicate the start point and again for the end point. The analog limiter prevents audio from exceeding –1 dBfs.

Like its predecessor, the MicroTrack II contains a rechargeable lithium-ion battery that can't be replaced by the user. When it eventually wears out, you must return the entire unit to M-Audio for replacement at a cost of $75. The included AC adapter connects to the recorder via a USB cable, and a USB connection also charges the battery.

Olympus LS-10

Although Olympus is most often associated with cameras and binoculars, it manufactures quite a few voice recorders, both digital and microcassette. The LS-10 ($399) offers performance far beyond its dictation-oriented brethren, however, with 24-bit sampling rates as high as 96 kHz and 2 GB of onboard flash memory (see Fig. 5). If you need more storage, its SD slot accommodates cards of any capacity. The LS-10 is the slimmest recorder I've used (though Yamaha's forthcoming Pocketrak 2G will be even slimmer). In addition to recording WAV and MP3 files, it records in Microsoft's Windows Media Audio (WMA) format, and it can store computer data by means of its USB connection.

The LS-10's feature set is quite impressive, with hardware volume knobs, two serviceable built-in speakers, and excellent battery life. The top-mounted mics sound clean and accurate, and you even get foam windscreens that slip tightly over them. The unit is obviously designed for easy one-handed operation and provides a generous LCD to view its hierarchical folders and menu structure. And when it ships, the optional RS30W remote will permit hands-free operation of record and stop functions.

Navigation couldn't be simpler thanks to centrally located cursor buttons surrounding an OK button that also functions as the Play button. As with the Edirol R-09, the area around the Record button flashes red in record-ready pause and glows steadily while recording. Onscreen meters indicate record levels calibrated in decibels, and a Peak LED flashes red when the input overloads. Pressing the dedicated Erase button deletes your most recent recording quickly and conveniently. Two buttons on the lower right, Menu and List, help you navigate the recorder's file, folder, and menu structure. Another button, A-B Repeat, sets the loop start point the first time you press it, sets the end point the second time, and cancels the loop the third time.

The remaining button, labeled Fn, is an assignable function key. It is immensely useful for instantly changing modes and accessing various functions. One of these functions is an unusual feature called Zoom Mic. The idea is that you can change the stereo mic's directivity with an onboard algorithm. The settings are Off, Wide, Standard, Narrow, and Zoom. Although the Wide and Zoom setting did create the illusion of distance, all the settings altered the equalization considerably and sounded more like effects processing than like repositioning the mics.

You can impart a similar effect during playback called Euphony Mobile, which purports to add audible expansiveness. Its settings are Normal (no effect), Natural (expansion), Wide (more expansion), and Power (emphasizing low frequencies). Like Zoom Mic, Euphony sounds more like effects processing than like the sound is emanating from a physically different environment. If you prefer a more traditional sense of space, the LS-10 also offers four reverb presets during playback: Studio, Club, Hall, and Dome. Using Euphony or reverb will lower 24-bit resolution to 16-bit and 96 kHz audio to 48 kHz.

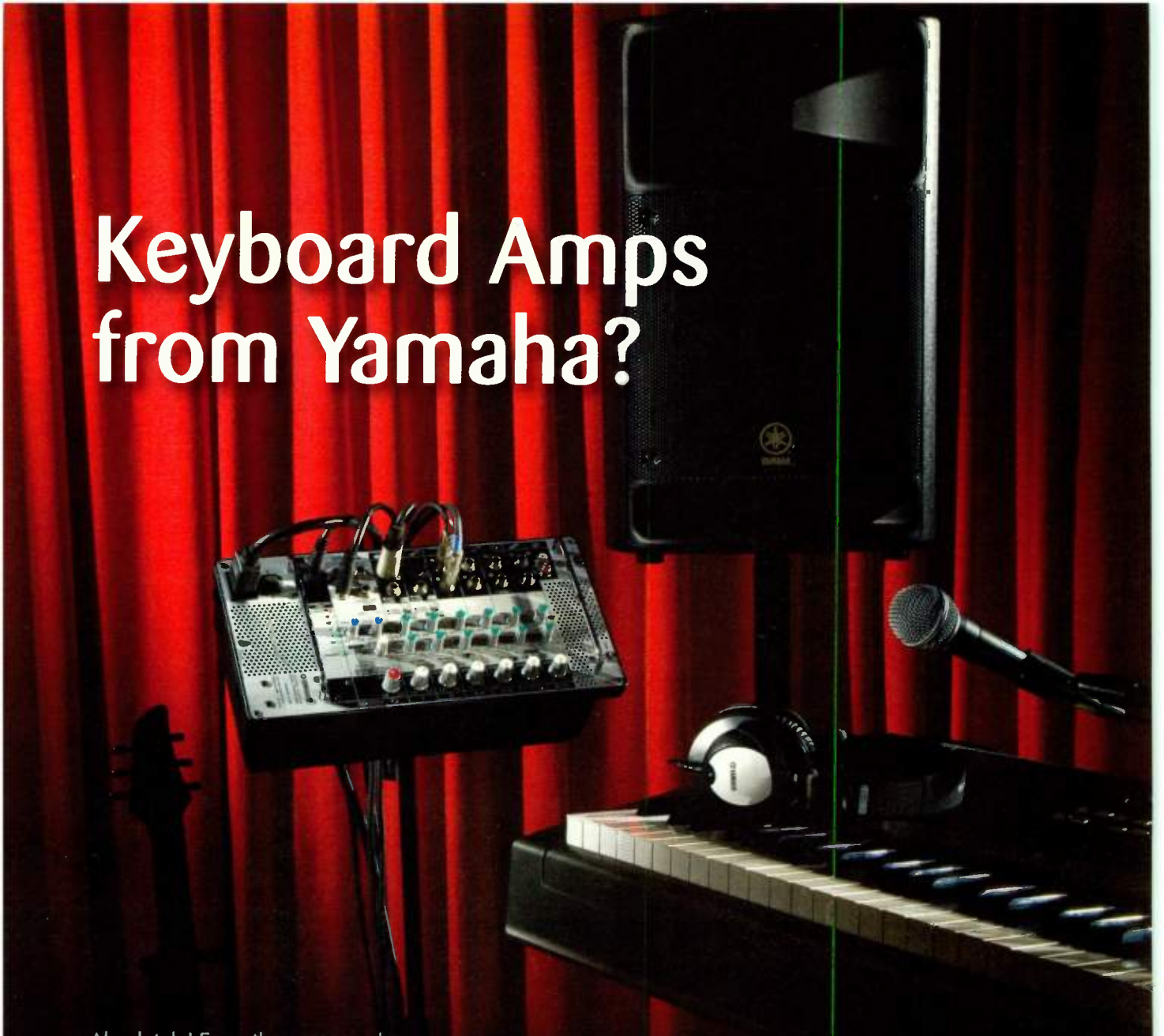
Sony PCM-D50

The PCM-D50 ($499) builds on Sony's experience with the outstanding PCM-D1 as well as with previous generations of digital recorders spanning decades. Though it is the largest, heaviest, and seemingly most rugged of all the recorders in this roundup, it still fits in a shirt pocket, if just barely (see Fig. 6). Its size offers advantages such as a generous amber backlit display, ergonomic buttons and knobs, and room inside for four AA batteries, offering a maximum 26 hours for playing MP3 files (it doesn't record MP3s) and 12 hours for recording 24-bit, 96 kHz linear PCM.

> The Marantz can go from being turned off to recording in less than 4 seconds.

One physical feature that distinguishes the PCM-D50 is a pair of mics mounted on the top and protected by a rigid metal framework. They swivel from an angle of 90 to 120 degrees relative to each other, allowing you to shift from typical XY to wide recording positions and everything in between. The unit contains 4 GB of internal flash memory, and you can

Keyboard Amps from Yamaha?



Absolutely! From the company known for market-leading electronic keyboards comes a new generation of keyboard amplifiers that redefines the category... STAGEPAS 150M and 250M. "How are they different from what's been available?" you ask. In almost every way (see chart at right). They're much lighter and more compact, provide a unique form factor and feature set optimized for keyboardists, and, most importantly, deliver the ultimate in sound quality. So, no matter what your favorite brand of keyboard is, Yamaha has the solution for making it sound its best. Visit your local Yamaha dealer for an ear opening demo.

FEATURES	STAGEPAS 150M	STAGEPAS 250M
Mic Inputs	2	2
Stereo Line Inputs	3	4
Phantom Power	-	Yes
Max. Output Power	150W	250W
Digital Class D Amplifiers	Yes	Yes
Speaker Configuration	8" Two-Way	10" Two-Way
Removable Mixer/Mic Stand Mountable	Yes/Option	Yes/Option
Channel Input Compressors	-	2
Reverb	1-Bit Modulation	SPX® Digital
Balanced ST Sub Output	Yes	Yes
Click Track Assign	Yes	Yes
Wedge-shaped Enclosure	Yes	Yes
Speaker Stand Mountable	Option	Yes
Weight	21 lbs	29 lbs

YAMAHA

www.yamaha.com

expand that further with one of Sony's proprietary Memory Sticks, either High-Speed Pro Duo or Pro-HG Duo.

Eleven buttons are on the front panel, with just three switches on the sides for Power, Hold, and DPC (Digital Pitch Control, which allows playback from 75 percent slower than to twice as fast as the original, without changing pitch). In addition to the usual Play, Pause, Fast Forward, Rewind, and Stop are buttons that access the menu and folder hierarchy, toggle the backlight, specify loop points, and divide files into smaller files. Three of the transport buttons serve double duty: when you're navigating onscreen, Play functions as an Enter key, and Fast Forward and Rewind function as Up and Down keys.

The display shows a variety of information, such as battery level, audio levels calibrated in decibels, and length calibrated in hours, minutes, and seconds. Quickly pressing the Menu button reveals the folder structure, and holding it for 1 second reveals a scrollable list of parameters and commands.

Regarding the time it takes to go from power-off to recording, the PCM-D50 is a little slow on the draw, especially when compared with speedy performers like the Marantz PMD620. It makes up for it, though, with its prerecord buffer, a very cool feature that captures audio occurring before you press Record by continually maintaining a 5-second buffer.

The PCM-D50 has one of the most flexible limiters I've seen. The recorder divides its input into two streams, one 12 dB lower than the other. With the limiter engaged, the PCM-D50 automatically begins recording the –12 dB signal whenever the input exceeds 0 dBfs. A menu setting lets you determine the rate at which the recorded signal returns to the higher level—either 150 ms, 1 second, or 1 minute.

Tascam DR-1

Shipping just in time for inclusion in this article, the DR-1 ($299) takes advantage of Tascam's many years of designing recorders that specifically target musicians. The DR-1 feels solid, contains a user-installable rechargeable battery, and has an amber backlit display as big as the Sony's (see Fig. 7). Although Tascam's recorder is one of the largest in this roundup, it's easy to hold and operate in one hand. It records WAV files at 44.1 or 48 kHz and MP3 files at any standard bit rate. The DR-1 is loaded with thoughtful features, and it even has a chromatic tuner, a fine-tunable A 440 oscillator, and a built-in metronome.

> Their fidelity and accuracy blow away yesterday's machines.

One distinguishing feature is a pair of top-mounted condenser microphones that rotate from pointing upward to pointing toward the recorder's front, making it easy to record yourself or mic a source in front of you with the DR-1 in your shirt pocket. For most recording, though, you'll probably want to leave it lying on its back; it doesn't have a threaded hole for mounting on a stand, and its bottom panel isn't quite flat enough to stand it upright. (The optional $75 AK-DR1 accessory kit includes a mic clip, tripod, and windscreen.) The reason is the unbalanced TS mono mic input mounted on the bottom, making the DR-1 one of only two units in this roundup that accommodate a ¼-inch plug.

On the top panel are two minijacks: one that accommodates a stereo mic input and supplies plug-in power, and another for a line input. The solitary output, another minijack on the right side panel, accommodates headphones and line levels. On the left side, a difficult-to-open door slides open to reveal the SD card (a 1 GB card is included) and USB ports. The DR-1's AC adapter (the $29 PS-P520) is an optional accessory, but you can power the recorder and charge the included lithium-ion battery by connecting its USB port to your computer.

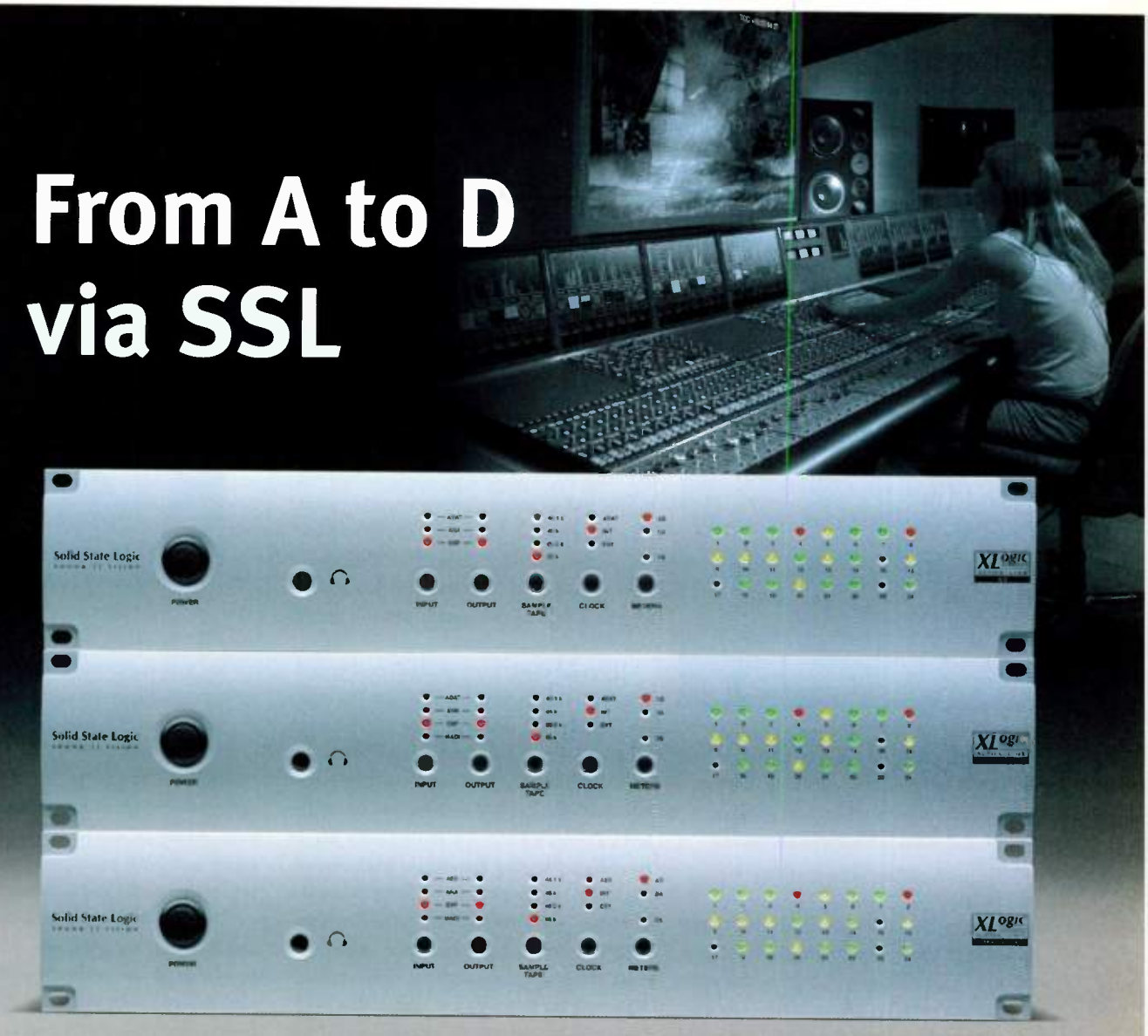
The DR-1's front panel has a relatively large LCD and enough space for ten buttons and a data wheel. Two buttons on the side let you adjust output level, but you get an actual knob for adjusting input level. While recording, you can always see your settings, levels, and timing data at a glance. You maneuver your way though the onscreen text and graphics using a combination of the front panel's Menu, Stop/Home, Play/Pause, Rewind, and Fast Forward buttons and data wheel and the side panel's Setting button. The wheel is also handy for scrolling through audio files and entering values. Dedicated buttons let you enable looping and set start and end points, access functions such as Variable Speed Audition (VSA), and apply effects such as reverb and autopan to the input signal.

The DR-1 borrows technology from the MP-VT1, a vocal and instrument trainer designed to help you learn songs by changing their playback speed and pitch. Like the MP-VT1, the DR-1 can change playback tempo with or without affecting

FIG. 5: The Olympus LS-10 is slim, lightweight, and versatile, and it contains 2 GB of onboard flash memory. It's nimble, too—you can power it up and start recording in about 6 seconds.

www.sweetwater.com/ssl

From A to D via SSL



- **Alpha-Link AX (top):** ADAT ⟷ Analogue
- **Alpha-Link MADI AX (centre):** MADI ⟷ ADAT ⟷ Analogue
- **Alpha-Link MADI SX (botttom):** MADI ⟷ AES/EBU ⟷ Analogue

Solid State Logic
SOUND | | VISION

In critical studio, live and broadcast applications, quality shouldn't be compromised at any point in the signal chain. Designed to avoid complicated workarounds and deliver pristine audio, the new Alpha-Link range is a collection of multi-channel audio converters, each featuring 24-channels of analogue I/O with SSL's premium A-D/D-A converters. The three models offer a choice of digital audio format options, for fast connectivity to MADI-, AES/EBU- and ADAT Lightpipe-equipped hardware.

XLogic Alpha-Link. This is SSL.

To find out which Alpha-Link is right for you, call a Sweetwater Sales Engineer today.

1-800-222-4700

Sweetwater
Music Instruments & Pro Audio

FIG. 6: Although slightly larger than its competitors, the Sony PCM-D50 offers all the features you'd want in a portable recorder, including 4 GB of onboard memory and 12 hours of 96 kHz record time on a single set of batteries.

pitch, and pitch without affecting tempo. You can adjust playback speed from –50 to +16 percent and adjust pitch as much as six semitones up or down with 1-cent accuracy. The Part Cancel function reduces the gain of a selected portion of your recording based on where it's panned, allowing you to minimize a vocal part or an instrumental solo from a prerecorded song so you can record your own part.

Another standout function that's unique in this roundup is Overdub. You can record additional audio to an existing stereo track; even if the original file is an MP3, the overdub creates a WAV file containing both parts. A pair of Mix Balance buttons on the side lets you adjust the mix of the old and new recordings. You can overdub as many times as you'd like, creating a new WAV file with each pass.

Zoom H2

The H2 ($199) is not only the least expensive recorder in this roundup, but it's also the only one with four mic capsules onboard, offering 4-channel in addition to stereo recording (see Fig. 8). The H2 runs off two AA batteries or the included AC adapter, and like the Tascam, it has a tuner and metronome built right in. It records 16- and 24-bit WAV files at sampling rates up to 96 kHz and MP3 files at bit rates up to 320 Kbps, and stores its data on an SD card (a 512 MB card is included).

The H2 is lightweight and easy to operate with one hand. Its green backlit LCD is as small as the OLED on the Marantz or Edirol recorders, but not quite as sharp. During recording, it displays the input level, elapsed and remaining time, file type, and so on. You maneuver the file and menu hierarchy using seven raised membrane-switch buttons on the front panel. A dedicated button displays the well-organized menu; use the Fast Forward and Rewind buttons to scroll through menus and the Record button to make selections.

Because the H2 has no dedicated record-level knob or buttons, you adjust the input level by selecting one of three Mic Gain switch settings, pressing Record to put the H2 in record-ready standby, and then using Fast Forward and Rewind to raise and lower the level. Pressing Record a second time begins recording. Pressing Play/Pause while recording drops markers, and pressing Record a third time stops recording. A menu selection enables a short prerecord buffer (1 to 2 seconds, depending on sampling rate)—enough to capture the beginning of sounds that might otherwise be missed. To loop playback, you can open an AB Repeat display and set start and end points.

The front mics are fixed at a 90-degree relative angle, and the rear mics are 120 degrees apart. Put them all together for 4-channel recording, and you get a 360-degree pattern. Two of the front-panel buttons scroll through four mic-pattern choices. You can plug an external stereo mic into the Mic In minijack (which offers switchable plug-in power), but if you want 4-channel recording, you'll need to use the internal mics. A separate stereo minijack handles line-level input. The only output is the stereo Phones/Line Out minijack.

When recording 4-channel audio, the H2 creates two stereo WAV files. Although you'll see four level meters in the display, you control input level for all four channels simultaneously. A nifty graphic image in the LCD lets you adjust 4-channel panning using the four buttons encircling Record as cursor keys.

FIG. 7: Designed with musicians in mind, Tascam's new DR-1 features a chromatic tuner, a metronome, variable playback speed and pitch, a ¼-inch mic input, and the ability to overdub tracks.

The H2's AGC is paired with a compressor and a limiter; not only does it let you specify thresholds for automatically starting and stopping record mode, but it also furnishes eight presets (Speech, Concert, and so on) that apply to various situations.

Your computer won't recognize the H2 as soon as they're linked. After connecting their USB ports, you must select whether you want to access the contents of the SD card or use the H2 as a USB microphone or audio interface (an unexpected bonus). Only then does the H2 mount on your desktop. After ejecting the H2 from your desktop, you press the Menu button to regain local control.

Observations, Contrasts, and Comparisons

I can easily recommend any of the recorders in this roundup. My personal favorites are the Sony PCM-D50 and the Olympus LS-10, but several others come very close. The Sony

offers the most well-rounded set of features for audio professionals. It's also the largest and heaviest, but at less than 13 ounces with batteries, it's still lighter than my digital camera. You'll find many of the same features in the Olympus, and it's quite small and light. I really appreciated its on-the-go portability and ease of use; it also offers tremendous bang for the buck.

Although the Korg has by far the best sound quality and the most onboard storage, it costs more than the others. It also has the shortest battery life without an external power supply. The M-Audio is the only one offering balanced inputs, 48V phantom power, and S/PDIF I/O on RCA jacks, but replacing the battery requires returning it to the factory. Nothing captures sounds faster than the Marantz thanks to its speedy startup and recording presets; its user interface takes some getting used to, however, and it tops out at 48 kHz. If you're a musician who wants a compact recorder for learning songs, the Tascam delivers features the others can't touch, but again, 48 kHz is its top sampling rate. The Edirol offers easy one-handed operation and some pro features, but its construction is less than robust. The Zoom is the most cost-effective choice available for recording in surround.

FIG. 8: With four built-in mic capsules, a metronome, and a versatile tuner, the Zoom H2's 360-degree recording and low cost make it unique among its competitors.

All of the recorders surveyed here have certain features in common, of course. Most have built-in mics, and they all have minijacks and exchange data with your computer via a mini USB port. Each has a menu-driven user interface and lets you quickly access recordings by organizing files into folders. All have switches that prevent you from accidentally turning the power on or off, and they power down after a period of nonuse.

I was surprised at how many approaches different manufacturers have taken to designing pocket-size recorders. Feature sets and user interfaces are quite diverse, and finding the one that suits you best means you should familiarize yourself with several. Each has its niche and its advantages. Nonetheless, I feel confident that at least one of them is exactly what you need. EM

Before becoming an EM editor, Geary Yelton directed the MIDI production suites at three major Atlanta recording studios. He now resides in Charlotte, North Carolina.

Manufacturer Contacts

Edirol
edirol.net

Korg
korgusa.com

Marantz
d-mpro.com

M-Audio
m-audio.com

Olympus
olympusamerica.com

Sony
sony.com

Tascam
tascam.com

Yamaha
yamahasynth.com

Zoom
samsontech.com

KRISTINA MARIE KRUG

Victor's Home Cooking

Bassman Victor Wooten thrives in his personal studio.

By Mike Levine

Victor Wooten is a musician's musician. Best known for his electric-bass work in the acoustic jazz fusion group Béla Fleck and the Flecktones, he is one of the premier bassists on the planet. And with his creativity and technical prowess, he has taken the instrument to new heights.

Raised in a family of musicians, Wooten has been recording since he was a kid. He toured for years with his four brothers as the Wooten Brothers, and his brother Roy, aka Future Man, is the Flecktones' percussionist. Victor's first "studio" consisted of a pair of 2-track decks that he used to overdub between. He later progressed to 4-track cassette recorders, Roland VS-880 and VS-1680 personal digital workstations, and, in his current setup, a Digidesign Pro Tools HD system with a Digidesign Control 24 console, Meyer Sound HD-1 monitors, and plenty of additional gear. Wooten has recorded several of his solo CDs at home, including his newest, *Palmystery* (see Fig. 1), which was released in mid-April.

Wooten's studio (see Fig. 2), which he calls VixMix, is in the basement of his house, which is located in the hills outside Nashville. The studio includes a large control room, a drum room, and a vocal booth. The quality of gear in his current setup gives him recording capabilities he'd never previously had at home. "Now, I literally don't have to leave home for any part of the process," he says. Wooten enjoys the flexibility that his studio provides; it allows him to work on his music while remaining only a few steps away from his wife and four young kids.

Shortly before *Palmystery* was released, I had a chance to visit Wooten at his studio and talk to him about his CD, his outlook on recording, and a lot more (see Web Clip 1).

ONLINE BONUS MATERIAL

What did you do to set up the basement as a studio?

The first thing we did was to waterproof the concrete: the floors, the walls, the cinder-block walls, and everything. There was some kind of paste we put on the walls. I live on a hill. When you're in the studio, the right wall, by the soundboard, is underground. It's also underneath the kitchen, and I didn't want any leaks from above, so we had to do stuff to the ceiling. The good thing is that there's part of that wall that didn't have to be sound insulated, because it's underground. And then for the internal walls, we used maybe 4-inch-thick insulation. And then we doubled all the walls, so we have double drywalls, double wood, and double insulation on each wall and on the ceilings.

And the sound in there is good?

The sound in there is great. Now if the kids are jumping or bouncing a basketball, I'll hear it. But most of the time, it's me in there recording with a bass direct. It's just when I have drums or vocals or anything like that, where I may sometimes have to ask them to be quiet. The way the studio is laid out in relationship to the house works out very nicely. The drum room is under a room where there are only books, so there's really nothing going on in there most of the time. The living room, where the kids might be, is in a different part of the house. So the drum room stays pretty quiet. I also [either] triple- or quadruple-insulated the drum room—I can't remember. But when you look at the drum room, you'll notice that the ceiling is a lot lower, so we put more stuff in there.

Not that you have to worry about any neighbors nearby.

No, we don't have to worry about the neighbors; we can play all hours of the night. The drums can go all night. And the back wall of the drum room faces outdoors. So there is a window out there. If the kids are outside playing, sometimes I'll hear them through that window. But for the most part, we don't have a problem.

Did you get a professional room tuner to come in and do any special acoustic treatment?

No, I didn't. I didn't have a special guy come in at all. I had a

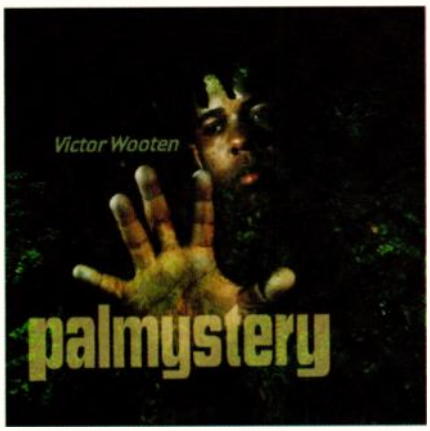


FIG. 1: In addition to Wooten and his four brothers, *Palmystery* features a stellar musician lineup that includes Mike Stern, Dennis Chambers, Neal Evans, anc Keb' Mo'.

lot of friends come over. What we did is a lot of listening. We took records that we know and just listened to them. And I had a good friend, a friend of mine named Curt Storey, who was engineering for me at the time. We went in, and he has really, really good ears. And we did do some listening to try to figure out the best place to put the mixing board. We had a few options of which way to face it, and we decided to go into the back corner, which was totally underground. The wall was very, very solid, and we put the board facing the way it is right now. But as far as having someone come in and tune it, there are a lot of those big professional steps that I skipped. I could have floated the floor—I could have done things like that, but I skipped them. Because I felt that the room is for me. I can do a record in a cathedral or a bathroom, as long as I know what it sounds like.

You generally record your bass direct, right?

For the most part, I do. And it's just because I'm old school and I don't know a lot of the high-end technical stuff. In my studio, I use a Control 24 board, and it has Focusrite preamps in the back. So most of the time I just plug straight in. A lot of the time I have an idea in my head and I want to hear it right away, so I don't feel like setting up. So I plug in, and I just start trying stuff right away. And if I like it, I keep it. I just acquired a bunch of great Radial DIs, and I've been using those lately. I've been using them on my latest stuff. On some of the new stuff that I'm doing with the Flecktones, I'm using some of the Radial DIs, too. So for the most part, I use a DI or just go straight into the board. Every once in a while, just to do something different, I'll mic an amp, but that's rare.

I see you've got a couple of bass amps here. What's that—a B-15?

Yeah, exactly—an old Ampeg. And I've got a few other amps. But it's rare that I'll mic an amp, because I don't want to take the time to set up.

What about compression—do you use it much on your bass?

When I'm recording, I don't do much at all. On the bass, I rarely use compression.

Even in the mix?

It's rare that I do, even in the mix. A lot of times on the final mixes, we may compress [the bass] for the sound, to make it sound bigger—in case we get lucky and it gets played on the radio or something like that.

What about from a dynamics standpoint? Do you do a lot of automation to level the bass out?

I can't say a lot, because I don't have anything to compare it to. Most of the things that I do are jazz records, not pop. But yeah, I definitely do some automation on riding things, riding solos, but I would have to guess that there's not a lot of automation compared to, maybe, normal records.

Does some of that have to do with your dynamics as a player?

It's definitely dynamics as a player. I would say that a lot of pop records are not performed by people who are used to playing live with each other, listening to each other. If there's any live playing at all, it's [done by] studio guys. Again, I'm speculating on this. But the people I'm usually playing with—a lot of times they're my brothers or my band, or I'll bring in a special person like Mike Stern, or Dennis Chambers on drums—we're really listening to each other, and we're playing together that way. So there's not a lot of adjusting levels that really, really needs to be done. But, of course, we still have to do it in the mixing phase.


KRISTINA MARIE KRUG

FIG. 2: In this shot of the main room of Wooten's studio, you can see some of his primary gear, including his Digidesign Control 24 console and his monitors from Meyer Sound, Genelec, and AAD.

In a lot of situations, it's routine to throw a compressor on a bass part to make it sit better in the mix.

Yeah, most people do that, but that's not my sound.

Number one by design.

INTRODUCING

The Studiophile BX Deluxe Series

What happens when you surpass what people expect from a near-field reference monitor? You end up with the best selling* monitor in its category–the M-Audio Studiophile™ BX5a. Now our obsession with perfection has led us to raise the bar again. Meet the Studiophile BX5a Deluxe and the Studiophile BX8a Deluxe.

* Source: MI SalesTrak

The BX Deluxe monitors sound balanced at a wide range of volumes, so your mixes will translate across diverse listening environments. They also provide detailed sonic imaging, seamless frequency integration and an amazingly cohesive sound. The BX Deluxe monitors are designed to deliver an exceptional monitoring experience that's true to your music. Hear for yourself at your local M-Audio dealer.

Studiophile BX8a Deluxe

- **130 watts of bi-amped power**
- **8" Kevlar low-frequency drivers**
- **1" natural silk high-frequency drivers**
- **XLR balanced and 1/4" TRS inputs**
- **OptImage IV wave guides**

Studiophile BX5a Deluxe

- **70 watts of bi-amped power**
- **5" Kevlar low-frequency drivers**
- **1" natural silk high-frequency drivers**
- **XLR balanced and 1/4" TRS inputs**
- **OptImage IV wave guides**

To learn more about M-Audio's complete line of monitors, please visit *www.m-audio.com/monitors.*

GET M-POWERED

M-AUDIO

www.m-audio.com

20 years

Let's talk about *Palmystery*. I noticed that there were a lot of songs in which you were playing melody parts on the bass, and then you had a conventional bass part underneath. However, it was always somebody else playing that underneath bass part, not you. Why didn't you just play both parts?

On previous records, I have. But on this record, I decided to use bass players whose sound I liked. Like my bass player, Anthony [Wellington], who travels with me. I enjoy playing a melody or solo on top of his playing, so he's playing on two of the tracks.

So in your live show you have another bass player?

Yes, when I'm touring with my band, I have Anthony. You have to think about this: when everybody else plays a melody or gets to solo, they get to play on top of a bass player—the bass player is supporting them. But for the most part, us bass players don't have that. So when it's time for us to solo, usually everyone drops out and we have to work a little harder and carry it ourselves. I like having that bass underneath me so I can take on the role as the soloist or the vocalist or the melody or something like that—that's great. Every bass player has their own feel and is going to drive the band their own way. That's fun to play over. So I enjoyed having different bass players supporting me on this record.

I was listening to the song "Left, Right, & Center," and I noticed that at one point the drum kit was panned totally to one side. I know you were involved in the mixing, and so what was the thought on that?

Well, there are three drummers on that track—three drummers playing separately and together. We have J. D. Blair, Dennis Chambers, and Will Kennedy. They all recorded their parts here at the studio, separately. What happens is that J. D. starts the track. And then when Dennis comes in, you'll hear J. D. move over to the left. And Dennis comes in from the right and takes the center. And then, a little while later, Dennis will move off to the left, and Will moves into the center; he comes in from the right. And then when all three are playing, J. D. is on the left, Will is on the right, and Dennis is in the center. Left, right, and center. So the drums are moving all over the place.

That's wild. I was listening to it, and all of a sudden I said to myself, "Wait a minute!"

I like doing things that are unconventional, because it just grabs your attention if you're listening. Even if you're not listening, you know something different happened.

I think that's good. There are a lot of people who are too conservative in their mixing. They think they have to do it a certain way because that's how everyone does it.

And sometimes we have to be that way. Because if you go out of bounds a little bit, the radio stations, or whatever, may not play it. But I don't expect my music to get played on the radio anyway. So I just do the music that I'm going to die happy about. To go back for a minute to "Left, Right, & Center"—Mike Stern played guitar on that, a guy named Neal Evans from the band Soulive played B-3, and, of course, all of that was done here. And Mike is such an incredible player. I was listening to his solo and I thought, "I should learn this." [So] I started learning it. As I was playing it in unison with him, I realized how cool it sounded. So I learned his whole solo and recorded it. So on the CD, when you hear this burning solo, when the song goes into double time, there's a burning guitar solo that's doubled with the bass. So you're getting me playing his solo an

Victor's Secret Weapon

FIG. A: Robert Battaglia helped Wooten engineer and mix *Palmystery*.

In addition to bass, *Palmystery* features guitar, live drums, horns, keyboards, lead and background vocals, and percussion. With so much to record, Wooten decided to bring in an engineer, Robert Battaglia (see **Fig. A**), to help him throughout the project. Battaglia, who has engineered for Béla Fleck and the Flecktones (Battaglia's brother Richard is their front-of-house engineer and road manager), Edgar Meyer, Dar Williams, Little Feat, and Bobby Womack, among many others, spent years engineering in Los Angeles before moving to Nashville.

Robert was heavily involved with both the tracking and the mix phases of *Palmystery*. I asked him if he finds it advantageous to work with artists like Wooten, who understand recording techniques. "Generally speaking, it helps," Battaglia says. "It would be pretty unusual if it didn't. They let you do what you're supposed to be doing, and they understand sometimes why you're doing something. And if they don't, they know you're doing it to try to get the project done."

I was curious how much Wooten's disdain for compression on his bass parts runs up against Battaglia's instincts as an engineer. "Victor and Béla have it in their head sometimes that they don't want something to hold back their emotion when they're playing," Battaglia explains, "so it's a catch-22 to try to get them to have the best of both. [Battaglia would say about adding compression,] 'Trust me—the emotion will still come through.' So I did some compression after the fact, but definitely never a lot."

Although Wooten was heavily involved in the mix process, Battaglia did bring mixes home and work on them in his own studio, which, like Wooten's setup, features a pair of Meyer Sound HD-1 monitors. Battaglia also has a subwoofer and a pair of Genelec 8020As. "It was a bass record," Battaglia points out, "and I wanted it to be good, and I wanted a lot of bass. But you know, it had to be right. So I really had to struggle and work like hell to make sure that I could get it sonically correct at home first, and then let Victor change any volume stuff later."

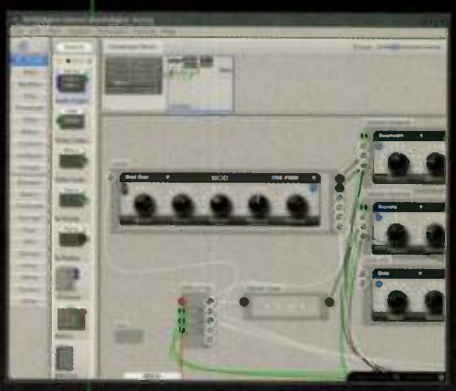
THE FASTEST WAY FROM YOUR
BRAIN TO YOUR SPEAKERS

FL STUDIO 8

Introducing :

Slicex : The ultimate slicer

DirectWave



FL SynthMaker

Do what almost **5.000.000** others do
every year : Download & get addicted
to our fully functional demo at :

www.flstudio.com

Victor Wooten: A Discography

Solo Albums

- *Palmystery* (Heads Up, 2008)
- *Soul Circus* (Vanguard, 2005)
- *Live in America* (Compass, 2001)
- *Yin Yang* (Compass, 1999)
- *What Did He Say?* (Compass, 1997)
- *A Show of Hands* (Compass, 1996)

With Béla Fleck and the Flecktones

- *The Hidden Land* (Sony BMG, 2006)
- *Live at the Quick* (Sony, 2002), DVD
- *Outbound* (Sony, 2000)
- *Left of Cool* (Warner Brothers, 1998)
- *Live Art* (Warner Brothers, 1996)
- *Three Flew over the Cuckoo's Nest* (Warner Brothers, 1993)
- *UFO Tofu* (Warner Brothers, 1992)
- *Flight of the Cosmic Hero* (Warner Brothers, 1991)
- *Béla Fleck and the Flecktones* (Warner Brothers, 1990)

Other Credits (Selected)

- India Arie, "Summer" from *Testimony: Vol. 1, Life & Relationship* (Motown, 2006)
- Mike Stern, *Who Let the Cats Out?* (Heads Up, 2006)
- Jaco Pastorius Big Band, *Word of Mouth Revisited* (Heads Up, 2003)
- Dave Matthews Band, *Live in Chicago 12-19-98 at the United Center* (RCA, 2001)
- Paul Brady, *Spirits Colliding* (Mercury, 1995)
- Marc O'Connor, *New Nashville Cats* (Warner Brothers, 1991)

octave lower than him. And it's such a fun part of that song.

"Miss You" was another amazing song on *Palmystery*. I've never heard slide bass before. Did you just use a regular bottleneck slide?

Yeah, I bought a few different types—glass, there's one that's all black (I don't know what it's made of), and a metal one—just to see what sounded good, because I don't know how to use a slide. I just go for the sound. I don't know what the technique is.

> I like to just play bass. I like not to have to solo.

And who was the engineer?

Mostly Robert Battaglia [see the sidebar "Victor's Secret Weapon"]. His brother Richard does sound for Béla Fleck and the Flecktones. Now Robert and Richard together record the Flecktones' records at Béla's studio. But Robert's also done a bunch of other stuff; he used to live in California. "Miss You" was another song with a different bass player. Basically, a couple of Januarys ago, the Flecktones did a cruise called the Jam Cruise. I heard a band on there called the Lee Boys [that was] kind of like a gospel band, a funky gospel band. And they have a guy in that band playing steel guitar, just rockin'.

Sort of like Robert Randolph's style?

Totally. Same type of thing. They're all friends. In listening to them, I just started getting ideas. And I always have a way of either writing something down or [using] a little recorder that I can talk into. And I got an idea for this song. And since they inspired the song "Miss You," I had all of them come in and play on it. So it's their drummer, bass player, pedal steel player, guitar player, and two of their vocalists. Two of the uncles sing—they're all a family. I only played the melody. I brought my brother Joseph in to play keys, and then my female vocalist, Sandra Williams, added some vocals to it.

That's a great song. It could be a single.

Thank you. I think it could, too. But most people see me as a jazz musician, and it's hard to get out of that. It's hard to get the radio stations to play [my material]. But I'm okay with that. I'm doing the music that I enjoy.

Because you made your name being flashy—not in the bad sense, but by showing a dexterity on the bass that few people do—have you found that people don't think of you when they just want a grooving bass player?

People don't think of me that way at all. I did an interview yesterday for a gentleman who was saying that one of his favorite records was a record by an Irish artist named Paul Brady. And he heard this song and he loved it, and he wanted to know who the bass player was—and he found out it was me. But it was a record where Paul called me just to play bass. There were no solos, nothing fancy, no thumb work, and I got to play bass. So it was nice that someone actually heard that and liked it for that reason. So for anyone out there, I like to just play bass. I like not to have to solo. And it's funny, because that's how I grew up, playing R&B soul music. But when the Flecktones hit it big, I got really known as a soloist. And that's what helped me develop my soloing: playing in this jazz fusion band.

So tell me what it's like to play with Béla. Does he really push things to the edge?

Yes. It keeps us all on our toes musicianship-wise, writing-wise, knowing how to work in the studio. I've learned so much from being in that band. I've learned so much from Béla himself. Each member is at the top of his game. My brother, who they call Future Man, he's just walking creation—he's [very] creative.

He plays that unusual drum controller.

That electronic drum controller that he came up with. Now, there are other companies making similar things, all based on his idea. He's even got a piano version of the same thing; it's all electronic. And then we had a guy named Howard Levy, and he was the original fourth member of the Flecktones. He was a guy who could play a chromatic scale on a blues harp. He never used a chromatic harp, [but] everyone thought he did. He was a guy that invented a whole way of finding notes that don't exist.

So even if the song is modulating, he can keep up on the same harp?

audio cubes

World's First Wireless Live Performance Controller With Full Color Lighting

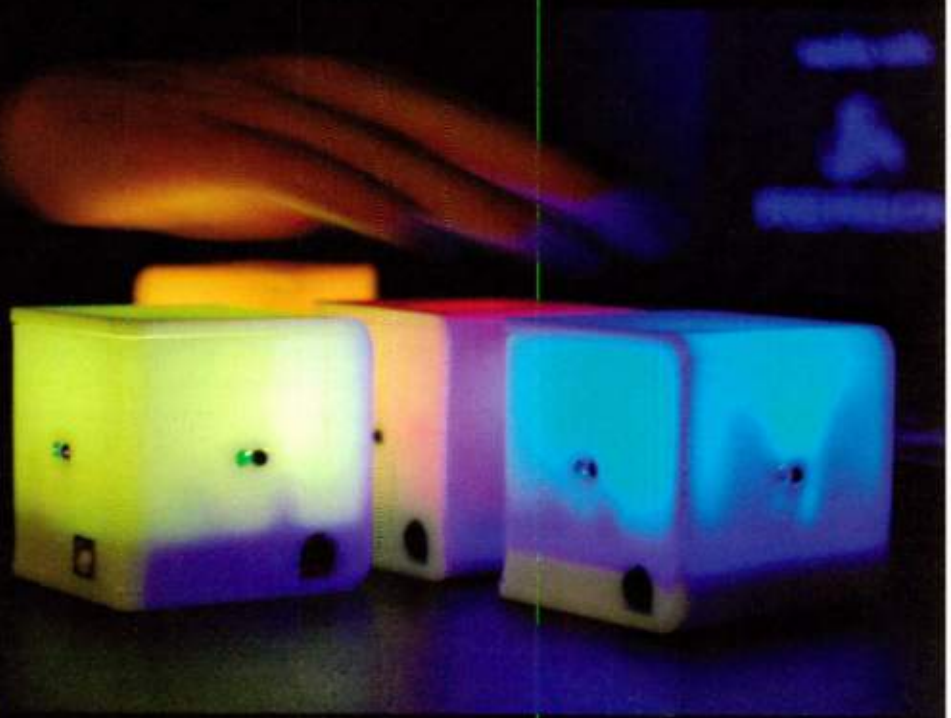
Create a stunning live performance by creating musical patterns which sync to each other.

Control your MIDI-compatible instruments or software using beautifuly designed cubes.

Synchronize cube light patterns to your music. Associate color changes to software settings.

Explore the true creative potential of your computer and music software.

The future is cubic.



KEY FEATURES

AudioCubes come in a set of 2 or 4 with USB cable, installation CD and manuals

Included MIDI Bridge software lets you connect AudioCubes to any MIDI Compatible device or software on your computer

FREE LoopBe Virtual MIDI Port, FREE sounds by Loopmasters and FREE templates for Ableton Live and Propellerheads Reason to get you started quickly

Ableton Live and Max/MSP Demo software included.

SYSTEM REQUIREMENTS

Compatible with Mac OSX 10.4 and Windows XP or later versions. Works with Vista and Leopard. No drivers necessary.

audiocubes MIDI Bridge

Please visit http://www.percussa.com/ for all the latest information and a list of dealers. Get in touch with our US product specialist Jean-Paul Dubé by calling toll-free 866.369.0966 or email jeanpaul@percussa.com

percussa

KRISTINA MARIE KRUG

Wooten generally records his bass direct rather than through an amp. For sonic variety, he'll switch to a different bass from his collection.

It doesn't matter. He can play in all 12 keys on the same harp and sound like Charlie Parker. And he can also do it on the piano, in unison with the harmonica. And at the time, he could play any instrument. He doesn't anymore. He could pick up the bass and blow you away; he could play saxophone, Chinese instruments, tabla. But now he's gotten himself to stick to the harmonica and keys. Then there's Béla, and what he's done on the banjo. So you could imagine traveling the world with these guys, just sitting around listening to them talk. Me, I was the young guy, probably in my early twenties when I met Béla, so I was just soaking it all in. But at the same time, I grew up with four guys like that. All my brothers are strange like that.

Compare playing in the studio with playing live. Do you feel as though you can be more creative as a live player or as a recording musician?

Well, both. But [they're each] a different type of creation. I can afford to take my time in the studio. When I play live, it's fun to be spur of the moment. Like we're talking right now. We're just saying whatever comes to mind. We could write it out, and think it out, and possibly make it better, possibly not. But both phases of it are creative, and I like both phases. If I had to choose one, I'd choose live, because I love the interaction with people. Like if I had to live by myself or live with other people in the world, I would choose being around people. Both Béla Fleck and Edgar Meyer, a great bassist, told me—and I'm going to try to paraphrase their words—that composing is like improvising in slow motion. You're still improvising, but the creative process is spanned out over time.

But in the studio, you can stop and go back and fix something.

You can stop and go back, yeah. And there are ways of doing that live. If I make a mistake, I can fix it. I can go back and make you think it's not a mistake.

EuCon • Apple LOGIC PRO • Steinberg NUENDO • Apple SOUNDTRACK PRO • Steinberg CUBASE • MOTU DIGITAL PERFORMER • Apple FINAL CUT PRO • Propellerhead REASON • Ableton LIVE • Digidesign PRO TOOLS (HD/LE/M-Powered)

the perfect mix...

...of form and function

The new MC Control brings the unparalleled speed, resolution and DAW integration of Euphonix' high-end professional consoles to your studio in a revolutionary, slim-line design. The high-resolution, customizable touchscreen and ergonomic controls let you effortlessly navigate and edit your projects without ever touching a mouse, and place everything from simple keystroke commands to complex custom macros at your fingertips to deliver an unmatched editing and mixing experience.

m.i.p.a.
Best Recording Hardware winner 2008

reddot design award winner 2008

Mac Universal

20 YEARS

euphonix.com

Euphonix artist

KRISTIANA MARIE KRUG

Wooten likes to be involved with all phases of the recording process.

It goes by so fast. A mistake live is gone in an instant. A mistake on a recording is there forever.

And then a mistake repeated becomes a part. And all of a sudden you're correcting it—what was a mistake is now okay. So there are ways of doing it, but they're different ways. I think it was Béla who said that a good improvisation will sound composed. Like when we listen to Charlie Parker or Trane, it sounds like they worked on it and wrote it out. But it's totally improvised. Good composition will sound like soloing. People might not know that Jaco Pastorius—one of my all-time favorite bass players—composed all the solos on his records. They were worked on, written out, constructed, but they sound improvised. Neither way is better; they're both legitimate. It doesn't knock Jaco because he composed them. But man, it's just amazing to be able to do both [composing and improvising], and I'm fortunate that I get that opportunity.

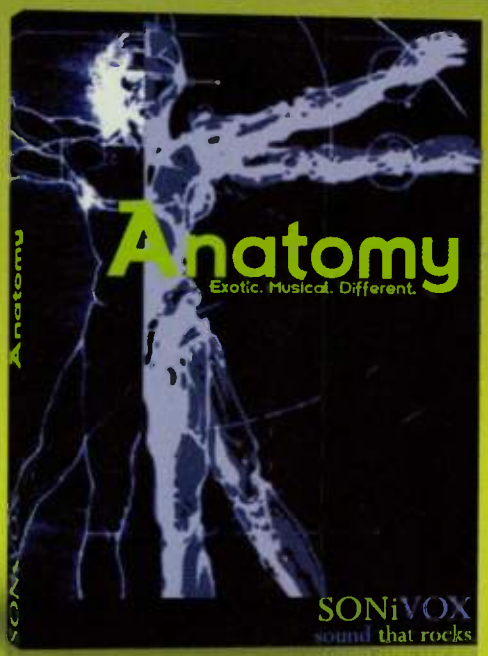
Do you often go in and edit your parts in Pro Tools and move this or that note around?

I will do some of that, but I do a lot less than many people. I'm an organic musician. I love the rawness, I love the mistakes. I could fix things and make it perfect, but it's more perfect when it's not—when it breathes. You rush a little here, you know that note wasn't clean, but it felt great. I like that. So I'm always listening to see what it sounds like and what it feels like. Because a note may not sound the best, but it has that feel. I try to meet in the middle, between how it feels and how it sounds.

(Editor's note: For more of this interview, in Podcast format, go to emusician.com/podcasts/elecmus_podcasts.)

Mike Levine is EM's executive editor and senior media producer. He also hosts the twice-monthly Podcast "EM Cast" (emusician.com/podcasts).

WE TRIED TO DESCRIBE IT.



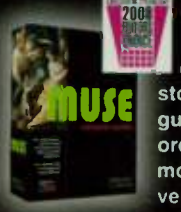
AND THEN GAVE UP.

A SAMPLE LIBRARY LIKE NOTHING YOU'VE EVER HEARD.

GET FREE SAMPLES AT www.SONiVOXmi.com.

THEN YOU TRY TO PUT IT INTO WORDS. GOOD LUCK.

Anatomy is a sample library for use with Native Instruments Kontakt 2 or Kontakt 3.



ALSO AVAILABLE:

MUSE, the award-winning comprehensive virtual instrument, stocked with 38 Gigs of drums, guitars, synths, keyboards, orchestral instruments and way more. PC version available now; Mac version available in May '08.

Broadway Big Band, the revolutionary virtual instrument that gets soul, pop, funk, and jazz horns right. Delivers what no other collection can: vivid, real-sounding brass.

SONiVOX
sound that rocks.

www.SONiVOXmi.com
888-577-9629

Virtual Orchestra Virtuosity

Using four of the top libraries in a real-world situation.

By Rob Shrock

Long gone are the days when professional composers would need a wall of fully loaded hardware samplers just to provide a few hundred megabytes of memory in which to realize a virtual orchestra. Today's computers can stream dozens of gigabytes of symphonic samples to provide an almost limitless collection of instruments and articulations. Recent developments in software interfaces allow unprecedented control of performance parameters for heightened realism. Orchestral music on the computer has never sounded so good.

However, all of this power comes with a price. You have to be willing to shell out the bucks for the latest in computer technology and have speedy hard drives for the massive amount of samples required. The better orchestral libraries are not cheap, and the time that must be invested in becoming intimate with the contents, mastering the enhanced performance techniques, and maintaining a working system is greater than ever before.

The goal of this article is to document the experience of working with several high-end libraries in order to realize a single piece of music. This is not a shoot-out between sample libraries or a comprehensive review of the featured products. My intention is to demonstrate the differences in capability and character between four top-notch libraries while explaining what I had to do to create each realization. Overall, I want the libraries to speak for themselves.

For a test subject, I orchestrated a short introduction to a song that will be featured on my upcoming solo CD (see the sidebar "The Score"). Next, I sequenced the piece entirely within a single library, using only the sounds included in that specific collection. I then repeated the process from scratch with the next library, and so on. This resulted in multiple realizations of the same piece of music that ultimately sounded quite different from each other, allowing me to compare and contrast the libraries within

a common musical context. (To hear the audio examples, see Web Clips 1 through 6.)

Piano is also featured in this orchestration, as I am a piano player. Although some of the featured libraries contain pianos, none compare with a dedicated piano library. I leveled the playing field by using the same exact piano performance and sound with the same tempo map for all the renditions: what you'll hear between the different versions is a change in orchestral instruments, while the piano part stays the same. For the piano, I used 2008 EM Editors' Choice Award winner Modartt Pianoteq 2 ($380), an excellent physically modeled software instrument.

I also decided to do whatever it took to get each sample library to sound its best in realizing the orchestration, even if it meant tweaking one library more than another. I wasn't interested in a General MIDI file approach that forces each library into an existing construct. Rather, I wanted each library to sound its best and to document whatever process was required to achieve that end. Obviously, some libraries are more complex and capable than others, which is reflected in the amount of time and work necessary to realize the orchestration to the fullest capabilities of that particular collection. However, I was primarily interested in the final results, which, in my opinion, are what matter most.

Additionally, I decided to create a version that would employ what I consider to be a "best of" from the various libraries. The reason is a simple and pragmatic one: each library has its own sound as well as its own inherent strengths and weaknesses. Mixing and layering samples from multiple libraries as we see fit is exactly how composers work in the real world. In that spirit, the final version (see Web Clip 5) includes instruments from all four libraries as well as from other libraries not featured here, because the point of that rendition was to make the music sound as good as possible with what was available to me, and to let you know how I achieved the final sound.

Meet the Orchestras

There are many orchestral sample libraries on the market, but only a few met my criteria for this article. For inclusion, each library had to contain a complete collection of orchestral instruments: strings, woodwinds, brass, and percussion. That immediately eliminated several otherwise good libraries, because there would be no fair way to compare an incomplete collection (a strings-only library, for instance) to the comprehensive libraries within the context of a full orchestration. Also, the quality of the included libraries had to be at the highest level, which eliminated several inexpensive and midlevel collections. (A couple of manufacturers never responded to inquiries about inclusion in this article and were dropped from consideration.)

FIG. 1: EastWest Quantum Leap Symphonic Orchestra Pro XP.

I eventually settled on four libraries: EastWest Quantum Leap Symphonic Orchestra Pro XP, MOTU Symphonic Instrument, Sonivox Sonic Implants Complete Symphonic Collection, and Vienna Symphonic Library Vienna Instruments. Each of these libraries sounds great, but they also sound quite different from each other, with some lending themselves to certain styles better than others.

Setting up for this article was harder and more time-consuming than I had imagined. Just getting all the libraries installed, authorized, and running properly on both my desktop and laptop systems was a major endeavor. The libraries contain huge amounts of data comprising the instruments and articulations, and the only way to learn each library was to put the time in and go through it thoroughly. In addition, I had to learn three different software interfaces: Kontakt, MachFive, and VSL's proprietary instrument (more on all this later).

Because this is a master class, I will not touch on the basics of each program. Details about the included instruments and interfaces can be found on the manufacturer's Web sites.

EastWest Quantum Leap Symphonic Orchestra Pro XP. The EastWest Quantum Leap Symphonic Orchestra Platinum Complete bundle ($1,195 [MSRP]), which includes Platinum Pro XP, takes up 138 GB of drive space. EastWest (soundsonline.com) offers several smaller collections that will suit some users. Currently, EWQLSO requires Native Instruments Kontakt 2.2 or later (see Fig. 1). However, EastWest says its custom PLAY software interface will be available for this library soon. (PLAY will be 64-bit compatible and tailored for enhanced performance control of the company's sampled instruments.)

The Platinum Pro XP edition provides an extensive collection of instruments and articulations. The samples are phase accurate and can be mixed and matched to create the desired ambient balance of stage to hall and/or surround mixes. EWQLSO sounds especially suited for bold, epic pieces and movie scores, but it is very demanding on computer resources when utilizing multiple perspectives at the same time.

The library samples are recorded with three mic perspectives: Full, Close, and Surround. I decided to use mainly the Full microphone placements in my final mix because I was not creating surround mixes in the context of this article, and using all three perspectives can be a bit much in a stereo mix, especially if you feel that the particular hall the instruments were recorded in isn't right for the type of music you're doing. I tried using all three positions simultaneously and they worked great together: there were no phasing issues, and EastWest seems to have thoroughly matched and mapped every corresponding program and sample properly. Kudos to the company for executing this feature so well.

Layering a touch of the Close mics with the Full perspective for certain instruments is just the ticket for getting a specific melodic line to jump out or to add clarity to a part, much like bringing up a few close mics on a recording date. Just copy the part to a new track, change the instrument to the Close mic version, and add to taste. This feature works very well and really makes EWQLSO stand apart from the other libraries in this regard. You can

hear it employed in several of the woodwind lines in my piece.

Obviously, the tax on your computer setup is much higher if you want to hear all three perspectives at once, because the number of voices is doubled or even tripled when layering two or three patches per instrument. Most users seem to work with the Full set and add the other perspectives toward the end of the recording process. If you do want to render all three perspectives and mix them together at the final stage, it's not that hard to duplicate your setup with the alternate programs and render the various mic positions separately. However, it's a rather time-consuming process, as care must be taken to match each corresponding program exactly.

The muted strings in the opening passage sound great, although I had to edit the level of

The Score

This piece of music is based on an original song from my current solo project. It was orchestrated in MakeMusic Finale 2007 (see Fig. A) and can be downloaded as a PDF file at emusician.com (see **Web Clip A**). Finale includes a subset of Garritan Personal Orchestra for notation playback, which is actually quite sophisticated. I've also created an MP3 of the unedited output from Finale using this library (see **Web Clip B**). The piano part is conspicuously absent from the printed score because I had not settled on an exact piano part at the time I wrote the orchestration.

It would be impossible to cover every instrument as well as all of their possible articulations in a single, short piece. However, I wanted this score to be a piece of music that could be performed with a real orchestra in my live show; hence the smaller configuration of woodwinds and brass typical of what is commonly available. (Because the score is not intended for commercial publication, I have not labored over the details of the layout, either.)

The idea was to try to include as much of the orchestra as possible within a short piece of music. Although this is not exactly what I would have orchestrated had I not also been working on this article, there are some specific things to listen for in the score, as I put them there intentionally to challenge the libraries.

The strings employ mutes for the first eight bars. Note the fast runs in the violins, violas, and cellos in bar 14, which is typically challenging for sample libraries, while the basses use tremolo. Starting in bar 15, the upper strings are espressivo, carrying the melody in double octaves

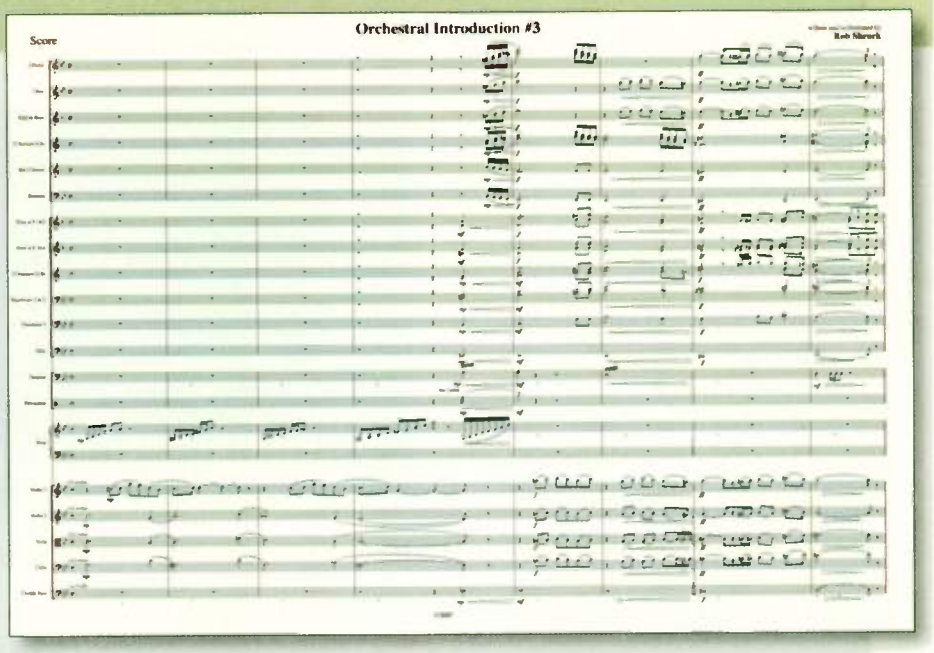


FIG. A: Page 1 of Rob Shrock's Orchestral Introduction #3.

for four measures (typical of Romantic music) before breaking off into a bit of contrapuntal interaction. Although the notation in measures 21 and 22 indicates bowed tremolos, I actually intended that to be fingered tremolos and was just too hurried to notate it that way. As it stands, fingered tremolos are impossible to pull off effectively in most libraries anyway, in which case I employed bowed tremolo in divisi to create the movement.

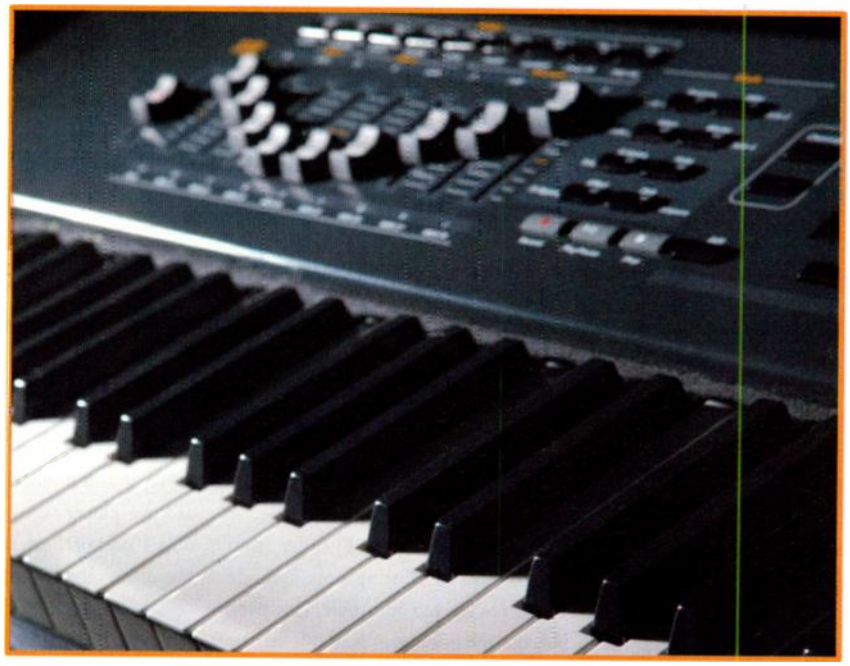
The bowed tremolo in bar 24 is intentional, followed by more contrapuntal action, with divisi cellos and pizzicato basses. Finally, the whispery ascent in the upper strings tests the delicacy of each library.

The woodwinds were written in pairs for the most part, with only a single bass clarinet and bassoon. I tried to give them a good cross-section of ensemble chords, fast runs, melodic lines, and wide dynamics to get an overall sense of their characteristics in each library.

The same holds true for the brass, as far as what I included in the orchestration goes. I thinned the trumpets down to only two players, while maintaining four French horns, three trombones, and a tuba playing chords (a configuration not easily realized in a lot of libraries, it turns out). Bar 15 sees the trumpet at its upper extreme, which is about as high as you would want to take an orchestral trumpet. In the real world, this voicing would probably jump out a bit too much, but that's one of the beauties of being able to more easily control the virtual orchestra. A smattering of harp, timpani, glockenspiel, and other percussion rounds out the orchestration.

KURZWEIL

Designed and Engineered in the United States



Kurzweil Music Systems is the oldest surviving major keyboard and synthesizer brand that still designs and engineers its products in the United States. We are proud of the award-winning innovations and cutting edge technology built into each of our products.

Our R&D facility has been located in Waltham Massachusetts since 1984 when Ray Kurzweil first opened the doors and began hiring the best and the brightest from U.S. Universities to design the most innovative electronic musical instruments ever conceived. The technologies and concepts that Kurzweil R&D developed were so ground breaking and forward thinking they are still viable and selling today. Over 20 years after its first entry onto the market the K Series continues to be the most sought after synthesizer instrument for broadway shows, composers, musicians, live touring, and backline instrument suppliers throughout the world... something unheard of in almost any technology category.

Never relinquishing the vision of "THE BEST SOUNDING INSTRUMENT" this team has been true to that vision and remains committed to it today.

Kurzweil Music Systems Research and Development
Est. 1984
Waltham, MA

www.kurzweilmusicsystems.com

KURZWEIL... IT'S THE SOUND

Kurzweil Music Systems 19060 S. Dominguez Hills Dr., Rancho Dominguez, CA 90220

FIG. 2: MOTU Symphonic Instrument.

the release samples in several of the Mod Wheel crossfade patches because the level would really jump out on key releases. EWQLSO does not provide separate collections for first and second violins, and only the 18 Violins patch contains con sordino (muted) violins, so the same patch had to be used for both sections and panned differently. There is only one patch of sustained con sordino per instrument in the string section, with no variations for runs, trills, and so on, but they sound good in this restrained context.

Although the list of included ensemble string articulations is not exhaustive, I had no problems re-creating everything asked of the string section in the orchestration. The runs in bar 14 and the bold, melodic expressiveness in measures 15 to 18 were a piece of cake for EWQLSO. The articulations speak nicely over a wide variety of dynamics, which is hard for many libraries to do. But this one does it effortlessly.

EWQLSO has a decent selection of brass that is consistent from patch to patch and sounds pretty natural, but not without some compromise to the process. The biggest problem I have with the provided brass is that you are stuck with either one or two solo instruments or fixed larger ensembles.

For instance, I wrote for four French horns playing individual parts—not an uncommon configuration. However, there is only a single solo French horn or a 6-piece ensemble to choose from in EWQLSO. Using the same solo instrument four separate times for each part ends up sounding unnatural. But playing four separate notes with a 6-player patch results in 24 players!

The compromise was to back off the Full perspective on the French horn sections and use mainly the Close programs. This gave them a little more immediacy, with the chorusing of multiple players acting more as ambience. I actually tried going the other way by making the ensemble patches more distant with the Surround mics, but that just got muddier and more indistinct.

The same problem exists with the trombones: you get one solo trombone or a 4-person section to choose from. For the three trombones in the score, I used the same solo trombone for all parts. In neither of these cases were there ideal solutions. However, there are two separate solo trumpets, so I was able to use keyswitching and multiple programs per instrument to create better-sounding, fluid lines there.

The woodwinds in EWQLSO suffer from the same limitation of offering only a single solo instrument or a fixed ensemble. However, enough patch variations are available in the solo woodwind instruments that two different programs can usually be found to mimic two different players, or the same patch can be used without it being as obvious as it is in the brass instruments. In general, I would have preferred to have had at least two complete (and different) solo instruments for most of the brass and woodwinds so I could build up more-convincing 3-part—or even 4-part—ensembles by staggering the two players.

MOTU Symphonic Instrument. MOTU Symphonic Instrument ($295; motu.com) weighs in at a mere 8 GB of samples and includes the fewest instruments, articulations, and ensemble configurations of all the products in this article. It is also more limited in its ability to manipulate the samples in sophisticated ways.

But it's the sound that matters most, and SI is a capable orchestral collection—among the favorite libraries of several top composers. It can be operated as a plug-in, or the instruments can be loaded into MachFive for additional parameter control and integration into a preexisting work-flow environment (see Fig. 2). Built-in traditional and convolution reverb are both included. It is by far the easiest to use of the four libraries featured, as well as the most affordable.

Because SI doesn't include con sordino strings, I used softly played sustains instead. It does provide separate first and second violin sections. For the most part, they sound like different samples altogether, so they can be layered. A few notes in the "sus f" patches (G above middle C and the high D) clearly utilize the same sample because they phase when played together on the same MIDI channel. (Using separate MIDI channels and a slight timing offset usually solves the problem if first and second violins play in unison.)

SI suffers from the same basic limitation in the brass and woodwinds as EWQLSO, in that the user must choose between a limited number of solo instruments—usually only one—and preconfigured ensembles. In the case of the French horns, two sections are provided: 4 player and 8 player. This is preferable to me, as the 4-player section is fairly dry and can pull off a 4-part orchestration without sounding too big, although it's still not an ideal solution.

A separate bass trombone is supplied, which helped counter having to use the same solo trombone for the other two parts in the orchestration. Four solo trumpets are available

FIG. 3: Sonivox Sonic Implants Complete Symphonic Collection.

(Trumpet 4 is muted only), offering a nice amount of flexibility.

Of particular note are the two harps. I used Harp 1, which is smaller and more distant, and also more appropriate for the context of this

FOR 149* BUCKS, THIS WILL ROCK YOUR WORLD

Find out how at:
www.novationmusic.com/nocturn

Sweetwater
Music Instruments & Pro Audio

For more information: 800-222-4700 or www.sweetwater.com

*149.99 US MAP Price.

novation
www.novationmusic.com

arrangement. However, Harp 2 is a big, gorgeous instrument that would handle soloistic work very well.

Unfortunately, SI doesn't provide a lot of dynamic changes to the samples other than what is available via Volume and Expression or any sample switching using Velocity that is already programmed into the patch. So it's mostly a WYSIWYG library. (An Expert mode allows you to tweak some layering options for crossfades between patches.)

I wish MOTU had left out the saxophones (unnecessary for a symphonic collection) and maybe even skipped on the choir stuff (although it sounds pretty good) and delivered more content on the meat-and-potatoes orchestral sounds. In spite of the limited number of programs in such a small footprint of data, SI offers quite a bit of detailed orchestration due to the fact that the samples themselves sound really good.

SI's built-in reverb can eat up a lot of processing power, so I chose to leave it off and use a generic room while sequencing. Some of the reverb programs actually pegged out the CPU on my dual-core 2.2 GHz MacBook Pro with only one instance activated! However, the included reverbs are excellent, so I edited one of the Concert Halls for the final mix.

Because I typically mix and match instruments from many different libraries, I usually use an external reverb to unify the ambience and glue everything together. But MOTU's reverbs are a nice inclusion, and if you have enough processing horsepower, they sound great. I imagine they would be killer in a live setup that uses soft synths.

Sonivox Sonic Implants Complete Symphonic Collection. I really love the overall character of Sonivox's Sonic Implants Complete Symphonic Collection ($2,995; sonivoxmi.com), and the room where the samples were recorded is a defining part of the sound. To my ears, there is just enough room sound to make the samples come alive, yet you can easily douse them in more reverb without the results turning to mush. Sonivox really got it right on the recording end. In my final mix, I didn't add any additional ambience, as it sounded great already.

Originally designed exclusively for Tascam GigaStudio 3, CSC requires 80 GB of storage and has recently been scripted for Kontakt, providing sophisticated performance control of the samples (see Fig. 3). The hallmark of CSC is the near-perfect blend between the close mics and the ambience of the hall where the samples were recorded and the in-place location of the samples. Release samples are also available to maintain the proper sense of space. This is a very detailed and musical library with a well-thought-out collection of useful articulations, and the con sordino string samples are among the best anywhere. CSC is a great combination of affordability, musicality, versatility, and ease of use.

FIG. 4: Vienna Symphonic Library Vienna Instruments.

The Kontakt programming is consistent and well executed. Liberal use of programs with Mod Wheel crossfading for dynamics, vibrato, alternate bowing, and timbre changes makes it easy to breathe life into a score. There is a lot of animation to the samples themselves, so I found it easy to get the score sounding good quickly with this library. I particularly liked the space surrounding the glockenspiel and the timpani rolls, which you can swell with the Mod Wheel.

Again, when it came to the brass and woodwinds, I faced the same challenge. Using the single solo French horn for four separate parts sounded unnatural. Sections for two, four, and six players are provided, so I opted to go for the 2-player sections as a compromise. Oddly, there is no solo tenor trombone, only sections of two and three players. There is a solo bass trombone, which is included in the score, but the range doesn't go high enough to cover all the tenor notes. So again I compromised and used the 2-player ensemble against the solo bass trombone. That resulted in five players rather than three, but that's not easily discernible in the ensemble mix.

The library includes both a solo Bb clarinet and a solo Eb clarinet, which can easily cover the two clarinets written in Bb, so I had no problem there. In addition to the 2-Flutes programs, there is a single solo C flute and a solo alto flute. The alto flute range is high enough to cover the second flute part, so I used it just to add variety between the two players.

The harp is from a separate product, Symphonic Collection Harp. Although it is sold as an add-on ($259), it is very much a part of the CSC library and is an excellent instrument in its own right and capable of solo work.

A good, but sparse, collection of sordino strings gives the first eight measures the color I was looking for. The liveliness in the samples sounds very realistic; I just wish there were more variations to the muted strings as there are in the regular ensembles.

The attention to bowing makes it easier to create realistic-sounding lines, as in measures 24 through 29. Because CSC employs separate sets for both first and second violins (sampled in performance position), and the naming structure is consistent between all programs, getting a good section together initially takes less time than with some of the other libraries.

However, I wish Sonivox had different sizes of string ensembles to choose from. As it stands, each string section is offered in only one size (eight first violins, six second violins, six violas, five cellos, and four basses). I love to layer smaller sections of four to six players with some solo instruments on top of the string sections. Unfortunately, no small configurations or solo string instruments are included in CSC. The variety in the performance you would naturally get by layering tracks is missing when using this library exclusively, which results in having to edit the timings, note lengths, and

iZotope RX

The most complete audio restoration product on the market.

With iZotope RX™, you never have to suffer with less than pristine audio—regardless of whether the problems stem from the analog or digital domain. Designed from the ground up by the team that brought you acclaimed creative audio processing solutions like Trash, Spectron and Ozone, iZotope RX is simply the most complete, natural-sounding audio restoration product available—period. It's ideal for archiving, recording, mastering, broadcasting and podcasting, video production, forensics, and any application that demands spotless results and a truly complete range of innovative restoration tools. It can even save tracks you thought were unsalvageable. iZotope RX is your prescription for total audio health. **Hear it now at *www.m-audio.com/rx*.**

Hum Removal
> precise filtering of hum and resulting harmonics

Declipper
> advanced multiband processing rebuilds damaged peaks in clipped audio

Spectral Repair
> removes hard-to-fix noises like guitar string squeaks, car horns and more—even replaces missing audio

Declicker
> automatically suppresses clicks, crackles and pops from vinyl or digital sources

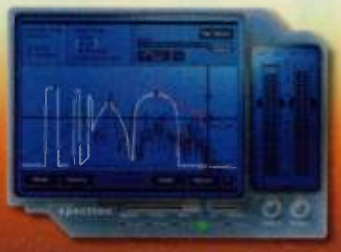
Denoiser
> removes steady-state broadband and tonal noise, like hiss and buzz, with less artifacts

Advanced Spectrogram
> unparalleled detail helps identify problems at a glance

Also available from iZotope

Ozone 3
Complete Mastering System

Spectron
Spectral-Domain Effects Processing



Trash
Complete Distortion Processing

GET M-POWERED

M-AUDIO
www.m-audio.com

20 years

Velocities of the strings in greater detail, as they must stand completely on their own. This is most noticeable in the opening four measures, where the strings play unaccompanied.

CSC's strength lies in its basic sound. If Sonivox decides to add more to this collection using the same development team, it would be a very welcome addition.

Vienna Symphonic Library Vienna Instruments. Vienna Instruments is sold in small instrument collections for as little as $445 and in bundles for as much as $18,000, with a *lot* of options and volumes in between. I don't own everything Vienna Symphonic Library (vsl.co.at) offers—for this piece I used Symphonic Cube, Appassionata Strings I and II, and Harps—and I am already up to more than 410 GB of samples on my hard drive. This library is the ultimate in sampling, practically adhering to the philosophy of "just sample everything."

Innovative developments in the custom software interface have recently made navigating the cutting-edge performance capabilities of this library easier than before. However, if you've worked with high-end orchestral bundles such as Vienna Instruments, then you know they are time-consuming to install and take dedication if you want to get the most from them. In the case of VI, the choice of articulations and methods of exploiting them are mind-boggling, but that's the price you pay for playing at the top of the mountain: VI is the undisputed benchmark of orchestral libraries (see Fig. 4).

A common conversation among VI power users goes something like this: "I'm trying to get the strings to do X." Response: "Well, did you try doing Y in the Performance control page?" or "Why don't you do Z in the Matrix Editor?" There are so many choices and so many ways to do things that it's easy to feel like you're never finished with a piece. In fact, as I write this, I am *still* tweaking my sequence in VI, always dangerously close to scrapping it all and starting over again, which would not be the first time. Of course, the upside is that using VI is very much like playing an instrument; no two people are going to sound alike on it, because the choices are just too numerous.

At the heart of VI is the proprietary instrument interface, which employs a sophisticated

> Each of these libraries sounds great, but they also sound quite different from each other.

blend of keyswitching, controller crossfades, analysis of player speed and velocity for determining articulations, and matrix switching, for some elaborate real-time control of instruments. Initially you will spend the bulk of your time just learning the library and getting your head wrapped around the various ways you can approach the sampled material.

Although all of the samples are recorded ambience-free, they do not have a claustrophobic, anechoic-chamber feel. There is enough air around them to sound open and natural yet neutral. The user is responsible for creating the desired ambience through processing, and the library can sound close and intimate or big and ambient with equal ease.

VI provides separate first and second flute, oboe, and English horn, as well as an alto flute, Bb and Eb clarinets, and single bass clarinet, bassoon, and contrabassoon instruments. Woodwind ensembles are in trios, which I didn't mind because I was able to accomplish my instrumentation easily with the supplied individual woodwinds.

VI comes the closest to getting it right in the brass section. Although not providing separate first and second players along the lines of the woodwinds, there is a separate piccolo trumpet, trumpet in C, bass trumpet, and cornet (oddly, no trumpet in Bb). Slides are covered with an alto trombone, tenor trombone, bass trombone, and contrabass trombone. Three-player sections of trombones and trumpets, as well as a 6-player trumpet section, are also included.

I used a combination of three different trumpets, depending on the range and sound in various sections of the score to pull off my 2-player instrumentation, and the alto, tenor, and bass trombones made a nice 3-piece section throughout the score.

Unfortunately, it was the French horn section that, once again, was underrepresented for the way I like to write. A single Vienna Horn and Triple Horn are the choices for single players, yet the two do not jell together well enough to stagger them into a 4-piece ensemble section. The fixed-ensemble choices are 4 player or 8 player, and I opted to go with the smaller for this piece—again, a compromise.

Without a doubt, the VI percussion collection is the cream of the crop. The only challenge is to use ambience properly to move the instruments to the back of the room if you're going for that authentic symphonic sound, as the recordings are very prominent and up close. I used an extra bit of early-reflection ambience in the final mix to move the percussion and harp back, and I rolled off some of the extreme high and low frequencies to create distance.

The string sections are versatile in some ways and limited in others. The limitations are that the basic violins, for instance, are a fixed 14-person section. No separate first and second violin sections are provided, so they must be created from the same collection and panned accordingly. However, VI also offers two volumes of Appassionata Strings (larger, lusher, and muted), Chamber Strings (smaller and more intimate), and Solo Strings. Bringing these collections together can create some quite detailed string passages.

In the orchestration presented here, I used various combinations of all the VI string collections to add depth, variety, and animation to the strings. The samples alone are so good that even though I haven't mastered all the available performance techniques yet, the results are very convincing to the ear. EM

Rob Shrock plays keyboards with Burt Bacharach and has worked with a who's who of artists.

Free Speech

Get creative with software speech synths. | By David Battino

I've long been fond of speech synthesizers; somehow their robotic sound heightens the humanity of the rest of a song. When mixed in more subtly, synthetic mumbles and murmurs draw the ear by tickling the subconscious.

Speech synths are also handy for making practical sounds, such as alerts ("MIDI received!"), channel IDs ("Left . . . Right . . . Center"), and announcements ("1 kHz at –10 dB"). To make quickie IDs like those, I usually turn to the online AT&T Natural Voices speech synth (research.att.com/~ttsweb/tts/demo.php), which generates a downloadable WAV file in a variety of interesting voices when you type in the text. Feeding the foreign voices English phrases is especially entertaining (see **Web Clip 1**).

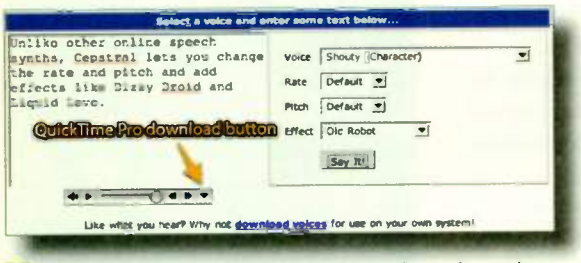


FIG. 1: Online speech synthesizers like Cepstral offer a quick way to add spoken annotations to your tracks.

With a stream ripper like Ambrosia WireTap (Mac; ambrosiasw.com) or Applian Freecorder (Win; freecorder.com), you can capture the output of other online speech demos. My favorites are Cepstral (cepstral.com) and Loquendo (actor.loquendo.com/actordemo). Cepstral offers a range of comedic voices, including a raging drill sergeant, a demon, and a terrific whisper (see Fig. 1 and **Web Clip 2**). Loquendo includes vocal sound effects and responds expressively to exclamation points (see **Web Clip 3**).

Unfortunately, these online synths can be slow to render audio. More important, their output can't legally be used in commercial projects unless you pay hefty licensing fees. They were developed for the telephone systems of giant corporations, not for musicians. The irony is that like Yamaha Vocaloid (which *is* designed for musicians), the corporate synths can sound a little too realistic. The better they sound, the more they resemble an excessively Auto-Tuned human vocalist—the technology starts to suck out the personality.

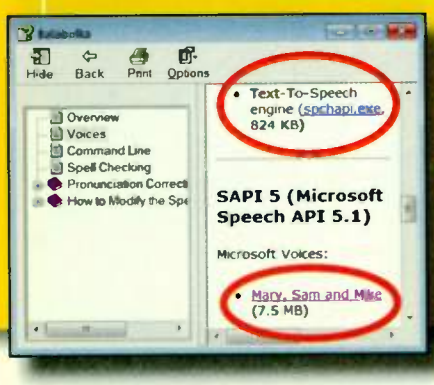
ONLINE BONUS MATERIAL

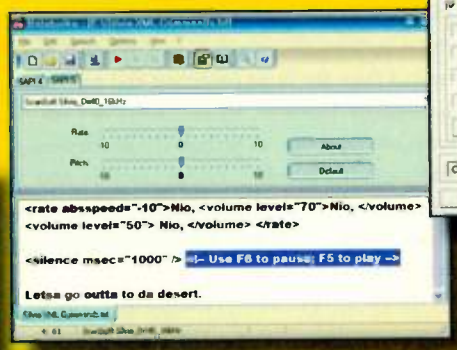
The Vocalist You Already Own

For synthetic vocal effects with character, I like to go old school, tapping the wheezy, grinding robo-voices that lurk inside Mac OS X and Windows. Here's how to play them while you still can. Windows Vista contains a significantly smoother voice called Microsoft Anna, and Mac OS X Leopard features an even more realistic voice called Alex, which "breathes" between phrases. Like the AT&T, Cepstral, and Loquendo synths, Anna and Alex create sound

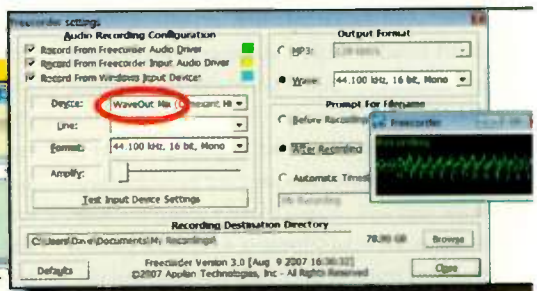
STEP-BY-STEP INSTRUCTIONS

Step 1: Hey, meat sack! Microsoft dropped the Bender-esque Sam voice from Vista. Get it back with the link inside Balabolka's help file.





Step 2: Add expression by wrapping words in XML tags.



Step 3: To capture the vocal stylings of Web sites or nonrendering software, resample the PC's WaveOut Mix (tinyurl.com/2u3t4j).

by splicing huge databases of sampled syllables into new combinations. In contrast, the older voices discussed here are synthesized on the fly in gritty, low-res glory. (Some of them rely on samples, too—but brief, crunchy ones.)

To access these voices, I use two helper programs: Balabolka (Win) and Vox Machina (Mac). There are many other choices, as well as alternative low-res synths such as Melody Assistant (myriad-online.com) and VocalWriter (kaelabs.com), but Balabolka and Vox Machina are baby simple to use and are small, flexible, and free.

Talking Windows

Start by downloading Balabolka (Russian for "chatterer") from cross-plus-a.com. The download page offers additional free voices, but you can also grab them later from links inside the program's excellent help file.

Windows XP has the Microsoft Sam voice, which one developer describes as "the gravelly guy who sounds like he just drank a fifth of bourbon." Sam's gone from Vista, so I downloaded him as well as Sylvia, an Italian voice (see **Web Clips 4** and **5**). To use the older "SAPI 4" voices, you may need to install Microsoft's speech driver, spchapi.exe; there's a download link to that in the Balabolka help file, too.

Type or paste some text into Balabolka's main window, and click on Play to try out the voices. You can also control playback with your PC's F5 and F6 keys. There are global sliders for pitch and rate, but you can alter individual words or syllables by wrapping them in XML tags like <volume> and <emph> (emphasis). The help file has a complete list (see "Step-by-Step Instructions," 1 through 3).

I like entering bursts of nonsense words to create interesting rhythms; this is one vocalist who will never complain! When you're happy with the results, click on the WAV button to export the performance as a WAV or an MP3.

Talking Mac

The speech-making process is similar on the Mac, although the syntax for modifying sounds is more squirrelly. Download Vox Machina from sveinbjorn.org/voxmachina, enter some text, and watch the creepy animated lips flap.

Some of the Mac voices, like Organ, Bells, and Cellos, have built-in melodies. For others, you can assign pitches with the [[PBAS]] (pitch basis) tag. Instead of wrapping the word, as in Windows, the Mac tag precedes it. [[PBAS +2]], for example, will raise the relative pitch one whole step (two semitones) (see **Web Clip 6**). PMOD (pitch modulation) is an especially dramatic parameter. For a complete list, see tinyurl.com/yv8zyg. And if you've installed Apple Developer Tools, check out Repeat After Me, a program that analyzes the pitch and rhythm of sampled audio and generates tagged text for the speech-synth-like low-res physical modeling (see "Step-by-Step Instructions," A through C).

Of course, most of the musical fun comes from what you do with the raw materials that these speech synths spit out. Chop the voices into syllables, and then load them into a sampler for pitched playback. Add delay, chorus, or reverb to smooth the jagged edges. Reverse the sounds, and mix them in softly to create spooky muttering.

Finally, a tip: my absolute favorite low-res voices come from an ancient Windows 95 program called Talk It. This purple gem still runs on Vista, and its FM-synthesized vocal stylings are cooler than ever (see **Web Clip 7**). For a free download link, go to en.wikipedia.org/wiki/Talk_It. em

---

David Battino (batmosphere.com) is the coauthor of The Art of Digital Music *and the audio editor for the O'Reilly Digital Media site (digitalmedia.oreilly.com).*

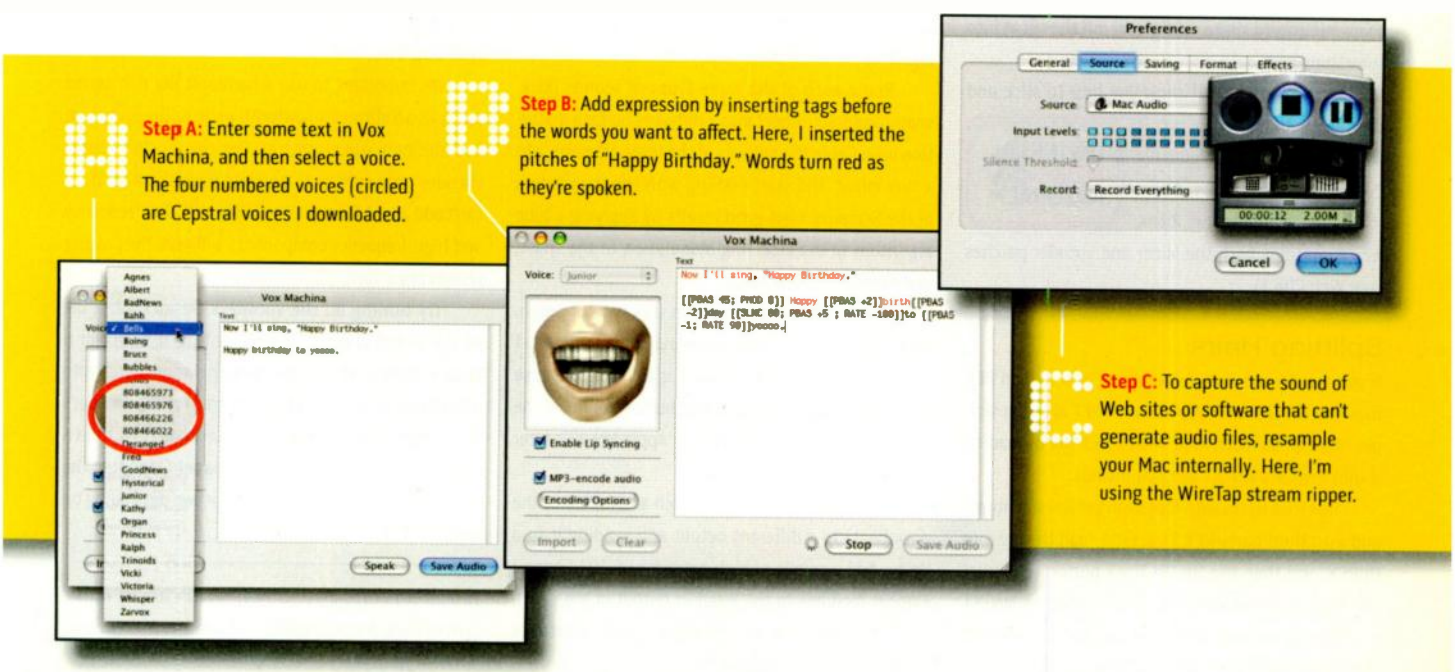


FIG. 1: When a REX file is loaded into the Reason NN-XT sampler, each slice will be assigned to a separate key. Use the Out knob (middle right of graphic) to assign slices to various audio outputs, such as the 5-6 stereo pair (shown here).

Beat the Blahs

Revitalize boring drum loops with Reason 4 effects. | By Jim Aikin

For fifty or a hundred dollars, you can buy a CD or DVD that's packed with great-sounding, professionally designed drum loops. But sometimes a beat needs a little work to sit well in your mix. And if you use it just the way it is, there's always the remote chance that someone else might use the same beat in their song that you use in yours, which would be embarrassing. Also, creative sound design is so easy and so much fun that it would be a shame not to take a few minutes to shake, rattle, and roll that beat into something new.

In this column, I'll show you how to slice and dice a beat and then run it through a vocoder. If you have Propellerhead Reason 4, download and run Mangling_2.rns, which contains both the slicer and vocoder patches (see **Web Clip 1**).

ONLINE BONUS MATERIAL

Splitting Hairs

If you use Reason, you already know how to load REX files into the Dr.REX module. But Dr.REX is rather simple. You can do much more with a REX file by loading it into Reason's NN-XT sampler module.

This trick works with files from the Reason library and with third-party REX files. First, load the file into Dr.REX, and then use the To Track button to extract the MIDI data from the file. Next, create an NN-XT and load the same file into it. Drag the MIDI data from the Dr.REX track into the NN-XT track.

Now delete the Dr.REX and listen to the sliced-up beat as it's played by the NN-XT. It should sound just the way it did before.

Open the NN-XT Editor panel (see **Fig. 1**). Click on the Select Zone Via MIDI button, and play up and down your keyboard. By doing this, you can quickly identify the zones that trigger the snare, kick, and other samples. Use the Out knob at the right end of the row below the display to assign the kick and snare samples to their own output channels (such as 3-4 and 5-6).

Route each of the three types of sounds (kick, snare, and hats/other) into a different Scream distortion unit. Cable the outputs of the three Screams into a line mixer, and start fiddling with the parameters of the Screams. I got good results by applying a tube algorithm to the kick, ring modulation to the snare, and overdrive to the hats.

You can do a lot more with this type of patch. Adding stereo delay to the snare using separate DDL-1 units for the left and right sides is a trick I often use (see **Web Clip 2**). Try replacing single samples in the beat with other types of audio, or apply NN-XT's filter and envelopes to them.

Try splitting one sample (such as the kick on the downbeat) to a different output and sending it to a delay. Add a couple of high-feedback CF-101 Chorus/Flanger modules to the input or output of the delay, and throw a Scream in somewhere to add overtones to the signal (see **Web Clip 3**).

Vocoder Pulse

Although adding vocal tracks to Reason songs is technically possible, it isn't easy—so why does Reason have a vocoder? One good application for this module is to use a Dr.REX beat as a modulator. Patch the Dr.REX left output to the vocoder's Modulator input, send the output of a Malstrom or Subtractor to the Carrier input, play sustained chords, and then start the beat. Instead of hearing a drum loop, you'll hear pulsing rhythmic chords (see **Web Clip 4**).

It's important to use a harmonically rich sound (such as a Subtractor sawtooth wave or the Malstrom FemaleChoir waveform) as the carrier, because a vocoder only subtracts partials from the signal; it can't add any. A beat that includes both low-frequency and high-frequency components will give the pulsing chords more variety.

Try turning up the vocoder's Decay knob a bit so the sound is more flowing, or turn it down for a choppy rhythm. Better still, tuck the whole patch into a Combinator, assign Rotary 1 to control the vocoder's Decay knob, and patch a synced sawtooth LFO from a Subtractor to the Rotary 1 rear-panel CV input. The decay time will change every bar or two depending on the speed of the LFO. em

---

Jim Aikin (musicwords.net) writes about music technology, teaches cello, and also writes various sorts of fiction.

Analog Factory Experience

THE FIRST HYBRID SYNTHESIZER

«Right out of the box I can immediately recall the golden years of early analog synths. Analog Factory is a beautiful mixture of the current Arturia products all rolled into one package.
How convenient to be able to switch from Modular Moog to Prophet V to CS-80 to....»

Herbie Hancock

TAE® True Analog Emulation

Arturia® SOFTWARE & HARDWARE

www.arturia.com

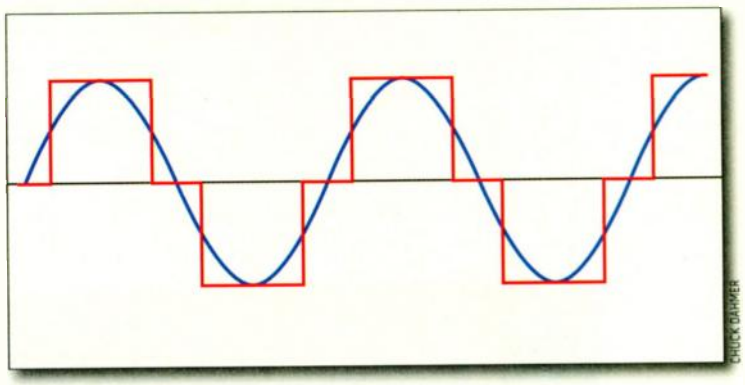


FIG. 1: The blue line represents a sine wave prior to A/D conversion. The red line represents the result of the digitization. The values between quantization intervals are rounded up or down, squaring off the waveform.

All in a Dither

How dither can work for you. | By Brian Smithers

What is it about dither that inspires so much trepidation among digital musicians? The mere mention of the word brings looks of disquietude normally reserved for the presence of witch doctors. Many explanations inadvertently contribute to dither's voodoo aura either by being too technical or by making it seem too much like magic. In this article, I'll strive to find the "happy place" where the concept reveals itself as a natural, sensible thing, albeit slightly counterintuitive.

Nontechnical people have no fear of dither. They understand it to be a vibration, fluctuation, or vacillation. This is the essence of dither in the technical sense, too: it vibrates the least significant bit of a digital signal in a way that interferes with the ill effects of quantization error. Simply put, dither counteracts quantization error.

Recall that quantization error is the distortion caused by rounding either the measurement of a sample during digitizing or the results of a DSP calculation. In both cases, the rounding of very soft signals results in a pronounced squaring off of the waveform. If, as in **Fig. 1**, the source is a sine wave, the digitized result is very much like a square wave with the same fundamental as the sine wave. (In the most extreme case—that of the quietest yet still detectable sine wave—the result would be a square wave. More often, however, it's a squarish wave, but the principle still applies.)

The harmonic content of a square wave is, of course, quite distinct from that of a sine wave—a square wave has a distinctive set of overtones, whereas a sine wave has none. The addition of overtones that is caused by quantization error is called *harmonic distortion*, because it is harmonically related to the input signal (see **Fig. 2**). This harmonic distortion occurs not just with sine waves, but with all input signals. Our ears are drawn to it precisely because it correlates to the original. It goes without saying that distortion that draws attention to itself is the worst kind.

Here's the counterintuitive part: the solution is to add very quiet noise—dither—to the signal before digitization (or, in the case of internal processing, before rounding the result of the DSP). Go ahead and cringe at the idea, it's okay. The noise is lost in the sonic impact of louder sounds, but it carries a benefit that reveals itself on very soft sounds. It toggles (vibrates/fluctuates/vacillates) the least significant bit randomly, causing its rounding behavior not to track the input signal. Because the rounding does not correlate to the source, there is no harmonic distortion.

> Dither is as automatic as it is critical in the recording phase.

Come Hither, Dither

Fig. 3 shows the digitization of a dithered sine wave. Because the sine wave is modulated randomly by the noise, the behavior of the digitized wave is less predictable. The overall arc of the digitized wave still reflects the period of the sine wave, but it has not been

STARR LABS

Unplug and Play

Wireless Receiver

The Z7S with Wireless AirPower Adapter

Play where you want to.

Lightweight, compact and beautiful the Starr Labs Z7S USB/MIDI guitar controller sets you free when combined with the optional AirPower wireless adaptor. No wires to tangle or clutter your performance. Compatible with any USB and MIDI equipped computers, systems and sound modules.

Z7S W/ installed AirPower transmitter $2,250.00 (pictured)
Z7S W/O AirPower transmitter $1,995.00
AirPower standalone Transmitter/Receiver pair $249.95
Option for Starr Labs controller systems

STARR LABS INC

Starr Labs • 7734 Arjons Drive • San Diego, CA 92126
www.starrlabs.com

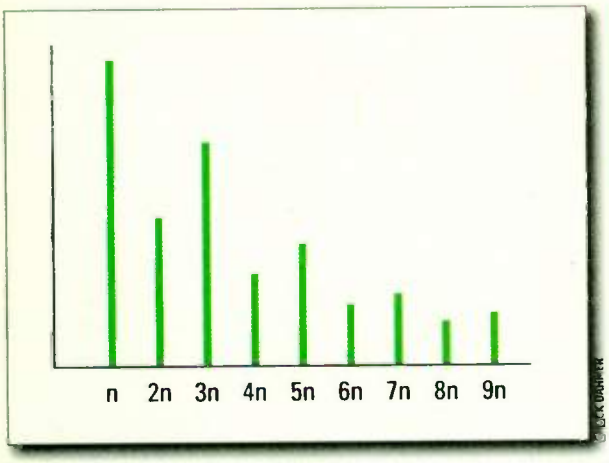


FIG. 2: The spectrum of the digitized signal from Fig. 1 includes overtones (harmonics) that were not present in the source signal (the sine wave).

If it feels like voodoo, embrace it anyway.

turned into a virtual square wave. Instead of a consistent set of square corners (representing harmonics), the digitized wave exhibits many smaller corners of random size and distribution. That randomness is the essence of noise.

Spectrum analysis of a digitized dithered sine wave reveals an energy peak at the sine wave's fundamental, along with a small amount of noise (see **Fig. 4**). The harmonic distortion that occurs when digitizing an undithered sine wave is eliminated. Note that it is not simply masked by the noise—it is eliminated (see **Web Clip 1**).

ONLINE BONUS MATERIAL

Sometimes a technique called *noise shaping* is used to shift the spectrum of the noise upward toward the Nyquist frequency, where our ears are less sensitive. By doing this, we can have the benefits of dither with less apparent noise.

Whither Shalt Thou Dither?

Because it counteracts the quantization distortion inherent in rounding, dither is to be used whenever you shorten the word length of a signal. The most drastic shortening of word length occurs when you digitize an analog signal—you could say the analog signal has infinite word length. Dither is therefore built into A/D converters, and it cannot ordinarily be adjusted or defeated. Dither, then, is as automatic as it is critical in the recording phase. It may, however, be a factor that contributes to the characteristic sound of a particular A/D converter.

Word length is also shortened when you bounce a 16-bit file from a 24-bit session. Be sure to apply dither when you bounce to a lower bit depth. (Note that sampling rate and dither have nothing to do with each other.) Typically, you would insert a dither plug-in as the final processor on your session's master fader or output bus. Set the dither to 16 bits, and bounce. Because the signal was dithered on capture, applying dither when bouncing is sometimes called *redithering*.

There is some debate as to whether you should dither a 24-bit bounce. Although it is technically the correct thing to do, the noise specs on all modern converters are well above the level at which the lack of dither would become apparent. Go ahead and dither, though—you've got nothing to lose.

More often than not, signal processing generates results that are longer than the nominal word length and must be truncated or rounded. If that sounds like a job for dither, you've got it. The design of a DAW usually determines whether dither is applied after real-time effects, but the user generally has control over whether to redither file-based processes. You should not redither repeatedly, however, because the noise can accumulate.

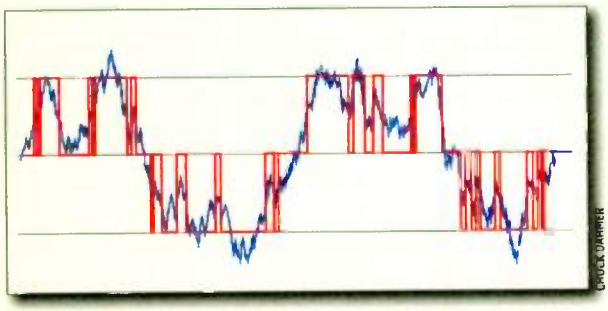


FIG. 3: The blue line represents a dithered sine wave prior to A/D conversion. The red line represents the results of the digitization. Its overall trend tracks the sine wave, but it rounds up and down between adjacent quantization intervals randomly. No large square corners result.

Dither, Hither and Thither

Although any dither is better than none, some dither is better than others. Several premium brands of dither are available, distinguishing themselves by the quality of the resulting low-level details and by the degree to which the noise remains innocuous. One highly regarded dither that has become widely available by being bundled with popular DAWs is POW-r dither, a product created by a consortium of respected audio companies. If you have multiple dithers at your disposal, create some careful listening tests with very quiet signals and signals that die away to black. These are the points at which dither reveals itself (see **Web Clip 2**). Some dithers, including POW-r, offer multiple types, and some offer defeatable noise shaping. For complex psychoacoustic reasons, different source materials may benefit from different dithers, types, and noise-shaping options. Experiment, listen critically, and keep an open mind.

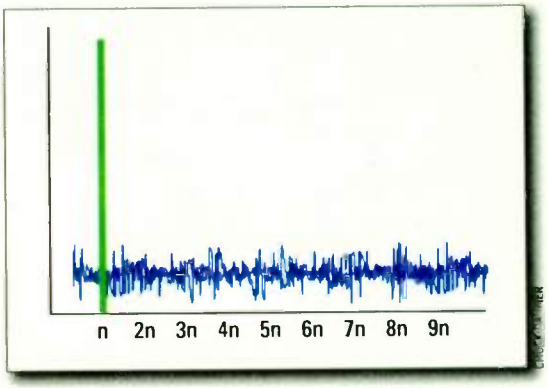


FIG. 4: The spectrum of the digitized signal from Fig. 3 consists of a single dominant frequency—the frequency of the sine wave—as well as a very small amount of noise. The harmonic distortion has been eliminated and replaced by noise.

Proper use of dither results in improved low-level detail, reduced harshness, and more-natural fade-outs. If it still feels like voodoo, embrace it anyway. Vacillate no more—go thither and dither. em

Brian Smithers is department chair of workstations at Full Sail University in Winter Park, Florida.

Q&A: Jordan Tishler

Career advice from a music-business pro.

In the contracted state of today's major-label record industry, having compelling music is no longer enough to convince a record company to invest in a musical act. The band or artist must first generate enough public interest on their own to convince a label that their act is a slam dunk. That means establishing a sustainable career with a professional product, all without the help of a label's advance money, tour support, or marketing dollars.

By Ravi

ANDREW RAPP

FIG. 1: Jordan Tishler started Digital Bear Entertainment in his college dorm room and has built it into a multifaceted company that offers recording, marketing, and artist development.

Despite this new reality, many musicians still self-produce demos and albums in the hope that their music alone will lead them to a record deal or help them become viable as independents. In many cases, they might be better served by first working with professionals who have experience in developing artists. Such consultants, most of whom were once employed by major labels, are now making their services available to all musicians.

One such professional is Jordon Tishler (see Fig. 1). Having gained experience in the 1990s as a producer and development consultant for labels, he now heads Digital Bear Entertainment—a production, marketing, and development company for musicians. Tishler, who is chairman emeritus of the New England Section of the Audio Engineering Society (AES), grew his company from a recording studio based in his Harvard dorm room to its current multifaceted status. I've sat on panels with Tishler at several music-business conferences and found him to be quite knowledgeable. In my interview with him, he offered strong opinions about how artists should approach their careers, what mistakes indie musicians often make, and what the future of digital distribution looks like.

What is the mission of Digital Bear Entertainment?

We seek talent and music that advances the art of music while attaining popular and commercial success. The focus is artist development, music production, and licensing music for TV/film. We help artists hone their songwriting, look, stage presence, and crowd interaction, and also help plot what and when to record and how to market the recordings. For example, bands without followings shouldn't be recording full-length CDs to sell, but rather, 3-song demos to give away—a better investment in garnering new fans. Touring is essential in growing the fan base, and there are right and wrong ways to plan a tour, approach clubs, get on plush bills, etc. We help artists do it right. The exposure and revenue from placing music in sync applications (TV/film) is also important for independent artists. I started my sync-placement company, dBE.Music, after realizing how many great songs out there might not otherwise be heard. We've been really successful with several high-profile indie films this year and a soundtrack album.

How are you different from a full-service label?

I think of us as the front half. We develop, plan, record, and market. Then it's up to the band—with our coaching—to sell, tour, and do interviews. We don't provide marketing dollars, tour support, video budgets, etc. That comes from the artists. We will, however, plan and budget these efforts. Additional costs range from $10,000 to $40,000, with $20,000 being about average. When an artist is ready, we shop to labels and provide connections to management and booking agents. I believe that labels will always be necessary. If you're not a rock star, you'll need a label to become one. They can take regional success to national or international levels. Like a good P.A., they "pump up da volume." But most people don't understand what labels really are: banks that fund risky projects that no traditional bank would consider. Furthermore, the label won't take your home or car if your album tanks. They just eat the loss. To hedge their bets, they've developed expertise in marketing. Labels have really gotten an unfair bad rap over the last decade.

How do you find artists, and what kinds of deals do you make?

Largely the old-fashioned way: demos, word of mouth, and seeing shows. I attend many music conferences annually to hear new acts and publicize our services. Of course, our Internet presence is key, and we use online services like Sonicbids and MySpace. The band has to have that "something special," which is largely great songwriting, but also a special presence—something magnetic about the act. For acts in the early stage of development, the

deals are fee-for-service consulting. For later-stage artists, we can talk points.

Where do you think digital distribution is headed?
As one who grew up with vinyl, I miss the space afforded by the packaging for really cool artwork and deep liner notes. The future distribution paradigm will need to satisfy customers' desire for both instant gratification and physical aspects of ownership. As the Internet's bandwidth grows, distribution of truly CD-quality files—not MP3 or AAC—will become standard. I don't download from iTunes, because I want high quality. Once I can get WAV files, that barrier will disappear. How I get that beautiful artwork is another matter. I suspect some interactive Web-based solution will occur where I can get a gorgeous booklet sent to me to accompany the downloaded files. Maybe there's extra revenue in that, and it certainly increases the "stickiness" of the buying experience, which is good for the artist.

What about the lack of gatekeepers?
We engineers talk about the noise floor—if it rises high enough, it ruins good takes by distracting from the performance. Similarly, with more releases than ever before, it's hard to get a good band noticed. A major label used to budget $250,000 for an initial release: half to make the album, and half to market it. Now, it's the same total amount, but 80 percent of it goes to the marketing—it costs that much more today to break through the pack. That's fine for the suits, but not so good for us creative types. It's positive that more music is being recorded, but most of it is crap that my good act has to fight through to be heard.

What are the recording-technology standards?
Many believe that you must use [Digidesign] Pro Tools if you're serious. That's BS! Digidesign makes good and widely used products, but [Steinberg] Cubase and Nuendo, [Apple] Logic, and [MOTU] Digital Performer work very well. With knowledge, all these file formats are interchangeable. As studio owners, producers, and artists, the key technological standard that we should push for is *universal* digital rights management (DRM). Most who copy music illegally do so because they've never really thought about the consequences to us, and therefore to them: if we can't make a living, there will be no more good music. When put that way, most change their ways. But for others, we should make sure that it isn't so easy to steal our work. I'm generally not big on government intervention, but DRM that is required to be licensed to legitimate hardware-device manufacturers would solve this problem. All our devices would play nicely together, and the DRM would only pop up its ugly head if you do something illegal. If it's seamless for the customer, we can look forward to continued sales of recorded music. Otherwise, I see sales of recordings going away along with our jobs.


ANDREW RAPP

This photo shows the control room and vocal booth at Tishler's Digital Bear Entertainment studios in Boston.

> It costs that much more today to break through the pack.

What are the biggest mistakes that most self-produced, home-studio-based artists make?
The first is to self-produce. If you're a guitarist who's taken 5, 10, or 15 years to perfect your playing, why would you assume that engineers or producers wouldn't need to spend that amount of time developing their craft? Even big-time artists that self-produce didn't start that way. In terms of quality, objectivity is the key. As the writer-musician, you have none. These songs are your babies, and your passion for them drives the train. Consequently, you can't see the weaknesses or fixes. Hiring someone is the way around this. A good working relationship is about complementing each other: passion and objectivity. In terms of distribution, there are ways to get your music available to sell on the Web: CD Baby for physical media and downloads, TuneCore for downloads, Snocap for sales directly from MySpace, etc. However, the biggest mistake is thinking that having material available will drive sales. *You* have to drive sales. These portals just provide the means.

Where should talented artists with a decent regional fan base and a home studio focus?
Let's assume that you have done the "giveaway" demo or maybe an EP to sell cheaply. And you've booked your own shows and toured your butt off in a smelly van, and loved it. If you were smart, you've also learned to gig swap—there's a real art to that. When you're consistently pulling 100 fans to shows throughout your region—Northeast, Southwest, not just your state—and 400 fans in your hometown, it's time to talk about booking agents and making a record that will sell to fans. Headlining 400-capacity venues twice a week generates approximately $75,000 annually for a manager or agent, and that's attractive. When independent sales reach 5,000 to 10,000 units, labels will come calling. em

Ravi (heyravi.com), former guitarist of three-time Grammy nominee Hanson, tours the country performing, lecturing, and conducting guitar clinics. He writes for several magazines, and Simon & Schuster published his tour journal.

ONE FOR THE ROAD REBATE

SPECIAL LIMITED TIME OFFER!

For a limited time, when you buy any FireStudio recording system you get a FREE Inspire 1394 FireWire mobile recording system!
Retail Value $229.95 Rebate valid on sales from June 1 to August 31, 2008.

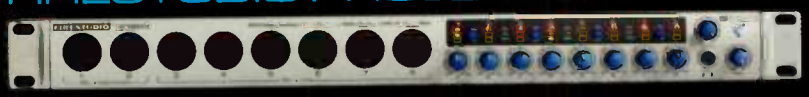
FIRESTUDIO 26x26 FireWire Recording System ($699)

- 24-bit resolution, up to 96K sampling rate
- 26x26 simultaneous record/playback channels
- 8 XMAX Class A microphone/instrument preamps
- 16 ch. of optical ADAT I/O (8 ch. via 96k dual SMUX)
- S/PDIF I/O, MIDI I/O
- Zero latency DSP full-matrix mixer/router
- PreSonus ProPak Software Suite included
- Optional MSR monitoring/talkback remote

FIRESTUDIO TUBE 16x6 FireWire Recording System w/ 2 SuperChannels ($799)

- 24-bit resolution, up to 96K sampling rate
- 16x6 simultaneous record/playback channels
- 2 SuperChannels (Tube mic/inst. preamps with analog limiter)
- 8 XMAX Class A microphone preamplifiers
- 6 TRS balanced line inputs and outputs
- MIDI I/O
- Zero latency DSP mixer/router
- PreSonus ProPak Software Suite included

FIRESTUDIO PROJECT 10x10 FireWire Recording System ($499)



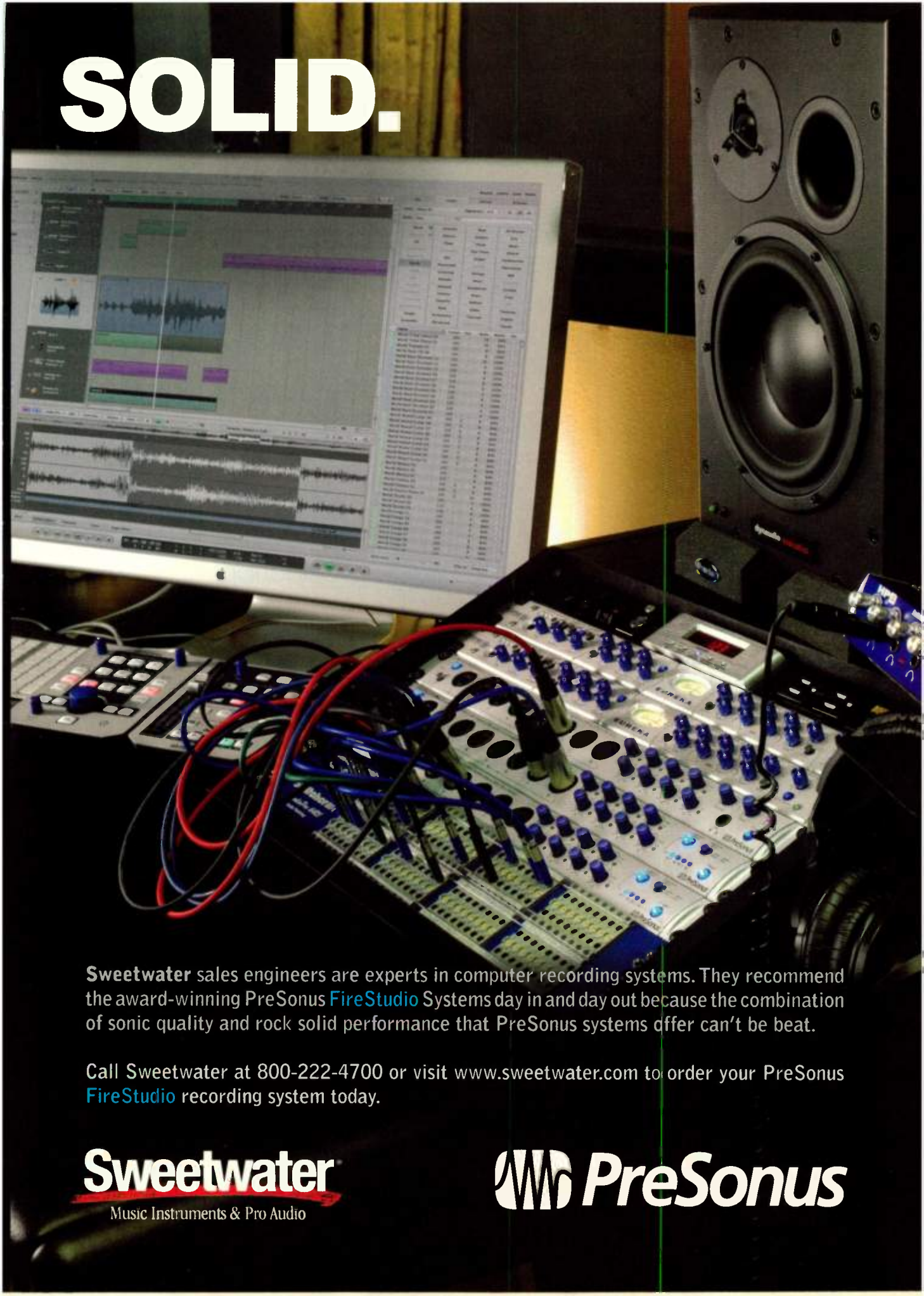
- 24-bit resolution, up to 96K sampling rate
- 10x10 simultaneous record/playback channels
- 8 XMAX Class A microphone preamplifiers
- 8 Analog mic/line inputs, 2 instrument inputs
- 8 analog line outputs
- S/PDIF I/O, MIDI I/O
- Aero latency DSP mixer/router
- PreSonus ProPak Software Suite included

FIRESTUDIO LIGHTPIPE 32x32 ADAT to FireWire Recording System ($599)

- 24-bit resolution, up to 96K sampling rate
- 32x32 simultaneous record/playback channels
- Word Clock I/O
- MIDI I/O
- Balanced main outputs with volume control
- Headphone amplifier with volume control
- Dual SMUX for 16 channels input/output at 96k
- FireControl zero-latency DSP mixer

All FireStudio recording systems are Mac and Windows compatible and work with Core Audio, ASIO and WDM based recording software including Logic, Cubase, Nuendo, Sonar, Digital Performer and many others.

www.presonus.com



In the Zone

In addition to mapping to Velocity zones, the triggers offer remarkable independence: different areas of the fingerboard can send to different MIDI channels and can accommodate practically any tuning you can conceive of. For instance, you can set one zone to respond to tapping the keys and another zone to trigger only when the strings are picked. Zones can overlap and can use different note-interval settings. If that isn't enough, an optional, independently programmable trigger pad (the $299 TCA1) installs over the strings, toward the neck. Consequently you can set up more zones than you have digits to accommodate them with.

Unlike a guitar fingerboard (whose frets are spaced closer together higher up), the Ztar's fingerboard scale is equidistant over the length of the neck. Presumably a graduated, guitarlike scale would add considerable expense. Still, the scale of the fingerboard buttons can be difficult to get used to if you are accustomed to a guitar-scale fingerboard; at first, I frequently overreached and triggered unintended pitches.

Great Expectations

The Ztar will not necessarily eliminate all the artifacts of MIDI guitar that you might expect. For example, the triggers are sensitive, so if you have a tendency to trigger adjacent strings with your fretting or picking hand, you'll still trigger unwanted notes.

The Z7S implementation goes well beyond Note On messages. Because you can assign multiple destinations to buttons and plucked strings, and the buttons are velocity sensitive, I was able to assign the velocity sensing to send Modulation Wheel messages and to use dynamics to control vibrato. Furthermore, you can assign alternate messages to successive events; in this way, you can switch messages on and off—a handy way to return a control to an initialized state.

Because the Z7S can send multiple MIDI messages, it opens new windows of opportunity for musical expression, but you have a bit more to consider when playing. For instance, because Dual mode allocates one portion of the neck for tapping and one for picking, you'll need to cultivate a new set of skills to keep track of what each hand is playing.

The arpeggiator is adequate for basic up-and-down patterns, but that's all. More interesting is the unit's sequencer, which, thanks to a recent memory upgrade, holds up to 40,000 events. Because the Ztar can send out lots of data, the upgrade is especially welcome. The sequencer resolution, however, is 24 ppqn, which does not allow much room for loose phrasing.

A Moving Target

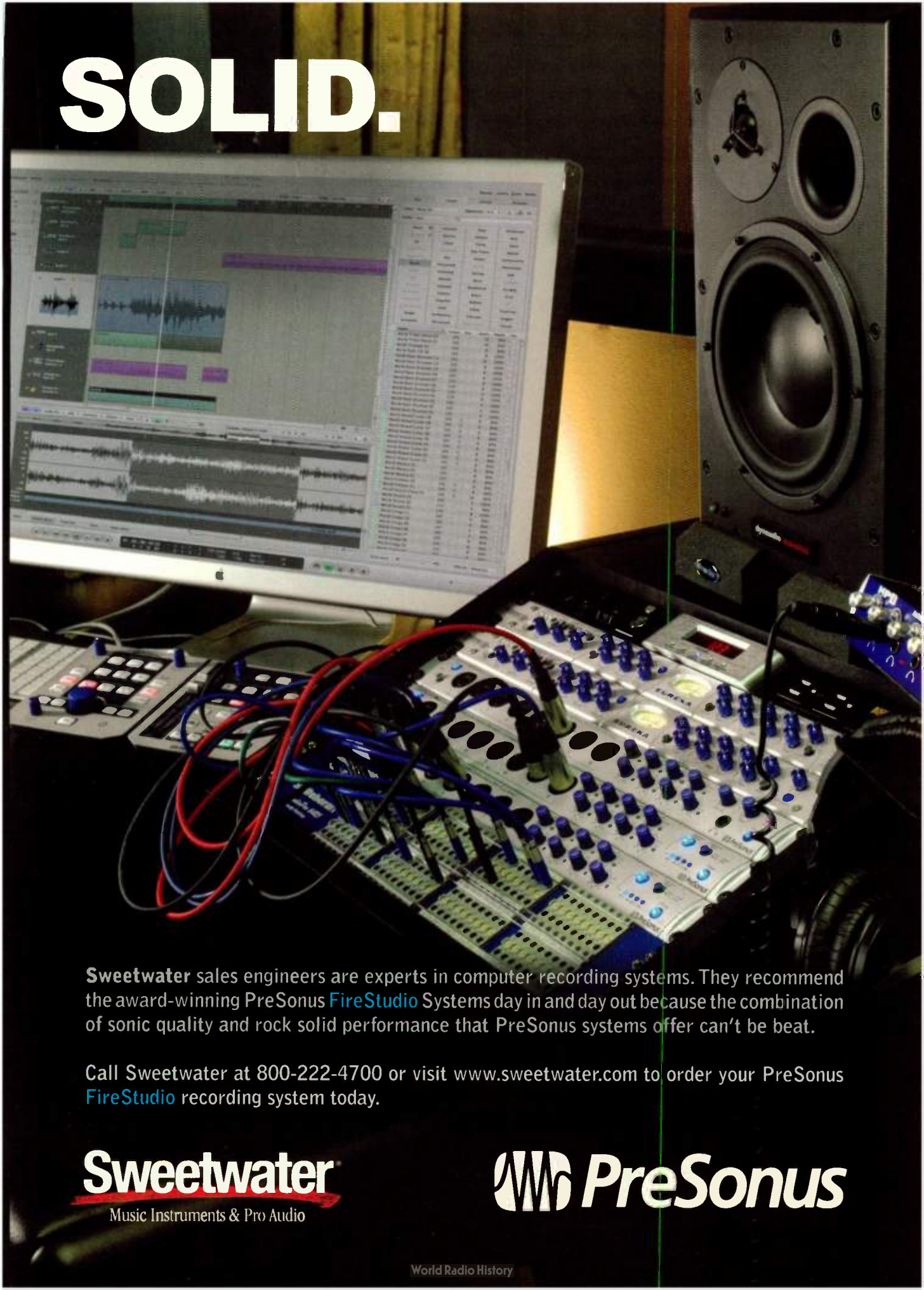
The Starr Labs Ztar Z7S is brilliant, but as of this writing, it's a work in progress. During the review period, Starr changed hardware and software, improving construction and adding more RAM and a more powerful CPU. As a result, I evaluated a moving target. Clearly, Starr's focus is improvement rather than mass production.

In addition, as a production-line instrument, the Z7S faces some quality-control hurdles. My first review unit shipped with a flimsy power supply, and a complete set of string triggers went dead. The optional battery pack needed to be replaced due to a loose solder connection. The accompanying USB driver software for Mac OS X was a beta version, and attempts to load SysEx data from the Mac via the Ztar USB connection never worked. Hopefully, as the Ztar's production ramps up, the quality-control problems will fade away.

The Z7S's MIDI implementation is easily light-years ahead of any guitar-to-MIDI converter's, and beyond most keyboard controllers', for that matter. To make the most of those features requires a clear understanding of MIDI and controller scaling and mapping, and the Z7S would greatly benefit from a comprehensive, dedicated user manual. (According to the manufacturer, such a manual is in progress, but no delivery date has been promised.)

The Z7S is neither a guitar controller nor a keyboard controller. You will need to get past many musical orthodoxies inherent in keyboard and guitar technique before you become truly comfortable with it, but once you do, it can provide a gateway to extraordinarily expressive musical performances. If you can spend time delving into its MIDI controls and adapt some of your musical skills, you'd be hard-pressed to find a more powerful MIDI instrument than the Ztar Z7S.

Former EM assistant editor Marty Cutler is a musician, writer, MIDI consultant, and teacher in New Jersey.



Yamaha

Tenori-on

A different approach to mobile music production.

By Geary Yelton

PRODUCT SUMMARY

sample player/sequencer	$1,199

PROS: Creatively stimulating. Very portable. Unique note-entry methods. High fun factor. Imports user samples. Sounds pretty.

CONS: Limited timbral palette. Minimal synthesis parameters. Doesn't respond to Pitch Bend or Modulation Wheel. Can't mix different step durations. Some tedious utility functions.

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

Yamaha
tenori-on-tour.com

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

ONLINE BONUS MATERIAL

Although it looks rather like a futuristic Etch A Sketch, the Tenori-on is a bleeding-edge musical performance instrument that combines sample-playback synthesis with real-time step sequencing. With a grid of flashing white buttons for entering notes, this one-of-a-kind device makes it easy for almost anyone to create music, especially if you understand harmony and song structure. The compact Tenori-on is powered by an included AC adapter or six AA batteries, making it completely portable.

The Tenori-on was designed by Toshio Iwai, a Japanese media artist, musician, and inventor who collaborated with Yamaha's Yu Nishibori in its development. Perhaps best known for originating the video game Electroplankton for the Nintendo DS, Iwai has produced interactive art installations and served as artist in residence for institutions throughout Japan, Europe, and the United States.

After a period of test-marketing in the U.K., Yamaha will begin selling the Tenori-on in the United States. (That should happen by the time you read this.) The company will make it available in very limited numbers only at tenori-on-tour.com. I consider myself lucky to have acquired one for review before its U.S. debut, and it's been my nearly constant companion for ten days.

Your Own Personal Light Show

The Tenori-on's 8-inch-square magnesium frame surrounds a 16 × 16 grid of 256 LED buttons (see Fig. 1). The entire matrix is simultaneously a multitrack MIDI controller and an eye-catching display. Each button is a data-entry point for determining pitch, changing programs (which Yamaha calls Voices), and altering other parameters, as well as a sort of virtual pixel that can dynamically glow three levels of white. All 256 LED buttons are replicated on the opposite side; the grid is identical on the front and rear, but they function only as lights on the rear. Five buttons on each side of the frame, held while pressing the LED buttons, let you select timbres and parts, adjust levels, change loop length and tempo, transpose octaves, and control other performance functions.

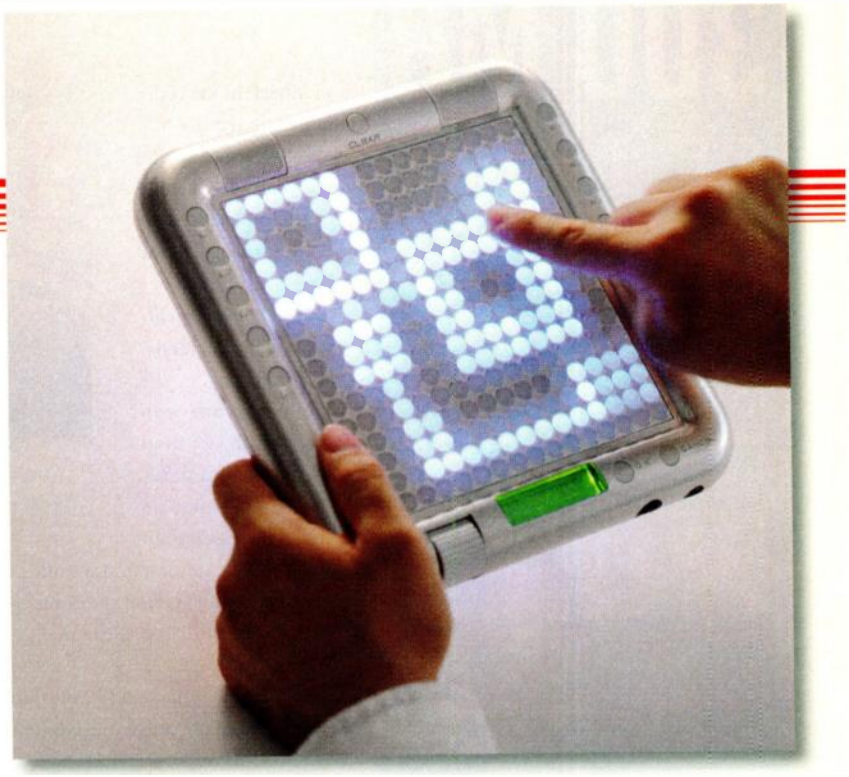


FIG. 1: The Tenori-on looks and functions like no other MIDI instrument. Each of the 256 LED buttons on its surface doubles as a note-entry point and an element in a dynamic light show.

Whenever a note plays, its corresponding LED button lights up for its duration. Playing a sequence, then, results in cascades of flashing lights, which add a lot to the instrument's visual appeal (see **Web Clip 1**). During use, you can set the Tenori-on on a table or other flat surface, hold it in your lap (my preference), or grasp it in both hands so that your audience sees the same light show that you do. When you hold it in your hands, the five buttons on each side—labeled L1 through L5 and R1 through R5—are comfortably positioned under your thumbs.

The frame's lower segment contains a data jog wheel, a perpetually backlit LCD, and two buttons labeled OK and Cancel (see **Fig. 2**). The jog wheel affects whatever appears in the LCD and turns easily with your left thumb. On the frame's top segment are two small speakers and the Clear button, which deletes anything you've entered into the currently displayed grid. The power switch is on the bottom segment's opposite side, and three jacks for audio, power, and MIDI are on the bottom edge. To keep the jacks small, a mini DIN jack connects to a 23-inch breakout cable with MIDI In and Out ports on the opposite end.

Tenori-on, Tune In, Drop Out

Understanding Layers, Blocks, and Modes is essential to using the Tenori-on. Layers are parts in a performance; most sequencers call them tracks. You can change each Layer's Voice and other parameters such as volume, panning, and length. A Block is a sequence containing up to 16 steps and 16 Layers. The Tenori-on's memory can hold 16 Blocks at a time. To switch Layers, hold the R1 button and press an LED button in the row corresponding to the Layer you want. Likewise, to switch Blocks, hold R5 and press an LED button in a column corresponding to the Block you want.

Modes are techniques for programming sequences; six Modes are available. The Tenori-on devotes 7 of its 16 Layers to Score Mode, 4 to Random Mode, 2 to Draw Mode, 1 to Bounce Mode, 1 to Push Mode, and 1 to Solo Mode. You can't change a Layer's Mode; if you'd rather program entirely in Score Mode, you're limited to seven Layers.

The Tenori-on starts up in Score Mode. The flashing grid scrolls from left to right and then loops at the default tempo (75 bpm). Pressing the OK button stops and starts playback. Horizontally, buttons represent individual steps in a 16-step sequence, and vertically, they represent 16 pitches. By default, they play a major scale (from C3 to D5), but you can globally change their transposition and octave and select from eight diatonic modes, a chromatic scale, or a pentatonic Okinawan scale (C–E–F–G–B–C). You can also shorten the sequence length to as few steps as one.

Score Mode should be familiar to anyone who's ever programmed a drum machine. Each row is a pitch, and each column is a step. Pressing an LED button plays its note, and holding it assigns that note to your sequence. Holding it again deactivates it. When a note plays, the surrounding buttons flash along with it. You can enter as many notes as you'd like into each column to create chords. All notes are of equal duration—a serious limitation, because you can't enter patterns in which some steps are 16th notes, for example, and others are quarter notes.

In Random Mode, holding an LED button causes a note to repeat every time a step plays until you press a second button. Then you'll see all the buttons between them light up until they reach the second button, which plays a note and then bounces back to the first (see **Web Clip 2**). Pressing more buttons adds new notes, which

play back in the order you enter them.

In Draw Mode, you can press LED buttons or use your fingertip to draw lines and curves that become repeating note patterns. Patterns play in the same rhythm you enter them, without regard to step duration, except that no note is longer than one step. Continuing to draw adds to the pattern, but you can't erase additional parts in the same Layer; pressing Clear makes the entire pattern disappear.

>> FIG. 2: You control transport functions and access menus in the Tenori-on's LCD using just two buttons and a jog wheel.

In Bounce, Push, and Solo Modes, pitch is arranged in columns, ascending from left to right. When you press an LED button in Bounce Mode, a note drops from that button and bounces back repeatedly when it reaches the bottom row. The distance from the button to the bottom determines the note's rate of repetition. Pressing the bottom LED cancels that note.

When you press and hold an LED button in Push Mode, it plays a note whose sound changes continuously, and the LEDs surrounding it flash in a repeating pattern. Push Mode works best with sustaining sounds.

Solo Mode lets you change a note's duration in response to how long you hold its LED button. It resembles Bounce Mode in that the row determines its rate of repetition. If you don't want notes to repeat, play only the lowest row.

When you leave the Tenori-on idle, its Interior Mode begins playing its onboard demo or a song you've stored in memory, or its grid begins flashing the time (in 24-hour format), or both. It can chime on the hour and even function as an alarm clock if you'd like. Such tricks quickly become tiresome, though, and a Power Save function turns off the LED buttons after whatever period of inactivity you specify.

Utility Closet

The Tenori-on's operating system is not especially complex and should become second nature as you gain experience. However, with only two buttons to access its menu structure, performing utility functions can be tedious and unintuitive. Pressing the Cancel button enters the main menu, and pressing the OK button selects menu items and drills deeper into the menu hierarchy.

I had to sift through the manual to find out how to perform basic operations such as saving my work to a Secure Digital (SD) card (which is not included). Even then, it took a while to grasp exactly what I needed to save and which menu to use. In the File menu, you can choose to save All Blocks, the Current Block, the Current Layer, or All Settings. Saving All Settings, oddly enough, doesn't save note data—only Voice assignments, tempo, and other parameter values.

To actually save your sequences, you need to choose Save All Blocks. Unfortunately (and surprisingly), you can't simply save to the same file; instead, you have to laboriously enter the entire file name and confirm that you want to replace the previous file bearing the same name each time you save. To make matters worse, entering text is like something from the early '80s—without going into too much detail, suffice it to say that my Timex watch has more-sophisticated text entry. I hope Yamaha soon offers a firmware update that simplifies this unnecessarily complex procedure.

Timbral Palette

Taken as a whole, the Tenori-on's collection of factory Voices has a gentle, pastel quality. In addition to purely electronic timbres, the focus is on organs, pianos, tuned and untuned percussion, harp, bells, staccato and pizzicato strings, and staccato woodwinds. Although you

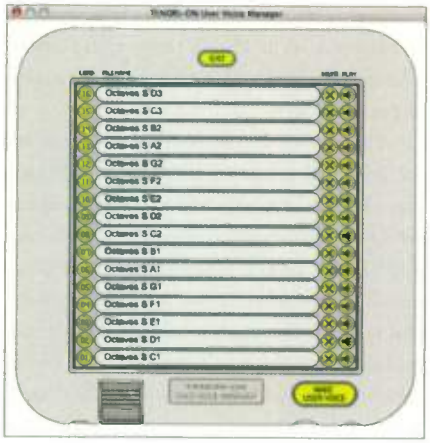


FIG. 3: A simple computer application lets you organize WAV and AIFF files into multisamples you can export to the Tenori-on.

could rock out with some of the drum sounds, I wouldn't describe any of the timbres as harsh, aggressive, or funky. Consequently, the instrument is probably more appropriate for ambient, down-tempo, or experimental music than for rock, funk, jazz, or dance music, unless you want to add pastel elements to those genres. Most lacking are aggressive basses, and there's a complete absence of sound effects, guitars, vocals, and world instruments. Then again, the Tenori-on's limited palette is part of what gives it such a recognizable character.

> You can expand the range of sounds by connecting it to another synth.

Keep in mind, too, that the Tenori-on works just fine as a unique MIDI controller. You can easily expand the range of sounds at your disposal by connecting it to another hardware synth or using it to control software instruments.

Most of the onboard samples are short, and by default, that's how they play. You can increase note length to nearly 10 seconds, but the length applies to every note in that Layer unless its Voice has been programmed with a short decay. The Tenori-on doesn't offer access to individual Voice parameters such as envelope generators.

Voices appear to be organized in a haphazard fashion. With a 16 × 16 grid available, it should have been easy for Yamaha to organize Voices by type, which would certainly speed things up when you're searching for just the right sound. Luckily, you'll find a Voice List near the back of the 123-page PDF manual.

The Tenori-on works only in MIDI Mode 3 (Omni Off, Poly), making it easy to use with a computer-based sequencer and an external MIDI controller. A quick glance at the manual's MIDI Implementation chart confirms that the Tenori-on responds to Velocity but not Aftertouch. It transmits and receives Program Change, Bank Select, Volume, SysEx, Clock, and a few other MIDI messages, but it doesn't respond to Pitch Bend, Modulation Wheel, or most other Control Change messages. It sends a fixed Velocity value of 100.

Bundled with the Tenori-on is a bare-bones application called Tenori-on User Voice Manager (Mac/Win), which allows you to import three multisamples of your own (see Fig. 3). You can load as many as 16 individual WAV or AIFF files at a time, each with a maximum length of just under 1 second. After you drag-and-drop your samples into the window, clicking on the Make User Voice button converts them to the Tenori-on's native TNW format, but you need an SD card reader for your computer to transfer samples to the Tenori-on. It would be more convenient if you could transfer user Voices via MIDI, as you could with many samplers 20 years ago.

Studio Tool or Posh Toy?

You could easily argue that the Tenori-on is not suitable for professional music production. It has no filters, LFOs, envelope generators, nor any of the user-programmable parameters you'd expect in a real synthesizer. It has only one oscillator per voice, and it provides no access to its sound engine other than the ability to import user samples. In some ways, its sequencing capabilities are rudimentary; in most Modes, you can't even vary individual note length or Velocity. On the other hand, the Tenori-on offers sequencing techniques you won't find anywhere else.

Would I consider buying a Tenori-on? Despite its limitations and some aggravating quirks, the answer is absolutely yes. It's a great catalyst for creativity that forces me to work outside of my usual compositional framework. It has a very strong personality that suggests musical directions I would never explore on my own. And its portable nature makes it a pleasant traveling companion: I'd be grateful to have one while killing time in an airport, relaxing on a beach, or even waiting out a rainstorm in my tent.

I have no doubt that soon you'll be hearing the Tenori-on in television commercials, movie soundtracks, and the music of a wide range of artists—not to mention in parks, schools, and other public places. It simplifies and democratizes composition in new and exciting ways, and most of the time, it sounds quite good. It also points the way toward future, more-sophisticated instruments based on its design, which I hope Yamaha continues to develop with pro musicians in mind. In the meantime, if the company can bring down the cost of the Tenori-on and its future offspring, it may have produced its biggest hit since the DX7.

EM senior editor Geary Yelton has been using synths and sequencers for about as long as Yamaha has been making them.

"We Had a Hit Single with Jesse McCartney, and it all Began with TAXI"

Andy Dodd and Adam Watts – TAXI members
www.reddecibelproductions.com www.adamwatts.com

Adam and Andy's success through TAXI is a little bit different from all the other stories you've probably heard. They got their *biggest* deal after their membership ran out!

Here's how it happened: "We joined TAXI in 2001 and found that it was a great motivator for us. We were members for two years. We learned a lot, wrote a ton of songs, and got a few film and TV placements -- some through TAXI, and some on our own.

We submitted a song we wrote with Jenn Shepard called "You Make Me Feel" to one of TAXI's Industry Listings. We didn't hear anything back for a while and eventually our TAXI membership ran out. Thankfully, we began to get so busy with production and writing gigs that we decided to wait and renew our membership at a later date.

Little did we know that TAXI had sent our song to a production/management company that was looking for material for a young, male Pop artist they were developing.

Later that year, Jesse McCartney's managers called us saying they had just heard "You Make Me Feel" on a CD they got from TAXI and wanted to have him cut the song. Although Jesse decided not to record "You Make Me Feel", his managers asked us to write more songs for him. We wrote a handful and they ended up putting his vocal on two of the tracks we produced, "Take Your Sweet Time" and "Beautiful Soul".

"Beautiful Soul" got played on Radio Disney, and Jesse's management got the song to a label executive at Disney. Soon after, Jesse was signed to Hollywood Records. "Beautiful Soul" became his first single, and we both signed publishing deals with Disney Music Publishing.

Jesse McCartney's album (entitled "Beautiful Soul") has gone Platinum in the U.S. and Australia.

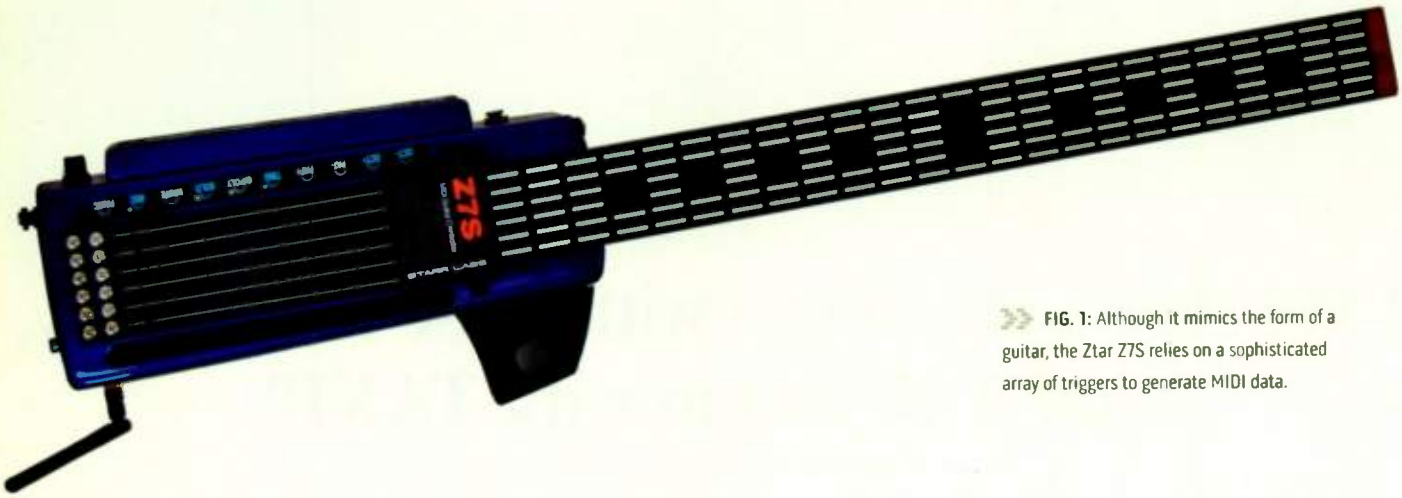
"Beautiful Soul" went to #3 on Radio and Records CHR Pop Chart, #5 on Billboard's Top 40 Chart, #19 on Billboard's Adult Top 40 chart, it's a Platinum Digital Single Download, it's on the Gold-selling 'Cinderella Story' Motion Picture Soundtrack, the Gold-selling 'That's So Raven' TV Soundtrack, and the video was nominated for Best Pop Video at a 2005 MTV Video Music Awards."

All of this came about because Adam and Andy sent a song to TAXI. Call for our free information kit!

TAXI®

The World's Leading Independent A&R Company

1-800-458-2111



>> FIG. 1: Although it mimics the form of a guitar, the Ztar Z7S relies on a sophisticated array of triggers to generate MIDI data.

Starr Labs

Ztar Z7S

It may look like a guitar, but this MIDI instrument is like no other.

By Marty Cutler

>> PRODUCT SUMMARY

MIDI fingerboard controller	$1,995

PROS: Fast, glitch-free tracking. Extraordinary MIDI implementation.

CONS: Hardware production problems. Inadequate documentation.

	1	2	3	4	5
FEATURES					
EASE OF USE			●		
DOCUMENTATION		●			
VALUE			●		

Starr Labs
starrlabs.com

ONLINE BONUS MATERIAL

Starr Labs has been building distinctive, guitarlike MIDI controllers for many years. Company owner Harvey Starr may not be a household name, but the company's Ztar Guitar/Fingerboard Controllers are known to many fans of alternative MIDI-instrument controllers. EM has covered several of these products in its "What's New" section and reviews, and the Ztar Z6 won an EM Editors' Choice Award in 2002.

Past Ztars were custom instruments with options such as string triggers and touch pads. The Z7S, however, represents Starr's first attempt at packing many such features into a comparatively affordable instrument (see Fig. 1). You still can get a few options, though, including a neck-sensor strip ($95), MIDI wireless ($249), a breath controller ($149), and a battery-pack kit with charger and two batteries ($199).

Marriages of Convenience

By no means a guitar, the Z7S is an attempt to marry the expressive capabilities of a guitar with the precision of a MIDI keyboard controller. The basic Z7S guitarlike form factor hosts a set of six string triggers, frets arrayed with fingerboard buttons, a ribbon controller, and a combination joystick and fire button of the sort found in some game controllers.

The string triggers extend to a length of about six inches from setscrews that are positioned where a guitar's bridge would normally sit. The string tension seemed a bit stiff, but it was easy to loosen for a better feel. The string triggers provide somewhat faster tracking and more accuracy than my guitar-to-MIDI system, but I found the tactile difference between the Z7S string triggers and the strings of my conventional MIDI guitar difficult to reconcile.

On the upper portion of the instrument's face, a row of membrane switches offers up and down octave transposition, patch selection (for controlling external instruments), and access to the various Ztar modes. You also get a Write button to confirm edits, a Record button for capturing and overdubbing MIDI data for playback, and a Panic button.

At the center of the instrument's top side panel is a large green LED display flanked by

FIG. 2: Viewing the Z7S upside down reveals the game-style joystick at the top left, in the shark's fin–like area. A ribbon sensor runs across the body to the right.

The ribbon controller is convenient for achieving rhythmic filter effects with taps of the picking-hand pinkie, but be careful not to strum too zealously!

The plastic Velocity- and Pressure-sensitive fingerboard buttons are programmable and can be mapped to a variety of MIDI data types, so they can do much more than just trigger notes.

Membrane switches provide octave transposition, patch selection for external instruments, access to the Ztar modes, MIDI recording, and more.

two rows of eight buttons. At the top level, the buttons select Ztar patches. Hit the Edit switch at the panel's left, and the patch-selection buttons access a menu of editing options; hitting it again accesses submenus and parameters. A pair of buttons above the Edit switch increase and decrease the values. Hitting the Edit switch again backs you out of Edit mode.

Jump for Joy

A 3-way joystick is positioned at the lower "bout" (the front part of the body where it joins the neck) of the instrument. I had to move my hand over and across the string triggers to engage it. I'd prefer to have the joystick near the instrument's upper bout, where I could catch it more easily.

My review unit had the optional neck-sensor strip installed along the top side of the neck. With this in place, you can run your thumb along the side of the neck to send Pitch Bend, MIDI Volume, or any number of expressive Control Change messages. However, players who normally bring their thumb over the fingerboard to hold down a string must be wary of accidentally sending MIDI data.

The ribbon controller sits next to the joystick, across the bottom of the guitar (see Fig. 2). It's relatively easy to reach and convenient for achieving rhythmic filter effects with taps of the picking-hand pinkie. Given its placement, though, I had to be careful not to strum too zealously.

> The Ztar will not necessarily eliminate all the artifacts of MIDI guitar.

Heavy Necking

The Z7S's neck is one of the instrument's most obvious departures from guitar design: in place of guitar strings, six rows of elongated buttons, nestled in plastic frets, correspond to frets on a guitar. The rounded buttons are roughly the diameter of my guitar's wound D string and feel smooth enough to navigate comfortably. In string trigger mode, they determine the MIDI Note Number of a plucked string and will sustain until released or dampened by the picking hand.

In Dual mode, you can simultaneously trigger notes and discrete Control Change messages based on Velocity data from the strings. Strings can trigger a different set of notes than those issued by tapping the buttons.

The buttons are Velocity and Pressure sensitive, and Starr has bestowed them with tremendous MIDI-data-mapping capabilities. For example, you can set up Velocity zones in which a range of values can output a different Note Number or MIDI channel. This is a great way to program alternate drum hits or cross-fade between instrument variations.

In the Zone

In addition to mapping to Velocity zones, the triggers offer remarkable independence: different areas of the fingerboard can send to different MIDI channels and can accommodate practically any tuning you can conceive of. For instance, you can set one zone to respond to tapping the keys and another zone to trigger only when the strings are picked. Zones can overlap and can use different note-interval settings. If that isn't enough, an optional, independently programmable trigger pad (the $299 TCA1) installs over the strings, toward the neck. Consequently you can set up more zones than you have digits to accommodate them with.

Unlike a guitar fingerboard (whose frets are spaced closer together higher up), the Ztar's fingerboard scale is equidistant over the length of the neck. Presumably a graduated, guitarlike scale would add considerable expense. Still, the scale of the fingerboard buttons can be difficult to get used to if you are accustomed to a guitar-scale fingerboard; at first, I frequently overreached and triggered unintended pitches.

Great Expectations

The Ztar will not necessarily eliminate all the artifacts of MIDI guitar that you might expect. For example, the triggers are sensitive, so if you have a tendency to trigger adjacent strings with your fretting or picking hand, you'll still trigger unwanted notes.

The Z7S implementation goes well beyond Note On messages. Because you can assign multiple destinations to buttons and plucked strings, and the buttons are velocity sensitive, I was able to assign the velocity sensing to send Modulation Wheel messages and to use dynamics to control vibrato. Furthermore, you can assign alternate messages to successive events; in this way, you can switch messages on and off—a handy way to return a control to an initialized state.

Because the Z7S can send multiple MIDI messages, it opens new windows of opportunity for musical expression, but you have a bit more to consider when playing. For instance, because Dual mode allocates one portion of the neck for tapping and one for picking, you'll need to cultivate a new set of skills to keep track of what each hand is playing.

The arpeggiator is adequate for basic up-and-down patterns, but that's all. More interesting is the unit's sequencer, which, thanks to a recent memory upgrade, holds up to 40,000 events. Because the Ztar can send out lots of data, the upgrade is especially welcome. The sequencer resolution, however, is 24 ppqn, which does not allow much room for loose phrasing.

A Moving Target

The Starr Labs Ztar Z7S is brilliant, but as of this writing, it's a work in progress. During the review period, Starr changed hardware and software, improving construction and adding more RAM and a more powerful CPU. As a result, I evaluated a moving target. Clearly, Starr's focus is improvement rather than mass production.

In addition, as a production-line instrument, the Z7S faces some quality-control hurdles. My first review unit shipped with a flimsy power supply, and a complete set of string triggers went dead. The optional battery pack needed to be replaced due to a loose solder connection. The accompanying USB driver software for Mac OS X was a beta version, and attempts to load SysEx data from the Mac via the Ztar USB connection never worked. Hopefully, as the Ztar's production ramps up, the quality-control problems will fade away.

The Z7S's MIDI implementation is easily light-years ahead of any guitar-to-MIDI converter's, and beyond most keyboard controllers', for that matter. To make the most of those features requires a clear understanding of MIDI and controller scaling and mapping, and the Z7S would greatly benefit from a comprehensive, dedicated user manual. (According to the manufacturer, such a manual is in progress, but no delivery date has been promised.)

The Z7S is neither a guitar controller nor a keyboard controller. You will need to get past many musical orthodoxies inherent in keyboard and guitar technique before you become truly comfortable with it, but once you do, it can provide a gateway to extraordinarily expressive musical performances. If you can spend time delving into its MIDI controls and adapt some of your musical skills, you'd be hard-pressed to find a more powerful MIDI instrument than the Ztar Z7S.

Former EM assistant editor Marty Cutler is a musician, writer, MIDI consultant, and teacher in New Jersey.

CME

• Always • One Step • Ahead •

Power! Integration! Control !

UX5/6/7/8

Motorized Faders, Up to 64 Programmable Controllers, 12 Trigger Pads, 2-channel USB Audio, Mic/line inputs, Balanced 1/4"TRS Outputs, 2 Mic pre-amps, The Best feeling keyboard found on any controller, Aluminum Chassis, U-CTRL for All major DAW software including Pro Tools, Digital Performer, Cubase, Nuendo, Logic, Sonar, and more. Class compliant with Vista/XP and Mac OSX

UF50/60/70/80

Built-in Duplex Wireless Midi up to 260 feet, Superior Keyboard action, Aluminum Chassis, Transport Controls, Breath Controller Port, Easy set up with U-CTRL for All major DAW software, Optional Firewire Audio Expansion Board, Class compliant with Vista/XP and Mac OSX

ASX Hardware Synth expansion board now available with hundreds of rich sonic possibilities.

Distributed by KAYSOUND www.kaysound.com

Sam Ash Sweetwater Musician's Friend Ubstreet zZounds

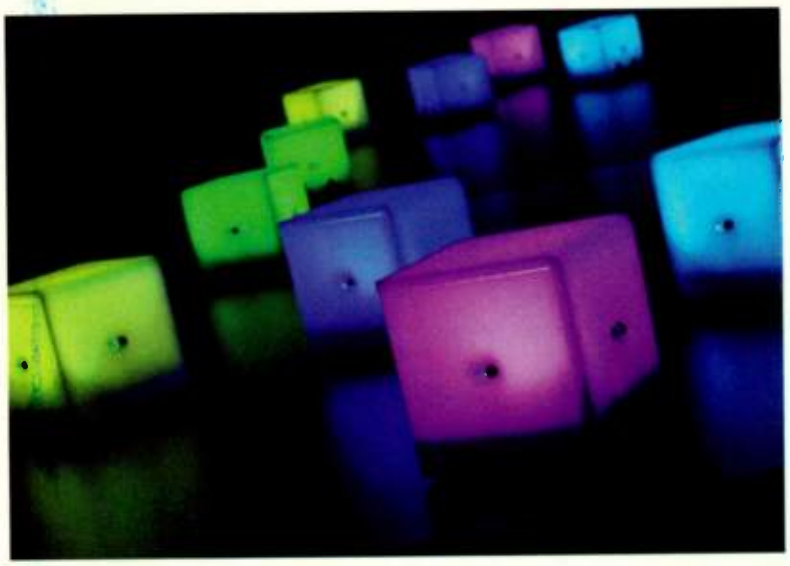


FIG. 1: AudioCubes use four infrared emitter/detectors to sense nearby objects and communicate with each other. A USB interface puts your computer into the conversation as well.

Percussa

AudioCubes

Shine on, you crazy dice.

By David Battino

PRODUCT SUMMARY

MIDI controller and audio processor
set of two $399
set of four $699

PROS: Exotic look. Flexible software. Huge DIY potential. Phlegmatic lo-fi sound.

CONS: Flimsy construction. Inconsistent sensors. Volatile memory. USB cable may block one sensor. Expensive.

	1	2	3	4	5
FEATURES			●		
EASE OF USE				●	
DOCUMENTATION				●	
VALUE				●	

Percussa
percussa.com

ONLINE BONUS MATERIAL

Down in the "mad scientist" hall of the 2007 NAMM show, I stumbled across fascinating new MIDI controllers and lo-fi audio processors from a small Belgian company. Percussa AudioCubes communicate with each other and with nearby objects by means of infrared light, translating your gestures into data that can drive MIDI software (see Fig. 1). They also respond to MIDI data over USB by changing colors, allowing you to create a desktop light show. Quarter-inch jacks enable them to process analog audio. The approximately 3-inch-square battery-powered AudioCubes can even generate sound on their own and beam it between themselves, forming a wireless modular synthesizer.

By the 2008 NAMM show, Percussa had moved upstairs to the main hall, refined its software, and lined up dealers around the world. As of this writing, the company still has no U.S. dealer but offers international shipping for about $20 for orders placed on its Web site.

Cubes in a Box

AudioCubes are the brainchild of Bert Schiettecatte, a young Belgian musician and programmer who became interested in "tangible musical interfaces" while earning his master's degree at the Stanford Center for Computer Research in Music and Acoustics (CCRMA). AudioCube development is partially funded by a grant from the Belgian government.

Percussa sells the cubes in sets of two or four. Inside the box you get the cubes, a USB cable, and a disc with software, audio loops, and PDF manuals. You can connect as many as four cubes to a single computer via USB, but once the cubes are configured, you can unplug them to let them talk among themselves, so to speak.

The cubes are constructed of two U-shaped pieces of milky plastic that glow when lit by the high-intensity, tricolor LED inside. Perhaps to create an unblemished top surface, the two halves are connected only at the bottom. Three screws attach one half to the circuit board, which in turn slots into several cutouts in the other half and rests on three protruding jacks (see Fig. 2 and Web Clip 1). This unreinforced design means that the cube's top face wiggles and two of the sides flex inward when grasped.

Combined with their sharp edges, that produces a creaky, unfinished feel.

A power button resides on the bottom of each cube. An internal rechargeable battery drives the electronics when the cube is not connected to a computer, but the cube forgets its programming when you turn off the power.

Two LEDs pierce each of the four vertical faces; one LED in each pair sends signals and the other detects them. In addition, one face contains an audio input, one contains an audio output, and a third contains the USB jack. These cables may get in the way as you start to move the cubes around.

Crossing the MIDI Bridge

To communicate with MIDI software, AudioCubes use a program called MIDI Bridge (Mac/Win), written in Cycling '74 Max/MSP (see Fig. 3). On Windows (which I used for this review), you need to download and install a third-party utility called LoopBe that functions as a secondary bridge between MIDI Bridge and your music software. LoopBe worked flawlessly, even muting the MIDI stream and notifying me when I accidentally created a MIDI feedback loop.

Before building those bridges, I updated the cubes' firmware with another Percussa program, Firmware Upgrade. Thanks to the clear PDF instructions, it was one of the easiest firmware updates I've ever done.

> Once the cubes are configured, let them talk among themselves.

MIDI Bridge allows you to set each USB-connected cube to one of three modes: Sensor, Receiver, or Sender. In Sensor mode, a cube acts like a Roland D-Beam; each vertical face becomes a motion detector, sensing the proximity of nearby objects and translating it into MIDI Control Change (CC) values. You can set each face to a different sensitivity, set upper and lower CC limits, and invert the response. Oddly, the default is to *lower* the CC value as the object—your hand, for example—nears the cube (the detection range is about 14 inches). Percussa's online forum explains how to calibrate the sensors, but I had a hard time getting repeatable results.

In Receiver mode, the USB-connected cube works with a second cube you've set to Sender mode. Each face on the receiver can be mapped to four MIDI note values. Depending on which side of the sender cube is facing it, the receiver will trigger one of those notes (the sender does not have to be connected to the computer). If you place a sender next to a receiver and spin it, you'll trigger the four notes in a row. Move the sender to face another side of the receiver, and you can get four different notes. I had to align the transmitters and receivers closely to produce reliable triggers.

The well-written manual explains how to use this technique to trigger clips in Ableton Live (a demo version is included, along with a song containing 16 clips—one for each face-to-face combination). You could also use send/receive pairings to select patterns in Propellerhead Reason. A template song is included for that, too, and a Remote codec should be available by the time you read this. And, of course, any other software that responds to MIDI notes or CCs is fair game as well (see the **online bonus material** at emusician.com).

Firing off clips in Live by twisting cubes was amusing, but what I really enjoyed was sending CCs back down the wire from Live to change a cube's color in sync with the music. CCs 14, 15, and 16 control the internal red, green, and blue LEDs, respectively. By mixing values, you can theoretically produce any of 4,096 colors. I found it easy to create rhythmic flashing effects

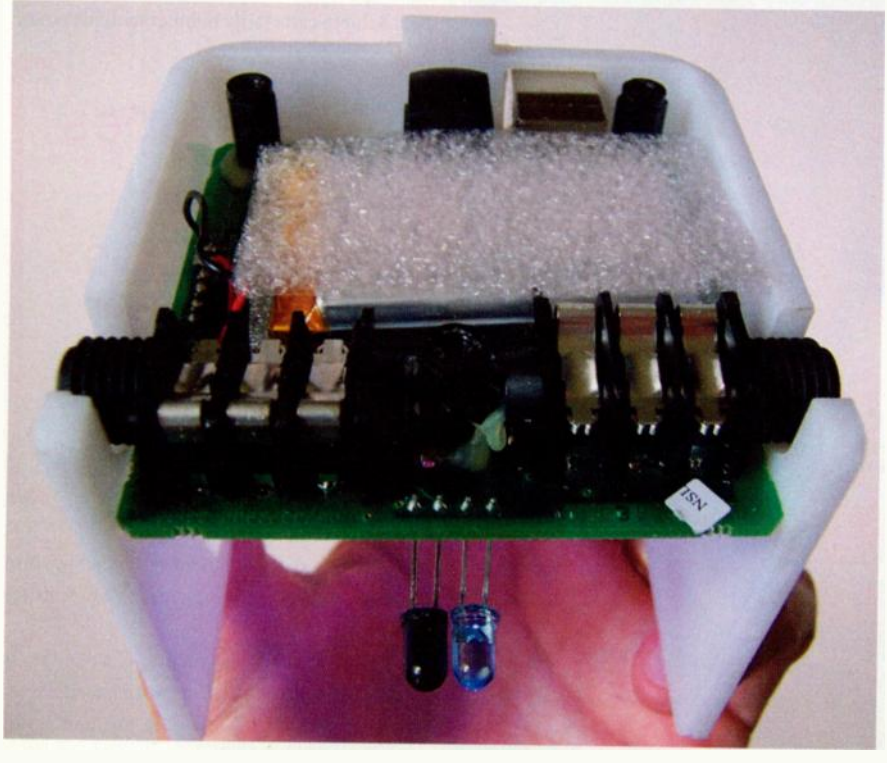


FIG. 2: Unlabeled ¼-inch jacks on the left and right handle monophonic audio output and input. The rechargeable battery is underneath the foam, with the power button and USB jack directly behind.

by sending single CCs, but changing several controllers simultaneously caused the display to lag; Percussa suggested reducing the sequencer's step resolution so that it sends out fewer CCs per second.

Audio Processing

AudioCubes' most unusual feature is their ability to process audio and transmit it over infrared to adjacent cubes. With enough cubes, you could set up an optical modular synthesizer—patching oscillators, sample players, granulators, and distortion effects together in ever-changing ways—simply by shuffling boxes. The circuitry has 9-bit, 32 kHz resolution, which produces a cool lo-fi effect (see Web Clip 2).

AudioCubes currently offer 12 synthesis and processing algorithms that you configure with another Max/MSP patch. Some parameters can be altered on the fly by signals from adjacent cubes. Percussa currently regards the audio functions as experimental and thus skips over the details in the manual, but it gave me some preliminary documentation (see Web Clip 3).

I initially had trouble aligning the cubes precisely enough to establish optical audio flow. Percussa suggested moving them farther apart to prevent the sensors from saturating, which helped.

Square Deal?

A pair of AudioCubes costs $399, and a set of four will set you back $699. It's hard to put a monetary value on such a unique device, of course. Similar tangible interfaces with visual feedback exist only in labs and universities, and most require pricey projectors and bulky furniture (see Web Clip 4 for an extensive list). Boutique instruments naturally cost more, but you usually pay more for anything unique. Consider, too, that AudioCubes look striking, work with popular software, and offer enormous potential for customization. Inventor Bert Schiettecatte fairly bubbles with ideas, and his Max-based development system allows him (and savvy users) to implement new features quickly.

> AudioCubes offer enormous potential for customization.

However, the construction of the cubes is flimsy. They just *feel* cheap, with sharp edges, creaking joints, and a wiggly top panel. On the other side of the die, so to speak, the type of DIY performer who'd be most attracted to AudioCubes would probably enjoy repackaging

FIG. 3: MIDI Bridge translates sensor data from the AudioCubes to MIDI Control Changes or notes. It also converts MIDI data from a computer-based sequencer to color values for the cubes' internal LEDs.

their electronics into custom housings. The circuit board's design should make that relatively easy.

A bigger question is how well the cubes facilitate musical expression. Throughout history, the instruments that have succeeded are the ones that fluidly map gestures to sound, supporting both nuance and drama as well as a path to virtuosity. I can imagine AudioCubes coming alive in the blazing hands of a juggler or turntablist, but I found the sensors too inconsistent to allow satisfying control. At present, AudioCubes shine as a cool-looking device for experimentation and live performance. Only you can say whether that novelty justifies the boutique price; the results will depend on your creativity.

David Battino (batmosphere.com) is the coauthor of The Art of Digital Music *(Backbeat Books, 2005) and the audio editor of the O'Reilly Digital Media site (digitalmedia.oreilly.com).*

FIG. 1: The ZAP's spartan interface includes 19 hard plastic triggers neatly arranged in five rows.

Zendrum

ZAP

A percussion controller that's well built, fun, and easy to use.

By Larry the O

PRODUCT SUMMARY

MIDI percussion controller **$999 (MSRP)**

PROS: Distinctive finger controller. Beautiful design. Outstanding Velocity response. Easy to set up and use. Well built.

CONS: Hard plastic pads could cause irritation. No multichannel capability. Limited display. Some documentation issues.

	1	2	3	4	5
FEATURES			●		
EASE OF USE					●
DOCUMENTATION		●			
VALUE				●	

Zendrum
zendrum.com

The original Zendrum (now called the Zendrum ZX) first appeared in 1994 in the hands of Manu Katche on the Australian leg of Peter Gabriel's "Secret World" tour. If not the first finger-oriented MIDI percussion controller to hit the market, the Zendrum was certainly one of the earliest. The Zendrum LT, designed for laptop use, came out six years later.

This year Zendrum introduced the ZAP (*ZAP* stands for Zendrum Articulating Programmer). Designed for use in the studio or onstage, the ZAP puts the Zendrum concept in a compact desktop package at a much lower price than the larger ZX and LT models. As with the rest of Zendrum's products, the ZAP is a highly expressive and unique controller designed to work with today's multisampled drum libraries.

Master Cylinders

All of the Zendrum controllers are based around an array of hard plastic cylinders, each of which triggers a MIDI note. The ZAP has 19 triggers arranged in five rows (see Fig. 1).

The programming interface is sparse: a cursor switch with an assignable button below it, and three 7-segment LED displays. The left and right arrows step you through the functions, while the plus and minus buttons increase and decrease values. The assignable button serves as either a momentary sustain switch or a kill switch depending on how it is set in software.

Everything is mounted in a gorgeous hunk of wood with the Zendrum logo burned into it. Prismatic foil backs a second logo and the company name. The ZAP is available in a selection of exotic woods, and custom versions can also be ordered. Overall, this fine-looking instrument invites you to play.

Aside from its strong aesthetic, the mass of the ZAP's body isolates the triggers and eliminates false triggering. The controller has four leveling feet for desktop use, and it can be mounted on a snare drum stand using an optional mount ($25), which provides a viable way to use the ZAP in live performance.

The rear panel is equally sparse (see Fig. 2): MIDI In and Out connectors, three trigger inputs, a sustain pedal input, and an on/off

FIG. 2: The rear panel includes MIDI I/O, three trigger inputs, and a sustain pedal input.

rocker switch. I had to visit the Zendrum Web site because of the lack of specifications in the manual for the types of pedals that can be used for the trigger and sustain inputs.

Keepin' It Simple

According to company cofounder David Haney, the ZAP's operating system is simple so that the widest range of players can make use of the controller. Aside from a few utility functions, there are only five parameters in the ZAP: the note map of all the trigger pads, the MIDI Program Change number, the MIDI Velocity ceiling (the maximum value that will be sent), the noise-floor setting (a threshold that determines the minimum force required to generate a trigger), and the MIDI channel. A collection of these five things can be stored as a Set Up, of which there are 16 in the ZAP. Almost all the factory Set Ups are configured around musical scales. The ZAP offers eight Velocity curves, but only the most cursory descriptions of them are given in the manual; there are no graphic illustrations of the curve shapes.

But don't think the ZAP's simplicity means it lacks sophistication. Its Advanced Program Function (APF) allows each pad to be set to Velocity Layer, switching through four successive MIDI notes as notes move across the Velocity range. Used in combination with a multisampled drum sound, this feature adds to the degree of expressiveness available. Of course, those four notes could also play entirely different sounds for an effect that is more compositional than performance oriented.

> This fine-looking instrument invites you to play.

The APF feature is well considered, and I cannot remember using any electronic controller with a more musical dynamic response. Even when using sounds that were Velocity sensitive but not multisampled, the ZAP's dynamic control was intuitive and smooth. I was very impressed with the Velocity responsiveness this controller provided.

Programming the ZAP is a fairly basic affair and reminiscent of programming Roland's original Octapad controller: scroll to a function represented by a cryptic 2-character abbreviation, hit a pad, and then scroll the values. There is no Save function of any kind; the current values are stored in a Set Up when you move to the next function. While this method provides an extremely fast way to work, it complicates recovering from accidental edits. Fortunately, the ZAP lets you dump and load its memory via MIDI SysEx messages, though I am not aware of any editors for this data.

It's in the Fingers

I was thrilled by the ZAP's sheer beauty as soon as I pulled it from its box, as well as by

its substantial feel. Even with the weight of a 7-pound block of wood, the ZAP sat comfortably on my lap and made me want to play it.

It didn't take long for me to get going, either—the very benefit Haney was looking for with his simple design approach. I used the ZAP in both tonal and percussive contexts in a variety of environments: with software instruments in MOTU Digital Performer, Apple Logic Pro, and Propellerhead Reason; and with two hardware sound modules, a Yamaha MU-50 and an E-mu Proteus 2000. It worked easily in every situation, though there was substantial latency in the response when playing Digital Performer's Nanosampler. The fact that this was the only case where latency was an issue makes me certain it was a configuration problem of some sort in DP, not the fault of the ZAP.

My first attempts to play the ZAP involved trying the scales in the factory Set Ups, but the logic in the scale layouts escaped me. No matter; I quickly and easily created a note map that fit where my fingers wanted to fall (see Fig. 3) and immediately began playing rhythmic melody phrases consisting largely of permutations of a few notes, à la Steve Reich, Philip Glass, or Peter Gabriel. It was fun.

Clearly, playing the ZAP is all about finger technique. Those who have already developed finger control, such as tabla drum players, keyboardists, guitarists, and wind players, will likely be able to get musical results quickly from the ZAP and find a comfortable style on it. Those accustomed to drum machines will also take to this controller easily.

According to Haney, hard plastic was chosen for the triggers because it responds much more quickly than rubber and other softer materials. Similarly, the ZAP uses piezoelectric elements instead of fancier trigger materials like FSRs (force-sensing resistors) because, Haney says, piezo elements have a faster response.

I have never enjoyed playing on hard plastic, and the ZAP's plastic pads bothered me, too. Apparently, there are many people who have no problem with these pads, but I got the feeling that regular playing could cause some discomfort in my fingers. Haney counters this by asserting that not much force is required to get a maximum Velocity value out of the ZAP,

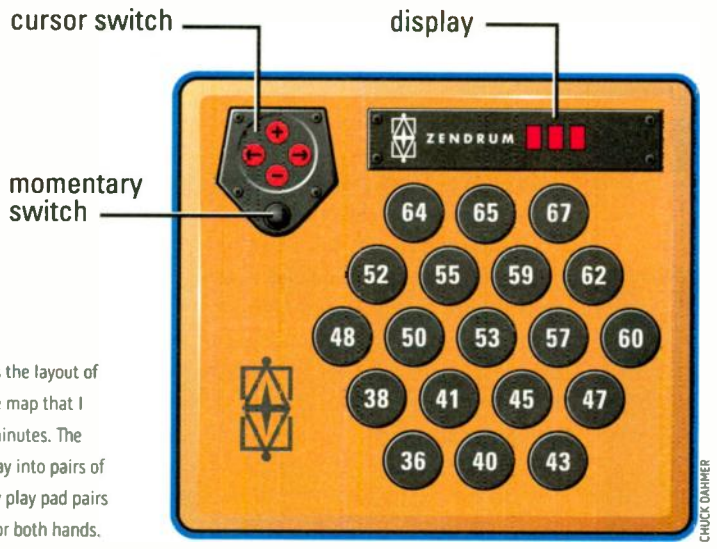


FIG. 3: This shows the layout of a major-scale MIDI note map that I created in a couple of minutes. The map breaks the pad array into pairs of rows so that I can easily play pad pairs with the fingers of one or both hands.

and that developing a lighter touch is the way to get the best out of the controller.

Straight Up and Down

The simplicity behind the ZAP's design is effective, but there is a fine line between simple and simplistic, and the ZAP sometimes comes quite close to it. For instance, the trigger pads can produce either a trigger (that is, a MIDI note of zero duration) or notes that keep sustaining. For drum modules, the trigger-only approach can work; for some longer 1-shot sounds, infinite sustain can work. There are many sounds that are best played by a note of fixed duration, though. Haney is aware of this need and is strongly considering implementing note durations. But with only two or three more new parameters, the risk of having no Save function starts to become too great to ignore.

Additionally, the 3-character display could easily cease to be viable. I've never liked stepping through lists of highly abbreviated parameter names, and the ZAP gets away with it only because of the small parameter set.

What it comes down to is the old power-versus-ease-of-use trade-off, and the more ZAPs that Zendrum sells, the more demand there will be to add features. For myself, I'd love the ability for each trigger pad to transmit over a different MIDI channel, and to have some form of continuous controller. Set Up naming would be very nice, and having more than 16 Set Ups could be useful, too, though I suspect most users actually use only a few and change presets in their sound modules a lot.

If Zendrum doesn't add features, users will have to find work-arounds, such as using facilities in a DAW, to get the greater control they may need. At that point, it's no longer simple for them anyway, so why not put the control in the controller, which is the logical place for it? It's a tightrope Zendrum is walking, but at the moment, the company has things in balance.

Hand, Hand, Fingers, Thumb

There are many ways to play the ZAP. It need not be with the fingers only; you can also use the heel of the hand or a flat palm. I played it like a conga, triggering a few sounds at a time, which was very enjoyable. Triggering sound effects is another obvious application, and I can see the ZAP serving as a very efficient audio postproduction tool.

Overall, the Zendrum ZAP is a controller that is unusual not only in its configuration, but also in the degree of expressiveness it offers. Although the ZAP's simplicity can be a double-edged sword, it certainly succeeds in the ease-of-use department, and there's a lot to be said for that. The ZAP is likely to be an instrument you will use regularly for many years, because it's fun, useful, and—unusual in this day and age—built to last that long.

Larry the O has been spending a good bit of time as Vibrafolk, a singing folk vibraphonist.

SAMPLEBASE

Satellite 1.0 (Mac/Win)

By Marty Cutler

Satellite Free and Satellite Pro offer access to the burgeoning library of Samplebase sounds, with Pro providing more programmability and the ability to create patches from your own samples.

Samplebase places high-quality sampled instruments and loops within reach of those with more-modest budgets. The vehicles for these sounds are Satellite Free (no charge) and Satellite Pro ($149), two convenient, easy-to-use instruments. Both feature 16-part multitimbral capabilities and sample playback.

Copy protection is minimal, transparent, and noninvasive; there are no esoteric authorizations, hardware keys, or secret handshakes. Establish an online account, and you can download the sampler or your purchased SoundBlocks (more on these in a moment) wherever and whenever you need them. The only restriction is that SoundBlocks load only into the purchaser's copies of Satellite.

Samplebase provides downloads of Free and Pro as an AU version for the Mac, as well as VST and standalone versions for the Mac and Windows. An RTAS plug-in is in the works. Installation couldn't be simpler, albeit with one minor nuisance: each plug-in format requires a separate request, email, download, and installation procedure. That can get messy if you rely on multiple formats. According to Samplebase, most of the company's typical users don't use more than one plug-in type. Still, a single installer for all formats would make life easier.

SoundBlocks are self-contained, preprogrammed packages of samples, patches, and Multis intended for use in Satellite—much like ReFills package sounds for use in Propellerhead Reason. Once they're loaded, you can play the Multis or patches provided or tweak and create your own patches or Multis. Samplebase provides a free demo SoundBlock featuring a representative selection of instruments and loops.

CONTROLLED BLEEPING

Satellite Free offers a surprisingly generous complement of basic control and editing amenities, including knobs for adjusting attack and release times, filter frequency, resonance, and filter type. Every parameter available in the Control and Mix sections can be assigned to Control Change messages, and you can set ranges to scale the response. You can route samples to one of four stereo outputs or two effects buses, and even alter pitch, time, and formant preservation.

For more in-depth programming, you can purchase and download Satellite Pro, a full-fledged sampler with the ability to load AIFF, WAV, REX, REX2, and other file types. With Pro, you can build your own patches and Multis and save them as SoundBlocks. Pro has the same friendly user interface as Satellite Free, with neat and logically arranged access to all programming areas, including those that are not available in the free version. For example, Free's Control section has 8 fixed modulation destinations per patch, whereas clicking on the parameter's name field in Pro opens a pop-up menu of more than 40 possible destinations. Pro provides access to three envelope generators and three LFOs, which are hardwired to pitch, filter, and amplitude. A more flexible modulation scheme would be nice, but I appreciate the additional features such as programmable LFO phases and an extra sustain or decay stage in the envelope generators.

Pro's keymapping section hosts simple but useful sample-editing features with a waveform display and tuning and looping tools. I found the Automap feature most useful for mapping menu-type patches (loops arranged sequentially across the keyboard). Attempts to automap samples from other samplers didn't work for me because there was no root-note assignment data embedded in the sample. But it was easy to reassign them from the list of samples displayed once they were loaded.

Satellite Pro offers undo functions for destructive sample edits, such as truncating and fades. Still, an undo history would be handy for complex multiple edits. That said, it's hard to find even a single undo in most software instruments.

SoundBlocks range in size from 20 to a couple of hundred megabytes, with prices ranging from $19 to $39. At present, the Samplebase library leans toward dance, hip-hop, down-tempo, rap, and electronica. Loops, phrases, and construction kits outweigh sampled instruments, but new titles are added frequently. I found some gems, including a terrific kora (a harplike African instrument) and a siter (a zither-like Indonesian instrument) culled from Ilio's *Origins* sound library.

Pulsation Station from MIDIhead is a collection of tempo-synchronized synth loops and phrases with lots of built-in animation and gated rhythmic effects, and Skippy's Magic Pads by John Lemkuhl gathers a nice handful of sweeping, moody pads.

WE HAVE LIFTOFF

It's refreshing to audition a product that combines ease of use with professional features at a ridiculously low price. If your needs are simple, Satellite Free provides no-frills programmability and a perfectly viable playback medium for Samplebase's growing supply of high-quality sounds.

The upgrade to the Pro version is reasonably priced and painless to install, and it offers plenty in the way of professional features, making it a worthwhile purchase for beginners or grizzled vets. I was able to understand the operation of the instruments with hardly a glance at the PDF manual. Kudos to Samplebase.

Value (1 through 5): 4
Samplebase
samplebase.com/satellite.htm

EUPHONIX

MC Mix

By Brian Smithers

Euphonix is well known in the world of high-end digital consoles and other hardware, including the MC Pro and System 5-MC control surfaces, but the MC Mix is the company's first foray into the price-conscious personal-studio market. At $999, it may be the first Euphonix hardware many musicians have a chance to use and own.

» The MC Mix control surface shows its high-end Euphonix lineage with crisp response and tight integration. Both its faders and its knobs are touch sensitive.

The MC Mix is a very attractive unit, minimalist in design and efficiently laid out. Except for Solo and On (mute), its buttons are smallish but are no harder to use than some of the smaller buttons on standard large-format consoles. Their backlighting is bright, and their labels are small but legible, even under low-light conditions. Every knob has a secondary function that can be invoked by using the Shift key. There's a Shift key in each bottom corner for easy reach, and by pressing both, you can lock Shift on.

The unit features touch-sensitive faders and continuous rotary-encoder knobs that also function as buttons. Above each fader is a 128 × 64–pixel organic light-emitting diode (OLED) display with bright yellow text that serves as a scribble strip and is way ahead of the displays found on competing units.

Euphonix expects to release, by the time you read this, a companion unit called the MC Control ($1,499) that features a configurable touch screen, dedicated transport controls, and four faders. Both the MC Mix and the MC Control connect to a host computer via Ethernet, using the EuCon protocol developed for Euphonix's high-end control surfaces. Up to four MC Mix units can be ganged together.

EU ARE IN CONTROL

The MC Mix works with all the major Mac-based DAWs and with video applications such as Apple Final Cut Pro, but it runs only on a Mac. Some applications, such as Apple Logic and Steinberg Nuendo, support EuCon directly; non-EuCon apps can communicate via the HUI or Mackie Control protocols. I worked with the MC Mix running Apple Logic Pro and Digidesign Pro Tools HD and M-Powered 7.3 and 7.4 on a MacBook Pro and on a Mac Pro.

A small application called EuControl must be running for the MC Mix to operate. Having to run ancillary applications next to a DAW is generally a bad idea, but EuControl seemed to do its thing without robbing any significant resources.

EU HAVE ISSUES

The well-documented installation went perfectly on my MacBook, but my Mac Pro initially wouldn't recognize the MC Mix. I contacted tech support incognito to be sure I got the real end-user experience. Euphonix has outsourced tech support for the MC Mix, but I got immediate and helpful attention. The problem resolved itself mysteriously and didn't recur.

The Bank buttons in the first version of EuControl wouldn't properly switch between fader banks in Pro Tools due to a glitch in the HUI implementation, but an update resolved the problem. I was at first a bit skeptical about having to fall back on HUI, but all the most important functions are fully implemented. The only real shortcoming is that the Home and End buttons, used to switch to the first or last bank of faders, don't work under HUI. Fortunately, an update is imminent, and the Home and End buttons should be working under HUI by the time you read this.

PERFORMANCE

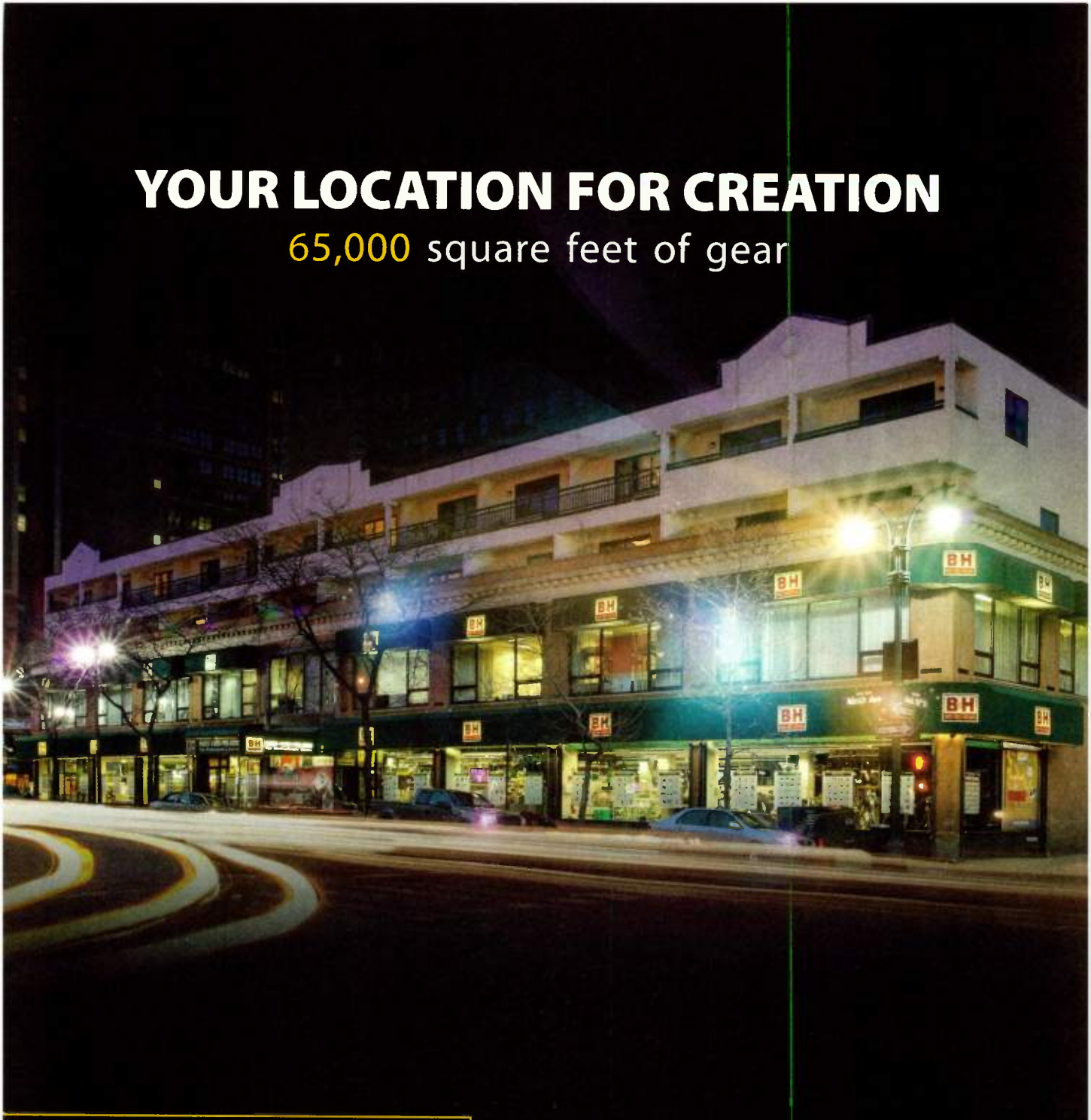
One of the most important advantages of a control surface is the ability to automate multiple plug-in parameters—as well as volume, pan, and mute—across multiple tracks, something the mouse simply can't do. The MC Mix does all this with ease and grace. The faders move smoothly and respond crisply, probably due to Euphonix's use of Ethernet instead of MIDI. (To be fair, the performance difference between the MC Mix and most MIDI or USB control surfaces is less significant than the theoretical advantage of Ethernet would suggest, but better is better.)

Plug-in parameters can, of course, be laid out across the scribble strip, and you can page through them as needed. However, the MC Mix also offers dedicated EQ and Dynamics buttons that lay out select parameters for any relevant plug-in on the selected track.

Assigning plug-ins is simple, although the method is given so offhandedly (under "knob configuration") in the otherwise well-written documentation that I missed it repeatedly. Plug-in names are listed alphabetically under HUI and lumped into four categories under EuCon,

YOUR LOCATION FOR CREATION

65,000 square feet of gear



Subscribe to the
B&H Pro Audio Catalog
www.bhphotovideo.com/catalog

Visit Our SuperStore
420 Ninth Ave, New York, NY 10001

bhproaudio.com
Shop conveniently online

800-947-5509
Speak to a Sales Associate

B&H
PHOTO - VIDEO - PRO AUDIO

and the names are hard to make out, given the limited number of characters a channel's scribble strip can display. It would be better if the names spilled over into the adjacent track's strip and if the order and categorization reflected that of the host DAW.

Transport controls are Shift-modified On and Solo buttons. I wish the Shift key were close enough to control the transport one-handed or that you could at least invoke Shift-lock with one hand.

WRAP IT

Overall, I was very pleased with the MC Mix. The only thing about the device that didn't seem appropriately high end is that the faders on the review unit chattered quite a bit when playing back a lot of automation. However, when writing automation, the faders were very smooth and precise.

Aside from a few quibbles, the MC Mix's overall implementation is quite elegant. If you're looking for a compact control surface for your Mac-based DAW, I recommend that the MC Mix be on your short list.

Value (1 through 5): 4
Euphonix
euphonix.com

OVERLOUD

Breverb 1.1.2 (Mac/Win)

By Richard Alan Salz

Overloud Breverb ($399) is an algorithmic reverb plug-in designed to emulate high-end hardware processors of the past. Like many of the models it emulates, Breverb offers four basic algorithms: Hall, Room, Plate, and Inverse. It provides more than 100 presets ranging from bread-and-butter effects to enhancers for thickening up vocals, guitars, or snare drums. Navigating the interface is easy and intuitive.

Breverb 1.1.2 is available in AU, VST, and RTAS versions, all requiring iLok authorization. I ran it as a VST plug-in on a dual-Xenon workstation in Magix Sequoia

Delivering more than 100 rewritable presets and a hardwarelike interface, Breverb is a plug-in that captures the sound of reverb processors from days gone by.

10 and Steinberg Nuendo 4. Breverb is very light on CPU usage. Even users with relatively modest machines should be able to open several instantiations before noticing a real hit to their processors.

UP AGAINST THE WALL

During the review period, I compared Breverb with several hardware and software reverbs. It more than measured up to the standard reverb plug-ins that accompany DAW software packages. Breverb's sound was markedly deeper and denser, and overall more believable. Many more parameters are available for customization, ranging from Attack and Decay to Diffusion and Width. Especially nice are Breverb's 2-band EQ and multifunctional gate. Either EQ band can sweep the entire audio range, and you can set it to shelving or peak curves. The EQ can also act as a highpass or lowpass filter. The gate allows you to shape the reverb tails and generate some rather unusual sounds.

Breverb also fared quite well when I compared it with my rackmount Zoom 9200, one of the better-sounding digital reverb processors of the early 1990s. Breverb's Room algorithm, for example, sounded much more realistic. However, when I compared Breverb with a Lexicon PCM91, the Lexicon unit had a more live sound than the plug-in. On the other hand, the PCM91 costs about five times as much as Breverb and is limited to stereo processing. When you consider that you can instantiate several instances of Breverb on even a modest processor, the comparison becomes even more lopsided.

Although I don't currently have a plate reverb, I've owned and used them extensively in the past. Breverb's Plate algorithm sounds deep and resonant, making it one of the best algorithmic plug-in versions I've heard.

ROOM TO GROW

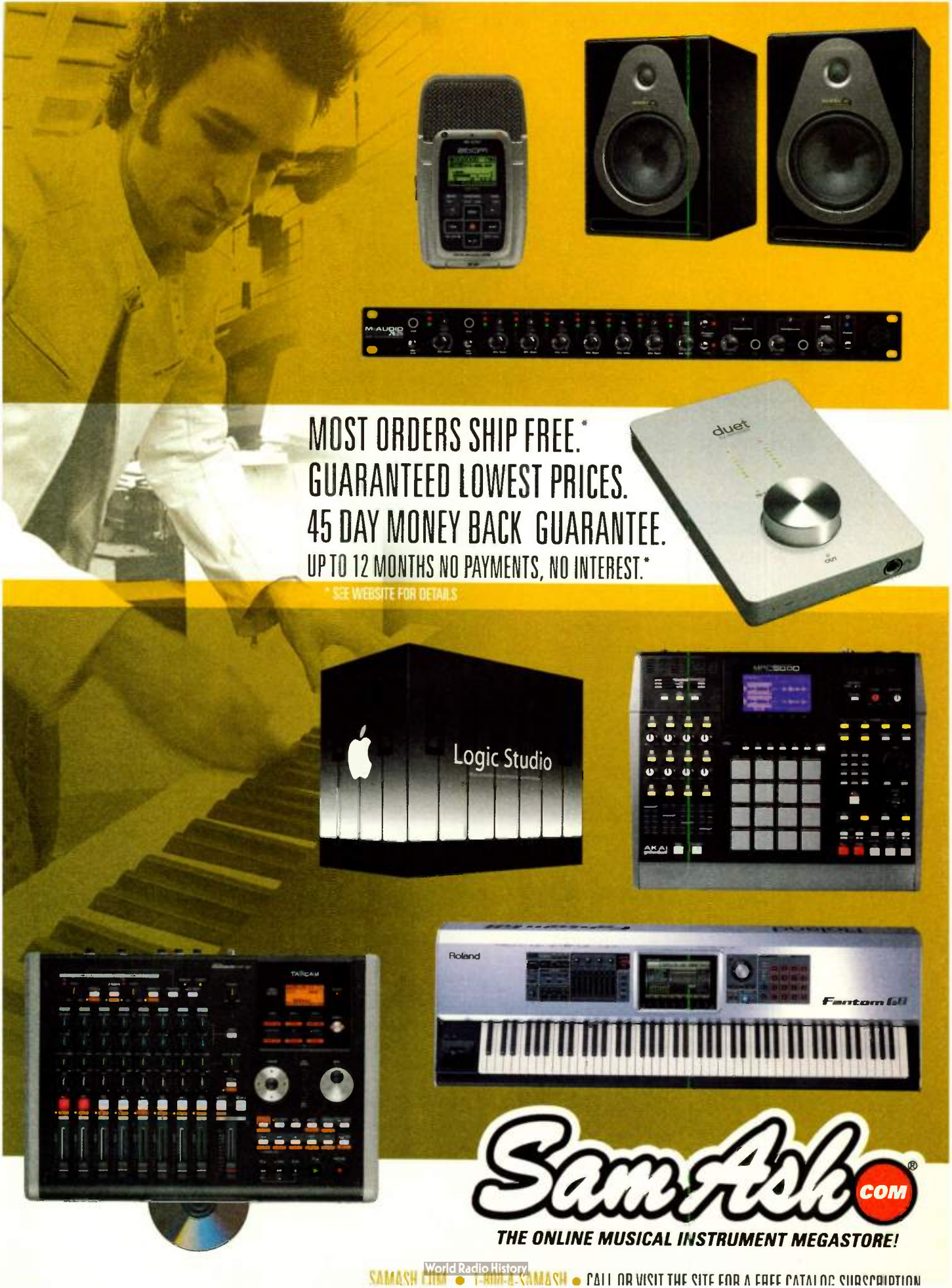
The graphical user interface bears more than a slight resemblance to the Lexicon LARC, a dedicated controller for Lexicon's high-end hardware units. A nice thing about Breverb's interface is that you can move the fader pod's location from the bottom to the side and determine how many of the six faders appear. You can also determine which of the 41 parameters are assigned to the faders. I stuck with the default settings (Dry, Wet, Time, Low, High, and Diffusion) most of the time, though I appreciated being able to adjust the panning of the wet signal on the fly.

I noticed that the dry signal's slider defaulted to zero whenever I changed presets. When using Breverb as an insert effect, though, I wanted to change presets without having to reset that control each time. I discovered a setting in the Preferences window that allowed me to specify whether I wanted the slider to reset when I loaded a preset or keep its previous value. Other nice touches include Undo and Redo buttons and two buttons dedicated to making A/B comparisons.

Breverb was at its best when I needed a reverb to create an effect, rather than to simulate the sound of a real room. For brash-sounding late-'80s and early-'90s snare drums, Breverb's Gated Snare Hall preset was just the ticket. Depeche Mode–like vocals were just a click away courtesy of the Odd Vocal Verb preset. The included presets furnish a wide range of usable sounds you can easily customize.

REAL OR UNREAL?

Breverb offers the flavor of a vintage reverb, and its intuitive interface allows



plenty of customization. Although it doesn't provide the sense of "you are there" that a convolution reverb can, it does succeed in mimicking the sound of hardware reverbs. If you crave the sound of '80s and '90s hardware, you'll probably love Breverb. If you already have an iLok, visit Overloud's Web site to take advantage of a fully functional 14-day demo.

Value (1 through 5): 3
Overloud
overloud.com

VIOLET DESIGN

Amethyst Vintage

By Richard Alan Salz

The Violet Design Amethyst microphone is a high-quality true condenser with a somewhat unconventional look. According to the manufacturer, the isolated quasi-lollipop head provides a more acoustically transparent setting for the capsule, which results in a sound that is decidedly more natural than other microphones' at this price point.

Latvia-based Violet Design offers two versions of the large-diaphragm cardioid mic. I reviewed the Amethyst Vintage ($1,399), which has a dual-diaphragm 1-inch center-terminated capsule, whereas the Amethyst Standard ($1,079) has a single 1-inch center-terminated capsule. Both have 6-micron-thick gold-sputtered Mylar diaphragms and a solid-state, transformerless Class A output section. Neither mic has a pad or a highpass filter, and their self-noise is very low at 7 dB (A weighted).

The Amethyst Vintage ships in a velvet-lined cherrywood box and comes with a five-year warranty in the United States. Other than a European mic-stand thread converter, the mic does not include accessories. The stylish and effective ASM shockmount ($171) is optional. Although it is possible to mount the Amethyst Vintage directly to a microphone stand, in all but the most serene settings, you're going to want to use the shockmount: resonances transmitted through the stand added an undesirable lower midrange thickening during my review of this mic when it was placed on a K&M folding stand and Atlas wheeled boom stand.

The Violet Design Amethyst Vintage is a large-diaphragm, cardioid condenser mic that works well on voice and on rhythm instruments.

REFLECTIONS

The Amethyst Vintage's published frequency-response chart shows a subtle boost from about 1 to 5 kHz, and a slightly higher presence boost that peaks around 15 kHz. However, the mic has the kind of dimensionality that you might normally expect to hear from a high-end tube microphone.

Although Violet Design recommends using the Amethyst Vintage on female vocalists, the mic provides a modern, up-front sound on male voices. The vocal tracks easily cut through a mix, yet never sound harsh, strident, or sibilant.

With its maximum SPL rating of 134 dB, I had no qualms about placing the Amethyst Vintage in front of a Marshall JCM-800 half stack. The microphone was great in this application; the amp sounded tight and punchy with a very clear transient attack, especially when using the Marshall's clean channel.

I also used the Amethyst Vintage to mic an FBB Custom fretless bass running through a small Polytone bass combo with a 15-inch Gauss speaker. The recording sounded rich and smooth. Although the mic delivered almost as much low end as a vintage AKG D12e, the instrument's upper midrange frequencies were rendered much more realistically.

The Amethyst Vintage yielded a clean and deep sound when placed approximately 1.5 feet in front of a 20-inch Premier birch kick drum. The resulting timbre combined rather nicely with that of an Audix D6 placed inside the drum.

Suspended 3.5 feet above a drum kit, the Amethyst Vintage captured a sound that was both immediate and warm. This is the kind of overhead microphone that can really glue a drum kit together, making it sound coherent and powerful.

MAKING THE CUT

The combination of excellent sound, solid build quality, and a generous warranty make the Violet Amethyst Vintage easy to recommend. While not exactly inexpensive, it's an excellent value in today's competitive mic market.

Value (1 through 5): 4
Violet Design
violetusa.com

NEYRINCK AUDIO

Mix 51 1.03 (Mac/Win)

By Brian Smithers

Among the major DAWs, Digidesign Pro Tools LE/M-Powered is alone in not offering surround sound. That function has

GO GLOBAL

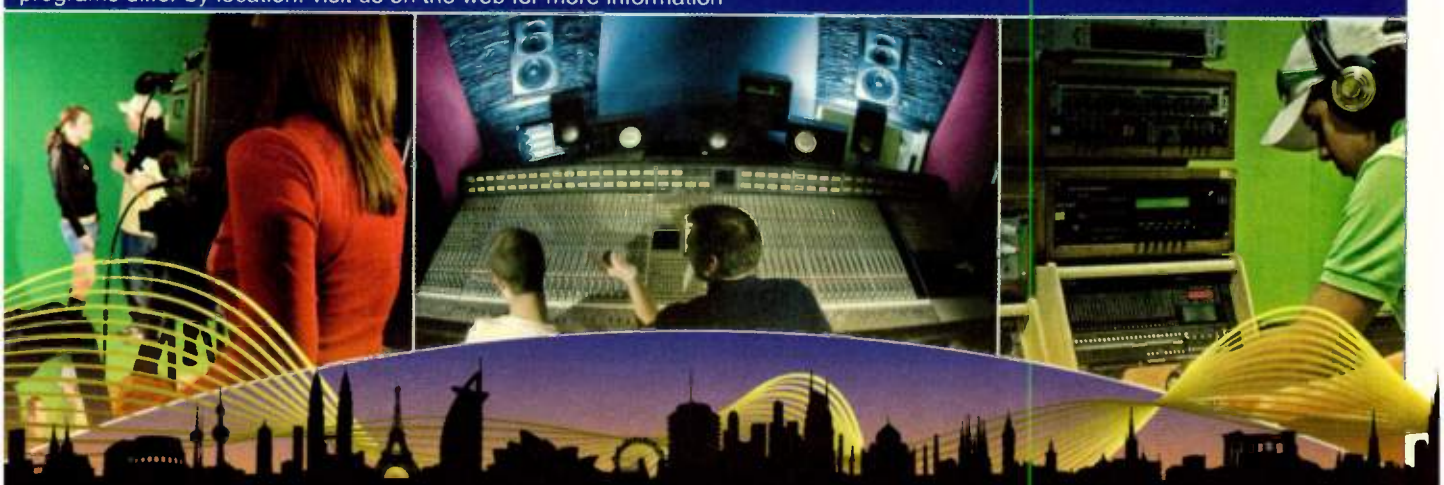
AUDIO • FILM • PRODUCTION

CERTIFICATE • DIPLOMA • DEGREE*

SAE INSTITUTE

www.sae.edu

*programs differ by location. visit us on the web for more information



New York 212.944.9121 • Atlanta 404.526.9366
Los Angeles 323.466.6323 • Miami 305.944.7494 • Nashville 615.244.5848

Over 50 Institutes in: USA FRANCE GERMANY HOLLAND SWEDEN BELGIUM AUSTRIA SWITZERLAND SPAIN ITALY SLOVENIA GREECE KUWAIT JORDAN AUSTRALIA NEW ZEALAND UNITED ARAB EMIRATES INDIA MALAYSIA SINGAPORE
Soon in: TURKEY and JAPAN

been reserved for the high-end hardware-based Pro Tools HD—until now. Neyrinck Audio has released Mix 51 ($189), an RTAS surround panner that brings every bit of the 5.1 panning capabilities of Pro Tools HD to LE and M-Powered users.

Mix 51 actually comprises three separate plug-ins: a surround mixer, a surround panner, and an LFE send. A single instance of the surround mixer on any track makes several sets of surround paths appear as available track inputs, in the same way multioutput virtual instruments appear. Assign these to aux tracks, route the auxes to three pairs of hardware outputs, and you have 5.1 surround.

EM HOT PICK

Inserting the surround panner plug-in on a track allows you to steer the signal within that surround path. In fact, the surround mixer makes three sets of 5.1 outputs available to the panner, along with three quad paths assignable as effects sends, making it easy to mix to separate dialog, music, and effects stems.

That's typical of the level of thought Neyrinck put into Mix 51. The surround panner offers virtually all the functionality of the Pro Tools HD surround panner, including divergence and center percentage controls. Divergence is displayed in the panner's grid as a blue box, just as in Pro Tools HD. An LFE send fader in the surround panner controls the amount of the track being directed to the LFE channel. A separate LFE send plug-in lets you send a track to the LFE channel of one of the three sets of 5.1 outputs without also sending any signal to the other five channels.

MAKE IT HAPPEN

Migrating your mix into an HD system is conceptually brilliant, if a bit labor intensive. Simply copy and paste (technically, Paste Special To Current Automation Type) each of Mix 51's automation playlists to the corresponding track parameters. Unfortunately, this must be done one parameter at a time.

Alternatively, you could simply run Mix 51 on the HD system. The only thing you'd lose is the same thing you lose in LE: multichannel plug-ins. Because Mix 51 mixes to three stereo outputs rather than a truly integrated 5.1 path, there is no way in LE/M-Powered and no simple way in HD to apply multichannel compression, reverb, or other effects to tracks. Multimono plug-ins are fine for most applications, but there are a few circumstances—compressing a drum kit, say—where a processor must see the entire surround output as a single entity.

Mix 51 is quite kind to your CPU cycles. On my dual-core 2.33 GHz MacBook Pro, applying surround panning to more

Neyrinck Mix 51 brings surround mixing to Pro Tools LE and M-Powered. The surround panner's parameters are fully compatible with Pro Tools HD panning.

than 40 tracks laid claim to less than 15 percent of my CPU. It doesn't use a dedicated buffer, so it doesn't increase system latency or require any manual delay compensation.

Mix 51 is affordable, simple to use, and compatible with Pro Tools HD surround panning, and it fills a gaping hole in a major DAW's feature set. So what's not to like? Well, I did find two minor bugs, but before I could finish writing this review, Neyrinck released version 1.03, which fixed one of them. The remaining issue, which the company plans to address in a future update, is that on a PC, you can't use the three-finger shortcut to enable parameter automation. (When you try, it snaps the control to the cursor—cool, but wrong.) For the time being, you simply need to go through the plug-in automation window.

Note that Mix 51 has no rear pan control. This doesn't limit your panning, but it does eliminate what Digidesign calls "three-knob panning," a mode in Pro Tools HD that makes diagonal pan automation simpler. Because there's no rear pan, when you copy your automation to HD's pan playlists, you'll need to copy Mix 51's front pan to both the track's front pan and its rear pan. This procedure, along with everything else you need to know about Mix 51, is laid out clearly in the exemplary PDF manual.

If you're interested in mixing in surround, having an LE or M-Powered system is no longer a limitation. If you need an inexpensive system on which to do preproduction before moving into an HD room, Mix 51 is your answer. Check out the 14-day demo. It has a small but impeccably documented demo session that almost makes the manual redundant. Go forth and mix! EM

Value (1 through 5): 5
Neyrinck Audio
neyrinck.com

EM MARKETPLACE

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 (510) 985-3259.

em ELECTRONIC MUSICIAN

ACOUSTIC PRODUCTS

ANALOG SYNTHS

EMPLOYMENT

Sweetwater
Music Instruments & Pro Audio

Sales Engineer

We are seeking an individual with a strong background in audio and high professional standards. Responsibilities include building and maintaining long-term relationships with Sweetwater clients, system consultation, and selling pro audio equipment to the professional, educational, and consumer market. Staying on the cutting edge of product knowledge and current technology will be a must. If you are highly motivated, passionate about music technology, and looking for a career not just a job, visit our online career center today!

Successful candidates must possess the following skills:

- A firm understanding of and passion for audio and music technology
- Excellent communication skills, both written and verbal
- Highly motivated team player with a great work ethic
- Professional and principled approach to business
- A strong will to succeed and commitment to excellence
- An orientation and desire toward a long-term career

Excellent Benefits & Perks:

- Best income potential in the industry
- 401(k), profit-sharing program, health & dental insurance
- On-site health club, restaurant, hair stylist, and more
- Employee purchase plan (buy gear at cost!)
- A whole lot more...

LEARN MORE & APPLY @
www.sweetwater.com/careers
Contact Jeff McDonald, HR Director at
1-800-222-4700, ext. 1052

EQUIPMENT FOR SALE

STEDMAN

Keep your headphones convenient and safe. Clamps to music stand or mic stand.

NEW!

888-629-5960
www.stedmancorp.com

Lifetime Warranty
Made in USA

JOSEPHSON ENGINEERING
C700A
Two-capsule condenser microphone
Variable pattern
For vocals, spot and far-field pickup

josephson.com

Subscribe to
MIX
www.mixonline.com

FURNITURE

OMNIRAX Studio Furniture
Synergy XL Series
Synergy S6C24 XL

pictured with optional solid mahogany "shorts"

800.332.3393 415.332.3392
www.omnirax.com

Studio Transformation
800.315.0878
furniture

ARGOSY
www.argosyconsole.com

INSTRUCTION & SCHOOL

BE A RECORDING ENGINEER

TRAIN AT HOME
Easy Home-Study practical training in Multi-track Recording. Join our successful working graduates or build your own studio. Career guidance. Diploma. Registered School.
FREE INFO:
Audio Institute of America
814 - 49th Ave, San Francisco, CA 94121

Subscribe to
Electronic Musician
www.emusician.com

MASTERING & PRODUCTION

Chances are, most studios could master your music. Don't leave it to chance, call Sound Affair Mastering
800-570-6656
www.SoundAffairLtd.com

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 U.S. ... Since 1989

HIGH FIDELITY MASTERING HFM
Offering the finest facilities for all your audio needs, restoration, 5.1 conversion, film
www.highfidelitymastering.com

Crazy Daisy Productions
Quality, Professional
Audio Mastering
for $279
Includes:
- Complete, full service mastering
- Gold audio master CD and log sheet
- MP3 master CD
- USB flash drive master
- Letter with technical feedback
- Return shipping

Submit materials online or by mail!
Email, FTP, or mail a track for a free sample
CrazyMastering.com
Phone: 541.517.1458
Email: info@crazymastering.com

eDeals eClassifieds
Mix Electronic Musician Remix

Subscribe to eDeals, a bi-weekly newsletter brought to you by Mix, Electronic Musician and Remix magazines, that delivers product updates and hot deals to over 100,000 musicians' inboxes.
www.emusician.com/edeals

Subscribe to
millimeter
www.digitalcontentproducer.com

RECORDS, TAPES, CDS

RECORDING SERVICES

The native MOTU studio — more power to you

Run DP6 and all your virtual instruments and plug-ins on today's 8-core Mac Pro tower for unprecedented native processing power, then customize your desktop studio with all the latest gear.

The new Mac Pro
8 cores standard, up to 3.2 GHz

With its 8-core processing, advanced Xeon architecture, 1,600 MHz dual independent front-side buses, and 800 MHz memory, the new Mac Pro delivers up to 2x greater performance for DP6, virtual instruments and plug-ins.

MOTU 828mk3
FireWire I/O with on-board effects

Mix inside the box. Mix outside the box. Or both. The 828mk3 is a complete mixer with on-board effects such as Classic Reverb, 7-band EQ modeled after British analog consoles, and vintage compression modeled after the legendary LA-2A leveling amplifier.

Waves Platinum
Waves and DP together on Intel

Waves 5.9.7 is now shipping and brings across-the-board Waves processing to Digital Performer on the Mac Pro tower and today's other latest Intel Macs. Waves plug-ins are absolutely essential for any DP-based MOTU studio.

www.sweetwater.com MOTU

Novation Nocturn
Compact intelligent controller

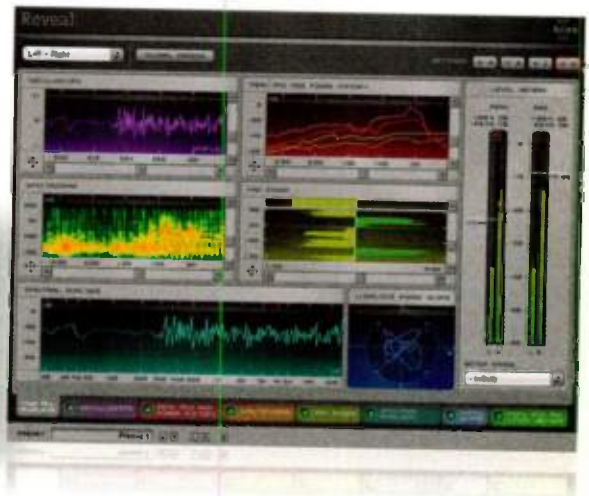
Featuring Novation's exclusive Automap Universal 2.0 software, Nocturn provides automatic, instant and intelligent control of all automatable plug-ins within Digital Performer, including "speed dial" — a unique touch-sensitive rotary encoder that instantly takes control of whatever your mouse is focused on.

Focusrite Liquid Mix
Get $150 back on legendary EQ/compression

Liquid Mix gives you tens of thousands of dollars worth of vintage and modern classic compressors and EQs, faithfully reproduced in your DP mix. Purchase before April 30th and get a $150 rebate. Call your Sweetwater Sales Engineer right away for details.

BIAS Master Perfection Suite
Mastering at its finest

Six stunning new plug-ins for Digital Performer: unparalleled spectral matching, linear-phase multi-band dynamics processing, super natural pitch correction/transposition, comprehensive analysis, 10-band paragraphic mastering EQ, and high-quality gating — all at a breakthrough price.



NI KOMPLETE 5 and KORE 2
Legendary virtual instruments with hands-on control

For Digital Performer users who want it all: 11 legendary instruments including KONTAKT 3 and the award-winning MASSIVE, combined with instant hands-on control. Choose from 7,500 presets in seconds and instantly tweak with real knobs.

Sweetwater
Music Instruments & Pro Audio

(800) 222-4700

The native MOTU studio — more power to you

Mackie HR824mk2
Active studio reference monitors

These high-resolution monitors sound as smooth as they look. The new Zero Edge Baffle™ minimizes diffraction for a crystal clear image and controls sound waves for wide, even dispersion. Acoustic Space, LF roll-off and HF controls let you tailor the sound to suit your MOTU studio space — and your taste.

Mackie Control Universal Pro
Automated control surface

The ultimate hands-on control for Digital Performer. Nine motorized, touch-sensitive Penny + Giles faders, eight V-Pots and more than 50 master buttons let you tweak to your heart's content. Apply the included custom overlay for Digital Performer for dedicated labeling of DP-specific functions.

Presonus Central Station
Control room monitoring with remote

The missing link between your MOTU recording interface, studio monitors, input sources and the artist. Monitor from among 5 sets of stereo inputs (3 analog and 2 digital) and manage your sessions with hands-on control room features like talkback and listenback.

Remix [hotel]

New York 2008

June 27-29 | SAE New York | Herald Square

Remix Hotel returns to the School of Audio Engineering's New York campus for another three-day weekend of master classes, artist performances, product demos and much more. You won't want to miss the Guitar Center Sessions at Remix Hotel, the iStandard Beast of the Beats producer battle, special guests and more. Register today!

With Technology and Media Partners: Access Music | B&H Photo, Video, Pro Audio | Celemony | Digidesign | Disc Makers | Ex'pression College for Digital Arts | Guitar Center Sessions | iStandard | KRK Systems | Modartt | Music Marketing | Pioneer | Rane | Roland | Serato | SoundToys | Stanton | TL Audio

Look for registration details at **remixhotel.com**!

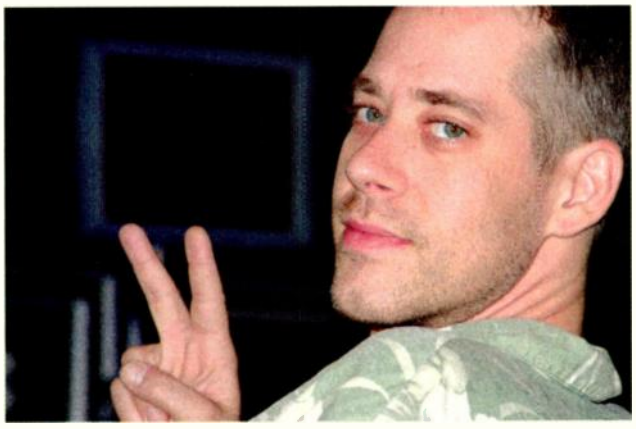
Is Surround Music Dead?

By Nathaniel Kunkel

Okay, I get it. Surround music is on life support. Why won't listeners embrace this technology?

For me, surround provides a more compelling way to hear music, but perhaps its immersive characteristics are not important to many listeners. It seems the x factor that drives music lovers to buy or stream a song is not significantly enhanced by the added experience of surround playback. They're playing a song because they woke up with it in their head, or it helps them get over the sadness of losing their lover, or something like that. And an MP3 will do just fine.

The areas where surround *is* taking off are the places that people go to with the intention of being immersed. Movies and gaming are the most successful surround markets, because people want to be enveloped by the experience.



What are our options? When CDs were popular, some people would play them in a crappy boombox (an MP3 equivalent, if you will), while others would listen on a quality system. But it was the same piece of media holding the songs that made the boombox listener just as happy as the guy with Magneplanar electrostatic speakers. We need to return to that scenario.

As long as we are selling physical media, it should have the best possible audio quality, with the option of surround. Currently, the obvious choice would be Blu-ray or regular old DVD-V. If the average listener decides that they want to take their listening experience to the next level with surround, it's already on the disc—along with the stereo files.

Why isn't everything released in surround on DVD-V now? The technology is here, and it's cheap. It seems that record companies have forgotten that they are selling art. Their business model for distributing music seems indistinguishable from that for selling hog jowls. When you sell art, you have a responsibility to honor it. Otherwise, you should get into another industry.

Which brings us to the big dilemma for record labels: who is going to pay for the surround mixes? And for that matter, who is going to put decent artwork into releases, with no promise of extra returns? The record company, of course. Why? Because it is the right thing to do. No other reason.

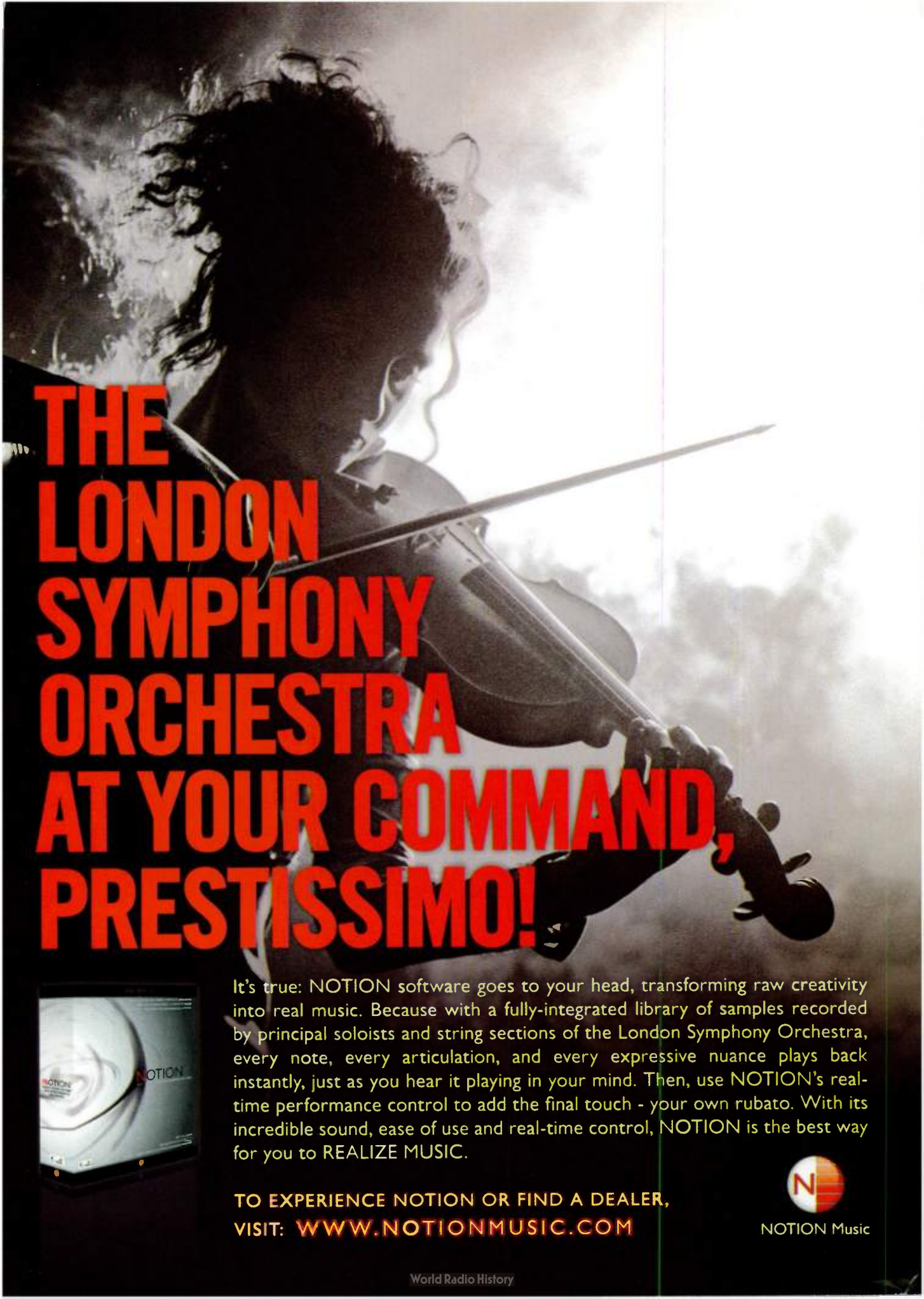
I understand that record companies need to make money. But I bet we'd end up with better stuff to listen to—in both stereo and surround—if they weren't looking for such astronomically high profit margins. Remember when selling 150,000 records didn't get you dropped from the label? Such sales used to mean you got to make another record.

There are two things I think we can all agree on: the current major-label model isn't working, and surround music seems to be dead in the water, which is a damn shame. It's time to give the buying public the best of all possible media even though some people may not appreciate it at the beginning. And we'd better hurry, because if no value is put into physical music packaging soon, that type of distribution will disappear entirely as the buyer's apathy grows.

Perhaps this will be a moot point when our Internet pipes are big enough to allow us to download surround files. Until then, we should be doing a better job for all the artists who spend their lives giving us beautiful music. We should try and save surround for the few who will get it. Would that be a waste of time? em

---

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



electric keys

universal vintage electric keyboard instrument

Electric Keys puts a slice of music history at your fingertips with the most complete collection of classic and vintage electric keyboard instruments ever assembled. This massive 40GB sound library includes over 20,000 expertly crafted 24-bit 96 kHz multi-samples of legendary electric pianos, electric organs, clavinets, Wurlitzers, tape samplers, string machines, keyboard basses and other rare and exotic electric keyboard instruments. Recreate the riffs you know so well from your favorite rock, pop, funk and jazz recordings of the last four decades, or create your own unique, yet distinctly classic sound. Electric Keys turns your Mac or PC into the ultimate vintage electric keyboard instrument.

50 instruments spanning 40 years

- 40GB sound library with 20,000+ samples of classic, rare and exotic electric keyboards spanning 40 years.
- Includes classic instruments heard on countless hit recordings, plus rare models offered as a VI for the first time.
- Pristine 24-bit 96 kHz multisamples carefully recorded, assembled and customized for each instrument.

Separate multi-effects rack

- Eight simultaneous effects, including: Amp simulation, Filter, Phaser, Flanger, Chorus, UVinyl™, Delay and Reverb.
- Separate FX presets allow thousands of FX/instrument combinations.

A consummate virtual instrument

- AU, MAS, RTAS, VST, DXi, Stand-alone.
- Beautifully rendered, authentic look.
- UVI Engine for superb sound quality.
- Factory and user combi presets for unlimited layers and textures.
- Disk streaming for fast preset loading.
- 256-note polyphony and low latency.
- MIDI Learn for hands-on control.
- MachFive compatible for unified operation with other libraries.

MOTU
motu.com