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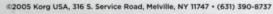


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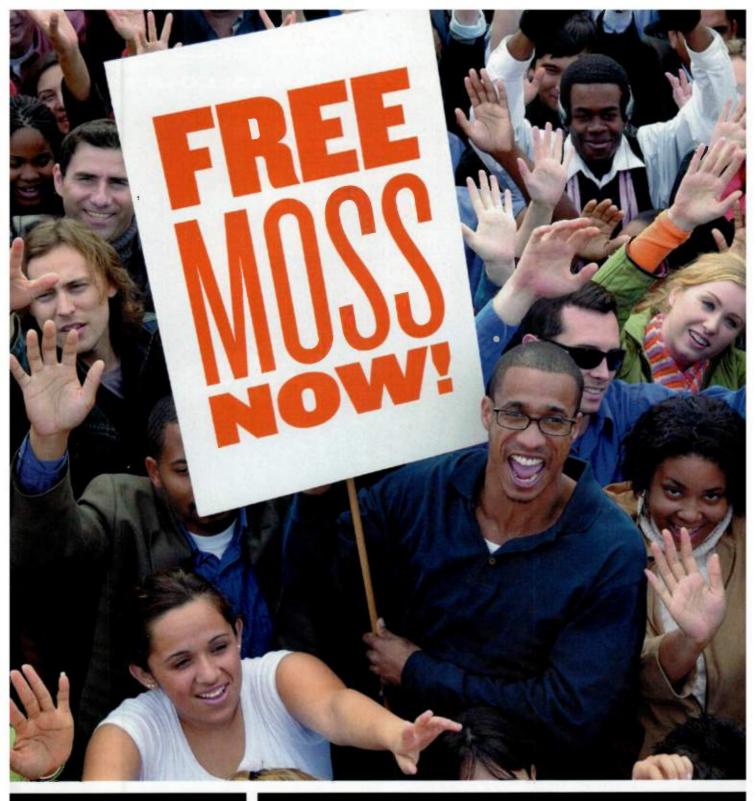
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Electronic Musician

February 2006 VOL. 22, NO. 2

INSIDE

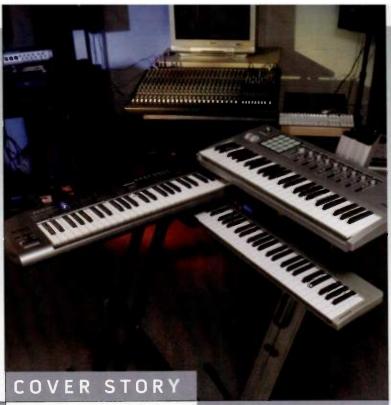
FEATURES

57 THE SUM OF ALL TRACKS

Some audio experts claim that summing digitally recorded tracks in the analog domain improves their sound by adding warmth. Other experts disagree. We assembled a well qualified listening panel to find out for ourselves.

By Orren Merton

Electronic Musician⊕ (ISSN 0884-4720) is published monthly by Prism Business Media, 9800 Metcalf Ave., Overland Park, KS 66212 (www.prismb2b.com). This is Volume 21, Issue 12, February 2006. One-year (12 issues) subscription is \$24. Canada is \$30. All other international is \$50. Prices subject to change. Periodicals postage paid at Shawnee Mission, KS, and additional mailing offices. Canadian GST #129597951. Canadian Post International Publications Mail Product (Canadian Distribution) Sales Agreement No. 40597023. Canadian return address: DHL Global Mail, 7496 Bath Road, Unit 2, Mississauga. ON L4T 1L2. POSTMASTER: Send address changes to Electronic Musician, P.O. Box 640, Mt. Morris, It. 61054 USA.



38 SEIZING CONTROL

In days of yore, MIDI keyboard controllers had a wealth of instrument-control features, but their connectivity was limited to MIDI In, Out, and Thru ports. In contrast, many of today's MIDI master keyboards also include a USB MIDI interface, an audio interface, and a control surface. But which one is best for your studio? We compare and contrast five current 49-key models: CME UF5, Edirol PCR-M50, E-mu Xboard 49, Korg Kontrol49, and Novation Remote 49 LE.

By Mike Levine

67 PRODUCTION VALUES: ON HIS OWN TERMS

In the mid 1990s, Kwamé walked away from a successful career as a rapper and reinvented himself as a producer. Now he produces such artists as 50 Cent, Christina Aguilera, and LL Cool J. In this interview, he speaks his mind about his production techniques, his personal studio, and the impact of Digidesign's Pro Tools on hip-hop.

By Lorne Hammond



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Twink puts a darker spin on vintage children's records with The Broken Record.

78 MAKING TRACKS (Not Quite) Random Notes
Use Ableton Live 5's Follow Actions to shake up your arrangements.

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Optimize the low end of your mixes through proper bass management.

WORKING MUSICIAN: Wanted: Demo Producers
How to find work and make money producing song and artist demos.

FINAL MIX Multiple Personality Order
Having multiple talents is a blessing that often goes unrecognized.



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QUICK PICKS

Dave Smith Instruments Poly Evolver Keyboard keyboard synthesizer

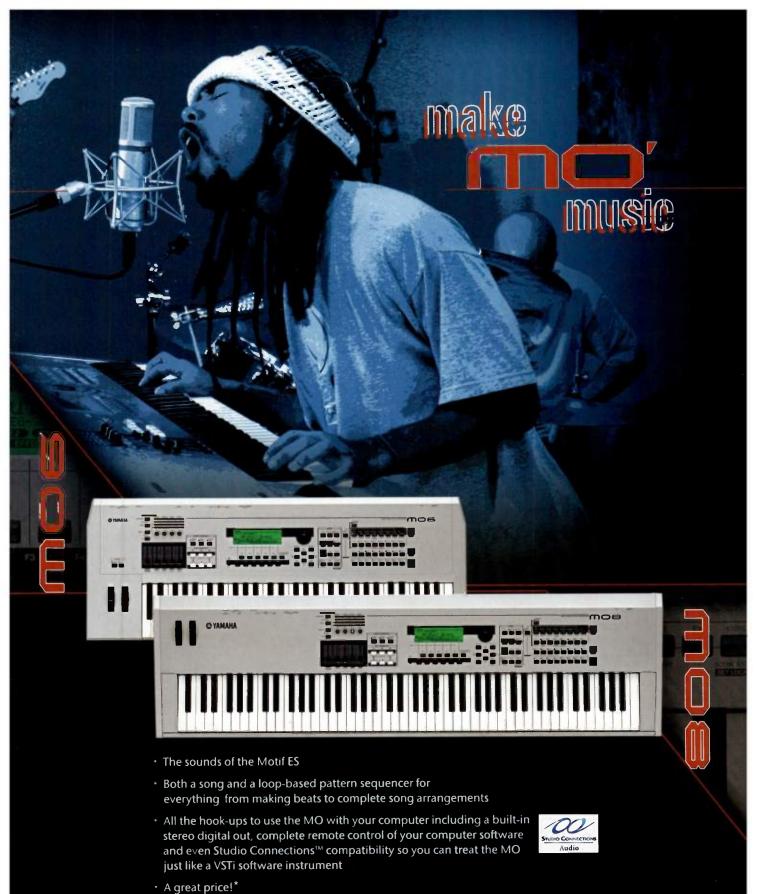
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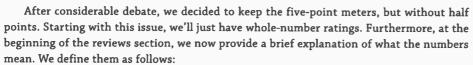
Reviewing the Reviews

In our February 2005 issue, we unveiled EM's first complete redesign in more than a decade. We strove for a clean, elegant, modern look, and we changed some basic content of the magazine by creating new columns and sacrificing a few older ones. Our huge effort was worth every bit of the time and money we invested, and the redesign process has continued beyond the February 2005 issue; we keep adjusting our fonts, rethinking our covers, and resolving a variety of design and content issues.

One question that we editors have repeatedly and often heatedly debated is what to do about the EM Meters. When we redesigned the Reviews section, we cut back the number of EM Meters for full-length reviews from four to one. (Quick Picks have always had a single meter.) Our goal was to streamline the reviews and to provide a quick and easy visual summary for our readers. But now, a year later, we think that when we spend several pages

> reviewing a product in detail, we need more than one meter in which to summarize our views.

> Beginning with this issue, therefore, we're returning to four meters for all full-length product reviews. (Quick Picks will still have one Overall meter.) As in previous years, full-length reviews will have meters for Features, Ease of Use, and Value (read: bang for the buck). The fourth meter will usually be Audio Quality, but for synthesizers it will be Quality of Sounds, which accounts for programming quality and sonic accuracy. We'll use a Documentation meter for products that don't make sound or for which sonic quality is of minor importance or is impossible to



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

At the same time, in our effort to control potential "grade inflation," we have raised our expectations for what constitutes a good product. If we give a product a "3" for Features, it has the features required to do the job it's supposed to do, so you should view that as a positive rating. A "3" for Ease of Use indicates that the user experience is satisfactory, albeit there is certainly room for improvement.

We hope that these changes will make the meters more meaningful and useful, and make our reviews even more valuable to you.

> Steve Oppenheimer **Editor in Chief**

Flectronic Musician®

A PRISM BUSINESS MEDIA PUBLICATION

EDITOR IN CHIEF

Steve Oppenheimer, sopperheimer@prismb2b.com

MANAGING EDITOR

Patricia Hammond, phammend@prismb2b.com

SENIOR EDITORS

Mike Levine, mlevine@prisr b2b.com Gino Robair, grobair@prismb2b.com

ASSOCIATE EDITORS Rusty Cutchin, emeditorial@prismb2b.com Dennis Miller, emeditorial@prismb2b.com Len Sasso, emeditorial@pris.nb2b.com Geary Yelton, gyelton@prisr b2b.com

ASSISTANT EDITOR

Matt Gallagher, mgallagher@prismb2b.com

COPY EDITOR

Lori Kennedy, lkennedy@prismb2b.com

CONTRIBUTING EDITORS

Michael Cooper, Mary Cosola, Marty Cutler, Maureen Droney, Larry the Q, George Petersen, David Rubin, Rob Shrock, Scott Wilkinson

DIRECTOR OF NEW MEDIA

GROUP ART DIRECTOR

Dmitry Panich, dpanich@pris nb2b.com

ART DIRECTOR

Laura Williams, lwilliam@premb2b.com

ART DIRECTOR, SPECIAL PROJECTS

Mike Cruz, mcruz@prismb2b.com

INFORMATIONAL GRAPHICS

SENIOR VICE PRESIDENT

Peter May, pmay@prismb2b.com

ADMINISTRATIVE ASSISTANT

Karen Carter, kcarter@prismt2b.com

Dave Reik, dreik@prismb2b.com

ASSOCIATE PUBLISHER

Joe Perry, jperry@prismb2b.c:m EAST COAST ADVERTISING MANAGER

Jeff Donnenwerth, jdonnenwe th@prismb2b.com

NORTHWEST/MIDWEST ADVERTISING MANAGER

Greg Sutton, gsutton@prismb2b.com

SOUTHWEST ADVERTISING MANAGER Albert Margolis, amargolis@prismb2b.com

ONLINE SALES AND MARKETING MANAGER

Samantha Kahn, skahn@prisr-b2b.com

LIST RENTAL

Marie Briganti, (845) 732-7054, marie.briganti@ walterkarl.infousa.com

MARKETING DIRECTOR

Christen Pocock, cpocock@pris mb2b.com

Clarina Raydmanov, craydmanov@prismb2b.com

MARKETING TRADE SHOW AND EVENTS COORDINATOR

Jennifer Smith, ismith@prism:2b.com CLASSIFIEDS/MARKETPLACE ADVERTISING DIRECTOR

Robin Boyce-Trubitt, rboyce@prismb2b.com

WEST COAST SPECIALTY SALES

Kevin Blackford, kblackford@pr.smb2b.com

EAST COAST SPECIALTY SALES

Jason Smith, jasmith@prismb2b.com

CLASSIFIEDS PRODUCTION COORD NATOR

Jennifer Kneebone-Laurie, ikneebone@prismb2b.com

Melissa Langstaff, mlangstaff@prismb2b.com

ADVERTISING PRODUCTION COOR INATOR Jennifer Scott, jescott@prismb=b.com

GROUP AUDIENCE MARKETING DIFECTOR

John Rockwell, jrockwell@prismb2b.com

DIRECTOR OF HUMAN RESOURCES

Julie Nave-Taylor, jnave-taylor@prismb2b.com

OFFICE COORDINATOR/RECEPTION ST

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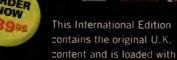
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PRESIDENT/CHIEF EXECUTIVE OFFICER

John French, ifrench@prisr-b2b.com

CHIEF FINANCIAL OFFICER/CHIEF OPERATING OFFICER
Andrea Persily, apersily@prismb2b.com

EDITORIAL ADVERTISING, AND BUSINESS OFFICES:

6400 Hollis St., Suite 12, Emeryville, CA 94608, USA (510) 653-3307.

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Letters

Remembering John Simonton

I was saddened to hear of John Simonton's passing (see the sidebar "In Memoriam: John Simonton, Jr."). Simonton was a patron saint and godfather of DIY electronic music. Many analog synthesizer manufacturers owe a debt of gratitude to his company, PAiA Electronics, for giving them the idea that electronic-music kits could be a reality. PAiA marketed some of the very first commercial devices for interfacing computers and synthesizers.

In the late 1970s, I bought a PAiA Phlanger and Gnome synthesizer and never looked back. People often commented on the sheer thoughtfulness and depth of PAiA's construction manuals and its after-market tech support. Every project made you smarter, and I have little doubt that they were planned that way.

I'd like to think that somewhere John Simonton, Robert Moog, and Harald Bode are sitting over a beer and arguing about optimal patching schemes. They will all be missed, and for some of us, Simonton a little more so.

Mark Hammer Ottawa. Canada

Sound Check

14

I'm a little concerned about Geary Yelton's response to Pete Wacker's letter, "Hearing Is Believing", in the "Letters" section of EM's December 2005 issue. Suggesting that Pete can't hear the difference

In Memoriam: John S. Simonton, Jr.

Whether you recognize his name or not, if you are reading *Electronic Musician*, John Simonton has influenced your life. His designs, products, and consulting work have influenced three generations of musicians and music technologists. Artists like Larry Fast, Peter Gabriel, Mark Mothersbaugh, Roger Powel Leon Russell, Don Slepian, and Willie Wilcox have all benefited from Simonton's creativity.

Simonton created PAiA Electronics in 1968 to produce electronic kits, and he soon manufactured and marketed several audio and music devices. He wrote for technical journals such as *Popular Electronics, Radio Electronics*, and others, and he quickly became known for his clear, concise, and fun writing style. He dedicated himself to demystifying technology for the average reader.

In 1972, Simonton created the first low-cost modular sym:hesizer kit. When static RAM became available, he designed the first user-programmable drum machine. Simonton created early models of microprocessor-controlled, polyphonic keyboards that had user-selectable software for key assignments and performance effects, as well as software for composing melodies using Brownian-motion rules. He also designed the battery-powered, handheld Gnome microsynthesizer, which was widely used in schools as a portable educational device.

In 1976, Simonton founded Polyphony Publishing to create an independent forum for discussing technologies behind various manufacturers' equipment, as well as the emerging home-recording market. In 1985, with Simonton still in the publisher's chair, *Polyphony* was redesigned and relaunched as *Electronic Musician*.

Around 1983, Simonton devised some of the first computer code for syncing SMPTE, MIDI, and beat clocks. That function is now standard in all major digital audio sequencers. In later years, he enjoyed the renewed interest in theremins and starved plate-tube circuits, and he created a third modular-synth line.

Simonton was a technical mentor and an inspiration to many people who became electronic engineers or professional musicians. He also mentored those who aspired to run technology or mail-order businesses. I was a lucky early customer who was invited to participate in Simonton's world. He opened unending opportunities for me in the music industry and was one of my greatest mentors in life, as well as a lifelong friend. We will all miss his clever designs and witty attitude toward electronics and music.

If you haven't already done so, check PAiA's obit page (www.paia.com/obituary.html) for memorial forums and blogs and see how Simonton touched his many fans and customers. —Marvin Jones

Marvin Jones worked with John Simonton on various projects between 1974 and 1981 and was the founding editor of Polyphony magazine. He still produces electronic music in his personal studio. For more stories about Simonton, PAiA, and Polyphony, visit www.paia.com or www.sonic.net/mjones/paia.















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Next Month in EM

Mid-Side Miking

This introduction to mid-side stereo miking explains how this useful mic technique works and when to use it. We also offer tips and discuss the creative use of mid-side tracks and decoding.

Six Creative Uses of Plug-In Automation

This article offers tips for using DAW plug-in automation in creative ways that go beyond standard volume and panning techniques.

Production Values:

Paul Haslinger

Austrian-born Paul Haslinger made his name playing with Tangerine Dream and went on to a solo career as a composer of film and game music. In this interview he talks about his gear and the state of the music industry.

Making Tracks:

Control Surface Tips

Learn how to use a DAW control surface to set up inputs and outputs, record a track, call up plug-ins, and much more.

Sound Design Workshop:

Respect for the LFO

It's easy to apply LFO to pitch for a vibrato effect, but you can also explore different LFO waveforms to achieve less obvious effects.

Working Musician:

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Letters

among various data compression schemes because there is something wrong with his hearing disallows what is probably the real solution to his problem: he needs to listen on better speakers. In fact, listening to various data compression rates is a good way to test the accuracy of speakers. Speakers that excel in accuracy and detail will reveal the deficiencies of encoders.

Bill Quinn Atlanta, Georgia

Check, Please

The last time I sent my check to EM for a subscription, I thought the magazine was about making music. But the December 2005 issue devoted more than 100 pages to full-page ads. The entire issue consisted of 138 pages, not including 10 pages for the cover story, "The Art of Podcasting," which is not what I call making music.

How about publishing more content that pertains to making music?

Merlin Robertson Fresno. California

Giants of the Industry

I just renewed my subscription. I used to read EM's reviews with excitement, and now I read them with trepidation. Manufacturers send you software, you test it, and it works okay. If it doesn't work, the manufacturers seem to respond immediately.

We Welcome Your Feedback

Address correspondence to:

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or email us at emeditorial@prismb2b.com.
Published letters may be edited for space and clarity.

However, people like me, who barely make a living in the world of audio technology, get swept under the rug—or so it seems. What happens when I have a problem? What happens when hundreds of users report a problem or what seems to be a deficiency on a manufacturer's Web site? I'll tell you what: generally silence or obfuscation.

For the past month I've been trying to resolve a problem with two software giants. I've been a musician for more than 30 years and a programmer for 20 years. I understand music, music technology, and how things work "under the hood." But because of fingerpointing [between the two companies] I've been unable to complete projects and earn money. All I want to do is create a quality product with as rauch ease as I can expect in the somewhat awkward (but exciting) world of audio production at home.

Come on, you giants of the music industry. Are we on our own, hoping that you'll throw us a crumb, or will you take us seriously?

I'm frustratec, but I still have faith.

Michael McCoy via email

Error Log

January 2006, "What's New," p. 24. The introductory pricing of M-Audio's Project Mix I/O control surface and FireWire audio interface (\$1,293 MSRP) ended on February 15, 2006; it is currently priced at \$1,599 MSRP.

November 2005, "Sound Design Workshop: Daily Double," p. 88. The time-correction software VocAlign is manufactured by Synchro Arts Ltd., and notby Antares as stated in the column. For more information about VocAlign, visit Synchro Arts' Web site at www.synchroarts.com.



Guitar Rig 2 is the only choice. The sound quality of this guitar studio meets the most professional demands, winning numerous awards and artists' praise everywhere. Drag and drop legendary amps, cabinets and effects into the rack and arrange them in any order. Now also catering to bass players, the range of original and authentic tones is endless. The included RIG KONTROL 2, a new, rugged foot controller with a built-in sound card, lets you plug and rock. It's that simple. No setup hassles, no extra hardware needed – just your computer, your guitar and powerful, studio-quality sound.

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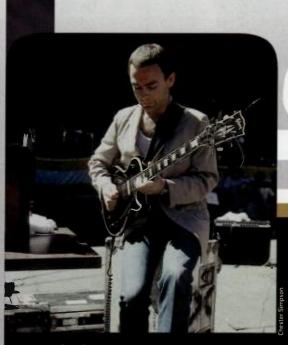




Awards in reference to GUITAR RIG 1



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EMspotlight

In League with the Crafty Gentleman

Robert Fripp has worked with the best—David Bowie, Peter

Gabriel, Talking Heads, Brian Eno, and of course, King Crimson—but he has also worked away from the public eye, pursuing truths other than the rock and roll life. In this interview from the EM archives, Fripp's insights are of interest to more than just guitarists. By John Diliberto. emusician.com/em_spotlight

On the Home Page

EM Web Clips

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

EM Guides Online

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

Show Report

18

The 2006 Winter NAMM show is the biggest annual musical-instrument expo in the United States. Visit emusician.com for our report on the exciting new recording gear, music software, and electronic musical instruments unveiled at this year's show.

EM seminars on demand

The EM Seminars on Demand are an exciting way to see new products and learn new applications and techniques online and at your



leisure. Korg USA's top sound designer, Jack Hotop, shows you how to customize a variety of synth sounds to suit your performing and compositional styles.

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ELECTRONIC MUSICIAN FEBRUARY 2006



VIENNA SYMPHONIC LIBRARY

Natural Intelligence

Introducing Vienna Symphonic Library's Virtual Instruments 10 VIENNA INSTRUMENTS - 1 SYMPHONIC CUBE

Three years ago the Vienna Symphonic Library redefined the sample library by introducing the Performance Tool, bridging the gap between static samples and dynamic performances. Now the next revolution is at hand. VIENNA INSTRUMENTS, the most powerful Virtual Instruments on the market, embody intelligent Performance Algorithms into an easyto-use VST/AU plug-in to orchestrate an inconceivably vast array of samples. For the first time hundreds of inspiring articulations can be combined in one Preset and on a single MIDI track. Vienna's proprietary Performance Detection analyzes intervals, repeated notes, patterns, and even speed in real-time and automatically summons the appropriate articulation or nuance. If you never imagined a Virtual Instrument could read your mind, think again. Never before has composing been so natural, fast, and so much fun.



NHHHHH

SOLO STRINGS CHAMBER STRINGS ORCHESTRAL STRINGS I ORCHESTRAL STRINGS I HARPS WOODWINDS I WOODWINDS II BRASS I BRASS II PERCUSSION

Log on to www.vsl.co.at: Watch the Video Tutorials and listen to demos. Check the availability of Individual collections and release dates. Visit us at the Winter NAMM Show, January 19-22, 2006, Booth #6730, Hall A



VIENNA SYMPHONIC LIBRARY www.vsl.co.at

Instruments

New

Success...

Today's top producers

and composers rely on

authenticity and value.

Impressive!"

Alex Wurman

Big Fish Audio for quality,

"Extremely useful sounds...

Film Composer - March of the

Penguins, Criminal, Anchor Man

Web



First Call Horns



'299" GigaStudio



The first call library for a modern horn Virtual Instrument. No more having to rely on orchestral brass for your modern horn needs. Pop, latin, jazz, big band, and rock n' roll horns are all here with unprecedented sound quality and programming. Trumpets, soprano, alto, tenor & baritone saxes, trombones, flugelhorn & French horn are also here. Each instrument contains solo and sections chromatically sampled, plus a ton of riffs, combinations & improvisations.



The Rhythm Station

^s69" WAV/REX/Apple Loops



Need a new drummer? One with some fresh, original grooves you haven't heard before? Check out The Rhythym Staion with over 400 live drum and percussion loops. These well played grooves range from 64 to 134 bpm and feature tight, dry and funky sets, scratchy beats and processed kits. With an emphasis on raw and natural sounding drums, these kits are perfect for R&B, Jazz, Hip-Hop, African, Latin, Brazilian, Reggae, World Beat and more.

1

Jazz Quartet

999 WAV/REX/Apple Loops



Breakbeat Jazz

1169" WAV/REX

With over 80 Construction kits of the most useable jazz you'll find anywhere, this collection is simply beautiful. The sophisticated, satisfying sounds of piano, bass, drums and guitar, come together in perfect harmony. Whether you need a cozy and intimate setting, or a grand concert hall feel, these recordings will give you an authentic jazz environment. Kits from 52 to 148 bpm, completely broken out. Seek a new level of artistic expression with the diversity of these timeless performances.

If you're into that weed smoking, turntable culture of HipHop, then go right ahead, jump into the crate diggin sounds of Breakbeat azz. Original sounding breakbeats, mixed up with vinylstyle rhodes chords, jazzy basses, FX and muth, much more. 2100 Rex2 loops and more than 3700 Wav loops & samples, all produced and recorded for Breakbeat Jazz... the ultimate Breakbeat collection.



Platinum Essentials 2

*69**
WAV/REX/Apple Loops



Greg Adams' Big Band Brass

19913 WAV/Acid/ Apple Loops

Well...well, guess who's back with another bag full of Platinum hits. The west coast phenomenon Keith a.k.a Clizark can't be stopped. We snatched him outta Snoop's studio to finish this sequel. Loaded with more Hip Hop and R&B construction kits, Platinum Essentials 2 contains all the sounds you've been askin' for, completely broken down. From bangin' beats and nasty bass samples to wicked synth and vicious sounds, nobody's puttin' it down west coast style like Clizark.

From the legendary trumpeter, composer, and arranger Greg Adams (Rod Stewart, Elton John, Linda Ronstadt, Lyle Lovett) comes over 4600 Eig Band Brass loops and samples, ready to bring a new level of realism to your production. Thousands of loops and one-shots.



Neo Soul 2

*9925
WAV/REX/Apple Loops



Veteran producer and composer Josquin des Pres teams up with multi-talented newcomer Brett Michael Wiesman to deliver the second installment of the critically acclaimed bestseller "Neo Soul". Reminiscent of Old School R&B and 70s funk, combined with today's hottest grooves. Whether you're a DJ, remixer, producer, songwriter, sound designer, rapper or singer, New Soul 2 is a rich musical palette that will enhance the sound libraries of music creators at any level.





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NAMM 2006

Booth 6314



Rotation

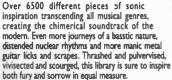
19915 WAV/REX/Apple Loops

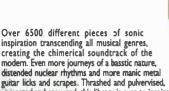
Britney, Christina, Justin, Janet...any of those names sound familiar? Of course they do, because they're on top of the charts and in heavy rotation on the radio. The whole world knows who they are! And if you're looking to produce tracks that the whole world is hearing, this is your secret goldmine of loops. These aiff/wav/rex loops are in Construction Kit format so you can use as much or as little of the track as you want, and mix and match with other material to create something that's ready for radio.



Hybridizer 2

WAV/Acid/REX/NNXT/ Kontakt







Soul City

WAV/REX/Apple Loops



Nu Jazz City

WAV/REX/Apple Loops



Polyester Loops

WAV/Acid/REX/ NNXT/HALion/ Kontakt/EXS24

and all manner of chemical are the mainstay of this truly sample collection, which 'Polyester' samples, 500 hi-velocity super-funked

Funky House Producer

WAV/Acid/REX/NNXT

Funky House Producer brings the sounds from the clubs of Ibiza, London, Paris and New York directly to your mix. Featuring the latest filterec funk loops, inspirational disco guitars, huge pumping beats, funky bass lines, dreamy Fx, killer keys and more. Whether you're looking to capture the blissed out sample production of Naked and Wave Records, or perhaps something deeper - you'll find that Funky House Producer delivers on every level.



Nu jazz Funk

WAV/REX

Can't get enough of those wild, syncopated funky beats of Nu Jazz? Then enter the brazilian flavoured sounds and moods of Nu Jazz Funk. Super funky sounding broken beats, mixed up with jazzy rhodes, moogy basses, percussion and more. 2800 Rex2 loops and more than 3500 Wav loops & samples, all produced and recorded for Nu Jazz Funk.. the ultimate Nu Jazz Beat toolbox.



Off The Hook Hip **Hop: Dirty South**

WAY/REX/Apple Loops

This is as dirty as it gets. From the legendary Off the Hook series, these construction kits flow with some serious Southern Hip Hop flavor. 2116 loops and sounds including drums, synths, electric bass, organs, guitars, rhodes, strings, percussion and more. Plus a ton of bonus material! With enough crunk juice to fill your pimp cup twice, you can ride with these tracks from St. Loius to New Orleans and back. Packed with the beats and sounds that make hits, this library is a must.



Mahadhi -**African Rhythms**

WAV/REX/Apple Loops

Mahadhi ya Afrika! Dance to the rhythm of Africa with this collection of Live played percussion loops. Traditional instruments including the Agogo, bembe, conga, djembe, ekwi, shekere, kalimba, talk drum, saworo, shaweru and more, will put you in the heart Africa. Authenticity is the key to this journey that takes you from Zimbabwe to Kenya, Algeria to the lvory coast. If you want to experience this culture in it's purest form, Mahadhi puts the rhythms of Africa at your finger tips.



Raging Guitars

Kontakt Player/Plug-in (VSTi/RTAS/AU/Dxi2)

This is the guitar onslaught you've been waiting for! A guitar virtual instrument done right, with over 11 gigs of multiple amps and levels of distortion, mono and stereo files. Loops that can be time stretched to features live and programmed drums, screamin' guitars, electric bass, synths, turntable FX, and atmospheres. If you're looking for butt-kicking loops with a hardcore attitude, welcome to NU match the tempo of your tune automatically, Sustained notes, chugs, hammer-ons, bends and lots more, so you can create your own



Nu Metal City

WAV/REX/Apple Loops

A head-banging collection of construction kits covering a variety of styles, including Nu Metal, Metalcore, Death Metal, and Industrial Rock. Inspired by the music of such artists as Slipknot, Korn, Anthrax, and Nine Inch Nails, NU METAL CITY

Loungin' House

WAV/REX

Want to delve deeper into the naked, intimate sound of House? Welcome inside the hypnotic and seductive grooves of Loungin' House. Luxurious dance floor beats, mixed with sexy latin style percussion, lush chords, samples and more. Spice your groove with dusty rhodes chords, smooth and warm pads, funky basstones, synths, riffs and FX-Vox noises. 2600 Rex2 loops and more than 5400 Way loops & samples, all produced and recorded for Loungin House... the ultimate House groove toolbox.





WHAT'S NEW

By Geary Yelton



Blue OmniMouse

Blue Microphones (www.bluemic.com) recently announced the OmniMouse (\$1,699), a pressure-gradient condenser microphone. Like the original Mouse, it has a rotating capsule enclosed in a spherical grille. The OmniMouse's omnidirectional capsule is identical to the one used in Blue's Bottle mic system. According to the

manufacturer, it offers low noise, superb transient response, and a smooth frequency response with a crisp high end.

Blue recommends the OmniMouse for recording classical ensembles, large orchestras, or any source where you want to capture the surrounding ambience. It is an appropriate choice for anything from live drums and percussion to vocal groups and horn sections. You can use it in a single mic setup, in a stereo pair, or in a Decca Tree formation. The OmniMouse ships with a custom shockmount and Blue's Cranberry mic cable.



Disc Makers (www.discmakers.com) manufactures CD and DVD duplicators and printers and offers media duplication services to musicians and other content creators. Recently the company introduced its most affordable do-it-yourself duplicator yet, the Pico (\$699). Weighing only 6.6 pounds, the Pico features a single drive with automated 16× DVD and 48× CD duplication and a 25-disc capacity. It can produce as many as 12 CD-Rs or 6 DVD±Rs in an hour and run unattended for hours at a time. Relay mode lets you queue up several masters at the same time.

In addition to full-size discs, the Pico handles 3-inch discs and CardDiscs by means of the included adapter. Also included is DiscForge (Mac/Win), a software application that provides audio playlist and data editing. Additionally, you get free lifetime technical support, 100 blank CDs or 50 DVDs, and a discount on future media purchases.

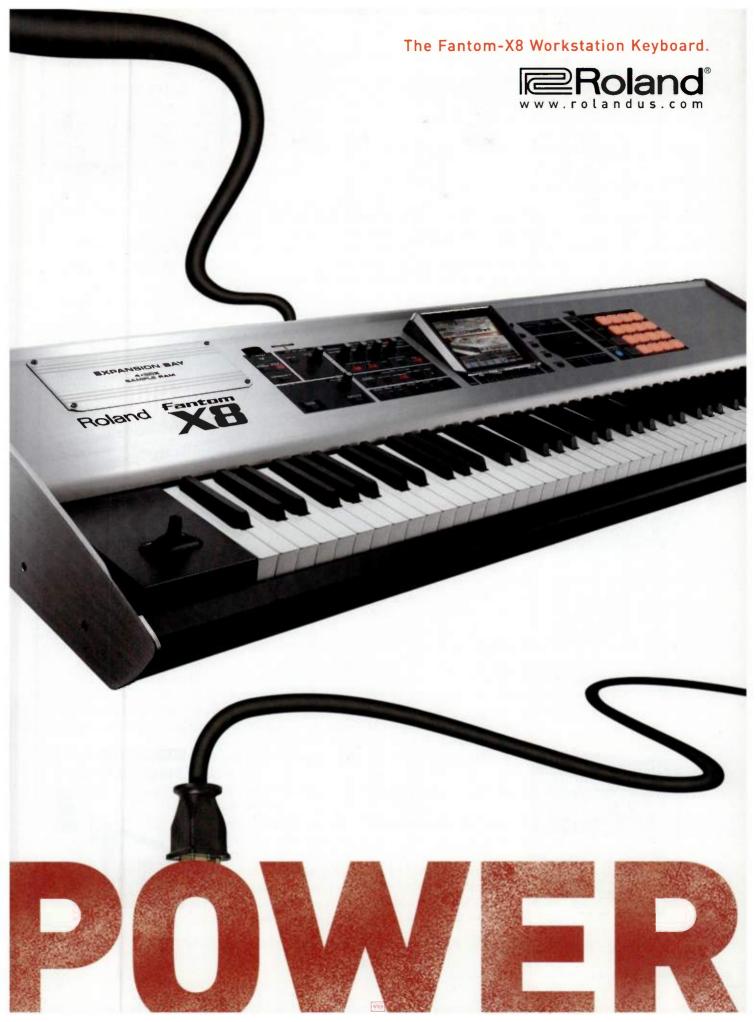
Yamaha M06 and M08

Yamaha continues to uncover gold by mining the technology developed for the Motif ES. Two new keyboard synthesizers, the 61-key synth-action MO6 (\$1,499) and the 88-key hammeraction MO8 (\$1,999), are designed for live performance and for seamless integration with computer-based studios. Both are 16-part multitimbral workstations with 64-note polyphony, 512

timbres, 64 drum kits, onboard song and pattern sequencing, and extensive effects processing. Performance mode combines as many as four timbres in layers or splits. As a master keyboard controller, each instrument features four independent zones. The arpeggiator supplies more than 1,700 sequenced phrases that interact with your keyboard performance. Phrase Factory capabilities are identical to those of the Motif ES.

The MO6 and MO8 provide global templates that configure them to work in tandem with computer software, offering remote control of DAW functions such as track arming, mixing, and transport commands. You can even edit soft-synth plugins directly from the synthesizer's front panel and display. Both instruments are also compatible with Studio Connections, which furnishes further integration between hardware and software.





AAS Lounge Lizard EP-3

Applied Acoustics Systems (www.applied-acoustics.com) has released Lounge Lizard EP-3 (Mac/Win, \$249; upgrade, \$49), an update of its modeled electric piano. It features an extensive new preset library, new multi-effects, and support for microtuning. The instrument's modeling algorithms have been improved, resulting in more realistic emulation of the tine bars and pickups. An integrated audio recorder lets you capture your performances on the fly.

You can now select from two pickup types: electromagnetic, for emulating Rhodes pianos; and electrostatic, for emulating

Wurlitzer pianos. A new fork model adds upper harmonic content, and an

enhanced damper model improves dynamic response. The effects section now provides EQ, chorus, and reverb, as well as tremolo, chorus, wah, and phaser. The expanded preset library takes advantage of all the instrument's new capabilities. Lounge Lizard EP-3 runs standalone; as a VST, an RTAS, or an Audio Units plug-in on the Mac; and as a VST or a DirectX plug-in on the PC.



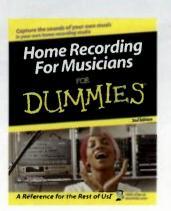
Get Smart



One of 2006's first titles from Peachpit Press (www.peachpit .com) is Real World Digital Audio (\$49.99), by Peter Kirn. This 629-page book and DVD-ROM delivers a detailed overview of making music with computer technology. After 45 pages explaining the fundamentals of acoustics and digital audio, the author surveys the hardware and software tools used for audio production. He offers suggestions for setting up and

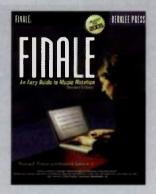
maintaining your own studio. Using GarageBand as a reference, he discusses creating songs with loops. A chapter on effects processing follows another on mic technique. Additional chapters cover MIDI, sound for video, live performance, and other related topics. The included DVD features software demos and a gigabyte of sampled instruments and loops.

The second edition of *Home Recording for Musicians for Dummies* (\$21.99), from **Wiley Publishing** (www.wiley.com), presents the practical aspects of setting up and recording in your personal stu-



dio. Author Jeff Strong details the various tasks in hard-disk recording and offers tips for selecting and interconnecting gear that suits your needs. He then walks you though tracking, editing, mixing, sweetening, and mastering your recordings and makes suggestions for distributing your music online. Though the book is intended primarily as an introduction to audio recording, even experienced recordists will find plenty of useful ideas and advice in its 384 pages.

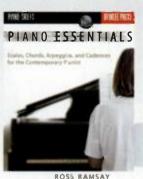
Berklee Press (www berkleepress.com) has published a revised edition of Finale: An Easy Guide to Music Notation (\$34.95), by Thomas E. Rudolph and Vincent A. Leonard, Jr. Taking a sequential approach to mastering all versions of Finale, the



authors begin with introductions to the tool palette and various note-entry methods. The reader is gradually guided from creating grand-staff and small ensemble transcriptions to scoring for big bands and full orchestra. You'll learn how to extract and print transposed parts from scores and create publisher-quality transcriptions. Readers can access a companion Web site to download Finale templates, libraries, and scores, as well as future additions to the book.

Another new title from Berklee Press is Piano Essentials: Scales, Chords, Arpeggios, and Cadences for the Contemporary Pianist (\$24.95), by Berklee College of Music instructor and Yamaha clinician Ross Ramsay. This 108-page workbook guides you through

major and minor scales in every key, exploring chord progressions, arpeggios, and music theory along the way. It can help you increase your playing speed and agility while improving your sight-reading skills. The book includes an audio CD of scale and phrasing exercises as well as Latin, funk, and swing drum patterns to accompany your practice sessions.



"Finally, someone gets it right! Sweetwater rules! The quality and consistency of your customer support is simply unrivaled anywhere. You bring a whole new level to the contest of customer service. You also prove that good people make a great company. Well done guys! Sweetwater rocks!"

— Kai Kaden

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President, Sweetwater Sound, Inc.

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Native Instruments BandStand

If you've been considering a hardware synth module just for its General MIDI (GM) capabilities, forget about it. Native Instruments (www .native-instruments.com) isshippingBandStand (Mac/Win, \$229), a soft synth that features a GM Level 1 sound set. Built around the Kontakt 2 sound engine, BandStand provides more than 2 GB of 24-bit samples comprising 128 instruments and 9 drum kits. Performance optimizations such as direct-from-disk playback ensure efficient operation, even on computers with modest resources.

BandStand has an easy-to-use graphical user interface that puts 16 simultaneous instruments at your fingertips. To assign an instrument to a channel, just drag it from one of 16 Browser banks to the desired cell. BandStand's Autoplay

function automatically plays any instrument in the context of an appropriate musical passage. A Quick Edit bar lets you independently change each instrument's tuning, pitch-bend sensitivity, Velocity curve, and other parameters.

In BandStand's automatable mixer section, you control the level, EQ, effects, and panning of each instrument. Choose



from six chorus effects, six reverbs, ten EQ curves, and five limiter presets, and edit user parameters for each. Because the integrated file player loads Standard MIDI Files, you don't even need a sequencer to play songs. And you can change the timing and feel of MIDI tracks using the Quantize and Humanize parameters. BandStand runs standalone or as a plug-in that supports VST, RTAS, DirectX, and Audio Units formats.

Download of the Month

HEIZENBOX (MAC/WIN)

Heizenbox (\$59) is a real-time granular processing VST plug-in for Mac OS X and Windows XP. The key description is real time: every parameter is available for MIDI automation, and a handson approach is highly recommended. A demo version that bitcrushes (distorts) the audio every 30 seconds is available from the Heizenbox Web site (www.heizenbox.com).

Heizenbox is easy to use, though mastering its controls takes a little practice. The first step is to hit the Record button and fill its audio buffer. Conveniently, you can quantize record-start and playback-start to various note values at the host's tempo. A handy Touch mode will automatically initiate recording when you click on any of the primary controls—Length, Offset, and Wet/Dry.

The prominent Length and Offset knobs and their associated Division and Repeats sliders are Heizenbox's most important controls. The Length knob sets the grain size, which can be displayed in samples or note values, and the Offset knob sets the scan speed through the audio buffer. When Length and Offset are set to the same value, the buffer plays back as recorded; each grain plays once and the next grain starts where the previous one ended.

However, things get interesting when you don't use the

same Length and Offset value. To that end, the Division slider divides the grain size by an integer between 1 and 16, and the Repeats slider causes each grain to repeat as many as 16 times. You can lock the Length and Offset knobs so that moving either one sets the other relative to the Division and Repeats val-



ues. Assigning MIDI remotes to those four controls gives you lots of ways to manipulate the grains (see Web Clip 1).

For the timid of finger, Heizenbox has LFOs for modulating pitch and grain size as well as the cutoff frequency of a built-in multimode filter. You can choose from three grain-playback modes: forward, backward, or forward-backward. A Shuffle knob delays alternate 16th notes. A Gate knob sets gating as a percentage of grain size, and a Blend knob smooths things out by crossfading between grains. Granular processing is not exactly a bread-and-butter effect, but it's a whole lot of fun, and Heizenbox does a great job of it.

-Len Sasso





Waves Vocal Bundle

The latest gotta-have-it native plug-in suite from Waves (www.waves.com) is the Vocal Bundle (Mac/Win, \$1,000). It comprises two new plug-ins, Tune and DeBreath, along with Doubler, Renaissance Channel, and Renaissance DeEsser. Together, the package is well suited to processing vocal tracks in the recording studio. Tune and DeBreath are also available separately.

Tune (\$600) provides surgical editing tools for pitch correction, formant correction, and melody transformation. You can use it to automatically retune as gently or as aggressively as you want. Transform audio data as easily as MIDI data, editing individual notes or entire melodies using a familiar piano-roll display. Because Tune supports ReWire, there's no need to export selected audio for process-

ing, and you can listen to your edits in real time as you play other tracks.

DeBreath (\$350) selectively removes

unwanted breath sounds from vocal tracks. Using a template-matching algorithm that separates breathing from singing or speaking, it reduces or eliminates breath noises without affecting the rest of the signal. By dividing the track into two elements—one containing voice and the other only breaths—you can process them independently for creative effects. DeBreath can also add room tone to compensate for any loss. Tune, DeBreath, and the Vocal Bundle support most native plug-in formats and require an iLok.



Sound Advice

Relative newcomer Nine Volt Audio (www ninevoltaudio.com) has introduced two new sound libraries, Chopped Guitars (\$69.98) and Downtempo Guitars Volume 2 (\$69.98). Both DVD-ROMs supply copyright-free 24-bit loops in Acidized WAV, REX2, Reason Refill, and Stylus RMX formats. File names identify each loop's tempo and key signature or chord progression. Chopped Guitars consists of guitar parts that have been heavily processed through effects, sampled, split into slices, and reassembled as unique rhythmic sounds. Although their origins are organic, the sounds in this collec-

chopped guitars

wav/acldized - refill - rex - stylus rmx

tion are heavily electronic in nature. Chopped Guitars contains more than 400 grooves in tempos ranging from 92 to 124 bpm. Downtempo Guitars Volume 2, like its predecessor, delivers slightly more traditional guitar sounds with a laid-back style appropriate for ambient, trip-hop, and other chill-out musical genres. It offers rhythmic atmospheres, melodic figures, and muted patterns, both with and without

effects processing, at tempos from 104 to 120 bpm. Owners of either product can download additional free content from Nine Volt Audio's Web site.

After months of anticipation, Garritan (www.garritan .com) has begun shipping its Jazz & Big Band Collection (\$259). Featuring samples of 6 trumpets, 5 trombones, 16 saxophones, and a variety of keyboard, wind, and rhythm section instru-

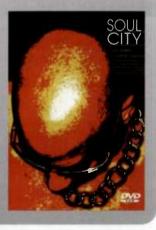


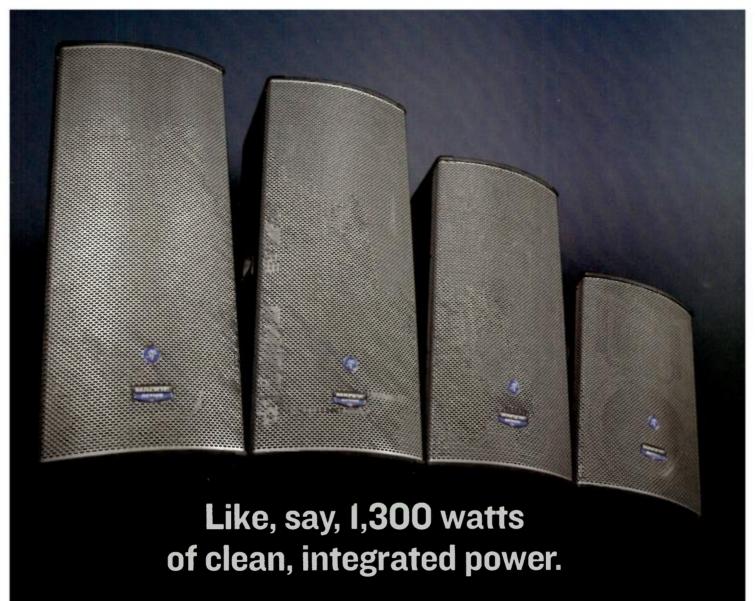
ments, Jazz & Big Band Collection delivers more than 50 instruments in all. Trumpets and trombones come with or without mutes, and the percussion section includes vibraphone and assorted Latin hand drums. Each instrument offers expressive capabilities such as mutes, vibrato, and tongue and slur articulations. The library is available in Native Instruments Kontakt

format, and Kontakt Player is included for Windows and the Mac OS. You can listen to complete audio demos on Garritan's Web site.

A new release from Big Fish Audio (www.bigfishaudio.com) promises to add life to your R&B productions. *Soul City* (\$69.95) is a tasty collection of loop construction kits filled

with old- and new-school soul grooves. Inspired by artists that range from Marvin Gaye and Isaac Hayes to Macy Gray and Erykah Badu, the DVD-ROM supplies Apple Loops, REX, and WAV files. Every track is played live by studio pros, with full mixes and separate files for individual instruments such as guitar, bass, drums, trombone, and sax. If you want to capture a genuine soul feel, Soul City will get you there in a hurry.





Introducing Mackie's SAz High-Definition Active Loudspeakers.

revolutionary SAz Series.

Every year, millions of of musicians and audiences are exposed to bad sound. Whether the PA system is weak, under-powered, muddy and/or distorted, bad sound translates into an unpleasant experience for all involved. But it doesn't have to be this way.

Introducing Mackie's new top-of-the-line SAz Series of High-Definition / High-Output Active Custom neodymium drivers: just one of Loudspeakers. With bi- and tri-amplified designs up to 1,300 watts, high-precision neodymium drivers,

and tuning by the world-renowned EAW loudspeaker engineering team, these loudspeakers translate music exactly as you intend - louder, cleaner and more conveniently than anything in Mackie history. Not to mention making the competitions' loudspeakers sound, well... bad.

Want to learn more? Visit our website at www.endbadsound.org. Or visit your Mackie countless new features in Mackie's dealer and ask to audition an SAz Series loudspeaker for yourself. Together, we can end bad sound.





Stop the Presses!

Signaling the company's foray into the world of virtual instruments, Digidesign has unveiled two new RTAS software synthesizer plug-ins, Xpand! (Mac/Win, free) and Hybrid (Mac/Win, price TBA). Developed by Digidesign's Advanced Instrument Research team, led by renowned software developer Peter Gorges in Germany, the two synths are designed to

Xpond

FIG. A: Xpand's GUI includes six preassigned Smart Knobs for easily accessing the important parameters of a patch.



FIG. B: The front panel of Hybrid is intuitively designed, making it easy to locate each synth parameter.

integrate efficiently into all versions of Pro Tools 7 and later, including TDM, LE, and M-Powered.

"With the introduction of Pro Tools 7, we have added a slew of enhanced MIDI features, with new looping, arranging, and composition tools that are changing the way people perceive our application," says Digidesign General Manager Dave Lebolt. "Now we're delivering tightly integrated virtual instrument's in Pro Tools, and to prove it, we're offering our first instrument, Xpand!, for free, so that all Pro Tools users can try it out for themselves."

Xpand! offers a variety of synthesis options, including virtual analog, sample playback, wavetable, FM, and virtual tone wheels. As many as four parts, each using a

different synthesis method, can be combined within a patch, and the four parts can easily be changed and edited. The six preassigned Smart Knobs give you instant access to the most important parameters of a sound (see Fig. A).

Xpand! comes with four arpeggiators and two effects processors that offer chorus, phaser, delay, and reverb, among other effects. The instrument includes more than 1,000 factory patches, which are conveniently organized into 28 categories, such as drums, basses, strings, vocals, pads, and arpeggios.

Xpand! begins shipping on January 19, 2006. A free CD containing the plug-in and 625 MB of samples will be available through Digidesign retailers or from the DigiStore for a nominal shipping fee.

"Although Xpand! is optimized for delivering heaps of sounds at a high rate of efficiency," Gorges explains, "our focus with Hybrid was to create a pro-level synthesizer. Our highest priority was to carve out a unique sound character and avoid any of the typical digital artifacts."

Hybrid features three high-definition oscillators that offer classic analog-style waveforms, such as sawtooth, square, and pulse, as well as complex waveforms such as a 7-oscillator stack called multisaw, a cross-modulation oscillator, oscillator sync, and more than 100 wavetables with 64 single-cycle waveforms in each.

"The oscillators are alias-free and react to modulation in a sample-accurate way," Gorges notes. "Among the oscillator models, there's a Prophet-5-inspired cross-modulation oscillator that creates complex spectra through audio-rate modulation." In addition, Hybrid's two-part layering scheme and modulation matrix make it easy to create complex patches.

The synth includes four envelope generators, three LFOs with sample and hold, a phrase generator, two step sequencers, an arpeggiator, and four morph groups (see Fig. B). "In the typical soft synth, envelopes get updated in multiples of the sample buffer size for efficiency, which leads to a lack of punch or even audible steps," explains Gorges. "However, Hybrid's envelopes and LFOs are sample-accurate, which gives them a lot of punch and definition."

Hybrid offers 23 filter types, including rescnant highpass, lowpass, bandpass, and allpass (for phase shifter effects). To add beefiness to the filter, Hybrid includes a saturation algorithm that overdrives the filter itself rather than distorting the signal before or after the filter. Gorges points out that "The newly developed multimode filter can be modulated at audio rate for filter FM, and the algorithm allows for Moogstyle saturation. The resonance cuts through over the entire frequency range and doesn't duck the oscillator signal, even at high-resonance levels."

Hybrid gives you two insert effects processors per part, and each processor has more than 30 algorithms. A separate Master effects processor is available, offering reverb, tape delay simulation, chorus, and flanging. Hybrid ships with more than 256 patches and will be available on its own in February 2006.

-Gino Robair

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M-Audio Studio Pro 3

The StudioPro 3 (\$99.95) is a compact and affordable powered studio monitor from M-Audio (www.m-audio.com). It features a 3.5-inch woofer and a 1-inch silk dome tweeter; both drivers are magnetically shielded for use around video and computer displays. With a cabinet made of medium-density fiberboard and a custom bass-reflex port, the StudioPro 3's bass response belies its small footprint, according to the manufacturer. Its specifications state a frequency response of 100 Hz to 20 kHz (±3 dB).

The StudioPro 3's power amp produces 10W into 4 Ω at 0.5 percent distortion, with a 2.3 kHz crossover frequency. A

Bass Boost control lets you add low-frequency gain and tailor the response to your environment. In addition to the rear-mounted main RCA inputs, a stereo aux input and a stereo headphone output are

mounted on the front panel. StudioPro 3s are small enough to pack in a suitcase, and their 100V to 240V power supply lets you use them virtually anywhere in the world. A pair weighs less than 9 pounds.



Arturia Brass

Software instrument developer Arturia (www.arturia.com) is shipping Brass (Mac/Win, \$349), a physical modeling program that simulates trumpet, trombone, and saxophone. Using algorithms created at IRCAM, Brass surpasses the capabilities of sample-based instruments by letting you control dynamics, articulation, and expression in real time.

Brass gives you control over parameters such as attack, pressure, noise, and vibrato. You can change materials from brass to wood to glass, and select from three sax mouthpieces and five mutes for trumpet and trombone. You can also choose a musical style and preset for each instrument. Humanization settings add realism to your playing. A graphic Spacialization window lets you control the instrument's placement in 3-D space.

Brass includes more than 500 preset riffs in an array of musical styles that range from soul and salsa to military and Motown. Onscreen graphics let you edit notes and tailor the length, tempo, and tonality of each riff. You can import and export riffs, trigger riffs with MIDI notes, and layer as many as four instruments in a riff. Brass is available as a download or packaged on a CD-ROM with a printed manual and a Syncrosoft USB key. It runs standalone and as a VST, DirectX, RTAS, or Audio Units plug-in.



Yellow Tools Independence

Independence (Mac/Win, \$499), from German software maker Yellow Tools (www.yellowtools.us), blurs the line between soft synths and samplers. Independence includes an 18 GB sample

Description

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library, and registered users can download additional free content from the company's Web site. It runs standalone and in VST, RTAS, DirectX, and Audio Units hosts. Owners of Culture, Candy, or Majestic can upgrade to Independence for \$149.

Independence is highly customizable and built for speed. It can import and map samples automatically, and the Mapping Editor lets you customize mult samples in seconds. Quickly edit instruments and copy settings from one instrument to another. The program features a multiple-page user interface, hard-disk streaming, audio and slice editors, and a built-in mixer environment, as well as an impulse-response processor and more than 30 insert effects. It also includes a custom edition of Chicken System's Translator for importing various sampler formats.

Yellow Tools has also announced three Extension sets for enhancing Independence's capabilities. Pro Groove (\$99) lets you manipulate the speed, sequence, length, and pitch of tempo-independent patterns. Pro Surround (\$99) accommodates multichannel samples and effects and supports any surround format. Pro Effekt (\$99) gives you an additional bank of insert effects that include reverb and side-channel compression and gating. EM

The awards just keep coming in...

"...Once again the indisputable gold standard in software samplers."

- May 2005, Electronic Musician Magazine



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Transistorless Computing By Scott Wilkinson

Nanotechnology could replace transistors.

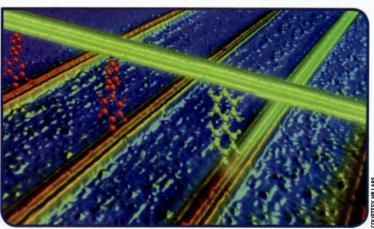
lot of information about computational nanotechnology has appeared on my desktop in recent months, some of which could be relevant to electronic musicians in the future. As I've said many times, any advance in computer technology has the potential to benefit those who use computers and other digital devices to make music. For example, see "Tech Page: NanoRAM" in the July 2005 issue of EM and "Tech Page: Blast from the Past" in the January 2006 issue.

HP Labs (www.hpl.hp.com) is working on some interesting nanotech projects, including a technology called crossbar computing. The ultimate goal of this project is nothing less than the replacement of the transistor, the most basic element of computing for the past 50 years. During that time, the number of transistors on a silicon chip has risen from one to nearly one billion, but Moore's Law can't continue to be upheld forever with conventional semiconductors. It is generally believed that transistors within a silicon chip won't function once they are reduced in size below about 10 nanometers (nm; billionths of a meter), which corresponds to approximately 30 atoms. So alternatives must be found if we want more powerful processors.

Three scientists working in HP Labs' Quantum

Science Research (QRS) group in Palo Alto, California, recently published a paper in the Journal of Applied Physics describing a transistor alternative called a crossbar latch. Nanowires measuring only 30 nm (100 atoms) in diameter are arranged

FIG. 1: In this artist's conception, crisscrossing nanowires are connected at each intersection by a single molecule that can be switched from one state to another, facilitating data storage and processing logic.



in a crosshatch pattern, with one layer of parallel wires on top of and perpendicular to another layer of parallel wires, forming a rectilinear grid of intersections.

Sandwiched between the wires is a layer of material that is only a few atoms thick. This bistable material (meaning it has two stable states, allowing it to conduct more or less electricity) is electrically switchable, allowing its polarity at each intersection to be reversed independently with the appropriate application of voltages to the wires. As a result, the material at each intersection can store a data bit.

The crossbar-latch concept was patented in 2003, but the QRS team published the results of an actual demonstration in 2005. The demo consisted of a single latch, with one signal wire crossing two control wires and molecular-scale, electronically switchable "devices" at the intersections (see Fig. 1). The latch was able to perform the NOT operation and restore signal levels to their ideal voltages, which will allow many latches to be chained together to perform complex computational tasks. Previous experiments had demonstrated molecular-scale data storage as well as the AND and OR operations, but the addition of the NOT operation completes the basic operational palette for general-purpose computing at the nanoscale.

The simple crosshatch pattern makes manufacturing relatively straightforward, especially compared with conventional microelectronic devices, and it can be constructed using a wide variety of materials and processes, providing great flexibility. In addition, a single geometry can be used for memory, processing logic, and interconnection, making the crossbar concept highly adaptable.

Manufacturing costs can be kept relatively low using chemical self-assembly, but that inevitably produces defects and irregularities in the size of nanoscale components. Another concern is the presence of random fluctuations in such small structures, especially at room temperature and above. Fortunately, the grid structure allows chip architects to easily design around those flaws using massive redundancy and other techniques.

It will be years before crossbar latches find their way into mainstream devices, but they could form the basis of true molecular computing, allowing Moore's Law to survive another 50 years. This technology offers the potential for processors thousands of times more powerful than today's, which should be sweet harmony to any electronic musician's ears. EM

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Off the Record By Matt Gallagher

Twink playfully weaves old vinyl snippets.

nder the guise of Twink, Mike Langlie typically makes music with toy pianos. Langlie describes The Broken Record (Seeland, 2005) as his experimental departure that was inspired by Negativland. "It's a tribute to children's music from a time that seems more innocent," he says. The album is a collection of audio collages made up of samples that Langlie extracted from vinyl children's records produced from the 1940s through the 1970s, subtly accompanied by Langlie's programmed parts. "The humor comes from taking songs like 'The Alphabet Song' or 'Pop Goes the Weasel' and sending them in an off-kilter direction," he says.

"Over about a year, I recorded my record collection onto my Mac to make CD mixes," Langlie says. "I used an old Califone schoolhouse record player. It's built like a tank, but it started to conk out after constant use. In some songs you can hear the belt slipping like crazy." Langlie connected the record player's audio output to the audio input on his 1.2 GHz Mac G4 running OS 9 and recorded into Macromedia's SoundEdit 16.

> "It took another year to slice up the archived songs using SoundEdit 16 and [Propellerhead] ReCycle," Langlie says. "I organized samples into themes and styles but kept my ears open for unexpected things. The dialog in 'Grandmother Meets



The Broken Record/Twink

the Wolf' was assembled from more than a dozen story records and completely unrelated things.

"I cut up riffs and phrases in ReCycle and then rearranged them in [Propellerhead] Reason," Langlie says. "This allowed me to retain the feel of certain parts while changing the order of notes, keys, or tempos to fit with other pieces, or to simply isolate certain sounds. I sometimes exaggerated the bad pitch-shifting and timestretching in SoundEdit16, where I thought it would fit with the rough edges of the sampled vinyl." Langlie notes that retaining the original records' pops and skips was essential. "Some of them suggested weird rhythms that I emphasized with my own drum programming, or made interesting polyrhythms when combined with other grainy samples.

"Reason let me manipulate things easily using filters, effects, and EQ," Langlie says. "Having a limitless supply of channels was nice, although I hit the ceiling of what my processor could handle. In those cases, I would export tracks and reimport them as merged stereo samples.

"A lot of songs started with a sampled riff or rhythm loop," Langlie says. "I mostly used Reason's NN19 sampler and Dr.Rex looping modules, tweaking their filters and adding effects. To help parts mesh together, I'd add a subtle bass line underneath the track using Subtractor and Malström. I could tweak patches on the fly to add more presence or to get out of the way of other parts as needed. The drum parts are from kiddie records, stuff I found through crate digging, and patterns I programmed using Reason's ReDrum unit. I built kits from drum samples and hits from children's records. I threw in a few toys and cheesy Casio rhythms for flavor."

Tempos and time signatures that changed during the course of a track presented another challenge to Langlie. "For songs that had a lot of sections, like 'Choo Choo' and 'Monkeyshines,' I had to make several Reason files of each tune and then tie them together in SoundEdit16," he says. "For a section in 'Monkeyshines' where the tempo creeps up slightly over several measures, I resorted to exporting the track measure by measure, each time bumping up the tempo a couple notches, then pasting all the pieces together in SoundEdit16. The complexity of it got crazy at times." EM

For more information, go to www.twink.net.



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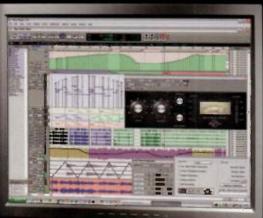








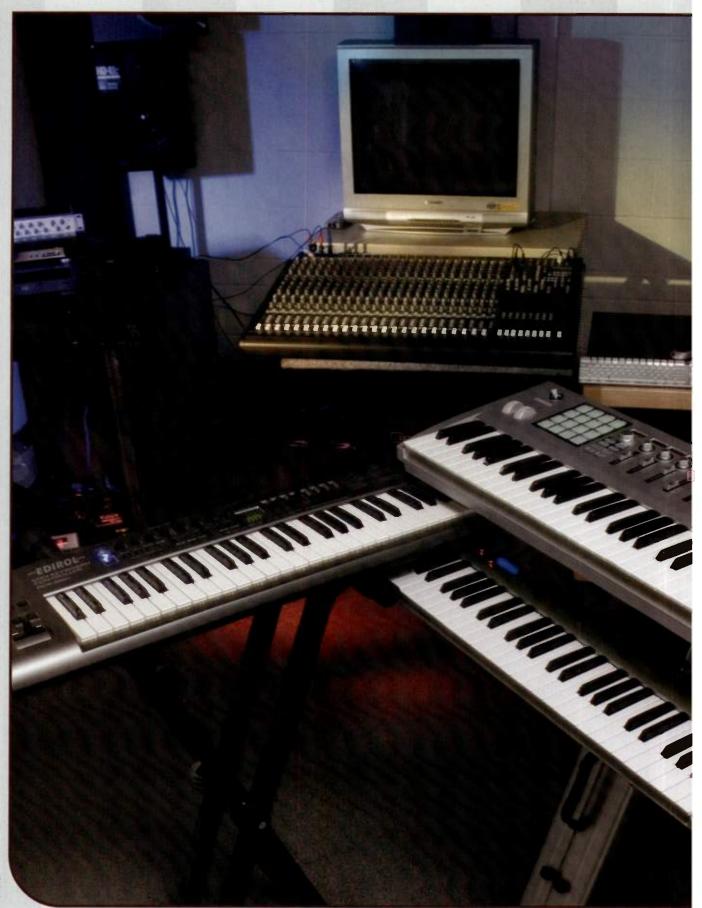






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JANE RICHEY

By Mike Levine

Five USB MIDI-keyboard controllers that put you in command.

Seizing Control

For sheer convenience, it's hard to beat a USB MIDI-keyboard controller. You don't need a separate interface or MIDI cables, and because it's powered by the USB bus, no power cable is necessary. Once you've installed the driver (some units don't even need those) and connected the USB cable, you're ready to go. Such simplicity of setup is particularly enticing for musicians traveling with laptop-based sequencing rigs.

But these keyboards are also a boon in the personal-studio environment. Most come equipped with a host of programmable controllers—usually knobs, sliders, and buttons—that you can use to tweak soft-synth parameters, DAW volumes and pans, and any parameter that responds to MIDI control.

Many of the keyboards come with preprogrammed templates, called control maps, for a variety of popular music software, but they're also easy to program yourself. If you don't mind rolling up your sleeves a bit, you can set up custom control maps for your plug-ins, your DAW software, and any other gear you have that responds to MIDI.

Narrowing the Field

Because there are so many varieties of USB MIDIkeyboard controllers on the market, narrowing down the field for a roundup was challenging. I decided to limit this article to 49-key units. That size is affordable, yet has enough keys to allow for meaningful playing. The five products reviewed here are the CME UF5, the Edirol PCR-M50, the E-mu Xboard49, the Korg Kontrol49, and the Novation ReMote 49 LE. The keyboards range in price from just under \$230 (the Xboard 49) to \$499 (the Kontrol49).

All the controllers have Velocity-sensitive, full-size keys. Although all of them are bus powered, there may be times when you want to use the keyboard without a computer or when a sufficiently powered USB port is not available. For those occasions, the Kontrol49, the UF5, and the PCR-M50 each come with a wall-wart or lump-in-the-line AC adapter. The ReMote 49 LE and Xboard 49 offer adapters only as an option, but both keyboards can be powered by batteries (four AAs for the Novation and three AAs for the E-mu).



All the keyboards in this article support Mac OS X and Windows XP for their USB-MIDI features. Several also support Windows 2000. The PCR-M50 is the only one that supports Mac OS 9, Windows 98, and Windows ME (see the table "MIDI Keyboard Controller Specifications" for details).

What's Onboard

One of the most important features to look for in a USB MIDIkeyboard controller is how many

programmable sliders, knobs, and buttons the unit has. The more you have, the more parameters you can control.

The Kontrol49 and the ReMote49 LE offer additional control types. The Korg unit gives you 16 programmable, Velocity-sensitive Trigger Pads that you can be use to trigger samples and send MIDI messages; the pads also double as function buttons. Additionally, the Kontrol49 has a joystick-style Vector control, that can affect two parameters simultaneously.

The ReMote 49 LE supplements its knobs with an X/Y Touchpad. By gliding your finger over it, you can manipulate as many as four programmable controllers on two axes (two on each).

The Xboard 49, the UF5, and the Kontrol49 have control wheels for pitch bend and modulation. The PCR-M50 and ReMote 49 LE use a single integrated control for those parameters: the former has a Roland-style paddle, and the latter has a joystick.

Getting in the Action

All five units have some type of synth action—either unweighted or semiweighted—and there is plenty of variation in feel. Some have relatively stiff action, while others have a lighter touch. Some



easy to do.



FIG. 2: The CME UFS has a lot of features that the other four don't, including a Breath Control input, a metal housing, 60 mm faders, and an optional FireWire audio card.

make a lot of mechanical noise when played; others are surprisingly quiet. All five keyboards evaluated let you choose from a range of Velocity curves. Those allow you to customize the keyboard's response to your playing style.

If you're a keyboardist of any skill, none of the units featured in this article have enough keys to function as your studio's sole keyboard. But any of them could play a vital role as either a control surface and or a secondary keyboard for synth and organ parts. If you aren't a keyboard player and don't plan to have any recording in your studio regularly, then any of these 49-key units could serve as your main keyboard.

To help compensate for their keyboard size, all five units offer easy octave transposition, usually requiring only one or two button pushes or knob twists. All but the ReMote 49 LE have transpose functions for intervals as small as a semitone.

The Port Side

Although the flow of MIDI data between the keyboard and the computer is handled through the USB bus, if you plan to integrate external MIDI gear into your setup, and you're not using another interface, you'll need a keyboard with a MIDI In jack. Of the five keyboards reviewed, only the PCR-M50 and the Kontrol49 are so equipped.

Four of the five have a single MIDI Out jack that can be switched between outputting the MIDI from the keyboard and echoing the MIDI coming from the computer through USB (the ReMote 49 LE also lets you output both simultaneously). The Kontrol49 has two MIDI Out jacks. That allows you to simultaneously and separately output the two MIDI streams. Most of the keyboards have rear-panel inputs for sustain and expression pedals.

Easy as Pie?

Another factor to look at when buying a USB MIDI controller is ease of use. Of all the five keyboards, only the ReMote 49 LE is USB class compliant, meaning that it

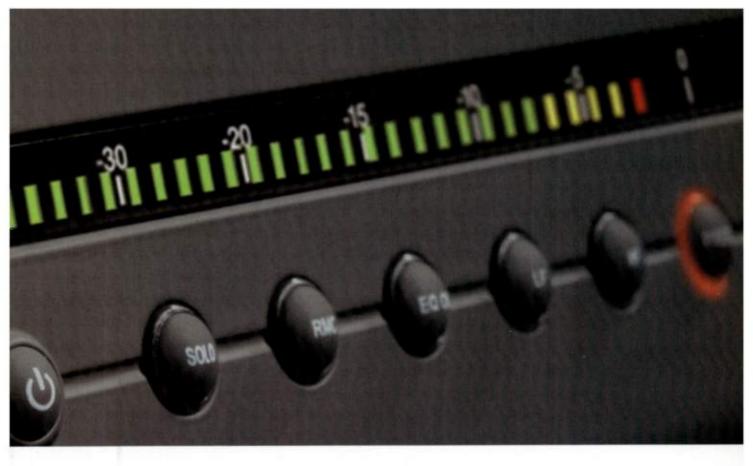
FIG. 1: Many software applications and

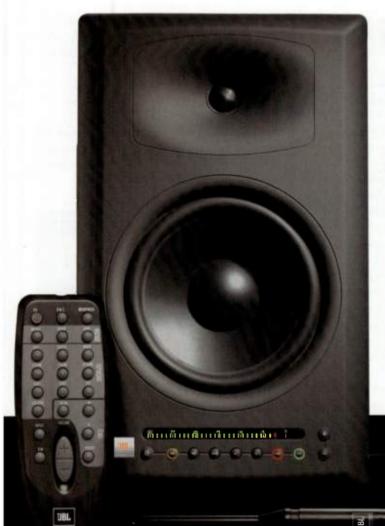
plug-ins allow you to map various features

messages. In Reason, the Remote Override

and parameters to external MIDI control

Mapping feature (shown here) makes it





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LSR4300

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Stunning sound and revolutionary intelligence to analyze and correct the problems in any room.







FIG. 3: The Edirol PCR-MSO's attributes include a variety of programmable knobs, sliders, and buttons; a solid and quiet keyboard feel; and a low price.

doesn't need drivers. Just plug it into a Mac OS X- or Windows XP-equipped computer, and it is recognized automatically. The others all require driver installation before use. For the most part, the installation process is easy. Once completed, your MIDI software will recognize the keyboard (some software requires additional preference setting.)

After you get the keyboard working, configure its knobs, sliders, and buttons to work with your various plug-ins and DAW software. To make that easier, three of the five keyboards—the PCR-M50, the Kontrol49, and the ReMOTE 49 LE—come preloaded with control maps for a variety of popular soft synths and sequencers. All three had templates for Propellerhead Reason.

The Kontrol49 has the most thorough Reason implementation through its Native Mode, which essentially allows Reason (or other software that supports Korg's Native Mode, such as Apple Logic Pro 7.1) to take control of it. As you switch Reason instruments, Kontrol49 switches automatically to the appropriate control map.

The UF5's default settings include GM volume, pan, synth control, and expression presets. You can download sequencer-template files for Steinberg Cubase and Nuendo from the CME Web site. The files will configure those sequencers to respond to the UF5's default settings. The E-mu Xboard 49 has only templates for the included ProteusX LE soft instrument.

Even if the keyboard you choose has lots of prefigured control maps, it's unlikely to have them for all of the software that you use. And even if it does, you'll want to modify what's there. Therefore, it helps to have a keyboard that you can program easily on. There was great variation among the five keyboards in that respect.

The Kontrol49 and the UF5 require the fewest steps when making a programming assignment. The ReMote 49 LE and the Xboard 49 are slightly more involved, but they are intuitive. The PCR-M50 has the most intricate assignment procedure of the five keyboards.

A lot of music-software applications (such as Reason, Apple Logic Pro, and Ableton Live) have controller-mapping capabilities that are sometimes called "learn" functions. Instead of matching your keyboard's control map to the software, you can match the software to your keyboard.

In Reason, for instance, if you Control + click (on Mac) or right-click (on Win) cn a parameter for one of the instruments, you get a dialog box that lets you configure one of your knobs or sliders to control that parameter (see Fig. 1). In Korg's Legacy Collection of soft synths, Control + clicking (or right-clicking) on an onscreen knob and then moving one of your controller's knobs or faders is all that's necessary to link the parameter with that particular remote control.

Not all software applications and instruments have learn features. If that's the case, and if your keyboard doesn't have a preset for the software you're using, you'll need to look either in the manual or in support documents for the software in question. Hopefully you'll find the Control Change (CC) numbers there that correspond to its various functions. Then you can program your keyboard's knobs, sliders, and buttons to match those numbers.

Four of the five keyboards come with editor software. The fifth, the UF5, is scheduled to have released its editor by the time you read this article. The editor applications allow you to do onscreen editing of your controller assignments, which is usually much easier than doing them on the keyboard. When you finish, you can save your edits to disk or in one of the keyboard's preset memories.

Once you have the correct template loaded or programmed into your keyboard, it can be confusing to

FIG. 4: Like the software editors for the other keyboards, the PCR Editor software greatly simplifies the process of setting up or tweaking control maps. Click on a control and a dialog box appears in which you can edit its value.





instead of dragging a mouse. On-board display of critical parameters for intuitive operation. Motorized control to craft more accurate mixes. And professional multi-channel I/O including mic/instrument preamps, Lightpipe and S/PDIF. ProjectMix I/O is the universal solution that combines the best of the hardware and software worlds for a new standard in streamlined production.

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keep track of which parameter is controlled by which knob, slider, or button. The Kontrol49 has the most elegant solution for this problem; it displays the name and value of the parameter being tweaked on an individual display above each knob-and-slider pair.

Although the ReMote 49 LE has only one LCD, it also displays the name and value information each time you touch a knob or button. The Xboard 49 has the best parameter display of the three others (all of which have LED displays) by alternately flashing the value, CC number, and MIDI channel of the parameter you tweaked.

The PCR-M50 and the ReMote 49 LE help you keep track of controller assignments by including physical template overlays (which have the names of the various parameters printed on them) that fit over the knobs and sliders on the keyboard's front panel. The PCR-M50 comes with a single overlay for GM2. The ReMote 49 LE comes with overlays for Reason Malstrom, Reason Subtractor, Native Instruments FM7, and G-Media Oddity, among others. The Kontrol49 comes with a generic overlay for its Trigger Pads. The overlay solution is viable only if you're controlling a single synth or a sequencer. If you have to keep switching them, overlays are more trouble than they're worth.

Included Goodies

In addition to editors, all five keyboards come with other software, in varying amounts. All give you drivers, except for the ReMote 49 LE, which doesn't need them. Most, with the exception of the UF5, give you bundled music software.

Typically, those bundles contain "Lite" or "LE" versions of popular programs such as Reason, Live, and Cakewalk Sonar. Novation breaks that pattern



FIG. 5: For PC users, one of the big bonuses of the Xboard 49 is the included ProteusX LE VST sound module, which comes with 1,024 patches and is expandable.

FIG. 6: Although the Xboard 49 is the lowest priced of the five keyboards, it offers a solid



by including a full version of its Bass Station mono synth plug-in with the ReMote 49 L3. Depending on the bundle and the software that you already own, the included software can add significant extra value to your purchase.

CME UF5 (\$279)

The black and red CME UF5 (see Fig. 2) offers a number of features that are unique among the keyboards in this roundup. It's the only one with an aluminum chassis (the others are housed in plastic), making it more durable for travel. It's also the only one that lets you set up splits and layers—handy capabilities for a performance situation.

The UF5's eight 60 mm sliders have a longer throw than do those on the Kontrol49 or the PCR-M50. (The Xboard 49 and ReMote 49 LE have no sliders.) Its Breath Control input is also unique in this roundup, as is its optional FireWire audio interface card, the UF400E (\$249). The latter gives you two channels of audio I/O, including analog line inputs and outputs; a mic pre; S/PDIF digital; a headphone output; and MIDI In, Out, and Thru ports.

The UF5 is also the only one of the five keyboards to offer a Drawbar mode for use with organ plug-ins or modules. That mode reverses the faders (making them full-on at the bottom and full-off at the top) to mimic the action of an organ's drawbars.

In addition to the sliders, you get eight programmable knobs and a number of function buttons that make changing parameters simple. It's easy to program the knobs and sliders with custom Control Change (CC) assignments. You just hold a function button down, move the knob or the slider that you want to program, and turn the Data Wheel to the controller number that you desire.

You also get a set of dedicated sequencer-transport controls. According to the manual (which you'll need to download from the CME site), the transport controls must be supported in the host software in order to work, or you must program your software (assuming it has a learn feature) to work with the controls.

The UF5 transmits Aftertouch (Channel Pressure) from its keyboard. You can turn the Aftertouch on and off using a function button on the front panel.



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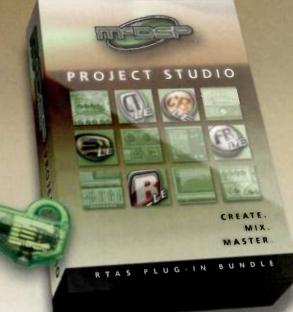
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The stock UF5 has no MIDI In and a single MIDI Out, but its MIDI Route function lets you choose whether the MIDI Out is echoing either what's coming from the computer through USB or what's being played on the keyboard.

The semiweighted action on the UF5 was the heaviest of all the five keyboards. If you're used to a weighted-action keyboard, you'll probably like it. If you're looking for a more synth- or organlike action, you'll find it somewhat stiff.

Many of the UF5's settings and features are aimed at those using General MIDI (GM) devices or software. For example, the faders have three modes: the first sets them up to control volumes for channels 1 through 7 of a GM module. The second controls channels 8 through 16, and the third allows the faders to be mapped to custom-controller messages (it defaults to CC 11, Expression).

The knobs have two modes. In one, each knob is preassigned a different GM-standard control message: Brightness (Cutoff), Resonance, Attack, Release, Pan, Reverb, Chorus, and Tempo, respectively. The other mode defaults to other controllers, such as Expression and Breath control, but allows you to assign your own.

Despite its many features, the UF5 has a rather significant flaw: it has virtually no onboard memory for user-customized presets. Your current setting is retained by the keyboard after power down, but that's it. That means you'll have to leave one setting on the keyboard at all times (not a practical solution in most cases), program your software or outboard gear to respond to the UF5's settings (which isn't always possible or practical), program the UF5 each time you want to control a different plug-in or outboard device, or use the software editor for that purpose.

The editor—which initially is for Windows only—

FIG. 7: The Kontrol49 offers the most expansive feature set, the largest software bundle, and the most informative displays.

should be out by the time you read this. It will make the UF5 a much more complete product, because it will let you to



MANUFACTURER CONTACTS

CME Pro/Yamaha Corporation of America (distributor) www.cme-pro.com

Edirol/Roland Corporation U.S. (distributor) www.rolandus.com

E-mu Systems

www.emu.com

Korg

www.korg.com

Novation/American Music and Sound (AMS) (distributor) www.novationmusic.com

transfer control maps to and from your computer, where you can save them.

PROS: Allows for splits and layers. Easy to program. Solidly built. Faders have long throw. Cptional FireWire audio card. Breath controller input. Many GM-oriented features. Drawbar mode.

CONS: Only one user-programmed control map can be in memory. No bundled music software. English manual in PDF form only, and it must be downloaded. Editor software is for Windows only.

Edirol PCR-M50 (\$249)

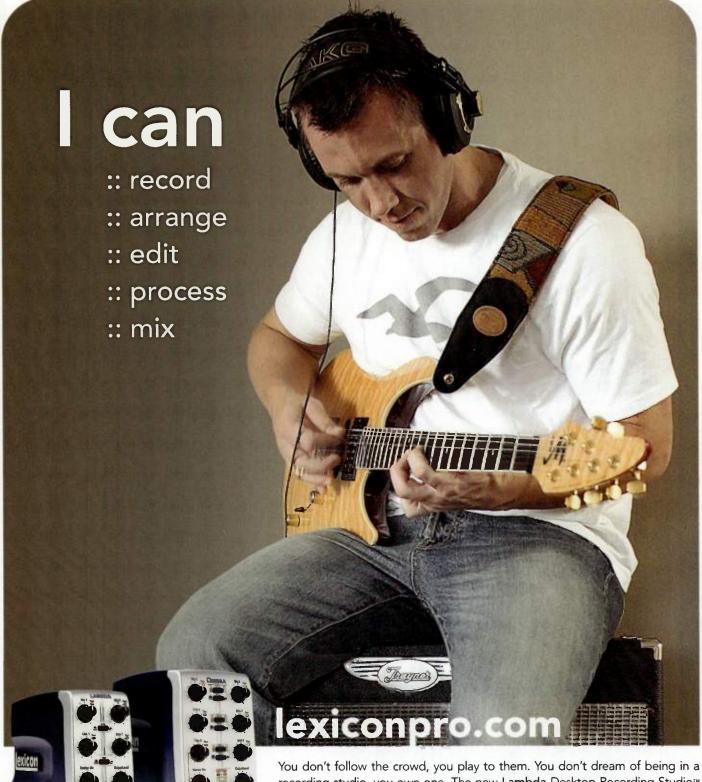
The slim and light PCR-M50 provides a nice combination of price and features. It's a sleek-looking unit that's dark grey with black controls, rounded corners, and a large, bright purple power indicator (see Fig. 3).

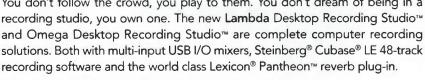
It has eight sliders on the right side, eight knobs in a straight line to the left of the sliders, and a total of nine assignable switches (a group of three and a group of six). A green, 7-segment LED display provides visual feedback. When the keyboard is in Edit mode, the keys double as function keys.

The PCR-M50 is a well-built unit. It's key mechanism comes courtesy of Edirol's parent company, Roland, which has years of experience in keyboard technology. The keys feel solid, offer good resistance for a synth action, and are mechanically quiet. You have a choice of 12 different Velocity curves, which is more than any other keyboard in the roundup.

Driver installation was a snap for Mac OS X. I just had to click on the Install button and the software did the rest. Conversely, the Windows XP installation was more involved than it was for any of the other keyboards.

You can program the PCR-M50 from either the unit itself or by using the PCR Editor software. Editing from the keyboard is complicated, requiring a number of unintuitive button pushes to set up controller and MIDI note assignments. The PCR-M50 does allow you to do some pretty sophisticated programming, though, including letting you set the upper and lower limits of





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CC assignments—only one of the other keyboards (the ReMote 49 LE) has that capability.

Editing is a snap using the PCR Editor software. When you select a button, knob, or slider on the onscreen display, a dialog box pops up into which you can quickly program notes (see Fig. 4), CC assignments, and more. Like the onboard programming, transmitting data to and from the editor also requires several button pushes.



FIG. 9: While most of the keyboards include "lite" versions of third-party software, Novation gives you a full version of its Bass Station plug-in when you purchase the ReMote 49 LE.

The PCR-M50 has 16 memories for storing control maps (it calls them Memory Sets), and it comes programmed with setups for a range of applications and plug-ins. You can download additional Memory Sets free from the Roland Web site.

In addition to the drivers and PCR Editor software, Windows users also get Sonar LE (Win), a "lite" version of Sonar that gives you a nice array of features. No sequencing software is included for the Mac.

PROS: Good action. Quiet keys. Large selection of Velocity curves. Advanced programming options. Good variety of programmable controllers. Sonar LE included for Windows users.

CONS: Unintuitive programming. Windows driver installation is complicated. No third-party software for Mac users.

E-mu Xboard 49 (\$229.99)

The Xboard 49 is the least expensive of the five keyboards, and it's an excellent value. That is especially true if you're a PC user, because it comes bundled with ProteusX LE (see Fig. 5), a multitimbral VST instrument that comes loaded with the entire sample set from the Proteus 2000 and gives you 1,024 patches. (It can be expanded with sound sets from the EmulatorX or ProteusX sound libraries.)

PC users also get Ableton Live Lite 4 for E-mu. That version of Live is reduced in features (for instance, you're

allowed only four audio tracks), but it does host ProteusX LE. Both Windows and Mac users get the Xboard editor software, which is nicely designed and easy to use.

The keyboard itself sports 16 programmable knobs (see Fig. 6), but it has no assignable sliders or buttons. You do get a data slider for entering values and 12 buttons for assigning functions and for editing. The 3-character blue LED is nicely implemented; it flashes instructions such as "Select" or "CC Send on Patch," which help simplify the editing process. The keyboard sends Aftertouch in the form of Channel Pressure.

The Xboard 49 is comfortable to play from the standpoint of its action. The keys, however, are a bit wobbly, have a spongy feel when you press down hard on them, and make a fair amount of mechanical noise.

The unit has a unique feature called 16-Channel Mode, which lets you quickly assign the same controller to 16 different MIDI channels, with each knob controlling one channel. That can be used for, say, controlling volume on 16 MIDI channels while mixing. Another nicely implemented feature is Note Latch Mode, which lets you specify a range of notes to stay on infinitely when pressed. You could use that feature to trigger a loop or a sustaining sample while you triggered other nonlatched samples from outside the specified range.

Although it has 16 preset memories, the Xboard 49 doesn't come with a selection of control maps; you get only one for the ProteusX LE. Luckily, programming your own presets is relatively easy. You press the Edit key, turn the knob you want to program, and set the data slider to the correct controller number. You can save as many presets as you want to disk using the Xboard Control software.

The Xboard 49's single MIDI out serves dual functions. Set to Thru, it echoes the MIDI data sent through the USB port from the computer. Set to Out, it outputs MIDI messages from the keyboard and its knobs. The unit is equipped with only a single footswitch input, but it can be switched between expression and sustain functions. When you plug in a sustain pedal, the



48



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Xboard 49 can sense the polarity of the pedal you're using and set itself accordingly.

PROS: Inexpensive. Intuitive programming. ProteusX LE included for PC users. LED display is surprisingly informative. 16-channel mode. Good editor software.

CONS: No sliders. No bundled software for Mac users. No control maps for third-party software.

Korg Kontrol49 (\$499)

There's a reason why the Kontrol49 sports the highest price tag of all the keyboards in this roundup: it's the best equipped. Almost any feature that you would want in a USB MIDI-keyboard controller has been included.

Reminiscent of Korg's MicroKontrol (but larger and significantly upgraded), the Kontrol49 is nicely designed (see Fig. 7) and has a very playable synth-key action. It's physically deeper than the other four keyboards. That depth allowed Korg to give it a spacious layout, in which none of the knobs, sliders, or pads feel crowded.

Its 16 programmable, Velocity-sensitive Trigger Pads add a great deal to the Kontrol49's utility. You can use them to trigger samples (they're great for drum sounds), to start clips in Ableton Live, or as momentary or toggle switches for any MIDI control messages that you assign to them. The pads do double duty as function keys when the keyboard is in its Setting (programming) mode.

The Kontrol49 has eight sliders and eight knobs. Like the UF5, the Kontrol49 has its knobs located directly above the sliders. I like that arrangement because it's more mixerlike and intuitive, especially if you've set up the keyboard to control a sequencer's mixer. If you're dexterous, that arrangement also makes it possible to manipulate a fader and its corresponding knob simultaneously with one hand, leaving the other hand free to play the keys.

You also get two programmable switches and a large knob called the Main Encoder, which can be set to control parameters such as track volume, tempo, and Program Change. Unlike any of the other four keyboards, the Kontrol49 gives you the option to set the pitch bend and mod wheels so that each can transmit two separate MIDI control messages. One is controlled by the forward or "up" range of the wheel, and the other is controlled by the backward or "down" range. The Vector Control is a joystick-style controller that can be programmed with two different CC numbers, one on the vertical axis and one on the horizontal axis.

Another feature that sets this keyboard apart from its competition is its displays. There are programmable 8-character LCD displays above each slider and knob pair, as well as one above the Main Encoder. With the

PHOTON ON THE HORIZON

Although it was not released in time to be part of this roundup, the 49-key Alesis Photon X49 (\$499, see Fig. A) is a USB MIDI-keyboard controller that should be on the market by the time you read this.



FIG. A: The Alesis Photon X49.

According to Alesis (www.alesis.com), the unit will be equipped with nine 60 mm sliders, ten backlit buttons, and ten knobs that have three layers. It will also contain an AXYZ Controller Dome, which is a controller that's activated by waving your hand over it.

Other features include a 2 × 16 line LCD, transport controls, and a ten-key keypad. The unit has three power options: bus power, an optional AC adapter, or four C batteries. It's USB class compliant, so it needs no drivers for Mac OS X or Windows XP. The Photon X49 will be bundled with Cubase LE sequencing software for Mac and Windows.

keyboard in Setting mode, those displays show parameter types and values.

Once you've programmed the slider (or knob), you can input a name for it, and it will show up in the display. When the display is referring to a slider, it glows green; when it's displaying a knob's properties, it glows red. That way, a single display can function for the knob and the slider. Considering the large volume of parameter names you're likely to be dealing with, having the visual feedback of the displays helps you stay oriented.

Because it's otherwise so fully featured, I was surprised to discover that the Kontrol49 doesn't transmit Aftertouch from its keys. You can send Aftertouch, however, if you assign it to one of the controls.

On its back panel, the Kontrol49 has assignable expression and sustain pedal inputs, a MIDI In port, and two MIDI Out ports. The dual outs allow you plenty of MIDI-routing flexibility.

The Kontrol49 comes with drivers for Mac OS X, and Windows XP, and the excellent and intuitive Kontrol49 Editor/Librarian (Mac/Win) application. You also get a folder full of control maps for a range of software.

Another bonus with the Kontrol49 is its generous software bundle, the Creative Kontrol Pack Vol. 2. It includes special Korg editions of Propellerhead Reason Adapted, Ultimate Sound Bank UVI, IK Multimedia SampleTank 2 (with 158 MB of sounds), Ableton Live Lite 4, and Korg's MDE-X effects plug-ins. It's by far the most extensive bundle of any of the five keyboards.

MIDI KEYBOARD	CONTROLLE	R SPECIFICATIONS

Make/Model	CME UF5	Edirol PCR-M50	E-mu Xboard 49	Korg Kontrol49	Novation ReMote 49 LE
rice	\$279	\$249	\$229.99	\$499	\$349
Programmable Sliders/Knobs/ Buttons	8/8/0	8/8/9	0/16/0	8/8/2	O/9/9 (The Group B feat effectively doubles this slider and button count.
Other Controllers	none	none	none	(16) Trigger Pads, Vector Control	X/Y Touchpad
Pitch Bend/ Modulation	wheels	paddle	wheels (programmable)	wheels (programmable)	joystick
MIDI	Out	In/Out	Out	In/Out/Out	Out
Pedal Inputs	(2) sustain and expression	(2) sustain and expression	(1) sustain or expression	(2) sustain and expression	(1) sustain
Additional Ports	breath controller	none	none	none	none
Preset Memories	0	16	16	12	16
Velocity Curves	4	12	8	8	8
Keys Transmit Aftertouch	yes	yes	yes	no (can be sent from a controller)	no (can be sent from a controller)
Drawbar Mode	yes	no	n/a	no	n/a
Bundled Software	UF Editor (for Win only, due out by the time you read this)	PCR Editor (Mac/Win), Sonar LE (Win)	Xboard Editor (Mac/ Win), Proteus X LE (Win), Ableton Live Lite 4 for E-mu (Win)	Kontrol49 Editor/ Librarian, Live Lite 4 Korg Edition, SampleTank 2 Korg Edition, MDE-X, Reason Adapted for Korg, UVI Korg Edition (all for Mac and Windows)	Novation Bass Station (Mac/Win), ReMote LE Editor (Mac/Win)
OS Support	Mac OS X, Windows XP/2000	Mac OS X, OS 9, Windows XP/2000/ ME/98	Mac OS X, Windows XP/2000	Mac OS X, Windows XP	Mac OS X, Windows XP
OS Support Dimensions	Windows	9, Windows XP/2000/		Mac OS X, Windows XP 28.7" (W) × 3.4" (H) × 12.6" (D)	Mac OS X, Windows XP 30.2° (W) × 2.7" (H) × 7.5" (D)



PROS: Programmable knobs, sliders, switches, and joystick. Helpful, programmable LCD displays. Easy onboard programming. Excellent documentation. Intuitive editor/librarian software. Comfortable action. One MIDI In and two MIDI Out jacks. Generous software bundle. Excellent selection of control maps. Native Mode.

CONS: Keys don't send Aftertouch. Pricey.

Novation ReMote 49 LE (\$349)

At first glance, the slim ReMote 49 LE (see Fig. 8), which is part of a new line of Novation USB MIDI controller keyboards, appears underequipped compared with some of its competitors. It has only nine programmable knobs and nine programmable buttons on its front panel. But that impression is deceiving, because there are actually double that number thanks to the Group B feature, which lets you access a virtual second layer of the knobs and buttons at the flip of a switch. It does not have any sliders.

The unit's X/Y Touchpad sits to the left of the keys, just under the pitch bend- and modulation joystick. Controlling the touchpad takes a little getting used to, but it has the potential for great expressiveness, if programmed and manipulated correctly.

The semiweighted action is playable, although the keys feel loose and are spongy when pressed hard. The keyboard doesn't send Aftertouch, but you can assign Aftertouch to be sent by any of the knobs or other controllers.

You get a single MIDI out, which can be switched to echo the keyboard, the USB MIDI coming from the computer, or both. You get a sustain pedal input but not an expression pedal input.

Editing on the keyboard is straightforward. You press the Edit button, turn a knob or press a button, use the Octave buttons to step through the various parameters, and change values with the Data knob. There are plenty of editing choices. And like on the PCR-M50, you can specify the range within which each controller will function.

Novation gets the most out of the programmable buttons by providing four button modes: Normal, Momentary, Toggle, and Step. Normal sends a MIDI message when pressed. Momentary sends the lowest value of the message when pressed, and it sends the highest value (all of which are programmable) when released. Toggle switches between the low and high values on each press. Step allows you to send increasingly higher value messages with each subsequent press.

Editing is greatly aided by the unit's 32-character LCD display, which automatically reads out the name, controller number, and value of each knob you turn or button you push. You can even name each param-

eter, although entering the letters from the keyboard is pretty slow going. (As on the Kontrol49, that task is much easier using the editor software.) Except for the Kontrol49 with its individual LCDs, the ReMote 49 LE's display is the most informative of any of the other keyboards reviewed here.

The ReMote 49 LE has transport controls that work in conjunction with the included sequencer Templates. These controls can also be programmed to send other types of MIDI messages, including Note On or Note Off. So consider them to be extra programmable buttons.

Once you've finished editing, you can save your control map to one of 16 onboard memories. Twelve of those contain factory presets for such software as Reason, Steinberg Cubase, Ableton Live, G-Media Oddity, Apple Logic, Stylus Trilogy, and Bass Station.

The editor software is simple to use, and makes programming even easier. The bundled Bass Station (see Fig. 9), a monophonic synth plug-in, is unique in this roundup because it's the only full version of a software title that's offered.

As mentioned, the ReMote 49 LE is the only one of the five keyboards that is USB class compliant and needs no drivers. So if you're using OS X or Windows XP, it's the only one of the five that can truly call itself plug-and-play.

PROS: USB class compliant. X/Y Touchpad. Group B feature effectively doubles the number of knobs and buttons. Informative LCD display. Intuitive programming. Full version of Bass Station plug-in included. Transport controls.

CONS: Keys don't send Aftertouch. No sliders. No MIDI In. No expression pedal input. No transpose function.

Gaining Control

All the keyboards reviewed here are solid performers that will get the job done for you. That said, there are significant differences in price, features, and feel. With all that variation, you should be able to find one that fits your budget, work style, studio setup, and taste. Bear in mind that most of these keyboards are part of product lines that contain other models equipped with the same control layout and features, but with larger or smaller keyboard sizes (typically 61-key or 25-key).

Once you've settled on a unit and you've gotten up to speed with its features, you're really going to appreciate the convenience and control that it provides. Happy tweaking. EM

Mike Levine is a senior editor at EM. He wishes to thank Doug Hall of Propeller Music and Sound Design (www.propellermusic.com) for his help with evaluating the keyboard actions.

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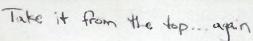
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Their friendly and informative Sweetwater Sales Engineer also told them that by investing a little more money, they could get the Pro Tools LE Factory bundles—arming them with even more professional plug-ins. They jumped at the opportunity.

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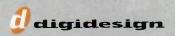
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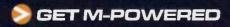
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The Sum of All Tracks By Orren Merton

Is summing your digital tracks with analog

hardware a

sound idea?

f you have read any audio newsgroups on the Internet, you may have noticed that certain topics spark endless and heated debate: Mac vs. PC, analog vs. digital, Pro Tools vs. everything else. Though the number and intensity of those holy wars ebb and flow, they still rage on because there is no single correct answer.

The debate over analog summing has evolved into another such contentious topic. A quick look at high-end pro audio gear reveals dozens of analog summing devices, some with prices exceeding \$5,000. Much of the marketing for those boxes implicitly or explicitly suggests that you need to sum your digital audio workstation tracks through their analog circuits for your mixes to sound their best. Naysayers insist that the boxes have no tangible effect on sound quality and that their venders are selling snake oil. As in all such arguments, many knowledgeable people with opposing viewpoints are all convinced that they are absolutely right.

If you are just tuning in to the debate, the signal-to-noise ratio of the arguments can make it difficult to get answers to simple questions. What exactly is analog summing? Why does it spark such heated debate? Does it require expensive equipment? And the most important question of all: will analog summing really help your mixes sound better?

Sum Great Reward

The idea of summing tracks using an analog mixer is nothing new. In the early days of digital recording, tracks were always summed together using a traditional analog mixer because no other options were available. With the rise of DAW software, recordists gained the ability to mix multitrack productions entirely within their computers.

As personal and project studios moved to multitrack digital tape, standalone digital recorders, and computer-based DAWs, it became clear that digital audio technology

had won the tracking war. Regardless of how good analog recording might sound, digital recording became ubiquitous. But the idea remained that analog hardware was useful for adding warmth and life to digital recordings, and soon a huge market developed for tube mics, analog preamps, and compressors with classic tube, transformer, and optical circuit designs.

Some recordists felt that something was missing from the sound stage of their DAW mixes. They began to send as many tracks as possible, either individually or in small submixes, from the computer's audio interface to an analog mixer and then back to the DAW. They felt that routing individual tracks through an analog mixer improved stereo separation and the width of the stereo field. Some advocates reported that better clarity, a more open or airy sound, was possible when they summed their DAW mixes through analog mixers.

A new type of hardware device, the analog summing box, arose to serve the specific niche created by such assumptions and observations (see Fig. 1). Put simply, an analog summing box contains the guts of a mixer minus any unnecessary extras. Typically, such devices offer multiple inputs, stereo outputs, and a clean signal path in between. Analog summing boxes often provide only an output gain control and sometimes individual pan knobs or level trims, but always fewer options than a complete mixer. Their manufacturers assume that all of the effects processing, submixing, automation, and metering happens in software; consequently, the hardware has only the minimum circuitry necessary to sum the channels.

Analog summing advocates feel that hybrid digital-analog systems give them the best of both worlds. In addition to virtual tracks and the advantages of computer editing, processing, and automation, users gain what they perceive as better head-

room, definition, and stereo imaging from analog summing. And most advocates insist that analog summing is the one true way to achieve those results.

FIG. 1: With the Dangerous 2-Bus, Dangerous Music became the first company to serve engineers who wanted a simple analog summing box.





FIG. 2: If you need extra analog outputs to connect to a summing device, you can use a digital-to-analog converter box such as the Apogee DA-16x (pictured above), which offers inputs in almost every digital audio format and 16 analog output channels.

Sum Disagreement

Not everyone believes that analog summing is necessary or even desirable. Some recordists insist that mixing digitally has no inherent disadvantages. They hold that any lack of clarity or stereo separation is caused by the person doing the mixing and not by the nature of digital mixing.

Moreover, digital summing advocates point out that even recordists who espouse analog summing do much of their summing digitally. Most analog summing boxes or small-format analog mixers have no more than 24 discrete audio channels. Even the most basic DAW offers at least 32 audio channels, and many DAW projects easily use two or three times that many tracks. To sum DAW tracks to analog, you need to group them together and submix them down to the number of inputs that the analog summing device offers.

For those reasons (and others), recordists who are satisfied with their digital mixes are adamant that analog summing boxes have nothing to offer. The only difference between summing a mix digitally and summing a mix through analog hardware, they insist, is the number of steps you take to achieve the same result.

You can see why this topic gets people on both sides of the fence so excited. Advocates of cigital summing reject the idea that anything is wrong with their mixes and feel that analog summing advocates are calling all their output inherently inferior. Advocates of analog summing feel that digital summing advocates are claiming their equipment is worthless and their ears are lying. And when people feel they have something to prove, the truth often gets buried.

Want Sum?

Nothing beats firsthand experience. You don't need to have thousands of dollars' worth of extra gear to hear the results of analog summing for yourself. You might even have the right equipment sitting around your personal studio already. Inexpensive gear doesn't necessarily mean bad results.

First, make sure that your software can send either individual or bus outputs to individual outputs on your audio interface. Your software will need to send one output to each of your mixer's inputs. Some entry-level DAWs limit how many channels they send to your audio interface; Apple Logic Express 7, for example, can send only 12 audio channels.

If your DAW is up to the task, you'll need an audio interface with enough outputs. Very few audio

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Talk about coming full-circle - in October, 1994 a recording industry publication debuted Argosy's first console enclosure for the Mackie analog 8.bus mixer. The phrase "[Argosy]... makes your Mackie look like an SSL" was their off-the-cuff comment that reflected the advent of this new industry. Who knew that barely ten years later, Argosy would be building consoles for Solid State Logic's AWS-900. "Our business is really service and the Argosy product is the result of taking our customers' needs to heart." - Tim Thompson, Vice President.

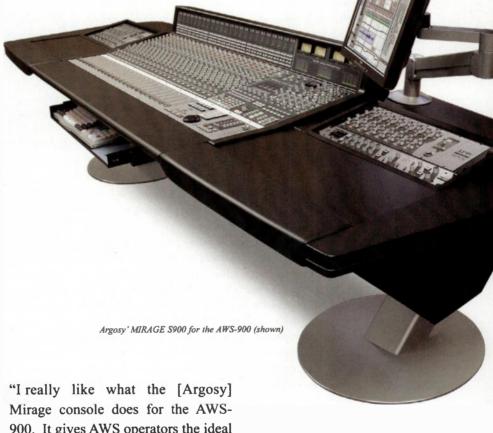


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interfaces have more than eight analog outputs, but many also have ADAT or other digital audio outputs. You can also use digital outputs for analog summing if you connect additional digital-to-analog (D/A) converters (see Fig. 2); just make sure you properly clock the devices to each other.

Finally, you'll need to have an analog mixer or a summing box. It doesn't need to be expensive; any analog mixer can sum its channels to a stereo master output. You can use any budget mixer that has enough channels (see Fig. 3); there's no point in using a 4-channel mixer,

because you'd probably have to submix almost the entire song, but any 8- or 16-channel mixer will do. If you can afford a dedicated analog summing box, many are designed just for this purpose.

Wiring your system for analog summing isn't difficult. Connect all the analog outputs from your D/A converters to your analog mixing device. If you're using relatively expensive interfaces, converters, and summing boxes, they may offer one or more DB25 connectors, which can carry as many as eight balanced analog channels over a single cable. Other interfaces and converters may require individual XLR or %-inch cables for each output or input. In those cases, you may want to use a cable snake. Also, if your converters have unbalanced outputs, you'll want to keep the cable runs as short as possible.

We Got Sum

Because you can sum signals using analog equipment in any price range, I wanted to test how analog summing

FIG. 3: You can use affordable analog mixers, such as the Mackie Onyx 1620, very effectively for analog summing.

would affect a mix with a reasonably priced system and with a more expensive system. I assembled an expert panel of four audio profes-



SUM TEST SONGS

The song "A Boy," by Randy Lee Fader and the Magnettes, was recorded in 2005 through Sytek and PreSonus mic preamps and an RME Fireface 800 into Logic Pro 7. The recording features one guitar, one bass, a minimally miked drum kit, three vocalists, and a tambourine. The band's Motown-inspired sound has plenty of air around the parts, which I felt would allow obvious differences in the summing to shine through.

As a contrast, the song "Cricket Chant," by the band Tarnish, was recorded back in 2001 using two MOTU 896s and Digital Performer 3.1. The dynamics and instrumentation were varied enough and the mix was dense enough to force us to really listen for subtle differences in the summing. The recording had more than 10 guitar tracks, 2 bass guitar parts, 14 tracks for the drum kit, and several layers of samples.

-Don Gunn

sionals to assist with the summing tests and to serve as the listening panel.

Producer and engineer Don Gunn, Jr., contributed two songs he recorded as well as contributed to the critical listening panel (see the sidebar "Sum Test Songs"). Recording and mastering engineer Barry Wood, proprietor of The Other Room mastering studio (www otheroom.com) in San Clemente, California, meticulously calibrated our analog equipment to ensure the fairness of our listening experience (see the sidebar "Sum Calibration Information"). Producer and composer David Das and producer and engineer Jeff Haddad, who manages Beach City Studios (www.beachcitystudios.com) in San Clemente, California, rounded out our listening panel.

Each song was recorded in Apple Logic Pro 7 and then summed through three systems. The first system was the original digital mix, mixed and bounced entirely within Logic Pro.

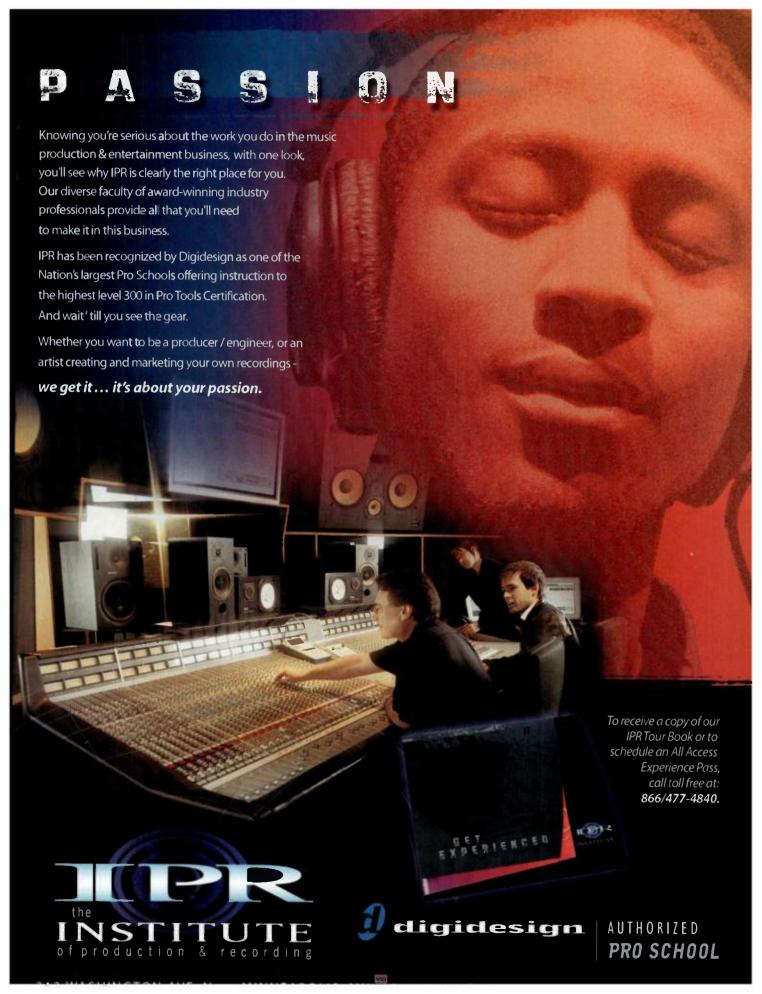
The second system was the budget system. I connected two Behringer Ultragain Pro-8 Digital ADA8000s (\$289 each; see Fig. 4) to my RME Fireface 800's ADAT ports and clocked them both to the Fireface. I then took 16 balanced XLR outputs from the Behringer D/A converters into the ¼-inch TRS inputs of a Mackie Onyx 1620 mixer (\$999). The total retail price of the Behringer and Mackie gear was just under \$1,580, not counting the cost of cables.

Our third system was more expensive. We connected an Apogee DA-16x (\$3,495) to the Fireface's ADAT ports. Then we used two DB25 cables to connect its 16 outputs to the 16 inputs of a Dangerous Music Dangerous 2-Bus LT (\$1,499). The total retail price of the Apogee and Dangerous gear was \$4,394.

Sum Caveats

The panel and I tried to be as rigorous, meticulous, and impartial in our listening tests as possible. To get the most out of each summing process, we remixed the

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SUM CALIBRATION INFORMATION

Accurately evaluating audible differences between the three signal paths in our test required that we have a level playing field. I therefore created an identical baseline level for the paths used in the experiment.

It was important to eliminate any discrepancies between the channel levels to ensure that the relative balance and panning of the mixes would not be altered. I achieved consistent levels by running test tones through each channel and measuring the resulting signals using Metric Halo's Spectrafoo metering software. The levels of each mix were matched as closely as possible to each other (again using Spectrafoo) as they were returned to Logic.

Calibrating the Behringer and Mackie signal chain required some care. I set the input trims by eye to their unity points. Then I adjusted the channel faders until they

all were within a few hundredths of a decibel of each other. Additionally, because the Mackie did not have enough mono channels, we used its stereo channels. I had to address any left/right imbalances on the stereo channels by making slight adjustments to the park hobs. (Mackie points out that the Onyx 1640 has 16 completely mono channels if you need them.)

The Dangerous 2-Bus comes aligned from the factory and has no facilities for user calibration. The Apogee DA-16x allowed for calibrating individual channels and calibrating the entire unit by increments as low as 0.01 dB, using front-panel buttons and menus. Luckily, though, I didn't need to calibrate the DA-16x or the Dangerous 2-Bus LT, because I found virtually no level differences from channel to channel.

-Barry Wood

levels of the stems for each mix. For both analog summing tests, we sent the main outputs of the summing mixer to two inputs on the Fireface to eliminate any A/D conversion differences on the way back into Logic Pro. To minimize any possible prejudice against a particular version, the file names were changed (with Barry Wood

keeping the key), allowing us to listen to and comment on each mix without knowing how it was summed.

Although we took pains to be fair and unbiased, we understood that (as with any hot-button topic) those looking to find fault in our process would undoubtedly be able to find errors. There were enough variables in the

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process that we could control only so many, and we had to make choices about what our ultimate goals were.

Some might argue that our comparisons were less valid because we balanced the mixes to get the best out of the summing hardware. Still others might wish that we had tested each summing device through multiple converters, or that we had run a "control" test in to and out of the converters to identify how much of what we heard resulted from the conversion process. In addition, users of different DAWs might feel that our results don't apply to their DAW of choice. We understand and accept

all such criticisms as valid; even the panel didn't always hear the same things in each version. Our goal was to conduct the most balanced listening tests of what we had and not to make absolute pronouncements.

After Sum Listening

Our listening panel did hear differences in the mixes. We were struck, however, by just how subtle those differences were. Far from being resounding, the differences between mixes were actually only matters of degree.

We all noticed a somewhat wider stereo image from the Mackie-summed mix of "A Boy." Three of us also detected a bit more presence in that one, and Don noted that the low end was moderately tighter. Barry felt that the high mids were slightly more pronounced and heard the boost most noticeably in the tambourine. Jeff thought that the Logic Pro mix had a somewhat better bottom end than the other mixes. David heard a little more sparkle and highend detail in the Dangerous 2-Bus LT mix.

The three versions of "Cricket Song" were so similar that they were almost too close for any of us to call. Don felt the Mackie-summed mix offered just a hair more low end. I heard a bit more low end in the Mackie and the Dangerous 2-Bus LT mixes, and the kick drum sounded slightly more defined. Jeff thought the Dangerous 2-Bus LT mix had slightly better high-end definition, a little more ambience, and a pleasing stereo field. David liked the stereo image and the sense of space around the guitars in the Dangerous 2-Bus LT mix and in the Logic Pro mix. I also liked the sense of space around the guitars in the Logic Pro mix, and I felt it had more energy.

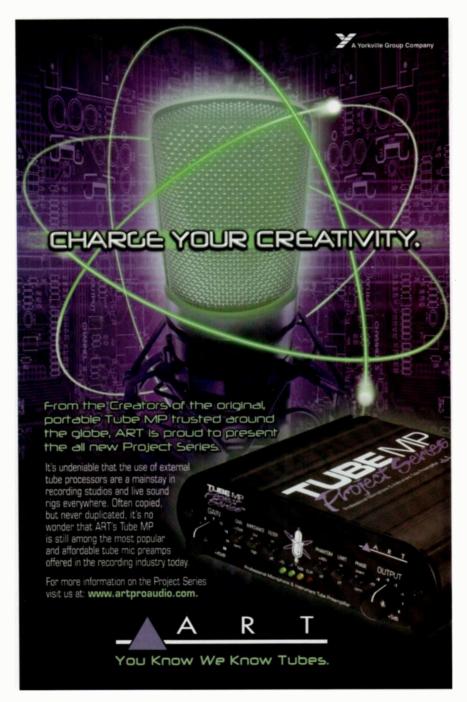
To Sum or Not to Sum?

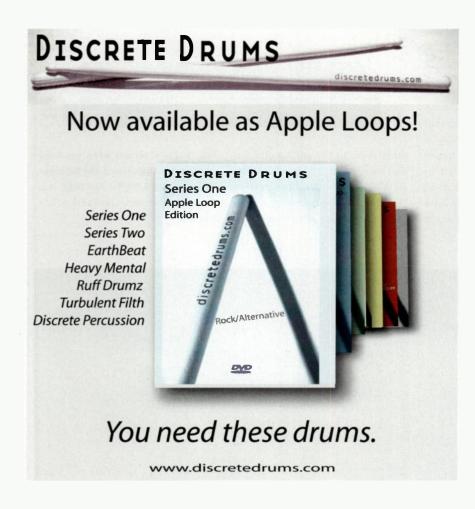
These listening tests demonstrated that busing tracks out from a DAW, sum-



ming them in the analog domain, and then busing the mix back into a DAW has a noticeable effect on the sound. The members of our panel were all satisfied that analog

FIG. 4: For occasions when you need additional analog outputs, the Behringer Ultragain Pro-8 Digital ADA8000 is a very effective and affordable A/D/A converter.







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summing is not just a gimmick. But the question remains, is it necessary?

Clearly, there was no best or worst version of each song-no winners or losers, just slightly different colors. Ultimately, it comes down to personal preference. As our results show, one of us might have preferred the low end of the Dangerous 2-Bus LT mix, another the Mackie mix, and still another the digital mix.

If you're interested in how analog summing might affect your mixes, try running your own tests. If you have an analog mixer and a few converter boxes or the money to experiment with a dedicated summing box such as the Dangerous 2-Bus, mix with them for a while and see how those mixes compare to your digital mixes.

If our results prove anything, it's that even with less-expensive equipment such as Behringer converters and Mackie mixers, you can get pleasing results. The Apogee converters and Dangerous 2-Bus LT took far less effort to configure and calibrate, but we did find aspects of the budget mix that we liked as well. In the end, how well the mixing engineer knows the gear being used is the most important factor. You can create a great mix digitally, using budget mixers and converters or using expensive converters and summing boxes. It's all a matter of how you use them. EM

Orren Merton is a regular contributor to EM and the author of several pro-audio software books from Thomson Course Technology. He would like to thank Chanda Cook, Derrick Davis, Max Gutnik, Bob Muller, and Cathy Wagner for helping this article come together, as well as David Das, Don Gunn, Jeff Haddad, and Barry Wood for their assistance.



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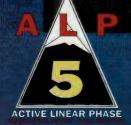


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On His Own Terms

By Lorne Hammond

After walking away from his career as a rapper, Kwamé comes back big as a producer. n the late '80s and early '90s, rap music and hip-hop culture were slowly working their way into the fabric of mainstream America. With acts like Jazzy Jeff and the Fresh Prince and Kid 'N Play reaching Platinum record sales, and movies like House Party hitting the theaters, hip-hop experienced a growth spurt unlike that of any genre since the explosion of rock 'n' roll in the '50s.

In 1989, a 16-year-old rapper from Harlem appeared on the scene with an album aptly titled *Kwamé*, the Boy Genius (Atlantic, 1989). His rapid ascension was not surprising considering his enviable musical pedigree: he grew up on the New York Jazz scene, hung out with family friend Stevie Wonder, and received his first drum set from the great Lionel Hampton.

Kwamé, the Boy Genius featured an innovative and positive brand of rap, and, uncharacteristically for the genre, he recorded it with a band (A New Beginning). Although his music was critically acclaimed and popular with urban teens, Kwamé became disenchanted with the gritty gangsta- style direction that rap was taking. When Atlantic tried to push him to join the trend, he wasn't interested. "I wasn't that kind of guy," he says. "I was the type of guy that used to wear suits and talk about girls. Everything was smooth, everything was real musical. And gangsta rap just wasn't my thing." After recording three albums for Atlantic, Kwamé left the label at the age of 21.

In 1995, he made one more solo CD, *Incognito*, on the indie label Wrap/Ichiban, but that was the end of his career as a recording artist. He continued to perform occasionally, but his focus had turned to production. He already had experience from producing his own albums, and had learned a lot from musical mentors such as Hurby "Luv Bug" Azor (who produced Salt-N-Pepa), Dr. Dre, and Teddy Riley. "As an artist, I was already producing myself," Kwamé recalls. "But I

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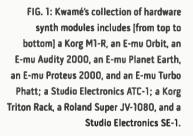
had to learn how to fully produce for other people and take myself out of the picture."

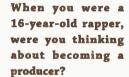
During the years that followed, Kwamé was slowly and relentlessly building up his production chops and his reputation as a producer. He began by producing indie demos and working on some soundtracks, most notably for the Emmy-nominated HBO special Dancing in September. Still, it was a challenge to get back to the upper echelons of the music business. "It was a hard road, because a lot of people just knew me as that old-school artist

and didn't take me too seriously as a current or future producer."

When a mutual friend introduced me to Kwamé back in 2002, he was in what could be called a professional chrysalis; he was locked in his apartment in Harlem banging out track after track, developing the sound that

has become his signature today. That sound has netted him producer gigs in both hip-hop and pop with a host of major recording artists including Will Smith, 50 Cent, and Christina Aguilera. So when an opportunity arose to sit down with him for EM, I jumped at the chance.





I didn't know what a producer was. I just knew that I had music in me, lyrics that I wanted to say, and topics that I wanted to speak about. So I had to do what I had to do to get it done. I wanted to make a record, but I didn't want to go out looking for someone else's beats or songs.

How did you get interested in producing?

To me, being an artist and a producer goes hand in hand. I never knew there was a dif-



FIG. 2: Kwamé's studio setup has come a long way since his early days of using two stereo tape recorders. In his new facility he's got a full-blown Pro Tools rig, a pair of Mackie 8-bus mixers, a vocal booth, and plenty more.

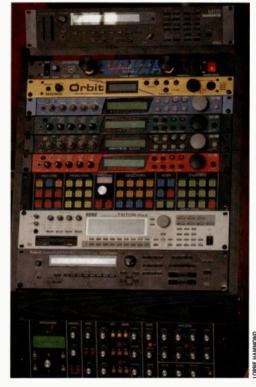
ference. Back then, my idols were Prince and Stevie Wonder. When I read the back of one of their albums, it would say "written, composed arranged, performed, and produced" by Prince or Stevie Wonder. So I thought if that's what they did, that's what I would have to do.

You produced your first demos. What was that experience like?

In the beginning, I worked with whatever I had. I didn't have any drum machines or anything like that, so I worked with a lot of acoustic instruments. I had a piano, a drum set, and a Casio keyboard that I got when I was 14. That was before I knew there was a 4-track [Tascam] Portastudio. I didn't know what a recording studio was or where to find one. I had to be creative, so I would play the beat on the drums onto a tape, and then I would take a smaller tape player and play back the tape with the drums while I played the piano over the drums onto the other tape. That was two tracks, so then I wanted some synthesized sounds and I would do the same onto the other tape, adding my scratches. Then I wrote my rhymes, and I would have my record. I didn't know any other way.

When you began working with Hurby "Luv Bug" Azor, did he teach you the art of hip-hop production?

When I started to work with Hurby, I sat back and watched him make these beats and write these rhymes, but that isn't how I learned to use the equipment. When he went on tour, me and Hurby's little brother broke into his room and took all of his equipment, learned how to use it, then put it all back before got home from the tour. So that's how I learned about the equipment. I still didn't know much about how to use it, so when I went to the studio, I would tell the engineer to sample a piece of this and a piece of that and then let me play it back. I knew what I wanted, because I had it all in my head. As I was playing it, I learned how to use the E-mu SP1200 and the E-mu Emulator.



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What was your first purchase as an artist?

When I got the money from my first album, my first purchase was some leather jackets, a phat rope chain, a shearling coat, and a Volkswagen Rabbit convertible.

I mean musically speaking.

Nothing, because my experience was that I was going in the studio and I needed three weeks to make an album. Then I'd go on tour. I didn't think that I needed to do anything other than that to be an artist. I would make money, spend it, and when it got low, I would just go in and say "give me my budget to go back into the studio."

Three weeks—that's a quick turnaround.

Yeah, but that's how it was done. There were more classic hip-hop albums then than there are now.

When was your "ah-ha" moment, when you discovered the potential in being a full-time producer?

I was on tour with Dr. Dre and Teddy Riley, the two biggest producers at the time. Dr. Dre had an Akai 12-track on the bus, so I would sit with Dre and he would make beats every day. I didn't even know that a 12-track existed. Then I wanted to get equipment—forget the girls and the cars.

Did you get some gear then?

I went to the music store as soon as I got home.

What did you get?

I bought an Akai MPC, a 4-track, a Korg M1, two JBL monitors and a microphone. Then I was good. I would buy instruments now and then because I would play a lot of stuff live on stage. I was still living at home so I put my stuff in the basement.

What was your first gig as an outside producer?

During the second album, I had a singer in my group named Tasha Lambert, who got a deal on Atlantic. I was

in the process of making my album in the studio, and I was making Tasha's album at home.



FIG. 3: Kwamé's production helped propel the hit song "On Fire," on the Lloyd Banks CD, *The Hunger for More*.

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How did you balance your new-found passion as a producer against your career as an artist?

I would bring my gear on the road, and I would invite everybody that I was on tour with up to my room to make a record. Instead of running around



Kwamé at his console with Pro Tools running on the laptop behind him. He says that Pro Tools has had a huge impact on the production of hip-hop music.

with groupies, I would try to make a record. I would also get girls that way: "Y'all want to come see the studio?"

What prompted you to leave your career as a rapper behind and go into production full-time?

I was forced into that way of life; the way of rap that I was used to was gone. Everything was gangstered out. I call it the "grimy '90s"—everything turned into grit, griminess, and all the things that I was the total antithesis of.

So you didn't get dropped by Atlantic? You left the label?

That's 100 percent of it. Because if I would have stayed, they would have killed me. Me putting in braids and wearing gangster clothes—it would have killed me. It was like, "I'm cool. I'd rather kill myself than let you guys kill me."

What did you do to get people to see you as a producer and not just as a rapper?

When it came to producing, I didn't discriminate. I would work with everyone from that kid down the block to somebody with a deal. I figured the more beats that I had out there, the more records I would be able to get on.

What platforms do you use to record?

I am definitely a [Digidesign] Pro Tools person, because Pro Tools is 100 percent studio friendly. I record my Pro Tools files, put the files in my iPod, go to the studio, dump the iPod in before mixing, and there is the record. That is that. I was very reluctant to do the Pro Tools thing; I was old school. I was forced to do Pro Tools. I was tired of my ADATs breaking down and my 16-track breaking down.

How has Pro Tools affected the production of rap music?

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Pro Tools has changed the production game 150 percent. You can put a track together much faster than before. I do everything at home and do only the mix in a big studio. It used to take three days to mix a record, and now it can take as little as four hours. It has also changed the way you interact with the artist. Now an artist will come into the studio and do their hook first, and then they will say, "okay, fly it." They are so used to just flying the hook [copying it into the other parts of the song] that they come in expecting to have to record it only one time. People also bring in a 2-track mix, and they know that the producer or engineer can cut it up to arrange the record anyway that they want. When something is messed up or if the vocalist sings off-key, the common response has become "You can fix it in Pro Tools," In the school that I am from, you could never do that.

Do you think that people get lazy working that way?

Not lazy, but people are definitely spoiled because of Pro Tools; I'm spoiled because of Pro Tools. The most that we would do back in the day is to sample the hook and play it in on the beat. I'm from the time when you didn't even have automation. Everyone had to stand at the board and say "Punch it in" and "Punch it out."

Do you ever press to do it the old way?

Sometimes I want to do things the hard way. I say, "Don't cheat, don't cheat yourself."

Do you do anything in Pro Tools to try to capture the sonic character of those early rap records?

KWAMÉ: A SELECTED DISCOGRAPHY

Songs produced for CDs

Pussycat Dolls, "Bite the Dust" from PCD (Interscope, 2005)

Will Smith, "Switch" from Lost and Found (Overbrook/Interscope, 2005)

Tweet, "Turn Da Lights Off," "We Don't Need No Water" from It's Me Again (Atlantic, 2005)

Lloyd Banks, "On Fire" from The Hunger for More (G-Unit/Interscope, 2004)

JoJo, "Breezy" from JoJo (Blackground/Universal, 2004)

Mary J Blige, "L.O.V.E." from No More Drama (MCA, 2002)

Dru Hill, "No Doubt" from Dru World Order (Def Soul/Def Jam, 2002)

LL Cool J, "10 Million Stars" and "Throw Ya L's Up" from 10 (Def Jam, 2002)

Songs produced for film and television soundtracks and scores

Lloyd Banks, "On Fire," and Chingy, "Relax" from Fantastic Four—the Album (Wind-up/20th Century Fox, 2005)

Nick Cannon, "Scared of You" from *Drumline* soundtrack (Jive/20th Century Fox, 2003)

"Crazy," "If I Can't Have You" from Dancing in September (HBO Films, 2001)

Upcoming releases for Christina Aguilera, Brasco, Joe Budden, Chingy, Janet Jackson, Juvenile, and Red Café

I don't care about capturing that sound—I did that already. When I was making records in '89, I was trying to make the records I am making now. I like clear, big dramatic music. Whether it's hip-hop, pop, or R&B, I just like big dramatic, orchestrated music. Sometimes that's a gift' sometimes it's a curse.

What do you mean?

So many records today are sparse: "kick, snare, kick, snare." I get so bored making records like that. It could be the perfect beat, like the "whisper beat" from the Ying Yang Twins [from the song "Wait" on USA (*United States of Atlanta*), TVT, 2005]. I love that record, but if I had produced it I would have put a whole bunch of music on top of it. Sometimes I go overboard, so I have to check and balance myself.

How do you do that?

I try to think outside of my box. I think of the artist as the last instrument on the track. I try to make a beat that is less than 100 percent satisfying to my ear, but becoming 100 percent satisfying when the artist is added on top. I make the whole thing, throw all the music in, but then I start to pull things out. When the artist gets on top, it gives me better perspective. Once I mix a record down for mass consumption, I pull things out anyway, so it's better if I do that earlier.

Do you have any secrets for getting a project rolling?

I don't have any secret techniques. What really gets me rolling is the sounds [see Fig. 1]. Different sounds

spawn different beats. I can hear a clang or a sound around the house; go sample it; and then fill it in with drums, bass, and keys. Sometimes I will randomly go through the Emu Turbo Phatt [sound module] until I hear a sound that interests me, and then I build a whole track around it.

But you don't have a routine?

It is never "get on the MPC, then the Turbo Phatt." It is never that way for me. If I make a beat that way, it never comes out right. If somebody says, "Make a beat" and I start tapping away, it may come out cool but will never be never right.

Do you use a lot of loops?

Some. When I sample, I look for noises. Most people look for loops, but I look for noises. Most

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tracks that I do begin that way. I made a track when I was listening to Etta James—a song called "Stop the Wedding." I liked the way that she said the words "wait" and "stop." So I sampled them and built a whole track around them—just because I liked the way she said those words.

How do you keep fresh creatively?

I try to go to the clubs. Sometimes I hear a beat that will make me want to go home and create one that gives me the same feelings as the one I heard in the club. I don't want to copy that beat; I just want one that gives you the

same feelings. It is all an emotional thing, an emotionalsonic thing.

What is the one piece of gear that you must have wherever you go?

Tube Tech compressors for my kicks and snares. Got to have them.

You have worked with 50 Cent, Christina Aguilera, Mary J. Blige, the Pussycat Dolls, and Will Smith. Do you do anything different or special to adjust for each artist?

No, I try to treat everyone the same. The good thing about a great artist is that they know what they want and they can come in and do their thing on the record.

When you work with the pop megastars, do they have any special requests of you?

No. The only thing is that the bigger the artist the earlier you need to be at the studio, even if they aren't there and you are waiting. You need to be there. The bigger the artist the more on point they are. Christina Aguilera and LL Cool J are superprofessional. Christina sings her songs word for word until they're right. LL goes in a room and locks the door when he is writing his rhymes until he gets what he wants. Jay Z and 50 Cent do things differently, but they are both superfocused.

Your studio in New Jersey [see Fig. 2] is quite different from your setup in Harlem. Did you have any special considerations when building it?

Not really. I just wanted a booth. I was just happy not to have to ask someone to step into a closet or the bathroom to record. I had someone who designs and builds studios come in and work with me.

What are some of the tricks you learned in commercial studios that you've been able to bring to your personal setup?

One thing I learned was more practical than technical: I learned time management. I learned little techniques to minimize the time in the studio.

What else?

The second most important thing I learned is the value of having your own



facility. I began working in the big studio because I didn't know any better. That's where I learned the nuts and bolts of producing, which I brought back home with me. But I can be more creative when I am not under the clock. Artists blow their entire budgets in the big studios, when they can get the meat of the work done at home. They want to go to a big studio just to write.

You sound as though you know from firsthand experience.

Yeah, I used to take a half-done track into the studio and work on it there. But now I do everything at home and do just the mix in a big studio.

Do you feel as though artists respond differently to working in a big studio than they do to working in your facility?

Unfortunately, some do. Some people don't take the studio seriously unless you have all this stuff. They think that if you have racks of stuff, then you've got a real studio. You got a vocal booth, you got a real studio."

Do the major artists you work with ever record in your studio?

Some do, but sometimes I like to work on their turf. A lot of the bigger artists have studios in their homes.

Does their entourage ever interfere with the work flow?

When I am working out of my home, I limit the number of people in the studio.

Now that you are so used to working at home, do you feel less comfortable somewhere else?

I prefer to work here, but I can rock anywhere, whether there are 100 people in the room or one. I do have one diva thing: if I go to an outside studio, all of the gear that I have in my house must be in that studio and be set up in the same way. I need to have all of my keyboards, even if I am only using one on that record—I must have all ten. I got to have that—and some Buffalo wings.

What do you feel are the common elements of rap and other forms of popular music?

Repetition and simplicity. If you can sing the record back and beatbox the beat, then you have a good radio record, whether it's pop or rap. For example, with the record that I did for Will Smith, "Switch,"





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THE ROLE OF THE HIP-HOP PRODUCER

In all forms of popular music, the producer is typically the overseer of the project; he or she guides the act, shapes the sounds, and coaxes the best performances. In hip-hop, producers have an additional responsibility: to compose and program the instrumental tracks (aka "beats"), which the artists then rap over.

"When I submit records to artists," says Kwamé, "I prett, much do 85 percent of the whole record. I write the hooks and the choruses. I even give ideas about how the rapper should rap on the record, and then the rapper will fill in the blanks." Although he points out that only elite producers usually have that level of involvement, hip-hop producers in general have a bigger compositional role than do their rock, pop, or country counterparts.

Another difference is that hip-hop producers often dor't produce an artist's entire CD, but instead work on only one or two songs. The artists choose different producers for different songs to add variety to the CD as a whole. "Between the artists and the record label, they'll seek certain producers for certain sounds," Kwamé explains. "If a rapper wants a grimy record [song] he or she will go to a producer that's more conducive to that. If they want a different sound, they'll go to a producer that's more conducive to that."

-Mike Levine

all you have do hear is that beat pattern and you know it's that record.

Does that way of working become redundant?

Sometimes I hate making records that way, and then other times I know that's what will work. It is hard because in the pop world everybody wants the same record. I made "On Fire," [by Lloyd Banks, see Fig. 3], and then everybody wanted a record like that. I made "Switch," and even those who don't listen to Will Smith wanted a record like it.

If everyone is asking you to recreate your past hits, how do you stay fresh and creative?

You have to have a sense of self as a producer, and you can't chase past hits. A lot of producers are great at duplicating their records, but I am not one of them. That's a great skill to have.

With all the technology at their disposal, do you think producers today don't need as much talent as when you were coming up?

No, a producer from the '70s might say that about me, and a

producer from the '50s might say the same thing about him. Just because things were harder to do doesn't make them better. I am all for change and progress as long it doesn't take away from the music. I'm not one to jucge what the people who follow me do with their music, because someone can say the same thing about me.

What are you working on now?

I'm producing a group called Jane Doe that is based out of Washington D.C., and I am working on a score for a Touchstone film that's called *Music High*. It's based on the Baltimore 3chool of the Arts and stars [J Records recording artist] Mario, who plays a young producer. I definitely want to work on more films.

Can you predict where your career is going?

No, I just take things one artist at a time.

Lorne Hammond is a consultant to the entertainment media industry, a music producer, a music publisher, and a program manager with VH1's Save the Music Foundation.

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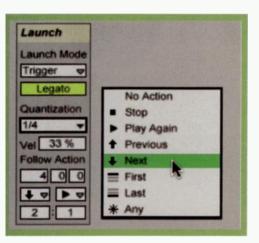
(Not Quite) Random Notes By Len Sasso

Using Ableton Live's Follow Actions feature.

n Ableton Live, each audio or MIDI clip that you place in a Session view slot contains a list of options that dictate what will happen after the clip begins playing. These options are called *follow actions*. Follow actions are powerful tools for creatively arranging and remixing clips. The feature is easy to use and lets you add an element of chance to your arrangements without your production's descending into a morass of randomness. I'll explain a few basics about follow actions, describe some more complex applications, and then discuss how to creatively combine follow actions with other Live features.

Follow actions are used to sequence clips in successive slots on the same track in Session view. The settings for individual clips are found at the bottom of the Launch panel of Live's Clip editor (see Fig. 1). Each follow action contains settings for a time, two alternative actions, and a ratio that indicates the most likely action. For example, the follow action in Fig. 1 specifies that after four bars (time 4.0.0), either the clip in the next slot will be triggered (Action A) or the playing clip will be retriggered (Action B), and that Action A is twice as likely to occur as Action B (ratio 2:1). A setting of 0 on either side of the ratio prevents the corresponding action from occurring.

FIG. 1: You set up live clip follow actions at the bottom of the Launch panel (shown on the left) in the Clip editor. You select the desired action from the pop-up menu shown on the right.



So Many Choices

As you can see in Fig. 1, eight choices are available, including No Action. The last five choices-Previous, Next, First, Last, and Any-are relative to the group of successive clips in which the selected clip resides (in other words, empty slots terminate a group). Grouping allows you to create several follow action sequences on the same track. And because the Previous and Next actions wrap around, you can create and quickly extend cycling groups of clips by dragging clips to either end of a group.

A group consisting of a single clip set to either Play Again or Stop

is the simplest example that makes use of follow actions. When set to Play Again, the clip repeats at the interval set as the follow action time. That's especially useful for short clips, such as sound effects, that you don't want to time-warp but want to repeat at regular intervals. Setting a single clip's follow action to Stop and assigning a time setting longer than the clip's loop length causes the clip to loop multiple times and then stop.

Another simple example is a group that contains multiple clips with each clip's follow action set to Next. When any clip in the group is triggered, Live cycles through all clips in the group, playing each clip for its follow action time. You have several options for the last clip's follow action. Next and First sends it back to the beginning of the group. No Action will cause it to either loop or play once, depending on its clip-loop setting. Stop will stop playback after the follow action time, terminating the clip sequence.

You can get a lot of mileage out of a basic clip sequence by adjusting the follow action time settings to make some clips loop several times and to truncate others. If you want elements to stay in sync when using time settings that truncate clips or loops, turn on Legato for all clips in the group. That forces the next clip to start at the same relative time position at which the previous clip is stopped.

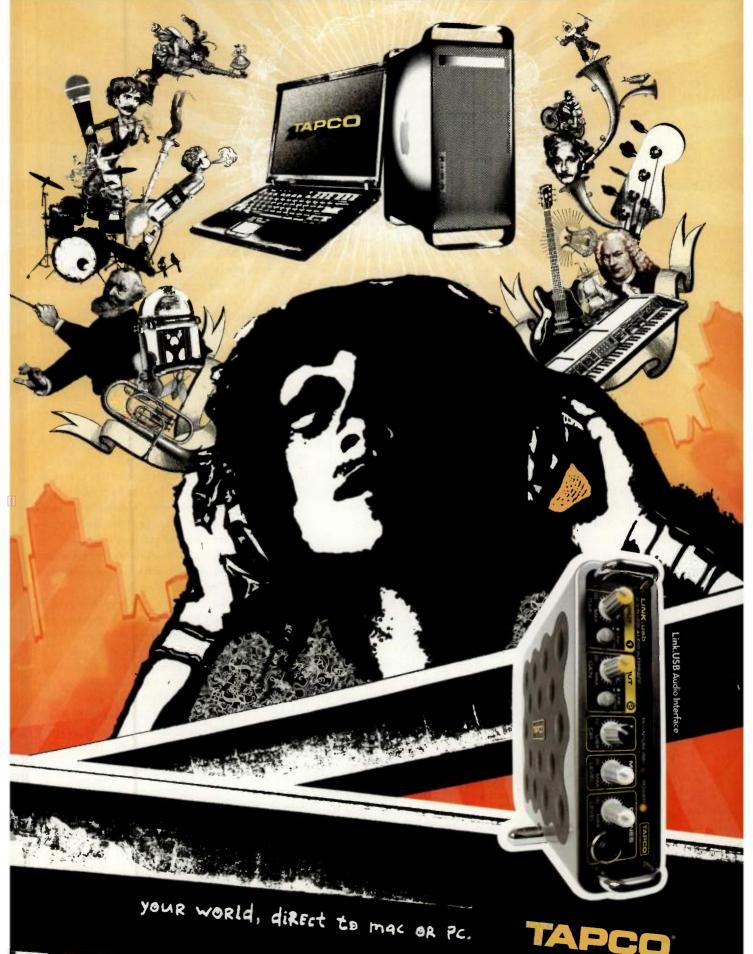
Eeny, Meeny, Miny, Moe

Using alternative follow actions is one way to add an element of chance to clip sequencing. If each clip's alternatives are Next and Play Again, the clip sequence will eventually reach the end, but some clips will repeat in the process.

The Any follow action introduces more randomness, and the order of the clips in the group is not preserved, which may or may not be important. If the clips are variations on a drum loop or interchangeable bass lines, for example, the option Any works well. If, however, you have long loops and short fills mixed in the group, choosing Any wreaks havoc with the rhythmic flow of the sequence.

Fortunately, there are several ways to introduce an element of chance with alternating forms such as loops and fills. If the loops and fills are in alternating slots (a loop followed by a fill followed by a loop, and so on), use alternative actions Previous and Next. Then each loop or fill will always launch a clip of the opposite kind (the one above or below it).

Grouping the loops on one track and the fills on another is a more flexible alternative. Setting all follow



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actions to Any will cause loops and fills to be selected randomly. But they will also play simultaneously, which probably isn't the result you're after. Fortunately, there are two ways to ensure that you're hearing only one track at a time. You can use Live's Crossfader, which you can automate on the Master track in the Arrangement view or assign to a MIDI controller (try the Mod Wheel or a MIDI note). Clip Envelopes offer a more powerful solution, however, as the following example illustrates.

Suppose you have a collection of 4-bar drum loops and matching 1-bar fills, with the loops grouped on one track and the fills grouped on another. To create random 4-bar patterns with 3 bars of a loop followed by 1 bar of a fill, set all the follow action times to 4 bars (4.0.0). Next create a 4-bar, unlinked volume Clip Envelope for each clip. For the loop clips, set the first three bars of the envelope to maximum and the fourth to minimum. For the fills, do the opposite: set the first 3 bars to minimum and the fourth to maximum (see Fig. 2). Triggering any Scene containing a clip from each group will start an unending drum sequence that alternates between loops and fills. Furthermore, unlike the Crossfader method, you can use this approach with more than two tracks.

For the Record

Once you've created follow action groups on several tracks, launching a Live Scene containing a clip from

FIG. 2: Simultaneously playing clips can be alternated using volume Clip Envelopes. Here, the Loop 1 clip plays for three bars, and the Fill 1 clip plays for the fourth bar.



each group takes on a new meaning. Assuming that there are chance elements and that not all clips have the same follow action time setting, you'll quickly wind up with an ever-changing scramble of clips playing on different tracks. Those scrambled clip configurations won't be repeated the next time you launch the same Scene, but there are three convenient ways to capture the results.

If you like working on the fly, you can invoke Live's Capture and Insert Scene command, which will create a new Scene containing the currently playing clips. The clips in captured Scenes retain their follow action settings, which is probably not what you want, but you can select all the clips when you're done and turn off their follow actions. Captured Scenes are placed below the currently selected Scene, so select a Scene outside of the area containing the follow action groups to avoid disturbing their order.

Recording the Session view playback as an Arrangement is a more flexible option, because it



FIG. 3: After recording the results of follow actions in the Arrangement view (top), Scenes can be isolated and consolidated for dragging back to the Sassion view (bottom).

captures every follow action as it occurs. When you're done, switch to the Arrangement view. Any clip change on any track marks the occurrence of a follow action and a potential new Scene. You can audition each of those by enclosing it in an Arrangement loop. You can use the Consolidate option on the clips in the loop, and then drag them back to the Session view to create a new Scene (see Fig. 3 and Web Clip 1).

Making the Scene

Using the Session view's Resampling feature to capture the combined audio output of all the tracks is the third option, and that will capture mixer ar.d send-effects processing as well. Make several copies of the resampled clip and adjust their start and end points to isolate interesting segments. Applying follow actions to those new clips is akin to having follow actions for Scenes—something that Live does not provide for directly.

Follow actions also have a place in live performance. The feature comes into its own when you have multiple follow action groups on the same track. When you assign a computer key or MIDI note message to a clip in a follow action group it will, of course, launch the entire follow action sequence, not just the individual clip. Trigger is the best Launch mode to use because once another clip in the group is launched, toggle- and gate-off modes no longer work (they apply to a clip that's already off). To turn off the whole group, assign a computer key or MIDI note message to the track's Clip Stop button, which resides just above the mixer.

Follow actions are well covered on page 110 of Live 5's manual, and the examples differ from those given here. Follow actions provide one very interesting way to explore the middle ground between chaos and complete predictability.

Len Sasso is an associate editor of EM. For free refreshments, visit his Web site at www.swiftkick.com.

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Enveloping Strategies

By Len Sasso

Using your DAW's automation tools for sound design.

ost DAWs have two kinds of automation: time based and clip based. Time-based automation is tied to the DAW's timeline, whereas clip-based automation is tied to (and loops with) individual audio and MIDI clips, which can be moved around on the DAW's timeline. Either kind of automation can be used to modulate plug-in instrument and effects parameters, but clip-based automation is more flexible. In this article, I'll discuss how to use the clip-based automation tools in your DAW. For my examples, I used Ableton Live 5, which has a particularly robust form of clip-based automation called Clip Envelopes. You can, however, implement the same techniques in most DAWs.

Flexible Flanger

Although technically a time-based process, flanging is often emulated with comb filters by modulating their notch frequencies with an LFO. You can expand on that technique by using parametric equalizers and automating their parameters.

Insert an EQ Four plug-in on a Live audio track. Set each EQ Four band to Bell Curve mode, and set the band frequencies to consecutive integer multiples of 220 Hz. For now, set each band's gain to the minimum (-15 dB), and set each band's Q to the maximum (12 dB). Place a harmonically rich audio clip in one of the Session view slots for the track. Select the clip, make its Envelope Box

FIG. 1: Each of the rhythm loops on tracks 4 frequency envelope through 6 has its own send-level automation (shown in the Clip Envelope editor at the bottom) for the four send buses.

frequency envelope the Clip Envelope on the length of want to unlink the control of the four send buses.



visible and active, and select the first frequency envelope for the EQ Four in the Clip Envelope editor. Depending on the length of the clip, you may want to unlink the envelope and set up a short loop of one or two bars.

Create a triangular envelope whose peak is roughly 30 percent, and copy and paste that envelope to the remaining frequency envelopes. Play the clip, and you'll hear typical flanging. You can change the effect by using Clip Envelopes of varying lengths, modulating other EQ Four parameters, and using two or more EQ Four effects in series (see Web Clip 1).

Stop That Arp

Arpeggiators are relentless, but you can use volume envelopes to curb their enthusiasm. Web Clip 2 illustrates a liveperformance technique for varying the rhythm of an arpeggiated bass line. The setup uses two MIDI tracks: a performance track to play the synth and an automation track to control the synth track's volume. Set Live's Monitor mode for the performance and automation tracks to In and Auto, respectively.

Insert a synth plug-in on the automation track and insert Live's Arpeggiator MIDI effect on the performance track. In Web Clip 2, I used the Thumb UpDown Arpeggiator style with a tempo-synchronized rate of eighth-note triplets (1/12). Route the performance track's MIDI output to your synth on the automation track (not to Track In). Playing a chord now produces arpeggiated eighth-note triplets.

Create an empty MIDI clip on the automation track, select its Mixer Volume envelope, and create a looping gating pattern. (Longer loops allow for more intricate patterns.) Assign MIDI notes to trigger different automation clips, and then play chords with one hand while selecting rhythm patterns with the other.

Tapped Out

You can create your own multitap delay from several Simple Delay plug-ins inserted on different return buses (see Fig. 1 and Web Clip 3). Effects on return buses can't be automated with Clip Envelopes, but you can automate the send levels to those effects. Be sure to initialize the setup by turning all send levels to the maximum and initializing all send-level envelopes to the minimum (0 percent).

For Web Clip 3, I used four Simple Delays with different delay times. I set each delay's mix to full wet. Three delays were stereo linked, tempo synchronized, and set to 50 percent feedback. The fourth delay was unlinked and set to short right and left delay times with 95 percent feedback to produce a pair of resonators tuned a fifth apart.

Send-level automation for any clip on any track controls the input to each delay. Use the return-bus sends for cross feedback between the delays. Relatively active automation works well on rhythm tracks, but to avoid lapsing into multitap chaos, it's best to place individual drum instruments on separate tracks with their own send-level automation. EM

Len Sasso is an associate editor of EM. Visit his Web site at www.swiftkick.com.

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How Low Can You Go? By Brian Smithers

The finer points of surround bass management.

ne of the most-commonly misunderstood aspects of surround monitoring is the relationship between the low-frequency effects (LFE) channel and the subwoofer. Despite the fact that in surround-sound mixing formats the term *point one*, as in "5.1" and "7.1," is used to refer to both, and despite the fact that the two are directly related, they also differ in important ways. The real-world difference between them is the result of a process called *bass management*.

The LFE provides a dedicated channel for the sort of low bass that is used in theaters and theme parks to add impact to star destroyers, explosions, and really big dinosaurs. The LFE is band-limited to frequencies below 80 Hz to 120 Hz.

In playback systems, the term *point one* refers to a subwoofer, a speaker dedicated to carrying only low frequencies. Subwoofers have been used for many years to extend the response of speaker systems. Here, I'm referring to subwoofers that are designed to extend

FIG. 1: Bass management redirects the low-frequency content of each directional channel to the subwoofer, where it is combined with the LFE channel.

accurate reproduction down to 20 Hz (or lower), and not to the sort of bazookas that are made to rattle car hoods and passersby.

Building full-range speakers is neither easy or inexpensive, largely because re-creating low frequencies cleanly and effectively requires large drivers and a great deal of power. A subwoofer takes over the low-frequency duties from multiple channels so the directional speakers can be built more easily and economically. It could even be argued that the explosion in affordable hometheater-in-a-box-style surround audio systems has occurred because of the use of subwoofers.

Though the LFE and the subwoofer may seem similar, the LFE is a production channel, whereas the subwoofer is a playback channel. The mix engineer determines what goes in the LFE, and the designer of the home-theater system determines what ends up coming out of the subwoofer.

Making the Point

Bass management takes the low frequency from the satellites, or the directional speakers, and combines it with the LFE to be played through the subwoofer. Because bass is less directional than treble, our ears localize sounds according to their placement in the directional speakers regardless of where the subwoofer is placed. We have little trouble synthesizing a sound's easily localized overtones with its disembodied fundamental. The net effect is ample bass response with good directionality at reasonable cost.

The details of a bass-management system are seen in Fig. 1. The signal from each of the five directional channels is sent through a highpass filter so that only frequencies above 80 Hz are sent to the corresponding satellite speaker. At the same time, a lowpass filter redirects frequencies below 80 Hz from each directional channel to the subwoofer. That is why bass management is also referred to as bass redirection. Meanwhile, the LFE passes through only a lowpass filter to ensure that just the frequencies below 80 Hz are passed to the subwoofer. The low frequencies of all five (or more) directional channels are summed together with the LFE channel and sent to the subwoofer.

As with speaker placement (see the Square One column "Covering All the Angles" in EM's November 2005 issue), bass-management cutoff frequencies are subject





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to varying standards. It makes sense, for example, that an 80 Hz cutoff is inappropriate if your directional speakers don't extend that far down. That wouldn't be an issue with studio monitors, but consumer playback systems will sometimes use (or provide the option of

Defeatable bass management is commonly built into surround monitor controllers.

using) a higher cutoff to accommodate very small satellite speakers. The LFE's cutoff is sometimes cited as being at 120 Hz.

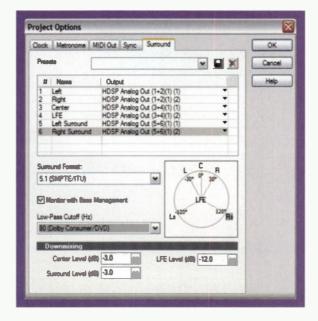
The Monitoring Question

Whether one should mix with a bass-managed system is debatable. After all, you've been crafting great stereo mixes on your "real-world" near-fields for years, so why should surround be any different? And if you can afford five directional speakers that extend to 20 Hz, why shouldn't you use them? Certainly those audiophiles who spend as much on their speakers as most folks do on automobiles will be listening to your mixes that way.

If, like most of us, you work with monitors that roll off in the 40-to-50-Hz range, you would be wise to add a bass-managed subwoofer to your system. If you

don't, you could find out the hard way that bass-managed consumer playback systems easily reveal low-frequency problems that you never heard in the control room. In the past, you could be forgiven

FIG. 2: Cakewalk Sonar 4 Producer Edition's surround options include software-based bass management. It can be turned on or off at will, and it supports several different cutoff frequencies.



for missing mic-handling noise, airplanes passing overhead, air-conditioning noise, and other problems as you monitored on your NS-10s, because most stereo bookshelf speakers were incapable of reproducing those frequencies. But with the increasing use of

subwoofers in people's homes, those days are gone. Because many people even listen to their CDs on bass-managed systems, you should at least check your stereo mixes with the subwoofer engaged.

Even if you monitor with true full-range speakers, you must

check your mixes on a bass-managed system to guard against phase cancellation. With six channels of bass frequencies being summed, the potential for such interference is high. Your full-range speakers might hint at the problem, but acoustic phase cancellation depends highly on the position of your head and is subject to mitigation by reflections. When out-of-phase signals cancel each other "in the wire," however, their cancellation is direct and irreversible. The only way to be sure those problems dcn't appear in the consumer's playback system is to do a critical listen through bass-managed speakers.

Defeatable bass management is commonly built into surround monitor controllers so you can mix without it, and then engage it to check for phase problems. Some facilities keep a consumer-level playback system on hand, either in the control room or in a separate room, for quality-control checks. Another option is software-based bass management (see Fig. 2)

A further argument in favor of bass management is that even with full-range speakers, it may be impossible for their real-world bass response to be identical at the mix position. Innumerable variables, including reflections from console surfaces and the speakers' proximity to walls and ceilings, conspire to prevent uniform frequency response from all five directional speakers. Bass management puts the low end of all channels on an equal footing.

Get Down

Subwoofers are sometimes frowned upon because it can be difficult to integrate their response smoothly with that of the satellites. Nevertheless, as an enabling technology for the explosion of home-theater surround systems, they are a fact of life. Understanding how bass management affects the playback of your surround mixes is a critical step in ensuring that your work translates to varied playback systems. After all, you always check your stereo mixes for mono compatibility, don't you? EM

Brian Smithers is Course Director of Audio Workstations at Full Sail Real World Education in Winter Park, Florida.

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The Professional's Source

Wanted: Demo Producers

By Steve Skinner

Build a career producing songwriters and artists.

any years ago, when I was just starting in the music business, I asked Frank Vilardi (a successful New York-based session and touring drummer) what kind of work was out there. He replied, "The world is a demo." There are many more demos produced than albums. And that means there is a huge need for demo producers.

I have produced demos for songwriters and artists for more than 20 years, and although it hasn't made me rich, it has provided me with a steady income. My clients spread my reputation around by distributing the songs that I produced for them. For example, I did a lot of recording for two major producers who had heard my demos from other clients. My demos for Jonathan Larson ended up becoming the arrangements for the musical *Rent*.

Necessary Chops

You need a variety of skills to produce quality demos, including minimal keyboard chops, good arranging experience, and an ear for how sounds fit together. From an engineering standpoint, proficiency in miking and mixing and the ability to work efficiently in your DAW are absolute necessities. Most of all, you need a good attitude. Producing demos is not about

is also the songwriter, but you would still treat such a project as an artist demo.

To get work producing song demos, you need to find songwriters. In the major cities, songwriters tend to congregate; they take classes in songwriting, perform at open mic nights, and attend BMI and ASCAP events. Those are all good places to drum up work. For example, you can offer the students in a songwriting class the opportunity to make a demo at a reduced rate. At least one of them will probably be writing hits in a few years, so it's a worthwhile investment of your time. Successful songwriters are good at networking, so if you're a skillful demo producer, word will get around.

Your goal when making a song demo is to create an accurate representation of the writer's vision for the song; you should strive to make it sound like a hit. If the songwriter's concept doesn't seem hit-worthy to you, however, you still have to complete it (although you can feel free to make the case for why it should change). After all, the songwriter is paying the bill. It's helpful to have your clients previde you with one or two songs from CDs as a reference for what they want their song to sound like.

If the songwriter doesn't have a great voice, he or

she might choose to hire a demo singer. It's important to know who the good professional singers are in your area so that you can make recommendations.

What makes a good demo producer stand out is the ability to do many jobs well.

you—it's about what artists or songwriters want. Your job is to realize their vision.

You also need a studio. The demo-quality bar has been raised in recent years, so you need a professional DAW, good mics and mic pres, signal-processing plugins, and some hardware- or software-based synths and samplers.

Take 2

There are two basic types of demos: song demos and artist demos. Song demos are sent to artists, labels, and producers to solicit an artist to record the song. Artists send demos to labels and producers to solicit a recording or production deal. Sometimes the artist

What to Charge

You have the option of charging your clients by the hour or by the song. I prefer charging by the hour, because that discourages the writer from suggesting endless changes. If, however, you don't work quickly and you like to take the time to experiment, a per-song rate may work better for you.

At the beginning, you should charge fairly low fees for your services. Many publishing companies allow their writers only \$500 per song, including vocal fees. That translates into approximately \$35 per hour, assuming ten hours of work on your part (covering the whole process, from tracking through mixing) and a \$150 fee for the vocalist. When you get



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

Jenna Drey - TAXI Member - www.jennadrey.com

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

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

Who Hears Your Music?

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

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

A Record Deal With Lots of Zeros!

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

Madonna, Bowie, Jagger, and me!

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





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

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

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more work than you can handle, raise your rates. In the New York area, \$100 per hour is the upper limit for song demos.

Some producers ask for a percentage of the publishing (in addition to a fee) for the songs they demo. I don't recommend doing that because professional songwriters—the clientele you want to cultivate—typically won't agree to those kinds of terms.

If you do a good job on the demo and the song gets covered by an artist, two things can happen. The producer can ask his or her programmer to copy the demo, or the producer can ask to meet with the person who did the demo. If it's the latter, then you'll be recording a song for a CD and making more money. It also means you've hooked up with a working producer.

Another Scenario

On an artist demo, the focus is on the artist and not on the songwriting, so your aim is to make the artist sound amazing. You'll need a quality vocal mic, a good mic pre, and pitch-correction software. Additionally, you'll need to spend more time on the vocals than you would with a song demo.

For an artist demo, it's important to create a unique sound. Unlike the song demo, which should sound similar to a song that a current artist would do, the artist demo should have a fresh personality that accurately communicates the artist's vision.

Artist demos are typically more work-intensive than song demos. Because of the additional work, it may be acceptable to ask for a portion of the song royalties (if the artist is the songwriter). I don't recommend asking for a cut of the royalties as a matter of course. But if you believe in the music and you have a good relationship with the writer, you can accept a lower fee in exchange for potential royalties.

Often songwriters will introduce you to artists, because artists collaborate with songwriters. You can also find artists at open-mic nights.

The Know It All

What makes a good demo producer stand out is the ability to do many jobs well. Unlike a record producer, the demo producer doesn't have the luxury of calling in an engineer, an arranger, or a programmer. If your background is in engineering, you need to learn how to play keyboards and how to arrange music. Having guitar

LONG-DISTANCE PRODUCER

The Internet is changing the world of the demo producer. With songwriter demos in particular, you can do most or all of the work without ever seeing your clients. The songwriters can send you MP3s of their rough recordings. You can then start a track, and send an MP3 of it back to the songwriter. If the songwriter likes it, you can finish the track and either get a vocalist to come to your studio or send a good-quality MP3 back to the songwriter. The songwriter can then record a vocal in a local studio.

At that point, you need some way to send and receive full-bandwidth files over the Internet. To do that, I use Apple iDisk. You can also set up an FTP site or use an Instant Messenger program, such as AOL Instant Messenger or Apple iChat, to transfer files. The songwriter's studio can then send you a full-bandwidth file of the vocal. You can mix the vocal into your track and then send the songwriter back an MP3 mix for approval. Once your client approves the mix, you can deliver a full-bandwidth version either through the Internet or on a snail-mailed CD. I've worked that way with people in Nashville, Florida, and even Russia.

I don't recommend working remotely on artist demos, because you'll want to be in the studio with artists when they are singing. Working remotely requires you to do a lot more producing.

chops is also helpful. If you're a keyboard player, get a working knowledge of how to play guitar and vice versa. And if you are a musician, learn how to engineer.

My background is in keyboard playing and arranging. I interned at a studio for several years. I read up on engineering. I hired professional engineers to do mixes for me, warning them before and that I would be picking their brains every step of the way. I still ask for engineering advice from those who have more knowledge than I do.

The Tech Effect

Increasingly more musicians have access to good recording gear these days, but only some have the skills to produce quality recordings. If you're good, you can get lots of producing work. Although many of my clients own or have access to recording gear, they typically don't have the technical or musical skills to make good demos on their own.

At one point in my career, I was recording a lot of demos and getting a bit tired of it. I was happy when I was asked to produce an entire album for an artist for a healthy fee. "Great!" I thought, "No more demos." The artist then said, "Well, I have about 25 songs I'm interested in, so to figure out which ones to do, we need to demo them." I guess Frank Vilardi was right: the world is a demo. EM

Steve Skinner has worked as an arranger/programmer for Bette Midler, Jewel, Céline Dion, R. Kelly, Diana Ross, The Bee Gees, and Chaka Khan. He arranged the musical Rent and coproduced the cast album. He has also produced a lot of demos.

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Shock Racks feature a "road ready" roto molded tough shell with an integrally molded valance that eliminates the need for a metal valance on the outside of the case. Standard rack depth front to rear rail is 20" with a standard 19" rack width per EIA standards. The efficiently redesigned frame with threaded steel rails and

aluminum cross components are factory equipped with 8 HM-245 elastomeric, high damping, wide temperature range shock mounts. Additional shock absorbers can be easily field mounted in each corner to handle heavier loads. Removable front and rear doors are fitted with rubber gaskets for water resistant protection. Easy-grip molded handles make transport convenient and recessed heavy-duty spring loaded twist latches allow these cases to meet ATA flight specifications.



Cubase SX3 takes music production to an entirely new level. SX3 adds more than 70 new features including Audio Warp - a high-quality real-time, Time Stretching and Pitch Shifting algorithm that automatically adopts a project's tempo. Also new in SX3 is External FX Plugins.

This function allows for direct integration of external hardware effects processors into the VST audio mixer just like software! The first step in the Steinberg/Yamaha collaboration is called Studio Connections "Total Recall". This modular editing system builds a powerful bridge between

the virtual and physical studio. Opening a project can not only recall an entire studio setup within seconds but allow full graphic editing right inside Cubase SX3.

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WHAT THE EM METERS MEAN

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

KORG OASYS

Introducing the mother of all workstations. By Geary Yelton

t last year's Winter NAMM show, after years of rumors and speculation, Korg unveiled the OASYS, its most ambitious synthesizer workstation ever. Touted as the culmination of Korg technology, it encompasses sample playback, physical modeling, DSP effects, multitrack audio and MIDI sequencing, KARMA control, and practically everything else you'd want in a self-contained music production studio. The OASYS can take you from sketching out ideas to tracking, mixing, mastering, and burning them to an audio CD completely within its confines.

The OASYS's feature list alone makes it king of the keyboard synths: a maximum 172-note polyphony, a huge variety of designer timbres, tons of

hands-on controls, plenty of expressive capabilities, and seemingly limitless programming potential. Its tilting 10.4-inch color touch screen LCD is gorgeous. With a 40 GB hard disk, a gigabyte of RAM, more than a gigabyte of onboard samples, and the ab:lity to add more of all three, the OASYS furnishes more waveform data than any previous hardware synth.

OASYS is an acronym for Open Architecture Synthesis Studio, and its core concept is expandability. Like the OASYS PCI card that came before it (see the sidebar "Traces of OASYS"), its sound engine depends entirely on the software that it's running. Every time you power up the OASYS (which takes more than a minute), it loads its operating system, synthesis and effects algorithms, and sample banks from its hard disk. That means that you can potentially extend the OASYS's architecture by installing new software and soundware using its built-in CD drive. In other words, the OASYS can evolve into any synth that Korg's R&D team develops.

All Hands on Deck

The OASYS is available in two models, one with 76 semiweighted keys, and another with an 88-note graded hammer action.

FIG. 1: The OASYS integrates and advances numerous technologies from previous Korg workstations. From its tilting touch screen to its vector joystick and ribbon controller, it delivers a wealth of musically expressive capabilities.

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With its charcoal gray exterior, silver aluminum trim, and large side-panel ventilation ports, the OASYS's striking appearance distinguishes it from other keyboards (see Fig. 1). Its front panel is a well-organized array of knobs, sliders, buttons, and joysticks. Most buttons illuminate when they're engaged. Just beneath the display are eight Velocity-sensitive pads for playing chords or individual notes (typically drum samples), and you can program them differently for each Program or Combination (Combi).

To the display's left, the OASYS's fully assignable control surface furnishes 9 sliders, 8 knobs, and 16 buttons can serve whatever mixing and modulation purposes you desire (see Fig. 2). The sliders and knobs each have 11 LEDs that make it easy to see their positions, even on a darkened stage. Five buttons determine the control surface's overall function, instantly switching it from a KARMA and a modulation panel to a mixer panel or to a Tone Adjust panel. Because the control surface can send MIDI Control Change (CC) messages, it can also control external MIDI devices and computer software.

To the far left is the vector joystick, illuminated by a glowing blue ring. Use it to pan between two stereo or mono oscillators in Program mode, to pan between four groups of Programs in Combination mode, or for almost any control function you can dream up.

The panel's right side has buttons to select Programs, Combis, and modes; to enter numeric data; and to trigger sampling. That's also where you'll find sequencer transport and tempo controls. Among a cluster of four Utility buttons is the Help button; pressing it summons text and graphics that explain the currently selected page or controller. Such functionality wouldn't be practical without the OASYS's large LCD, which makes reading help files just like reading them on a computer display.

I/O and Away

Except for a single ¼-inch headphone jack up front, all inputs and outputs are mounted on the back (see

FIG. 2: The Mixer & Modulation section is packed with assignable knobs, sliders, and buttons for controlling synth parameters, audio and MIDI tracks, and even external hardware and software. Fig. 3). The OASYS has eight individual unbalanced %-inch outputs and two main unbalanced %-inch outputs. Two analog inputs are on balanced Neutrik combination XLR and %-inch jacks, each with

a corresponding phantom-power switch, mic/line switch, and level knob. The other two analog inputs are unbalanced %-inch inputs. I was surprised that the OASYS has

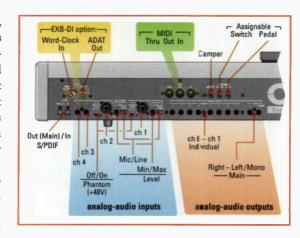


FIG. 3: Connections for analog and digital audio, MIDI, and USB 2.0 are located on the back panel. Two Neutrik XLR inputs supply switchable phantom power for condenser mics.

only two balanced inputs and no balanced outputs, especially considering its suitability for studio work.

Optical S/PDIF ports comprise the instrument's digital audio I/O (AES/EBU is not an option). The optional EXB-DI digital interface board (\$200), previously available for the Triton, adds 8-channel ADAT Lightpipe output and a BNC word-clock input. If you want to record four audio tracks into the OASYS at the same time, then you'll need to use at least two unbalanced analog inputs or the S/PDIF inputs.

Jacks for a damper pedal, an assignable pedal, and an assignable footswitch (all optional) are above the outputs alongside single MIDI In, Out, and Thru ports. Also on the back are four USB 2.0 ports for connecting external hard drives or other mass media. There's currently no support for connecting the OASYS to your computer using USB, but a flash drive is a convenient means of transferring data between them.

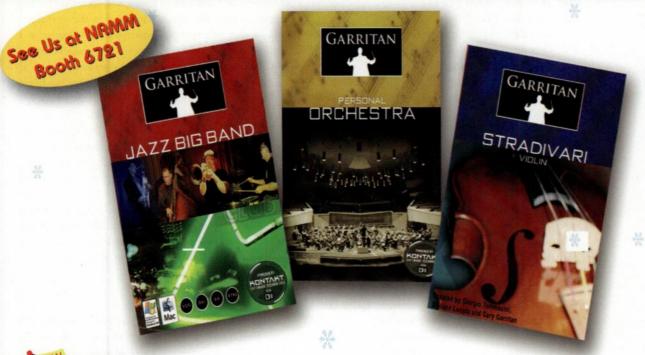
Organization, Man!

The OASYS is built around a 2.8 GHz Pentium 4 CPU and has a proprietary operating system based on Linux. Rather than adopting the entire Linux OS, though, Korg customized only what was needed. Unlike instruments that run a stripped-down OS originally designed for general personal computing, the OASYS OS is built from the ground up with musical applications in mind.

The OASYS ships with 1 GB of RAM. The most recent operating system (as of this writing, OS 1.10) supports a maximum of 2 GB, attained by adding a 1 GB PC2700 DDR333 or PC3200 DDR400 DIMM. The amount of RAM the OASYS has, of course, determines how much data it can load at startup. Sample data is divided into the 314 MB ROM sample bank, which comprises the standard sound set, and an EXs expansion sample library, which is loaded optionally. Korg's nomenclature is a bit confusing, though, because the wave data isn't stored in ROM. Instead,



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it's loaded into RAM from the OASYS's built-in hard disk. How much RAM you use to load sounds determines how much is left over for user sampling.

Two EXs banks come standard with the OASYS. A 313 MB bank called EXs1 is an extension of the standard sound set, and a 503 MB bank called EXs2 is a beautiful multisampled Steinway concert grand piano with four Velocity layers and sampled damper resonance for each note (EXs1 contains a 130 MB version of the same piano). Because the standard 1 GB of RAM isn't enough to hold both EXs banks, you must choose which one will load when you restart the OASYS (EXs1 loads by default).

The OASYS organizes Programs and Combis into seven Internal banks and seven User banks, each with room for 128 Programs or Combis. Each Combi contains as many as 16 constituent Programs, one for each MIDI channel. Previous Korg workstations allowed only eight Programs in a Combi.

Making Synths

The OASYS's stock voice architecture, HD-1 (High Definition), is the latest incarnation of Korg's tried-and-true 16-bit, 48 kHz PCM sample-playback engine and a generation ahead of the Triton's HI (Hyper Integrated) synthesis. Its modulation capabilities are impressive, and its sound is clear and pristine.

HD-1 sounds can have two stereo or mono oscillators, each with an independent signal path. Each oscillator can layer two multisamples and generate as many as four multisamples for crossfades and Velocity

splits. As you'd expect from an instrument with so much waveform data, the sample selection is enormous—everything from practically any instrument you can think of to almost 300 sound effects and well over 100 synth waveforms.

Each oscillator is routed to either one or two resonant multimode (lowpass, highpass, bandpass, or band-reject) filters, each with a dedicated envelope generator and a multitude of other modulation sources. Single filters can be 6-, 12-, or even 24 dB per octave, depending on the selected type. An onscreen image displays the filter's overall response curve. The OASYS's filters sound impressively analog, and the total absence of audible zippering when you sweep the cutoff frequency is like nothing I've ever heard on a digital synth (see Web Clip 1).

HD-1 has three flexible envelope generators. Each envelope has three to five levels, and four time values determine how long it takes to move to the next level. A Curve parameter governs whether a level changes in a straight segment or in a linear or an exponential curve. You can modulate an envelope's time parameters with as many as three modulation sources, and you can modulate level parameters with as many as two sources.

One key to understanding the OASYS is the concept of AMS. It stands for Alternate Modulation Source, but it's really any assignable modulation source. An AMS might be a physical control such as a joystick or a slider, a MIDI command from KARMA or from an external source, or a modulator such as an LFO or an envelope generator. Every possible modulation cestination has at least one AMS input. In fact, many of them can receive control signals from AMS Mixers, which combine two or more sources and allow for shaping, quantization, and other forms of processing.

You Can Call Me AL

The OASYS's additional synthesis engines are called EXi Expansion Instruments. The OASYS originally shipped with two EXi algorithms—a virtual analog called AL-1 and a drawbar-organ emulation called CX-3—and Korg has just released a third, a plucked-string simulation called STR-1.

AL-1 effectively demonstrates just how far analog modeling has come. It offers all the warmth and character of a real analog synth with greater programmability and control. AL-1 has a maximum polyphony of 84 notes, and each voice has an 8-waveform audio oscillator, a 6-waveform audio oscillator, a 2-waveform suboscillator, live audio input, a ring modulator, and a noise generator with a fixed lowpass filter and saturation control. Five of those six sound sources are available simultaneously.

You have complete control over the start phase of each oscillator—something you won't get with a traditional analog synth. The most interesting waveform choices are Saw/Pulse and Square/Triangle, which can crossfade between two waveforms at a rate specified in the Wave Morph parameter. You can modulate the Wave Morph parameter in real time. You can also use the ring modulator to intentionally create and control aliasing, which is useful for certain electronic timbres; the OASYS is the first synth I've seen offering that capability.

In addition to all the filter types in HD-1, AL-1 features a thick and juicy resonant Multi Filter that can crossfade between any 2 of 21 filter types. You can assign a fixed value to the balance between the two types and modify it with a modulation source, the depth of which can be controlled by another mod source.

AL-1 Programs each have a dedicated step sequencer that serves as a modulation source. Use it to create

PRODUCT SUMMARY

KORG OASYS

keyboard workstation OASYS 76 \$7,999 OASYS 88 \$8 499

PROS: Impressive sound. Excellent display. Well-designed user interface. Lots of hands-on control. Flexible synthesis engine. Computer-like multitrack recording.

CONS: Expensive. No balanced outputs. Only two balanced inputs. No multichannel digital input. No USB connection to computer.

FEATURES
EASE OF USE
QUALITY OF SOUNDS

MANUFACTURER Korg

www.korg.com

98



NOTATION PRODUCT OF THE YEAR

(CUETHE TIMPANI)



NOTION

MUSIC COMPOSITION
AND PERFORMANCE SOFTWARE

WINNER, ELECTRONIC MUSICIAN EDITOR'S CHOICE 2006 NOTATION SOFTWARE OF THE YEAR.

A NOTEWORTHY AWARD FOR A TRULY NOTEWORTHY PRODUCT.

NOTION music composition and performance software is the only product to match a robust and intuitive notation editor with a built-in interpretive playback engine that's as smart as it is powerful. The result is a first in the history of composition: musicians can now write music and instantly play it back - in full orchestration.

To bring this idea to life, NOTION uses samples of the London Symphony Orchestra recorded in Abbey Road Studios. Integrating notation and performance in one program allows for composing directly to the orchestra without the need for file conversions, patches, external sequencers, or separate sample batches.

FEATURES

Samples of the London Symphony Orchestra recorded at Abbey Road Studios

No external hardware or software needed

Over 1000-voice polyphony

MIDI keyboard entry

NTEMPO: real-time "conducting" of the score including vamp

Non-standard keys and complex time signatures

MusicXML import

Scalable reverb from natural, recorded decay Instrument audio mixer: mute, solo, decay, pan, and balance

WAV file creation

MAC and PC compatible



HOW IT WORKS

NOTION features the first music-minded composition interface designed so musicians can focus on music, not technology.

It's simple: enter notation from the computer or midi keyboard, and press "play". NOTION's interpretive audio playback engine reads the score and instantly generates performance-quality playback, unleashing perfect samples of the London Symphony Orchestra.

All articulations, dynamics, and expressions are realized instantly and faithful to the written piece.





PLAY LIVE

NTEMPO playback gives you real-time performance control. Rubato, holds, cutoffs, and vamps are accommodated with perfect precision. Incorporate NOTION performance as live accompaniment to players, theatre, or anything else in the real world. Seamlessly.

"I was absolutely thrilled to use NOTION and I fell in love with it, and with the wonderful prospect of using a single, musical, intuitive piece of software using just standard notation to play my music and not a sampler, a sequencer, a library and a notation tool... I am 100% sure that NOTION has the concept and the promise to change our old ways and give us only one thing to worry about

- Lubo Astinov - composer, educator, performer, orchestrator

- "NOTION ... has the potential to become the first true mass-market music software useful for beginning students all the way to professional copyists and composers..."
- Peter Alexander, Sonic Control webzine

"NOTION is wonderful! I am thrilled to find such ease of use coupled with the newest advances in music notation and performance. NOTION is a dream come true, thanks to Jack Jarrett and his outstanding staff."

- Mary Gae George, author of Artistry at the Piano

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M-AUDIO

melodic patterns, to automate changes in filter cutoff, or to bring any modulation destination to life. Assign each of the 32 steps a different duration to create complex rhythmic patterns. EXi Programs can host as many as three simultaneous step sequencers.

B-3 and Beyond

Korg introduced the CX-3 algorithm several years ago on an electronic drawbar organ of the same name. The OASYS's version goes so much further that it should have been given a new name. Accomplished Hammond players will love CX-3 (and roadies responsible for transporting real B-3s and Leslies will love it even more). Like Korg's CX-3 keyboard, the OASYS's CX-3 emulates every detail of a B-3 organ and a Leslie cabinet (see Fig. 4). The new CX-3 extends the original CX3 with capabilities such as percussion on the lower drawbars and the ability to save your own vibrato chorus presets.

You can split the keyboard into two upper and lower halves and assign different drawbar combinations to each. Choose a vintage or a clean tonewheel type and emulate key click, leakage, noise, and other aspects that enhance realism. Add percussion to the second or third harmonic and govern its level and decay time. In EX mode, you can add four extra drawbars to the traditional nine and assign percussion to a mix of five drawbar pitches.

CX-3 does an exceptional job of modeling a Leslie rotary-speaker cabinet. You can independently specify the slow and fast speeds of the horn and rotor and control how long they take to accelerate and decelerate. You can program the lengths of time it takes them to stop completely, and you can even set the phase at which they stop. You can also specify distances and stereo spread for a pair of simulated mics for the horn and another pair for the rotor.

Strings Attached

STR-1, the most recent addition to the OASYS's bundled EXi algorithms, is a physical model of a struck, scraped,

FIG. 4: CX-3 effectively duplicates every control parameter of a Hammond organ and a Leslie cabinet, from drawbar and split settings to independent horn and rotor speed.



or plucked string. It synthesizes traditional string timbres such as guitars, basses, harps, electric pianos, and various ethnic instruments such as dulcimer and sitar, as well as unique pads and effects. User parameters control various characteristics of the virtual string such as damping, decay, dispersion, and harmonics.

A collection of 128 Programs accompanies STR-1, along with KARMA voicings that take advantage of its real-time expressive capabilities. They sound uniformly

excellent and do a good job of showing off Korg's stringmodeling technology, but programming your own string sounds can be daunting. Although the Parameter Guide describes dozens of parameter choices, it doesn't clearly explain how to use many parameters to your advantage. The best way to learn, then, is to edit existing Programmand listen to what happens.

Taste a Sample

Like the Triton, the OASYS is a fully functional sampler. You can record mono or stereo samples to RAM or direct to disk through the analog or S/PDIF inputs. In addition, you can rip samples from audio CDs or import Akai, AIFF, or WAV files. The OASYS can digitally sample its own output, whether you're playing a Program, a Combi, or a Song, either live or sequenced, and with or without KARMA or effects processing. Once sampled, a sound can be used any way you use the OASYS's native samples to create multisamples, one-shots, or wave sequences. You can also time-slice, time-stretch, and perform other sample-editing procedures.

With the stock 1 GB of RAM installed, just over half is available for sampling if you don't load any expansion (EXs) samples. If you load EXs1, 202 MB is available, and if you load EXs2, you won't have any sampling memory unless you add more RAM.

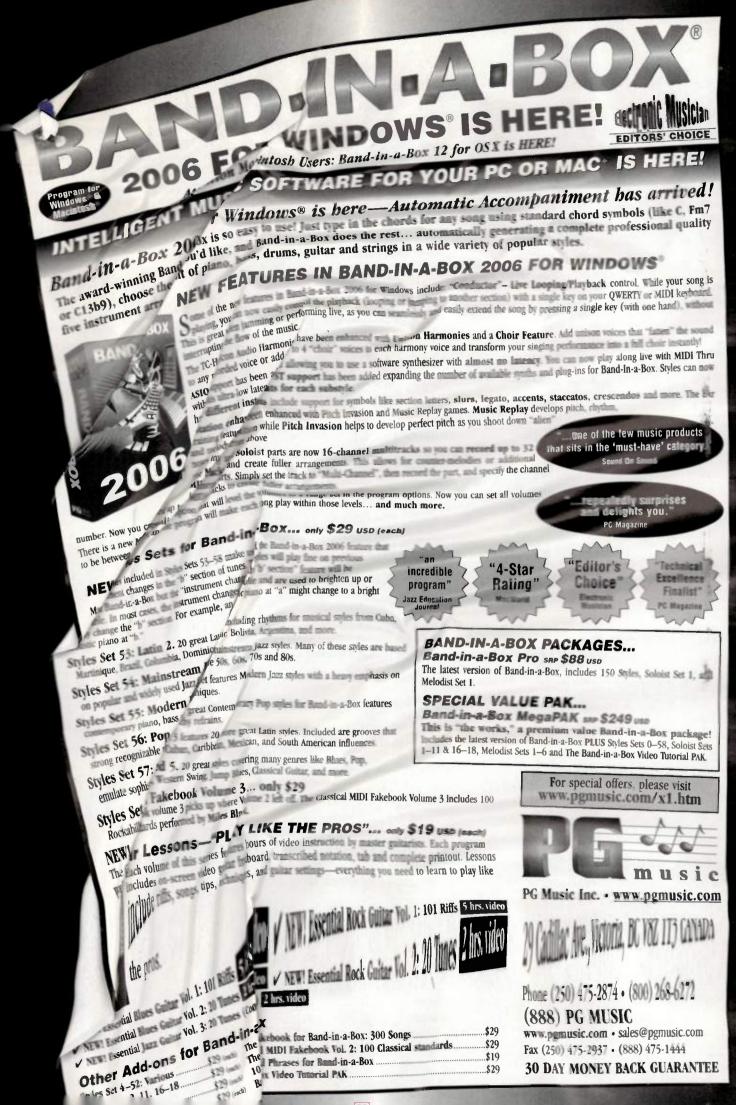
Catch a Wave

One of the OASYS's most creatively stimulating features is wave sequencing, which plays a series of multisampled waveforms in succession to create evolving textures or rhythmic phrases (see Web Clip 2). The Wavestation introduced wave sequencing in 1990, and the Legacy Collection's soft synth Wavestation recently updated it. Like the Legacy Collection, the OASYS furnishes all the Wavestation's original waveforms.

Wave sequencing on the OASYS goes quite a bit further, allowing you to modulate each step's position and duration in real time. At long last, stereo waves and user samples are supported. Wave sequences can be as long as 64 steps, with user-programmable parameters for each step such as pitch, level, start offset, and crossfade time and shape. Wave sequences can loop forward or backward or alternate in direction. They can also control Program parameters such as filter cutoff or LFO rate, with two modulation settings for each step. The OASYS's internal memory banks contain 150 rewritable wave sequences, and the user banks generously provide locations for 224 of your own creations.

Improve Your KARMA

Just in case you've been asleep for the past five years, KARMA stands for Kay Algorithmic Realtime Music Architecture and was developed by inventor Stephen Kay. First introduced in Korg's Karma keyboard,



KARMA uses software magic to generate MIDI data that triggers notes, chords, and musical gestures in response to your real-time input. For example, by playing keys and pads, pressing buttons, turning knobs, and pushing sliders and pushing complete dynamics tar strumming.

The sheer processing port to go ensiderable to g

WWW

OASYS SPECIFICATIONS

UASYS SPECIFI	CATIONS HD-1 sample playback
Sound Eng	modeled analya
Maximum Polyphony	CONT. COMMENT
Audio Data Format	dynamic voice allocation 16 bit 48 kHz mono see
Analog Inputs	TRS/ XLR Neutrik m. all have TS (2) unbelanced % ic/line switching switchi
Analog Outputs	(2) unbalanced % ain, (8) unbalanced %
Digital Audio I/O	optical S/PDIF, optional ADAT dutput/word-clos al. (1) %
Data I/O	optical S/PDIF, optional ADAT output/word-clock ^{al} , (1) 1/4 (4) USB 2.0, (1) Mark la, (1) Microbac (1) Mark la, (1) Microbac (1) Micr
Control Inputs	
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Real-Time Controllers	ac To action ight To action ight To action or joystich To stick ignable siders To action ight To stick ignable siders To action ight T
Display	ignable
CPU	Pendum 4/2 8 CM2
RAM	GB, expandable to 2 GB
Included Waveform Libraries	314.6 MB preset PCM, 313.6 MB EXs1 exceeding, 503 EX
Mass Storage	adisk, (1) CB-R/RW
1emory Locations	(1.920) Pograms (1.792) Combinations, (161) d. (374) walk
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lampling	ther sampling; Imports Akai S UNISAND
udio/MIDI Sequencer	(16) MID (1) master
ARMA	(2,048) Generated Effects. (3) February of (1) Modules (1) Modules (2,048) Generated Effects. (3) February of (4) Modules, (1) Modules (1)
dditional Features	wave se
imensions	OASYS 88: 57.40" (M) × 5.31" (H) × 19.06" (D
eight	OASYS 78: 55.44 lbs.; DASYS 88: 70.99 lbs.





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Recorded by legendary musician Miroslav Vitous, these sounds have been praised over the years for having a warmth and playability still unmatched today. Sampled in the proper spatial positioning in the highly acclaimed Dvorák Symphony Hall in Prague, the instruments were performed by the Czech Philharmonic Orchestra, an ensemble with a romantic tradition going back centuries.

All of this symphonic beauty emanates from the sound of Miroslav Philharmonik, which brings together the entire Miroslav Orchestral and Choir collections plus gigabytes of additional instruments, ensembles and performance articulations into a new virtual instrument plug-in with an unprecedented power of composition and performance.

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memorizing different control layouts for hundreds of individual GEs.

One KARMA Module containing a specific GE is available to each Program. On the original Karma, Combis shared front-panel controls; the OASYS lets you switch between four control-surface layers so that all the sliders and buttons are available to each KARMA Module. As well as the four KARMA Module Layers, a Combi or sequence has a Master Layer that controls aspects such as swing.

One OASYS-exclusive KARMA function is the ability to generate its own form of wave sequencing. Just as it can trigger different notes or modulation parameters,

KARMA automatically triggers individual waveforms and pitches in a wave sequence, one for each step in a KARMA pattern. KARMA-generated wave sequences can't crossfade from one sample to another the way that standard wave sequences can, but you can build complex and random timbre patterns triggered by a single note or the press of a button.

Another new KARMA ability is Note Remapping, which lets you edit patterns in real time by substituting individual instruments. For example, by moving a slider, a pattern that plays a snare, kick, and hi-hat groove will play the same drum pattern on sidestick, tom, and ride cymbal (see Web Clip 3).

Effects Department

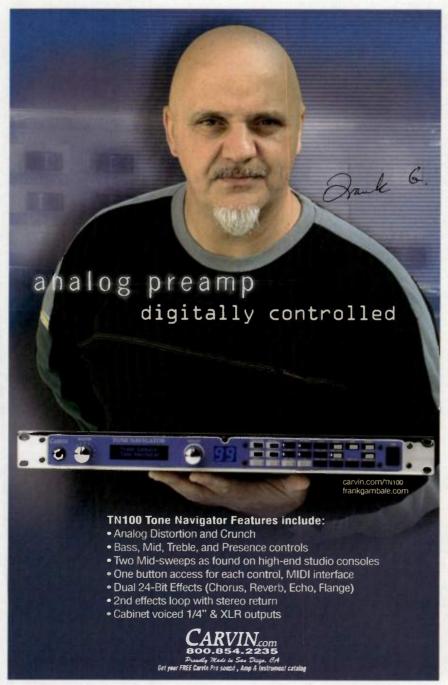
The OASYS supplies 185 effects algorithms running the gamut from mastering-quality dynamics and 3-band EQ to ToneWorks guitar-amp modeling and stompbox classics such as flanging and chorus. It also features the Korg O-Verb, which is one of my favorite stereo reverbs borrowed from the OASYS PCI. Other outstanding effects include the Korg 01/W synthesizer's stereo waveshaper and the Polysix's ensemble. Just about the only effect notably lacking is a convolution reverb. Considering the OASYS's native expansion capabilities, however, I would be surprised if such a reverb wasn't already well into development.

The OASYS can process Programs or even individual oscillators through as many as 12 stereo insert effects arranged in series, and you can route wet signals to either the master or individual outputs. Two stereo master effects are routed to the Send 1 and Send 2 bus, and they can be any effects type available as an insert effect. In addition, the OASYS routes the master L/R outputs directly through two Total Effects, which can also be any available effects type.

The OASYS can function as a 6-input, 10-output effects processor for external audio, whether you're processing live performances or audio recordings (see Web Clip 4). Additionally, the OASYS's two stereo FX Control Buses let you create sidechains to control the vocoder and dynamics processors in response to audio signals other than the signals being processed.

Hit Record

The OASYS offers 16-track audio and 16-track MIDI recording from a unified graphical user interface. You can use the front-panel mixer to control levels and panning



and to enable tracks while recording or mixing. I was surprised that you can record only four audio tracks at a time, especially considering that all six inputs (four analog and two digital) are simultaneously available for external effects processing.

You can apply any of the onboard effects to the audio tracks, and you can record dry while monitoring through effects (if desired). You can also transfer audio from computer-based DAWs by importing AIFF or WAV files into OASYS tracks. You can insert time signatures at the beginning of any measure and tempo changes anywhere in a song, and the MIDI sequencer lets you record tempo changes using a tempo-tap function. Punch-ins and punch-outs can be manual or automated. In addition, mixer automation is available, and like a computer-based DAW, the OASYS lets you make recording passes that record automation data only.

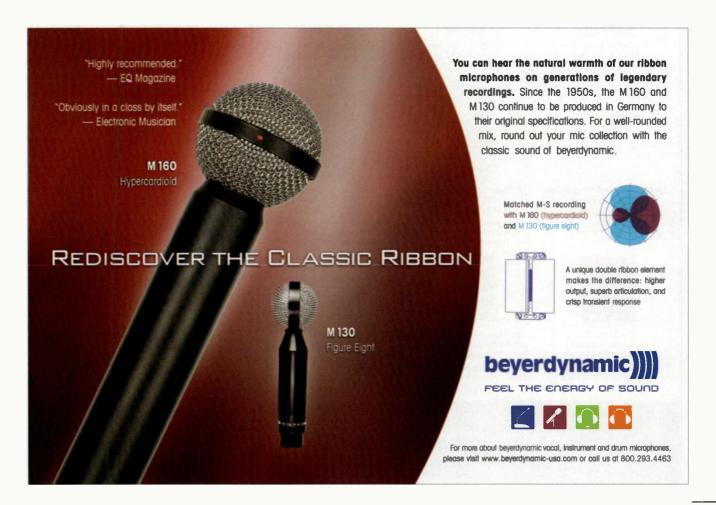
Personalized song templates prepare the OASYS for multitrack sequencing at the touch of a button by automatically assigning Programs, routing voices, and arming tracks. Song templates include a selection of rhythm patterns for assembling drum and percussion tracks. And for quickly capturing musical sketches, just press the Enter button and then press Record.

TRACES OF OASYS

In 1992, Korg first previewed a prototype of a DSP-based keyboard synth called the OASYS. It had a software-expandable architecture with PCM playback, physical modeling, additive and FM synthesis, and the first iteration of Korg's TouchView display. Other than two appearances at Winter NAMM, however—one in a private hotel suite and another on the floor a year later—it never saw the light of day outside of Korg, which used its technology as a springboard for other DSP instruments such as the WaveDrum, the Z-1, and the Trinity.

Creation of the original OASYS also led to 1999's introduction of the OASYSPCI, aDSP and audio expansion card that you could install in your computer (for a review, see the October 2000 issue of EM, available online at www .emusician.com). Though the OASYS PCI offered algorithmic synthesis and effects capabilities that were previously unattainable, its \$2,200 retail price (along with users' unrealistic expectations regarding its polyphony) prevented it from catching on.

Thanks to a well-designed user interface and detailed color graphics, the OASYS effectively duplicates the experience of recording with a computer rather than with a synthesizer. The OASYS supports 16-bit, 48 kHz recording, but because the bit rate is limited by the software and not by the A/D/A converters, 24-bit recording could someday be offered in an OS update. That's one update I would like



to see, because it would minimize bit-rate conversion when importing audio tracks and samples from a computer.

Dream Machine

Hardly anyone (outside of Korg) mentions the OASYS without bringing up its enormous price tag. Fortunately, you get what you pay for, and the OASYS delivers more than any synthesizer workstation I've ever seen-more usable features, better integration of those features, and more expandability than most of its competitors. All its wonderful attributes will only add to your frustration if you can't afford to own one, though. Anyone who makes serious money by playing keyboards should at least consider buying an OASYS, and commercial recording studios that don't own one will be at a real disadvantage.

Korg has invested so many resources into the technology behind the OASYS that I expect it to be around for a while. The company's long history of growing its flagship instruments assures me that the OASYS's expandability is more than just marketing hype. In the next few months and years, Korg plans to offer more expansion samples, instruments, and

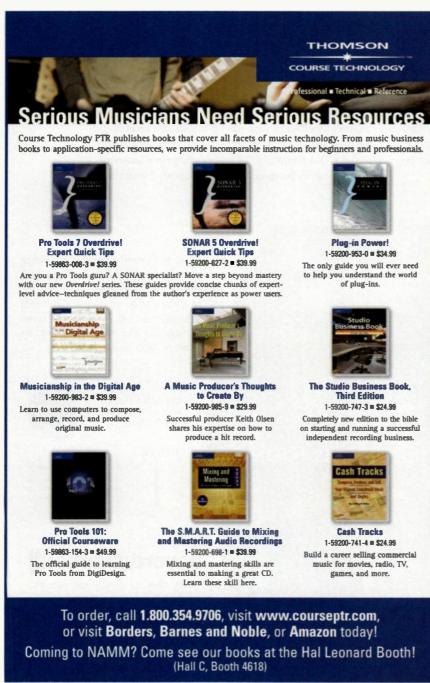
> effects. During the time that I was writing this review, Korg announced the STR-1 EXi and an OS update, both free of charge. Don't expect all future upgrades to be free, though, just as you expect to pay for your computer's new software.

> I thoroughly enjoyed working with the OASYS. First and foremost, it's a blast to play. It sounds fantastic, and I had a great time exploring its abilities. It was as stable as any DSP-based synth I've ever used, and I didn't experience a single crash, unlike what I expect with a computer-based workstation. Switching Programs, effects, and modes was impressively speedy, and the large display (which always stayed remarkably cool to the touch) made it easy to see what was going on at all times.

> The OASYS covers most of the territory you've grown accustomed to treading in a computer-based music-production rig. It adds impressive traits such as vector synthesis, a touch-screen interface, and realistic drawbar organ and analog synth modeling. If you're likely to take advantage of KARMA, it's sure to take your music to places it couldn't go otherwise. The built-in help is useful when you're learning your way around an instrument as deep as the OASYS.

> Along with its sound quality, functionality, and flexibility, the OASYS's depth is the instrument's most impressive aspect. There are so many features that I've been able to touch on a just few. (For additional information about the OASYS, see Web Clip 5.) If you commit yourself to mastering the OASYS, you'll probably spend months (if not years) discovering things that you never imag-

EM associate editor Geary Yelton has been



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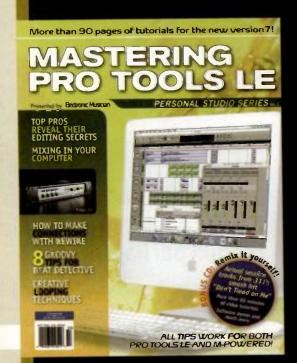
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FIG. 1: The MOTU Traveler includes a full complement of analog and digital I/O in a mobile, bus-powered package.

MOTU Traveler

MOTU packs a pro studio into a mobile package. By Orren Merton

ost portable audio interfaces are compact and inexpensive, and they offer limited features. With the Traveler, however, MOTU gives the mobile recordist the same combination of professional features and affordability that it has brought to commercial and project studios. The Traveler features as many as 20 simultaneous inputs, flexible onboard sync, a choice of power sources, and the ability to operate as a standalone mixer.

Configure all parameters directly from the Traveler's front panel.

In the Bag

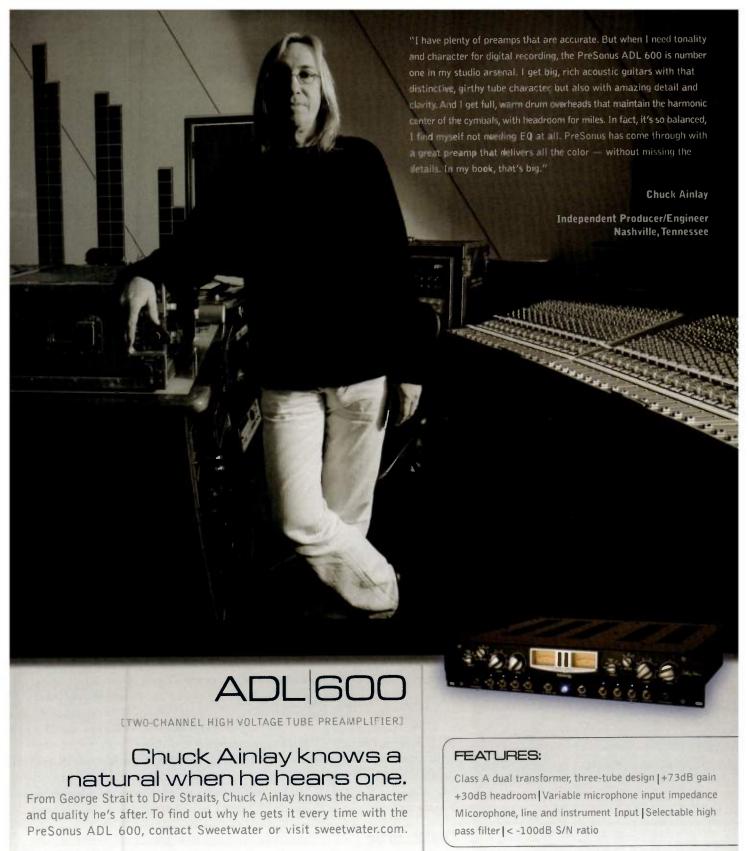
MOTU designed the Traveler to be easily transportable (see Fig. 1). Its rack ears, unlike those of MOTU's other audio interfaces, are not initially attached. That makes the Traveler easy to throw in a bag or a suitcase with a laptop and other location-recording essentials.

The Traveler's dark blue front panel furnishes everything you need to make quick adjustments and change settings on the fly, even in time-critical location-recording situations. Each of the first four channels has a push pot and a 48V phantom-power switch; pushing the knob toggles a -20 dB pad. Taking the pad into account, the mic preamps have a maximum gain of 73 dB, adjustable in 1 dB steps. Six additional push pots let you control the device's setup and the built-in CueMix DSP monitor mixer. The Volume push

pot adjusts the headphones and the main outputs; just push in the knob to toggle its function, which is reflected in the main display.

The center of the faceplate contains a multipurpose

LCD that displays parameters graphically. To its right, another display presents a dozen 4-segment LED meters showing the analog, S/PDIF, and AES/EBU input levels. LEDs indicate analog output and ADAT I/O activity. Unfortunately, there's not enough space on the front panel for output or ADAT metering.



Chuck Ainlay's credits include:

DIRE STRAITS • MARK KNOPFLER • VINCE GILL • WYNONNA • TRISHA YEARWOOD • GEORGE STRAIT • PETER FRAMPTON • LYLE LOVETT MELISSA ETHERIDGE • MARTY STUART • PATTY LOVELESS • NANCY GRIFFITH • JUNIOR BROWN • WAYLON JENNINGS • MARY CHAPIN CARPENTER TRAVIS TRITT • SHERYL CROW • DIXIE CHICKS • WILLIE NELSON • SUGARLAND • MARTINA McBRIDE • EVERCLEAR • EMMYLOU HARRIS

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The rear panel has four Neutrik combo XLR/TRS jacks for inputs 1 through 4, which accept mic, line-level, or high-impedance instrument inputs. The other four inputs are balanced/unbalanced TRS line-level jacks, as are the eight analog outputs. All analog I/O supports 24-bit, 192 kHz audio. The rear panel also has S/ PDIF I/O (which is on coaxial connectors) and two optical connectors (which are capable of either ADAT or S/PDIF operation). Additionally, the Traveler features word-clock I/O, an ADAT sync input, and XLR inputs for AES/ EBU I/O. The maximum sampling rate for digital I/O is 96 kHz.

On the Side

Because the Traveler jams so much I/O into its small case, its external power and MIDI ports are on the right side of the unit rather than on the backplate. The Traveler was designed to get bus power from its 6-pin FireWire port. If you have a laptop without 6-pin FireWire, or if you will be working on location with a portable 24V battery pack,

you can use an optional DC adapter or the side-mounted 4-pin XLR battery port. A switch lets you enable or disable bus power.

On first blush, I feared the side ports would be blocked when the Traveler was rackmounted. Because

it is smaller than the standard 19-inch rack width, almost two inches of clearance are between the Traveler's side and the edge

of your rack—more than enough room for power and MIDI plugs. If you plan on rackmounting the Traveler and using the MIDI or power ports, you should insert those plugs before securing the device into the rack.

CueMix to Go

The Traveler comes with CueMix DSP, MOTU's third-generation hardware monitoring software. CueMix DSP lets you

TRAVELER SPECIFICATIONS

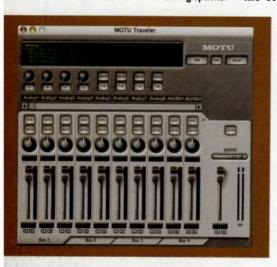
Analog Audio Inputs	(4) Neutrik balanced/unbalanced %" TRS/balanced XLR combo, (4) balanced/ unbalanced %" TRS
Analog Audio Outputs	(8) balanced/unbalanced ¼" TRS, (1) ¼" headphones
Digital Audio I/O	stereo coaxial S/PDIF, stereo AES/EBU, stereo optical (switchable S/PDIF or ADAT Lightpipe)
Data I/O	(1) MIDI In, (1) MIDI Out, (2) FireWire, word-clock I/O
A/D/A Rates	44.1-, 48-, 88.2-, 96-, 176.4-, 192 kHz
Digital Sampling Rates	44.1-, 48-, 88.2-, 96 kHz
Maximum Preamp Gain	73 dB
A/D Dynamic Range	112 dB (A-weighted)
A/D THD+N	<0.0017% (-95 dB) @ 1 kHz, -1 dBfs
D/A Dynamic Range	109 dB (A-weighted)
D/A THD+N	<0.0015% (-96 dB) @ 1 *Hz, -1 dBfs
Crosstalk	109 dB @ 1 kHz (typical)
Weight	3.8 lbs.
Dimensions	14.75" (W) × 1.75" (H) × 9" (D)

control the Traveler's internal I/O routing (see Fig. 2). You can route any combination of inputs to any stereo output pair, change level and pan settings, and mute or solo your inputs. You can also engage a +6 dB software boost, toggle the reference level between +4 dB and -10 dB, and mute your master output. CueMix DSP's onscreen console provides preamp knobs, pad buttons, and a master fader with metering. I'd prefer to be able to route any input to any output, but CueMix includes four separate mix buses, so you can configure inputs to four output pairs and switch between them on the fly.

The CueMix DSP application is easy to use. The graphical user interface (GUI) looks like a standard mixing console with all the input channels displayed and the output pair serving as master output for the current mix bus. Moreover, the message center at the top of the interface identifies the control that you're mousing over and available configuration options. To cover every possible monitoring situation, you can save your own presets for instant recall.

Because mobile recording often means live recording, being able to configure as much as you can without a computer is a real time-saver. Happily, you can configure all CueMix DSP monitor routings and

FIG. 2: CueMix DSP gives you an intuitive, mixerlike GUI for all of the Traveler's I/O routing options.



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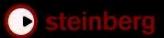
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all internal parameters directly from the Traveler's front panel. You can even save presets directly from the front panel and use the Traveler as a standalone 8-output mixer.

By default, the main display shows a graphical representation of all the current mix's input faders from the onboard CueMix DSP. To adjust a channel's volume, push the Mix Bus knob to select from the four mix buses, turn the Cursor knob to move to the channel that you want to adjust, and turn the Value knob. You can access all the other CueMix DSP parameters by pressing the Mix knob and then scrolling with the Param knob.

You can access the basic setup options such as word clock and optical I/O format using the same knobs. The well-written

manual clearly explains how to access virtually all of the Traveler's parameters from the front panel. For configuring the Traveler's SMPTE reader/generator, though, you'll need the included FireWire SMPTE Console application. That application lets you assign any analog input and output to handle timecode I/O.

FIG. 3: Based on MOTU's Digital Performer, AudioDesk 2 offers a full-featured audio recording, editing, and mixing environment for the Mac.

I recorded a variety of sources such as electric and acoustic guitars and male and female singers. I also played various reference CDs that I know intricately through the Traveler's outputs.

The Traveler's instrument inputs run hot, even at a -10 dB reference level. When recording electric guitar direct through the Traveler. I still needed to engage its -20 dB pad, and then raise the gain to hear the best results. With condenser microphones, however, I got an excellent vocal level with headroom to spare. The 73 dB of gain that the Traveler's preamps delivered was more than enough for most mics and the other sources I tried, but it wasn't quite enough level for miking acoustic guitar with my Royer R-121 ribbon mic.

The preamps were quiet, even at high levels of gain, but they lacked a bit of high end and had a narrower low-end image than more expensive preamps. When I tested only the converters, however, the Traveler's outputs sounded clean and balanced, with a good stereo image.

I would expect an audio interface that has a feature set as extensive as the Traveler's to cost much more. I was very impressed with its performance and versatility, especially in light of its affordability. The Traveler is well designed and well executed, and anyone who is looking for a full-featured recording interface should definitely consider buying it.

Orren Merton is the author of Logic Pro 7 Power! (Thomson Course Technology, 2004) and Logic 7 Ignite! (Thomson Course Technology, 2005).

PRODUCT SUMMARY

MOTU Traveler

audio interface \$895

PROS: Lots of simultaneously available I/O. SMPTE generation and sync. Optional DC adapter, optional external battery, or FireWire bus power. Front-panel CueMix DSP control. Excellent documentation. Bundled AudioDesk 2 software.

CONS: No front-panel output metering. Mic preamps lacking in high end.

FEATURES		T	\Box	
EASE OF USE				
AUDIO QUALITY	1			
VALUE				п
MANUFACTURER				

Macintosh users get a bonus: the Traveler also comes with AudioDesk 2. MOTU's recording, editing, and mixing application derived from Digital Performer's audio features (see Fig. 3). AudioDesk 2 lacks Digital Performer's MIDI and softwareinstrument support, but it does offer a professional-quality multitrack audio recorder, comprehensive editing, and a full-function mixer, complete with support for third-party MAS plugins. AudioDesk owners can upgrade to Digital Performer for \$395.

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Source Code: EMFB



FIG. 1: Synful Orchestra's front panel provides slots for assigning instruments to different MIDI channels. The sliders in the lower half of the screen let you adjust several of the parameters in the additive synthesizer.



SYNFUL Synful Orchestra 2.2.0 (Mac/Win)

A unique synthesizer that reads between the notes. By David M. Rubin

eality is a funny thing, especially when you try to emulate it with MIDI instruments. What is it that makes one performance sound more real than another? The most popular approach to rendering the real world of musical performance has traditionally been to create ever-more-accurate samples of instrument sounds and combine them with a mechanism for switching quickly from one sample to another. That often yields mammoth libraries with a comparable appetite for processing power. Synful's Eric Lindemann, however, has decided to buck the current trend. His nimble Synful Orchestra charts a new course in an effort to impart greater realism to MIDI performances.

Synful Orchestra is a cross-platform plug-in instrument that supports Audio Units (Mac only), VST, and DXi (Windows only) formats (see Fig. 1). Unlike sample-based plug-ins, which focus on producing individual notes, Synful Orchestra concentrates on the transitions between notes in an effort to capture the elusive real-life qualities of musical performances.

How a player moves from one note to another affects the notes and the performance in many subtle

but vital ways that are often overlooked in other software instruments. For example, when two notes are played, the first note may linger slightly before moving to the next note; it may slide into the next note with varying degrees of portamento; or it may become louder, become softer, or change timbre during the transition. Each note may also introduce vibrato or add different amounts of breath or bow noise. Those context-sensitive transitions are what Lindemann calls the "connective tissue of musical expression."

Reconstructive Surgery

Synful Orchestra is based on a sophisticated multipatented technology called Reconstructive Phrase Modeling (RPM), which grew out of Lindemann's dissatisfaction with more-traditional approaches to synthesis. Here's how it works: Synful Orchestra contains an extensive RPM Phrase Database that includes musical phrases representing the myriad ways in which notes lead from one to another on different musical instruments. Phrases include a variety of articulations and other transitional elements, such as whether notes are detached or slurred, move precisely or with portamento, or incorporate various kinds of attacks.



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When you play a series of notes into Synful Orchestra (directly from a MIDI controller or from a sequencer track), the software analyzes your performance and searches the database for the appropriate kinds of transitions. It then isolates the transitions and the associated notes from one or more phrases, adapts them, and recombines them into a new phrase that represents your performance.

Say, for example, that you want to play two notes on the violin in a highly expressive manner. The first note is louder than the second, it leads into the second note with a long portamento, and the second note has a distinct accent followed by vibrato. The RPM Phrase Database includes phrases with all of those transitional elements, but not necessarily in the exact form as your performance. The notes might be at different pitches, the portamento might be too long or too short, the accent might be too strong, and so forth.

That's when the RPM technology steps in. It automatically pitch-shifts and time-stretches the notes and transitional fragments and interprets such things as overlaps (or lack thereof), crescendos, timbre changes, and Pitch Bend data. The program combines these "musical gestures" into a realistic rendition of your performance with the right pitches and the proper timings (see Fig. 2).

Extracting various transitional fragments and

characteristics from several different phrases and seamlessly splicing them together in real time would, of course, never work if you had to rely on sampled sounds. (You'd soon be buried in clicks, pops, and strangesounding artifacts.) Instead, Synful Orchestra is based on a form of additive synthesis in which sounds are generated from combinations of sine waves and noise elements (such as bow scrapes and flute chiffs).

All of this fancy computational footwork takes place behind the scenes, and you don't need to understand the RPM technology to get good results. Nevertheless, Synful Orchestra lets you control (to some degree) how the plug-in processes the input that it receives. The main point to keep in mind is that this is not a sample-based instrument, nor is it a form of physical modeling. It's a unique software instrument that enables you to perform expressively in real time without having to jump from sample to sample or use keyswitching to change articulations.



FIG. 3: If you prefer to have only one instrument per front part you can switch to Synful Orchestra's Single Channel mode.

In essence, it interprets and responds to your pla technique before it outputs the notes.

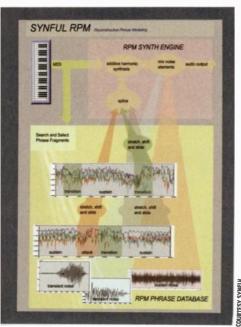
Under Control

Synful Orchestra's basic layout is similar to other m channel software instruments. Its front-panel Cha Grid offers a slot for each of the 16 MIDI channels can assign one of the built-in instruments to a cha by clicking on its drop-down menu. Each menu li modest assortment of solo orchestral patches su flute, oboe, clarinet, English horn, bassoon, violin, cello, bass, French horn, trumpet, and trombone. I need more than 16 instrument slots, you can ha many instances of the plug-in as your CPU can han you prefer having only a single instrument per inst you can switch to Single Channel mode, which dis only one instrument at a time (see Fig. 3). In ter processing demand, it doesn't matter if you have a 16-channel plug-in or 16 Single Channel instances

The plug-in provides real-time control over the transitions by using CC11 (Expression) data. Bu in the upper-right area let you use your Volume (pedal to send Expression data, or you can use se Expression and Volume controllers. The Expr controller adds a unique kind of spontaneity to formance by enabling you to alter the dynami timbre of notes and transitions to more closely the responses of acoustic instruments. The change you make affect which phrase fragments are sele the RPM engine, yielding different performance the same series of notes. In fact, changing the Ve of notes or introducing mod-wheel and pitcl data also changes how the RPM technology sele assembles its fragments.

Speaking of pitch bend, Synful Orchestra pro specialized Synful Pitch Wheel mode that is desi produce more realistic slides and portamentos i and wind instruments (something that a st pitch-bend control has never been particularly g It takes a while to get used to it, but among other it lets you play a note, slide into a second note

FIG. 2: Drawing on a database of transitional elements, performance data, and other components, Synful's Reconstructive Phrase Modeling (RPM) technology realistically re-creates your expressive gestures as you perform.



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REVIEW

pitch-bend wheel, and play the second note without having its pitch displaced by the wheel.

Sliders and Delays

A bevy of front-panel sliders (all of which respond to controller data) lets you control the additive synthesis part of the program. Harmonic Tilt is a type of EQ control that lets you change the relative emphasis of the higher- to the lower-frequency harmonics. Release Trim affects the length of note releases; Sustain Noise Trim controls how much sustained noise (such as the bowing noise of a violin) is added to an instrument.

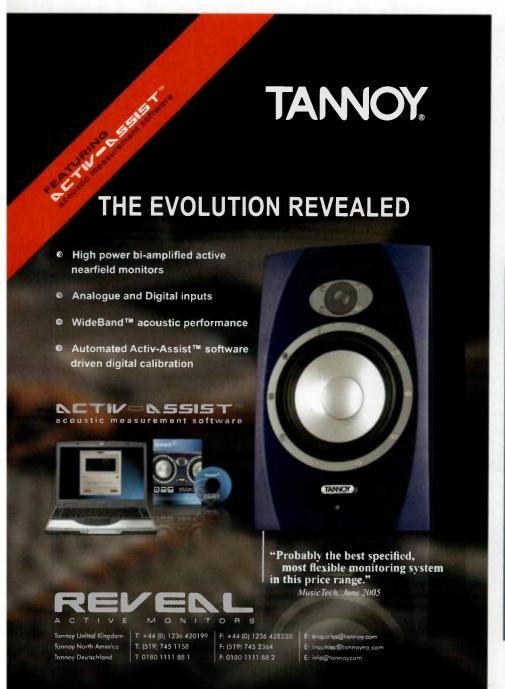
Transient Gain lets you control how much transient noise is added to attacks or transitions. Harmonic Parity allows you to change the relative balance between even and odd harmonics. For example, I made the flute sound like a clarinet by dragging the slider all the way to the right to boost the odd harmonics. Smaller adjustments let you make more subtle changes to an instrument's tone color.

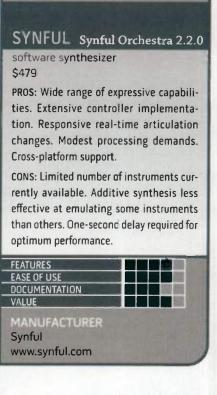
Regardless of how you set the sliders and play the notes, you won't get the best possible performance from Synful Orchestra if you don't record your MIDI tracks into a sequencer before playing them through

the plug-in. That's because with a live performance, the RPM engine has no way of knowing what the next note in a series will be or how it will connect to the previous note until they're both played. As a result, the software has to guess at your intent, which generally results in more-conservative interpretations.

If you first record your tracks into a sequencer, however, you can activate Synful Orchestra's Delay For Expression (DFE) function. It adds a one-second delay between the sequencer's MIDI output and the plug-in's response. With a little extra time to think, the RPM engine can look ahead to the upcoming notes and transitions and make more-sophisticated choices that produce a more expressive

PRODUCT SUMMARY





result. You could activate DFE and perform directly into the plug-in, but according to medical experts, playing an instrument with a latency of one second has been shown to cause insanity in musicians. I'd advise against it except for experimental purposes. A better solution is to turn off DFE when recording tracks (you'll still get some expressiveness), and then turn it on for the final mix. You'll have to compensate for the delay before mixing Synful Orchestra tracks with tracks from other sources.

Synful Behavior

Synful Orchestra's additive synthesizer is a strength and a weakness. On the positive side, it offers control over a wide range of sound-shaping parameters. More importantly, it enables the RPM technology to work its magic. On the negative side, the individual instrument sounds, when played in isolation, don't match the stunning realism found in many of the newest high-end sample libraries. My favorite patches were flute, violin, and viola. Oboe, English horn, and cello were a bit weaker, and the brass instruments were a mixed bag. (According to Lindemann, a new and improved set of instrument sounds will be available in the coming months, and fur-

ther improvements to the program should yield better instrumental renditions in future updates.)

The premise on which Synful Orchestra is based, however, is that note transitions and connections—coarticulations—are what make a performance seem real. And in that respect, Synful Orchestra is surprisingly successful. Its expressive output is natural sounding and varied, and the resulting performances are often convincing in spite of the synthesized sound of some of the current instruments. The listener is drawn into the performance because it doesn't sound like it's coming from a MIDI keyboard. (Check out the classical excerpts in Web Clip 1 at the EM Web site, www.emusician.com.)

With its extensive support for controller data and responsiveness to a wide range of performance gestures, it'll take some practice to truly get the most from this program. But in the short time that I've spent with it, I've found Synful Orchestra to be an amazing instrument, a real ear- and mind-opener, and well worth a look.

David M. Rubin is the author of the recently released Power Tools for Peak Pro (Backbeat Books, 2005).



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FIG 1: The DV-RA1000 front panel has programmable function keys for accessing frequently used menu items.

TASCAM DV-RA1000

A high-res DVD and CD recorder for the personal studio. By Myles Boisen

he Tascam DV-RA1000 is a high-definition 2-track mastering deck that offers more than four hours of 24-bit stereo recording, USB 2.0 compatibility, dynamics and EQ effects, and editing and project management functions. With a complete selection of analog and digital I/O, the DV-RA1000 can also perform onboard conversion between all current PCM sampling rates as high as 192 kHz and record to CD-R/CD-RW media (44.1 kHz, 16-bit AIFF only) and DVD+RW media (24-bit Broadcast WAV files at all sampling rates).

The DV-RA1000 also records Direct Stream Digital (DSD), which is a high-definition format developed by Sony for Super Audio CD (SACD) releases. DSD is a 1-bit digital recording scheme, which is clocked at 2.822 MHz, stored in DSDIFF file format, and incompatible with conventional PCM recorders or players. Tascam offers DSD software (see the sidebar "Minnetonka Discwelder Bronze 1000"), which points the way toward SACD and DVD-Audio authoring for personal studios.

Form and Function

The Tascam DV-RA1000's sleek 2U front panel has a headphone jack and level control, a timer control, a power switch, and transport control (see Fig. 1). The open/close selector for the disc drawer doubles as a shutdown button for DVD recording. Above that button is a disc status light and two LEDs that indicate either PCM or DSD recording modes.

A few features require further explanation. When the Ready button, which doubles as a pause key, is simultaneously engaged with Play, the data wheel can be used to scrub the audio for editing purposes when you're in PCM mode. Mute is a smart key that latches when engaged quickly, or you can hold it down for a longer period of time and then release it in a nonlatching mode; that option mutes the sound during recording or playback. The trackskip reverse and forward keys also double as $10\times$ search controls when continuously depressed.

The spacious LCD screen displays a dBfs level meter, input and clock assignments, media type, sampling rate, bit rate, total tracks, and current track number and time. The function keys below the screen can be programmed as shortcut keys to common menu-accessed operations. The front panel also has a jog/data wheel and a mini-DIN jack for a PS/2 keyboard.

From the home screen, the Enter key opens the Virtual Front Panel (VFP), which is a collection of software controls (some of which are duplicated on the remote) that cover standard functions such as playback and track programming, disc finalizing and rewriting, pitch control, and 16-bit dithering. The VFP also has an output oscillator for calibration purposes. The DV-RA1000 arrives ready for mounting with rack ears.

On the back of the unit, analog inputs and outputs are available as either RCA (-10 dBV) or XLR (balanced +4 dBu) pairs (see Fig. 2). S/PDIF and AES/EBU are available as digital I/O, including two AES/EBU I/O jacks for double-wire formats (88.2 kHz and above). The recorder also supports double-speed, single-wire connections at 88.2- and 96 kHz.

Two pairs of BNC jacks—one for SDIF-3 and one for DSD-raw signals—are dedicated to the I/O requirements of digital DSD recording. The USB 2.0 jack lets the DV-RA1000 operate as a data drive on any personal

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computer, reading from all recordable CD and DVD media and recording to DVD+R single- and dual-layer discs. The rear panel also offers word-clock in, out, and thru, as well as a 9-pin RS-232C-compatible jack that functions as a control port for systems such as those from Crestron and AMX.

The included RC-RA1000 remote control offers one-touch accessibility to many functions that are otherwise found in onscreen menus (see Fig. 3). The remote connects to the recorder with a detachable 12-foot cable and needs no batteries.

Notably, the DV-RA1000 has one of the clearest and most comprehensive manuals that I've seen in a long time. And it should be comprehensive, given the wide range of features offered.

Working with CD-Rs

I was able to burn CDs easily (without referring to the manual) using the analog inputs. The DV-RA1000's display acknowledged that I had selected CD-R recording, and the unit auto-selected 44.1 kHz, 16-bit mode after I loaded a blank disc. During test recording, the HHB 24×, Apogee Gold, and generic Office Depot 52× CDs all worked fine with the DV-RA1000.

DV-RA1000 SPECIFICATIONS		
Analog Inputs	(2) XLR +4 dBu, (2) RCA –10 dBV unbalanced	
Analog Outputs	(2) XLR +4 dBu balanced, (2) RCA -10 dBV unbalanced	
Digital Inputs	(2) AES/EBU and (2) S/PDIF for PCM, (2) SDIF-3/DSD BNC for DSD	
Digital Outputs	(2) AES/EBU and (2) S/PDIF for PCM, (2) SDIF-3/DSD BNC for DSD	
Other I/O	(1) USB 2.0; word-clock in, out, thru; (1) 9-pin control I/O	
A/D/A converters	24-bit	
Sampling Rates	44.1-, 48-, 88.2-, 96-, 176.4-, and 192 kHz	
Record Resolution	16- and 24-bit	
Frequency Response	20 Hz-20 kHz (±0.5 dB)	
Signal-to-Noise Ratio	DVD+RW recording >103 dB (A-weighted), CD-R recording >94 dB (A-weighted)	
THD+N	PCM <0.005%, DSD <0.007%	
Size	19" (W) × 3.75" (H) × 14.1" (D)	
Weight	15 lbs.	



FIG 2: In addition to the conventional analog and digital I/O, the DV-RA1000 includes a USB 2.0 port.

Digital recording (using Apogee PSX-100 and Waves L2 converters) was almost as easy, although the DV-RA1000 didn't prompt me to switch its clock source from internal to digital when I used an external digital converter. The recorder warns you, however, when a digital clock signal is missing or doesn't match the set sampling rate, and it notifies you when a proper clock signal has been restored.

I used the DV-RA1000 and an HHB CDR-830 Burn-It Plus to record mixes of a current project that had drums, acoustic bass, electric guitar, tuba, trombones, and trumpets. Then I lined up the tracks in Digidesign Pro Tools LE for comparison. Playback auditioning was done through the Apogee PSX-100 converter. With analog input and onboard conversion, the Tascam produced a warmer mix than the HHB, with noticeably clearer lowend resolution of kick drum and bass. The reproduction of percussive transients was also more pronounced and lifelike on the Tascam CD.

A more dramatic increase in overall quality was audible on the 44.1 kHz, 16-bit mixes when they were converted from analog to digital through the Apogee PSX-100 and the Waves L2 Ultramaximizer. Those mastering-quality converters, both of which cost more than the Tascam device, preserved more of the airy highend details of the analog multitrack. Dynamics were also heightened, giving more immediacy and depth to the mix.

During the 44.1 kHz, 16-bit mixing session, I also checked out the differences in quality between the analog master and the Tascam's D/A output. The DV-RA1000's –10 dBV output showed minor high-end coloration and a subtle veiling of high frequencies. The acoustic bass seemed less clearly resolved, and its transients receded back into the mix.

After the first CD was burned, there was one thing that threw me for a loop—finding the finalize button. The absence of a finalizing switch on the front panel puzzled me, but I did find such a switch on the remote.

The alternative to using that one-touch remote-based button is to access a software switch within the VFP menu. You can do that by pressing the enter button and then scrolling through a number of software switches (11 clicks with the jog wheel, 6 clicks using the direction buttons). It's hard to imagine why anyone with a working remote control would want to go through that complicated procedure.

Because of the above-average converters inside, the DV-RA1000 is also a great-sounding unit for basic CD

playback. Compared with an assortment of consumer CD players, the Tascam yields all the expected benefits of improved resolution and superior D/A conversion: smoother and warmer sound, less listening fatigue, and improved depth and subtlety from any 16-bit recording.

DVD+RW or Bust

The DV-RA1000 records to only DVD+RW. DVD+R, DVD-R, DVD-RW, and DVD-RAM discs are not supported. Tascam cautions against using printable discs.

Before recording begins, the DVDs need to be fully formatted, and the entire process takes about 35 minutes. Recording prematurely risks RAM buffer overruns and potential disc errors.

Using mixes from a recent project, I tried transfers from a ½-inch tape master to DVD at high-resolution rates. In addition to the Tascam's onboard conversion, I tested the Apogee (double-wire) and Waves L2 (single-wire, double-speed) converters at 24-bit, 96 kHz resolution. The Apogee didn't work with the DV-RA1000 in single-wire, double-speed input mode.

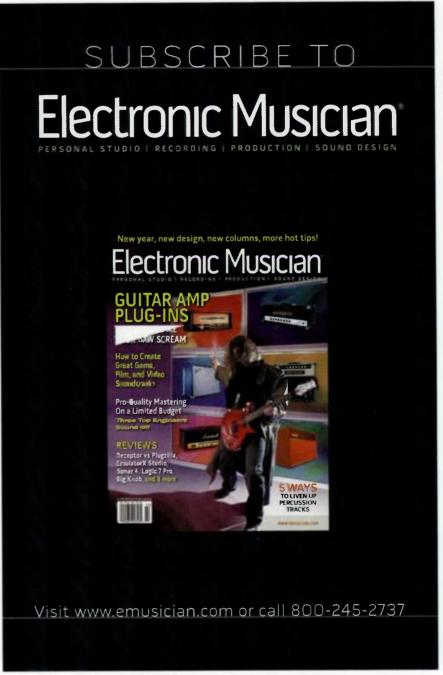
The results were consistent with what I had come to expect from the unit.

Judging from the analog output, Tascam's conversion was close but not equal to that of the dedicated converters or source tape, having slightly less high-end gloss and a softened edge on some transients.

Predictably, 192 kHz recording conveyed the best fidelity among the PCM modes with analog input. At that rate, differences in the overall tonality would be indistinguishable to most listeners. But after repeated listenings, transients and subtle details in the rhythm guitar and vocal echo seemed to be pushed back into the mix, making the end result of Tascam's conversion scheme a bit flatter and less dimensional. After a brief



FIG 3: The DV-RA1000's wired remote gives you instant access to deeper editing functions.



period of familiarization, the DVD recording process became as intuitive as it had been with CD.

Working with DSD

My original assumption was that recording DSD with the DV-RA1000 required a pricey external DSD processor. That misconception was bolstered by the following statement in the manual: "If you are recording to a DSD DVD, the signals will always be input and output through the BNC connectors." Tascam Product Manager Jeff Laity cleared up the confusion by informing me that the DV-RA1000 also converts and records DSD signals through the analog inputs.

When comparing ½-inch source tapes with DSD transfers over mastering speakers, I was impressed at how close the DSD tracks sounded to the original. On a heavy rock mix, the DSD recording sounded a little less smooth than the original, bringing out some edginess in the guitar and female lead vocal. Subtle details in imaging and room sound were conveyed without noticeable coloration.

The DSD process also came close to the original on an Afro-pop mix, but differences in the high-end were apparent, especially on a crucial triangle part,

which seemed to lose realism and prominence in the DSD transfer. The low-end drums and acoustic bass were indistinguishable from the analog source mix.

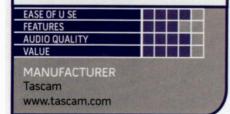
PRODUCT SUMMARY

TASCAM DV-RA1000

mastering recorder \$1.499

PROS: Supports wide range of PCM sampling rates. Has DSD recording without costly external processor. Compatible with 16-bit CDs. Project text stored with mixes. Has onboard EQ and dynamics, USB capability, wired remote control, and a large range of pro I/O options. Uses rewriteable DVD+RW discs. Comprehensive manual. Well-designed LCD screen.

CONS: Onboard dynamics program offers no improvements over average DAW plugins. Editing is limited and cumbersome. Some editing, text, and effects features not available on all types of media or recording modes. A/D/A conversion not competitive with top-dollar converters. DVD+RW discs must be formatted before use.



Effects and Editing

Tascam's onboard effectsmultiband expansion and compression and 3-band EQ-can be made active during recording or playback, but they can't be used in quad-speed modes (for example, 176.4- and 192 kHz PCM or DSD). Beyond the gentlest of settings, the compressor was not particularly transparent or preferable to the average dynamics programs offered in DAW software. Whether in single or multiband compression mode, as soon as gain reduction registered on the small meter, the signal was being squeezed too much. The multiband expansion mode is useful for reducing noise during quiet passages, but it requires some patience to get the settings just right.

Tascam's EQ program consists of low and high shelves with gentle 6 dB/octave slopes, as well as one parametric midrange band with an extremely wide Q range of 0.25 to 16. Even when boosting radical amounts of midrange, the easy-to-use EQ was sweet sounding and free of distortion. Under normal use, it exhibited warm lows, musical mids, and smooth highs without harshness. It is particularly nice to be able to use that feature on 16-bit CDs.

Another worthwhile feature is the output level control at the end of the effects chain. That trim control adjusts gain downward from 0 dBfs in 0.5 dB increments to -10 dB and in 1 dB increments from -10 to -72 dB. That makes it possible to sculpt smooth fades with no quantization or zipper noise.

Editing within the DV-RA1000 is accomplished by scrubbing the audio (there is no waveform display), putting markers within a file, and then dividing, recombining, or deleting files in menus one at a time. Tracks cannot be copied for safety purposes, and only one level of undo is available.

If you're used to waveform editing, you will find this menu-based process time-consuming and probably too inefficient for anything other than trimming noise at the beginning or end of a file. But it will work for those who are willing to spend the time navigating the multiple menus. Editing operations are not supported in DSD mode.

It's the Little Things

A few of this recorder's less noticeable features are worthy of comment and praise. As a USB device, the DV-RA1000 interfaced perfectly with my Apple Mac G4. And the audio from the headphone jack is of sufficient quality to make some of the A/B judgments called for in this review.

Monitor (input/playback) is a helpful feature that I wish more manufacturers would implement on digital gear. Switching the monitor modes makes it possible to A/B an incoming signal against prerecorded audio without going into record mode. But that switch does not make confidence monitoring possible during recording.

Finally, rewriteable computer media technology has improved considerably. Despite valid concerns about the erratic nature of CD-RW discs, writing to DVD+RW using the DV-RA1000 worked flawlessly. No one likes having to wait for formatting, but anyone who made it through the era of the Alesis ADAT and the Tascam DA-88 will find this process to be painless with the DV-RA1000.

Bells and Whistles

In terms of its versatility and compatibility, the Tascam DV-RA1000 is an outstanding value. The bountiful feature set, which includes more options than I can cover thoroughly in this review, seems tailored to the needs of personal and professional studios. Although the onboard effects and editing options are limited and probably won't appeal much to anyone using a DAW, those functions are

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MINNETONKA DISCWELDER BRONZE 1000

Tascam, in collaboration with Minnetonka, offers a DSD-to-PCM audio conversion tool and DVD-Audio authoring application called Minnetonka Discwelder Bronze 1000 (Mac/Win). The application is available free to registered DV-RA1000 owners.

Discwelder Bronze 1000 converts DSD audio to PCM WAV files, at any resolution, which can then be imported into a DAW or burned to DVD-Audio. (According to Tascam, the only DAW platforms that currently support the DSDIFF file format are mastering systems from Genex, Pyramix, Sadie, and Sony.) The software also includes tools to create a hybrid DVD disc with two volumes, so the disc will play on any DVD player. One section of the disc is in DVD-Audio format, which allows you to create a high-resolution release that will play up to 24-bit, 192 kHz stereo files. The second section of the disc is compatible with standard DVD-Video players.

well implemented and easy to use for a quick fix or in the absence of a computer workstation.

The DV-RA1000's high-resolution sampling rates certainly grab your attention, but the real-world benefits of double- and quadruple-speed sampling are always subservient to converter quality. After spending hours listening on studio and mastering monitors, I'd rate Tascam's onboard converters as good but not great. Compared with the ana-

log sources from which I transferred data, slight compromises in the DV-RA1000's audio were evident—most notably a reduction of high-end air and loss of subtle transients—even at 192 kHz and DSD resolution.

Converting high-resolution data streams is tricky, and there are reasons why the top converters cost thousands of dollars. Fortunately, Tascam's foresight in adding single- and double-wire capability makes the DV-RA1000 an ideal mate for a top-dollar converter at a high-sampling rate.

Still, considering its price is less than a high-end A/D/A converter alone, the DV-RA1000 is a remark-

able deal. Not only is it loaded with goodies, the DV-RA1000 is also an important leap forward in technical achievement that fits within the budget of the most modest studio.

Myles Boisen hunkers over computers and mixing boards late into the night at Guerrilla Recording in Oakland, California.



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FIG. 1: Peak's Audio Document window makes waveform editing and marker placement a breeze.

BIAS Peak Pro XT 5 (Mac)

A classic just got better.

By Len Sasso

IAS Peak has a long-standing reputation as the premier sample editor for the Mac, and for quite a while, it was the only one. Although Peak is no longer the only game in town, enhancements in playlist management and CD burning, new DSP processes, augmented plug-in support, and numerous user-interface improvements keep Peak, version 5, squarely in the running.

Peak comes in three flavors: Peak LE (\$129), which is a low-cost, basic sample editor; Peak Pro 5 (\$599), which is fully equipped; and the Peak Pro XT 5 bundle (\$1,199), which includes the Master Perfection Suite of plug-ins (\$599) and SoundSoap audio-restoration software (\$599). Optional add-ons include multitrack audio-only sequencing with Deck 3.5 (called the Studio edition) for \$200 and Disk Description Protocol support with the optional DDP Extension (\$399). In short, you can have everything BIAS has to offer for \$1,798. For this review, I'll focus on the Pro XT 5 bundle.

What's in the Box?

The Pro XT 5 package consists of four installation CDs and printed manuals for Peak, SoundSoap Pro, and Master Perfection Suite. The manuals also come in

PDF format. Peak now uses a USB hardware copy-protection key (dongle), which is a first for Mac sample-editing software. Activation of the key along with product registration is required. It's managed seamlessly online, but it can also be accomplished offline if necessary.

SoundSoap Pro and its little brother SoundSoap 2 are audio-restoration Audio Units, DirectX, RTAS, and VST plug-ins that can be used in any audio application that supports those plug-in formats. Both versions of SoundSoap are also available for Windows XP. SoundSoap 2 is for basic noise reduction and click, hum, and rumble removal. With few controls, it's easy to use and does an excellent job (see Web Clip 1). SoundSoap Pro has advanced controls for hum removal, click and crackle removal, noise reduction, and noise gating. It takes a bit longer to set up, but it allows for extremely fine control over the results.

The Master Perfection Suite consists of six mixing and mastering plug-ins: GateEx for noise gating and downward expansion; PitchCraft for pitch correction and formant shifting; Repli-Q for spectral matching; 4-, 6-, 8-, and 10-band EQs named SuperFreq; 3- and 5-band compressors named Sqweez-3 and Sqweez-5; and the multipurpose analysis plug-in called Reveal. Although those plug-ins install in the global VST plug-ins folder,





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REVIEW

they are currently usable only in Peak. Versions usable in other hosts are in the works and will be free to current Master Perfection Suite owners.

Peak Pro 5 also ships with a small collection of audio content: loops from PowerFX and ambient sound effects from sound designer Steve Cerilli. Rounding out the package are a free suite of 34 VST effects plugins from Maxim Digital Audio (mda); Dreampoint's Freeverb-c reverb plug-in; and my personal favorite, SFX Machine Lite.

In Your Face

One of the best aspects of Peak, in terms of graphics and customizability, has always been its user interface. You can choose your own colors for all display elements, and the waveform is clear at all zoom levels (see Fig. 1). You can freely assign key commands to most common tasks, and you can also create buttons in the Toolbar and entries on the context menu, which pops up when you right-click with the mouse.

Peak has many clever tricks for navigating its Audio Document window. For example, you can lock region and loop markers so that the beginning and end markers move together or so that markers at the same location (such as the end and beginning markers of adjacent

regions) move together. You can split a region into two regions with a single keystroke. Selection boundaries and marker locations can be set to snap to a variety of grids, including zero-crossings, bars and beats, CD frames, and a user-defined number of samples.

Peak's looping tools are outstanding. Loops can, of course, be defined from the current selection, but they can also be defined by length in bars and beats using the Loop Surfer. Once defined, Loops can be nudged one sample at a time in either direction. The Loop Tuner can be used to match the start and end points, and you can invoke crossfade looping when you can't get a smooth transition by other means. Additionally, you can now toggle the Loop On/Off Flag when saving AIFF files.

Scrubbing has been improved with the addition of tape-style scrubbing, which mimics the behavior of manually moving the reels of a tape recorder with the playback head engaged. Jog and fixed-position dynamic scrubbing are still available, with scrub times ranging from 10 to 600 ms. (The scrub time sets the size of the audio chunk that is looped during scrubbing.) The high quality of Peak's scrubbing results from its new sampling-rate-conversion algorithm, which is state of the art.

An edit-history tab has been added to the contents drawer, and it is more convenient for managing edits

SCHOOL OF: COMPUTER ANIMATION > DIGITAL ARTS & DESIGN > ENTERTAINMENT BUSINESS > FILM > GAME DEVELOPMENT > RECORDING ARTS > SHOW PRODUCTION & TOURIN

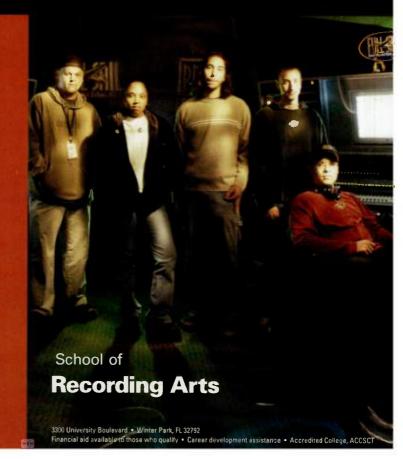
ONE OF THE FIVE BEST MUSIC PROGRAMS IN THE COUNTRY

- Rolling Stone Magazine
August 11, 2005



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than opening the separate Edits window. Unfortunately, the edit history is still cleared when an audio file is saved, although you can preserve the edit history until quitting Peak by using the Save a Copy As option. A save-project option that includes the edit history would be a welcome addition to Peak's bag of tricks.

Tools of the Trade

Peak 5 has four new processing tools on its DSP menu: Envelope From Audio, Normalize (RMS), Auto Define Tracks, and Strip Si ence. Envelope From Audio extracts the volume envelope from selected audio and makes

that envelope available in any of Peak's envelope-based tools, such as Fade In, Fade Out, Gain Change, Amplitude Fit, and Plug-In Envelope.

Unlike standard normalization (which is also available), Normalize (RMS) uses an algorithm that maximizes the root-mean-square (RMS) level of the signal. RMS more accurately represents the perceived volume; therefore, using Normalize (RMS) on different audio files will result in a better match.

Strip Silence has three functions: removing, reducing, and gating portions of an audio file or a selection that falls below a user-defined threshold for a user-specified minimum amount of time. Reducing and gating are useful for controlling low-level content—a poor man's version of Sound-Soap. Removing silent sections completely is useful for joining separate loops or riffs in files containing several such segments.

Removing silent sections is especially useful in conjunction with the Auto Define Tracks tool, which sets region markers around clips separated by silence in an audio file. Setting regions first, then stripping the silence between them reduces the file to its real content. You can then burn a CD directly from the Audio Document window, and each region will become a separate CD track.

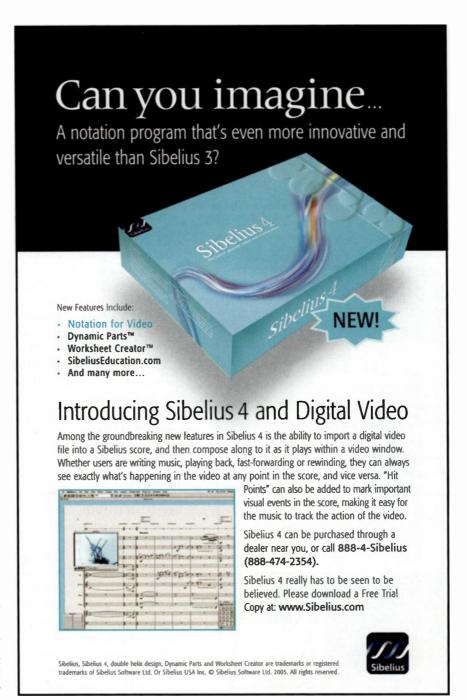
Play It Again

Playlist management and CD burning have been completely redesigned, and that is probably the biggest and most welcome change in Peak 5. Peak supports CD indexing, PQ subcodes, ISRC, and CD-Text. In addition to the list window, there is now an interactive graphical display that allows you to arrange playlist events on a timeline (see Fig. 2). You can also use the graphical display to trim playlist events and adjust crossfades and gaps. Other handy play-

list features include Slip and Shuffle nudge modes and optional snapping to CD frame boundaries.

Playlist events are taken from regions of open audio documents. If you have a bunch of separate audio files that you want to burn to CD, you can open each of them, define a region that contains the whole file, and then arrange them as events on the playlist. You can also chop one or more audio files into regions and use the playlist to sequence the regions in any order you like.

All edits made in the playlist are nondestructive, meaning the original audio data remains unaltered. Trims and crossfades are done on the fly. Furthermore,



REVIEW

each playlist event can have its own plug-in effects chain using Peak's V-Box technology.

Once you've created a playlist, you can use it several ways. You can burn a Red Book audio CD directly from Peak. If you've purchased the DDP Extension, you can export the playlist as Disc Description Protocol files for commercial CD manufacturing. You can export the playlist as a Jam Image file for use in Roxio's ubiquitous Jam CD burning software. You can also export the playlist as an AIFF file or in Sound

Designer II format with all playlist events marked as SDII regions.

Plug for Plug

With Peak you can insert VST and Audio Units effects plug-ins to process audio-document playback in real time. The processing can be printed (bounced), with automatic latency compensation, as a destructive edit to the entire audio document or to a selection. Bounces can be undone like any other edit. In addition to your own plug-in collection and the previously mentioned free collections supplied with Peak, Peak Pro 5 includes two proprietary BIAS plug-ins: Sqweez, a basic

compressor-limiter, and Freq-4, a 4-band parametric EQ.

Beyond inserting and bouncing individual plug-ins, you can arrange multiple plugins in complex series and parallel configurations using Peak's V-Box virtual rack. V-Box can have as many as 99 rows and 99 columns (that's 9,801 plug-in slots), but for practical purposes the default 10 × 10 configuration is sufficient. The routing is not always as transparent as it might be, but V-Box is still powerful.

V-Box allows you to mix VST and Audio Units plug-ins, and it now supports virtual instrument plug-ins in both formats. You can play your virtual



FIG. 2: Playlist management now has a graphical interface for easy track, gap, and crossfade management.

instruments along with audio documents, you can process virtual instruments with effects plug-ins, and you can record virtual instruments directly into new audio documents. You cannot, however, record a mix of a playing audio document with a virtual instrument.

Master of the Universe

The Master Perfection Suite, which is part of the Peak Pro XT 5 bundle, features multiband compression, multiband parametric equalization, gating, pitch- and formant shifting, matching EQ, and an all-purpose signal analyzer (see Fig. 3). All the plugins have four temporary storage buffers for quick comparisons. The user interfaces are clearly laid out; my only complaint is that numerical parameter entry is awkward because you must backspace digit-by-digit through the current entry before entering a new value.

The multiband EQ and compression plug-ins, which come in a variety of band counts, sound great and do just what you would expect. The matching EQ (Repli-Q) analyzes the EQ spectrum of reference and source audio, and then computes an EQ curve to match the source to the reference. You can fine-tune the effect by adjusting Matching and Smoothing sliders.

GateEx affects noise gating and downward expansion. It has controls for attack and release time, gate depth, expansion ratio, hold time, and hysteresis (the difference between the gate-open and gate-close thresholds).

PitchCraft is for transposition and formant shifting as well as pitch correction (see Web Clip 2). Within reasonable limits, it can be used to correct vocals and create background harmonies, and it works well with most solo material. You set the transpose and formant-shift amount in semitones and cents. For pitch correction, you choose a tuning (Equal, Mean, Pythagorean, and so on), a scale (Major, Phrygian, or Blues, for example), and a key. PitchCraft then shows you the allowed notes on a

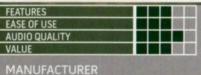
PRODUCT SUMMARY

BIAS Peak Pro XT 5

audio-editing software Peak Pro XT 5 bundle \$1,199 Peak Pro 5 \$599 Peak LE 5 \$129

PROS: Excellent graphical playlist management and CD burning. Easy-to-use, customizable sample editor. State-of-the-art samplingrate conversion. V-Box multiple effects manager. Excellent suite of audio-restoration and mastering plug-ins.

cons: Can't save during playback. Undo history deleted when quitting Peak. Plug-in controls are touchy. Numerical entry is awkward.



PIACITICACTURE

BIAS, Inc.

www.bias-inc.com

graphical keyboard, and you can further adjust the scale manually.

Reveal analyzes the audio passing through it and displays the results on seven meters: Oscilloscope, Peak and RMS Power History, Peak and RMS Level, Spectogram, Spectral Analysis, Phase Scope, and Pan Power. The meters can be viewed simultaneously or individually. The simultaneous display is great for quickly spotting problems, but the individual displays show much more detail when making corrections.

The Peak Experience

Peak covers a lot of territory and does most things quite well. It excels at bread-and-butter sample-editing tasks, and its built-in DSP tools cover all the bases. Version 5 ups the ante in CD burning and playlist management and puts Peak at the front of the pack in those areas. V-Box brings a higher level of flexibility to plug-in management than is available elsewhere. The XT bundle adds high-end mastering and audio-restoration tools, and although



FIG. 3: V-Box technology allows multiple plug-ins to be configured in series and in parallel.

the graphical user interface is a little touchy, all the right stuff is there.

The competition in sample-editing software for the Mac has heated up in recent years, and the various offerings now differ in price and features. For its combination of features and ease of use, Peak remains a worthy contender.

Len Sasso is an associate editor of EM. Visit his Web site at www.swiftkick.com.

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REVIEWS

FIG. 1: Cakewalk Z3ta's
Effects panel includes an amp
simulator (at the bottom of
the EQ module), distortion,
chorusing, compression,
reverb, EQ, and three
delay lines.



CAKEWALK Z3ta+ 1.4 (Win)

A waveshaping soft synth that raises the stakes. By Jim Aikin

ome people say that the filter is the most important component of a synthesizer. It's true that goodsounding filters are vital, but that thinking goes back to the early days of synthesis, when oscillators could produce only a few harsh and uninteresting waveforms. Oscillators today are far more versatile. With a few good oscillators, you can make amazing sounds and never go near a filter.

Cakewalk Z3ta+ has good filters, to say nothing of its respectable effects section, morphing LFOs, and other strong features. But the oscillators are what set this instrument apart from the rest. Waveform programming has rarely been so easy, and real-time modulation has seldom sounded so good.

Z3ta+ is now distributed in the United States exclusively by Cakewalk and requires only a serial number (provided on the CD case) for installation. No online authorization is required. The program is compatible with Windows XP/2000. It can operate as a standalone unit and as a VSTi or a DXi plug-in. In standalone mode, it is ASIO-compatible for low-latency operation.

What's Up

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As if to emphasize the importance of its waveform palette, Z3ta+ can use as many as six separate oscillators per patch.

Six LFOs and eight envelope generators are also onboard. The dual resonant multimode filters can run in series or in parallel. There are ten filter modes, including lowpass, highpass, bandpass, notch with various slopes, and formant. The effects section (see Fig. 1) includes separate modules for distortion, chorus-flange-phase, compression, delay, reverb, and graphic EQ. It also has an excellent amp simulator from which you have 25 models to choose.

The modulation matrix, which allows as many as 16 routings, is powerful. One of its inputs is an X-Y Pad (see Fig. 2), which can be controlled using the mouse. Well-implemented real-time MIDI control gives you external access to some important parameters that aren't available in the modulation matrix. There's also an arpeggiator with 150 preprogrammed rhythms.

Z3ta+ ships with 768 factory patches, all of which are instantly available from a menu—there's no need to individually load 128-program banks. When Z3ta+ is instantiated as an effects plug-in, an envelope follower that tracks a sidechain input signal is also available as a modulation source.

Draft, Normal, and High audio output modes balance CPU efficiency with sound quality. A $2\times$ Oversampling option adds a lot of presence to some patches. There's even a scratch pad WAV file recorder.

Fans of alternate tunings will be happy to learn that Z3ta+ is Scala-compatible, which means you





can create your own tunings or load any of the 200 supplied tunings. (For more information about the Scala tuning-definition standard, visit www .xs4all.nl/~huygensf/scala.) The synth also features a Hermode tuning algorithm, which dynamically retunes individual notes as needed to produce more consonant chords. (See Web Clip 1 for a description and Web Clips 2 and 3 for audio examples.)

The Controls

The user interface is clean and generally easy to navigate, though a few details are oddly implemented. For instance, the range sliders for the modulation matrix are sometimes blank even though a range amount has been set. The printed manual is sketchy and will probably frustrate musicians who are less familiar with the deeper aspects of synthesis.

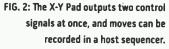
One undocumented problem had me baffled for a while. The normal installation puts all Z3ta+ files in your preferred VST plug-ins folder and the Cakewalk folder (for DXi operation). When I first tried to create my own arpeggio patterns, they wouldn't play back because I was working in the wrong folder. My pattern appeared in Z3ta's menu even though it wasn't actually there, because the arpeggiator patterns were named arp001 through arp200, and the numbers for which there was no file in the folder weren't grayed out, as they should have been.

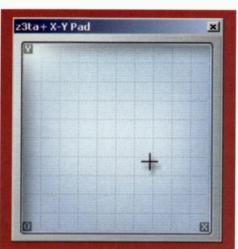
I spotted only one bug while using Z3ta+. When a delay effect is synced to the host's tempo, moving the mouse above either of the delay-time sliders (without clicking on the slider) causes the delay to lose sync. I'm told that that bug will be fixed in the next update.

MIDI Control Change assignments are global to all patches, and Z3ta+ lacks an easy method for storing or loading alternate sets of assignments. Because Z3ta+ has hun-

> dreds of parameters that you might want to control—far more than MIDI has Control Change parameters—that is a limitation. There are, however, two

> > work-arounds. For live use, the MIDI assignments are stored in a separate file on the hard drive, so you can create multiple setups and tuck the one you want to use into the MIDI folder before launching Z3ta+. In the studio, automation data for all sliders. switches, and pop-up menu selections can be recorded into a host DAW by moving the Z3ta+controls with the mouse.





The Oscillators

If you're not feeling adventurous, you can use the Z3ta+ oscillators much the way that you would those in any other synth: choose one of the more than 50 factory waveforms, set the octave and semitone transposition, set the level, pan the output somewhere between the two filters, and you're ready to go. Any of the waveforms (except sine and noise) will also respond to pulse-width modulation. But that's just the beginning.

Each oscillator has mode and group settings. The group parameters let you listen to an oscillator in the normal way or send its output on to the next oscillator for frequency modulation, phase modulation, ring modulation, or sync. For instance, you can use the six oscillators as three carrier-modulator pairs in an FM algorithm. Using the mode settings, you can choose whether the oscillator will restart its waveform on each Note On, whether it will be set to a fixed frequency instead of tracking the keyboard, or whether it will be transformed into a group of eight detunable oscillators for truly fat sounds.

You'll find a deeper level of oscillator programming in the Shaper window. You can use the Shaper window to subject any waveform (except for sine and noise) to 14 transformations. The results are instantly visible and audible (see Web Clip 4), and 12 of the 14 transformations can be assigned to real-time MIDI control. Except in extreme cases, the results of modulation are free of glitches, artifacts, and other audio weirdness. Additionally, each oscillator can respond differently to MIDI control inputs, so the possibilities for expressive waveform shaping are endless. Waveshaping is also handy for adjusting a waveform until a patch produces exactly the overtones needed for a Z3ta+ track to sit well in a mix.

Z3ta+ can load six user waveforms into any patch. Each waveform can be as long as 64 KB—long enough for short percussive noises and single-cycle waves. The user waves always loop, but you can shut down the amplitude envelope before the loop is heard, making Z3ta+ a usable source for drum sounds. All oscillators are deployed across the entire keyboard, however, so you can't create key zones with different sounds.

Envelopes and LFOs

The eight envelope generators in Z3ta+ are not just ADSRs; they have delay, slope-time, and slope-level sliders. The attack, slope, decay, and release segments can be individually set to linear, convex, or concave curves. (The pitch envelope generator is set up differently and lacks selectable curves.) The envelopes lack sync and loop facilities, but a far more significant limitation is that individual envelope segments, such as attack time, can't be modu-

lated from MIDI Valocity or Note Number. Segments can be controlled by MIDI Control Change messages, but the lack of Velocity control is a stumbling block for expressive keyboard playing.

Each LFO can have two waveforms and will morph from wave 1 to wave 2 at a rate controlled by a slider. Four of the LFOs are global (all voices use the same LFO) and two are local (separate for each oscillator). All of them can be synced to the host tempo and will start reliably with reference to the number of beats that have passed since the beginning of the song.

Modulation Routings

The most difficult part of Z3ta+programming to grasp is the modulation matrix. Each of the 16 routings has settings for Source, Range, Curve, Control, and Destination, so there's a lot of power. The Control parameter, for instance, is where you assign LFO depth to the Mod Wheel, to another MIDI control source, or to an envelope generator.

The dozen Curve settings include unidirectional and bidirectional, slow and fast, and so on. The slow curves are concave, whereas the fast curves are convex. For mathematical reasons. some Curve settings will double the apparent rate of an LFO. You don't have to select a curve-the modulation will still be active without it. Overall, the interaction of the Curve, Control, and Range parameters is mystifying. For one thing, the Range sliders can be given minimum and maximum values, but when no control source is specified, changing the minimum value has no effect. Also, the outputs of the envelope generators can be inverted and scaled down in the envelope generator itself and in the modulation matrix, which makes it harder to troubleshoot a modulation that isn't doing what you envisioned it to do.

PRODUCT SUMMARY

CAKEWALK Z3ta+

software synthesizer \$199

PROS: Powerful waveshaping resources with real-time MIDI modulation. Plenty of oscillators, envelopes, and LFOs. Rich-sounding amp simulator. User waveforms and arpeggio patterns.

CONS: Envelope segments can't be modulated by MIDI Note Number or Velocity. No envelope or LFO control of waveshape. Documentation is marginal. No CPU meter. No undo feature.

FEATURES
EASE OF USE
AUDIO QUALITY
VALUE

MANUFACTURER Cakewalk www.cakewalk.com

Wavy Gravy

The heart of a synthesizer is its sound palette, and Z3ta+ has a rich one, thanks to its superior waveshaping, plentiful modulation sources, and capable effects. The MIDI control options, while not complete, are powerful. The support for user waves, arpeggiator patterns, and alternate tunings are welcome additions to the package. The modulation matrix needs more work and better documentation, but it's fully usable now, so that's not a reason to wait for the next release.

For leads, basses, pads, textures, and effects, especially in aggressive electronic styles, Z3ta+is an excellent choice. The more I use it, the more I appreciate its strengths.

Jim Aikin writes regularly for EM and other music magazines and Web sites. His latest books are Power Tools for Synthesizer Programming (Backbeat Books, 2004) and A Player's Guide to Chords & Harmony (Backbeat Books, 2004).

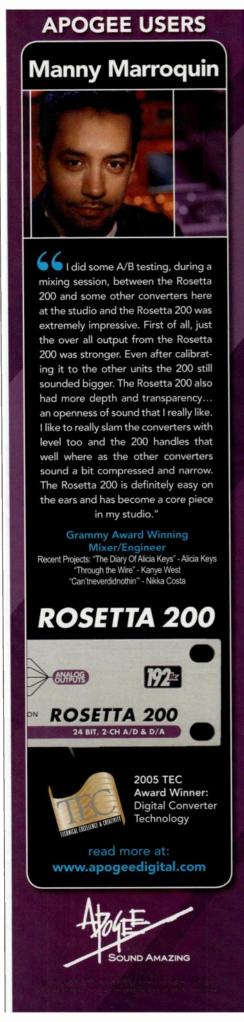




FIG. 1: Based on the popular Native Instruments Kompakt Instrument platform, Quantum Leap Colossus furnishes an enormous 35 GB sample library that has a tremendous variety of instruments.



QUANTUM LEAP Colossus (Mac/Win)

An abundance of sampled instruments. By Marty Cutler

uantum Leap Colossus (see Fig. 1) is a virtual instrument that holds a massive 35 GB sample library. It attempts to provide almost every instrument that any arrangement might call for. Colossus even features an enormous General MIDI (GM) sound set. Roughly half of its content is new; the remainder is derived from previous Quantum Leap titles. Overall, the quality of the sounds in this collection is very good. As you'd expect, such a massive sound set allows for generous sample times and nicely filled-in sample maps. Whether the instrument succeeds at its goal may depend on your definition of a workstation.

Extra, Extra Large

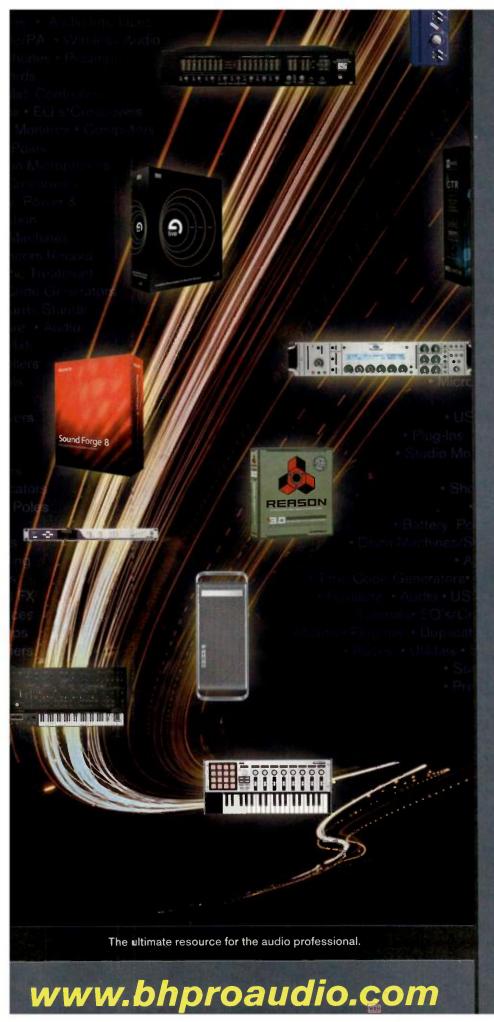
Installation was time-consuming (Colossus has eight DVDs of content) but not complicated, capping off with a simple challenge-and-response authorization. Colossus supports VST, Audio Units, RTAS, and DirectX plug-in formats. As a standalone synth, it supports Core Audio in Mac OS X and DirectSound and ASIO in Windows. Minimum PC requirements are Windows XP and a 1 GHz Pentium III or Athlon. Mac

users will need Mac OS X 10.2.6 and an 800 MHz G4. Both platforms also need 512 MB of RAM and 35 GB of disk space.

With the ubiquitous Kompakt Instrument as its playback vehicle, Colossus is much more than just a sample-playback device. Kompakt gives you synthesizer sound-design tools, including AHDSR envelope generators for amplitude and the filter, and a third, assignable envelope. In addition to reverb, chorus, delay, and a low-frequency oscillator that you can synchronize to tempo, Colossus has a master filter for additional sound-shaping flexibility. As with most hardware instruments that play samples from ROM, you cannot edit the individual samples that comprise the patch.

Beat a Path

Kompakt Instrument is 8-part multitimbral, and each part has a pull-down menu that allows you to select an instrument from one of 20 groups. The process is a bit clumsy, because the small menu contains nests of submenus that have so many choices that you can easily lose your place while dragging through the list.



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The Professional's Source

First on the menu is the Acoustic Drumkits group, a uniformly terrific set of instruments. Most are culled from the StormDrum collection. Kit sizes run from 65 to 90 MB, furnishing plenty of Velocity-switched samples for expressive dynamics. My favorite among those is Jazz Kit Sticks, which has a hollow, almost tomlike kick and a clangorous snare. Increasing Velocity on the second snare at D2 changes the balance of a rim shot from mostly stick to predominantly snare—very loose and ringy. The Electronic Drumkits group also carries titles from StormDrum, which are processed acoustic instruments rather than standard drum-machine fare.

The Acoustic Guitar Family group contains guitars and other fretted instruments such as mandolin and banjo. The 380 MB 2Guitars is a standout, with a pair of instruments creating a natural-sounding unison effect. Harder keystrokes invoke samples of the instruments sliding in to the target pitch. Fret-sliding noise adds to the realism.

Because I'm a banjo player, you might expect some carping about a sampled replica of my main axe. The banjo in Colossus is not bad; the samples sound warm and plunky and are recorded from a high-quality instrument played with fingerpicks. The amplitude-envelope settings serve most typical playing techniques well, but you'll need to adjust for a shorter release time to keep trills and staccato techniques from ringing. Although the low-pitched fourth string

on the banjo is frequently tuned to D (as is the case in this patch), tuning that string down to C is also common. Unfortunately, Colossus has no provision for extending the sample map or even the playing range of the samples. Restricting keymaps to the instrument's natural range is pervasive in the Colossus sound set; that may help beginning musicians who are unfamiliar with orchestration. but Colossus is, after all, a synthesizer, and it shouldn't have those limitations. Then again, other synthesists might disagree.

In most instances, squeaks, buzzes, and other performance artifacts provide a realistic, live feel to instruments. Some sounds, however, suffer from an overemphasis of these musical byproducts. The Classical Guitar patch has fingerboard scrapes, vibrato, and other articulation noises; some of them transpose chromatically with the sample. You might not notice that in a dense arrangement, but it's a dead giveaway during solo moments. The Silvertone and Rickenbacker basses have more cumulative buzz than a coffee plantation, but only if you invoke that buzz with higher-Velocity keystrokes. The Upright Bass EXP2 patch is beautiful and lush, with just enough delayed vibrato to make the strings sing during long sustained notes, and a Velocity-switched slide to the target note—think Sam Jones or Eddie Gomez.

The Rhodes of Colossus

The two main acoustic pianos are quite good. You get two versions of a Fazioli F308 Grand piano: a 3 GB version sampled with plenty of natural ambience, and the equally ambient but slightly brighter 1 GB economy size. Both sound good in exposed settings and are well-suited to classical music and solo piano in general. The 1.5 GB Steinway B is nice, too; it's more versatile, in part, because of the absence of sampled ambience. Thankfully, Kompakt's direct-from-disk streaming works well, but the trade-off is more stress on the CPU. The producers rightfully tout the nicely programmed Rhodes suitcase piano, which really barks with higher Velocities, but be sure to check out the completely glassy and synthetic GS1 EP1.

The Electric Guitar bank has some delightful stuff: samples of a '56 Stratocaster are animated and long. Although the documentation doesn't delineate the sample maps, many of the guitar patches are at least a couple of Velocity layers deep. Digging into some notes brings up a satisfying pop and occasionally a bit of string buzz. Stratocaster samples include bridge and neck pickup groups. Some guitar patches are roundrobin setups—a programming trick that allows triggering of alternate samples to avoid static, machine-gunlike repetition. That worked well when playing tremolos. Another favorite is the J Jones Electric Sitar, and the lap-steel patch is great for all-around slide-guitar parts (see Web Clip 1).

The Pop Brass bank has an abundance of trumpet, trombone, and saxophone sounds, with lots of specialized articulations and modulation-activated crossfades. TP Minidamoocha (as its name suggests) offers Cab Calloway-era trumpet played with a plunger that you can modulate into raucous growls (see Web Clip 2).

Most synth pads and basses are excellent, though I didn't care much for the Synth Solo instruments. Stormdrone Mod holds a batch of bizarre, evolving drone sounds that have equal parts organic, analog, and digital origins. The modulation wheel induces

QUANTUM LEAP Colossus soft sample player \$995 OVERALL RATING (1 THROUGH 5): 3 PROS: Scads of great-sounding instruments. Instruments suitable for a wide range of styles. Simple but expressive modulation assignments. Effective disk-streaming scheme. CONS: Poorly programmed GM bank. Some unlooped and unedited samples in the Vintage Organ section. Half the content drawn from previous collections. Expensive. EASE OF USE **FEATURES AUDIO QUALITY** VALUE

PRODUCT SUMMARY

Quantum Leap/EastWest (distributor)

MANUFACTURER

www.soundonline.com

pitch and timbral changes. This is great stuff for scoring science-fiction and suspense films. Surprisingly, the oddly named Disk Utilities category holds a few gargantuan-sounding rhythm beds that didn't make it into the StormDrum collection.

The General Dies at Dawn

If you are considering Colossus primarily for General MIDI projects, you should either look elsewhere or prepare yourself for lots of transposing and data remapping. Basic programming criteria such as envelopes, Velocity response, and transposition are rarely consistent with standard GM instruments. Most of the GM sounds are ported over from non-GM banks along with their Velocity-switched articulations. In some cases, MIDI files that were prepared for GM instruments played back with lively new dimensions of expression. But equally as often, unintended upand-down slides made performances sound downright silly. Some synth tones don't resemble their GM equivalents at all. In certain cases, instruments are mapped an octave higher than the GM spec. Nonetheless, don't ignore the GM bank; it has fine sounds that do not appear in the other banks, such as steel drums and shamisen.

Farfisa and Vox vintage organs are unlooped and stop abruptly at around ten seconds. Furthermore, A2 and Bb2 of the Vox Continental and Combo organs conclude with extra notes, as if the sample were never properly truncated. Unfortunately, the included Kompakt Instrument does not have any user-programmable looping or truncating capabilities.

If you own other EastWest titles, you might understandably balk at the fact that half of the material derives from collections you may already have. Unfortunately, the documentation provides no clues to differentiate between old and new material. Most of the ethnic instruments (including the banjo) derive from Quantum Leap Ra, which reproduces them with more-intricate and expressive sample maps (see my review in the October 2005 issue of EM).

Colossus offers plenty of great-sounding instruments in sufficient variety to compose in a number of idioms. Nevertheless, I don't think that any single collection can completely satisfy every composer's need.

Marty Cutler used to play pedal-steel guitar but now concentrates on banjo and guitar. And thanks to MIDI, he plays almost everything else.



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QUICK PICKS

DAVE SMITH INSTRUMENTS

Poly Evolver Keyboard

By Gino Robair

One of the major attractions of a vintage synth, besides its sound, is the user inter-



face, which typically gives you hands-on control over important parameters. In contrast, the ergonomics of programming a modern synth module, using a data wheel to scroll through menus, is less than satisfying.

The Poly Evolver Keyboard is a hybrid analog and digital synthesizer that gives you hands-on control over its many parameters. The keyboard has Velocity and Aftertouch capabilities. In a bold and welcome move, Dave Smith Instruments has released the Poly Evolver Keyboard (\$2,699), a performance versionofits 4-voice analog/digital synth module that puts 78 knobs and 58

er creative level. For example, the first thing you notice is its extra 4-stage envelope, with Velocity and Delay controls, which is just waiting to be put to work. And like all the modulators, the envelope has a Destination control so you can easily route it to one of nearly 70 parameters.

Through clever design the PEK's

Through clever design, the PEK's controls are kept to a minimum: there is one set of knobs for the four oscillators, one set for the four LFOs, and another set for the four sequencer tracks. Dedicated buttons let you select each oscillator, LFO, or track for editing. To solo a particular oscillator, LFO, or track, just press and hold the corresponding button.

To edit any parameter of a Program, turn the corresponding knob slightly, and the parameter and its setting automatically appears in the display. You can raise and lower the setting using the parameter's knob, with the increment/decrement buttons, or using the Param 2 knob. A dedicated button, Combo Part, makes it easy to edit Combo parameters when you're working with multitimbral

instruments.

All of the knobs are endless rotary encoders, which have a sturdy feel. Musicians who like visual feedback when editing will enjoy the PEK's frontpanel light show. For example, four blue LEDs show the instru-

ment's voice allocation as it dynamically cycles through voices 1 through 4. This feature is especially helpful when figuring out how many voices are used in the factory presets. In addition, each of the four front-panel LFO LEDs is duplicated on the rear panel, giving your listeners a light show as well.

The PEK's rear panel is similar to the rack version in terms of connectivity, offering a pair of unbalanced ¼-inch master outputs, a pair of unbalanced ¼-inch outputs for each voice, two unbalanced ¼-inch inputs for running external signals through the PEK's filter and effects, three footswitch jacks, and MIDI In, Out, and Thru ports. A dedicated MIDI output

is provided for daisy-chaining additional Evolvers or Poly Evolvers, in order to increase your voice count. The PEK uses a lump-in-the-line power supply, which helps keep the instrument's size and weight down.

Keys to Heaven

The 5-octave keyboard has a quick, light action, and the octave-transposition buttons, located above the illuminated pitch and mod wheels, give you two additional octaves in either direction. The PEK responds to Velocity and Aftertouch, and the factory patches demonstrate these features very well.

As in the Poly Evolver rack, there are four banks of 128 Programs and three banks of 128 Combos. Saving your work on the PEK is as easy as pressing the Write switch, and then pressing Yes. The Compare switch lets you A/B your edited sound with the sound that's in the location you want to save to.

Performance Driven

Although the Pcly Evolver Keyboard seems expensive at first glance, when you consider its many features (8 analog oscillators, eight digital oscillators, analog lowpass filters, and four 4-by-16 step-sequencers among them), you'll see that it offers plenty of bang for the buck. More importantly, the Poly Evolver Keyboard sounds fantastic and is a blast to play. I've heard few instruments that can match the sonic power of the Poly Evolver Keyboard, and it's worthy of my highest recommendation.

Overall Rating (1 through 5): 5
Dave Smith Instruments
www.davesmithinstruments.com



switches under your fingertips. Although there is nothing new under the hood, the keyboard and controls immediately unlock the full potential of the Poly Evolver, even for the musician who is unfamiliar with synth programming. (You can familiarize yourself with the features of the Evolver and Poly Evolver online at emusician.com.)

Tweak and Ye Shall Find

The main signal path of the Poly Evolver Keyboard (PEK) is clearly marked on the front panel. This map invites you to begin tweaking sounds right away, and it helps you get your programming juices flowing at a high-

BIG FISH AUDIO

Rotation

By Doug Eisengrein

Big Fish Audio's *Retation* DVD (\$99.95) is packed with more than 1.5 GB of loops and samples designed for pop and R&B music production. The loops are provided in three popular formats: WAV, REX2, and Apple Loops (AIFF files). Folders for each

ELECTRONIC MUSICIAN FEBRUARY 2006

format reside inside two main style folders, Construction Kits and Guitar Loops. Also included are a basic Read Me file and a demo of Ableton Live 4.

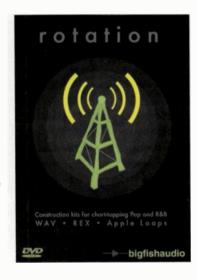
File Mix

The entire collection was produced and compiled by producer Matt Haines and composer Steve Sechi, both of whom have impressive resumes. The guitar loops were p ayed by two of Los Angeles' top Pop/R&B session guitarists, Shea Welsh and Les July. Most of the Construction Kits WAV files are stereo and are recorded at 24-bit, 44.1 kHz resolution. A few, however, are mono (electrc basses, for example) and others are 16-bit WAV and SD2 files.

The guitar loops are a mixture of 16- and 24-bit mono files. The REX2 fi es are formatted the way the WAV fi es are and include appropriate slice points, while the AIFF files are predominantly 16-bit files in mono and stereo. The sampling rate of all files is 44.1 kHz.

Scanning the folders for suitable loops is a breeze, because of a smart directory and file-naming scheme. Folders are numbered for easy recall, and the folders' names display the loops' beats per minute, key, and, for the guitar loops, whether they are acoustic or electric. Using Ableton Live and Propellerhead Reason, I scanned the contents of each folder, previewing

Big Fish Audio's *Rotation* DVD includes more than 1.5 GB of pop and R&B loops and samples in WAV, REX2, and AIFF files.



each loop and freely composing from scratch.

The Construction Kits are aptly named. Each of the 25 folders contains between one and three slightly different multi-instrumental 8-bar clips, followed by a loop of each instrumental component. Individual drum hits are also provided as standalone samples. Instruments run the gamut from acoustic and electric basses, guitars, and strings to electric pianos, Clavinets, flutes, brass, and a wide variety of synth tones. The styles range from sexy and hip-hop flavored to mellow jazzy numbers, and from little ditties reminiscent of Prince, Rockwell, or Morris Day, to grooves tinged with Middle Eastern accents. Original tempos range from 75 to 130 beats per minute. The collection offers a nice variety of styles: all drums are electronic, however, even if a few sound more acoustic than others.

Sound Construction

The sound quality of the Construction Kits is excellent; experienced engineers recorded all of the loops and samples with quality equipment. The complete loops with instruments are premixed with nice stereo separation and excellent balance, and the creators wisely included all components as raw files, allowing users to create their own mixes. The only exception is the drums, because individual drums are not provided only as sampled hits and not in loop form. The program material is appropriate for the intended genre, and all files are neatly arranged enabling even the most novice producer to crank out a tune within minutes. Furthermore, most of the material can work across different

The Guitar Loops cover a variety of acoustic and electric guitars, from tight lead snippets and minimal chord strums to the requisite wah-wah funk rhythms and distorted electric rock licks. The playing is tight and the loops are spot-on; the sound quality of the Guitar Loops, however, isn't as pleasing as that of the Construction Kits. Although that might be an unfair comparison because the Construction Kits

are composed primarily of electronic instruments, some of the Guitar Loops sounded a tad harsh in my monitors, and most of them contain a heavy vibrato effect. That doesn't render them less useful, but it does mean there's less tonal variety by comparison.

In addition, there are some gaps in matching keys between the two folders. For example, of the 14 Guitar Loops folders, 4 are in D minor, while only one folder of the Construction Kits uses that key. The Guitar Loops sport 2 folders in D-flat, although there is no D-flat material represented in the Construction Kits. Some matching keys are present, yet to get the most use out of this collection it would be helpful to supplement it with other source material.

Cool Tools

Taken individually, the two folders contain an excellent variety of tight, well-recorded, and conveniently named modern-sounding groove material that is ready for instant, Top 40 pop construction. And the included individual drum samples and REX files provide the goods with which to manually rearrange and spice up the provided loops and build new drum maps for your favorite sampler.

Overall Rating (1 through 5): 4
Big Fish Audio
www.bigfishaudio.com

BODY GLOVE

Keyboard and Guitar Cases

By Gino Robair

Whether your gear lives in a studio or hits the road with you, instrument cases are a neces-



sity that few musicians want to spend money cn. Nevertheless, a quality case promotes the longevity of your gear far better than the cardboard box it originally came in.

eBlitz Audio Labs has begun distributing Body Glove instrument cases for guitars, keyboards, drums, and cymbals. Besides being branded by one of the world's most recognizable logos, these cases offer a number of features that make them worth the extra investment.

All Keyed Up

All of the Body Glove cases are hybrid designs: water-resistant, nylon-based soft cases that have a variety of



The keyboard controller case includes in-line rubber wheels and straps on the back to hold a folding keyboard stand.

reinforced areas. For example, the sides on the keyboard cases feature ABS plastic strips reinforced with a flat strip of steel. The lid has a layer of dense foam and a thin sheet of ABS plastic, and the bottom of the case has two thin plywood sheets—one at each end of the case—that are attached to the sides with strips of steel. Using two sheets of wood rather than one gives the back of the case a bit of play.

ThereareseveralBodyGlovekeyboard cases in the line: two 61-key cases, a standard model for synths (\$269.95) and one for controllers (\$249.95); an 88-key case for synths (\$329.95) and for controllers (\$299.95); a 76-key case (\$279.95); and a 25-key controller case (\$239.95). The bottom of each case has heavy-duty rubber in-line wheels, which you'll appreciate when it's time to lug your weighted controller down a hallway. The rubber feet on the bottom of the lid let you stand the cases up vertically.

The lid of the cases, the thickness of which varies according to whether it is the Standard or the Controller version, has two pockets: a large rectangular one and a smaller one. The bottom of the case has 1.5-inch straps designed to hold your folding keyboard stand. The cases have double stitching throughout,

reinforced lower corners, 2-inch carrying straps, and rubberized handles and zippers.

Overall, the keyboard cases feel robust. I received 61-key and 88-key cases (it wasn't clear whether they were the Standard or Controller size), and I was able to fit a 61-note Dave Smith Instruments Poly Evolver keyboard in the smaller case. Our Alesis Andromeda

(also a 61-note instrument) had to go into the larger case because of its depth. In both instances, there was extra room to one side, but the instruments sat snuggly in the cases once they were zipped up.

Have Guitar, Will Travel

Body Glove's guitar gig bags are heavily braced with ABS plastic on the top, the back, and the sides, and they are well padded.

The cases have a side handle, a shoulder strap, and a 4-point backpack-style harness with lumbar support, which can be folded away and hidden behind a zippered compartment. The cases feel sturdy enough that I would feel fine about carrying my guitar in one on an airplane; the extra reinforcement will certainly keep the instrument safe in an overhead storage compartment.

According to the manufacturer, the internal fabric has been chemically treated to wick moisture away from your instrument, which is useful for long-term storage purposes and for traveling. Another nice feature is that the area of the lid that covers the guitar's headstock is reinforced with nylon, to protect the interior from being torn by the sharp ends of the strings.

The front of the cases have two large pockets, and Body Glove includes an 8-inch-by-12-inch amp wallet with each gig bag that can be used to hold strings, picks, a slide, a capo, and your car keys. The wallet unzips to 24 inches in width, and the Velcro straps enable you to conveniently attach the open wallet to the handle of your amp.

Body Glove offers five sizes for guitar (a one-size-fits-all electric case, three types of steel-string acoustic cases, and a classical guitar case), and

one size for electric bass, all of which are \$179.95 each. My caseless '50s-era, %-scale Gretsch, which isn't a common guitar shape or size, fit remarkably well into the electric-guitar case I received for review. If, however, you have a semi-hollowbody instrument, you'll have to try one of the other cases.

State Your Case

Although the Body Glove logo puts a premium on the price of these cases, the quality of their build warrants it. The entire line, which also includes moisture-wicking dust covers, are well designed and rugged, and each case comes with a lifetime warranty, which begins when you register it online. You'll definitely want to check out the Body Glove product line the next time you visit the music store.

Overall Rating (1 through 5): 5

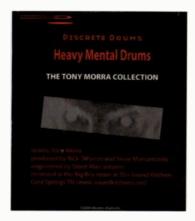
Body Glove/eBlitz Audio Labs (distributor) www.bodyglove.com

DISCRETE DRUMS

Heavy Mental Drums

By Mike Levine

Loop libraries from Discrete Drums are known for being creative, well recorded, and well played. The company's latest product, *Heavy Mental Drums*, is a collection of hard-rock drum loops that will only enhance its reputation.



Discrete Drums' Heavy Mental Drums collection gives you a large variety of big-sounding drum loops intended for metal and hard-rock productions.



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ich of the 64 tracks can hold 8 effects, arming them turns the mixer into a multi-track recorder.



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Some people just don't get it.

The library comes in several configurations. I reviewed the Super Probundle (\$379), which contains 24-bit multitrack files, 16-bit stereo versions, and a DVD of the individual samples. Also available is the Pro bundle (\$329), which contains the multitrack loops and the 24-bit sample disc; and the Pro Tools Bundle (\$329), which offers the multitrack loops as Pro Tools session files, and the sample disc. If you want only the stereo loops and don't need the sample disc, there's the stereo Apple Loops edition (\$124) or the 16-bit stereo WAV edition (\$129).

Heavy Mental Drums features the playing of studio drummer Tony Morra and the massive acoustics of the Big Boy Room at The Sound Kitchen in Cool Springs, Tennessee. The engineer was Steve Marcantonio.

Going Mental

The library contains 16 songs and 3 drum solos. In the Super Pro bundle, the multitrack files come in a box of 14 CDs. Twelve contain the loop files, and the other two are audio discs for auditioning the performances. The 16-bit stereo files come on two discs and are also accompanied by the two audition CDs. The mixes on the 16-bit versions are quite good.

The songs are broken up into loops typically between two and four measures long. The playing covers a range of metal and hard-rock styles, and the collection is diverse from the standpoint of tempo.

Several songs include lightning-fast double-bass drum parts—the signature sound of metal drumming. Much of the material in the collection also works for straight-ahead rock styles.

Multiple Track Personalities

Each multitrack loop is split into eight tracks that can be mixed at will. You get mono Kick, Snare, and Hat tracks, and stereo Toms, Overheads, Room, Big Room, and "Gak" tracks.

All the elements are well recorded, but the room tracks are what really define this collection. When mixing, I particularly liked adding the Big Room track, which was recorded

well back from the kit. It makes the mix come alive and sound really huge (see **Web Clip 1**). The Room track was recorded closer, but also adds significant ambience.

The Gak track was recorded with a cheap condenser mic, and it is supposed to sound compressed, distorted, and generally cheesy. Added judiciously, it can give an additional edge to your mix.

Burn and Punctuate

Besides verses, choruses, fills, bridges, intros, and endings, each song has Punctuation Mark loops, which consist of bass-drum and cymbal accents. Some songs have Crash and Burn endings in which Morra fills wildly. All have Bash tracks, in which he keeps time but hits cymbals on all the downbeats.

Including drum solos in a loop library was a novel idea. You get three solos: two that are less than 30 seconds long, and a third lasts for more than two minutes. Morra blazes through them, and though I wonder how often you'll want a full drum solo in your production, the solos have lots of cool parts that could be cut up and used for fills or in other short sections.

I couldn't, however, find a tempo listing for the solos, and after checking with Discrete Drums, I found out that the solos weren't recorded to a click. That diminishes their usefulness because, assuming that you're going to use only a section of the solo, you'll need to determine its approximate tempo and then time-stretch it to fit the tempo of your project.

Mental Floss

I had problems with the MFI Multi-Format Installer application (Mac/Win) that is included on the sample disk. It's designed to load the samples into a variety of formats including GigaStudio, Kontakt, Reason, Halion, Battery, EXS-24, and Mach Five.

I used it successfully with the EXS-24 in Logic but had problems when I tried it with Mach Five. It didn't load the samples into the cor-

rect folders, and the sampler therefore couldn't find them. According to Discrete Drums, that glitch should be remedied well before you read this review.

No-Brainer

Despite a couple of minor flaws, Heavy Mental Drums is another winning library for Discrete Drums. If you need large-sounding, flashy drum loops for your metal or rock tracks, you won't be disappointed.

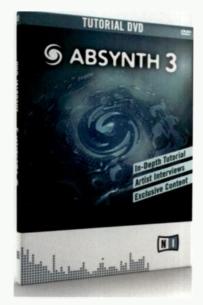
Overall Rating (1 through 5): 4
Discrete Drums
www.discretedrums.com

NATIVE INSTRUMENTS

Absynth 3 DVD Tutorial

By Jonathan E. Segel

Native Instruments has released the Absynth 3 Tutorial DVD for its soft synth, Absynth 3. The tutorial is useful for the novice, and it's great for experienced users who want to get the most out of the instrument. Narrated by Native Instruments' product specialist Brian Smith, the DVD covers every parameter and



The Native Instruments Absynth 3 Tutorial DVD offers a thorough investigation of every feature in Absynth 3.

prophet-0







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menu in Absynth 3, and does so in a logical order.

Peeking into Windows

Absynth 3 is an oddity among Native Instruments' collection of synths (for a review of Absynth 3, see emusician .com.) Originally designed by Brian Clevinger and Rhizomatic Software, it has retained its single-window structure and blue green sci-fi graphics. A set of tabs at the top of every window

lets you access the various component views: the Main window, the Patch window, the Waveform window, and the Effects, Envelope, LFO, and MIDI control windows. This inclusive structure creates a kind of flow chart for building sounds with Absynth, and it allows a straightforward and comprehensive method for teaching someone how to use the synthesizer.

After the DVD's introduction, it is divided into nine chapters, each describing and dissecting one of Absynth 3's seven windows, with an additional chapter on sampling and another on surround sound and panning. There are two sections on selected artists Jeff Rona and Junkie XL, and a larger section or Clevinger. The interviews offer brief introductions to the work and methods of the two artists. while the section on Clevinger is longer and allows him to discuss why he created Absynth and how he uses it.

Step by Step

Smith does a great job of guiding the viewer through the world of Absynth, and his enthusiasm is directed almost exclusively toward teaching. Starting with the Main window, he explains how the synthesizer is organized graphically and how that determines the course of the tutorial. Smith describes every button and menu item in detail, showing the viewer by example how everything works. Fcr example, in describing the use of the Patch window, he dissects a complex patch module by module, showing which parts of the oscillators, filters, and modulators make up that particular sound.

The chapter on waveforms begins with an overview of waveform synthesis in the time and the frequency domains. Smith then shows viewers how they can be manipulated within the program. Likewise, the chapter on effects contains valuable lessons about using time-based effects for echo and resonance, including an explanation of the physical nature of comb filters and multitap echoes.

The chapters about the envelope and LFO windows are exhaustive and show Absynth 3's unique sonic capabilities. Many of the lessons are illustrated by patches from the factory banks, although some of the process involves manufacturing sounds from scratch to show the various workings of the synthesizer. The DVD also includes a special sound bank with tutorial patches that are used in the lessons.

There are a few basic synthesizer concepts that Smith assumes the





Zero-G Beats Working in Cuba captures lively, authentic Cuban-style percussion performances.

viewer understands. For example, he doesn't explain what a lowpass filter does. But even for those viewers who don't know the term its meaning is made obivous from the filter's usage in context.

Just the Facts

The Absynth 3 Tutor al DVD is long. Almost every chapter is more than a half hour in length, with frequent suggestions that you stop and work on the synthesizer components discussed to get the most out of the lesson. The primary aim of this tutorial is to get you to experiment and find new sounds for yourself, and it seems to be designed as much for sound designers as for musicians. All in all, the DVD offers a valuable set of lessons, whether you're an experienced Absynth user or a novice.

Overall Rating (1 through 5): 4

Native Instruments USA www.nativeinstruments.net

ZERO-G

Beats Working in Cuba

(Mac/Win)

By Marty Cutler

Every regional style has its adherents, but besides authenticity, the most important elements in a sample library of ethnic music is recording quality, attitude, and a lively groove. Zero G Beats Working in Cuba (\$299.95) offers all of that in spades and provides a focused set that goes well beyond mere textbook folkloric authenticity.

Three DVD-ROMs comprise the package: two DVDs hold roughly eight and a half GB of 24-bit, 44.1 kHz loops and include the Native Instruments Intakt instrument plug-in as a playback medium. The third DVD is a short film outlining the project.

Intakt supports VST 2.0, DXi, ASIO, Audio Units, Core Audio, and RTAS. I used it as an Audio Units plug-in with Apple Logic 7.1.1 and MOTU Digital Performer 4.6, and tried it as a VST plug-in using Ableton Live 5.02. My computer was a dual-processor, 1.42 GHz Power Mac running OS X 10.3.9. Once you have completed the installation process, you invoke the registration tool, which identifies and authorizes the host computer and provides an authorization key. The process is quick and painless.

Sweet Beats

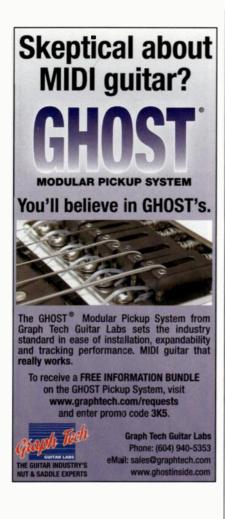
Using Intakt, the sound set gains considerably more flexibility than you'd have with a simple collection of loops to drop into tracks. Intakt lets you divide a loop into slices so you can reorder them, change the timing



A marriage of technical precision and artistic inspiration, the AT4040-features an advanced large diaphragm tensioned specifically to provide smooth, natural sonic characteristics. Designed as a multipurpose performer, this true condenser microphone offers exceptionally low noise, wide dynamic range and high solucipability for greatest versatility.

A passion to achieve the highest quality inspires every aspect of 40 Series design and manufacturing. Employing the latest technological innovations in the quest for superior performance, unerring dependability and sonic consistency, the AT4040 continues the tradition of excellence embodied in every 40 Series microphone.







and dynamics, reverse samples, apply DSP, and lots more. As with a sampler, grooves are mapped to note numbers, and MIDI notes trigger the grooves. Furthermore, the plug-in provides a basic subtractive-synthesis engine with two multimode filters, envelope generators for amplitude and filters, two synchronizing LFOs, and three effects: Lo-Fi, distortion, and delay. At first, I questioned the absence of reverb, but the room ambience enveloping the percussion recordings imparts a beautiful, natural quality that makes further treatment unnecessary. If you want, you can assign loops to one of the plug-in's eight stereo outputs for additional processing, but you'll do yourself a disservice if you don't at least audition the grooves without effects.

The grooves are the most masterful examples of the styles I've yet to hear outside of live performances. As with a fine ensemble film cast, the musicians form a whole that is greater than the sum of its parts, with plenty of playful rhythmic interaction. These are not sterile grooves with formal, soulless note-for-note replications. Players push and pull each other within a clearly defined stylistic and rhythmic framework, providing plenty of propulsion (see Web Clip 1). According to the DVD movie, several of the players have worked together for years, and it shows.

The 18 styles represented include Bolero, Mambo, Guaracha, Pilon, Son Montuno, and Songo, each with more than 20 variations. (Think of each variation as a patch, and each style as a bank.) The samples consist of 2- to 6bar loops carved from a full, song-form performance. Most often, the variations consist of a keyboard layout of the full mix and subsequent keys that trigger dry recordings of individual instruments comprising the groove. Each patch includes a stereo, room-ambience mic recording. Other patch variations include pitch-shifted versions of the individual groove elements and individual hits.

As authentic and beautifully natural as the grooves sound, the presence of synchronized LFOs as modulation

sources invites a measure of creative abuse, and I was quickly able to route an LFO to filter cutoff. Playing this beat-synchronized, processed loop polyphonically produced a gamelanthrough-a-wan-wah-pedal-type effect—strange, but not out-of-place in more contemporary, less traditional music (see Web Clip 2).

Beating Around the Bush

Despite a beautifully recorded, passionately played, creatively open collection of loops, there are a couple of fatal omissions that hobble Beats Working in a serious way: its lack of a multitimbral structure and its keyboard mapping. You can load only one patch at a time so, for example, even though you may have 20 to 30 variations for a Son Montuno groove, the only way to arrange them in order is to load multiple instances of the plug-in and create additional tracks until you have the amount of variation you need. I wracked my brain to find a more efficient workaround, but unfortunately, the Intakt manual was of little help, and the HTML-format notes, though earnest and useful, didn't address that aspect of arranging the grooves. The frustration I felt was the equivalent of a starving man staring at a deliciously prepared full-course dinner through an impenetrable plate-glass window. It seems as though Zero-G could have at least provided a full-mix patch containing all of a style's grooves mapped across a single keyboard layout. (According to the manufacturer, that feature will be added in an update that will be sent to all registered users.)

I hope that the upgrade planned by Zero-G does not force the end-user to jump through hoops just to avoid repetition. The beautifully recorded performances breathe fire and deserve room to develop. With that minor tweak, Zero-G Beats Working in Cuba should rightfully find a prominent place in every groove enthusiast's sound library.

Overall Rating (1 through 5): 3
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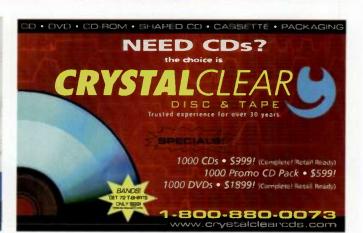
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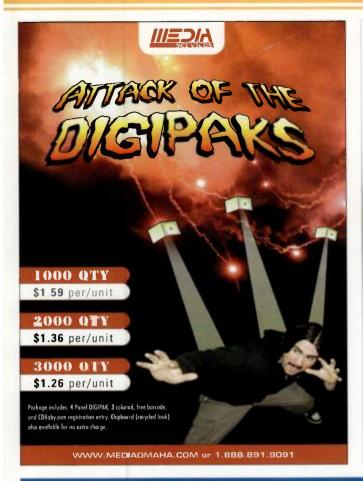
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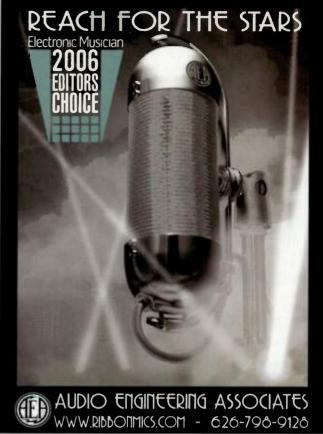


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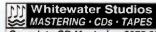






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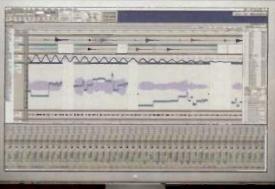
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Large capsule mic

The new RODE NT2-A can be plugged directly into your 828mkH or Traveler FireWire interface. This professional large capsule (1") studio microphone incorporates three-position pick-up patterns, pad, and high pass filter switches conveniently located on the mic body. At the heart of the NT2-A is the Australian designed and manufactured HF1 dual diaphragm capsule. The frequency and transient response of this new transducer has been voiced to complement today's modern recording techniques, and yet still evoke the silky smooth character of the legendary microphones of the 50's and 60's. These features provide the flexibility and superlative audio characteristics that make the NT2-A one of the most versatile condenser mics available. The NT2-A's variable controls allow switching between Omni, Figure 8, and Cardioid polar patterns. The three position high-pass filter provides a flat response or an 80Hz and 40Hz high pass filter. The microphones Pad can be switched between 0 dB, -5dB and -10dB. The NT2-A comes in a soft pouch with an M2 stand mount.





Stackable MOTU audio I/O

All MOTU FireWire interfaces, including the Traveler, 828mkll and 896HD, are stackable, giving you a cost-effective, expandable system that delivers stunning quality and performance. You can daisy-chain up to four MOTU interfaces to your Mac — even the steek and portable PowerBook — and record all inputs simultaneously. For example, you could connect four Travelers directly to a PowerBook to record 64 inputs to 64 tracks simultaneously at 48kHz. If you connect four 896HDs, you can record 72 inputs to 72 tracks — all to the internal hard drive. On today's multi-processor G5's, you can expand even further with a PCI FireWire card. With four Travelers connected to the on-board FireWire bus, plus a fifth Traveler connected to the PCI FireWire card, each with 20 inputs, that's a whopping 100 inputs recorded simultaneously to 100 separate tracks. Make no mistake: a MOTU native system with multiple interfaces delivers astonishing performance and value.



Inprecedented Native Studio Power

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Looking for transport control of Eigital Performer that goes way beyond your mouse or the extended keypad on your Mac keyboard? Try the new Frontier Design Group TranzPort, the world's first wireless DAW remote controller. This convenient, compact unit trees you from your conventional position, sitting in front of your Mac. Now you can control Digital Performer from anywhere in your studio. TranzPort has plug-and-play compatibility with DP, thanks to its dedicated DP control surface plug-in software. In addition to controlling all of DP's transport functions, you can also arm tracks for record, set markers, punch in/out, start loops and more using TranzPort's intuitive interface. You also get real-time feedback on s gnal levels, timecode position, track names and more via the backfit LCD and LED indicators. Controlling DP has never been more fun, convenient and tlexible!



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Looking for the ultimate compact keyboard controller for your MOTU studio?

The Alesis Photon X25 Portable 25-key USB MIDI controller/audio interface delivers the revolutionary Alesis Axyz controller dome and ten 360-degree rotary knobs, giving you powerful hands-on MIDI control of your Digital Performer studio and software plug-ins. Advanced features include 24-Bit 44.1/48 kHz USB audio I/O with balanced stereo audio inputs and outputs, 25 key, velocity sensitive keyboard, full-size pitch and modulation wheels, and an LCD screen with dedicated encoder for fast and easy set-up.



On-demand Waves DSP.

For large-scale multitrack recording systems, it is good practice to offload plugin processing from you host computer. The Waves APA-44M delivers on-demand Waves processing to your MOTU native desktop studio via standard Ethernet. Open your existing Waves plug-ins as usual in Digital Performer via the new Waves Netshell™. But now you can run up to 6 Waves IR-1 Convolution reverbs at 44.1kHz at once, and save your CPU po ver. Need more Waves processing? Just add another APA-44M with the snap of an 3J45 Ethernet cable. It's that simple. For extreme processing needs, connect up to 8 units to your network. The APA-44M is equally at home connected to a laptop desktop or both. Just transfer your Waves authorized iLok. You can even share a stack of APA-44M is among several computers across the Waves Netshell network. The APA-44M ushers in a new era of state-of-the-art, distributed-network Waves processing for your MOTU multitrack studio.



5-bay removable storage.

The Glyph GT 205 is a 2U five-bay FireWire enclosure onering many advantages for large-smale multitrack recording, including hot-swap portability and convenience. Specifically designed for applications requiring multiple drives, it can be configured with four FireWire hot-swap GT Key drives up to 500GB each. Its expansion bay offers the option of AIT backup, a SCSI or FireWire hot-swap receiving bay, DVD-R/RW or CD-R/RW. Using Ghrph's proprietary IntegrityTM hot-swap technology, you can easily shuttle content to other GT Series er closures. To keep your studio quiet, GT Keys incorporate sound-dampening composite metal technology in their frames. Includes 3-year warranty, plus overnight advance replacement warranty in the first year for GT Keys.





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Your DP mastering and processing lab awaits you: BIAS Peak Pro 5 delivers award winning editing and sound design tools, plus the world's very best native mastering solution for Mac OS X. With advanced playlisting. Superb final-stage processing. Disc burning. Plus PQ subcodes, DDP export (optional add on), and other 100% Redbook-compliant features. Need even more power? Check out our Peak Pro XT 5 bundle with over \$1,000 worth of additional tools, including our acclaimed SoundSoap Pro, SoundSoap 2 (noise reduction and restoration), Squeez-3 & 5 (linear phase multiband-compression/limiter/upward expander), Reveal (precision analysis suite), PitchCraft (super natural pitch correction/transformation), Repli-Q (linear phase EQ matching), SuperFreq (4,6,8, & 10 band parametric EQ) and GateEx (advanced noise gate with downward expander) — all at an amazing price. So, when you're ready to master, Peak Pro 5 has everything you need. It's the perfect complement to DP. Or, perhaps we should say, it's the perfect finishing touch.





The control room.

The PreSonus Central Station is the missing link between your MOTU recording interface, studio monitors, input sources and the artist. Featuring 5 sets of stereo inputs (3 analog and 2 digital with 192kHz D/A conversion), the Central Station allows you to switch between 3 different sets of studio monitor outputs while maintaining a purely passive signal path. The main audio path uses no amplifier stages including op amps, active IC's or chips. This eliminates coloration, noise and distortion, enabling you to hear your mixes more clearly and minimize ear fatigue. In addition, the Central Station features a

complete studio communication solution with built-in condenser talkback microphone, MUTE, DIM, two separate headphone outputs plus a cue output to enhance the creative process. A fast-acting 30 segment LED is also supplied for flawless visual metering of levels both in dBu and dBfs mode. Communicate with the artist via talkback. Send a headphone mix to the artist while listening to the main mix in the control room and more. The Central Station brings all of your inputs and outputs together to work in harmony to enhance the creative process and ease mixing and music production.



Purified power.

To get the most out of your MOTU studio gear, you need the cleanest power possible. The negative effects of poorly supplied wall outlet AC power on your gear can be dramatic, without your ever knowing how good your gear can really sound with properly supplied power.

Furman Sound introduces the all-new Power Factor Pro with its ground-breaking Clear Tone Technology", which actually lowers the AC line impedance supplied by your wall outlet while storing energy for peak current demands — over 45 amps of instantaneous current reserve. Additionally, Linear Filtering Technology", (LiFT) dramatically lowers AC line noise to unprecedented levels in the critical audio frequency band. Also included are Furman's unique Series Multi-Stage Protection Plus (SMP+) surge protection and automatic Extreme Voltage Shutdown (EVS), which protect you from damaging voltage spikes or sustained voltage overload.

Equipped with the same LiFT and SMP+ features, plus EVS Extreme, the Furman Sound IT-20 II ultra-low noise balanced isolation power conditioner is designed for the most critical, ultra-low noise installations. Delivering an astonishing 80d8 of common noise reduction from 20Hz-20kHz, you're assured the lowest possible noise floor for all the gear in your MOTU studio. The IT-20 II's toroid transformer design assures a contained magnetic field for complete isolation from sensitive studio components nearby. The ultransfe in purified power.





Unprecedented Native Studio Power



Hands-on automated mixing.

Imagine the feeling of touch-sensitive, automated Penny & Giles faders under your hands, and the fine-tuned twist of a V-Pot™ between your fingers. You adjust plug-in settings, automate filter sweeps in real-time, and trim individual track levels. Your hands fly over responsive controls, perfecting your mix — free from the solitary confinement of your mouse. Mackie Control delivers all this in an expandable, compact, desktop-style design forged by the combined talents of Mackie manufacturing and the MOTU Digital Performer engineering team. Mackie Control Universal brings large-console, Studio A prowess to your Digital Performer desktop studio, with a wide range of customized control features that go well beyonc mixing. It's like putting your hands on DP itself.

Accurate monitoring.

The Mackie HR-Series Active Studio Monitors are considered some of the most loved and trusted nearfield studio monitors of all time, and with good reason. These award-winning bi-amplified monitors offer a performance that rivals monitors costing two or three times their price. Namely, a stereo field that's wide, deep and incredibly detailed. Low frequencies that are no more or less than what you've recorded. High and midrange frequencies that are clean and articulated. Plus the sweetest of sweet spots. Whether it's the 6-inch HR-624, 8-inch HR-824 or dual 6-inch 626, there's an HR Series monitor that will tell you the truth, the whole truth, and nothing but the truth.



The MOTU system experts.

When it comes to putting together MOTU recording systems, nobody does it better than Sweetwater. Whether you're building a simple portable recording rig with a Traveler and an iBook or a 128-track powerhouse Digital Performer studio centered around the latest Quad Core G5, Sweetwater can help you select the perfect components for your MOTU system, from the specific MOTU audio interface model, to control surfaces and hard drives, to plug-ins and studio monitors. Even better, we can install, configure, test and ship a turnkey system straight to your door — all you'll need to do is plug in the system and start making music.

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SHIPPING



Multiple Personality Order By Larry the O

ome people are tightly focused on one goal, one way of living, one set of skills. Others have more diverse interests and talents. There are good things about each orientation, but it is interesting to observe how the world responds to those with more than one talent, especially the part of the world that is our little Electronic Musician community.

Music is one of the talents most commonly found with multitalented creative types. Engineers, producers, visual artists, even commercial programmers are often musicians, too. As the saying goes, "real musicians have day jobs," so you find musicians earning a living with all sorts of more, um, marketable skills.

In a group containing people with multiple talents, there are many benefits to making use of as many of those skills as possible. Although it's potentially tricky to divide a person's time and balance their workload, the results of taking full advantage of such a person's skill set can be amazing. Furthermore, it is fulfilling and empowering for people to be able to fully realize their potential. The multitalented person can be a very powerful asset, indeed.

Consider a typical small company: by and large, each person in such a company performs a number of roles. For a very small company to survive and grow, it is essential to have people with multiple talents. Usually, the most obvious way to witness this is to observe the receptionist or office manager (often the same person, of course), who handles so many responsibilities that the job title is laughably

Music is one of the talents most commonly found with multitalented creative types.

inadequate to describe the position.

Unfortunately, not all small organizations value multiple talents. For instance, it is common in band situations for members to get "typecast" in a role. Perhaps the band leader wants to be the only writer

or singer in the group, so other band members' songwriting or vocal skills never see the light of day. Or maybe the "Oh, he's just the drummer" syndrome rears its silly head. (For those who hadn't noticed, the ranks of top producers and computer-music pioneers seem to be well stocked with drummers.) As a result, those band members' valuable musical, technical, and business skills are not used to the band's advantage.

When an organization grows in size, it is common for pigeonholing to increase. Perhaps the only way an organizational structure can deal with people is by classifying them. At best, this need to maintain job segregation can mean losing out on abilities that could help the company. In the worst case, the person may be explicitly told they are not to exercise a useful talent. It's true that some large projects can only be effectively managed by segregating functions, but it is easy for larger organizations to lose the perspective of multiple talents as a virtue.

For example, at the beginning of my career in audio, I worked as a bench technician at a well-known pro audio company. At that time, few people in the company could do a good product demo, and when the national sales manager found out I could do that, he requested my presence at a NAMM show. Management allowed me to go represent the company there—on the condition that I made up the time missed from the bench! I also watched a close friend of mine with skills in engineering and marketing go through the same hassle (at a considerably higher level) at the same company. They didn't know which hat he should

> wear, when his greatest value to the company was that he could

Multitalented people can feel a bit schizophrenic when faced with people's difficulty in knowing what to do with them. Of course, the multitalented person can and often does pursue other

interests independently, which can offer more freedom (if fewer resources) than exercising those skills on the job. In the end, the only bad thing about being multitalented is that those with narrow perspectives won't understand or make best use of your skills. EM

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