>>REVIEWED >> KORG WAVEDRUM > ZOOM R16 > SOUNDTOYS DECAPITATOR > SONNOX RESTORE

JULY 2010

em
ELECTRONIC MUSICIAN

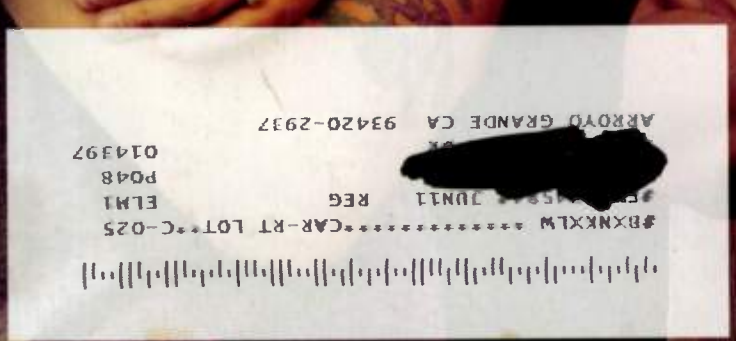
10 Tips for Your Next Album Release

8 Virtual Guitars and Basses Reviewed

New Column: Gear Geek

The Glitch Mob
Adventurers in Electronica

A PENTON MEDIA PUBLICATION



Carmen Rizzo Tracks His Latest on the Road

EMUSICIAN.COM

Privia

PX-3

BREAKING THE RULES... AGAIN!

RULE #1 – AN 88 NOTE WEIGHTED ACTION KEYBOARD MUST BE HEAVY

Weighing in at an unbelievable 24 lbs, the PX-3's scaled weighted hammer action redefines the stage piano category. With an Ivory Touch matte key finish and the feel of this remarkable Tri-Sensor action, you'll never believe that you can carry the PX-3 under one arm.

RULE #2 – IT MUST BE EXPENSIVE

The PX-3 offers four layer dynamic stereo piano samples, editable sounds, insert effects, a backlit LCD and more. It only sounds like it costs thousands.

RULE #3 – A STAGE PIANO CAN'T CONTROL OTHER GEAR

The PX-3 allows for 4 simultaneous sounds. These can come from the PX-3's great sound engine, an external MIDI device or both at the same time. Use it on stage or in the studio with your computer, the class-compliant USB MIDI interface works seamlessly on any Mac or PC.

RULES WERE MEANT TO BE BROKEN

The Privia PX-3 breaks all of the rules and more by delivering an extremely lightweight, high performance, 88 note weighted action stage piano and controller at a price that is an absolute steal.

CASIO

FOR MORE INFORMATION PLEASE VISIT WWW.PRIVIAPIANO.COM

Pat Thrall Producer/Engineer Beyonce

Marco Migliari Producer/Engineer Robert Plant

John Seymour Producer/Engineer Santana

Tony Mangurian Producer/Engineer Willie Nelson

Chuck Ainlay Producer/Engineer Vince Gill

Bob Bullock Producer/Engineer Shania Twain

Blake Eiseman Producer/Engineer Kanye West

Thom Russo Engineer Michael Jackson

Allen Morgan Producer/Engineer Nine Inch Nails allenmorganaudio

Khaliq Glover Engineer Herbie Hancock

introducing The Mighty Drumagog 5

accept no substitutes

"Drumagog makes others seem like toys. If you are not using Drumagog, you are working way too hard." —**Pat Thrall**

Only one drum replacement plug-in is the proven industry standard: Drumagog. And now Drumagog 5 leapfrogs all comers with features unavailable anywhere else.

The most accurate alignment algorithm available—period. Even complicated rolls, ghost notes and flams are no match for Drumagog 5's new alignment engine. Drums hits are perfectly aligned and phase accurate.

Volume independent triggering. Drumagog 5's new triggering engine provides independent control over triggering level and transient detail.

Auto Hi-Hat tracking. Only Drumagog 5 automatically detects hi-hat pedal position (open/closed) and adjust the samples accordingly. Hi-hats are now easy to replace, accurate, and faithful to their original articulations.

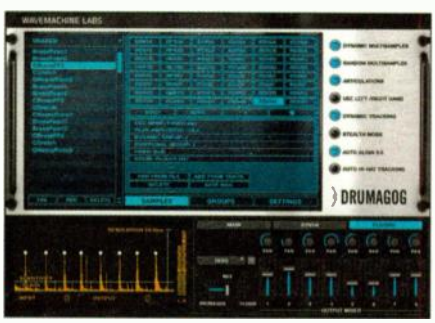
Automatic Left/ Right hand samples. When Drumagog detects enough speed, it automatically alternates between left and right samples for the most realistic rolls ever.

Multiple room and mic samples. Up to three room or alternative mic samples can be triggered from a single drum hit. All room and mic samples maintain a phase-lock to each other.

Auto Ducking. Want to keep the original overheads for cymbals, but get rid of the old snare bleeding into the track? No problem. Set Auto Ducking on the overheads, and the snare is outta there.

Two modes. *Live Mode* offers zero latency, while Advanced Mode gives you absolute accuracy.

Stealth Mode: the Secret Weapon. Drumagog's exclusive Stealth Mode lets the original audio pass through until the trigger threshold is reached. On a track with snare and hi-hat, for example, Drumagog can pass the hi-hat through but instantly crossfade to replace only the snare hits. Incredible!



Open virtual instruments *inside* Drumagog 5 for unlimited sounds. Plug-ins such as BFD2, Superior Drummer, Kontakt, and more open directly in Drumagog for easy access to a virtually unlimited library of samples.

More control. With 384 multisamples per file, Drumagog 5 lets you change and automate, pitch, level, articulation, and MIDI parameters for each level. Dynamic tracking lets you force samples to be all soft or all loud—or anywhere in between.

Convolution Reverb included. With adjustable room size, offset, delay and more, Drumagog 5's reverb comes with a custom IR library and the ability to read standard IR files.

Outrageous Morph Engine. Designed in collaboration with MoReVoX sound designer Sabino Cannone, Morph Engine reshapes sound with every beat, for mind-blowing effects unmatched by anything else on the market.

Choose your own protection. Drumagog 5 makes it simple. If you're an iLok user, Drumagog offers iLok support. If you prefer challenge-response, no problem. Drumagog 5 supports both.

Get the whole story at **www.Drumagog.com**

ELECTRONIC MUSICIAN

JULY 2010 VOL. 26, NO. 7

FEATURES

Cover photo by Dove

32 CONTROLLER FREAKS

Having built a cult following based primarily on their high-energy live performances, The Glitch Mob finally took time away from touring to record their debut album, *Drink The Sea*, a collection of instrumental music highlighted by meticulously layered synths and pounding, almost cinematic-sounding drums and percussion. *EM* sat down with the trio to talk production, software, controllers, live vs. studio, and much more.

26 PICK, PLUCK, SLAP, AND TAP

Although nothing replaces a real player, virtual guitars and basses are surprisingly complex and comprehensive MIDI alternatives that offer a huge variety of sonic choices. We looked at eight such instruments from companies including Best Service, MusicLab, Impact Soundworks, Manytone, Native Instruments, and Spectrasonics.

38 COUNTDOWN TO YOUR ALBUM

After you're done mixing your album, there are plenty more decisions to be made before you actually release it. Here are 10 crucial tips regarding mastering, duplication, clearing rights, publicity lead time, and more, which will help make your next album as successful as possible.

REVIEWS

Photo by Dan Goldwasser

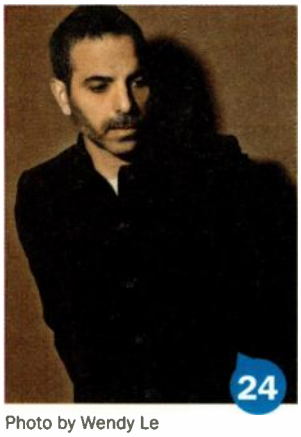


Photo by Wendy Le

COLUMNS

DEPARTMENTS

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FIRST TAKE

Ahoy, Gear Geeks

I don't think I'm going out on a limb by saying that for the great majority of recording musicians, gear is a big deal. Yes, we can sometimes focus too much on it, and we need to keep the "art" part of recording front and center, but gear not only helps us get our job done, it's also just plain fun. I don't know about you, but when I get a new piece of hardware or a plug-in, or a new instrument, I get almost the same feeling I used to get as a kid when opening presents at my birthday party.

So for all of you who are gear junkies like me, we are introducing yet another component of *EM*'s new-and-improved column lineup: "Geer Geek." Written by former *EM* senior editor Geary Yelton (his first name, though appropriate, is purely coincidental), this column is designed as an homage to classic equipment, software, and instruments. Each month, he'll look back (in text and photo) at a piece of gear that was consequential in some way to the evolution of music technology.

Photo by Marla Cohen

For this month's column (p. 16), the spotlight is on the New England Digital Synclavier. Although very expensive when it came out—definitely not a home-studio kind of device—the Synclavier was ahead of its time in the areas of sampling, sequencing, and the whole workstation concept. I'll leave the details to Geary, but give it a read. If you like gear, you're going to love this column.

The final piece to *EM*'s column lineup is "Inside Talk," in which we'll get insights and tips from recording artists, producers, and engineers about their work. This month, I talked to renowned producer, remixer, and recording artist Carmen Rizzo (p. 24). He just released his latest solo CD, *Looking Through Leaves*, and he talks about the songwriting, recording, and production process for the album, much of which was done on the road while he was touring with various acts or producing other albums.

And, of course, we have the cover story (p. 32). I was intrigued by The Glitch Mob when I heard that they liked to perform by triggering samples from JazzMutant Lemur controllers. It sounded like a pretty unusual approach. It turns out that for their current tour, it's a lot more complex than that. Each bandmember has several controllers (Lemurs, keyboards, pad controllers, and electronic drum controllers) at their station onstage. I was able to talk to them onstage after soundcheck, where they went through their live setups and explained how they execute their complicated show. I've posted a video of portions of that interview, intercut with recent live footage of the band performing at the Moog factory in Asheville, N.C. My thanks to Moog for providing that footage.

But the live part is only one aspect of The Glitch Mob's story; their recording approach is fascinating as well. Starting off by writing quick musical sketches in Steinberg Cubase, the band eventually builds up the sounds on their tracks with massive layering and processing. Many of their songs came in at upward of 100 tracks. They also have some pretty interesting things to say about how they mix and the way they use social media to connect with their fans.

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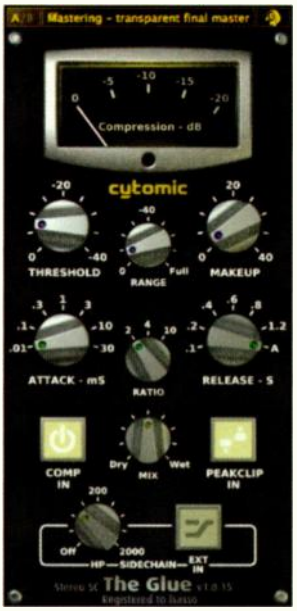
FRONT PANEL

DOWNLOAD OF THE MONTH

CYTOMIC THE GLUE

By Len Sasso

For me, dialing in good-sounding compression always involves a bit of luck. So a helpful batch of presets, easy A/B comparison, and several ways to avoid or mitigate over-compression are essentials. The Glue (Mac/Win, $99) is an AU, VST, and RTAS compressor plug-in from Australian circuit-modeling expert Andrew Simper of Cytomic (cytomic.com) that offers all three. The Glue models a cross between the circuitry in Solid State Logic's E and G Series bus compressors from the 4000 consoles. The controls and metering are kept simple to minimize tweaking and help concentrate your focus on the compressor's sound. For example, metering comprises a fast and accurate compression-amount needle; compression ratios are 2, 4, and 10; and the knee adjusts automatically from soft to hard as the ratio increases.



The Glue has three useful features not found on its hardware counterparts. Most notable is the Range knob, which dials back the maximum gain reduction. Its effect is evident on spiky transients when using long compressor attack times, and it differs noticeably from parallel compression as controlled by the Dry/Wet knob (see **Web Clip 1**). The third addition is a highpass filter in the detection circuitry, which is active whether compression is being triggered by the main input or an external (sidechain) input. This lets you reduce pumping when compressing signals with strong low-frequency content. Wave-shaping-based peak clipping is offered (recommended only for spiky transients), and you can toggle the compression off to more clearly hear the effect of peak clipping.

The Glue comes with 80 factory presets for tracking (drums, guitar, bass, keys, and vocals) and mastering. The plug-in holds A and B presets for quick comparisons and fail-safe tweaking. It sounds great, is easy to use, and won't take a big bite out of your CPU. ✱

OPTION-CLICK

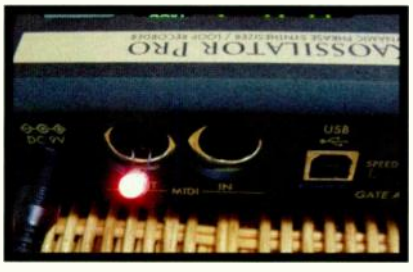


FIG. 1: With the MIDI jack in "smile" orientation, insert the cathode (short leg) of an LED in the second hole and the anode (long leg) in the fourth hole to make your playing shine. You can also identify the cathode by the flat spot on the LED's collar.

BRIGHT LIGHTS, BIG MIDI

Build a hardware MIDI data detector for $1.49

For my 30th "Option-Click" column (see them all at emusician.com), I thought I'd share one of my favorite MIDI hacks: the one-bulb data detector. Simply plug an LED into the second and fourth

HEAR EXAMPLES OF THE GLUE IN ACTION ✱ EMUSICIAN.COM/BONUS_MATERIAL

THIS MONTH'S SOUNDTRACK

By Mike Levine

This collection of releases contains a mix of styles, often within the albums themselves. From South Asian-influenced pop to neoclassical to bluesy R&B to electro-pop, there's lots of musical territory covered here. *

ROBERT RANDOLPH AND THE FAMILY BAND//

***WE WALK THIS ROAD* (WARNER BROS.)**

Aided by producer T Bone Burnett, this album comprises a riveting set of 20th-century American songs featuring the band's hard-driving sound and Randolph's Sacred-steel playing, which is often reminiscent of a slide guitar on steroids.

ÓLAFUR ARNALDS//

***...AND THEY HAVE ESCAPED THE WEIGHT OF DARKNESS* (ERASED TAPES RECORDS)**

A dreamy-sounding set of neoclassical, chamber-pop compositions from this Icelandic artist. The music is piano based with a large dose of small string-section sounds and the occasional drum set and bass (featuring a remotely recorded Tony Levin) thrown in.

KARTICK & GOTAM//

***BUSINESS CLASS REFUGEES* (EARTHSYNC)**

This Isreali duo mix traditional South Asian elements with a modern rhythm section on this intriguing world-music-meets-rock/pop release.

GROVESNOR//

***SOFT RETURN* (LO RECORDINGS)**

Hot Chip drummer Grovesnor (aka Rob Smoughton) offers up a tasty dose of R&B-tinged electro-pop that's crisp, melodic, and very catchy.

CLOTHESLINE REVIVAL//

***THEY CAME FROM SOMEWHERE* (PALEO MUSIC)**

Conrad Praetzel and Robert Powell return with a mélange of roots music—slide guitar, pedal steel, acoustic guitar, Charlie Musselwhite on harmonica, and more—mixed with processed beats and Praetzel's ethereal production. Cool stuff!

Robert Randolph and the Family Band photo by Danny Clinch. Ólafur Arnalds photo by Lisa Roze

holes in a MIDI out jack, and it will light up when the instrument transmits MIDI data. Actually, there's a 50-percent chance it will light up because LEDs are unidirectional. **Fig. 1** explains the necessary orientation.

High-intensity LEDs work best. You can buy them for $1.49 at RadioShack, but it's faster to cannibalize one of those ubiquitous keychain flashlights. For a more permanent installation, solder the LED into a MIDI plug—or even a plastic monster (see oreil.ly/MIDI-LED).

—DAVID BATTINO, BATMOSPHERE.COM

THIS MONTH ON EMUSICIAN.COM

VIDEO// THE GLITCH MOB

A mix of live-performance footage and interviews about the band's unique, controller-crazy stage show.

COMPOSER SPOTLIGHT// JASON GRAVES

Listen to exclusive clips from Graves' just-released composition to the *City of Heroes Going Rogue* videogame.

SCREENCAST VIDEOS// SONNOX RESTORE

Take a look inside this audio-restoration suite.

EM CAST// CARMEN RIZZO

Hear more of the interview featured in this month's "Inside Talk" column with the renowned producer, remixer, and recording artist.

WHAT'S NEW

By George Petersen

ABLETON PARTNERS
NEW INSTRUMENTS FOR LIVE

SUITE SELECTION

Now available through Ableton's web shop (ableton.com/partner-instruments; $39 to $99) is a new series of instruments custom-made for Live by Ableton's sound partners. These include sounds such as sampled grands, Balinese gamelan, EBowed guitar, boutique vintage synths, found objects, acoustic and electronic percussion, atmospheres, and soundscapes. All work with Suite 8, Live 8, or Live Intro, and most use Live's Rack format, with the eight Macro Controls carefully mapped to provide powerful, top-level control for immediate tweaking.

SNAZZY FX
PROCESSING MODULES

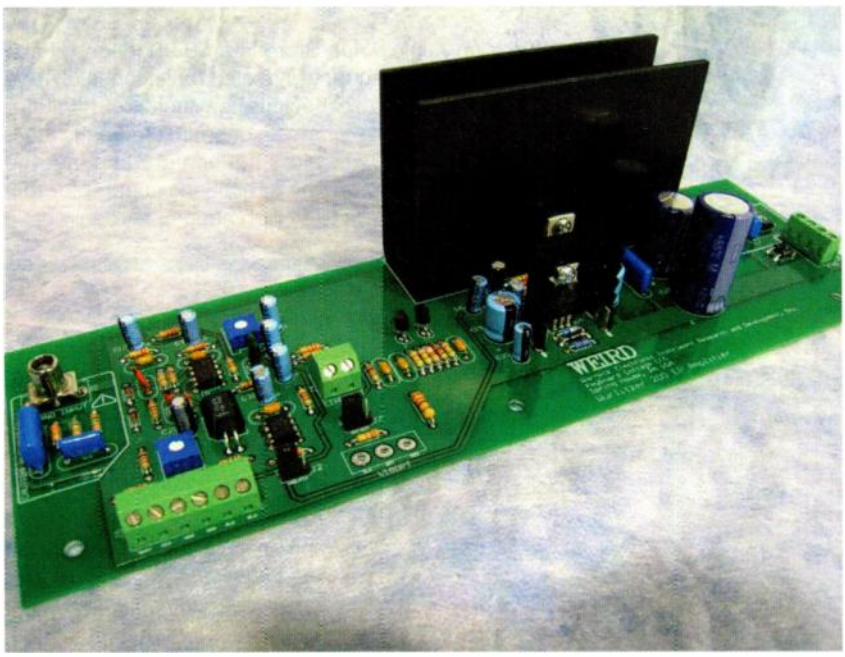
PUT THEM ON THE TABLE

Snazzy FX (snazzyfx.com) launches a new line of tabletop all-analog processing modules. The Wow and Flutter ($330) recreates the warbly sound of tape spinning out of control, but by tweaking the Threshold and Warp controls, it can provide subtle vibrato or wild pitch shifting, rubber band delays, and plastic portamentos. The Mini-Ark ($449) can precisely track a guitar input, add an octave above/below, and mix in the original with a distorted version. Add an infinite hold for droning. Add staccato, swells, Crazy Vibrato, Super Fuzz, or more. An array of CV outputs adds control of external synths or other Snazzy FX units. The Tracer City ($499) analog, multimode resonant filter offers textures from envelope-follower effects to filtered tremolo, or aggressive filter sweeps and subtle coloration to wild possibilities from its two modulation sources, and external CV or audio (FM) inputs.

ROLAND
TD-12KX V-DRUMS

BIGGER BANG BOOM!

Intended for live and studio use, Roland's (rolandus.com) TD-12KX V-Drums ($3,999) features larger kick and floor tom pads, and stronger hardware than Roland's TD-12SV kit. The included TD-12 COSM sound engine module sports 12 pad inputs and hundreds of onboard sounds. New V-Edit functions include mic placement options, bass drum beater selection, a hi-hat tambourine, a versatile sequencer, and a mix input jack for connecting MP3 or CD players. The set comes with five multilayer mesh-drum trigger pads, three 12-inch CY-12R/C V-Cymbals, and a VH-11 V-Hi-Hat.



WARNECK RESEARCH
WURLITZER UPGRADES

PIMP MY WURLY

Two new upgrades for classic Wurlitzer Model 200 electric pianos from Warneck Research/Keyboard Cottage (keyboardcottage.com) include the $379 replacement amplifier board, a drop-in/solder-free installation that reproduces the sound characteristics, EQ curve, and vibrato of the original, but without all of the noise. Also offered is the VariVib ($199) variable-speed vibrato upgrade that provides the original-style vibrato waveform but adds variable-speed control (approximately 1Hz to 15Hz) in a simple three-wire installation.

MCDSP
6030 ULTIMATE COMPRESSOR

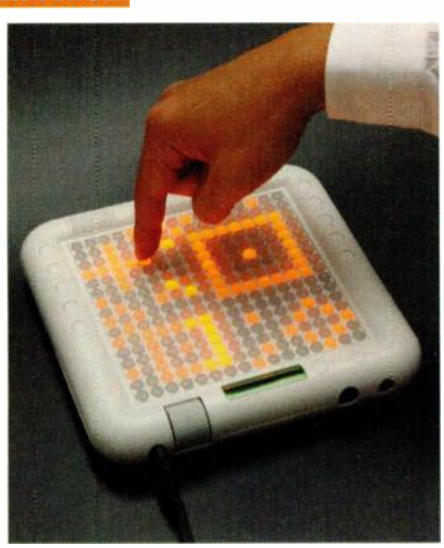
BIG SQUEEZE

Designed for plug-in fans who want access to lots of vintage sounds, McDSP's (mcdsp.com) 6030 Ultimate Compressor ($295) provides a selection of 10 different dynamics processors, from smooth tube emulations to aggressive solid-state designs. The software supports TDM, RTAS, and AU plug-in formats. Expected to ship sometime this summer, it will be included in McDSP's Emerald Pack (upgrades are available for existing customers) and will also be available separately.

YAMAHA
TENORI-ON O

MUSICAL FUN, LOWER PRICE

The new Tenori-on O from Yamaha (yamaha.com) provides the same ease of music-making as the original, but by removing a few frills—no battery operation and its LEDs are only visible from one side of the unit—the new version has a $699 street price. Its 16x16 matrix of 256 orange LED switches provide a visual image of the structure of the music. When touched, the LEDs create intuitive compositions, even without specialized knowledge of music.



MARANTZ
PMD661

HIGH-RES, SMALL SIZE

A stereo digital PCM/MP3 pro recorder in a handheld package, the PMD661 ($599) from Marantz (d-mpro.com) offers a small 6.5x3.7x1.4-inch footprint, single-handed operation and records 44.1kHz/48kHz/96kHz, 16-bit/24-bit audio to SD cards (up to 32GB). Features include switchable balanced mic/line XLR inputs, a S/PDIF digital input, unbalanced line outs on RCAs, and a secondary unbalanced line in on a mini-jack connector. A USB 2.0 port can transfer files to a PC or Mac DAW, and included Mark Editor software provides basic editing functions.

TC ELECTRONIC POLYTUNE IPHONE APP

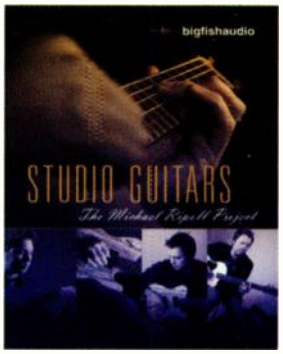
STAYIN' IN TUNE

Now available from Apple's App Store is a $9.99 iPhone/iPad/iPod touch version of TC Electronic's (tcelectronic.com) PolyTune guitar tuner, which allows for checking the tuning of all guitar strings simultaneously. It also offers an onboard chromatic tuner with ±0.5-cent accuracy. Used with an iPhone or an iPad, the internal mic provides instant tuning of acoustic guitars; for tuning electric guitars, a mini-jack-to-¼-inch adapter is required.

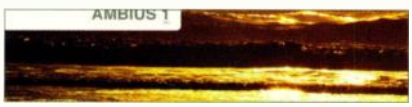
SOUND ADVICE

By Len Sasso

BIG FISH AUDIO
STUDIO GUITARS: THE MICHAEL RIPOLL PROJECT



In Studio Guitars: The Michael Ripoll Project ($99.95, DVD), Big Fish Audio (bigfishaudio.com) strives to deliver a comprehensive collection of guitar loops covering seven essential styles: acoustic guitar, blues, country, funk, jazz, pop, and rock (see **Web Clip 1**). Each style has its own folder with subfolders categorized by key and tempo. The 1.85GB, 24-bit, 44.1kHz library comprises 1,059 loops delivered in Acidized WAV, Apple Loops, and REX2 format, along with an installer for Spectrasonics' Stylus RMX. All loops are composed/performed by studio guitarist Michael Ripoll, whose professional credits span the covered styles and include Carrie Underwood, Mary J. Blige, and Stevie Wonder.



TONEHAMMER
AMBIUS 1: TRANSMISSIONS

If dark, cryptic, and unnatural describes your next project, you'll like Ambius 1: Transmissions ($79, download). Tonehammer's (tonehammer.com) 2.5GB library includes raw samples and sampled instruments for Native Instruments Kontakt 3 and later. The Kontakt presets fall into three categories. Tuned Instruments deliver playable leads and pads that start with sampled acoustic instruments and add lots of effects. Melodic Ambiences are musical and organic-sounding, but are ethereal and better suited for background washes. Horror Ambiences are meant to be disturbing—the root canal, for example, begins with a recording of the real thing.

Each of the Konakt instruments has three controls; one is mapped to the MIDI mod wheel to manipulate filter cutoff, control the send amount to an ambience effect, or crossfade between different sounds. Presets with *pulse* in their name are suitable for percussion. The music that naturally evolves from this library is a bit disturbing (see **Web Clip 2**).

RENEGADE MEDIA GROUP
JOSH HARRIS DANCE VOL. 1 BLAST VOL. 1

A collaboration of New York producers Josh Harris and Bobbybass, Renegade Media Group (renegademediagroup.com) delivers useful sound tools to producers, remixers, and DJs. Their first two releases—Josh Harris Dance Volume 1 and Blast: Modern Urban Production Tools Volume 1—are designed for dance and hip-hop genres, respectively. Both libraries are $79.99 downloads delivered as Acidized WAV, REX2, and Apple Loops samples and as a Reason ReFill. Dance comprises 15 construction kits in a variety of keys with tempos in the mid-120s to mid-130s. You'll also find ancillary loops and one-shots of drums, pitched instruments, and sound effects, many of which have matching MIDI files. Blast has 13 construction kits in the neighborhood of 100bpm, along with an 87-piece percussion kit and additional drum and music loops. Reflecting a cohesive design philosophy, the two libraries even mix and match well (see **Web Clip 3**).

NEW ATLANTIS AUDIO
LOST & FOUND: NEW YORK CITY NIGHTSCAPES

Lost & Found: New York City Nightscapes ($19.99, download) is the latest in New Atlantis Audio's (newatlantisaudio.com) collection of atmospheric, found-sound ReFills for Propellerhead Reason. It is the culmination of six years of nighttime field recording capturing a diverse collection of soundscapes, including tourist attractions, city works, traffic, street vendors, and so on. These have been combined, mangled, processed, and resynthesized, and then sliced in REX2 files for use in Reason instruments. In addition to the REX2 files, you'll find Redrum kits and Combinators holding playable instruments, layered scenes that combine beats, ambiences, and music loops, and toolkits of dialog and Foley sounds. Weave those into your own productions or use them to create evolving cityscapes (see **Web Clip 4**). ✱

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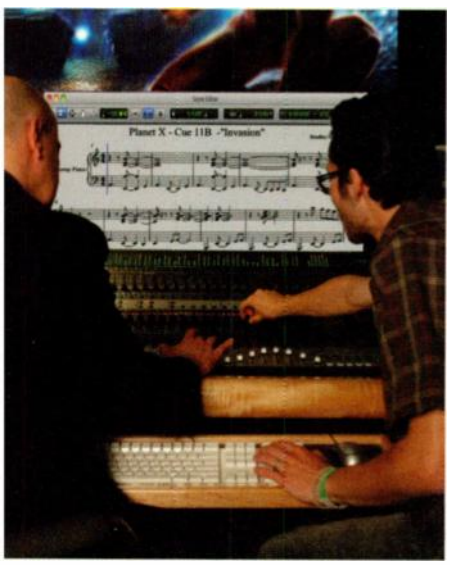

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By Geary Yelton

The Synclavier II was the first instrument to combine FM and additive synthesis, audio sampling, hard-disk recording, 200-track sequencing, and many other technologies that synthesists later took for granted.

NED Synclavier II

The mother of computer-based synths lives on

The all-digital New England Digital (NED) Synclavier II first appeared in 1979 and encompassed many of the technologies synthesists would come to rely on a decade later. By 1983, when synth manufacturers such as Roland and Sequential launched MIDI, and Yamaha unveiled the DX7, you could already buy a Synclavier with FM and additive synthesis, audio sampling and resynthesis, multitrack sequencing, hard-disk recording, graphic waveform analysis, music-notation printing, and a velocity-sensitive keyboard. Most of those technologies gradually trickled down from the Synclavier and its Australian competitor, the Fairlight CMI, to the instruments and software that synthesists use today.

The futuristic Synclavier II was priced to match its sky-high capabilities. A full-blown system was financially beyond the reach of practically everyone but rock stars, universities, and commercial recording studios. Although a 1981 price list from NED said an 8-voice instrument with enough memory for 1,000 sequencer events sold for $13,750, a more typical system could easily cost more than 10 times as much, and at least one system reportedly sold for half-a-million dollars.

With 132 illuminated buttons and a single control knob on the front panel, every Synclavier was custom-built by hand using the finest components. Patches, sound files, and sequences were stored on 5.25-inch diskettes, Winchester hard drives, and eventually, magneto-optical discs. Most of the expense came from options and upgrades, which by 1984 included 128-voice polyphony, 50kHz mono sampling and audio recording, and a 200-track sequencer (called a *digital memory recorder*).

THE ALPHA AND OMEGA

The Synclavier was conceived in the mid-'70s when pioneering composer Jon Appleton founded NED with computer developers Cameron Jones and Sydney Alonzo at New Hampshire's Dartmouth College. NED designed its own operating system and the 16-bit ABLE computer, which had such impressive throughput that NASA installed them on spacecraft to handle large amounts of data. The Synclavier used a computer terminal with a rackmount CPU rather than a PC.

The Synclavier stayed in the public eye and ears throughout the '80s and beyond. It made its network television debut in a 1986 episode of *The Cosby Show*, when Stevie Wonder sampled the Huxtables during their visit to a studio. It was featured prominently on albums by Michael Jackson (*Thriller*), Sting (*The Dream of the Blue Turtles*), Paul Simon (*Hearts and Bones*), George Michael (*Faith*), Frank Zappa (*Jazz From Hell*), and others too numerous to mention. And it was also a mainstay in dozens of movie soundtracks and television commercials.

All told, NED sold more than 1,200 Synclaviers worldwide. By the time the company closed its doors in June 1992, it had released several Synclavier models, including tapeless studios in the late '80s that were adored by post-production professionals. Used Synclaviers are still a hot commodity, thanks to their military-grade construction and ongoing support by DEMAS (Digital Equipment Maintenance and Support; synclavier.com) and Synclavier European Services (500sound.com). Both companies repair, rebuild, and upgrade old Synclaviers, and they sell Mac OS X software that emulates the original computer terminal and software, ensuring the system's viability in an age of inexpensive alternatives. ✱

After nearly a decade as a full-time EM *editor, Geary Yelton has a new title: contributing editor. He lives in Asheville, N.C.*

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NATIVE INSTRUMENTS

THE FUTURE OF SOUND

By Kristi Kates

Home base: Reykjavik, Iceland
Primary software: Cockos Reaper
Band philosophy: A low-pressure atmosphere makes for great lo-fi music.
Website: seabearia.com

Photo by Lilja Birgisdóttir

Seabear, from left: Halldór (Dóri) Ragnarsson, Örn Ingi Ágústsson, Ingibjörg Birgisdóttir, Guðbjörg Hlín Guðmundsdóttir, Sóley Stefánsdóttir, Sindri Már Sigfússon, and Kjartan Bragi Bjarnason.

Home Fires Burning

Seabear fights Iceland's chill with *We Built a Fire*

"I've always believed that imagination is more important than gear or money," says Sindri Már Sigfússon of Seabear, an experimental indie folk band from Reykjavik, Iceland. On their newest release, *We Built a Fire* (Morr Music), Seabear achieved monumental-sounding music using minimal equipment. Along the way, the band itself evolved from Sigfússon's one-man show to its current seven-person lineup. "I needed people to play with me in concerts," Sigfússon explains. "I think it's fun to play in a big band like that; the songs turn out completely different from the ones I make on my own."

Sigfússon says that some of the songs on *We Built a Fire* were expanded from a germ of an idea, while others were completely made up from scratch in the studio. He adds, "We'd been playing a few of the songs live for a while, too, so those took shape on tour."

Sigfússon recorded tracks in his basement studio and claims that his equipment is "amateur at best," with an assortment of instruments forming the roots of Seabear's eclectic studio approach. "I've been collecting things that make sounds for years now, and I have a pretty big collection—guitars, synths, organs, a pianette, a drum kit, autoharp, banjo, ukelele, and all sorts of percussion," he says.

To lend an extra richness to the main vocals, Sigfússon borrowed an AEA R84 ribbon mic, although for everyday use he relies on the classics—and a trick or two. "I really like that AEA mic, but I usually use a Shure SM57 or 58, a RODE NT1-A, or some cheap crappy mic. For this album, I recorded some of the vocals through my Peavey Delta Blues [tube] amp, and for some of the group singing, we tried singing all together really far away from the mic. I didn't use a lot of effects on the vocals, just a little reverb."

For tracking, Sigfússon used Cockos' Reaper digital audio sequencer. "I used [Steinberg] Cubase SX for a few years, but recently switched to Reaper, which I like a lot," he notes. He routed tracks through an M-Audio DMP3 preamp and Focusrite Saffire FireWire audio interface. Drums were recorded ahead of time at Sundlaugin ("The Swimming Pool") Studio in Mosfellsbær, Iceland. "It really was a swimming pool years ago," Sigfússon says.

Sigfússon made good use of that studio for the track "Cold Summer," which features the contradictory notion of a spacious and warm—yet eminently lonely sounding—piano (see **Web Clip 1**). "We used Sundlaugin's grand piano, and it's a tiny bit out of tune," Sigfússon explains. "It was recorded in a big room, so it's all natural reverb and room sound. The horns were real and were played in the same room as we recorded the piano. I really like the feeling of that song." On "Lion Face Boy" (see **Web Clip 2**), Alex Somers (of the Reykjavik-based duo Jónsi and Alex) chipped in to assist with strings and accordion parts, which were recorded off-site in Somers' living room.

Sessions for *We Built a Fire* were scattered over the course of 12 months, with a good time had by all. "It didn't take long to do the actual recording," Sigfússon says. "It took longer to get everyone together! But we had a lot of fun. I find things go best in the studio when people are in a good mood." *

By Sarah Benzuly

Jason Graves during a string recording session at Skywalker Sound (Marin County, Calif.).

Photo by Dan Goldwasser

Summing the Strings

Jason Graves' symphonic approach to composing for videogames

In the mid-'90s, composer Jason Graves got his start in L.A. working on reality television, movie trailers, ad spots, and more. He gained valuable experience in working on tight deadlines, and he made a name for himself in the area of symphonic scoring. But he began to feel creatively trapped. So in 1998, he moved back to his hometown of Raleigh, N.C., to break into the indie film world. An acquaintance familiar with his orchestral work needed help on a videogame, *King Arthur* (Konami, Krome Studios, 2004), that required 30 minutes of original music. "The creative freedom I was looking for was handed to me on a plate," Graves says. "After that first game, I started thinking, 'I want to do music for games,' and it just took off."

A few years back, there were limitations on how much space in games was allotted to audio tracks. Is that still the case?

The nice thing about music is that it still takes up a lot less space than graphics. You can compress the music down while keeping the overall quality. I'd say the biggest limitation is the developer, depending on how much they're willing to invest in technology to have the music play back in the proper way. In a lot of games, the music starts and stops, and that's pretty much it. With the implementation itself, from a technical standpoint, there really isn't much of a limitation in terms of what the music can do or what I end up being asked to compose. Some games have four or five or even six different stems of music streaming in real time at the same time during the game, and the game engine is mixing them up and down.

Are you creating multiple stems based on game play?

Yes. Either I'm composing one big piece of music that gets deconstructed into stems, and then the developer can say, "This one track that just has a synth pad and a quiet drum playing, I'll use that for ambient exploring in this area." The other end of the spectrum is they ask for four layers of music that slowly build up in tension or something like that. In the end, I'm responsible for creating music that can be placed anywhere and in different combinations. The more fluidly you can switch between those different stems, the better game-play experience.

With so many different possibilities of game-play, are you scoring to picture, or do you have a mental image of what the game is and go from there?

Eighty percent of the game music, I get a walk-through, and they tell me, "We need music here, here, and here." The other 20 percent is usually an in-game event, where the timing is never going to change. They both have their own challenges and are fun in their own ways. I love the film and television aspect of scoring to picture and having these hit points handed to you. You know the music has to react in a certain way. The nice thing about in-game music is that there are no hit points; it's literally, "We need two minutes of ambient music, and you can do whatever you want."

Did you have a professional studio designer come in for your home studio?

A friend of mine recommended Wes Lachot. The original reason I was interested in working with Wes is that he lives 30 miles from my house. I wanted to work with somebody I could meet with face-to-face. The fact that he designs world-class recording studios was the reason I hired him. I also had a chance to go to some of his other studios with him and listen to the room, listen to the speakers he was recommending. His

control rooms are known for their really wide sweet spots and flat sound. He's so passionate, too. That's the kind of guy I want to work with.

What speakers did he recommend?

Dynaudio M3As with Bryston amps and crossovers. Wes loves the combination of these speakers with the Bryston crossovers and amps. He's custom-building the acoustic treatment for the room around that particular combo.

Did you install a console?

I transitioned a couple years ago from having an external mixing board and lots of outboard effects to doing almost everything in the box now, which is great. For me, it was a matter of being able to recall everything at a moment's notice. Plus, with really good converters and the emulation software available, it really does make a difference from where it was five years ago.

I've got the Apogee Symphony System with the AD/DAX converters and I also have an SPL MixDream analog summing mixer. So everything that I'm recording and playing gets converted back to analog, warmed up, summed together and put back into the computer. It's the best of both worlds: You have the flexibility of digital but you still have the sound of the analog world.

What DAWs do you like to work with?

I use [MOTU] Digital Performer mostly when I'm composing for orchestra. When I'm doing techno or pop for a commercial, then I'm usually in [Apple] Logic. If I'm dealing with live recordings, then I'm posting in [Avid] Pro Tools. [Graves uses the Sibelius notation program.]

What is it about these platforms?

With orchestra, with real detailed composition—lots of lines, lots of massaging continuous controller data, trying to make the orchestra in a computer sound like a real orchestra—for me you can't beat Digital Performer; it's just intuitive and I've been using it for 20 years.

Logic has such a strong pop background with its preset templates, virtual instruments, drum machines, and synths, it just seems naturally intuitive for that style. And then Pro Tools, if you're recording anything multitrack—especially in these big studios, like AIR Studios or Skywalker Sound—they're always recording in Pro Tools. It's easier for me to open it up in that and use the same settings that they have. I can integrate it back into my system without too much hassle.

All three platforms are really capable within their own rights; they have so many options. It's just about figuring out which ones you want to use and which parts of the software makes you a stronger composer or arranger or mixing engineer.

Most of your work is orchestral in nature. Are you recording live orchestras or starting with samples?

Even if the end result is a live orchestral recording, the score gets mocked up in the world of MIDI using orchestral samples. One of the things I've been spending a lot of time on the past few years is my own orchestral sample sessions.

Graves' latest videogame adventure: *City of Heroes Going Rogue*

I'll record my own brass or woodwind or strings, and build custom instruments in [Native Instruments] Kontakt, basically filling in the holes of the commercially available libraries and hopefully getting a more unique sound as a result. There are a lot of projects that don't have the budget for a live orchestra, so it's essential to have the flexibility my ow custom sample library affords. I can offer clients something that sounds relatively close to a live sound but they don't have to worry about paying to hire a huge orchestra. And a lot of that custom sample work isn't 60 players on a giant scoring stage. I do a majority of it locally with a few select woodwind and brass players.

For the bigger projects, we know going into it that we're recording live orchestra, so I just swap things out: All the MIDI parts get muted and we use live players.

Speaking of orchestral work, your most recent game project, *City of Heroes Going Rogue* (NCsoft, Paragon Studios, 2010), is mainly strings. How did you get involved in this project?

The audio director, Adam Kay, and I have worked together on a couple of other games and we always have a great time. This is an expansion; it's a MMORPG [massively multiplayer online role-playing game]. There was a lot of music in there that they wanted to update and bring into the more cinematic realm. I think that's the main reason why Adam came to me. It was all samples—no orchestra budget—but I used a lot of my custom samples and played a lot of percussion on it. As usual, I started with the main theme; I'm a thematic guy. I was able to take the theme and incorporate it into different parts of the game. There are four or five areas in the game you travel to, so we tried to give each of those areas its own sound, harmonically speaking or with instrumentation.

I was asked to compose a piece of music that would tie in all of our thematic references, our harmonic references, and instruments, and we could extrapolate the rest of the music for the game out of this main theme. I did a 4-minute piece of music that develops and states the theme in a couple different ways, because the whole point of the game is you can be one of the good guys and then you can switch over and be with the bad guys, and switch back. So there was this concept of choice and I was trying to figure out how to musically explain that: There's a lot of musical ambiguity in how the piece ends; it's up in the air. But that's what is great about it because it is something different and that's what always attracts me to a new gig. ✱

By Jason Feehan and Randy Chertkow

FIG. 1: You can use your blog's syndication feature to feed content to your pages on sites such as ReverbNation, MySpace, and Facebook.

Syndicate Yourself

How to use your blog to be everywhere at once

Considering that the first thing that people do when they learn about something new is Google it, in today's music world, if you don't exist on the Web, you don't exist at all for a large number of fans.

Of course, all artists should have their own website. But to make an impact, you need more than just one hit on a search. Fortunately, musicians can leverage the large number of free sites and services that are available to put up their music, such as MySpace, Facebook, ReverbNation, Eventful, and Last.FM. Unless you have serious problems with the user agreement (and yes, you should read them; not all of them are friendly to musicians), these are great places to put yourself and your music where there's already an audience. Even better, beyond giving fans a new place to connect with you and hear your music, each web presence that links to your website will improve your site's page rank with search engines.

If you have many web presences, it's time-consuming to keep them all up to date. When you're doing it yourself, you don't want to spend time copying and pasting content you post at one site to another. And yet you don't want to skip this step because you'll likely end up with fans at one site that don't necessarily follow you at another. The good news is that you don't have to work as hard to keep them all in sync if you have a blog.

Blogs have a special ability, called syndication, which nearly every music web presence out there can pick up. Your blog can feed your other sites automatically. It's the perfect situation: You get to write something once and automatically update all of your web presences.

If you're not writing a blog yet, don't be surprised if your website already has a built-in blog built that you can start using. Otherwise, there are many fine blogging sites such as Blogger, Wordpress, and ReverbNation (see **Fig. 1**). Once you have your blog, the first thing you'll want to locate is your blog's feed. Make sure that you get the feed address rather than the address of your website itself, as many of the web presences will want the actual feed address.

Once you have your blog's feed, head to each web presence separately and link your blog. Each site will have slightly different instructions. For example, to add your blog to ReverbNation, click "My Profile," then "Manage Your Blog Preferences," and then "I Would Like To Show A Blog I Maintain On Another Site" to enter your blog's feed address. On Last.FM, you'll need to sign up as a label where you can manage your feeds. For Facebook, you'll need to create a band fan page and then use a Facebook application such as Facebook Notes to pull your blog's feed. If you run into any trouble, search the site's Help function, and you'll get the hang of it pretty quickly. And while this may sound like work, your time spent is worth it: For every five to 10 minutes you spend adding your feed to a new site, you'll save hours of copying and pasting to keep it updated.

Most feeds only grab the title and the first few words of any post you make. So it's best to make your blog titles and opening sentences interesting enough to readers that they'll click on it and visit your site. But from there, there's no limit to the number of sites you can link to the same feed. Next time fans search for you, you'll be everywhere they are. ✱

Randy Chertkow and Jason Feehan are authors of The Indie Band Survival Guide: The Complete Manual for the Do-It-Yourself Musician *and* The D.I.Y. Music Manual, *and founders of the open and free musician resource IndieGuide.com.*

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By Mike Levine

Photo by Marc Goldstein

Carmen Rizzo recently released his latest solo album, *Looking Through Leaves*.

Planes, Trains, and Hotel Rooms

Carmen Rizzo fits in recording his new album around his busy production and touring schedule

As an in-demand producer, remixer, and musician, Carmen Rizzo doesn't have a ton of time left in his schedule for working on his solo albums. But by taking a laptop-based setup with him on the road, Rizzo can work in his down time between shows and sessions. That's how he was able to accomplish much of the songwriting and production for his latest album, *Looking Through Leaves* (Electrofone, 2010). On this album, his third solo effort, Rizzo intentionally steered clear of the world-music influences that filter through a lot of his work and tried to go for a purer electronic sound.

When he's off the road, the two-time Grammy winner makes his professional home in a well-appointed project studio (see **Fig. 1**), which is located in a commercial building in downtown L.A. During his career, he's worked with a diverse group of artists including Seal, BT, Coldplay, and Ryuichi Sakamoto, to name a few. I had a chance to speak with Rizzo recently about his new solo release and his production techniques and gear.

The new album, *Looking Through Leaves*, sounds great. What was your overall plan for this record, musically?

To just do something that I don't always get a chance to do on most records. I'm fortunate that people hire me for my style—for better or for worse. But when you do an artist record, there are no boundaries and you can really express yourself the way you want. And when I write music and do records, it sort of is dark and kind of goes to the heart or the soul, and this record kind of naturally came out that way, where it was a little darker than I expected.

Tell me about your process when doing a solo album. What's your workflow?

I'm usually working on other people's albums, so it's difficult for me to kind of stop working, and say, "I'm going to write or record my own album." So what I often do is, in between other projects, I have a little window, and as I find inspiration [I write the material]. And so that's why this record was written mainly on planes and trains and in hotel rooms over the whole world.

Is Ableton Live your main DAW?

No, it's actually [Avid] Pro Tools. I sequence MIDI; I'm probably one of the few people who actually use [Pro Tools] for MIDI. [Laughs] I do everything in Pro Tools, but Ableton is my second DAW, and I find that I do a lot of songwriting in Ableton. And, of course, I perform with Ableton. It's becoming kind of a close second.

So when you've worked on a bunch of things in Live, and then you're coming back to your Pro Tools setup, do you just ReWire them together and get the sounds through that way or do you bounce out stems?

Both. I either ReWire it or I freeze it. Because when you ReWire, you can't use VST, and I have a lot of VST instruments so I have to print that stuff and then send it over. That's the one drag about ReWire.

You have a Pro Tools HD setup in your L.A. studio, I assume.

I have an HD2 with the Universal Audio cards, the new ones [UAD-2], and a D-Command. I forget the name of it, it's like the mini-ICON.

So you like working with a console?

Absolutely. I can't understand how people make records with just a mouse. I realize [why you'd do it] if you're disabled or on the road, but not for making serious records. I need to use a control surface, whether it's a Euphonix or a D-Command of some kind. It makes no sense to me.

Because of the moving fader part of it?
Yeah, it's faders and knobs. I mean nowadays, all of us, I think all of us, are mixing as we go. Nothing is a demo, and for me, when I start to create something, it's a finished product whenever I start it.

Right, most people I speak to say the same thing.
You're mixing as you go, and I like to use the console as an instrument. And maybe I'm showing my age because I was kind of schooled that way, but I just think that you treat it much differently when you have knobs and faders as opposed to only a mouse. And maybe that's just a technique, but...

I could see if you have an old Neve or SSL or something that has a sound that it's imparting on your audio, but something like an ICON is more neutral and it's all digital. So is it the physical motion of moving the faders and knobs that you like?
It's the physical motion, yes. It's not like, "Oh, running it through this Neve makes me smile." It's more like, "I need to push that fader to a level where I feel what I'm doing."

A lot of people are drawing in automation curves to deal with level tweaking and have no mixer at all.
Well, I think that's fine; I think that's wonderful that we can all draw fades in. But I just think that something about having a control surface—whether or not it's digitally controlled—means something as a performance. And I think that that's something about performing—and maybe this is parlaying it to a live show more than in the studio, but not really. Everything can be treated as a performance, in a studio or onstage, and not all instruments are musical. What I mean by that is, the same thing with a cutoff filter of a synth—where you're physically moving it—is often no different than playing a chord. And I just think that sometimes people forget about that, especially with technology, where you can automate everything and you can hit Play and it does something. You know, stage, of course, is different than in the studio, but there's something about a control surface that I need and that I like when I make my records.

So tell me about some of the synths that you're using on the album.
I should point out that my writing partner, Jamie Muhoberac, a wonderful musician and dear friend, worked together with me in getting sounds, and all those sounds were very well-crafted and took time. But I would say my favorite synths that I used on the record were the Rod Papen stuff.

Which ones? Do you use Blue?
I used Predator an awful lot, I used SubBoomBass, and Blue a little bit. But Predator was probably the most-used synth on my record. And probably Alchemy by Camel Audio; I love their stuff, as well as the Cakewalk stuff: Rapture and Dimension Pro, which are the two most under-rated synths out there.

Yeah, I've used them; they're quite good. There were several songs with synth sounds that sounded arpeggiated.
They're actually played.

Really?
Yeah. [Laughs] By Jamie, actually. On "Strada," for instance, I had this idea and I did a rough arpeggiator part myself, and then I had Jamie do it much, much better. I think that particular one was two synths together—I think it was [GForce] Minimonsta and Predator, and kind of filtered with [McDSP] FilterBank stuff. I do a lot of processing, and this was interesting because most of the records have a lot of Native Instruments stuff—you know, of course, all their stuff's amazing—but I would say out of all their products, Machine and Battery 3 were used the most. On the other records, I used a lot of Reaktor and other stuff, but I didn't use as much on this one. I have to say Rob Papen [synths] led the way on this record. I just love his stuff, and he's such a sweet guy, and he makes such great products—as well as effects now; he's making a reverb and he's coming out with a delay. His reverb is unbelievable.

Thanks for taking time out to talk to *EM*.
No, thank you, Mike. And I have to say, on the record, your magazine is by far my favorite out of all the magazines that are still left. Some don't even get read in my household [laughs], but yours when it comes in is the one I pick up immediately. And honestly, it really is the best one out there. ✱

FIG. 1: A look inside the control room in Rizzo's studio.

Pick, Pluck, Slap, and Tap

EM looks at eight virtual guitar and bass products

By Marty Cutler

Mention *guitar* or *bass*, and no two people will conjure up exactly the same image. There are so many ways to play these instruments and so many different sounds that they are virtually impossible to pigeonhole.

Guitar and bass have enormous sonic breadth and depth, and it's doubtful that any one musician can invoke Doc Watson or David Torn (to give two polar examples) from a single instrument. That's especially significant if you are a solo composer with a home studio and limited resources. With that in mind, I've compiled a representative roundup of virtual guitars and basses from sample libraries, dedicated sample players, and physically modeled software, limiting my choices to dedicated guitar and/or bass products, and not including those packages that also cover other instruments like keyboards and drums. One or two instruments may stretch your definition of guitar and bass a bit, but they effectively demonstrate the lengths to which sound designers can go to create expression and realism.

FIG. 1: Best Service Chris Hein Bass affords control over a large number of sonic artifacts. The notes highlighted in pink on the virtual keyboard are keyswitches used to activate different articulations.

BEST SERVICE
Chris Hein Bass

Weighing in at roughly 13GB, Chris Hein Bass from Best Service (bestservice.de) focuses on two electric basses and an upright, but there's more variety than you might think. You get a Musicman Stingray slapped and played with a pick, a Le Fay Remington Steele fretless bass played finger-style, and an 1870-vintage Meister Neuner upright acoustic bass strung with gut, nylon, or steel strings. Instruments are further divided into patches that focus on (for instance) pickup choices, playing distance between bridge and neck, and then subdivided into lighter-load patches with fewer sampled articulations.

At first, the control panel can appear busy and daunting, but the panel is simply there for re-assigning keyswitch and modulation destinations; most real-time controls appear as keyswitches below the normal range of the instrument (see Fig. 1).

My favorite of the electric instruments was the picked bass, whose aggressive rock 'n' roll tone was outstanding without the need for excessive keyswitches and controllers. Stronger velocities bring in glisses and the same pulled-bass tone, which was much more effective in this context. For some reason, the all-in-one patch (which contains all of the articulations) defaults to monophonic, legato behavior. That setup makes for very convincing hammer-on and pull-off techniques, but I could find no mention of this in the documentation. I counted roughly 60 CC messages for real-time modification of the instrument's behavior—many of them with no explanation and unclear nomenclature. (What are Atmosphere Level and Note Off Density?) Fortunately, most of what you'll need to pull of a convincing bass line is under your fingers, and you can assign a few extras in the instrument's control panel.

The thicker tone of the Hein fretless differs from the characteristically woody Fender Jazz bass that was part of Jaco Pastorius signature sound. The velocity switching moves abruptly to a comparatively aggressive, pulled-string tone at higher velocities—owing more to Larry Graham than Jaco.

Among the acoustic bass instruments, the steel-strung acoustic bass is a winner with a fuller, deeper tone than the gut- or nylon-strung counterparts, which tend to sound thin by comparison. Apparently, the modulation wheel moves the samples between a pickup and a mic tone. With the mod wheel moved all the way back, the sampled saturation effect moves too far into overkill for my taste, but you can back it off for a more subtle, overdriven sound (see **Web Clip 1**). Overall, Chris Hein Bass is a solid collection of instruments, but it needs better documentation.

IMPACT SOUNDWORKS
Shreddage

With a tremendously accurate and musical set of sitar and other instruments under Impact Soundworks' (impactsoundworks.com) belt, Shreddage is the relatively new company's first virtual guitar, and it's equally impressive. Shreddage is promoted as a "metal" guitar suitable for rhythm parts, but it can do well in a variety of rock and R&B arrangements, and although its highest note (fifth fret of the high E string) doesn't venture into stratospheric territory, it could probably do quite well in some lead-instrument situations.

The target software instrument is Native Instruments Kontakt (Version 2 or later), but the samples are unlocked, so pulling the audio files into any sampler is fair game if you want to do the programming. The samples are clean, with no effects or scripting deployed in Kontakt; instead, programmer Andrew Aversa includes some tasty patches for AmpliTube, Guitar Rig, POD Farm, TH1, and others.

Multis compose the full instrument rather than single patches crammed with all of the articulations and unwieldy set of keyswitches. Instead, clever round-robin programming coupled with velocity switching brings the instrument to life. Consequently, playing the instrument is a musical and direct process with little need for offline controller editing.

Shreddage's strengths as a rhythm guitar become more evident as you play chords from the left-side keygroup. Single notes are in the right group (see Fig. 2). In general, light velocities trigger palm-muted notes, with stronger velocities triggering increasingly sustained samples. Eight alternate samples for every note help eliminate the typewriter effect common in single-sample notes. Successive keys alternate between up- and down-pick strokes.

The set includes patches ranging from simpler, limited articulations to double-tracking setups to achieve huge, wide-screen guitar sounds. Impact Soundworks Shreddage is a steal.

FIG. 2: Here's a multi in Impact Soundworks Shreddage. Simple power chords are layered on the left, shaded part of the keyboard, and single notes are laid out on the right.

MANYTONE MUSIC
Manybass

A generous complement of synthesis parameters, amp and cabinet simulators, and multiple effects make Manytone (manytone.com) Manybass an acoustic and electric bass collection with plenty of room for customizing sounds (see Fig. 3). Patches include instruments played from different picking-hand positions and techniques, and multiple pickup settings so it's very easy to emulate, for example, changes from fingerstyle to tapping to slapping.

Four slots can load variation patches, and you switch between them with MIDI note-numbers or Control-Change messages (see Web Clip 2). Only one slot can be active at a time, which precludes layered patches, multitimbral, and velocity-switch setups. Many patches use velocity layers, revealing string rattle and other artifacts when played more forcefully. Don't neglect to play above and below the conventional range of the instrument: The GrowlBass patch uses staccato bass samples above its highest Bb, and natural harmonics and pickup taps below its low B.

FIG. 3: The well-organized user interface of Manytone Manybass invites customization and experimentation.

Useful and attentive programming is in abundance. For example, aftertouch-induced vibrato is subtle and quite natural sounding. Natty Dread is a warm, muted, and bottom-heavy reggae bass, and Punk Jazz nails the close-to-the-bridge nasal tone that opens the Weather Report tune of the same name. Manybass is a tremendously versatile and solid set of instruments.

Manyguitar 1.04

Probably the most versatile and imaginative collection of guitars I've surveyed here, Manyguitar acoustic and electric guitar emulations range from mellow to jangly, and all points in between: Strats; Teles; and 6- and 12-string acoustics, both processed and pure. Similar to Manybass, a generous selection of patches use velocity-enabled alternations to avoid static, repetitive-sounding instruments.

Trem Tele MW is a standout patch: a gorgeous Telecaster-type instrument with a lush, phase-shifter-enhanced tremolo, slide samples, and finger squeaks arranged outside of the instrument's normal playable range. Light Velocities trigger palm-mute samples (see Web Clip 3).

FIG. 4: Manyguitar's Wizard at the top left provides dropdown menus to immediately switch to groups of preset parameters.

In the realm of less-conventional guitar sounds, standout patches include Fripp&Eno, an otherworldly lead that simulates a delay-soaked EBowed guitar, and Fadepad, a slow-attack, resonant, chorused Stratocaster. Not surprisingly, the late Tim Conrardy, one of my favorite synth programmers, created these two patches.

All controls are intuitively laid out, and trying out existing patch parameters on a different guitar is no more than one pulldown menu away, as is the Sound Wizard, a menu of preset parameters that you can apply to any of the basic guitar types (see **Fig. 4**). The chances are very good that if Manyguitar doesn't have quite the sound you're looking for, you are only a couple of tweaks away.

Manybass or Manyguitar patches are exchangeable in either plug-in, and you can import your own samples, sound fonts, and patches formatted for Wusik Wusikstation. Manytone offers a number of additional sound sets, including meticulously sampled upright acoustic, fretless, and Precision basses. You can tweak sounds to taste with ADSR envelopes for amplitude and filter—each with adjustable keyboard tracking and a choice of resonant, high-/low-/bandpass filters.

MUSICLAB
RealLPC 1

MusicLab (musiclab.com) boasts a product line that includes three sample-based guitars with a nice complement of realistic performance capabilities. RealGuitar and RealStrat—virtual acoustic and Stratocaster-type guitars, respectively—have been reviewed in *EM* (August 2006 and May 2008, respectively, available at emusician.com). The company's most recent offering is RealLPC, a virtual, sample-based emulation of a Les Paul Custom guitar.

Performance artifacts such as release samples, assorted squeaks, and noises abound, and they are easily accessed and modulated through keyswitches, Control Changes, or an onscreen panel. You can even set the plug-in to play volume-pedal, violin-style solos quite convincingly (see **Web Clip 4**).

Without an understanding of how guitars are played, extensive sampling is not enough for a realistic part, and that is RealLPC's ace in the hole. RealLPC works fine as a solo instrument, but it excels as a rhythm guitar. Hold down chords on a keyboard, and it can automatically map incoming notes into guitar voicings (see **Fig. 5**). Diatonic keys above and below the individual notes become alternating up-and-down strums, and flats and sharps trigger muted strums. Because the trigger keys extend across two octaves, it's easy to create complex rhythms with either hand, and you can slide into chords and change inversions on the fly.

If you want a further assist, a built-in Pattern Manager loads MIDI files of rhythm strums and pattern picking in a variety of styles, and you can add your own. For even more realism, modulate the pick position as you play. I wish there were other pickups represented, but some of that effect is achievable with the pick position and a bit of EQ. In the tradition of the company's other virtual guitars, MusicLab produces expressive and convincing guitar performances.

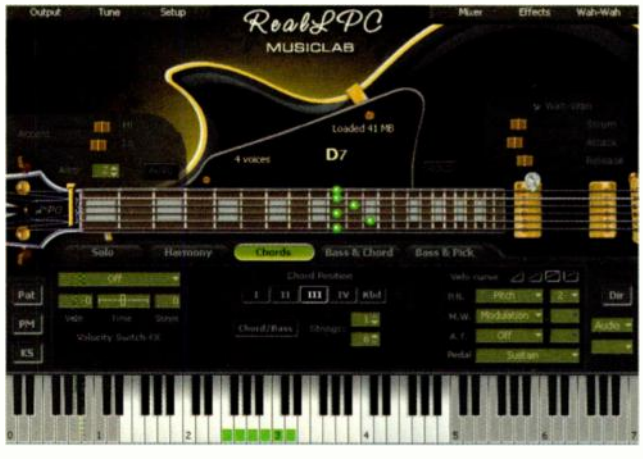

FIG. 5: MusicLabs' RealLPC can map MIDI notes from a keyboard into guitar voicings, as illustrated by the vivid green dots on the fingerboard. You use keys above the range of the notes to play up and down strums.

NATIVE INSTRUMENTS
Essential Bass

Essential Bass for Kore 2 and Kore 2 Player—from Native Instruments (NI; native-instruments.com)—confers easy access to eight default parameters and eight user controls (see **Fig. 6**). Synthesizer basses dominate the collection, but high-quality acoustic and electric instruments are in good supply. Among these are an outstanding acoustic upright bass sampled in several layers so that stronger velocities bring out a bit of string rattle and vibrato-induced growl. Another nice touch is a bit of sympathetic vibration from adjacent strings, subtle enough to add depth and realism without calling too much attention to itself. Notes of longer duration trigger release samples of the string snapping back into place, while four notes mapped below the range of the main samples trigger muted versions of each open string, and notes above the normal range provide string squeaks. Variations include a layered upright paired with a synth, which adds a nice, albeit synthetic girth. Kore 2 controls let you easily adjust the relative balance (see **Web Clip 5**) between a natural and artificial character.

FIG. 6: The Kore 2 user interface affords plenty of real-time control in Native Instruments' Essential Bass. Red and highlighted buttons reflect parameters I've selected for adjustment with the Kore controller.

A handful of programs using the acclaimed Scarbee "Red Bass" (a Fender Jazz bass) sample set ably represent electric bass.

Scarbee Bass Library

The Scarbee Red Bass shows up again, but with more detail and performance options in the Native Instruments Jay-Bass for Kontakt, which is a single-instrument sound library in a series of electric-bass titles from the Scarbee Bass collection. What is uniformly appealing about the Scarbee basses is their uncomplicated, musical ease of expression: Although they make use of keyswitching, most everything you will need falls under your fingertips and within the playable range of the instrument. The Jay-Bass is a knockout with its full, woody, tone.

Touch the keys lightly ,and you can generate harmonics. Add a bit more velocity, and you've got dead notes. Dig in a bit more for normal notes played in round-robin style with samples of alternate fingering and intelligent crossover to the next string. Keyswitches below the range of the instrument let you deliberately choose an alternate string on which the same note can be played. Hammers, trills, and even sliding chords are possible. To slide chords, hit a chord, press a sustain pedal, and play the target root note. Although it's not a fretless, it's a great choice for those Jaco Pastorius emulations (see **Web Clip 6**).

The Scarbee MM bass relies on a single-pickup humbucker—Musicman bass—as opposed to the two single-coil pickups (and three pickup options) of a Jazz bass. Overall, the sound is rounder with less of a pronounced mid- and upper-midrange tone than the Jay-Bass, but with a similar woody character.

FIG. 7: The Native Instruments Scarbee Bass collection features beautifully sampled, musical replications of popular electric basses.

For sounds more conventionally suited to rock 'n' roll, the Scarbee Pre-Bass can hardly be beaten; it's a single-pickup Precision bass with a rounder tone than the other Scarbee basses, but with plenty of detail and complexity.

All three Scarbee basses let you adapt the bass to a musical style in which bassists presumably make different string- and fret-position choices for notes, choose from a handful of tweaked preset effects, or create your own effects presets. As a whole, playing the NI Scarbee Bass collection is an immersive experience providing some of the most natural-sounding and playable bass instruments around (see **Fig. 7**).

SPECTRASONICS Trilian 1.3.1

Spectrasonics' (spectrasonics.net) Trilian offers a broad variety of electric, acoustic, and synth bass sounds. You get more than 60 different electric basses, each with a multitude of articulations. The new Acoustic Bass alone comprises 21,000 samples with mixable direct and miked outputs. Trilian's core library is a whopping 34GB. As with the Native Instruments Scarbee basses, Trilian focuses on playability to the highest degree. Practically everything you will need to bring these basses to life lies under your fingertips.

Trilian's new acoustic upright basses are perhaps the most intimately detailed sampled instruments I have ever heard, featuring careful and generous velocity-layering blended with extensive multilayered artifacts including slides, release noises, finger squeaks, and copious round-robin alternates for notes. Even the artifacts often use alternate samples and velocity layers. The remarkable attention to

FIG. 8: Although its synthesis capabilities are deep, Spectrasonics Trilian lets you place most significant controls on the main panel.

> Trillian's Upright basses shine in exposed solos and in dense mixes.

detail pays off in a big way, as these instruments shine in exposed solos and in dense mixes. As a performance instrument, Trilian is ahead of the curve with a smooth, polyphonic legato that gracefully allows hammers and pull-offs while holding down other notes (see **Web Clip 7**).

Spectrasonics' STEAM engine—fundamentally the same synthesis that powers Omnisphere—allows you to personalize patches owing to its deep architecture and generous modulation capabilities. Higher-level preset tweaks appear on the instrument's main panel (see **Fig. 8**). For instance, the Full-Range All acoustic bass presents knobs for altering the balance between mic (samples recorded through a Neumann U47) and pickup. Do you want a cleaner sound with fewer artifacts? Dial back the Noises knob. The Bissonette Studio Bass is similarly endowed, with front-panel controls to adjust the amount of Ampeg or Direct signal.

Trilian's Chapman Stick—whose range extends from bass through guitar—is a serious piece of work, and it had me channeling (or at least attempting to channel) Tony Levin. You can really hear the impact of the fingers tapping the strings.

There's a boatload more here: acoustic bass guitar, Hofner Beatle Bass-style instruments, a super-raunchy Music Man Sting Ray, and loads more above and beyond the vast collection of synth basses. Trilian is a studio brimming with just about any bass you'll ever need.

Time and space prevent me from covering much more than this small handful of instruments; there are tons of virtual bass and guitar libraries currently on the market. See the **Online Bonus Material** for a few more, including some products I've examined before, which remain strong contenders worthy of consideration. *

Marty Cutler and Kenny Kosek head up Chef of the Pasture, a bizarre mélange of banjo, fiddle, electronica, tall tales, and humor. Check it out at web.me.com/martycutler/Chef_of_the_Pasture.

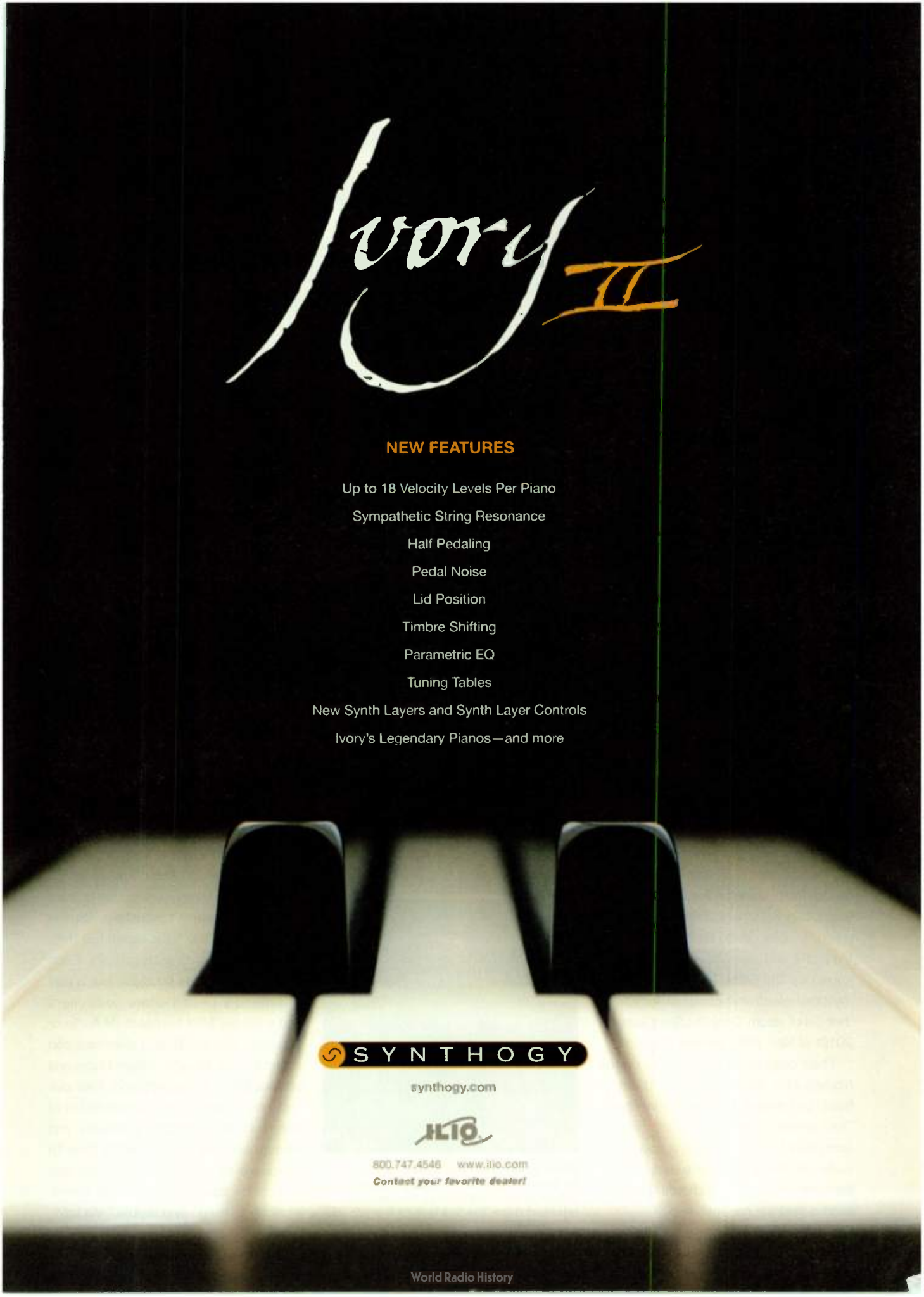

Photo by Rueben Cox

BY MIKE LEVINE

Controller Freaks

(L-R): Josh Mayer, Justin Boreta, Ed Ma

The Glitch Mob's unique approach to electronic production and performance

Lights flash, video images roll on a screen at the rear of the stage, and the three musicians slam into the song with great abandon and tons of physical energy. Punching buttons on controllers, pounding electronic drums with sticks, banging on keyboards, and plucking a Fender bass, Justin Boreta (Boreta), Ed Ma (edIT), and Josh Mayer (Ooah)—better known as The Glitch Mob—perform the rhythmic electronic compositions from their debut album, *Drink The Sea* (Glass Air, 2010), at New York's Highline Ballroom.

Their original musical style melds hip-hop with aspects of glitch, drum 'n' bass, and myriad other electronic styles. Their heavily layered synth and percussion parts from the recording have been sampled into Ableton Live and are triggered as either notes or chords from their various onstage controllers.

Making the transition from DJing to live-music performance, The Glitch Mob at one point performed shows where each of them had a laptop, and the three were synched together by MIDI.

Although the band has been together for several years and has built a strong following and a lot of buzz, the recently released *Drink The Sea* is their first album.

However, latency issues made that problematic, and they switched to a single MacBook Pro with all of their controllers connected through a MIDI interface. The band also did some shows where they primarily triggered their parts from JazzMutant Lemur controllers. On the current tour, they have expanded their controller arsenals substantially. Each player not only has a Lemur, but a pair of Roland V-Drums snare controllers and a 49-key MIDI keyboard (M-Audio or Novation). Ma and Boreta also have pad controllers (an M-Audio Trigger Finger and an Akai MPD24, respectively). Their current show comprises a combination of live-played parts, triggered samples, and background tracks. "We really tried to reproduce the record, note for note and percussion sound for percussion sound, as close as humanly possible," Ma says.

A lot of the pain frequencies were notched out on this record.

The band has been playing together for several years, but caught on so fast as a live act that their touring schedule precluded them from recording an album until recently, although they have done a lot of remixes. *Drink The Sea* is a mainly instrumental electronic effort that features heavily layered synths, mixed with real bass and guitar, and bolstered by bombastic, cinematic-sounding drums and simple, yet effective melodies.

Although the word *glitch* is in the band's name, and that conjures up the genres of glitch-hop or IDM, the band says their name doesn't mean that they play those styles per se. "We didn't intend for that to mean anything concrete," Boreta says about the name. "[But] we did sort of use the glitch technique of the stutter edit and the splatting, cutting, and dicing of sounds." However, the new album comes from a more narrative place. "We were really just trying to tell a story," he says.

I had a chance to sit down with all three of them backstage at the Highline Ballroom and talk about the album production, the live show, and a lot more.

How did The Glitch Mob get started?

Boreta: We were friends before we decided to play music together. We just happened to be doing a lot of DJ stuff at the time in California—around San Francisco and Los Angeles. And at one point, we just decided to team up and play at the same time. Doing like a tag-team DJ set, using laptops, using Ableton [Live] and [M-Audio] Trigger Fingers and such. And that eventually morphed into a hybrid, live-DJ, electronic performance thing where we'd play our own songs and then other people would play samples over them. And that slowly morphed into the full live show that we have today. So when we first started the band, we didn't intentionally set out to be a band, I guess; it was more of an organic progression to where we are now.

Ma: We were also doing a lot of remix work for a while. And we were getting more into the pattern of being solo producers that came together collectively to remix bigger artists. Kind of like a Soulwax type of thing, to some degree. And eventually we kind of had to put all the remixes on hiatus so we could come together and write our own music.

Interestingly, you've built a reputation, until now, without the benefit of an album of your own.

Mayer: I think when we decided to get together and play music, we kind of just instantly turned into this touring trio thing. We got booked at so many shows that we always talked about making [an album], but we never had the time really. It was just this organic process that happened. It was sort of word of mouth, and people said, "You've got to check these guys out."

Boreta: Another way we've really gotten word out is to give out music for free. For the first few years, we would take a stack of burned CDs of a mix we put together, and we would hand it out to everyone at the show. At the time, MySpace was the easiest way to get your music out—we had free remixes on MySpace. Everything was free. I would say that five or 10 years ago, this sort of thing wouldn't have been possible.

Do you guys do the social networking stuff yourselves?

Boreta: We do it all ourselves, actually. We have people on our team who help out. But up until this point, we've done it all ourselves. We answer every Facebook message personally; every MySpace message, every Twitter reply is coming from us. We take interaction with our community very seriously.

That must be very time-consuming.

Boreta: It is time-consuming. [But] it's a fun part of the product.

Ma: And totally worth it.

Mayer: I think that one thing that always bothered me in the music world was feeling really disconnected from some of my favorite artists. Not even knowing if that person was friendly or whatever. I think it meant a lot to us to be able to reach out to our fans, and personally say, "Hey this is what we're doing. Here's a piece of advice. If you have any questions," whatever it might be. That means a lot to us.

Photo by Misha Vladimirskiy

The Glitch Mob onstage at this year's Coachella festival. Boreta, left, is hitting a Roland V-Drums snare; Ma, center, is on bass; and Mayer is triggering from a JazzMutant Lemur.

how they produced these sounds.

"The drum sounds came from a variety of different plug-ins," Ma says. "We used [XLN Audio] Addictive Drums quite a bit and it was processed. And we also used [Quantum Leap] Stormdrum and [Toontrack] Superior Drummer 2. The Toontrack guys were really nice, and they hooked us up with the whole bundle. So we used up with a lot of the Addictive Drums tom sounds," Ma says.

Another interesting aspect of The Glitch Mob's drum production was that they were constantly tuning the drums to match the keys of the song. "Kick drums, toms—it was very critical that they were tuned to the song," Ma says. "Even snares, sometimes."

They typically used Iced Audio's "Because the album is so beat- and percussion-heavy," Boreta says. "There's a lot of reverb, too, so if it's ringing out of tune, you can really tell."

Going the extra mile to tune the drum sounds is another example of The Glitch Mob's meticulous studio techniques. "It was definitely a very long and tedious process to get everything tuned properly," Ma says.

Boreta: We think of the whole interaction with the fans, with the community, as just a part of the creative process. For instance, we like to give back in whatever way we can. We have a discussion forum, we write on our Facebook [page]—which is eventually going to move over to

thing is in the box. We do everything on a Mac Pro in [Steinberg] Cubase.

So you do your production in Cubase, but your live show uses Ableton Live.

Boreta: Yeah, everything was Cubase. On this album, pretty much the entire GarageBand. And then when we were done with those 10 songs, we'd go back and redesign the songs. And once the redesigning was done, we went back and we mixed the entire album. So kind of in this multistep stage.

COVER STORY * CONTROLLER FREAKS *

Photo by Lindsey Byrnes

The Glitch Mob rehearsing for their tour. Converting their high-track-count, heavily layered recordings for performance required a great deal of sampling and planning.

distort and notch until we've carved everything out. In our studio, we would crank the hell out of it until it would hurt, and then turn it down until it got to the point where it was just as bright as it needs to be. And then in mastering, Simon [Davey] would do very subtle brightening. Even if you throw on the album and listen to whatever popular electronic track right now and listen to ours, it sounds dim. And it was very intentional.

Ma: That was also something that was sort of confusing for our fans who are DJs and producers. A lot of people thought our music wasn't mastered or something.

And you aren't worried that when it goes up against another tune it's going to suffer?

Ma: That wasn't something we were concerned about.

Boreta: It still has the attitude and sort of the punch, but it's a different take on everything, and it has more of a classic feel.

Boreta: It's also just the way we make music. If you wanted to actually play the synths live—maybe if the technology was there it might be better—but our sounds are processed over and over and over again, from the first phase to the mix phase. And when we mixed the album, we bounced down everything to audio because we have multiple sessions of hundreds of UAD plug-ins. Each sound would have to go through about 15 to 20 UAD plug-ins. That's what brought us back down to audio was really technological limitations.

Ma: The samplers in Ableton are wonderful for that. We were able to sam-

What do you say to people who say, "Oh, they're just triggering samples; they're not musicians"?

Ma: [Laughs] We'd say we are.

Mayer: We're not trying to fool anyone. We're not trying to make it seem like we're awesome musicians and we can get up here and shred guitars.

It doesn't bother you when people say stuff like that?

Mayer: No, because we'll say, "No, we're playing samples."

Ma: We're performing this music the best way we know how to the best of our ability. We're not trying to fool the crowd into thinking we're Slash or Flea or something.

"We answer every Facebook message personally, every MySpace message."

Let's talk about the difference between your recorded music and your live show. You're playing the same tracks on this tour, but you're achieving them very differently than you did for the record.

Ma: Exactly. Almost every melody that you hear on the album has been sampled note for note [for the live show]. That was the only way that we could get the actual sounds of the record to translate live. There's no way that we could essentially load up the plug-ins that we use, stack 20 plug-ins and play live; it would kill the computer.

ple, as I said, like every melody, note for note, and then load them into the Ableton samplers, and then replay them as they would be heard on the album. Honestly, our re-creation of the listening experience is very, very close; it sounds very close to the record. Aside from a few nuances, I'd say it's as accurate as it's going to get to how the album sounds. And that was our goal.

So you were thinking about performing it ahead of time.

Mayer: Even before the first note was put down.

Any chance that, sometime soon, you'll be using iPads onstage?

Boreta: Yeah, we talked about it. We do have an iPad. Ed has an iPad. We actually didn't have time to play with it before we went on tour, but we're open to anything.

What apps have you tried it with?

Ma: I'm a big iPhone and iPad music app geek. So I've got all the good ones right now.

Can you imagine doing a show with your iPads being the only controllers?

Ma: That could be cool. Yeah, sure. *

Mike Levine is EM's editor and senior media producer.

B&H
PHOTO - VIDEO - PRO AUDIO
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TOOLS FOR CREATION

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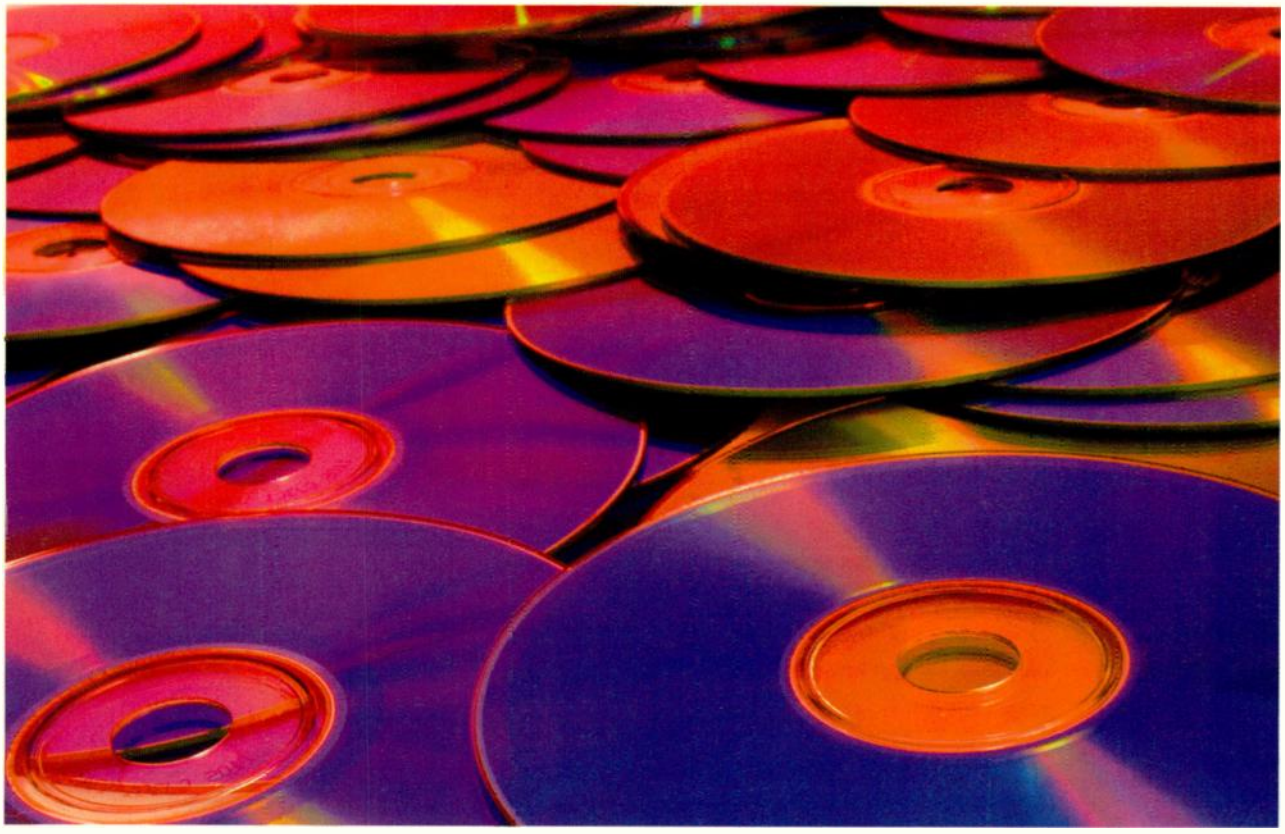


Countdown to Your Album

Ten things you should do before you put out your next release

By Jason Feehan and Randy Chertkow

It's easier than ever to release your music to the world. And there is now a wealth of online services that will help you promote, distribute, and share your music. But even though musicians can release material whenever they want—and many fans are happy with the idea that they can download singles—the press, fans, radio stations, podcasts, and even digital distribution stores still ask the same question: "When's your next album coming out?"

Of course, an album in today's music world is more than just a physical object. It's a concept that helps promote your music; it gives everyone something to focus on. Having an album enables events such as a record-release party, gives you a story to tell to help get you reviewed or mentioned in the media, provides you with a group of songs for sale in a digital music store, and gives you something tangible to sell fans after a live show.

No matter what you plan to do with your album, you want to put out the strongest product you can. While many articles in *EM* delve into the recording and mixing aspects, here we'll focus on what happens after the mixing is done, but before you actually release your project. We've put together a list of steps—presented roughly in the order you're likely to deal with them during the process—that will help make your album release successful.

10. PUT YOUR BEST SONG ON TRACK 1

There's more music out in the world than ever, which means that musicians have to fight even harder for the 30 seconds of consideration that they get from any media outlet, radio-programming director, or reviewer that gets their album. In a recent interview in *EM*, Bob Boilen, the music reviewer for NPR's *All Songs Considered*, said that the show receives 200 to 300 CDs per week (see "Industry Insider: Bob Boilen" in the February 2010 issue of *EM*, available at emusician.com). Their review method: toss the press release in the recycle bin, slot the disc in the player, and listen to track one. If that doesn't grab them, they put it on the giveaway pile and move on to the next disc. Don't lose the opportunity to reach far more people through each reviewer by leading with a weak track. The rest of the music on the CD won't matter if no one hears it. Although the actual sequencing of the song order for your CD will likely happen during mastering (see step 8), it's something you want to decide on before that point.

9. GET ISRCS FOR EACH OF YOUR TRACKS

Your songs may make it onto webcasts, ringtones, and all kinds of other electronic dis-

tribution methods. Because of this, before you distribute your music to anyone, get an International Standard Recording Code (ISRC) for each of your tracks. This is an international serial number that will uniquely identify each song and can be digitally embedded in the disc subcode (you can do this with many 2-track editors and some CD-burning applications, or your mastering engineer can do this for you) or even into the ID3 tag of an MP3 file. The ISRC code is widely used in digital commerce sites and by collecting societies, so it may affect the royalties that you get for your music.

Note that you need an ISRC for each track separately. In fact, if you have multiple versions of the same song, each of those tracks should get its own ISRC code, as well.

If you want to get an ISRC code for your music, head to usisrc.org. While you're there, you can also get codes for any prior recording. Additionally, some CD stores will supply you with ISRCs.

8. GET THE ALBUM MASTERED

Many musicians are tempted to save money by skipping the critical mastering process before sending their music off to be reviewed, played on the radio, or replicated 1,000 times. Don't make that mistake. Mastering is a critical and very specialized process, and it is best done by an experienced engineer with the right gear in an acoustically treated studio. Evening out volume between tracks, smoothing out EQ, adding compression and limiting, and getting the benefit of an experienced pair of ears with a fresh perspective on your project is key. It will add that critical polish to your album and help it stand out from the crowd. Listeners and reviewers will look negatively on such problems as jarring volume changes between songs, too much bass, or overly bright or dull mixes, and these problems can't easily (or cheaply) be fixed once the CD is made and the songs have been put up for sale at digital music stores.

If you use a mastering engineer, try to choose one in your area so you can attend the session. If you already know who will be mastering while you're mixing the album, ask if it would be okay to send this person a couple of your mixes so that if there are any glaring sonic issues (such as too much bass or harsh EQ), you can try to correct these problems yourself while mixing. This can save you a lot of expensive hourly charges when you do get to the mastering phase. (To hear advice on this and other mastering issues from renowned mastering engineer Greg Calbi, listen to the "EM Cast Greg Calbi" podcast at emusician.com/podcasts.)

7. LEGALLY PROTECT THE MUSIC

Although U.S. copyright law doesn't require that a work must be registered with the government to get copyright protection, you can get statutory benefits, such as the ability to recover your legal costs if you prevail in a lawsuit, if you register it within a few months of publication. For musicians, that publish date is usually when a CD is released. Take a little time before the album is released to register both the music (form PA) and the recording itself (form SR) with the U.S. Copyright Office (copyright.gov) as a collection so you get the full benefit of registration as it is more cost-effective to register them as a whole than each song separately.

Also, before the album release, register the songs with a Performance Rights Organization (PRO) and the sound recording with SoundExchange so that if it's played and picked up in their surveys, you can get paid for it (see the "D.I.Y. Musician" column in the June 2010 issue of *EM*). If you wait until after it's been released, you might miss out on their surveys if it's played.

6. OBTAIN A BARCODE

Although getting a barcode sounds like a trivial commercial step, it's more important than some musicians think. Music sales are tracked within the United States through Neilsen Soundscan (en-us.nielsen.com), which uses the barcode as the unique identifier for the album. Without it, the album sales won't be counted. Also, some musicians forget that barcodes are also part of the album art. They usually need to be obtained ahead of time or it slows the entire process down while waiting for it.

Most CD duplicators or replicators offer barcodes, often for free. They can also be purchased as a service from some indie CD stores such as CD Baby (cdbaby.com).

Considering the competition your album faces for attention from reviewers, media outlets, and more, it's crucial to put your strongest song as track 1. Otherwise, it may never get heard.

5. CHOOSE AN APPROPRIATE METHOD FOR MAKING YOUR CDS

Assuming you're going to make physical CDs, there are lots of options for manufacturing them. To choose the right one, estimate how many CDs you'll need for each of these categories: CD sales at live shows, physical CD sales online, PR campaigns, free CD giveaways, college or commercial radio campaigns, and CD review campaigns. Each of these can affect the size of your run, as well as help you determine the quality of disc that you'll want. If you need a rough guide, just assume that you'll need at least 100 for each of the aforementioned uses.

Once you know how many and what you're going to do with them, you can choose the best method for you. Consider one of these five options:

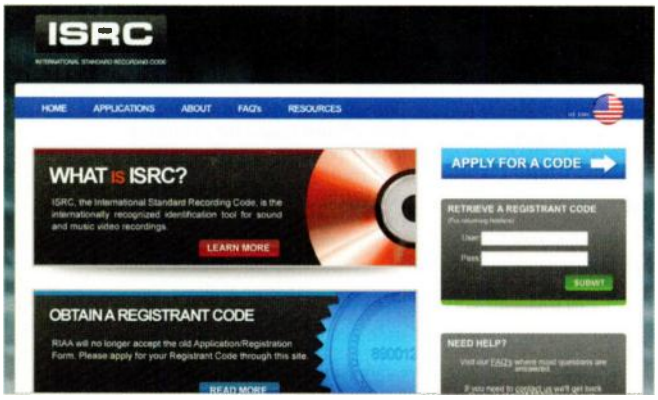
• **Make It Yourself.** You can always use your own computer to burn CDs and print covers and liner notes. This method is certainly easy for demos but very time-consuming. (Think of using scissors to cut perfectly square fold-outs for the CD case 20 times in a row.) Also, it usually results in a low-quality product that is not appropriate for PR campaigns, radio, and CD reviews. It costs approximately $2 per disc if you buy in bulk, use color ink for your cover, and buy empty jewel cases. These prices get closer to $3 to $3.50 if you get a printer that can print on the CD itself and you use higher-quality paper for the insert.

• **Buy a Duplication Machine.** If you need to be able to make a large number of CDs on demand, bulk-duplication machines may be an option. These machines will usually both duplicate CDs and print reasonable-quality images on the CD face itself. On average, a decent machine costs approximately $1,200; the lower-priced ones aren't worth buying as they don't last as long. Figuring in the insert, the toner, CDs, CD case, etc., your cost is around $1.80 per CD once you've paid for the machine. This option is usually only if you need to be able to handle a lot of different CD runs on short notice. If you have just a few albums, you're usually better off going with one of the other methods.

• **Use a Print-on-Demand Service.** Print-on-demand services such as CreateSpace (createspace.com) or CD DVD Fulfillment (cd-fulfillment.com) offer a no-up-front-cost option. This allows you to make a profit on every sale. The print-on-demand disc is a good-quality CD-R that can be used for any purpose: PR, radio, or promotions. If all you're trying to do is sell physical CDs online, there is no cost to you. If you are trying to make discs for PR or reviews, you can also make a short run with these services (and the prices get cheaper the more you make). For that, the cost is around $4.50 to $5.50 per CD. If you think you'll need more than a dozen or so CDs, consider the next method instead.

• **Duplicate It.** There are two major methods that are often confused for making a large number of CD copies: replication and duplication. The latter is for short runs between 100 and 500 CDs. It creates CD-Rs that don't last as long as replicated CDs do (although they'll usually last a couple of years or so), and they don't play in some of the very oldest CD players. The final product looks just as good as a replicated disc, however, because it's usually made using the same printer for the insert and on-disc images. The result is perfectly good for publicity, music reviews, and submitting to radio stations. The cost per CD is typically between $4 and $5 if you add in the shipping costs to get the discs delivered to you. There are many companies around the country that offer duplication services. Some of the larger ones include DiscMakers (discmakers.com) and Diskfactory (diskfactory.com).

• **Replicate It.** Replicating CDs involves making copies from a glass master disc, and creates the highest-quality product. Most CD manufacturers don't even offer replication unless you're going to make 1,000 copies or more. Although this method has the highest up-front costs, it also has the lowest cost per CD with the best result. The prices are usually around $1 to $2.50 for each disc after shipping costs are figured in. Most of the companies that perform duplication also offer replication.



The U.S. ISRC agency (usisrc.org) is the website to go to when applying for ISRC codes, which are digital identifiers for your songs.

4. CLEAR THE RIGHTS

When you hire a CD manufacturer to duplicate or replicate your CD, the company will ask you to sign a form that you've cleared the rights to the music on the disc and the art on the disc and inserts. As always with copyright law, this is more complicated than it seems. If you want to do it right, you need

Any cover tunes on your album must be licensed, and the first stop for that should be the Harry Fox Agency (harryfox.com), which administers licensing for music publishers in the United States.

to spend a little time tracking down the info and clearing the rights.

For cover songs, you are required to pay a mechanical royalty for every single copy of the music that you make. This royalty is due when you make a copy, regardless of what you do with the music: sell it, give it away, or even just leave it in your basement. This is why CD houses are required to ask about clearance when they make your discs rather than when you sell them. To clear the rights, start by going to Harry Fox Agency (harryfox.com) and using its online SongFile service to see if it handles the rights for the song you want to license. Otherwise, you'll have to contact the copyright owner directly. (For more on licensing, see "Show Me Your License" in the September 2006 issue of *EM*).

There are only two pieces of good news about this process. First of all, the maximum rate is capped by law, currently at 9.1 cents per copy. Second, cover songs usually are a great way to get people interested in your music as people search for them in popular online music stores. A purchase of a cover that you recorded can turn into a purchase of your entire album.

For any art that you don't create yourself, you'll have to negotiate separately with the owner. Often forgotten is that photographers own any photographs they take unless you hired them under a "work for hire" contract. If you don't have such a contract, it might be necessary to pay the photographer for the use of his/her work in your album.

3. PROOF YOUR DISCS

It's embarrassing if you have discs made that have text mistakes on them. There is no reason that such errors should get through. The best way to avoid such a problem is to get a proof copy from the CD manufacturer and hand it to as many people as possible. Although it's tempting to skip this step because it usually costs extra, it's worth it.

No matter how much checking you do on your computer screen before you submit it, there's something about having a physical proof that forces you to truly look at every word. You will also get a chance to see the alignment of all of your images and the overall effect of the art. These types of mistakes are the kind that can lead to the music being ignored, no matter how good it is.

2. MAKE SURE TRACK NAMES AUTOMATICALLY COME UP IN MUSIC PLAYERS

When you pop a CD into iTunes or other computer-based music players, the track and artist names usually come up. This makes it easy for listeners to know what they're hearing, and it is used for the titles in MP3 files when people rip the CD. But for new CDs, all that comes up are generic titles such as *Track 1* and no artist name. Fortunately, this is something that you can fix yourself before you send it out to anyone.

The track information is stored in two services: Gracenote MusicID (gracenote.com) and FreeDB (freedb.org). Both do the same thing: They get a fingerprint of the CD (based on the combination of length and order of the songs) and compare it to their databases. If they have an entry, the track names come up. If they don't, you will need to fill the track information out yourself, and then use the Submit button in your player. For example, in iTunes, choose Advanced/Submit CD Track Names after typing in the names, which submits the information to the services.

1. BUILD IN APPROPRIATE LEAD TIME FOR PUBLICITY AND PROMOTION

Although some musicians like to release their album the instant that they get it in their hands, that can sometimes interfere with a coordinated media campaign. If you are planning to promote your disc through traditional media (newspapers, magazines, and radio), new media (blogs, podcasts, and websites), and social media (MySpace, Facebook, and Twitter), you need to build in the right lead time to coordinate these campaigns.

Traditional media outlets typically need lead times of three months to schedule their articles. They expect press releases and sometimes require a lot of callbacks to get their attention, which can be time-consuming. If you plan a traditional media campaign to have articles coming out around the same time you release the album, have your discs in hand and ready to go before you even start the campaign.

> For social media, it's best to make it an ongoing communication through the entire process.

New media needs just a week or so of lead time for news about a release show. And for the album release itself, you should approach them just before or just after release to announce the news.

As for social media, it's best to make it an ongoing communication through the entire process—including during the album's recording—so that your fans feel connected to you and your latest work. By the time the album comes out, they'll be excited to see the final product. Putting together a street team and finding ways to get them involved is a great way to keep the excitement going while you build up to a release party.

FADE OUT

Imagine you're a music reviewer holding two CDs in your hand: One is a burned CD in a sleeve with magic marker written all over it, and the other is a professional-looking CD. Better still, once the professional-looking CD is played, it's mastered and the band's name and song titles automatically pop up in your music player. Which would you pay attention to? Which artist do you think put in the time to want to be reviewed? Considering that most artists only put out a handful of albums, it's worth the effort to follow through on all of these steps. After all, your music is worth it. ✱

Randy Chertkow and Jason Feehan are quite experienced in the art of putting out CDs, having released 18 of them with their band, Beatnik Turtle (beatnikturtle.com).

By Len Sasso

FIG. 1: A few simple modifications to Layer B of this VIP Library patch adds a bass rhythm to its original ethereal sound.

Tril-o-Sphere

Expanding Trilian's sound palette with Omnisphere

Spectrasonics' Trilian bass module and Omnipshere synth module are outstanding instruments in their own right, but owning the pair significantly expands your sound-design options. Omnisphere can access any Trilian sound source, patch, or multi, and that lets you apply Omnisphere's advanced synthesis techniques to Trilian patches. You can combine Omnisphere and Trilian sound sources in Omnisphere's A and B patch layers, as well as layer Omnisphere and Trilian patches in a multi.

The version 1.3 upgrade for both products includes enhanced performance and programming features, along with an expansive new Omnisphere library of 150 patches and 33 multis called the VIP Library. Each of those combines Trilian and Omnisphere sounds and techniques, and I'll use them as the basis for my examples.

NOT BY CHOICE

One of my favorite randomly evolving, ethereal VIP patches is Aleatoric Surrealism. It combines a bowed, spinning bicycle wheel with fingered harmonics from an electric bass. Both sounds feature a slow attack and granular processing, and are fed into their own deep, long-tailed reverb. The bass is transposed up two octaves and sent to a tape delay with high feedback. The result is a purely ambient, Waterphone-like sound with no hint of bass.

With a few quick tweaks, you can bring back the bass and add a little rhythm while maintaining the patch's ambient essence. Start on the bass (B) layer by dragging the amp-envelope attack slider to minimum, changing the transpose to zero, and turning the Mult tab's granular processing off (see **Fig. 1**). You'll now hear a pronounced bass with a long echo and deep reverb. Adding MIDI controllers for bass-echo feedback and A-layer amplitude gives you even more control over the ambiance (see **Web Clip 1**).

TONES FOR TUNES

At the other end of the spectrum, you can use Omnisphere's sample-processing options to craft unusual chord and lead instruments from Trilian sound sources. The Timbre slider in Shift mode (also available on Trilian) shifts and transposes the sample map, causing the formants to change without changing the tuning. That's used, for example, to produce the clavinet and electric-piano patches Jangly 12-String Clav and Knockin' Rhodes.

Omnisphere's pitch-tracking option for the modulating oscillator lets you create playable instruments using ring and frequency modulation. Start with the VIP patch Picking the Harmonic Belltones, remove the modulation routings of LFO1 to ring mod depth and velocity to sample start, change the Wheel routing from ring mod frequency to ring mod depth, and click the routing's Invert button off. That yields a very playable sound in which the mod wheel controls the timbre—morphing it from the string-harmonics source to a more bell-like sound.

The Strumming Harmonics Drive patch uses bit-crushing ring modulation and waveshaping to modify a string-harmonics source. To create a playable organ-like patch from that, change the Timber mode to Shift, increase the amp attack slightly, and turn the arpeggiator off. Applying LFO modulation to filter spread adds a Leslie-like effect.

Finally, don't overlook the many sampled classic-synth sounds included as Trilian sound sources. They make great starting points for Omnisphere patching, either by themselves or layered with bass sounds (see **Web Clip 2**). ✱

Len Sasso is a freelance writer and frequent EM *contributor. For an earful, visit his website, swiftkick.com.*

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By Ming (aka Aaron Albano)

The Basics of Bass

The unsung hero of most modern productions is the bass part. But without understanding its multiple roles and functions, it can muddy and choke your mix, create compression and volume issues, and take the life out of what could be a stellar production.

In all of my productions, I ask myself these questions: What is the genre of music to be produced? Where will this production be most listened to? Who is the audience? The answers will drive the characteristics of the song's bass part.

I usually divide the possible bass elements into live or programmed. Genres such as rock, metal, jazz, and roots reggae generally use live bass, while genres such as hip-hop, dub-step, and reggaeton use programmed bass. There are, of course, plenty of sub-genres and exceptions to this rule. In many situations, I'll layer a live bass with programmed bass to create a really big sound (see **Web Clips 1a** through **1c**).

LIVIN' LIVE

The most important element of recording live bass is a great bass player. Forget the gear; a large portion of tone, compression, and movement comes from the hands of a master. An experienced bass player will create movement and variation in a performance without drawing attention away from the vocal melody or solo instrument. That being said, it's my job to find the right sonic space for our amazing bass line.

For rock or metal, I'm not usually concerned with sub bass, so I'll use a highpass filter between 40Hz and 65Hz to eliminate any string rumble or hand noise that might interfere with the clarity of the mix. I try to use compression sparingly in my DAW, maybe employing a 4:1 or 6:1 ratio. If I'm using an analog compressor, I'll push it a little harder to grab a bit of that analog overdrive.

I prefer to record direct, either through my Neve preamps or an amp emulator like the Line 6 Bass PODxt Pro. If the bass line was recorded clean, I often add a little bit of overdrive, followed by EQ, to get the bass to sit nicely with the guitars. I exaggerate the gain on my EQ and sweep the frequency until the midrange sits in with the rest of the program, and then reduce the amount of EQ gain once I've found the sweet spot.

If I need to clean up a sloppy bass passage, I'll use a noise gate on the bass with a quick attack (about 20ms) and a slightly longer release (about 175ms) to eliminate unwanted fret noise or amp noise. To give a little extra warmth, I'll sometimes use Waves MaxxBass or another bass maximizer to fatten it up.

For reggae, the bass is felt and heard, so I'll highpass the bass at a lower frequency, 30Hz to 34Hz, and focus my EQ efforts on the low end and less on the low mids.

An interesting technique the bassist from Tortured Soul uses is to play a passage an octave above the desired frequency and then use an octave pedal to pitch it down to the correct frequency range. I've experimented with some pedals that let you add subsonic frequencies as well, creating dub-like tones.

I have a couple of different basses so I have some tonal choices. One has an amazing tone but questionable intonation, so some of the notes I play on it are slightly out of tune. I'll use Celemony's Melodyne to pull those notes into tune while retain the tone and feel of the passage.

Always remember: Live bass is not perfect. It has movement and coloration, and that's what makes it so interesting to the ear.

IN THE PROGRAM

Unlike live bass, where the tone and feel has a lot to do

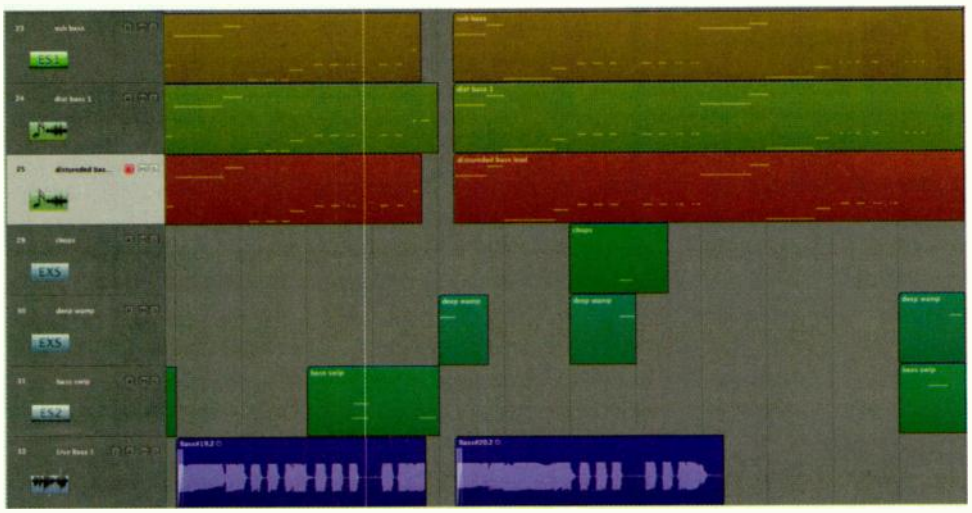

FIG. 1: You can get a really full bass sound by combining several sources. In this case, live and programmed bass sounds are layered.

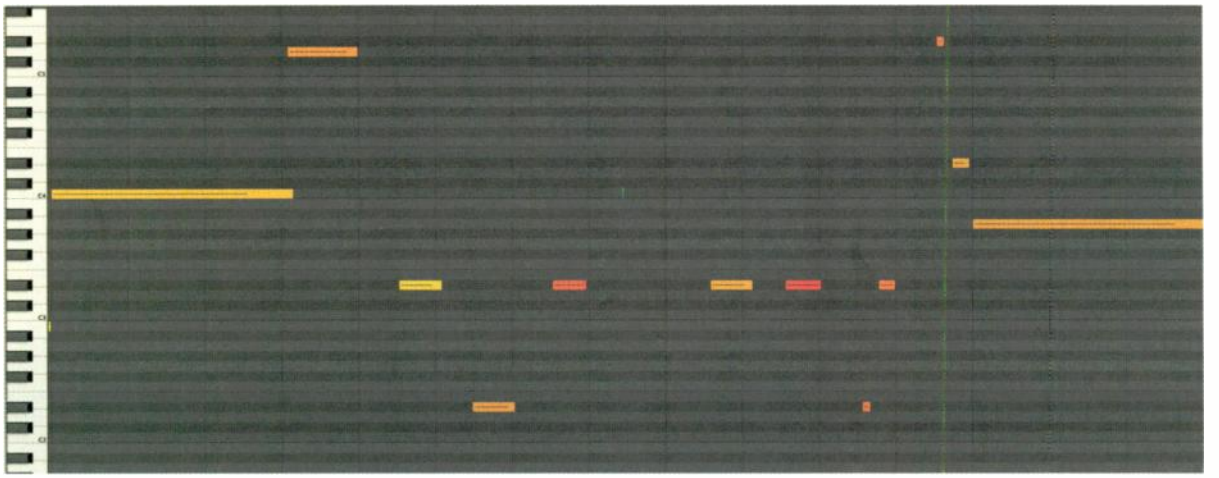

FIG. 2: This screenshot of a section from a MIDI bass part shows the technique of quantizing only parts of a measure (typically the downbeats) to keep the feel from being too mechanical.

with the player, programmed bass relies on the programmer to add movement, volume, and tonal nuances. Therefore, I often combine or use multiple bass sources to create the proper bass passage (see **Fig. 1**).

Genres such as drum 'n' bass, dubstep, and electro-house are dependent on complex and multisonic bass sections. To create these passages, I break the bass line down into sub bass (30Hz-60Hz) multiple mid basses (80Hz-250Hz), and an upper-mid bass (250Hz-600Hz).

The sub bass comprises a basic sine wave or 808 tone that is more felt than heard. A common mistake is to make your mix overly bass-heavy because the sub bass is too loud. This will decrease the mix's overall volume and can mess with your mix-bus compression. Yes, hip-hop is bass-heavy, but the mix is usually relatively even, with the drums and bass playing off of each other. Your audience will most likely have a sound system with lots of bass, so let them turn the bass up to their liking rather than make your mix too bottom-heavy.

A 3dB increase in bass may not be that noticeable in your earbuds, but it will be on a large, bass-heavy system. I usually normalize the volume of the sub bass because it's harder to notice its volume fluctuations when you're monitoring it in your studio, and too much of a fluctuation in volume in the sub frequencies can be a nightmare on a bass-heavy sound system. I sometimes find it hard to distinguish the notes of a sub-bass line, so I'll program that line an octave or two higher and then transpose it down to fit in the sub-bass range.

Let there be space. Don't feel that every second has to be filled up with a sub-bass passage. Sub bass is fatiguing on the ears, and constant sub tones can be nauseating on a large sound system. By allowing space between the notes, the mix will have better movement and the listener will focus on the lead elements of your song.

The sub is also where a lot of the bounce to the electronic music comes from, so be playful with the programming. The head-nodders and dancers will thank you.

MONKEY IN THE MIDRANGE

In dub-step or drum 'n' bass, the grinding bass lines or chopped-up melodic staccato lines occur in the mid and upper-mid frequencies. I often double the mid-bass line with the sub bass to create massive, gut-busting passages.

Sweeping envelopes, highpass EQ, distortion, and resonant filters are great to use on mid bass. A technique I often use is to make duplicates of a single bass source. I then apply different effects to each of the copied tracks, creating new bass sounds. I'll program a melodic passage using one bass sound, and then chop up the MIDI passage and spread it across the different bass sources so I can modulate the bass line with the different effects. Quick filter sweeps, envelope modulation, or a diving bass wobble are easy to accomplish with this technique.

Mid bass is great to run through a sidechain compressor. Set up a compressor with the kick drum as the sidechain input, and run one of these bass lines through it to create that pulsing *wamp* characteristic of electro-house.

Timing is everything and a locked bass line is important, but I don't quantize the whole bass line. I'll play a bass passage in real time until it feels good. If some notes are noticeably out of time, I'll select the offenders and bring them nearer to the grid by either quantizing them or dragging them closer to the desired moment in time. I usually quantize the first note of a passage and the notes where other important rhythmic elements are hitting such as kick drums. This technique helps retain the feel of a good passage while lending a little punch to your mix (see **Fig. 2**).

I use upper mid-bass for quick melodic phrases that grab the listener's ear but don't necessarily act as the main melody. This helps create a little more interest in a bass line that may repeat in multiple sections. ✱

Ming (mingsmusic.com) is a NYC-based artist, producer, and DJ. He owns Hood Famous Music and co-owns Habitat Music (habitatmusic.com).

Layer It Up

How do you achieve the "it" factor when creating a remix? Asking that of a music producer ranks right up there with posing the question, "What is the meaning of life?" With that in mind, this month's discussion will focus on a technique that will help to develop, or improve upon, a signature sound. The technique I am referring to is layering.

Layering is the most effective way to create new sounds, produce rich textures, and add depth to any project (see **Fig. 1**). This technique can be used to add a more distinct and rich sonic quality to virtually any sound, including vocals, synths, guitars, bass lines, sound effects, and more. There are three basic steps involved; I'll take you through them one at a time.

FIG. 1: A section of a song showing various layered guitar parts: a quadrupled main guitar, three harmonized guitars, and doubled power chords at the bottom.

STEP 1: DUPLICATING THE PARTS

The actual duplication of the parts is as easy as re-recording or copying the same notes or pattern on a new, separate track. In the case of MIDI tracks, it's just a matter of copying the MIDI region down to a new track. Once that's done, you can start shopping for sounds. With MIDI parts, it is critical to change the layered sound from the original; otherwise, it will be an exact duplicate and will only make the part louder. (More on this later.)

Some people also think you can simply copy a live-performed track (such as a guitar or vocal) and shift it slightly, or add some sort of harmonizer or chorus effect. Even though such effects do have their place, it's always best to take the time to re-record the live performances, which will give a much more desired layering effect. I have had people, especially budding artists, act surprised when they hear that they must duplicate their part as closely as possible to make the live layering sound convincing. You don't need to do much to the double once it's done other than add some standard processing such as EQ and compression.

When remixing drum parts, layering drum samples can create complex sounds, such as a kick that can rattle the subs and snap in the highs. I will sometimes put in as many as three or four layers of kicks and snares, which can be as simple as dragging the samples I want to use into the DAW's timeline and matching their timing to the samples in the existing drum part. Even with live drums, layering samples underneath them makes it possible to create bigger and better sounds. When it comes to drums, the main goal is to target certain frequency spaces, which I will address next.

> The quickest way is to transpose the part either up or down an octave, which instantly adds depth.

STEP 2: COMBINING SOUNDS AND FREQUENCIES

Once the part has been copied, you must pay attention to what the sounds are doing and to what part of the frequency spectrum they're occupying. Again, in the case of synths and MIDI parts that are exact copies, it is essential to choose a different sound that will complement and add a new dimension to the musical part. When I start layering, I usually have a goal in mind in terms of the direction of the overall sound I am trying to achieve. Synths are the easiest, and sometimes the most

fun because they offer an almost limitless range of sonic possibilities. From sustained pad sounds, to classic synth stabs, to arpeggiated parts that offer movement, you can go in so many directions with synths.

Layering is, of course, a fundamental aspect of the sound-creating engine of many synthesizers (both modern and classic), and is part of what makes synths so different from other instruments. Many synthesizers have multiple oscillators that can be set to different pitches and waveforms, adding layers of sound for lush, rich results (see **Fig. 2**). For example, if I want a huge-sounding synth, I will first compose the musical part, then start layering to fill certain parts of the frequency spectrum.

The quickest way is to transpose the part either up or down an octave, which instantly adds depth. Taking it one step further—not only by changing the pitch of the sound, but also by using a different synth with a different type of patch—it's possible to create a unique composite sound. I can't tell you how many times people have asked me, "What synth did you use to create that part?" Nine times out of 10, the sound I achieved was the result of layering different synths with different patches and targeting specific frequency ranges with each patch.

With guitars and vocals, I get an immediate sonic payoff right after I double, triple, or even quadruple a part by panning the tracks to either side (how wide to make the spread depends on the song), which immediately adds richness and width (see **Web Clips 1a** and **1b**). In that case, I rarely change the sounds at all. At most, I might decide to double the part in octaves or harmonize it rather than just do a straight double.

In the case of a vocalist, pitch modulation with octaves and harmonies is most common. Bass lines and drums can be a bit trickier. With these, it's necessary to watch out for frequency masking. This occurs when two sounds, or in this case layers, occupy the same parts of the frequency spectrum, causing them to clash with each other. Usually they end up getting hidden in one big messy sound that lacks any sort of clarity. To avoid this, target different parts of the spectrum with each layer.

With bass drums, for example, three layers may include a sub-sounding kick for the bottom frequencies, a standard kick for the body and punch, and then maybe even a hi-hat sound doubling the other two at a lower volume to add some really nice snap and pop. If done properly, the result won't seem like three separate kick samples, but one cohesive sound that covers a broad frequency range that can be accentuated further with processing. The same holds true for bass lines. It is very easy to add low, sub layers that just muddy things up. Target specific frequency spaces with each layer (see this month's "Production Central" on p. 44 for more on bass layering).

FIG. 2: Most synths use multiple oscillators to generate sound. By activating more than one, and adjusting parameters such as the waveform and pitch of each oscillator, you can get some really thick layers.

STEP 3: PLACING THE SOUNDS

Finally, you need to figure out where you want to place the layers you've created. I already touched on guitars, but what about kicks, snares, and basses? For those elements, it may be best to put the layer in the same part of the stereo field as the original as they are most often intended to sound like one cohesive sound. Kicks, basses, and snares are typically panned to the center. With synth layers, I like to experiment with different left-to-right placements to make certain that the mix has more width, especially if they're the featured sounds of my mix.

The result won't seem like three separate kick samples, but one cohesive sound.

With live instruments such as guitars and vocals, a wide left-right placement of each layer works wonders for adding width and texture. The number of layers I'm using determines how I will pan them. If I only have two stacks, I will typically not pan them hard left and right. I prefer to put them closer to keep the sound more together. If I have four stacks, then I will usually pan the first set hard left and right, and the second set maybe at 10 o'clock and 2 o'clock.

THE SUM OF ALL PARTS

By simply layering parts and sounds, you can quickly add dimension and a more characteristic sound to your mixes. However, as with most aspects of music creation, there can be a tendency to overdo it. Just adding more parts does not ensure a better result. It is always wise to take a step back and see if the layer or part really adds that something that will achieve the unforgettable. If not, then remove it and try something else, or leave it out all together. After all, this is not rocket science and usually the simplest things can have the greatest impact. ✱

Vincent di Pasquale is a producer/remixer who works out of his project studio (vcdstudios.com). He has remixed songs for One Republic, Madonna, Nelly Furtado, and many others, and he is the author of The Art of the Remix, *a comprehensive, interactive remixing course available now at faderpro.com.*

REVIEWS

FIG. 1: With a real drumhead and an impressive assortment of onboard sounds, the Korg Wavedrum plays equally well using hands, sticks, mallets, or brushes.

Korg Wavedrum

The sound of drums heralds the return of a legend

By Geary Yelton

PRODUCT SUMMARY

ELECTRO-ACOUSTIC DRUM
PRICE: $599

PROS: Fun to play. Realistically responds to performance technique. Many excellent sounds onboard. User-programmable. Portable and affordable.

CONS: Challenging user interface. Dynamic range a little too wide. Disappointing selection of cymbal patches.

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

korg.com

GUIDE TO EM METERS

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

Although Korg's original Wavedrum sold poorly after its launch in 1994, it quickly gained a mystique that's often inevitable with expensive, rare, and unusual instruments. Retailing for $2,499, it was a true electro-acoustic drum that responded to mechanical vibrations that resulted when you played it. The Wavedrum's onboard DSP-generated synthesis included physical modeling, making it the first and only instrument of its kind. It responded to a drummer's performance technique with much greater nuance than would have ever been possible with completely digital instruments.

Armed with numerous technological advances and design innovations, Korg more recently introduced a new and much improved Wavedrum. Like its predecessor, the new Wavedrum lets you play it with sticks, mallets, brushes, hands, or fingers. You can damp the head manually or apply pressure to change its pitch, just like an acoustic drum. Compared with the original, though, this year's Wavedrum ($599) is considerably less expensive and, in most ways, considerably more versatile.

THE NEXT WAVE

More than anything else, the Wavedrum resembles an elaborate practice pad (see **Fig. 1**). You can play it in your lap (it weighs less than 4.5 pounds), on any flat surface, or mounted on a snare stand. Its bottom housing is made of tough, rigid plastic, and the top rim is made of powder-coated aluminum. Five tuning pegs around its perimeter let you adjust the tension on its standard 10-inch-diameter drumhead using the included drum key. Coarse ridges on the left and right sides invite you to scrape them with a drumstick to simulate guiro, cabasa, and similar percussion. At the top, Volume and Value knobs flank six buttons, seven red LEDs, and a three-character LED just behind a prominent raised nameplate.

Behind the controls and recessed under the top edge are the Power button, unbalanced ¼-inch outputs, a mini-jack for headphones, another for an

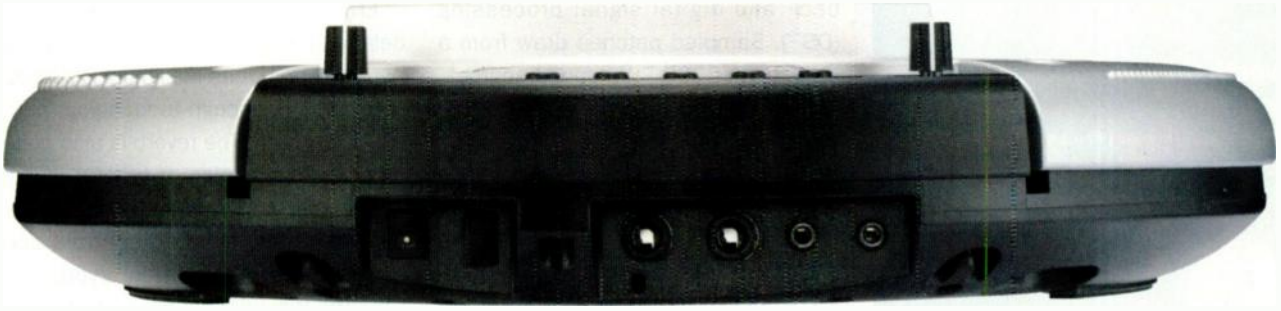

FIG. 2: The Wavedrum's back panel hosts all its connections to the outside world, all of them analog.

iPod, and a connector for the included wall-wart power supply (see **Fig. 2**). The Wavedrum supports neither MIDI nor USB, so it has no data ports.

When I first turned on the Wavedrum, I was surprised that its audio output level was so low, especially for an instrument that makes significant physical noise when you strike it. Korg's explanation is that the Wavedrum's dynamic range is so great that you'd otherwise easily clip the output. Still, I'd gladly sacrifice dynamics for a hotter signal; the ideal solution would be an internal compressor or at least a limiter. A one-off sheet accompanying the owner's manual explains the procedure for doubling its output level, but even that wasn't as loud as most electronic instruments, so I returned the setting to its default and routed the outputs through a stereo preamp. A guitar amp works well, too—especially one with two inputs.

Inside the Wavedrum are two sensors for the head—one that responds to hits and another that responds to pressure—and a second pair for the left and right sides of the rim. The rim sensors are independent of the others and allow you to trigger a completely different sound. The sensors pick up the details of your performance, including striking, thumping, rubbing, scratching, and pressing down on the head. Owing to its rigid nature, playing the rim is less nuanced than playing the head, changing only loudness, pitch, or velocity, depending on how hard you hit it.

Because the Wavedrum makes noise when you play it—even when it's turned off, as any drum does—its acoustics can compete with the synthesized sound emanating from within, especially when the volume is turned down and you select a patch that sounds nothing like a traditional drum. If the amplified sound isn't loud enough, it's easy to drown it out with the sounds of striking the Wavedrum. This isn't a problem when recording, of course, as you'll hear only the output signal on playback.

> It feels like you're playing an acoustic drum.

I'd like to see an expression-pedal input in future versions. The original model had this feature, and I can't imagine it would have significantly raised the current Wavedrum's cost. A pedal would be dynamite for changing pitch as you played rolls with both hands, for example, or varying effects depth in real time.

Because it isn't a MIDI instrument, you must actually play the Wavedrum to get anything out of it. You can't cobble together a sequence and then trigger it like a MIDI drum module. The only way to capture your performance is to record its audio output. That's less of an issue than it used to be because editing audio has become almost as easy as editing MIDI data.

THE RHYTHM OF THE HEAT

The Wavedrum holds 200 patches; by default, the user bank contains 100 patches duplicating the factory bank's 100. Although you can access any patch by turning the Value knob, each patch takes a few seconds to load. Luckily, you can quickly access any sound you've stored in 12 slots by repeatedly pressing the Bank button to scroll through three banks, then pressing any of four numbered buttons to load a patch within the selected bank.

Kit sounds such as snares, kicks, and toms are quite realistic, but the Wavedrum really shines on world percussion: conga, djembe, surdo, tabla, taiko, etc. (see **Web Clip 1**). It also offers several synthesized drum sounds, some with acoustic qualities and others that are purely electronic in nature. There's even a nice collection of innovative sound effects, including wind that blows harder when you press down on the drumhead without striking it. My only disappointment was that realistic cymbals are in short supply. The few that are available don't respond like real cymbals, which

would ring out differently depending on how and where you struck them.

The Wavedrum relies on two sound-production techniques: sample playback and digital signal processing (DSP). Sampled patches draw from a collection of 200 PCM sound sources. Thirty-six DSP algorithms either control how these 24-bit, 48kHz multisamples respond to any variety of performance techniques, or they process the acoustic sounds the drum makes when you play it. Many algorithms rely on physical modeling and others offer virtual analog, additive, or nonlinear (Korg's variation on FM) synthesis.

Algorithms come in single and double sizes. When you load patches using single-sized algorithms, you can independently assign an algorithm and a multisample to the head and the rim. With double-sized algorithms, the head and rim play as a single instrument instead of producing independent sounds.

The Wavedrum also contains 100 preset rhythm loops, any of which you can access with four button presses and a turn of the knob. They range in style from traditional beat patterns to the latest hip-hop grooves, with a heavy emphasis on Latin percussion (see **Web Clip 2**). You can't record your own loops, but you can play along using any patch you choose and change patches on the fly. The factory loops sound terrific, and for marginal drummers like me, they ensure you'll always have steady accompaniment to improve your drumming skills. Most feature two or more instruments independent of the one or two you can play live. My only complaint about the loops is that the last beat cuts off instantly when you stop playback rather than ringing out naturally, as it would with a sequencer playing samples.

A DIFFERENT DRUM

Editing user patches is usually a matter of pressing the right buttons and turning the Value knob. After you've made changes to any patch, press the dedicated Write button and select a location to save your edited patch. User parameters range from basics such as tuning, level, and panning to algorithmic specifics such as the drum's size and whether it sounds more metallic or wooden.

Effects-wise, the Wavedrum offers delay and reverb. The delay has very few parameters, but its maximum 2-second delay time is enough to loop your playing in real time. The reverb is also quite basic, with a choice of types ranging from spring to canyon.

With so few onboard controls and such a minimal and often cryptic display, the Wavedrum's user interface is hardly intuitive. You'll want to keep the manual handy until you memorize the combinations of button presses and knob twists needed to load and edit patches. The Wavedrum's lack of a USB port precludes any possibility of a computer-based editor, too, so editing sounds is unavoidably cumbersome.

THE ONE TO BEAT

With so many types of drums from which to choose, the Wavedrum is remarkably versatile. Because you can interact with it in so many ways—hitting it, rubbing it, and so on—its versatility extends to performance techniques. Its greatest success, then, is that it feels like you're playing an acoustic drum.

The Wavedrum opens up an unending world of timbral variety. In the unlikely event you grow tired of the 100 stock sounds, you can create your own patches using algorithms or samples that are neglected in the factory patches.

For the first time since the original Wavedrum, you can carry a massive collection of drum and percussion instruments under one arm that sound realistic and feel like real drums when you play them. And the price is certainly right. If you're an electronic musician with rhythm in your hands, or a skilled percussionist of any kind, I can't imagine why you wouldn't want to own one. *

Former senior editor Geary Yelton has been writing for EM *since 1985. He lives in the heart of the Blue Ridge Mountains in Asheville, N.C.*

HELLO MUSIC ARTIST PROFILE

GAMBLE & BURKE

MEMBERS:
Kaz Gamble and Dan Burke

HOMETOWN:
Boston, MA

THEIR SOUND:
Poppy electro-soul with hooks for days

SIMILAR ARTISTS:
Chromeo,
Hall & Oates,
Daft Punk

THEY SENT US:
"Isolated (With You)" (single)

RECENTLY:
Featured on the 9th electronic music compilation from French label Kitsuné Music

WE HEAR:
Roland Jupiter 8, a smooth vocoder plug-in, dudes we'd like to hire to play at our birthday party

OUR SCREENERS WROTE:
"The hook grabs. The production is great. The synth tones and programming are both top notch. This totally captures everything that was good about 80s pop."

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FIG. 1: The Zoom R16 packs a lot into a small, portable chassis, including the ability to record eight simultaneous tracks.

Zoom R16

Way more than just a 16-track recorder

By George Petersen

PRODUCT SUMMARY

RECORDER/INTERFACE/CONTROLLER
PRICE $399

PROS: Inexpensive, compact, easy-to-use 24-bit DAW records eight tracks simultaneously. AC or battery operation. Doubles as a computer audio interface and control surface for popular DAW programs.

CONS: Recording limited to 44.1kHz. Limited input metering; small status display. Phantom power only available on two channels.

FEATURES:	1	2	3	**4**	5
EASE OF USE:	1	2	3	**4**	5
AUDIO QUALITY:	1	2	**3**	4	5
VALUE:	1	2	3	**4**	5

zoom.co.jp

When Zoom first announced its R16 recorder/interface controller, I was intrigued. Here was a standalone 16-channel digital recorder that could double as a DAW front end/controller and, at a street price of $399, could be a desirable tool in a lot of production situations. Over the years, I've learned to read the fine print on such offers, which are typically loaded with gotchas—little traps that quickly remove the luster from such perceived bargains. Some of the most common trip-ups in this situation—whether with DAWs or hardware units—is recording low-fi data-compressed audio or only offering two or four simultaneous record tracks, making these products very limited when tracking drums or doing live multitracked band recordings. But the Zoom R16 records linear 44.1kHz PCM audio data at 16 bits or 24 bits, and its eight onboard line/mic preamps can capture up to eight tracks at the same time—something that's never been done at this price point. I had to check this one out.

Physically, the R16 is small—just 14.8x9.3x2 inches (WxDxH) and less than 3 pounds—but there's a lot going on inside. Beyond its recording capabilities, the R16 also has a 16-channel digital mixer with eight channel faders and a master fader (see **Fig. 1**). A Bank switch provides fast access to the other eight channels. Under the hood are more than 100 DSP effects—compression, EQ, reverb, chorus, delay, and guitar FX (distortion, flange, pitch, wah, tremolo, and more), as well as amp/cabinet emulations, a digital metronome, and a built-in chromatic tuner. The R16 has an onboard 2-track recorder for mixing within the box—with or without mastering effects—and a sequence play function that lets you assemble playlists of finished songs or projects.

The R16 is bundled with Steinberg Cubase LE 4, although it works with a wide assortment of DAWs—Mac and PC. As a bonus, the R16 can also double as a DAW controller, offering remote tweaking of DAW parameters (including transport functions) using Mackie

Control protocol. Taking the *recorder* job description to the next step, the system can operate as your DAW front end, routing its eight mic preamps through 24-bit A/D converters and outputting a 44.1kHz/48kHz/88.2kHz/96kHz datastream over USB to your computer. And note that the 44.1kHz sampling rate limitation only applies to recording directly to the R16's SD card.

THE INS AND OUTS

Housed in a lightweight plastic chassis, the R16 has eight channel inputs on combo XLR/TRS mic/line jacks (see **Fig. 2**). The first channel has a 470k-ohm hi-Z switch for connecting a guitar or bass, and channels 5 and 6 have switchable 48VDC phantom power. The rear panel also has ¼-inch jacks for connecting a pair of studio monitors and a headphone output. Both have individual level controls, but the rear panel placement makes these somewhat inconvenient. The unit can be powered by an external AC adapter, or for up to 4.5 hours on six AA batteries. When used as a DAW recording interface, the R16 can also be bus-powered from USB, and the side panel has two USB ports for connecting to computers or to a second R16 for synchronized, simultaneous 16-track recording. And built into each side of the R16 is an omnidirectional condenser mic with the pair routed to inputs 7 and 8. These afford a quick setup for laying down ideas or musical sketches, or can be switched out of the signal path when the XLRs are in use.

The R16 has no onboard hard disk, instead storing audio tracks as individual WAV files onto removable SD (max 2GB) or SDHC (max 32GB) cards (see **Fig. 3**). It includes a 1GB card to get you started (about 200 track-minutes at 44.1kHz/16-bit), but on a 16-track project, that only equates to about 12.5 minutes of recording time. Fortunately, SD media is readily available, fairly inexpensive, and easy to transfer to any software DAW for further tweaking or editing. I did most of my work on 4GB SDHC cards; these provide more than an hour of 8-track, 44.1kHz/24-bit recording. This is the maximum resolution for the onboard recorder, and the R16 definitely sounds much better in 24-bit mode. Also, standard DVD-R discs offer convenient backup for the 4GB cards.

IN SESSION

Central to most R16 operations is a small monochrome LCD screen that includes a couple lines of characters and a few small icons for operational status. This small display is your window to the world; fortunately, most R16 functions are handled via one-switch-per-function controls rather than a confusing maze of menus. Some functions are tedious, such as entering project/file names by marking characters using the data wheel. But for the most part, navigation is straightforward and fast once you become accustomed to using the data wheel and cursor/enter/exit keys. Perhaps in a future software revision, Zoom could enable such functions from a QWERTY keyboard connected to one of the R16's USB ports.

Speaking of software, the drivers that shipped with my review unit were several months out of date, so be sure to check the zoom.co.jp website for the latest drivers/software. These are required for using the R16 as a controller or DAW front end, and as the unit first began shipping about the time that Mac OS X Snow Leopard and then Windows 7 were coming to market, Zoom has addressed most of the R16's early driver issues.

Overall, operation is a breeze and you will barely have to consult the manual. One thing that impressed me right away was the R16's lack of fan or drive noise that always seems to be part of the recording process.

I began my tests of the R16 with a simple vocal/guitar session. In this case, I routed the onboard pickup of a Taylor 814ce acoustic into the hi-Z input on channel 1, a Sterling Audio ST69 tube vocal mic into channel 2 and two RODE M3 condensers placed in a spaced stereo array about 16 inches in front of the guitar and connected into the R16's channels 5 and 6 (the two inputs with phantom power). It all worked quite well with a bit of added crunch from a Marshall amp model, a wide airy sound from the stereo RODEs and smooth ST69 on vocal. Having phantom power available on all chanels would be nice, but here it was no limitation—the M3s could have been battery powered (from their onboard 9V), the tube mic didn't need phantom and the guitar went direct.

The mic preamps themselves weren't stellar (I own several preamps that cost nearly 10 times the R16's price), but

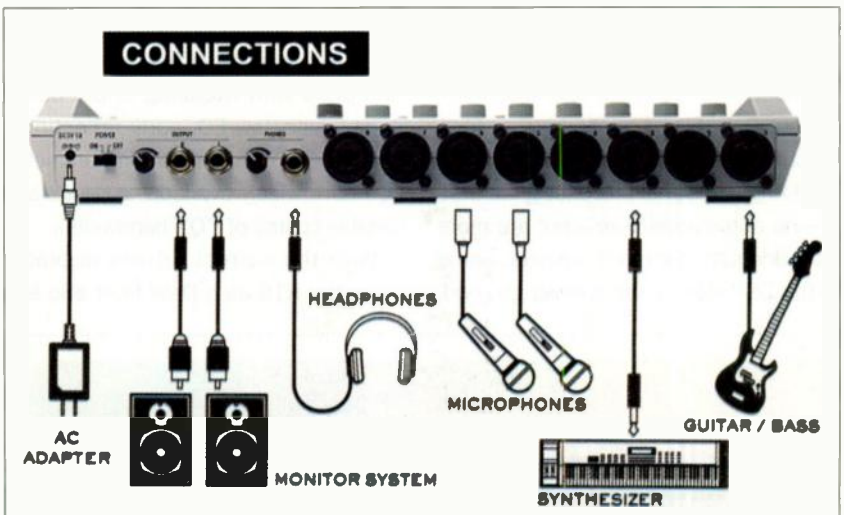


FIG. 2: The back panel has eight combo XLR-¼-inch connectors, but the rear headphone and monitor-level controls are somewhat inconvenient.

they weren't bad, either. These lacked the extended headroom capability of outboard preamps, but were fairly clean. I did have an issue with the gain knobs, where I had to push the gain fairly high up to get the signal to about -30dB (about 4 o'clock) and then 1/16 extra turn of the knob would make it jump to overload. To get the optimum performance from the R16, you have to be careful about setting levels, and the short (four-LED) ladder meters make this a little hard, although the fast-reacting red peak LEDs give you a good indication of levels during session setup.

While tracking, record punch in/outs were uniformly smooth and these can be manual or set up for rehearse/auto-punch. One thing I missed was a footswitch control for punching in.

Mixing and signal processing are static—no automation here—but are more than adequate for many projects. Some of the DSP effects are surprisingly good,

FIG. 3: The R16 stores up to 32GB of data on standard SDHC cards.

and, of course, if you need more, you can always transfer your project to a DAW for final touches. At the same time, the R16 provides a decent amount of access to the DSP parameters—for example, the reverb programs offer hall, room, spring, and plate with tweaking of pre-delay, decay, high/low EQ, early reflections, and wet/dry mix; the 3-band parametric EQs have widely overlapping bands and variable control of "Q" (bandwidth).

With the correct drivers in place, using the R16 as a DAW front end is a real plus—a useful feature that extends the unit's versatility while adding the capability to do extended fidelity (up to 96kHz) recording. The R16 is also touted as a DAW controller, but in this application is far less of a plug-and-go process, requiring a fair amount of user tweaks and customization just to add the ability to use the transport controls, faders, and five function keys. Anyone seeking more a detailed DAW controller would be best advised to look at a dedicated unit.

AND IN THE END

Having spent several months with the Zoom R16, I really like it, whether used as a sketchpad for laying down song ideas, as a DC-powered location recorder for budget video shoots, or for recording rehearsals/live performances. Add in its "bonus" DAW interface capabilities, and the R16 is a deal that's hard to resist, especially at $399. *

FIG. 1: DeClicker detects clicks, pops, and crackles and shows them as different color puffs in a screen called the Events Graph.

Sonnox Restore (Mac/Win)

A top-of-the-line audio-restoration suite

By Mike Levine

Audio-restoration software has many uses, including cleaning up transfers of old crackly LPs, getting rid of buzzes from guitar amps, and reducing ambient noise in video soundtracks. There are numerous products on the market designed to deal with these sonic issues, and Sonnox's Restore suite is on the higher end of the available choices. It's a pro-level toolset that comprises high-quality algorithms and a versatile and wide-ranging set of parameters in each of its three plug-ins. You get Oxford DeClicker for clicks, pops, and crackle; Oxford DeNoiser for hiss and broadband noise; and Oxford DeBuzzer for hums and whistles.

Sonnox Restore runs natively under AU, RTAS, and VST. I did my testing on an 8-core, 3GHz Mac Pro.

CLICKETY CLACK

Clicks, pops, and crackles are found in all types of recorded audio. You're most likely to run into them when transferring old LPs, but even in dialog recording and video sound, these sonic gremlins can appear for a variety of reasons.

Oxford DeClicker offers a comprehensive toolset to handle all such transient noises. Sonnox defines what is considered a click, pop, or crackle by the length of the event. Pops are between 3ms and 10ms; clicks are between 0.05ms and 3ms; and crackles are anything shorter than 0.05ms. To graphically represent them, each category has what's called an Excitation Profile, which is like a waveform display with peaks that rise above it to represent the offending events. The upper part of the graphic display is called the Events Graph, which shows bubble-like puffs corresponding with the peaks in the bottom of the display. The green ones are pops, the blue clicks, and the white crackles (see **Fig. 1**).

There are separate sections for addressing clicks, pops, and crackles, each with its own Threshold and Sensitivity controls. Setting the Threshold for each determines the level

PRODUCT SUMMARY

AUDIO-RESTORATION SOFTWARE
PRICE: $1,895

PROS: Effective algorithms. Numerous and highly adjustable parameters. Excellent graphic displays.

CONS: Pricey. Manual not comprehensive. Complex UI.

FEATURES:	1	2	3	4	**5**
EASE OF USE:	1	2	**3**	4	5
AUDIO QUALITY:	1	2	3	4	**5**
VALUE:	1	2	**3**	4	5

sonnoxplugins.com

at which such events will be affected by the removal filters. The Sensitivity slider, which is also available in each of the three event-type controls, sets how much of the detected events will be repaired.

A dialog mode lets you set two sets of thresholds: one for when the speaker is talking and one for the background sounds in between. For situations in which the program audio contains events short enough to be mistakenly detected as offending events (horn stabs or drum hits, for example), DeClicker has an Exclude box, which lets you draw in sections on the graph to be excluded from processing. This feature can be fully automated.

I tried DeClicker on recordings of spoken word and acoustic guitar, each of which contained clicks, crackles, and pops. For the spoken example, it was pretty easy to set the thresholds to where the offending events disappeared or were reduced heavily (see **Web Clip 1**). I had to be careful not to turn the Sensitivity up too high, or it started to degrade the audio. This was even more critical when working on the guitar track. Still, for both, I was able to remove or minimize the noise events without degradation.

Like the other plug-ins in the Restore suite, DeClicker has input and output attenuation controls, which further add to its flexibility. One other note about this plug-in: You need to set your buffer quite high when working with it, or its processing will impair the signal.

NOISES OFF

Broadband noise can be a real problem, especially for spoken-word recordings and video soundtracks. Unless your signal-to-noise ratio is optimal at all times, you're likely to have a lot of background noise. If the mic is low-quality, such as the built-in mic on a video recorder, the noise can be quite noticeable, and you might even have to deal with machine sounds from the recorder itself. Often, you also have to contend with other noises such as air conditioners and power tools. When using denoising software to reduce unwanted sounds, it's critical to set your parameters correctly, or you can end up with a lot of audio artifacts (often referred to as *musical noise*), which can ruin your recording and make it sound like it was tracked underwater.

Of all the broadband noise reducers I've tried, Oxford DeNoiser has by far the most flexible and deep set of controls (see **Fig. 2**). DeNoiser gives you several different ways to set the noise profile, which is what the software uses to determine what is noise and what is program material. The idea is to gate out the noise and leave the program material untouched. The key to an effective setting is to make sure you're not gating much of the program material because that's when you start to hear artifacts.

In DeNoiser, the most effective way to set your noise profile is to isolate a small section of the audio that contains only noise. Loop it and send it to DeNoiser in Auto mode, and the software will calculate a profile for it. Then hit the Freeze button to lock in that setting. The main section of the plug-in's window displays frequency on the horizontal axis and level on the vertical. A real-time analyzer shows you where the noise is and at what level it's occurring and being reduced at the various frequencies. You can then vary both the Threshold and Reduction sliders (the latter controls how much reduction is occurring) to find the best combination. As with all three plug-ins in the suite, pressing the Diff button lets you hear only the portion of the audio that's being affected by the processing, which helps a lot to make sure you're not reducing too much of your program material.

Auto mode looks at the audio signal and guesses what is noise and what isn't. It's effective, especially in situations where the noise is variable or you can't isolate a section of only noise for the software to analyze. The third mode is Manual, which lets you completely set up the noise profile yourself.

In all of DeNoiser's modes, you can fine-tune both the Threshold and Reduction parameters on a frequency-specific basis using the Bias controls. This lets you reduce or increase the processing within specific frequency ranges, allowing you to fine-tune the noise profile. If there's a frequency range in your program material that is getting degraded by the noise reduction, you can set DeNoiser to ignore (or reduce less) in that area only.

Beyond that, you get a lot more options to fine tune your audio. The Smooth and Tune controls are designed to alter the noise profile a bit to help eliminate musical noise. I found their effects to be pretty subtle, but they did help a bit in some cases. The Color and Air controls have more of an obvious impact; the former boosts or

FIG. 2: DeNoiser offers an unprecedented level of control. The red line at the top is the Noise Threshold Bias control, which, along with the Noise Reduction Bias, gives you the ability to graphically fine-tune the noise profile.

cuts the low end of the noise profile, and the latter does the same with the high-frequency material. Experimenting with these will help you fine-tune the noise profile even more.

The HF Cut control is a lowpass filter that attenuates 18dB from an adjustable frequency between 1kHz and 22kHz. This can be useful to cut out, say, a high-end whistling or ringing noise. (You can also use DeBuzzer for those types of noises.) DeNoiser also has a dedicated hiss-reduction section for high-frequency noises in situations (usually non-musical) where there isn't a lot of high-frequency information in the program material.

I tried DeNoiser in a number of different scenarios. For instance, I was able to reduce the background noise on a video with relative ease, without affecting the original recording perceptibly (see **Web Clip 2**). I also used it successfully on other video soundtracks and on noisy phone-line recordings for a podcast.

One thing to bear in mind with broadband de-noisers: No matter how well they work, they can't produce miracles. If your audio track is upside down—that is, the noise is louder than the source audio—you'll never get a fully satisfactory result. I found this out when trying to fix the soundtrack on a video of a pianist playing at a jazz concert that was recorded on a cheap videocamera mic. I tried everything I could with DeNoiser (and with a couple of other noise-reducing plug-ins), but reducing the noise to acceptable levels affected the audio quality of the piano substantially. Still, it was an improvement, and I got my best results with Oxford DeNoiser.

WHAT'S THE BUZZ?

The Oxford DeBuzzer is designed to handle electrical hums and other steady-state noises. The trick with this kind of noise reduction is to identify the noise's fundamental frequency. DeBuzzer then calculates the harmonics and uses a comb filter (in most cases) to reduce or remove the offending tones.

FIG. 3: DeBuzzer, like the other Restore plugs, offers a wide range of controls. The large white knob in the middle is for setting the fundamental frequency of a buzz or hum.

DeBuzzer has tools to help you set the fundamentals. Its Frequency Detect section has an animated waveform display that shows a peak at the frequency it thinks is the fundamental. You then set the large control knob to match that frequency (see **Fig. 3**). You can also turn on a tone generator and, just by using your ear, locate the fundamental that matches it. (I found that feature to be very helpful.)

Similar to DeNoiser, DeBuzzer has both Auto and Freeze modes. Auto is designed for situations where the fundamental might be moving around a bit (for example, on something recorded on a warbling tape machine). If the fundamental isn't moving, then the Freeze mode works best.

One of my tests of DeBuzzer was on a high-gain electric-guitar track that had a ton of buzz from a virtual amp and heavy compression and distortion effects. I used a combination of the tone feature and the waveform peak display to get a ballpark setting for the fundamental, at which point the hum was reduced considerably. I then tweaked it using the Fine Adjust option, which lets you set the fundamental in increments as fine as 1/10,000Hz. Just by moving the frequency knob around a little with Fine Adjust on, I heard the buzz drop off substantially more.

DeBuzzer also handles high-frequency noises and whistles. I tried this out on the same piece of video soundtrack, and I was able to easily lock in on the offending high ringing sound and zap it completely away. I heard no degradation of the original audio at all. As an alternative to the comb filter, you can opt for a parametric EQ for sounds that have few harmonics. For this high-frequency ring, the parametric was the better choice.

CLEAN AND GREEN

Overall, I found the plug-ins in Restore to be well-designed, fully featured, and excellent-sounding. That said, these tools require a major investment in money and time: Due to all of the adjustable parameters that they offer, they are not simple to use. The manual is less comprehensive than I would like (especially at this price point), but Sonnox provides a helpful Quick Start guide and an overview video that summarizes a lot of the basic functionality.

If you only need audio restoration occasionally, this suite is probably overkill from a price, feature, and learning-curve standpoint. But if you're producing video or audio that contains dialog and spoken-word segments, or if you're doing a lot of restoration work on older music material (like LPs), or forensic restoration, you'll find the deep, flexible, and excellent-sounding toolset in Sonnox Restore to be worth every penny. ✱

Mike Levine is EM's editor and senior media producer.

QUICK PICKS

SOUNDTOYS * DECAPITATOR (MAC/WIN)

By Michael Cooper

Are you ready for a plug-in that will rip your head off? SoundToys Decapitator ($179 native, $349 TDM) models the sound of five analog processors driven to the point of extreme distortion. More than a one-trick pony, the plug-in can also add subtle richness, girth, texture, and warmth to your tracks using moderate settings.

You can buy Decapitator alone or as part of SoundToys' Native Effects and TDM Effects bundles. The plug-in is available in TDM, RTAS, AU, AudioSuite, and VST formats for iLok. I tested Version 4.0.2 of the AU plug in MOTU Digital Performer 6.02, using an 8-core, 2.8GHz Mac Pro running OS X 10.5.4.

GETTING A HEAD OF MYSELF

I got great sounds with Decapitator before even opening the succinct operating manual, but a perusal of the document improved my results.

Five Style buttons—labeled A, E, N, P, and T—switch Decapitator to different saturation algorithms, which are modeled after the 1950s-era Ampex 350 tape-recorder drive preamp, Chandler/EMI TG Channel (a combination mic pre, DI, and EQ), Neve 1057 input channel, and the Culture Vulture distortion device from Thermionic Culture. (Two Styles—P and T—emulate pentode and triode modes, respectively, for the latter unit.)

A Drive control increases gain and distortion for the chosen algorithm. Lower the Output control to keep post-saturation levels sane, or activate the Auto Gain switch. (You can still fine-tune output levels using the Output control.) The Punish button kicks in an extra 20dB of gain at the front of the signal chain for radical distortion. Blend processed and dry signals to your liking with the Mix control.

EM HOT PICK

SoundToys Decapitator emulates the saturation characteristics of five analog processors to produce both subtle and extreme effects.

Three controls filter the signal before it's saturated. These include a low-cut filter (continuously variable from 20Hz to 1kHz); a Thump switch, which boosts a few decibels at the low-cut filter's corner frequency; and a Tone control. The latter simultaneously and progressively boosts low frequencies and attenuates highs when turned counterclockwise from the noon position; turn it clockwise, and highs are boosted while lows are cut.

If the processed sound is too fizzy or buzzy, use Decapitator's high-cut filter (continuously variable from 1kHz to 20kHz) to roll off highs post-saturation. Engaging the Steep switch changes the filter's slope from 6dB to 30dB per octave. That's useful for approximating the timbre of a guitar amp's speaker cabinet when Decapitator's high-cut filter is set to around 4kHz or 5kHz.

> The Punish button kicks in an extra 20dB of gain.

Also provided are facilities for saving and recalling custom presets, a Compare function for your tweaks, and a nice selection of factory patches.

INTO THE BASKET

I love this plug-in. The A (Ampex) mode with a mild Drive setting was my overall favorite for adding subtle richness and girth to vocals, acoustic guitar, and bass. Activating the Thump switch on a spoken-word track lent a chesty, DJ-like timbre that sounded gorgeous.

T mode was generally my favorite for processing trap drums. But chaining two instances of Decapitator in series—one instance in T mode and the other set to A—sounded terrific on top-miked snare drum, especially with a little high-cut filtering applied. The resulting bright, colorful, raspy tone sounded as if a bottom mic had also been placed on the drum (see **Web Clip 1**). Activating the Punish button on the plug that was set to T mode made the track sound like the drummer was banging on a thermo-nuclear-powered garbage can. Bombastic!

P mode—with bassy Tone, high Drive, Thump and Punish settings—transformed a chorusy, atmospheric, stereo electric-guitar track into something like the over-the-top, distorted guitar on The Beatles' "Revolution" (see **Web Clip 2**).

I also liked N and E modes on electric guitar. Dialing in a moderate amount of Drive and preserving a little bit of

HEAR EXAMPLES OF THE DECAPITATOR IN ACTION * EMUSICIAN.COM/BONUS_MATERIAL

dry signal produced a beautifully subtle edge to the track without throwing fidelity completely out the window. Boosting the Tone control fully clockwise, setting the high-cut filter almost completely counterclockwise, and activating the Steep switch gave the track the midrange emphasis I was looking for.

A CUT ABOVE

SoundToys was apparently careful to preserve phase coherence in the Mix control's blending of processed and dry signals because the plug-in sounds very focused when used in this way. Such quality parallel processing enables you to produce beautifully rich tones. But make no mistake: SoundToys' Decapitator can also transform tracks beyond recognition with brutal distortion. Yeah, baby! ✱

Overall rating (1 through 5): 5
soundtoys.com

QUICK PICKS

AUDIO-TECHNICA ✱ AT4080 AND AT4081

By Myles Boisen

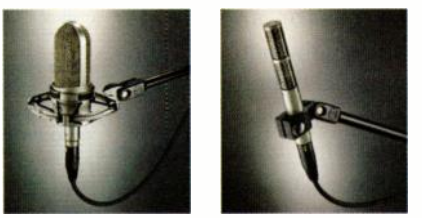
There has never been a better time to be a ribbon microphone enthusiast, with new designs and manufacturers regularly popping up. Now, Audio-Technica has jumped into the game, offering its first ribbon models: the AT4080 ($1,245 MSRP) and AT4081 ($895 MSRP). Both are built around the same dual-ribbon assembly, newly designed by the company's engineers. The onboard active elements are powered by 48V phantom to increase output to levels comparable with modern condenser mics.

STYLISH DESIGN

The AT4080 is topped with a distinctive long grille familiar to anyone who knows the company's popular AT4033 and other 40 Series mics. The AT4081 sports a slim retro-'60s appearance and is the smallest ribbon mic I have seen. Both are side-address, and the pickup pattern is bidirectional (aka figure-8).

In addition to the visible differences in construction between the two models, the AT4080 offers internal acoustic baffling and a larger output transformer to increase its low-end response. According to Audio-Technica's supplied specs, the 4080 also features slightly higher output and lower noise (about 3dB for both).

The AT4080 kit ships with a fully professional, metal-suspension shock-mount and a dust cover that is large enough to fit over both the mic and shock-mount. The AT4081 comes with a hard-rubber mic holder and a foam windscreen Both microphones are housed in a vinyl storage case and are covered by a limited five-year warranty.



The AT4080 (left) and AT4081 ribbon microphones use active electronics to increase output to levels comparable with modern condenser mics.

EM HOT PICK

IN STUDIO

In sessions at three different San Francisco Bay Area studios, I quickly settled on the AT4081 as my preferred tonality between the two models. The highest praise I can give for this mic is to report that I used a pair for stereo drum overheads on two different kits, and I loved the sound when recorded to both analog and DAW systems.

Prior to this, I had never gotten good results using ribbon mics as overheads. The extended high end, accurate midrange, and lack of muddiness or proximity-effect bass boosting of the 4081 is just perfect for drum recording. The 4081 pair sounded great on a Hammond organ/Leslie cabinet combination, as well as on a baby grand piano. Around the studio, I also tried the 4081 successfully on vocals and acoustic guitar. Placement can be a challenge with these sources, but getting the mic a bit farther away resulted in tracks that were warm and present, without excessive room sound. The 4080 ribbon proved to be an excellent pairing with acoustic bass.

A standard loudspeaker test—using high-quality cabling and a Manley Labs Langevin Dual Vocal Combo stereo preamp—revealed the 4080 and 4081 to be surprisingly different in frequency response. The midrange pickup was comparable, but the 4080 gave thumpy low bass, and the 4081 reproduced the kind of crisp high-end detail that I would expect from a condenser mic.

The Royer Labs R-121 provided an interesting contrast to these mics. The AT4080 had much more low end while the Royer, like the AT4081, offered airy highs. The AT4081 and R-121 were similar in high-end response, but I was surprised to hear that the Royer was brighter and clearer at 6kHz and above. In terms of low end, the 121 gave depth to bass drum and acoustic bass that surpassed the 4081, but it didn't equal the punch of the 4080.

The AT4081 was a closer match to an AEA R84. The AEA delivered slightly more low end below 100Hz, while the AT4081 conveyed more midrange and nuances of room tone from the audio samples I auditioned. High-end response was roughly comparable between these two ribbon transducers.

REMARKABLE RIBBONS

Both of these ribbon mics have their merits, and they arrive ready to compete with any of the premium ribbon mics out there in terms of features, specs, and sound quality. The 4081 really won me over with its affordable price tag, crisp tonality, and slim, maneuverable body style. Highly recommended. ✱

Overall rating (1 through 5): 4 (4080); 5 (4081)
audio-technica.com

ARTURIA * HIP HOP PRODUCER (MAC/WIN)

By Asher Fulero

Hip Hop Producer ($99), the new urban-themed software bundle from Arturia, gathers four key production tools needed to build the necessary components of hip-hop together into a single box for a reasonably low price. It combines a streamlined version of the company's Analog Factory Hip Hop soft synth with Ableton Live 8 Lite Arturia Edition, Applied Acoustic Systems' Lounge Lizard Session, and the Hip Hop Drums sample/loop collection from ModernBeats. Between big analog synths, hot beat loops and construction kits, realistic electric piano, and the remixing capabilities of Ableton, this pack leaves few stones left unturned for the aspiring hip-hop creator.

Hip Hop Producer bundles the Analog Factory Hip Hop soft synth, Ableton Live 8 Lite Arturia Edition, Applied Acoustic Systems' Lounge Lizard Session, and the ModernBeats Hip Hop Drums sample/loop collection.

IN THE FACTORY

Arturia's Analog Factory is really the focus of the package, though getting an upgradeable entry into the Ableton world is also a big draw at this price point. As usual, the Arturia synths look and sound great. This Hip Hop edition is appropriately gold-tipped and comes preset with 250 patches from the full version's arsenal, hand-picked to be relevant to a wide range of hip-hop styles. The synth tones are noticeably smoother and more alias-free than most soft synths, and they have a quality that somehow cuts right through the densest of mixes. The engine is a hybrid from Arturia's collection of re-created vintage synthesizers (including its Minimoog V, ARP2600 V, Moog Modular V, and CS-80V). The interface is streamlined to include only Filter, LFO, FX, Envelope, and Volume, plus eight snapshot knobs, which I found to be immensely useful to mark cool tones for later use without stopping the knob twiddling. The preset system is surprisingly fast and convenient; filtering by CPU usage is something I didn't expect to use, but now I wish all my plug-ins would offer.

LOUNGING AROUND

Lounge Lizard Session is an electric piano simulator that does an impressive job in re-creating the nuances of real Rhodes and Wurlitzer EPs using modeling rather than sample banks. Although the Session version doesn't offer the Fork/Tine/Mallet controls of the full version, the engine is the same and so are the sounds. It operates with a much lower hit to the host processor and greater polyphony/instances than sample-based methods. Also, dynamic shifts are smoother because there are no velocity layers. Both Lounge Lizard and Analog Factory also offer standalone versions for use in performances where the CPU power needed to run the host is unnecessary. Lounge Lizard is basically the same as Electric, the AAS-designed Ableton instrument that comes with the complete Live 8 Suite and is also sold separately as an add-on (not included in this version of Live Lite). It isn't the real thing, but it certainly sounds convincing enough, especially in heavily limited hip-hop mixes.

WE GOT THE BEAT

The included beats library is relatively impressive considering the low price tag; it includes a wide array of preset drum kits ready for use inside Ableton—including detailed beatbox kits, vinyl scratch kits, clap kits, and specific drum kits in the styles of some of the most successful hip-hop producers (such as Dr. Dre, The Neptunes, Just Blaze, and the KeeMaster). There is also a wide array of sampled drum machines, and all the kits are set up using Ableton's Drum Racks so it's easy to surf through the well-made patches but just as quick to create your own mix-and-match kits. There are also more than 1,200 music loops, most of which sound great and can really help get a mix started quickly.

LIVIN' LITE

The package's main production hub is Ableton Live 8 Lite (Arturia Edition), the all-in-one production/performance/remix/editor/sequencer software designed for creating and performing modern musical styles. The Lite version offers capped numbers of Scenes, Tracks, and Effects, and it is missing a few of the really great effects and software instruments compared to the full version. Otherwise. it contains all the advantages of working with Live's Clip view and offers the creative tools needed to craft hip-hop of any variety. It's easy to mix and match beats, kits, loops, and synths, and then create arrangements, sequence, automate, and mix songs down. Afterward, you can use Live again to perform the songs, either whole or in pieces. Though it isn't the full version, it still offers all the advantages of how the software works. Once registered, users can choose to purchase a discounted upgrade from Ableton's website to Live Intro (the medium level). regular Live, or the full Live Suite.

Together, the four ingredients bring all the necessary components to making great hip-hop—with the obvious exception of great talent, something that money cannot buy. *

Overall rating (1 through 5): 3
arturia.com

API ✱ 527

By Eli Crews

API's latest 500 Series module, the 527 compressor ($895), incorporates various features from other VCA-type compressors found in its product line—most notably the 225L compressor and 2500 stereo bus compressor. Unless you happen to own an API console, you'll need a compatible rack frame to use the 527, such as API's 500VPR 10-slot rack or the 6-slot 500-6B Lunchbox.

PRECIOUS REAL ESTATE

First designed by API in the late '60s, 500 Series modules have small 1.5x5.25-inch faceplates, so the 527's controls are compact yet ergonomic, and they display API's signature knob shape and color scheme. Continuous controls are output, threshold, ratio, attack, and release, and all have detents for easy recall. A switch determines whether the LED shows output level or gain reduction. The odd thing about the meter is that gain reduction is shown backward; that is, all 10 LEDs are illuminated when there is no reduction happening, and they sequentially turn off to indicate the amount of reduction, from 1.5dB to 23dB. Another switch allows linking the sidechains of multiple units, although a hardware modification is necessary for that.

A Type switch determines whether the VCA functions in feed-back (Old) or feed-forward (New) mode. Simply put, New is generally more transparent while Old yields more of a distinctively compressed sound. Another toggle determines the knee shape (hard or soft). Again, soft is more transparent while hard clamps down on your signal more, providing the sound of heavy compression, even at lower gain-reduction settings. Yet another switch turns on the patented Thrust circuit, which is a filter inserted into the compressor's sidechain designed to account for the way low-end energy triggers compression more heavily than high-end energy. It's not a completely unique concept, yet the shape of the 527's filter accounts for a different sound than that of other compressors with sidechain filtering, which simply reduce the amount of low-end energy in the detection circuit. The 527's Thrust filter starts around 1kHz, so more of the low-mid components of your signal pass through uncompressed. The remaining features are an overload LED and a hard-bypass switch, which glows when the compression circuit is active.

EM HOT PICK

The API 527 compressor includes output, threshold, ratio, attack, and release controls, all with detents for easy recall.

SINGLE DRUM TEST

With only a single 527 for testing, I couldn't do stereo drum bus tests through the compressor, so I set up a mono drum submix for some parallel compression. Blending the compressed signal back in with my drum mix thickened up the sound considerably, especially with the Thrust engaged. Cymbals and snare settled into a really nice space—overall, the drums went from sounding like a recording to sounding like a record.

On kick drum, the 527 was extremely adept at sculpting the transient of the signal. I could achieve a pillowy, cushioned sound by setting the ratio to 8:1, keeping the attack and release in the middle of their range, using the Old type and soft knee, and engaging the Thrust circuit. Backing off the ratio a bit, slowing down the attack, and switching to New/Hard/No Thrust resulted in a much punchier, more forward sound, appropriate for the sound of the song. I had similarly versatile and effective results on the snare.

EVERYTHING ELSE

On bass guitar, the 527 was highly flexible and useful. I generally preferred the Old setting as it thickened the sound while tightening up the low-mids in a really pleasing way. I assume API's proprietary transformer had something to do with that. Guitars sounded thicker and meatier through the 527, too, with wayward transients kept in check. I also used the 527 quite a bit on vocals, in both the tracking and mix stage. For tracking, I tended to keep it in New mode with a soft knee to help prevent any discernible compression artifacts; in this mode, the 527 was quite transparent. During mixdown, I altered the settings to match the song's tempo and character, often opting for the more extreme settings. Speaking of which, a quirk of the 527 is that the auto-makeup gain makes your signal seem louder the higher you turn up either your ratio or threshold controls, so as you approach full limiting, your output control often needs to be backed off from unity—the opposite of most compressors.

MAKE ROOM IN MY RACK

I've come to really love this compressor during the months I've been using it. It's well-built and versatile—transparent enough when I want it to be, but also able to provide a sound of its own when pushed a little bit. Little wonder, as the 527 uses the same 2510 and 2520 discrete op amps and output transformer that have given API's products their heralded sound for decades. I'm hooked—API's not getting this one back. ✱

> The 527 uses the same 2510 and 2520 discrete op amps and output transformer that have given API's products their heralded sound for decades.

Overall rating (1 through 5): 5

apiaudio.com

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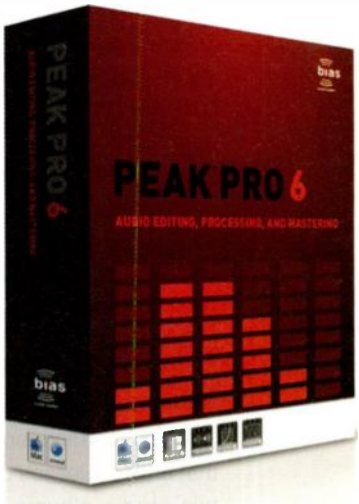

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By Steven Wilson

New is the New Old II

In interviews, I often refer to the *golden age* of albums as shorthand for the 10-year period from *Sgt. Pepper's Lonely Hearts Club Band* through the advent of punk rock. It was a period when albums—until then typically little more than collections of filler intended to sell off the back of hit singles—were elevated to a total package of music, lyrics, artwork, and sequencing in which the musical continuum became more important than any individual song. This vision for something greater helped rock music finally join cinema and literature as a serious art form.

One important aspect of this era was that artists released one and sometimes two studio albums a year, with little regard as to how they would be received.

> Experimenting was out, and making records became about feeding a hit machine.

They didn't have the time to worry about that when faced with the record companies' constant demand for new material. This pressure allowed the artists to experiment, and if those experiments failed, then so be it, there would be another album within a matter of months to redress the balance.

Consider that in the early 1970s, Elton John released 10 studio albums, two of them doubles, and two live albums—all of high quality; Neil Young's output from the late '60s to the early '70s covered singer/songwriter material, country music, and heavy rock. Not to mention that at almost any time during Frank Zappa's career, you could expect a jazz album, a classical album, a box set of guitar solos, a rock opera, or a doo-wop album.

Once punk came along, however, the idea of the album as an artistic statement came to be seen as old-fashioned and pretentious. And while many bands continued to make fine albums, the advent of MTV in the mid-'80s brought music back to the level of image and artifice, as the golden age of the artist gave way to the golden age of the A&R man. Album releases were spread out more as companies shifted their priorities from putting out as much music as possible in the hope that some of it would hit big, to micromanaging album projects to ensure that every release was a potential blockbuster—the next *Rumours* or *Hotel California*.

With a new model in place of an album every three years or so, the stakes riding on each one were phenomenally high. If it failed, the artist's career could well be over before the next album came along. This resulted in a play-safe mentality, with artists reluctant to mess with an established hit formula and labels centering massive promotional campaigns around comeback albums that largely epitomized *more of the same*. Experimenting was out, and making records became about feeding a hit machine, not following the artistic muse.

The good news is that current recording technology has enabled musicians to free themselves from a dependence on record labels, and the Internet has put distribution into the hands of the artists themselves. Bands are arguably freer to record and distribute music now than at any time since the dawn of the music industry.

For all the apocalyptic clamor about the death of the album, this is actually a very exciting time for recording artists. The decline of commercial radio and music television has swung the focus away from the idea of selling your whole concept in the space of a three-minute pop video, and pushed the emphasis back to artists who make albums and tour. And because the Internet has created a stronger bond between fans and artists than ever before, the artist once again has the freedom to experiment and take chances, releasing several albums a year in wildly different styles if they choose to.

Just like they used to in that golden age. *

Steven Wilson is the lead vocalist, guitarist, and founding member of the band Porcupine Tree. His most recent solo album, Insurgentes, *was released in 2008. Go to swhq.co.uk for more info.*

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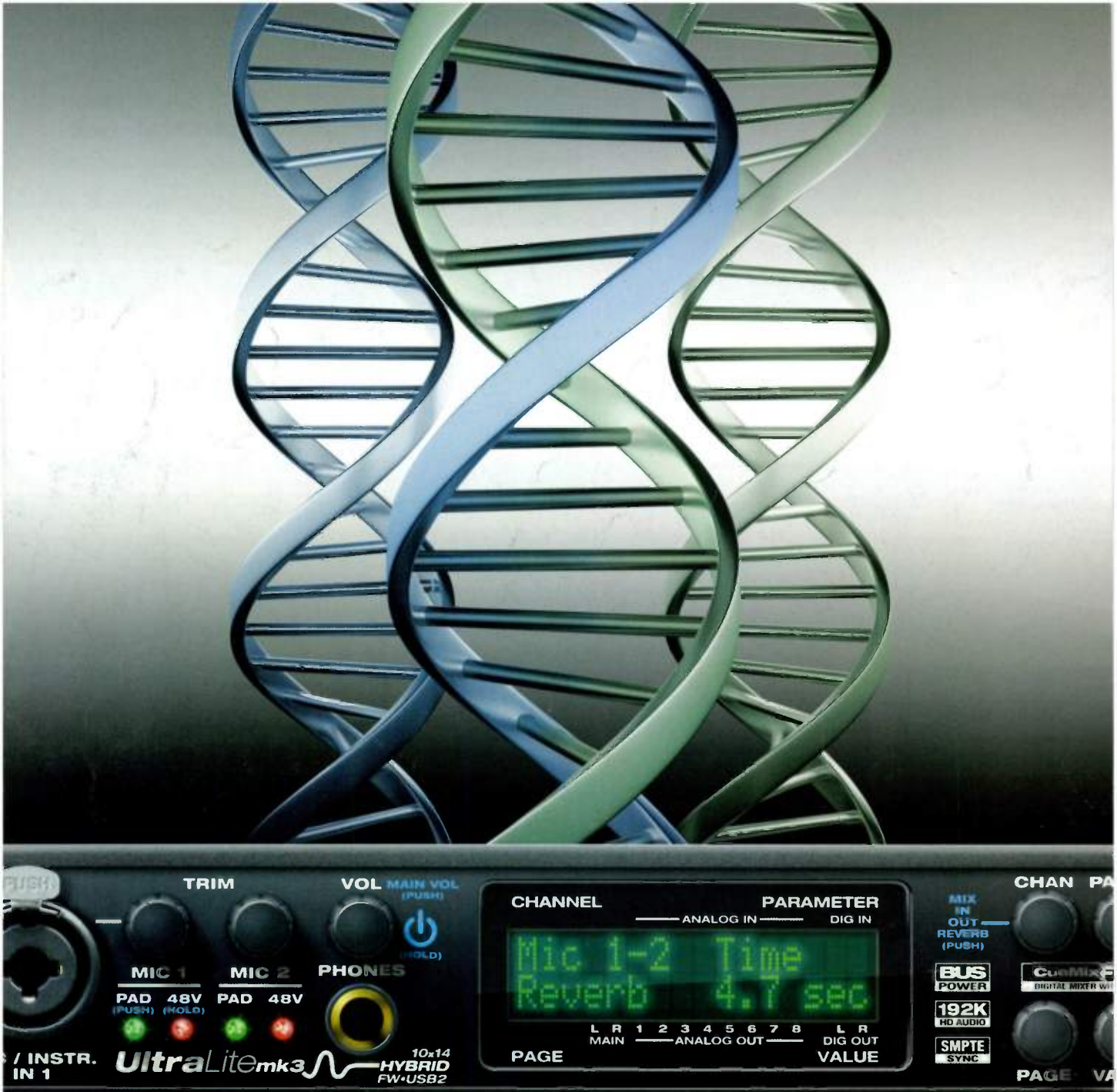
Houston, Texas

St. Johns, Newfoundland, Canada



HYBRID TECHNOLOGY

The UltraLite-mk3 Hybrid delivers another industry first from MOTU: Combined FireWire and USB2 connectivity in a single audio interface. The result? The most versatile audio I/O ever made. For both Mac OS X and Windows 7/Vista, the UltraLite-mk3 Hybrid gives you innovative engineering, pristine audio quality, powerful mixing/processing, rock-solid performance, and native 32- and 64-bit driver support for all your favorite audio software.

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