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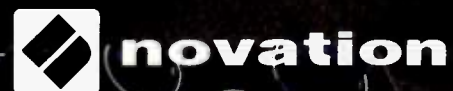


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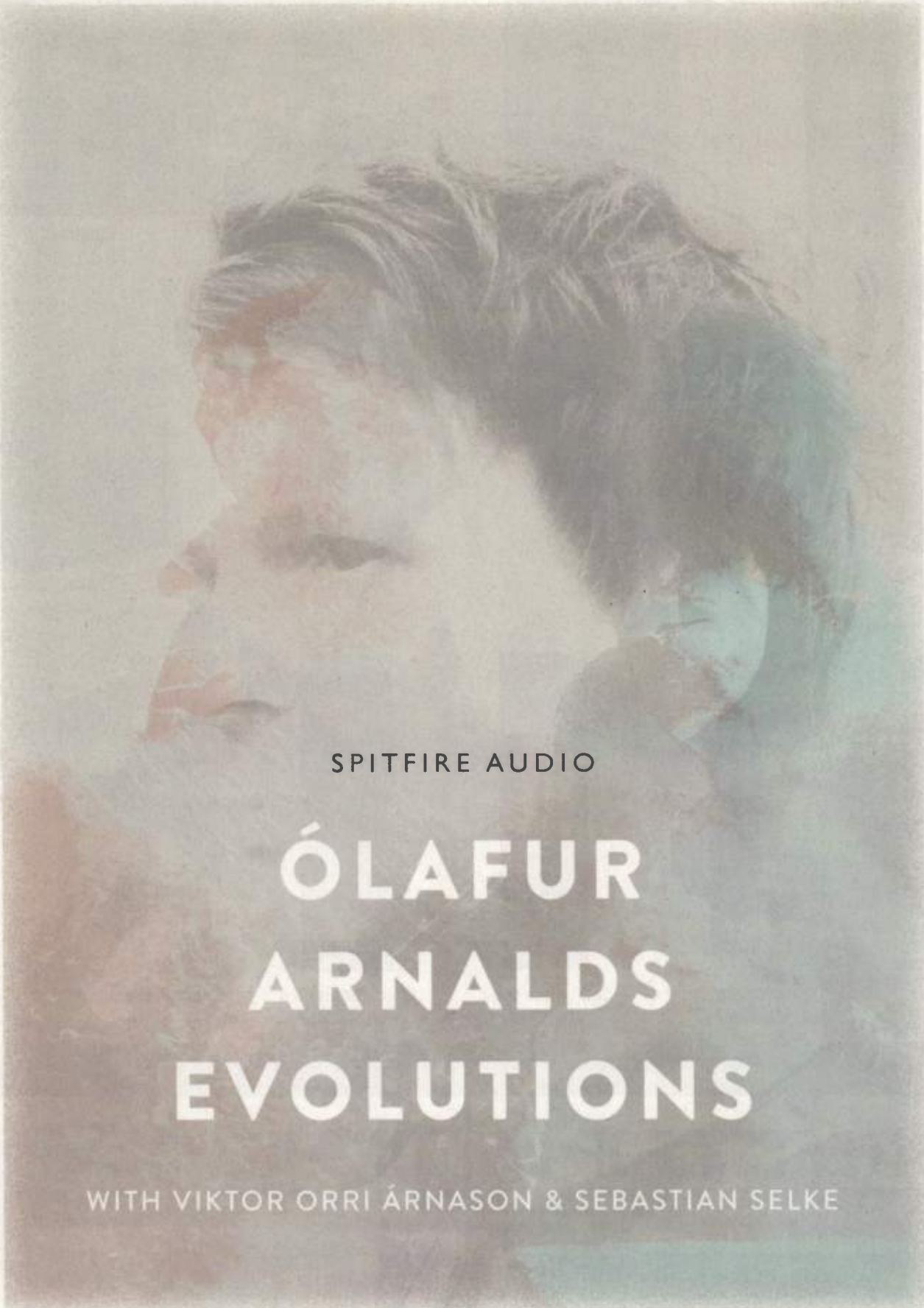
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# electronic **MUSICIAN**

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## THE 2016 EDITORS' CHOICE AWARDS

It's the toughest job we love the most: *Electronic Musician* celebrates the 25 greatest music production technology innovations to debut in the past year.

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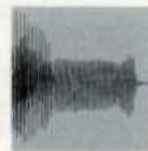
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## Honoring the Best

WE'RE ALL gear collectors, but here at the magazine, most of us have crossed into hoarder territory. Who could blame us? Hundreds of new synths, apps, microphones, monitors, groove boxes, controllers, workstations, plug-ins, outboard effects, and other recording gear land on our desks each year for our perusal. We know that most people are not as fortunate as we are, and musicians working at home have to make difficult choices when

it comes to shelling out their limited dollars on the latest gear designed to improve their recordings or streamline their workflow.

So we strive to help our readers make informed gear choices by offering honest, in-depth reviews in every issue. And for more than two decades, our annual Editors Choice Awards have recognized the very best products of the year.

Starting on page 18, we honor the

year's greatest technology innovations. We've chosen 25 products in a wide range of categories, from microphones to synths to apps; all designed to help you make better music, onstage or in the studio. Join us in congratulating the winners.

Every award is subjective, and we'd like to hear your opinions. What are your favorite new products? Email us at [ElectronicMusician@musicplayer.com](mailto:ElectronicMusician@musicplayer.com).



**SARAH JONES**  
EDITOR

[sjones@musicplayer.com](mailto:sjones@musicplayer.com)

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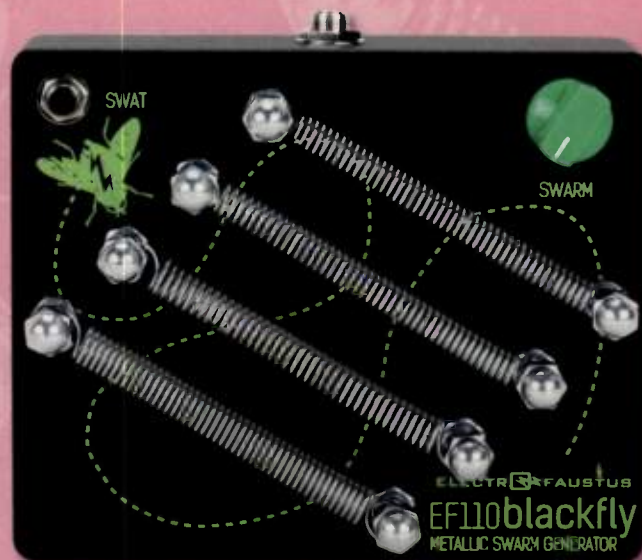
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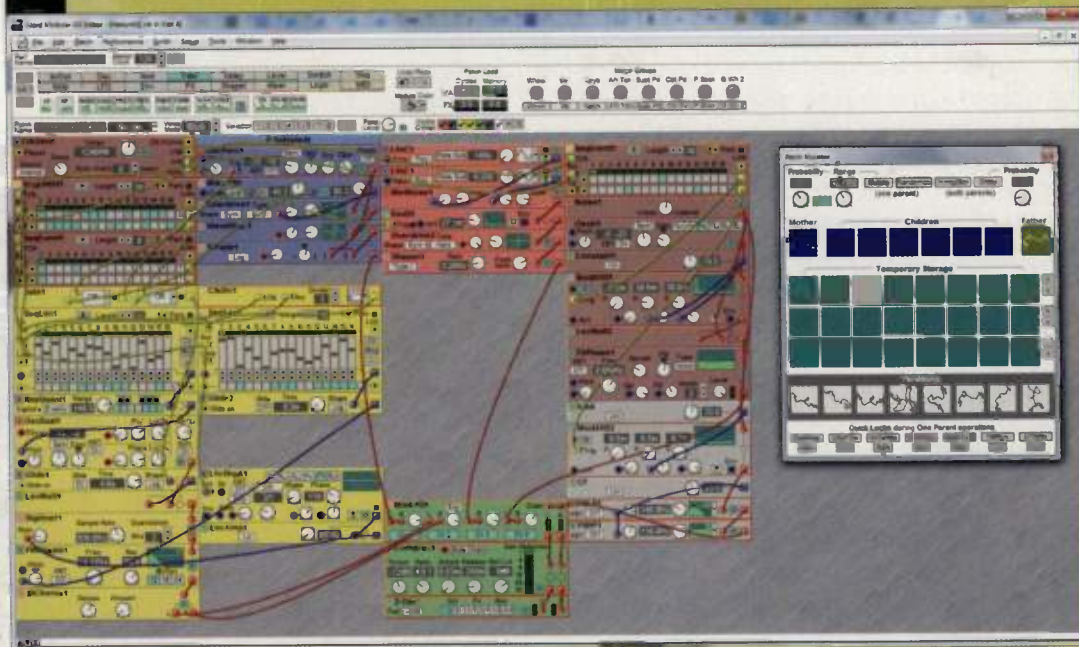


## gadget geek



## Hot Buzz Electro-Faustus Blackfly

The Blackfly "metallic swarm generator" from Electro-Faustus is a spring-activated instrument that generates all sorts of buzzy, metallic, dronelike, and straight-up weird sonic textures, depending on how you strike, strum, scrap, pluck, or otherwise excite the four springs mounted on its faceplate. Springs are arranged in order from low to high pitch, and can be tuned by tightening the nuts that attach them to the unit. Simple controls include a Swarm frequency adjuster and Swat kill switch. \$149 at [electrofaustus.com](http://electrofaustus.com).



## The genesis of Nord's patch variation feature

Randomizing patch parameters to create new sounds can be as frustrating as it is exciting; you often get more duds than winners. To solve this problem, Nord ([nordkeyboards.com](http://nordkeyboards.com)) implemented a system called Mutator, which provides an elegant way to create new sounds while retaining some sort of relationship to the previous patch.

Mutator is the brainchild of Pelle Dahlstedt, a musician, composer, and researcher based in Gothenburg, Sweden. It began as a standalone software program that modeled biological evolutionary concepts to control huge numbers of parameters simultaneously. "The idea stems from my interest in finding a method of exploring all the parameter variations when programming sounds," says Dahlstedt. "There are sometimes hundreds of parameters on a synthesizer and it would take a long time to try all the combinations. And we only have two hands."

Dahlstedt traces his breakthrough back to PhD work at Chalmers University of Technology where his supervisor, Dr. Mats Nordahl, was a complex-systems expert with a background in the area of artificial life. "He introduced me to biologically inspired technologies," Dahlstedt remembers, "such as evolutionary computation. I saw great potential in that and asked: Why not make an interactive composition and sound-editing tool? In late 1999, I created MutaSynth, a software program that lets you breed sounds on any synthesizer."

With MutaSynth, he could create subtle or extreme variations on a programmed sound, as well as combine aspects of two patches to create hybrids. For example, he can select a patch to be the Mother, then click the Mutate button to create several Children—the same patch with different parameter settings. The

Children that sound the best can be temporarily saved for further mutation and tweaking, or one of them can be designated as the new Mother to create another generation of patches. Furthermore, he can take one of the stored patches and make it the Father to generate additional Children that share aspects of both parents.

"I used MutaSynth to program Yamaha, Oberheim, and other synths I had, as well as the Nord modular, where I could build any sound engine—some of which had 200 parameters," he explains. "This allowed me to evolve and explore a 200-dimensional space of possibilities. With any patch, you can breed all the parameters by ear, and edit the sound without knowing what you're doing."

In 2005, Dahlstedt contacted Nord, and they decided to implement the concept into the Nord Modular G2 environment. Although the G2 is no longer in production, Windows users can run the free Nord Modular G2 Demo ([nordkeyboards.com/downloads/legacy/nord-modular-g2](http://nordkeyboards.com/downloads/legacy/nord-modular-g2)) and explore its Mutator capabilities in software.

However, Mutator functionality is currently available in the Nord Lead 4 and the Nord Lead A1, though in a simplified form. Here, the Mutator button creates variations on the current sound, while leaving certain parameters untouched, such as output level, reverb and arpeggiator settings, and the mono/legato setup.

"They are slightly different in implementation," Dahlstedt says of the two keyboards. "In the Nord Lead 4, you can make slight variations or greater variations; you can depart from the current sound, but always go back to the Mother sound to get new variations in different directions. In the Nord Lead A1, you have simply two choices: Mutate, which is one step away from the current sound; or Randomize, which creates a completely new sound."

Dahlstedt adds that "for evolutionary algorithms, you need to generate a number of alternatives and choose the best ones." For example, the Lead A1 has a scratch-pad memory called Like where you can temporarily save patches and determine later which ones you want to keep or mutate further. Moreover, this synth allows you to mutate and randomize several sounds at the same time by activating Multi Focus, so that all active slots are affected.

"Although these Mutate systems are simplified compared to the G2 version," Dahlstedt adds, "they are useful for creating patch ideas and moving out of your habits for programming sounds. If you use them with arpeggiators and other structural features in the synth, you can also use them to create compositions."

Visit [emusician.com](http://emusician.com) to see a video of Pelle Dahlstedt demonstrating his patch mutation system using the Nord Modular G2.

## Record multitouch and motion-controlled synth performances.

**WE LOVE** iOS synthesizers based on physical gear as much as the next geek, but creations like Bit Shape TC-11 2.0 for iPad/iOS 7.1 or later ([www.bitshapesoftware.com](http://www.bitshapesoftware.com)) really hit home why the iPad platform makes for such fun instruments. TC-11 has a fully programmable modular synthesizer under the hood,

but the main interface is simply a multitouch x/y axis with gyroscope/accelerometer/compass motion controls. Through factors like Touch Speed, and Distance to Previous Touch, TC-11 controls every synth parameter of its 160 presets without knobs, faders, etc. It's a powerful hands-on tool that feels essential for sound designers and experimental electronic musicians.

but vary the speed of your movements to see what results.

**1.** Get used to the TC-11 interface with the synth patch of your choice. Hold down two or more finger touches to observe the sound. Then move the fingers to different distances and see which parameters change, such as modulation rate, filter amount, etc. Next, rotate the fingers so they're at different angles, and observe those changes. Now do some freeform movements

**2.** Go to Settings>Patch and toggle on or off the different modules for oscillator, filter, effects, LFOs, sequencers, etc. Double-click any module to edit its settings and hear the results from the Live Preview View.

**3.** To go deep into tweaking the motion and multi-touch controller assignments, as well as the layout of the touchscreen, peruse the Patch Options, Controllers, and Triggers in the Patch menu.

**4.** To record TC-11 2.0 performances to 16-bit/44.1kHz WAV, enable Settings>Display>Show Record Button. Record your performance; you can send the finished WAV to another app through AudioCopy or grab it through iTunes File Sharing.

Get in touch with the iTunes App Store and pick TC-11 2.0 for \$24.99.



## CLASSIC EM

## Philip Glass, October 1986

**WE INTERVIEWED** Philip Glass in 1986, just a few years after the completion of the last work in his monumental opera trilogy *Einstein on the Beach*, *Satyagraha*, and *Akhmatov*, when he was already deep into the film-scoring arc of his career. By this time, Glass had grown into an unlikely pop culture phenomenon, as mainstream music audiences everywhere began to embrace his work.

**Glass:** I tend not to use synthesizers for invented sounds, but to either extend or imitate acoustic instruments... The next stage for us is the MIDI system so we can link several synthesizers together to make composite sounds.

**EM:** You haven't done that yet?

**Glass:** We do it to a limited degree, but we're doing to do it more. MIDI will allow us to make a much better string sound than we can currently get, and I think it will improve the vocal sounds a great deal. In a certain way, people who make electronic music would probably



consider this not very adventurous, because what we're doing is trying to perfect and make a kind of neo-realism in terms of acoustic and symphonic and vocal sounds using electronic instruments.

But I have to remind you that all through the '50s, '60s, and '70s, there was a whole development of pure electronic music where the main currency was invented sounds rather than found sounds. And for the most part, by and large, it was not successful. I'm not sure why—I suspect that our taste is very conservative in the sense of what we'll accept as real sounds; that largely, the invented sounds are a little too strange for most people, and that we eventually can learn them.



## >> The Cactus Blossoms with Alex Hall



Engineer/drummer Alex Hall playing and recording at home

"THIS BAND has such a classic sound, the temptation would be to go whole-hog with a '60s Nashville country-politan sound," says engineer/musician Alex Hall. "JD [McPherson, producer] avoided following that inclination to its logical conclusion. I think that made the record stronger."

Hall recorded the Everlys-esque harmonies of the Cactus Blossoms in his house—another suggestion from producer/rock 'n' roll artist McPherson. Together, Hall and McPherson made the young bandmates (and actual brothers)—Jack Torrey and Page Burkum—feel at once comfortable and inspired in the "studio." They recorded live in the friendly confines of Hall's home, adding inventive elements along the way.

"In the song 'Mississippi,' there's a break leading up to the guitar solo that just features Jack's voice and the guitar, but during mixing, I mulled Jack's voice out to a Leslie speaker and faded that in slowly over the course of four bars or so. It's subtle, but it's not the kind of thing you would hear on an old record," says Hall, pointing out one of the touches that ups the ante on the Blossoms' debut LP *You're Dreaming*.

In addition to recording and mixing, and opening his home to the Cactus Blossoms, Hall played drums on the album. "This was actually the first time we ever worked with a drummer, so that was a big deal!" says Torrey.



L-R: Joel Patterson, Page Burkum, Jack Torrey

"We stayed with Alex, too, so basically we would not leave his house for three days at a time," adds Burkum.

Hall set up the brothers and accompanying musicians (Joel Patterson on guitar, Beau Sample on Bass, and Hall himself on drums) in different corners of his living and dining areas, which come together to form an "L." The Cactus Blossoms strummed acoustic guitars and sang side-by-side in the vertical part of the "L," with the rhythm section and Patterson situated in the horizontal part.

Torrey and Burkum sang into a matched pair of Blue Baby Bottle microphones. Torrey's Silvertone Archtop acoustic guitar and Burkum's Harmony Sovereign were miked up with a couple of RCA 77 ribbon mics.

"Those 77s give the guitars a nice, deep dark sound, which seemed to work well with the way that they play," Hall says. "The preamps were basic, solid-state—kits that I built from Seventh Circle Audio. I might also have been running a couple of outboard EQs to add a little bit of air to the top, but I tried to keep the tracking as clean as possible. Because I was playing, too, I was a little afraid to commit too much color to tape since I couldn't monitor the entire time. I generally like tracking with compression and EQ, and committing things, but in this instance, I had to be more conservative."

As it was, Hall periodically ran up and down stairs to the basement mix suite that he used as a Pro Tools-based control room on the session.

"Alex was drumming and running up and down, and JD would be down there listening, and he would let us know things like, 'This has less energy than it feels like upstairs. Let's try it again and give it a little more juice.'" Torrey says.

"Before we started recording, JD weighed in on what songs we should choose, and talked about the direction and rhythmic approaches we would take on the songs," Burkum explains. "Then, in the studio, he was often the calibrator of what was working and what wasn't."

"JD and Alex were amazing," Torrey says. "I felt like I learned something every time we had a session. Something changed every time, and I think it definitely shifted us."





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## 5 ROLAND/V-MODA M-100 AIRA

DJ headphones  
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**HIGHLIGHTS** Designed in Italy, the V-MODA Crossfade M-100 over-ear headphones are branded with Roland's AIRA logo and colors • extra-large, memory-foam ear pads • 50mm dual drivers • 5Hz to 30kHz frequency response • includes two cables with 1/4" adapters, case, and accessories

**TARGET MARKET** DJs, producers, musicians

**ANALYSIS** Built for concert use or recording, these cans offer the extended low- and high-end response capable of reproducing the wide frequency range created by the AIRA synth line as well as other modern electronic instruments.

[rolandus.com](http://rolandus.com)



## 6 BLACK CAT MONSTER K-FUZZ

Eurorack module  
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**HIGHLIGHTS** A 6HP module with a "vintage fuzz" circuit, modified for use in a modular synth system, for adding overtones and waveshaping to the input • controls for Frequency and Saturation • 3-position switches for Clipping and Voicing modes • two CV inputs • hand-built in the U.S.A. • first in a series of modules that will include a ring modulator, multiplier, and probability matrix

**TARGET MARKET** Eurorack users

**ANALYSIS** A stompbox-style distortion processor that has been optimized for use in a modular setup.

[blackcatpedals.com](http://blackcatpedals.com)



## 7 EASTWEST HOLLYWOOD SOLO INSTRUMENTS

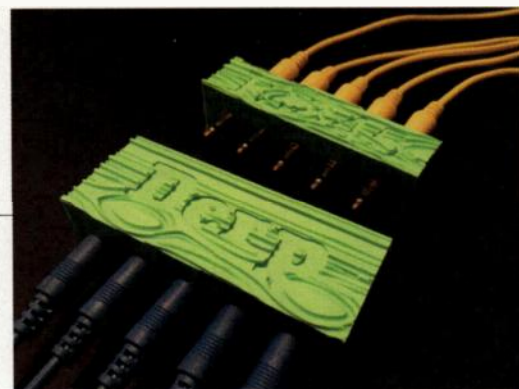
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**HIGHLIGHTS** Produced by Doug Rogers and Nick Phoenix, with Shawn Murphy engineering, these libraries include Hollywood Solo Harp, Hollywood Solo Cello, and Hollywood Solo Violin • Maestro folder contains combo instruments, with keyswitches for many of the articulations • includes folder of individual articulations accessible using velocity • FX folder with special effects and glissandi

**TARGET MARKET** Composers, musicians, performers

**ANALYSIS** Designed to fill out the Hollywood Orchestra series and provide a traditional set of high quality computer-based instruments.

[soundsonline.com](http://soundsonline.com)



## 8 DERP MODULAR DERP BLOCKS

Portable patch cable connector  
\$13.95 individually; \$29.95 a pair

**HIGHLIGHTS** Made up of two blocks that connect: one block has jacks on both sides, while the other has jacks on one side and plugs on the other, allowing them to connect • available with 3.5mm or 1/4" outside jacks • designed for connecting patch cables between modular cases, especially for transportation • available in five colors: green, orange, blue, purple, and gray

**TARGET MARKET** Modular synth users

**ANALYSIS** A convenient way to route five audio signals or CVs at a time.

[derpmodular.com](http://derpmodular.com)



Unlike your favorite hacked *Speak & Spell*, the Synthesis Technology E950 Circuit Bent VCO provides a high level of precision when needed, but you can make it burble and babble just like the original.

## SYNTHESIS TECHNOLOGY

# E950 Circuit Bent VCO

## Taking your modular beyond the *Speak & Spell* routine

BY GINO ROBAIR

**T**he Texas Instruments *Speak & Spell* is easily the most popular item from the '70s and '80s for circuit bending. While the mods done by Q. Reed Ghazala and others provide musically useful sounds, the results are unpredictable: Admittedly, that's a key part of the aesthetic for many users. Yet, wouldn't it be useful to have repeatable control over those wonderful vocal sounds?

Of course, speech synthesis has already been implemented in a handful of Eurorack modules, but none offers the flexibility of the Synthesis Technology E950 Circuit Bent VCO (\$199). A consultant to the original *Speak & Spell* team in the 1980s, Synthesis Technology's founder, Paul Schreiber, and DSP programmer Eric Brombaugh, went to the source and officially licensed TI's linear predictive coding (LPC) speech-synthesis algorithms for this module.

Moreover, the E950 includes three generations of voice synthesis: the original, albeit lower quality, *Speak & Spell* words, letters, and numbers (banks 1 through 4); higher quality sounds from an industrial alarm system originally using the MSP50C10 chip (banks 5 through 8); and a "female" voice from an alarm clock (bank 9). Each bank offers roughly 60 utterances: Dial up the first 40 using the Fine/Index knob or access the full list by sending a CV to the FM/Index input (when the FM/Index Mod knob is turned up). There are six words per octave, and when you trigger the highest setting, the entire list of sounds in the bank is repeated. The module provides a Pitch knob and 1V/octave CV input.

The module also includes two VCO banks, each containing 16 waveforms borrowed from Synthesis Technology's superb wavetable VCO, the E350 Morphing Terrarium. Additionally, the E950 utilizes

the same smoothing/anti-aliasing algorithm implemented in the E350. In VCO mode, the E950 tracks over eight octaves.

The E950 operates differently using the VCO wavetables instead of the speech banks. For example, in VCO mode, sound is always present at the Audio jack, while in speech mode you have to trigger

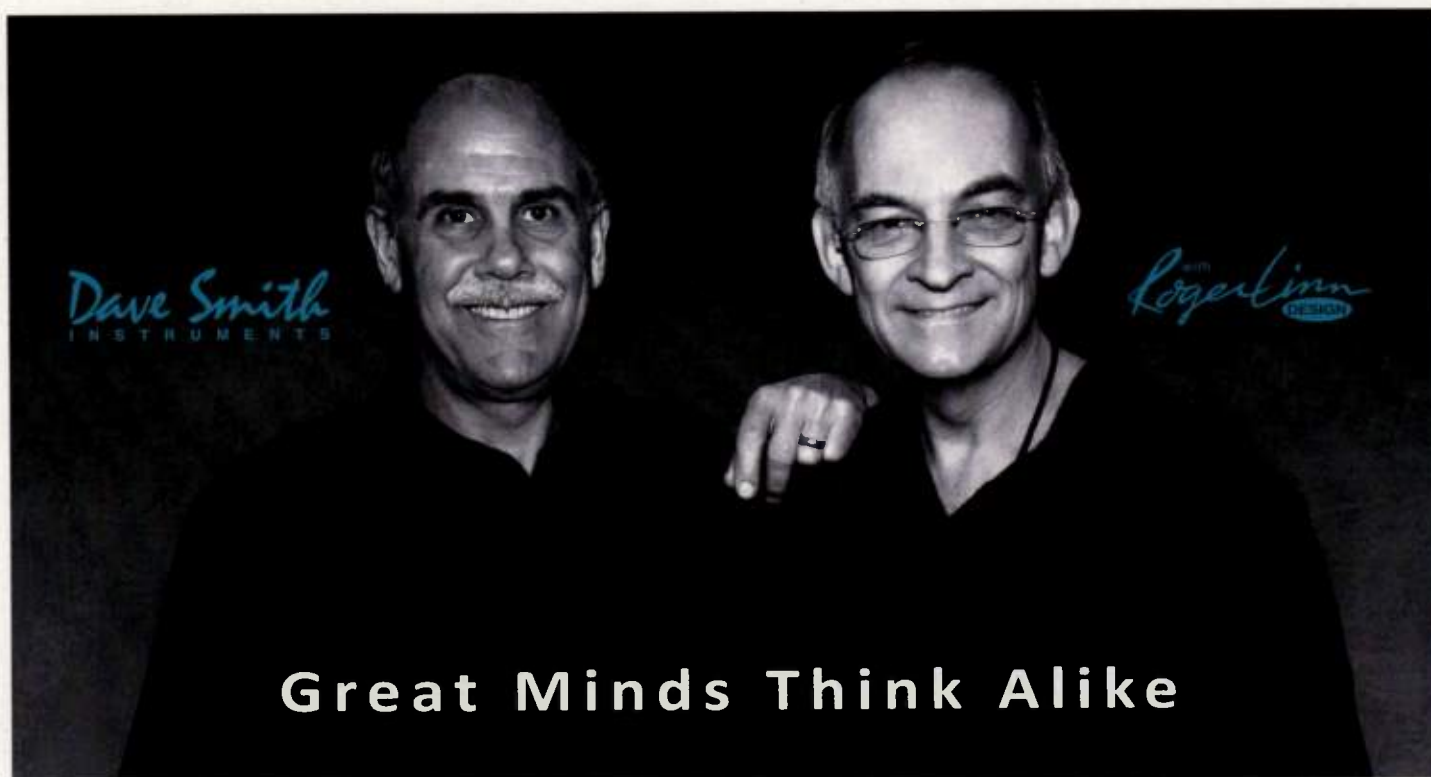
the voice by patching a gate signal to the Sync input. You can get stuttering effects by retriggering the gate before the sound is finished.

Another difference between VCO and speech modes is with the Digital output: It delivers noise in VCO mode, whereas in speech mode it sends a +5V gate signal while a sound is being generated. Furthermore, the Effect knob sweeps through the VCO wavetables, while in speech mode it controls the pitch-corrected speed of a word when set counter-clockwise from noon, and jumbles playback when set clockwise from noon.

While this latter setting can be used for classic circuit-bent sonorities, you can make the words further unrecognizable by simply lowering the Effect and Speed controls as well as adding CVs for modulation. Consequently, the E950 is not a one-trick pony as you might expect, but rather an entire circus of timbres, from format-rich sounds to modulated wavetables. And while the module allows you to manually access each of the speech sounds discretely when you need to, it can just as easily be taken into territory that will satisfy users who prefer more indeterminate results.

Synthesis Technology is developing the E951 Expansion module, which will add voltage control of bank selection and provide looping functionality. ■

6-Voice Synth Engine · 450+ Drum Samples · Analog Filters · Sequencer · Compressor



Put together two of the most influential electronic instrument designers of our time and great things are bound to happen. Case in point? The **Tempest** analog drum machine — from the fertile minds of **Dave Smith** and **Roger Linn**.

With 6 analog synth voices (2 analog and 2 digital oscillators each) and some of the most slamming drum samples around, you can use its 16 velocity- and pressure-sensitive pads, 2 touch sliders, and other live performance controls to grab hold of your beats and twist, warp, and mangle them like nothing you've ever heard.

In the studio or live on stage. **Tempest** was made to be played.



**TEMPEST** | 6-Voice Analog Drum Machine



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# The 2016 Editors' Choice Awards



Celebrating the Year's  
Top Innovations in  
Music Technology

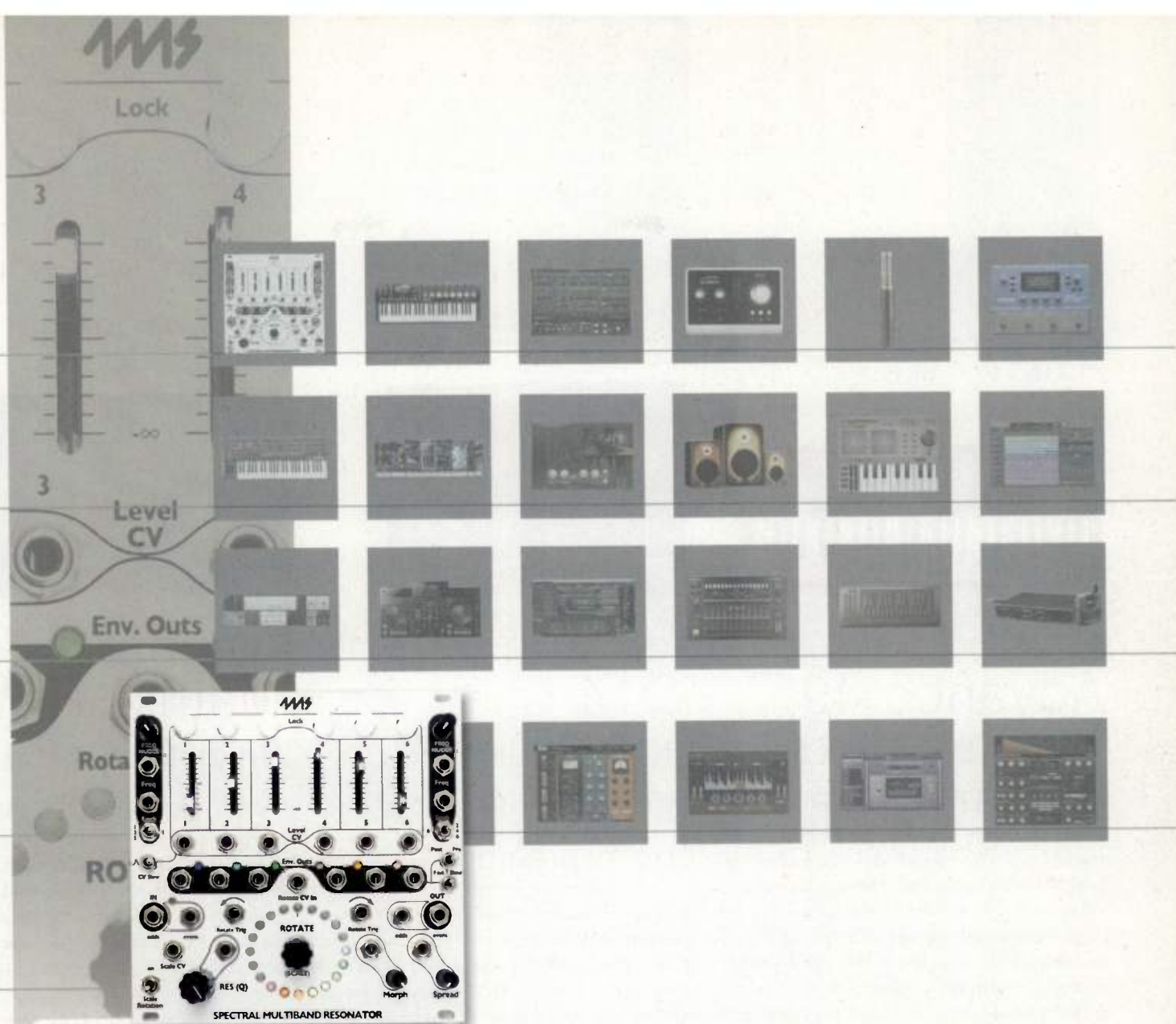
**BY MARTY CUTLER, STEVE LA CERRA, MIKE LEVINE,  
GINO ROBAIR, MARKKUS ROVITO, AND GEARY YELTON**

It's the toughest job we'll ever love. Every year, in early December, the *Electronic Musician* editors and contributors embark on the formidable task of surveying the past year's new products, spend countless hours haggling over the merits of the latest technology advances, and weeks later, emerge with our short list of 25 top innovations for our Editors' Choice Awards.

We approach awards a little differently here: Rather than shoehorning gear into rigid product categories, we prefer to pick the winners first, then create a unique award for each product that truly celebrates the things that make it special.

So join us in celebrating this year's 25 winners—innovative products that will help you make better music, whether you're in the studio, onstage, or in the DJ booth.





MODULE OF  
THE YEAR

## 4MS Spectral Multiband Resonator

Bandpass filtering like you've never seen it before

4MS took the classic voltage-controlled spectral filter concept to new heights with a set of innovative features that make the Spectral Multiband Resonator (SMR) one of the most musically satisfying synth modules available. Once we began patching it, we knew it was an award winner.

The SMR has six resonant bandpass filters, each independently tunable with control over level and resonance. Use Rotate to move through 20 filter frequencies for each fader and soften the transitions using the Morph function. You can also modulate the distance between the intervals using Spread and Nudge, and divide them between a pair of audio outputs (one for the even-number channels, the other for the odd numbered ones). The module comes with a variety of traditional and exotic scales, with space available to save your own. Use one scale across all six frequency bands, or assign each band its own scale.

The SMR is capable of beat-synchronized harmonizing, vocoding, and so much more, yet it remains simple to use. Morphing clouds of chords and resonant percussion timbres—it's all here. This is one Eurorack module you'll come back time and again.



## VERY IMPORTANT CONTROLLER



# Akai Advance 49

Finally, a board that treats every VSTi like a VIP

Usually, you don't run out and buy a premium-price keyboard controller because of its included software. The Akai Advance series does also include a better-than-average collection of plug-in instruments and loops that usually illicit a mildly interested sniff from a user before he or she moves on, but the main attraction is the VIP (VST Instrument Player) software, which turns the Advance keyboards into direct controllers of any VSTi.

With the Advance 49 and VIP, you can browse, launch, control, and map any of your VSTi plug-ins in any host software, because VIP itself runs as a VST, AU, or AAX plug-in. VIP automatically maps the plug-in to the Advance's colored pads, pots, and buttons, and you can customize the mappings. You can also create a Multi from up to eight VSTis loaded simultaneously in VIP, which is amazing for auditioning sounds and sound design.

The Advance also throws in the huge boon of a 4.3-inch color display, which shows the browser and other key features of the VIP software, so you can choose sounds and edit and perform them with minimal back-and-forth from the computer screen.



## A POSITIVE ID



# Audient iD14

An affordable interface with console-quality preamps

Audient, a company whose analog mixing consoles cost multiple thousands of dollars, made a splash on the market this year with an audio interface priced below \$300. That got our attention, especially when we discovered that it included the company's console mic preamps.

The iD14 is a two-input desktop USB interface that also sports an optical input for adding more channels with an external unit (not included). What makes it stand alone at its price point is sound quality and very low latency for a USB interface. Audient's iD software makes configuring its features and setting up cue mixes a breeze. Using the iD Function button, you can access a range of additional features including "Scroll Control" mode, which lets you use the large multifunction knob that normally controls output level to scroll your computer screen just like it was a mouse's scroll wheel. Add in 48V phantom power and solid metering, and you've got yourself an amazing interface—and a great deal.



## THE MATRIX RELOADED



# Arturia Matrix-12 V

Bringing back the '80s (without all that hair)

If capturing the Oberheim Matrix-12 in software were an easy task, then Arturia would have done it years ago. Once again, those wizards from Grenoble have pulled off a deft technological feat, thanks to a unique talent for bringing vintage classics back to life as virtual instruments.

The legendary Matrix-12 may have been the ultimate analog polysynth in the mid- to late '80s. Its dozen multitimbral voices graced many familiar tracks with luxurious sounds you'll instantly recognize if you know what to listen for. This musical monster had mod routing that ran rings around its rivals and exceptionally versatile filters with 15 resonant types. You could layer 24 oscillators in unison, each generating several waveforms simultaneously, or divide your sound palette into 6 keyboard zones on different channels. Matrix-12 V is faithful to the original in stunning detail, actually improving on its namesake by making its complex user interface far easier to maneuver. Unlike the original, Matrix-12 V also supplies a suite of effects for polishing the Oberheim sound to a warm, swirling glow that could lend your tracks a vintage studio vibe. Matrix-12 V is a winner every step of the way.



## OUTSTANDING IN ITS ELEMENT

### Audio-Technica AT5045

A versatile, sweet-sounding mic for capturing instrument sounds

When Audio-Technica announced the AT5045, a condenser designed for instrument miking and the second entry in the company's 50 Series, we were eager to give it a try. This was due in part to A-T's reputation for making quality microphones, but also because the first mic in the series, the AT5050 large-diaphragm vocal condenser was quite impressive. Ditto for the AT5045.

When tested on acoustic guitar, resonator guitar, mandolin, fiddle, and banjo, the results were crisp, present, and realistic, with very little experimentation needed to find a sweet spot. On a guitar amp, the mic delivered big-time, as well. Thanks to its fast transient response and impressively high SPL rating of 149 dB, it's also an excellent choice for drum and percussion miking. The AT5045 sounded great on every source we tried it on, so how could we not give it an award?



## AXES POWERS

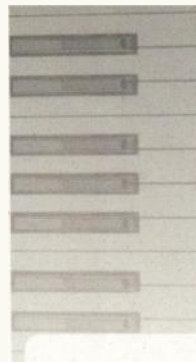


### Boss SY-300

Guitar synthesis comes loose from its moorings

You can finally say goodbye to all the proprietary cables and technological hurdles: Simply plug in a standard 1/4-inch cable and you're ready to play the Boss SY-300, which packs a three-oscillator, analog-modeling synthesizer and powerful effects into a compact floor unit. All of the guitarist's bags of tricks are spoken on the SY-300, including polyphonic pitch bend, glisses, and strums, with a fluency even the best MIDI guitars can't match. In fact, the SY-300 can process anything you can pass through its single, 1/4-inch input, including violins, bass, vocals, or prerecorded tracks.

A USB B port on the unit's rear panel passes audio bi-directionally, which adds basic audio-interface functionality and the ability to send your DAW's audio tracks through the synth or the effects, in addition to supporting MIDI for saving and loading patches. The synth's easy front-panel programming lets you go well beyond the less-than-inspiring presets. Better yet, download the excellent, free software editor-librarian; our reviewer had no problem finding his way to his own sounds. The Boss SY-300 may be the most revolutionary leap forward in guitar-synth technology in decades, and leaps into the limelight for Editors' Choice.



## THE PROPHET RETURNS



### DSI Sequential Prophet-6

Analog is back, baby, and it's better than ever

Way back in 1978, Dave Smith made musical instrument history when he launched the Sequential Circuits Prophet-5, the first truly polyphonic synthesizer that could memorize and instantly recall complete patches. With five distinctive analog voices, the Prophet-5 instantly became the go-to synth for recording hit records until, just a few years later, digital synths and samplers rudely knocked it off its throne.

Over time, analog polysynths were considered just too expensive to compete with their digital counterparts, but you can't keep a good format down. The demand for true analog came roaring back in the 21st century. Smith and company have answered the call by launching the Prophet 6, a true analog polysynth that combines old-school sound and a classic user interface with modern technology, and the first synth bearing the Sequential moniker since 1987. Compared with its predecessor, the Prophet 6 is undeniably new and improved, with continuously variable VCO waveforms, a suboscillator for each voice, lowpass and highpass VCFs, new LFO waveforms, an expanded Poly-Mod section, velocity and aftertouch response, digital effects processing, memory locations for 1,000 programs, and a modern arpeggiator/sequencer thrown into the mix. Don't need the 49-note keyboard? The new Prophet-6 Desktop can be yours for hundreds less.

If you've been longing for a modern polysynth with real VCOs, VCAs, and VCFs, your wait is definitely over.

## THE SKY'S THE LIMIT



# EastWest Composer Cloud

A personal orchestra  
at your fingertips—  
anytime, anywhere

Imagine you're in the middle of a session and you suddenly realize that an orchestral harp would take your track to the moon. With subscription-based, web-delivered software as the norm, shouldn't you have instant 24/7 access to any instrument you can think of? Of course you should, and EastWest has you covered with Composer Cloud.

Highly regarded for its broad collection of libraries and VIs, including the Hollywood Orchestra series and Symphonic Choirs, EastWest's Composer Cloud Gold collection is your gateway to more than 9,000 virtual instruments for a reasonable monthly subscription fee. There's a discount if you subscribe by the year, a reduced rate for students, and the company offers a free trial month with your choice of three Composer Cloud products.

Whether you're a composer, game-audio designer, or songwriter, Composer Cloud is the most affordable way to expand your timbre palette, as well as get the sound you need when you need it. That's a winning combo.

## ABSOLUTELY FABULOUS



# FabFilter Pro-C 2

A compressor that's  
ready for anything

Voting for this award was easy, because all of the editors agreed immediately: From its excellent sound quality to its extensive feature set and informative interface, the Pro-C 2 is a must-have dynamics processor.

In addition to side-chain EQ, auto gain, auto release, and continuously variable knee, the Pro-C 2's notable features include a hold parameter, quality metering, oversampling, as well as mid-side processing and parallel compression capabilities. Our editors especially noted the excellent performance of the look-ahead feature and the useful collection of style presets—Clean, Classic, Opto, Vocal, Mastering, Bus, Punch, and Pumping—that allow for a range of control from transparent to over-the-top. You can even trigger compression using MIDI notes.

The user interface is detailed, but without clutter. Set it to a standard compressor image or a scrolling peak-level display, then expand it to the full size of your computer monitor: Retina support for Mac OS X means it will remain easy to read. But no matter where you use it, Pro-C 2 is likely to get the job done quickly and efficiently. Win-win!

## A SONIC SUNBURST



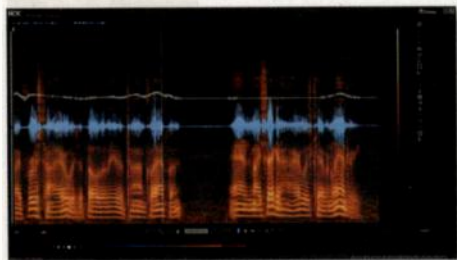
# Gibson Les Paul Reference Monitors

Premium sound in your  
choice of finishes

If somebody told us a year ago that we'd be giving an award to studio monitors with front panels finished like an electric guitar, we might have asked them what they were smoking. But as it turns out, they would have been right. There are such monitors—Gibson's Les Paul Reference Monitors—and we *are* giving them an Editor's Choice award. Why? The main reason isn't the Cherry, Tobacco Burst, and Cherry Burst finish options, which look like the top of a sunburst Les Paul guitar. Their excellent sound was what won us over: The playback reproduction was detailed and well balanced, frequency-wise, making them great for mixing.

The Les Paul Monitors come in three sizes, with woofers of 8", 6", and 4" respectively. And while they're a bit on the pricey side for the home studio market, their sound quality is worth the extra shekels. We also loved that everyone who walked into the studio said, "Wow, what are those?"

## A SOUND PRESCRIPTION



## iZotope RX 5 and RX 5 Advanced

Glitches and noises  
beware, RX 5 is here

iZotope RX, in both its Advanced and standard versions, has long been a leader in the audio restoration software field. Remarkably, in its fifth incarnation, it's gotten better. Version 5 focuses on speeding up workflow: Since audio restoration tasks can be long and tedious, anything that helps you work faster is welcome. To that end, the new Instant Process feature lets you select one of five processes, and every time you select a section of audio, that process is immediately initiated on it. The Module Chain lets you construct custom effects chains and apply them with a single click. Users of RX 5 Advanced also get De-plosive, a module that lets you quickly eliminate popped *p*, *b*, and other consonant sounds, as well as a redesigned, more intelligent version of the Leveler module and an AudioSuite version of the Ambience Match processor. Space doesn't allow a mention of all the new stuff, but suffice it to say, whether you have RX 5 or RX 5 Advanced, you're using award-winning software.

## THE BETTER YOU SYNTH, THE PLAYER YOU GET



## KV331 Audio SynthMaster Player

You'll be happy you  
fell for a player

iPad owners have scads of soft synths to choose from. Let's face it, though, some are wildly superior to others. One of the very best we've heard is SynthMaster Player, an iOS edition of the Mac- and Windows-based SynthMaster that excels in its versatility.

SynthMaster Player's most outstanding feature is a multitude of dynamite sounds. Two hundred top-shelf presets get you going, and you have the option to buy hundreds more. For the best bang for the buck, get 800 additional presets by upgrading to the Pro version. If you own SynthMaster for the Mac or Windows, you can export all your preset banks to your iPad, even the ones you've created yourself. Although Player doesn't accommodate the deep patch-customizing capabilities of the full-tilt version, it lets you edit enough parameters to make it do your bidding. Whenever the job calls for a synth on your iPad, SynthMaster Player rounds all the bases.

## THE WHOLE 9 YARDS



## MOTU Digital Performer 9

From streamlined  
workflow to synth-  
style audio processing,  
this update has it all

DP9 combines workflow improvements, such as floating plug-in windows, automation lanes, MIDI note muting, and Music XML export with a bumper crop of synth-style audio processing. Megasynt applies virtual analog subtractive synthesis to guitar, bass, or anything else you want to feed it. For a simpler signal flow, try MicroG and MicroB, a pair of Polyphonic Octave Generators designed specifically for guitar and bass, respectively. MultiFuzz models Craig Anderton's Quadrafuzz, bringing independent distortion to four frequency bands for some serious audio havoc.

MOTU models the classic 1176LN Limiting Amplifier with the MasterWorks FET-76, offering all of the controls of the hardware unit. Perhaps the most exciting is the inclusion of MOTU's MX4, a three-oscillator, wavetable synth, whose capabilities extend well beyond analog synth tones, into hyper-animated sweeping sounds and bizarre timbral shifts thanks to a generous pool of wavetables and a brilliant modulation matrix. There is good reason for Digital Performer's frequent appearance in our Editor's Choice Awards; its deep set of recording and editing amenities, intuitive workflow, and terrific-sounding plug-ins keep it ahead of the pack, and this year is no exception.



## GET YER TWEAK ON



## Native Instruments Reaktor 6

Don't pay a lot for  
a modular synth;  
Reaktor 6 practically  
gives them away!

Analog modular synths have enjoyed a substantial renaissance recently, so this year, Native Instruments decided to get in on the action. It makes sense that Reaktor 6 (\$199), the continuation of the long-time leader in DIY soft-synth creation, would jump atop the modular craze. Reaktor 6 does it with what it calls Blocks; more than 30 modules for quickly building modular rack-style synthesizers. Blocks are also the bridge between people who use Reaktor to build seriously original synths and those who use it for the more than 70 factory instruments with presets and the thousands of free community-designed instruments.

Reaktor 6 also features a refined workflow with more efficient libraries and a modernized interface, as well as more powerful tools for hardcore builders. When you consider all that it does for the price, it feels like the be-all, end-all soft synth whether you want set-it-and-forget-it satisfaction or to build your own beast from scratch.



## BOOTH IN A BOX



## Pioneer DJ XDJ-RX

The death of the  
laptop DJ?

We've never seen a great DJ controller that worked independently of a laptop... until this one. The Pioneer DJ XDJ-RX finally shows that the leader in professional club DJ gear may have known what it was doing all along, as it was at first slow to adapt to the DJ controller innovations of the 2000s.

Pioneer DJ's much more expensive CDJ-2000Nexus and XDJ-1000 music players and DJM series of mixers dominate the professional DJ booths in clubs and festivals worldwide. If you're going to be a big DJ, you're more than likely going to have to perform on them. So the XDJ-RX approximates those larger club systems in a bedroom-DJ controller with a single-color screen that builds in its own software based on Pioneer's free Rekordbox software.

Now a DJ can learn and practice on a home system, so when he or she transitions to a club DJ booth, it will feel like home. The XDJ-RX uses the same Rekordbox file prep software that the pro Pioneer gear uses, so you prepare your music files on a computer, save them to USB thumb drives, plug those drives into the XDJ-RX, and prepare for stardom.



## ONE-STOP DRAG-AND- DROP



## PreSonus Studio One Pro 3

As user-friendly as it gets

From the start, Studio One promised streamlined passage from song creation to mixdown to mastering. And what could be more time-saving than the ability to drop in instruments, plug-ins, loops, and audio tracks right from the browser?

Version 3 enhances the creative process with new features such as the Scratch Pad, which takes drag and drop to the limit: Opening a Scratch Pad divides the arrangement window in two. Do you want to try out that groove 36 bars in, but with just the drum and bass track? Draw a marquee around the drums and bass you want, and drag it to the beginning of the Scratch Pad: Plug-ins, patch assignments, buses and all are retained—it's that simple. Moreover, you can build as many Scratch Pads as you'd like. Having this kind of flexibility without resorting to multiple undos and redos is remarkably liberating.

Version 3.0.1 took things to the next level by adding support for Studio One Remote, an iPad app that brings beautiful graphics and comprehensive control to your fingertips. Top it all off with two new instruments—Presence XT and Mai Tai—and an easy-access Arranger window and you can see why we think Studio One Pro 3 is award worthy.

The Harrison of Digital Audio Workstations

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Group Assignment  
Movable Metering  
Channel Comments  
Direct Output Selection

Dynamics On/Off  
Make Up Gain

Gain Reduction Meter

Threshold Slider

Dynamics Control

Leveler/Compressor/Limiter  
Mode Select

8 Stereo Mixbus Channels (4 shown)  
Output Tape Saturation Control  
Output Compressors  
Output Phase Meter  
Output K Meter  
3 Band EQ



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## THE MIX- STRUMENT



### Roland AIRA MX-1

Live performance  
mission control  
brings software and  
hardware together

Breakthroughs like the AIRA MX-1 exemplify why we stopped categorizing our Editor's Choice Award winners several years ago. Today's innovative products often combine several categories or create their own. As a case in point, the MX-1 bends the boundaries between mixer, sequencer, effects module, MIDI controller, and instrument.

It starts as the command center for up to four other AIRA units whose audio, MIDI, etc. syncs through the MX-1's AIRA Link USB inputs. It also has analog and digital audio inputs and two PC inputs for syncing and processing DJ software or a DAW just like the other channels. This includes basic mixing, a dedicated filter, "beat effects" (which use a step sequencer to control sidechain, filter, and slicer), multi-effects, and shuffle.

It also offers modes for treating the MX-1 as a full MIDI control surface or as a mixer for 18 DAW tracks. And it has special control over Ableton Live for clip launching, recording, and mixing. Savable combi presets and a Mastering chain of processors on the output are just a couple more features that make the MX-1 a unique creation that you should experience to fully appreciate.



## PATHWAY TO OTHER DIMENSIONS



### Roli Seaboard Rise

Polyphonic  
multidimensional  
controllers made easy

Forward-thinking musicians are witnessing a battle for dominance as PMCs slug it out in the marketplace. This past year saw the emergence of two extremely worthy newcomers, the Roger Linn Design LinnStrument and the Roli Seaboard Rise. Though we had a hard time choosing one over the other, the Rise has a leg up with two big advantages. Because its layout is strikingly similar to a piano keyboard, anyone who plays keyboards can get started rather quickly. And because it's a seriously scaled-down, two-octave version of the bigger Seaboards with no internal sound engine, it costs less than any of its competitors.

You can play any hardware or software MIDI instrument with the Rise, but it really shines when paired with the included computer-based soft synth, Equator. Equator pairs DSP-generated waveforms with sample playback and lets you process them with five filters, five envelopes, and an excellent assortment of effects. If you play keyboards and you feel stifled by their expressive limitations, find out what the Seaboard's "five dimensions of touch" are all about.



## VIVA LA EVOLUTION



### Sennheiser evolution Wireless D1

No white-space  
worries here

Available in handheld vocal, instrument, head-worn, or lavalier mic versions, Sennheiser's evolution D1 transmits digitally in the 2.4GHz range where you won't have to fret over FCC registration or interference from "white space" devices. The D1 employs aptX Live codec technology for secure transmission. Automatic frequency management and microphone sensitivity adjustment allow quick and easy setup, and automatic interference management provides protection against potential interference from WiFi or Bluetooth devices.

The evolution Wireless D1 systems are compatible with Sennheiser's Wireless System Remote application which allows remote control over all parameters and provides performance monitoring. Receiver features include remote battery status, automatic pairing, HPF, 7-band EQ, de-esser, the ability to assign names to the transmitters, and a lock mode to prevent accidental changes to the system.

# ARTURIA®

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ANALOG SYNTHESIZER



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# ENJOY

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Commercial Promotion - Available until January 31st - Limited Quantities



\$99...  
ARE YOU  
SHURE?

## Shure PGA181

A low-cost condenser  
that doesn't sound cheap

Just when we thought, “do we *really* need another microphone on the market?” Shure released the PGA181, a side-address condenser intended for use on vocals and a variety of instruments. The PGA181's frequency response extends from 50 Hz to 20kHz and it can handle SPLs up to 138 dB—so far, so good.

But what really sets it apart is that it sounds *so much better* than competitively-priced condenser mics. We tried it on snare drum, acoustic guitar, vocals, violin, guitar amps, and drum overheads and it delivers the goods. It comes with a simple, sturdy stand-holder and it's built like a tank so you can leave the kid gloves in the closet. Get a pair so you can use them in stereo!

RACK YOUR  
PLUG-INS, NOT  
YOUR BRAIN



## Slate Virtual Mix Rack

It's like having a  
500 Series rack in  
one insert slot

Slate Digital's Virtual Mix Rack (VMR) looks like a software version of a 500 Series rack, and that's how it works: You use the VMR as a single plug-in in your DAW and it will host a complete processing chain in a single window. The VMR includes four modules modeled after classic analog processors: FG-N and FG-S EQs, and FG-116 and FG-401 compressors.

Modules can be dragged and dropped in the rack; signal flow follows the order of the modules from left to right, and moving their position within the rack does not interrupt audio playback. Slate's processing technology allows hundreds of instances to be run native, and a library of presets for individual modules, as well as processing chains, is included. Slate offers additional modules for the VMR including FG Bomber, The Custom Series Bundle, and Revival.

LEVEL  
BEST



## Sound Radix Drum Leveler

Make those drums  
sit just right

The best intentions notwithstanding, drums are an orchestra unto themselves, and as such, they're a bear to mix. Often the internal dynamics of a drum track may cause one kit piece to stand out too much or, conversely, not hit hard enough. What do you do with a stem track if ghosted snares get lost in the sauce?

Sound Radix Drum Leveler is at heart a dynamics processor, simultaneously encompassing compression and expansion, but with a twist or two. It gives you control of the gain for individual beats without affecting bleed or adding any of the artifacts that crop up when processing transients. Part of that talent lies in its advanced real-time beat-detection capabilities: You can zero in on just the hits you need to change by setting upper and lower thresholds to reach a target level, leaving hits outside the threshold completely untouched. For further focus, you can set the plug-in to operate in stereo, dual mono, and mid-side modes.

Do you want to raise a weak kick drum and toms while taming an occasionally overzealous snare? Our reviewer did this—and without boosting the already pronounced cymbals—in a stereo track. He declared without qualification that Sound Radix Drum Leveler is a “product every mix engineer should own,” and we agree.



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## Spectrasonics Omnisphere 2

A playground for  
inspiration and  
exploration

Looking for boring synthesizer sounds? You won't find them here! But you will find tons of exciting timbres to suit every mood and situation.

Although Omnisphere 2's synth architecture does offer unusual depth and ample creative opportunity, the real star of the show is Spectrasonics' stellar sound design. Along with bread-and-butter musical sounds, Omnisphere 2 delivers a generous double-truckload of timbres unlike anything you'll hear anywhere else. These are sounds that grab you by the ears and electrically stimulate your brain.

Years in the making, this major update serves up morphing waveforms, new filters and effects, and literally thousands of new sounds. Choose from analog modeling, sample playback, wavetable, or granular synthesis, add some remarkably versatile effects, and layer and split your keyboard any way you want with up to eight simultaneous parts. You can even import your own sound files and have your way with them. Previous versions were so good that it's hard to believe Omnisphere 2 could be such a vast improvement, but once you've used it, you'll certainly agree it's one of the finest synthesizers you've ever played.

A REVERB FIR  
THE AGES



## Waves H-Reverb

An intelligently  
designed reverb that  
believes in convolution  
and algorithms

The market is flooded with reverb plug-ins, so the only way to break through the clutter is to create a product that's both original and sounds great. Waves has done just that with H-Reverb. H stands for *hybrid*, which refers to its mash-up of convolution and algorithmic processing, using Finite Impulse Response technology, or FIR.

The plug-in gives you detailed control over its abundant processing, including the choice of 10 early-reflection algorithms, the ability to add echo taps to the signal, and control over the decay envelope, LFO, and overdrive features. H-Reverb can be configured for stereo or surround and also includes a Dynamics section that lets you compress the reverberated signal.

If you're one of those users who likes to get in and tinker, H-Reverb will feel like a sonic playground. Even if you're not, you get lots of cool presets and everything sounds great. Now *that* fits our definition of an award-winning reverb.

LIGHT WEIGHT,  
HEAVY HITTER



## Yamaha TF Series Digital Mixers

A feature-packed and  
portable pro board

Given Yamaha's successful history manufacturing digital consoles, it comes as no surprise that the company's TF Series mixers pack so much punch into an easy-to-use package. The fact that Yamaha can bring them in at such reasonable price points is amazing: The TF1, TF3, and TF5 offer 16, 24, and 32 analog inputs, respectively, plus 16 balanced XLR outputs for feeding front of house and monitors.

All three TFs feature Yamaha's TouchFlow operation for efficient control via touch screen, Gain-Finder to help set input channel gain, 8 mono plus 6 stereo aux sends, 8 effects, 10 patchable graphic EQs, and motorized faders. On top of that, the 34x34 USB 2.0 port enables them to function as a DAW interface. All are compatible with TF Stage-Mix for wireless remote mixing via iPad, and the MonitorMix app for aux send mixing via iPhone, iPad, or iPod Touch devices. ■

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 **SENNHEISER**



# Mutemath

The New Orleans quartet move away from alt-funk rock and lean heavily on synths on their fourth album, the sunny, reflective *Vitals*

BY KEN MICALLEF

Mutemath's fourth effort, *Vitals* (Wojtek Records), moves in a surprising direction, considering the band's previous alt-funk rock pursuits. The New Orleans based quartet of Paul Meany (vocals, keyboards, piano, keytar), Darren King (drums, percussion), Roy Mitchell-Cárdenas (bass, vocals), and Todd Gummerman (guitar, vocals) have typically expressed their musical passions through minimalist improvisation and high-relief song hooks. But the deeply saturated keyboard sounds and occasionally Motorik drum rhythms of *Vitals* recalls Krautrock-inspired funk dreams more than the Red Hot Chili Peppers' mayhem.

"We leaned heavily on the synths; just what we were digging," explains Paul Meany. "Something happened when our guitar player moved to synths and our bass player moved to guitar. That became a really liberating formula for us. Once we had a handful of songs we liked, when we got together we limited our instrumentation. We made a decision as to specific keyboards, amps, guitars, and drums and tried to exhaust those outlets as opposed to introducing a new palette of instruments for every song. We found a lot of inspiration. We enjoyed letting the synths push the weight of the songs and using the guitars as percussive counter-melodies."





**Mutemath self-produced and recorded *Vitals* at Palmquist Studios at Infrasonic Sound in Los Angeles. Eric Palmquist (opposite page) handled additional engineering.**

An album of reflection tempered by sunny, reverberant production, *Vitals* connects the cerebral cortex in beautiful ways, from the beatbox-slaming merriment of “Monument” and the street-crawling globular journey “Used To,” to the spotlight-aspectacle requiem “Remains” and Chemical Brothers-worthy groove “Joy Rides.” With *Vitals*, Mutemath delivers an epic sonic punch of pure pleasure.

Mutemath self-produced and recorded *Vitals*, with additional engineering by Eric Palmquist at Palmquist Studios at Infrasonic Sound in Los Angeles, with the eminent Mark Needham mixing at his Ballroom Studios in Griffith Park. The band’s

workhorses on *Vitals* included Logic Audio, Vintage Audio preamps, an Ensoniq ASR-10 sampling keyboard, Darren King’s vintage Rogers drum kit, and the M-Audio Solaris microphone.

Recording classic analog synthesizers (isn’t everybody?) both direct and via amplifiers and allied to a provocative drum tracking scenario, Mutemath envisioned *Vitals* as equal parts “party album” and isolated, boy-in-a-plastic-bubble sound esthetic.

“We’re usually chasing a feeling,” Meany says. “This time we wanted it to be very alive. The record goes to some dark places but we wanted it to be framed in light. And this contains some of the

first songs we wrote in C Major, a very happy key! That’s why we called the record *Vitals*. We wanted the record to feel invigorating. We wanted it to look forward to tomorrow.”

“The record correlates to where we are now as a culture,” Darren King adds. “Coming out of the ’70s and into the ’80s feels eerily similar to going out of the ’00s and going into the teens.” More to come on that curious remark.

Mutemath got busy in multiple studios for *Vitals*, much of the album recorded during stops in their long world tour. The band recorded in “home studios all over the place,” from Meany’s New Or-



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leans studio to Darren King's Tyler, Texas studio to the basement of an abandoned print shop, and Palmquist Studios.

Mutemath recorded each instrument separately in Logic, with acute attention paid to their fragile collection of hardware synthesizers: ARP Omni, Roland Juno 60, a 1970s-era Crumar, and Korg MS 2000, as well as NI Massive and Kontakt, and the band's long-suffering workhorse, the Ensoniq ASR-10 sampling keyboard. In addition to line-in recording for synthesizers, Mutemath favored a Shure SM57 miking a quirky Guild Maverick amplifier with built-in spring reverb. But the Ensoniq was put into overdrive on *Vitals*.

"That's the synth that Darren and I started on when we first began programming," says Meany. "We use it often to jack up a synth sound or sample something. We sample jams or use a soft synth to create a different flavor or texture, then throw that into the ASR-10. It's an extremely difficult keyboard to work on if you've not started on it. Logic or Ableton are easier to work in, but the ASR-10 has a certain sound and we like its onboard effects; they have a certain quality. We've worked with it for so long it's become habitual. We know we can get a certain sound and a certain effect and chop up the sample in a certain way. We've always used it since we started Mutemath. We've never outgrown it. It's part of our arsenal.

"We did a lot of experiments with the ASR-10," Meany muses. "For one song, Roy split his guitar signal between his amp and the ASR-10, while Darren was throwing real-time effects on the guitar and also sampling Roy's guitar amp, also via the ASR-10. In the end, that wound up be-

coming a texture, something in the background that spackled things. That's how we create textures, just piling samples up in the ASR-10."

"The ASR-10 allows you to create something then step away from it while it loops very objectively," Darren King says. "It's a great tool for dissecting ideas. You find what you think are happy accidents when things match."

King created many of the album's synth effects and textures, using the ASR-10 in conjunction with other vintage machines.


"Sometimes I'll create a patch and the band will jam on that while Paul writes lyrics," King explains. "On 'Vitals' I played 30 minutes of arpeggio on the Juno 60. Then I edited it down to what you hear on the track. We often employ scissors and glue as a songwriting tool. We record a sea of stuff, pick through it, create a thrift store's worth of synth and guitar parts, then play around with that.

"I recorded keyboards through an amp on one side—one direct, one through pedals," King adds. "The Crumar has a few different outputs; I'd come out of the headphone jack too to give it more personality. You can really freak out the stereo image when you do that kind of stuff."

King used a Korg MS2000 to create the shimmering synth bed of "Stratosphere," cranking it to 11 for extra distortion. "I went direct with one line and into an old Guild Maverick amp with its spring reverb," he recalls. "I sent that to Paul; just a ten-minute jam with different time signatures. He focused on a particular progression and looped it, sang over it, and sent it back to me. Then the song sat in writer's purgatory for nine months until we finally found a chorus. The beat for that one

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**CASIO**

is a blend of programmed snare and live kick. The hi-hats were played separately. Roy brought in the guitar, which sounds like synths but it's all guitar."

Eric Palmquist followed Mutemath's lead when tracking the band at his studio complex. Bass was mostly created on synths tracked in Logic Audio, brought into Palmquist's Pro Tools 10 HD 2 rig, reamped into the Guild Maverick "to create a slappy spring sound, and also into an old Gibson amp," he explains. "The main bass sound was tight and punchy, then we used the amps to dirty it up and bring some space to the sound." Mutemath created additional bass sounds by layering Korg MS2000 and Juno 60 with electric bass.

Palmquist also tracked guitars through the band's Guild Maverick and his Fender Princeton. He relies on a Flea 47 as a room microphone to "bring the guitar into its natural space," as well as close miking with BeyerDynamic M160s. Palmquist also tracked Meany's vocals via his early-1980s Trident ADC 32-channel console, heavily modded with custom Cinemag and Trident A Range transformers. His ever-faithful Flea 47 mic was put into service allied to a Neve 1064 and two compressors.

"After the Flea and the Neve, I hit two compressors lightly, in series, which tightens up the sound really well, says Palmquist. "I used the Slate Audio Dragon compressor, which is their 1176-style com-

pressor. It has a highpass filter which keeps the vocals nice and full. Then an Inward Connections TSL-4 Vac Rac; that's like an LA-2A style compressor. One is quicker, the other is silkier and more tube sounding. I run both with the highpass filter on. That keeps the body of the vocal really nice; hitting each compressor lightly gives the impression of tightening up the vocals without it seeming overcompressed.

"Paul has such a dynamic range," he adds. "It felt like we came upon the sound very quickly. Then I did a lot of post work with effects; that was more trial and error. But getting a sound that would capture his performance and his dynamics, and also his range; it worked really well with that setup."

Conversely, for the bulk of the album's vocals, Paul Meany worked entirely alone in the studio, producing his vocals with a combination of Logic Audio plug-ins, including the Space [Designer Convolution] Reverb, Logic compressor, EQ, and limiter. "I found a setting that worked and copied that into all the sessions," he recalls.

Meany used the M-Audio Solaris microphone exclusively for tracking vocals, after a series of microphone shootouts proved its worth. "When I want a cleaner, in-your-face take that works with my voice, I use the Solaris," he says. "I have an Amek mic pre and an Empirical Labs EL8 Distressor, and that's it. I have to be left alone when cutting vocal takes. If it's a scratch track I don't care, but when I need to get inside of a song, I am playing two roles of being vocalist and producer. I like to take my time, do a bunch of takes. It becomes a creative process: creating harmonies, stacking vocals, trying effects. I enjoy it more when no one is observing and I can escape into my own head and excise the demons and listen. I enjoy the isolation."

For transitions within songs, Eric Palmquist employed a McDSP Filterbank F202, "a simple high-pass lowpass filter that sounds good and is easy to automate," he recalls. He also relied on Soundtoys Filterfreak and the band's inspired effects that made the rounds between band and engineer.

An adventurous musician with a zeal for both drumming and recording, King cut drum tracks at his studio in Tyler, Texas, the band's basement print shop digs, and in Palmquist Studios' spacious live room.

"Darren played the kick and snare drums with mallets," Palmquist reveals. "We recorded drums and cymbals separately so there was nothing bleeding through. Those two approaches contributed to the electronic-ness of the sound. Removing the decay on the drum mics also made the drums sound more electronic. We used three kick drum mics: an AKG D112 for the kick-in; for kick-out, the Wunder Audio CM FET 7; and a Yamaha SKRM-100 Subkick. I miked the snare with a Shure SM57 and an old AKG C60; both on top of the snare. I like using the 57 on the snare along with a small-diaphragm condenser; they bring out different characteristics that blend and comple-

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ment really well, especially when mixing.”

Drum mics included “the Flea 47 as the drum set overhead, four feet above the drums to get some immediate space,” says Palmquist. “Then a stereo Royer SF-12 for a room mic, 15 feet away; and a SM57 further out in the room with a Standard Audio Level-Or, a JFET limiter/distortion processor.

“Flea is an amazing company out of the Czech Republic; they make the best U47 knock-off,” Eric says. “The Flea 47 is incredibly well-built. It’s the best right down to their F7 capsule, which is truer to the original M7 capsule.”

King recorded his Rogers kit in a small eight-by-eight drum booth in the band’s dedicated print-shop studio. He used one microphone to capture hi-hat, bass drum, and snare drum—an unusual approach, for an unusual drummer.

“We did mostly live drums with some samples,” King explains, “but playing one piece of the kit at a time so you have more control over each element and you can effect each drum without worrying how it affects the cymbals. I was trying to sound more like a robot and less of an animal this time.”

King used a collection of Shure, AKG and Blue mics, one situated dangerously close to every drummer’s main source of locomotion.

“I placed one Blue mic on the beater side of the kick drum, between the kick and snare, above my right knee,” King says. “That one mic is the loudest mic, between the hi-hat, kick, and snare. I set it really high. That allows less bottom end snare than you normally get if you mike your drums that way. We use Vintech pre’s, which are a big part of the sound. We use mostly close room miking, and didn’t lean on overheads very much.”

King tracked kick and snare first, then cymbals, then tom and Remo Roto Tom overdubs. Shure 57s were placed directly over the toms into the Vintech preamps and EL Distressors. A single room mic, AKG C12, enabled the band’s preference for a tight, non-stereo drum sound.

“No bottom heads is a big part of my sound,” King explains. “I use my wallet or cut up a mouse-pad to dampen the drums. Or I cut an outer ring from an old head and place it on the existing head; I love that sound, it muffles the ring but it doesn’t choke the tone. That also aids the electronic sound. Recording the drums separately allowed us to get that electronic sound already. Often people use triggers to get more definition, but when we recorded drums separately from cymbals we didn’t have to worry about that.”

When mixing King’s drums at Palmquist, Eric relied on various software and hardware to do the deed right. “When I mix drums I use the gates to tighten the sound,” Palmquist explains, unknowingly following King’s tightness-is-rightness approach. “I was even gating the room mics pretty hard, it brings that artificial tightness to the drums. It’s fun to mess with those sounds in an electronic

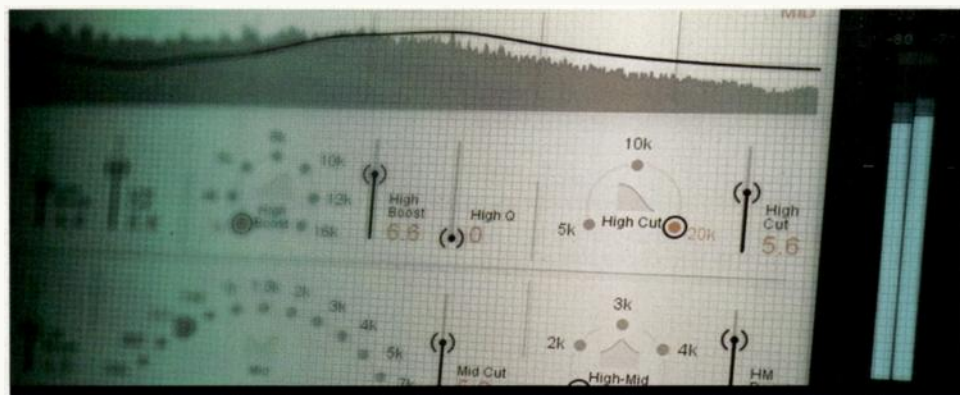
way. For example, when a tom sound was normal I duplicated it, took each strike and reversed it, then placed each drum strike as if it was leading up to itself, almost like a weird reverse reverb. It’s trying to use electronic techniques with organic sounds.

“All the electronic crescendos and odd sounds on the tracks I mixed were based off a vocal that has been reversed or reverbed and pitched,” Palmquist adds. “I might take a chord from a song; make a huge reverb tale of it, then reverse that, then mess around with FabFilter plug-ins. They have some creative filters like the Volcano 2; it creates this modular feel. It’s the sound of music moving and breathing.”

Mutemath’s shimmering song world is amply ex-

pressed on *Vitals*, the band’s guerilla recording tactics impossible to detect amid the album’s slick, serene production attributes. It’s the sound of dance music and rock music compressed into glistening melodic ‘n’ rhythmic capsules – the perfect accompaniment to a journey to the moon or simply across town.

“We’re all due for that certain happiness, that certainly melancholy happiness, that blend that the ‘80s had and could provide,” Darren King muses. “I initially thought *Vitals* would be more bombastic and visceral and testosterone-driven. I thought we would one-up our previous record, *Odd Soul*. But when Paul started writing his songs, the best ones were the ones that felt like a party. So we followed in line.” ■



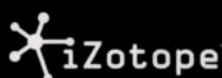
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Phil Dodds, ARP's Director of Engineering, plays the famous 5-note sequence in the film *Close Encounters of the Third Kind* on a massive ARP synth.



The first ARP 2500 (above).

# The ARP: A Photo History

BY GEETA DAYAL

*We would like to dedicate this feature to the memory of Dennis Colin, one of ARP's early engineers, who took his own life in November 2015. Colin was a major force behind the circuit design of ARP's first synthesizers.*

Alan R. Pearlman founded ARP in 1969. The ARP 2500, introduced in 1970, was a tremendous synthesizer, succeeded by the smaller, more popular ARP 2600, the synth that put ARP on the map. ARP went

head to head with Moog as the most influential synthesizer company on the planet, and soon, this upstart company based in Massachusetts was providing synths to Paul McCartney, Herbie Hancock, Pete Townshend, Stevie Wonder, and many other stars. By 1981, a series of financial missteps had leveled ARP as a company. But the legend of ARP lives on, and its synthesizers remain unparalleled. Korg recently unveiled a new version of the ARP Odyssey for a new generation of fans.

Read interviews with early ARP innovators in our companion Web feature at [emusician.com/arp](http://emusician.com/arp).

The first edition of *Learning Music with Synthesizers*, by Alan R. Pearlman, David Friend, and Thomas Piggott.



The ARP 2600: a portable, semi-modular classic.



David Friend (left) and Alan R. Pearlman (right) in the early days of ARP.

Engineers build and test ARP synthesizers by hand at the ARP factory in Massachusetts in the 1970s.

Pearlman (center) talks about the early days of ARP at a recent symposium at Berklee College of Music. The event brought together many of the major figures from ARP's heyday.



An ARP "NAMM jam" in 1973, with Mike Brigida, David Frederick, and Don Lewis.





## VARIOUS ARTISTS SIX PACK TO GO BLOODSHOT

Bloodshot knows how to party. In celebration of its 21<sup>st</sup> birthday, the Chicago-based indie roots/rock 'n' roll label has released a limited-edition package of drinking songs. Tracks are assembled in six 7-inch singles. Most of the songs are covers. Highlights include the Bad Lovers' groovy '70s thrash take on The Banditos' "Still Sober after All These Beers"; and Elizabeth Cook's cowpunk version of the Dead Kennedys' "Too Drunk to F\*ck" is worth the price of admission on its own.

BARBARA SCHULTZ



## JUNIOR BOYS BIG BLACK COAT

DOMINO

On their first album since 2011, Ontario electropop duo Junior Boys successfully internalizes the motorik rhythms of southwestern neighbor Detroit, mixing the pair's more traditional breathy disco-tech and glassy melodies with increasingly sinewy, staccato tracks. With these more unyielding productions centered around an agitator of prickly hi-hats and whipping synths, aqueous bass and vocal samples get worked into a lather. The fragile balladry, rubbery arpeggiation, and metallic barrages make for a dreamy, jittery wash of pleasing contrasts.

TONY WARE



## VARIOUS ARTISTS 30TH CENTURY RECORDS COMPILATION VOLUME I

30TH CENTURY/  
COLUMBIA

Brian Burton aka Danger Mouse launches his 30<sup>th</sup> Century Records with an 11-track compilation produced himself. *Volume One* includes four sparkly, previously unreleased songs from a mixed bag of talent: Sam Cohen, Autolux, Arcs, and Nine Pound Shadow—reflective of the visionary creator's diverse skills. The common thread is the selections are guitar-based, and from Maybird's sweetly mournful "Big Sun Explosion" to the dirge of Jock Gang's "Tell Me About It," all bases are covered.

LILY MOAYERI



## WEATHER REPORT THE LEGENDARY LIVE TAPES: 1978-1981

COLUMBIA LEGACY

The last true jazz group to score a Top Ten hit with the heavily-caffeinated "Birdland," Weather Report strode the earth like gladiators on tour, turning up their amps to 11, improvising brilliantly, and flaming out quietly. The band that made bass innovator Jaco Pastorius a star, Weather Report perform with their legendary intensity over four discs, Joe Zawinul's interstellar synths quizzically dancing, Wayne Shorter's saxophone moaning majestically. An essential addition to the Weather Report discography.

KEN MICALLEF



## SAVAGES ADORE LIFE MATADOR

London post-punk quartet Savages traffics in unrelenting physicality. A bundle of clenched riffs adhered with palpitating bass, the 10 tracks on the group's sophomore album showcase a balance of density and dynamic alliteration few recent bands outside of black metal have achieved. Every increasingly flushed run of predatory fills and frayed transients hits with brutal clarity, building in systolic pressure. The end result is 40 confrontational minutes of dizzying, bruising, arresting emotion.

TONY WARE



## VARIOUS ARTISTS RINGO STARR: THE LIFETIME OF PEACE & LOVE TRIBUTE CONCERT

COMMUNION  
MUSIC US

Benefiting the David Lynch Foundation, this live album offers some standout tracks: Ringo himself performs three songs ("Photograph," "Boys," "A Little Help from My Friends"), which is always worth hearing. The Head and the Heart perform a beautiful, fluid version of "Octopus's Garden" full of unique details as well as adorably faithful ones. Ben Harper fills hearts with a super-soulful "Walk with You." And the great Bettye Lavette steals the show with her smoky electric blues version of "It Don't Come Easy."

BARBARA SCHULTZ



## SHYE BEN TZUR, JONNY GREENWOOD, AND THE RAJASTHAN EXPRESS JUNUN

NONESUCH

Collaborating with Israeli-American singer/composer Shye Ben Tzur and 19 Rajasthani traditional musicians, Jonny Greenwood plies the occasional synth into this simmering Qawwali soup. Recorded in a stunning 15<sup>th</sup>-century Rajput fort, this Sufi devotional music spans history yet sounds oddly modern. "Eloah" blends rhythms while crisscrossing Hebrew with Urdu; "Roked" soars via the vocals of Zaki Ali Qawwal; "Kalendar" mixes Ben Tzur's flute with Greenwood's eerie Ondes Martenot.

KEN MICALLEF

# Cock Fight

Guitar gods like Slash, Michael Schenker and Mick Ronson have used the cocked wah sound to create monster riffs that have earned a permanent place in the rock lexicon. That required finding the sweet spot in their wah pedal's sweep. The Cock Fight lets you achieve that cool cocked wah sound without the wah pedal. Tune in the tone you want. Add the built-in distortion for more grind and growl, or switch to the Talking Wah mode for a stuck voice-box sound. If you plug in an expression pedal, you can sweep the Cock Fight for jaw dropping wah and talking pedal effects, with or without distortion!



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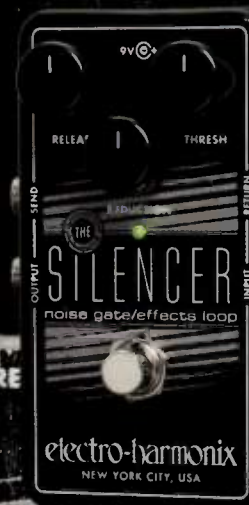


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## 22500 dual stereo looper

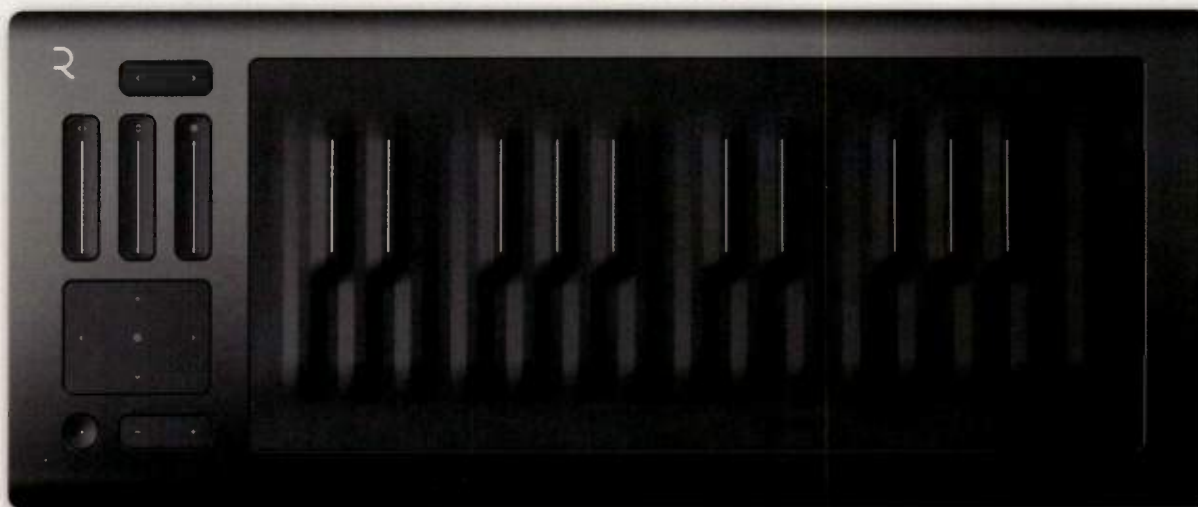
Combining a compact footprint, comprehensive feature set and an intuitive user interface, the 22500 delivers powerful looping capabilities in an affordable, easy to use package. It records high quality, non-compressed audio direct to a removable SDHC card (4 to 32GB) and each card holds up to 100 individual loops. Includes an 8GB card for up to 12 hours of total recording time. An optional Bank Up/Down Foot Controller is available.



NEW FROM

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The Roli Seaboard Rise is a USB MIDI controller offering five dimensions of Multidimensional Polyphonic Expression. It can also be used wirelessly via Bluetooth if you're using a Mac with a Bluetooth LE chip running OS X 10.10.2 or later.

ROLI

# Seaboard Rise

## MULTI-DIMENSIONAL POLYPHONIC EXPRESSION FOR THE MASSES

BY PAUL D. LEHRMAN

Paul D. Lehrman PhD is director of the Music Engineering Program at Tufts University in Massachusetts and is a former director of the MIDI Manufacturers Association. He has been writing about electronic music for *EM*, *Mix*, *Keyboard*, and other magazines for more than 30 years.

**STRENGTHS**  
Multidimensional polyphonic expression, with more flexibility than its predecessor. Highly playable and fun.

**LIMITATIONS**  
Dashboard software is unintuitive. Equator requires a lot of CPU power.

\$799  
roli.com

**I**t's rare that a music hardware manufacturer follows up its first product in a matter of months with a second product, at a much lower price, that in some ways blows the first one out of the water. But that's what British company Roli has done.

Roli's new Seaboard Rise is a lower-cost, controller-only version of the Seaboard Grand that I reviewed in the November 2015 issue of *EM* (available at [emusician.com](http://emusician.com)). It resembles a traditional keyboard, but with peaks and valleys where the black and white keys should be. And rather than having moving parts, it features a uniform rubberized surface with a complex sensor network underneath.

Roli calls the bumps *keywaves*, and there are sensors on each to detect left and right movement, which they call *glide*, as well as pressure and velocity (called *strike*). It uses a round-robin MIDI scheme called Multidimensional Polyphonic Expression, in which subsequent Note Ons are each sent over a different channel, which allows every note to have not only its own velocity, but also its own pitch bend and pressure (Aftertouch) information. Ribbon sensors positioned above and below the keywaves send out pitch bend as well, allowing for polyphonic bi-directional glissandi over a two-octave range.

Compared to the 61-note Seaboard Grand, the Seaboard Rise is less than one-third the price. One reason, according to company information, is that the Seaboard Grand is handcrafted entirely in London while the Rise is assembled in Ireland, using automated manufacturing techniques and some components sourced offshore. Another reason is that Rise is smaller, with only two octaves of key-

waves. And, while the Seaboard Grand has a built-in synth engine and its own audio outputs, the Seaboard Rise is a controller that can be used with software running on a Mac or Windows computer or iOS device.

In terms of feel, the Seaboard Rise seems to respond better to a lighter touch, although the difference between the two models is subtle. But when it comes to expressive capability, the Seaboard Rise goes beyond its big brother in several significant ways. First of all, it responds to key movement on the y-axis (e.g., toward and away from the player), which the company calls Slide. Second, it responds to how fast you take your finger off of the surface, which it refers to as Lift, but which many of us will recognize as Note Off velocity, a part of the MIDI spec since day one but rarely implemented in hardware or software before now. Thus, the Seaboard Rise offers you five dimensions to play with.

In addition, the controller has five real-time controls to the left of the keywaves—three touch faders and an x/y pad—that are mappable to any MIDI controller command. Unfortunately, the Seaboard Rise has only one pedal input, which can be either switched or continuous, so you can control sustain or volume, but not both.

While the Seaboard Grand has a single, somewhat confusing multipurpose rotary control for patch changes and octave transposition, the Seaboard Rise has distinct and obvious button pairs for those functions. The Seaboard Rise doesn't rely on an external power supply, but instead has an internal rechargeable bat-

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**Fig. 2. Roli's Equator software for the Seaboard Rise provides mapping for all five performance dimensions. It includes two sample playback modules, three wavetable oscillators, FM synthesis capabilities, and effects.**

hensive than the Seaboard Grand's version, offering more flexibility in assigning and scaling the performance parameters, as well as a very neat graphic display showing the multidimensional response of the instrument as you play.

The Equator software for the Seaboard Rise improves on the earlier version by incorporating the extra performance dimensions and including 128 presets, up from 48 (see Figure 1). It is also four times as big as the earlier version, taking up over 2 GB in the Mac's Application Support folder.

The Seaboard Rise, like the Seaboard Grand, is both a challenge and a delight to play. Experienced keyboard players will have to adjust their technique to take advantage of the great degree of independence afforded to each finger, as well as the additional gestural parameters, particularly the left-right pitch axis. Landing off-center on a key, hardly an issue on conventional keyboards,

tery, which the manufacturer says is good for up to 12 hours and which replenishes itself when you connect it to a computer over USB. Even more interesting, if you have a Mac with a Bluetooth LE chip running OS X 10.10.2 or later, you can play the device completely without wires, because it sends MIDI over Bluetooth.

#### THE SOFTWARE SIDE

Although the Seaboard Rise is USB class-compliant, you need two Roli programs to realize its full potential. Dashboard configures the instrument for use with the company's own synthesis program, Equator, or other soft synths. The Seaboard Rise version of Dashboard is much more compre-

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can have serious consequences. Fortunately, you can modify the scalability of the parameters in Dashboard so that they're quite forgiving, and new users will want to take advantage of that until they get accustomed to the instrument.

Although keyboardists are the largest group of potential users, the Seaboard Rise will appeal to others, most likely guitarists and string players who will relate well to the way that subtle finger motion can affect pitch, timbre, vibrato, envelopes, and other musical parameters.

#### ROOM FOR IMPROVEMENT

The Seaboard Rise is a wonderful addition to the Roli line and will bring the joys of a multidimensional polyphonic controller to a much larger audience than the far more expensive Seaboard Grand. But there are two ways that Roli could make it even better.

One is to offer a 37- or 49-note version. The two-octave range is okay for soloing within a group structure, and the instrument does sit nicely on top of a larger keyboard. (There are hard rubber strips on the back to keep it from sliding off.) But for serious solo work, or recording for that matter, a larger range would be an advantage. As of this writing, the company is noncommittal regarding future products.

The other problem, which is more serious but should be easier to fix, is the Equator software. The 128 presets it ships with are certainly usable, but when it comes to customizing them, or designing your own patch from scratch, it's not terribly friendly. Assigning a modulation source—that is, one of the five expressive dimensions—can be done graphically by selecting the source's scaling window and then selecting one or more target parameters and drawing a colored arc in the parameter window, which can be a bit confusing and counterintuitive; or it can be done through a clumsy "modulation list" window. The PDF documentation is sketchy (hint: read the splash screens when you first launch the software!), and while the company has posted a number of helpful videos demonstrating the instrument's presets, there is only one on programming it, and it's not very informative.

The three touch faders can't be assigned to synth parameters in Equator; their only function is to act as sensitivity controls for the pressure, glide, and slide functions, which is not all that useful, since you can set up those functions within each patch with greater accuracy and flexibility. The program is excessively modal: In too many cases, you have to close a window to open another one when it would be best to be able to view both of them at once. Finally, there is this bug: Sometimes after you save a preset,

the next time you open it, some of the parameters have changed.

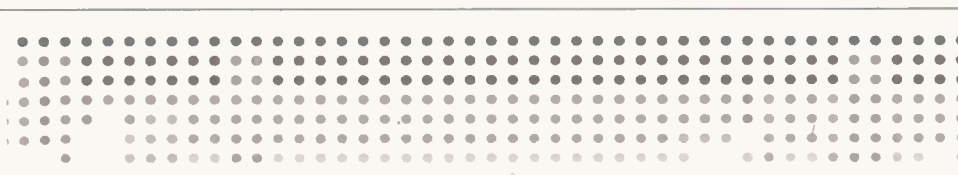
Furthermore, you cannot use Rise's single pedal input for volume control in Equator; it only works when you are playing MIDI synths. You can program one of the touch faders to handle volume in Equator, but it's a complicated and confusing procedure.

Last, the software is a CPU hog. Alone, it demands more than twice the power of a whole rack of Kontakt instruments, and on my (admittedly creaky) 2.66GHz dual-core Mac Pro, Activity Monitor shows the program frequently topping out at 100 percent. The result is occasional glitch-

es and dropouts, as well as (although this may be unrelated) stuck notes.

#### RISE TO THE TOP

Fortunately, software issues like this are relatively easy to address, and Roli is aware of them and actively working on them. At least one update is expected by the time you read this. As it stands, Roli already has a winner in the Seaboard Rise. It's a major addition to the world of expressive controllers and priced within reach of many musicians who will love what it adds to their performance capabilities. ■



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To accommodate so many on-screen elements, Falcon's GUI is larger than most plug-in windows. At its largest, it can fill your entire display, and you can click and drag to make the standalone version any size you want.

UVI



# Falcon

## IF YOU LOVE SYNTHESIZERS, YOU'LL WANT THIS SOFT SYNTH

BY GEARY YELTON

Former senior editor Geary Yelton has been reviewing synthesizers for *Electronic Musician* since its very first issue in 1985.

### STRENGTHS

Uncommon depth. Logical, well-organized workflow. Integrated sample editor. Terrific factory content. Expandable using UVI sample libraries and user samples. Includes \$100 content voucher. Priced to intimidate competitors.

### LIMITATIONS

No undo. So deep and different that it may take awhile to grasp everything.

\$349  
uvi.net

**A**t first I was skeptical about taking this assignment. Does anyone really need another soft synth that couldn't possibly live up to its manufacturer's lofty promises? Fortunately, a close friend had seen a demo and convinced me to check it out. Boy, am I glad I listened to him! Three weeks later, I am so thoroughly impressed with UVI Falcon that I can't wait to use it every time I boot up my computer.

Falcon handles synthesized and sampled sounds with aplomb, even mixing and matching sound engines controlled by common modulators in a single program. It combines many forms of synthesis, from simple virtual analog to complex wavetables. It is so fully multibrain that there appears to be no limit to how many parts you can play independently, stack, and layer, so long as you have enough MIDI ports and channels to address them all. With comprehensive synthesis features, an onboard sample editor, and a collection of presets that will knock your shoes and socks off, Falcon is the new alpha dog in town.

### TAKE A GANDER

Downloading and installing Falcon's 962 MB of data was a breeze. Its sample content was recorded as 24-bit, 96kHz WAV files, compressed to lossless FLAC and then converted to UFS format for maximum quality and minimum file size. Because most of the programs rely on DSP-generated waveforms rather than samples, the download is much smaller than it could be. Copy protection is by Pace iLok, which I've always found convenient.

Falcon runs standalone or as a plug-in. Its resizable user interface is arranged in a logical hierarchy that makes perfect sense once you've learned to maneuver its intricacies. With so many creative options,

complexity is inevitable, but UVI has brought Falcon's complexity down to an acceptable level by keeping its user interface tightly organized. Still, you should be aware that it isn't like synths that follow a left-to-right audio signal flowchart. Falcon is more top-down than left-to-right.

Once you get the big picture, you should be able to create, modify, and organize sounds more quickly than with other multibrain synths.

A multi contains from one to an apparently unlimited number of parts. Each part contains one program, and each program contains layers, keygroups, and oscillators. Falcon treats oscillators as what they actually are: the only components that make sounds, making them the absolute heart of any electronic musical instrument. Anything downstream from an oscillator serves to modify the sound it makes, whether it's a filter or a phase shifter. At every stage upstream from the oscillator—multi, part, program, layer, and keygroup—you can use modulation, audio effects and MIDI event processors (like arpeggiators, alternate tunings, scripts, and a MIDI file player) to further define what comes out of the speaker.

Falcon's GUI has three views—Main, Mixer, and Performance. In the Main view, the center pane is where you access and edit programs, layers, keygroups, oscillators, effects, modulation parameters and keyboard maps by clicking on the Edit tab. These are stacked in levels in which you reveal parameter, controls by clicking on icons and triangles as if you're opening folders. Additional tabs access MIDI event processing pathways, modulation routings, and effects parameters.

Two sidebars flank the center pane. The left one

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accesses parts in a multi, and the browser in the right one makes it dead simple to find and load presets, samples and components. Mixer view displays a mixing console comprising loaded parts and effects parameters, and Performance displays an overlook of all parts simultaneously.

## BUILD A BETTER BIRD

You create and modify programs by combining Falcon's basic components—oscillators, effects, modulations, and event processors. Click on a tab in the right sidebar to choose the component type you want, and then click and drag the component to the center pane. For example, dragging an oscillator to the keymap creates a keygroup, which you click and drag to encompass whatever note range you prefer. The type of oscillator you select will determine the sound engine.

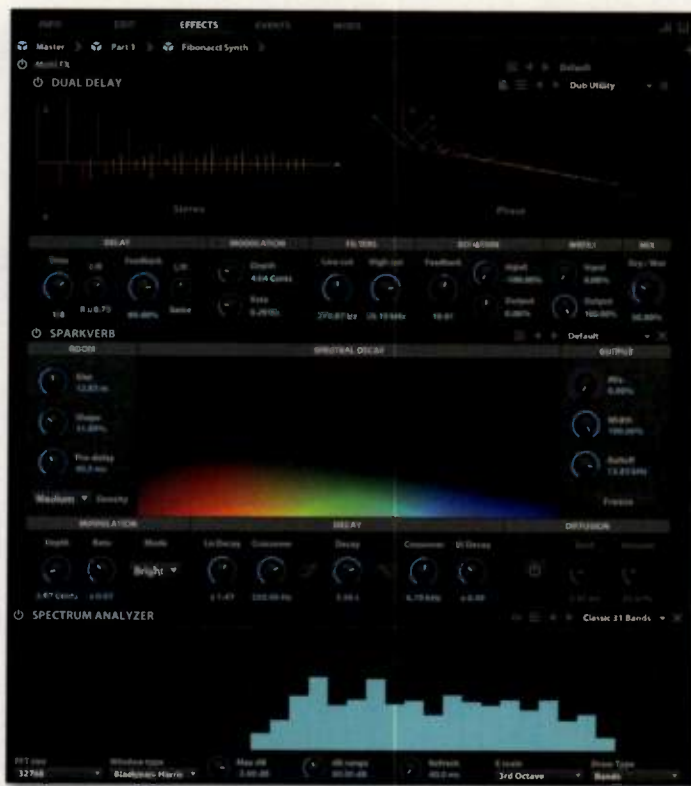
Oscillators are either synthesized or sampled. Synthesis oscillators are DSP-generated and comprise virtual analog, wavetable, phase distortion, and 4-operator FM types, as well as noise (15 colors), analog stack (up to eight layered oscillators), drum (blending analog and noise), and organ (9 sine waves with drawbars). The pluck oscillator uses physical modeling to emulate one or two plucked strings. The selection of wavetables is especially impressive, with dozens of choices that allow you to impart motion to your sounds by modulating wave indexes. You can also import your own samples to resynthesize as wavetables.

Because the sampling oscillator's GUI displays editable audio waveforms, you won't need a separate sample editor. Right-clicking enables all the usual sample-editing functions, such as cropping, normalizing, looping, and so on.

Additional sampling oscillators offer more than standard playback. The stretch oscillator transposes pitch without changing duration, and the slice oscillator automatically divides rhythmic loops into sections and maps them to the keyboard. ICRAM Stretch is similar, but it preserves envelopes and transients more accurately. Falcon's granular synthesis capabilities revolve around the ICRAM Granular oscillator, which splits samples into grains and manipulates them using a variety of methods. ICRAM Multi Granular carries those concepts even deeper. Either granular type is perfect for transporting samples to innovative territories.

One of Falcon's oddities is that filters are considered audio effects and appear alongside delays, reverbs, and other effects processors. A nice variety of filters is included—standard single-mode and multi-mode types, a state-variable filter, a morphing vowel filter that sweeps formants, and my favorite, the Xpander filter, a ladder filter with 37 response curves, saturation and oversampling. I just wish some of its complex and unusual shapes were better documented. Most of all, I wish Falcon had an undo function.

Other effects range from ordinary to extraordinary. Some of the standouts include numerous distortions



**Fig. 1.** You can load and edit multiple effects, save them as a group and recall them as a Multi FX preset.

types, many guitar-amp simulators, a sophisticated dual delay, and the Sparkverb reverb processor (available separately for \$199). You even get a spectrum analyzer, phase meter, and chromatic tuner (see Figure 1).

Not surprisingly, Falcon's modulation options are comprehensive. The envelope generators include AD, AHD, ADSR, DAHDSR, and a multi envelope with any number of breakpoints. The step envelope is a pattern sequencer with up to 128 steps, and the Drunk module generates random changes in amplitude within user-defined limits. Falcon's LFO offers waveshapes I've never seen before, and you can independently adjust its delay and rise time, which determines the time between its onset and its full value.

Although the user manual is clearly written, Falcon has too many deep features to cover every detail in fewer than 200 pages, and many aspects are glossed over too quickly. Fortunately, a series of YouTube videos helps to fill in the blanks.

## CALL OF THE WILD

It sounds as though UVI spared no expense on hiring talented sound designers. The included patches—and there are hundreds of them—are uniformly excellent. I probably shouldn't expect less from a company that built its reputation on dynamite sample-playback libraries, but I'm still stunned by just how good and how varied most of these patches are. You could easily record an entire album using only Falcon, and no one would ever guess it was a single software instrument.

If I had any criticism of Falcon's content, I'd say it doesn't supply a lot of traditional musical sounds,

but not to worry. You can load any sampled content for UVI Workstation into Falcon—whether it's UVI's *Orchestral Suite* or MOTU's *Bob Moog Foundation Encore Soundbank*—map it, modify it with filters, effects and modulators, and save your creations as new Falcon content. What's more, your Falcon license includes a \$100 voucher toward purchase of any UVI library—quite a bonus. You can mix and match synthesized and sampled material in the same keymap, regardless of whether it's Falcon's factory content, content from UVI sample libraries, your custom synthesizer creations, or samples you've recorded yourself or acquired from third parties and imported into Falcon.

## I AM THE FALCONER

I'm excited about Falcon. It does more of what I want a synthesizer to do than anything else ever has, and I plan to develop a close relationship with it. I'm sure it has its flaws, like any software, but after three weeks of digging into it, the only one I've found is that it isn't terribly intuitive for the first few hours.

Falcon gives you plenty to explore and plenty of ways to stimulate your creativity and curiosity. It will take you as deep as you want to go, but because it's so thoughtfully and logically organized, developing a smooth and speedy workflow is all but certain once you've gained enough experience using it. Whether you want a platform for creating your own timbral vocabulary or you want an expandable palette of new sounds to make your music more interesting and fresh, Falcon may be exactly what you're looking for. ■

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Fig. 1. Circuit's fully RGB velocity-sensitive pads use well thought out color coding, dimming, and blinking to effectively supply the compact surface with copious amounts of control interfaces.



NOVATION

# CIRCUIT

## COLORS ARE A GROOVEBOX'S BEST FRIEND

BY MARKKUS ROVITO

Markkus Rovito drums, DJs, and contributes frequently to *DJ Tech Tools*.

### STRENGTHS

Fast and fun workflow. Highly portable. Efficient interface. Full RGB LEDs. Eight Macro knobs. Strong Nova-derived synth sounds.

### LIMITATIONS

No power or audio over USB. Can't assign separate effects settings per instrument. No pattern note transposition. Only ways to save work to a computer are via audio and MIDI recording.

\$329 street  
novationmusic.com

People have been refining and reinventing the rhythm machine/beat box/groovebox paradigm for decades, each time trying to find the perfect balance of features, usability, price, portability, and innovation. This time, Novation has cleverly assembled some of its existing technology to create an electronic music sketchpad that emphasizes speedy workflow, extreme portability, and a highly efficient interface that maximizes the available controls.

Right away, you'll notice Circuit's centerpiece: a 4x8 grid of RGB backlit, velocity-sensitive pads (see Figure 1). Owing to Novation's years of development into the Launchpad Pro, these pads serve to sequence patterns, play sounds, display numeric values, and mute tracks, as well as select sounds, effects settings, patterns, and larger Sessions. The function buttons surrounding the grid largely determine how you'll use it to create music with the four drum parts and two 6-voice polyphonic synthesizers.

Moving past a small learning curve, you'll be capturing drum and synth tracks at will, anywhere you can bring the compact box, which has a surface area just slightly greater than a 10-inch iPad. The unit accepts power from six AA batteries (included) or from an AC adapter (also included). (USB power is not currently an option.) If you don't want to use the 1/8" headphone jack or 1/4" left and right outputs, the speaker built into the underside of the unit kicks on when the audio outputs aren't in use.

Circuit is about as mobile-friendly a 6-track groovebox as we've seen, and if you want to incorporate it into a larger setup, it has MIDI DIN

I/O via included breakout cables, USB MIDI (no USB audio, currently), and a fully rubberized bottom surface that grips a tabletop (see Figure 2).

### INTEGRATED SOUNDS

At Circuit's core are six instrument parts—four drum parts (any of which can utilize one of the 64 onboard drum sounds spanning kicks, snares, cym-

bals and percussion) and two synth parts derived from the Novation Nova synth engine. There are also 64 total synth patches, which you select across two "pages" of the pad grid, and a Side-chain setting for each synth, which ducks the volume of a synth to various degrees when the kick drum plays.

The drum parts cover many familiar and proven electronic and sampled dance-music sounds, while the synths definitely recall the Nova's flavor, covering a range from smooth to harsh basses, staccato to sweeping leads, as well as funky and filthy sounds.

Eight Macro knobs—endless rotaries that show their "up" or "down" position with dimming LEDs that color code to the selected instrument—control one or more parameters for the selected synth or drum part. Their functions vary according to the patch.

Novation programmed the Macros well, so that you can end up with a final product that's miles away from the factory preset. In general the synth macros are programmed for the oscillators (Macros 1-2), envelopes (Macros 3-4), filters (Macros 5-6), and modulation/effects (Macros

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DiGiGrid Creative Audio Interfaces.

A black and white portrait of Jack Joseph Puig, a man with long dark hair and a goatee, wearing a dark turtleneck and a blue blazer. He is looking directly at the camera with a slight smile.

## Jack Joseph Puig

U2, Lady Gaga,  
Black Eyed Peas,  
John Mayer



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(real time low latency monitoring)."

7-8). The large highpass/lowpass Filter knob applies to the overall mix.

## PARTS TO PATTERNS

Through constant color-coding, blinking and dimming, Circuit's LED pad grid opens up a world of controls for all of the machine's functions. In addition to the functions noted earlier, you can input notes for the step sequencer and real-time playback/recording, select scales, and set velocity and gate levels and swing amount.

There are 32 Sessions in the unit's memory—16 editable, preloaded Sessions and 16 user slots. In turn, each session has 32 pattern memories—eight patterns each for Synth1, Synth2, Drum 1/2, and Drum 3/4. Unfortunately, each pattern can only have 16 or fewer quarter-note steps, which is not really long enough to realize a lot of melodic themes. And stringing together longer melodies across patterns is not always ideal or possible.

Playing around with the preloaded Sessions will help you get familiar with the setup, but anyone accustomed to standard step sequencers should find it easy to choose a blank Session, select a drum part in Note mode, and input notes for a pattern. You can record notes in real time or in steps, but either way, for each step you can adjust the Velocity and Gate pages to values of 1-16. Moreover, you can capture the Macro knob movements while recording a pattern. As you record patterns, you can duplicate one pattern to another slot, and then change its length or use Nudge to move notes over and create cool timing variations.

I wish Novation had included a way to transpose a pattern's notes up or down, but they didn't. However, in the Scales page, you can set the scale type and root note for each Session. In a live performance, you could change the root note on-

the-fly to create notation shifts. For 15 of the 16 scales, Circuit's Note mode provides rows of pads with an octave's worth of notes for that scale, so you'll always play in key. However, if you choose the Chromatic scale, Circuit's note mode will approximate an octave of white and black keys on a musical keyboard across two rows of the pad grid; expanded Note view shows the keyboard inputs on all four rows of the grid.

The FX page provides 16 tempo-synched delay settings, ranging from short to long, and there are eight reverb settings to choose from. On this page, the six Macros act as effect sends for the six instrument parts: Although you can only pick one delay and one reverb setting for the Session, you can dial in different amounts for each instrument. The Save function saves any changes made to the entire Session—sounds, patterns, effects, etc.—at once.

## LIVE OUTSIDE THE BOX

Circuit would be great for live, improvised, or semi-improvised performances, because you can quickly and fluidly change the sounds, sound settings, Macro movements, effects parameters, and timing of the notes in a pattern. You can also set patterns for each of the four parts to automatically play in a continuous loop by selecting blocks of connecting patterns. Looping varying amounts of patterns for each part creates another layer of variation over time.

This is also a tidy controller for external MIDI gear in a live or studio situation. Circuit syncs to and resends incoming MIDI clock, and you can use its playback, sequencing, and control functions with external gear over MIDI channels 1, 2, and 10.

Circuit's USB port supplies class-compliant USB MIDI to a Mac or PC for easy driverless

connection. It can act as a USB software controller and comes with Ableton Live Lite, but despite its physical similarities to a Launchpad, it doesn't have any onboard control templates for Live or any other software. You'll have to map it yourself. You can also record your Circuit patterns and sessions as MIDI data to a DAW track as a way to back up and transfer your work to a larger DAW session. To record its audio, you have to use the analog outputs rather than USB.

As this went to press, Novation was working on a possible software component to Circuit, based on user feedback, that would give it more robust computer integration. There are all kinds of directions they could go with that; I feel that it's of the utmost importance to create some kind of bulk memory dump that would save Circuit's Sessions as parted-out MIDI files (and perhaps audio files). The reason is because Circuit power users will eventually fill up its internal Session slots.

You can barely help filling up Sessions every time you sit down with Circuit. The patterns just fly out of your fingers. The pad grid is a natural for step-sequencing beats, and many people by now are used to playing synth notes from a pad grid, either in the scale rows that curate the notes from a single scale or from the chromatic keyboard. If you've never used pads like this to play notes, it may not feel natural at first, but you may also be surprised by how quickly you get something interesting going. And a little invested time pays off in dividends of finger dexterity down the road.

This kind of spontaneous productivity was the initial point of Circuit. It's there to get you started on musical ideas wherever and whenever you want. A few choice upgrades to make finishing those ideas easier, as well as maybe iOS integration, will crank up its value even more. ■



Fig. 2. Circuit comes with a wall adapter, as well as six AA batteries. The USB port is currently for sending MIDI to a computer only. Included MIDI breakout cables give you MIDI DIN I/O connections to external gear.

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~ **Butch Walker**  
Engineer/Producer - Avril Lavigne, Fall Out Boy, Pink.

***"I love the way the control and tracking rooms sound now... and so does everyone that records here!" ~ Butch Walker***



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~ **Daniel Adair**  
Drummer - Nickelback.



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~ **Keb' Mo'**  
Roots music legend

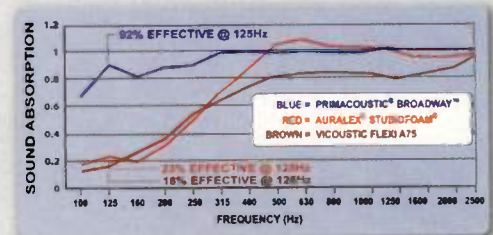


"Not only does my room sound amazing, it's also really beautiful!!!" ~ **John Rzeznik**  
Performer/artist/producer - Goo Goo Dolls.

***"Not only does my room sound amazing, it's also really beautiful!!!"***

~ **John Rzeznik**

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## IZOTOPE

A MAJOR UPDATE THAT  
LETS YOU WORK  
FASTER AND SMARTER

Mike Levine is an editor, writer, and multi-instrumentalist who lives in the New York area.

**Instant Process. Corrective EQ.** Advanced version includes Redesigned Leveler, Signal Generator, and Deplosive. Module Chain. De-Reverb available in standard version..

Advanced version is pricey. De-esser feature in Leveler could be more effective.

**RX 5: \$349; upgrade from RX 1 through 4, \$199.**

Using parameters such as Sensitivity, Strength, and Frequency Limit, De-plosive zaps out plosives with impressive ease. And what makes it particularly efficient is that it can be applied over an entire audio file, so you don't have to deal with each plosive individually.

When RX 4 Advanced was released last year, it included a new module called Ambience Match, which was a really useful effect that could “learn” ambience from one part of a recording and reproduce it somewhere else. Most helpful in spoken-word recordings, such as video soundtracks, it greatly simplified the process of copying and pasting ambience to cover up edits.

**E**very autumn, iZotope unveils its latest incarnation of the audio editor and audio-restoration suite RX. This year's edition, like past ones, comes in two versions—RX 5 Advanced and RX 5—and features a slew of new features and improvements. Because we've reviewed earlier versions of RX (review archives are available at [emusician.com](http://emusician.com)), I will focus on the new features, many of which are aimed at speeding up workflow. Let's start with what's new in RX 5 Advanced.

Whether they show up in a sung vocal or dialog, plosives (popped

modules that come in the standalone version. However, the Ambience Match processor is available as an AudioSuite plug-in for Pro Tools only in RX 5 Advanced. But it lets you apply the effect without opening the file up in RX.

The Leveler module, which was introduced in RX 4 Advanced, has been tweaked for Version 5. It now includes "intelligent" breath control and de-essing parameters. Also new are dedicated modes for dialogue or music. A number of new presets have been added, as well. The idea of the module is essentially to ride the gain on your program content to even it out and get it to a user-adjustable RMS level. After it's done processing, it also provides you with manual clip-gain editing to fine-tune the results where needed.

In my testing, Leveler's new Breath Control feature worked well. The module found most of my breaths and cut them out completely. The De-Esser worked decently, although, in my testing, I got better results from the de-esser setting of an external dynamics plug-in. Overall, though, the Leveler module is now more flexible and versatile than ever.

Yet another addition to the Advanced version is a

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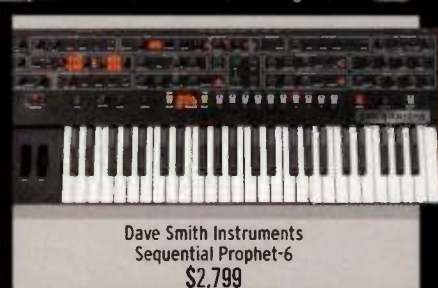


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Fig. 1. Two of the modules that have been added to both versions of RX 5: Module Chain (left) and Corrective EQ.

module called Signal Generator. Unlike most of the modules, which have icons on the right side of the screen, it is accessed through the module list under the Windows menu. Signal Generator is capable of creating sine, triangle, sawtooth, and square waves to use as test or calibration tones. It

can even be used to create bleeps to cover obscenities in dialog or lyrics.

Signal Generator can also generate four types of white noise, as well as pink and brown noise. It can be set to create digital silence and has a slider for correcting DC offset. Three

different pasting modes are available for it—Replace, Mix, and Insert. These are useful and important, because if you're working on, say, a video soundtrack, you don't want to change the duration of the audio file when you put in silence. The Mix setting combines the generated noise with the existing audio in your selection. The Replace setting replaces the selected audio. If you do want to add to the duration, the Insert option can be used. Clearly, the signal generator will be most useful in broadcast and post-production situations.

#### NEW IN BOTH VERSIONS

Many new features are common to both RX 5 and RX 5 Advanced. For example, the GUI has been updated, and the icons under the main display are now larger and have more space between them, which makes them easier to see and use.

Most of the buttons are the same, but you'll notice two large rectangular ones that were not in previous versions. These are for the new Instant Process feature. When the Instant Process button is engaged, you can choose from among five different processes: Attenuate, De-Click, Fade, Gain, and Replace. Then, every time you select a portion of audio, RX 5 processes it immediately: Talk about your time-savers!

## Tradition, tubes & transformers...

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This is the real thing. Developed by industry guru Deane Jensen, the 'no compromise' Twin-Servo preamp combines two legendary Jensen 990 discrete op-amps with Jensen's finest input and output transformers to produce a response that ranges from 1Hz to 150kHz. Updated to fit inside a 500 series module enclosure, the Twin-Servo delivers a sonic clarity and low-end depth that is without equal.

### PowerPre™

#### mic preamp

The PowerPre is a 100% discrete mic preamp with an old-school Hammond™ broadcast transformer for ultra-warm tone. The Radial PowerPre features Accustate™ gain control for lowest noise at any setting, Vox Control for added breath or extra punch, a high-pass filter to eliminate resonance, a 10 segment LED meter display for easy readout and plenty of gain to handle any situation.

### PowerTube™

#### tube preamp

The PowerTube is an amazing class-A tube preamp that combines the natural harmonics of a 12AX7 with the sonic performance of a Jensen™ transformer. Inside, a charge pump delivers 140 volts to the tube for maximum headroom while the transformer yields Jensen's legendary Bessel curve. Features a high pass filter to eliminate resonance, an 'air' switch for extra top end and a 10 segment LED ladder for visual feedback.

"The PowerPre is a must hear. I got great results, particularly in high transient situations where you can drive it hard for more transformer color. I bought one."  
~ Mix

"The PowerPre is a fine example of a well designed, low-noise mic preamp that can give a bit of 'meat' or 'air' when needed. It may well be your preamp of choice."  
~ Electronic Musician

"The PowerTube promises 'tube magic'... retro tone and warmth... and this puppy succeeded. You won't find many options at this price point that deliver on this promise."  
~ TapeOp

"The Q4's two Mid bands include a Q setting narrow enough to go all Hendrix with and you can make superb Wah-wah effects with the low-frequency knob. Astonishingly wholesome and lovely!"  
~ Resolution

"Using the EXTC, I was surprised at how quietly most pedals can perform, and this got me digging out some neglected curios which sounded stunningly clean and juicy."  
~ Resolution

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INSIDE

Instant Process is perfect for repetitive editing tasks such as removing finger squeaks from a guitar part, getting rid of glitches in a voice recording, or any situation where you previously had to select the audio and then press the process button. Now it takes one step, and for long-form material such as soundtracks or podcasts, it can greatly speed up your workflow.

Users of the standard version will also be happy to know that the De-Reverb module, originally available only in the Advanced version, is now included in RX 5.

## CHAIN OF TOOLS

One of the realities of using audio restoration processing is that you often have to do multiple passes over the same audio, either to run different processes or to repeat the same one. As you might expect, this can be quite time-consuming. The new Module Chain feature allows you to select multiple processes and run them in series over your audio file or selection.

When you open Module Chain, you get a window that can be configured with as many processes as you wish, and in any order. Most RX 5 modules are available for use. You can even include third-party plug-ins in your effects chain via the Plug-In module. For each process in your chain, you can access its cor-

responding module window and set the parameters any way you want. You can also repeat processes within the chain if you want to re-create the effect of running multiple passes.

For example, let's say you were editing a podcast and you wanted to clean up the dialog. You could run a chain with Dialog De-Noiser, De-Plosive, Corrective EQ, and Leveler. In previous versions you'd have to run each as a separate pass. Now you can do it all at once, and then save your favorite chains for future use.

iZotope has also made life easier with a selection of useful preset chains including Improve Distorted Dialogue, Live Music Cleanup, Remove Background Noise, and Reduce Room Tone, among others. These make great starting points and can potentially illustrate ways to use certain processors in applications for which you might not have considered using them.

## Q-ING UP

The EQ module has been completely redesigned in RX 5. Now called Corrective EQ, it features a larger and more colorful GUI reminiscent of the modules in iZotope's Ozone mastering suite.

The number of bands has been increased from six to eight. These include highpass and lowpass filters, which now feature four selectable curves,

including roll-off settings of 12, 24, or 48 dB/octave, as well as a Brickwall option. This is much more flexible than in prior versions. The six internal bands can be switched between Bell, Low-Shelf, and High-Shelf filters, with Q settings that can go from very wide to extremely narrow.

The EQ can be globally set to Analog or Digital mode, with corresponding shape changes in the filters. Like in some of the other modules, iZotope has increased the number of presets. (The old version had only one.) Now you get eight presets including Streaming Enhance, Laptop Correction, and Reduce Resonance (see Figure 1). Naturally, these will almost always need to be tweaked for your particular situation, but again, they provide starting points for certain types of correction that can be helpful.

## TIME IS MONEY

By focusing most of the new features on improving workflow, iZotope has made RX 5 a lot more valuable. You can now work more quickly and efficiently.

For current RX users, the improvements in the upgrade will be worth every penny. If you're buying RX for the first time, you'll appreciate how powerful and easy RX 5 is to use. As usual, whether you buy the standard or Advanced version depends on your needs. But either way, you'll get an exceptional set of tools for the money. ■

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## Space Heater™ studio tube driver

The Space Heater 500 is a 12AX7 tube overdrive designed to bring loads of spice and character to your tracks. It features 3 voltage settings for slight harmonics, medium crunch or over-the-top distortion. A combination of high and low-pass filters let you focus the distortion when parallel processing and a Jensen™ transformer rounds out the output for the ultimate in smooth, natural tone.



## Q4™

state-variable parametric  
The Radial Q4 is a state-variable class-A parametric equalizer with a 100% discrete circuit. This unique old-school design enables component level control over individual gain stages, eliminating the need for excessive tone robbing negative feedback. This makes the Q4 the most natural sounding EQ ever! Features include high and low shelving with parametric control over the low mid and high mid regions.



## EXTC™

### guitar effects interface

The EXTC is a unique device that lets you interface high impedance guitar pedals with your recording system. It features easy access front panel 1/4" connectors for quick set-ups, plus individual send and receive controls to optimize the signal path and a wet-dry 'blend' control. The effects loop is transformer isolated to eliminate buzz and hum caused by ground loops.



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WAVES

# Cobalt Saphira

## AN OUTSTANDING HARMONICS GENERATOR

BY MICHAEL COOPER

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Equalizers can't be independently bypassed.

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Cobalt Saphira offers independent control over the generation of even and odd harmonics. The display at the bottom of the GUI is set here to show the equalizer sculpting the Warmth (odd harmonics) generator's output.

Saphira, the first plug-in in Waves' new Cobalt product line, allows you to control the amount of even and odd harmonics it generates separately. In addition, it can emulate a tape recorder's mechanical influence by adding wow and flutter artifacts. The plug-in supports AAX Native, AudioSuite, Audio Units, RTAS, VST, and VST3.

According to its manual, "Saphira works best on complex, loud signals," including those on master groups and the master bus. But I got some of my most fabulous results lathering Saphira on guitar and bass tracks.

The Edge and Warmth sections of Saphira's GUI generate even and odd harmonics, respectively, and can be independently bypassed (see Figure 1). Raise the Send sliders for Edge and Warmth to drive the input to their respective processing blocks and generate more harmonics. Saphira's sends will maintain unity gain as you adjust them, with one caveat: Adding gobs of odd harmonics will make the fundamental frequencies, and thus the overall level, louder. The Return sliders for Edge and Warmth control the respective output levels of the generated harmonics.

Harmonics Modes buttons—labeled A to G—change the harmonic structure of the sound generated. Modes A, B, and D are characterized as sounding natural; C provides punch; E, F, and G add dirt.

You can color the outputs of even and odd harmonics independently using respective 4-band equalizers (which don't affect the dry signal). The EQs are configured the same: The two middle bands offer parametric bell filters, the lowest band can be switched to provide a highpass filter or low shelf, and the highest band offers a lowpass filter or high shelf. Both EQs can be bypassed at once but not separately.

Tape controls in the bottom-left section of the GUI add wow and flutter to both the dry sound and the equalized harmonics, emulating the way an analog tape recorder modulates sound. You can choose among five different virtual tape speeds ranging from 7.5 to 30 ips (inches per second) and use the Depth control to increase the level of modulation. The Tape section can be independently bypassed.

A display at the bottom of the GUI alternately shows the selected equalizer's control section (for Edge or Warmth) and relative levels of even and odd harmonics for the selected harmonics mode. An output-level control, stereo I/O meters (virtual LED ladders), A and B workspaces, Undo and Redo buttons, and preset-management facilities round out Saphira's intuitive interface.

Saphira sounded phenomenal on bass and electric guitar tracks, creating dozens of different tonal shades that would've been impossible to achieve using EQ; my tweaks often made the track sound like I had swapped out the instrument's pickups! And every mode was useful in shaping drum tracks, making them sound more punchy, lean, tap-y, or crisp.

I liked using harmonic modes B and C for mastering. B was subjectively the loudest of the clean-sounding modes (A through D); it brought vocals forward and broadened the midrange band the most. Mode C sounded darker, producing a softer top end and lending subtler girth to the mids. No matter the application, all of the modes generally sounded best using Saphira's LPF and high-shelving EQ to roll off some top end, softening any inherent edginess.

Euphonic, full-featured, and user-friendly, Cobalt Saphira is a steal at \$149. ■

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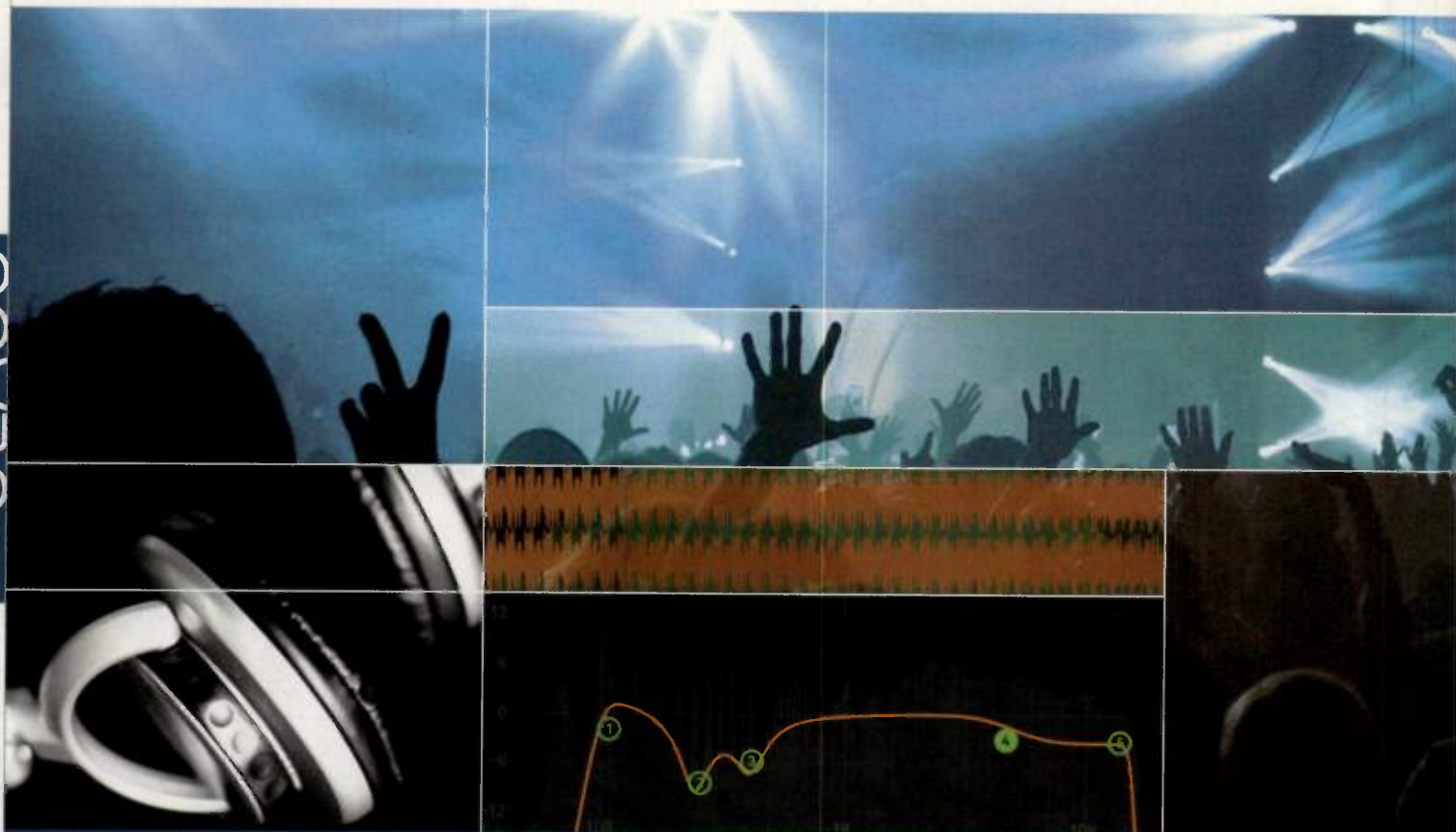


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| <b>D</b> Numark Lightwave DJ Loudspeaker with Beat Sync'd LED Lights<br>#NLIGHTWAVE<br>\$249 <sup>00</sup>          | <b>E</b> Allen & Heath GLD-112 Chrome Edition Compact Digital Mixing Surface<br>#ALGLD2112<br>\$6,499 <sup>00</sup> | <b>F</b> Audeze LCD-XC Closed-Back Planar Magnetic Headphones<br>#AUDEZLCDXCBBBL<br>\$1,799 <sup>00</sup> |
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# Bass Programming

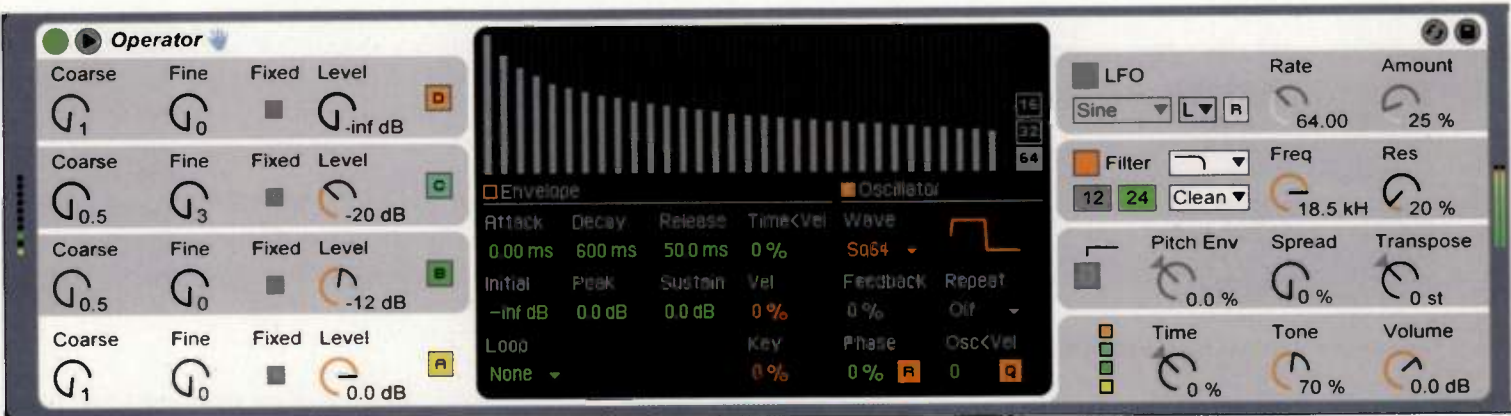
Create killer bass patches for modern electronic styles using just your DAW's stock plug-ins

BY MARKKUS ROVITO

**I**t's not just hype; lots of professionals have basically credited Native Instruments Massive with helping usher in the "new rock 'n' roll," or what younguns alternately call bass music, dubstep, neuro bass, and other monikers; while certain older people who have become their parents call it noise, garbage, their worst nightmare, or just "not music." Massive's incredibly flexible routing and ample, powerful modulation options did make it more feasible for studio-tanned producers to obsess over programming until the ubiquitous, polyrhythmic "wuub-wuub, wub-wub-wub-wub-wub," bass lines came out, somehow both round and sharp at the same time.



# for Bass Music



**Fig. 1. The oscillator settings for your main bass sound's synth.**

That sound not only permeates clubs, raves, and festivals now, but also a certain amount of pop, hip-hop, and music for picture. So it can behoove almost anyone to learn about these techniques, and they can apply to other sound design tasks as well, whether you make the devil's music or not. And while we love Massive and the whole NI Komplete bundle, one instrument never has the lockdown on a sound or production technique. This how-to takes the wrapper off of bass programming for bass music using just stock instruments and effects. In this case, I'll use

Ableton Live 9 Suite, which has become the popular standard for electronic music, but conceivably any full-featured DAW package will do.

These techniques will put you well on your way to bass music mastery, but they still just scratch the surface. Love them or hate them, the successful producers in this genre put in work. There is a near infinite playground of routing, modulation,

and processing that they have explored, and if you're just starting off on this journey, think of it as a long trip that you can enjoy the way.

## STEP 1: CREATE THE MAIN BASS AUDIO

To begin, create a MIDI track with a 3-oscillator synth, like Ableton Live Operator or almost any other subtractive or wavetable synth. Set Oscilla-

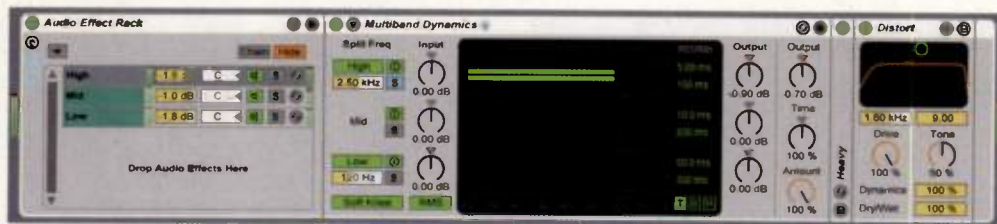


Fig. 2. In an Audio Effect Rack, create three Chains with a Multiband Dynamics unit on each one; solo one band for each dynamics unit (for example, the High band is soloed here). The High band also has two distortions on it: an Amp with the Heavy preset and an Overdrive with the Distort preset.

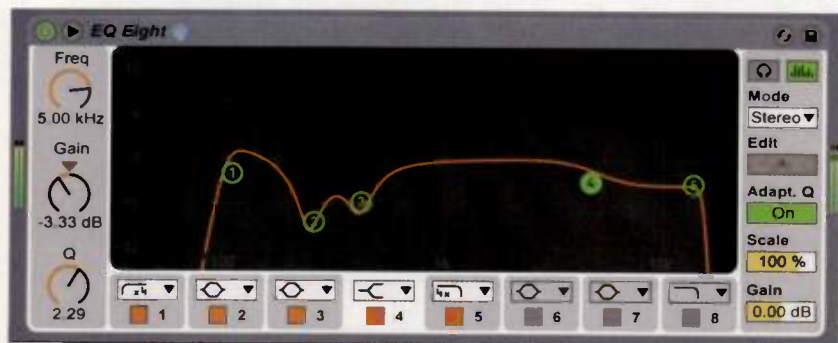


Fig. 3. The multiband EQ settings for the main bass synth sound, before bouncing to audio.



Fig. 4. The Main Bass sample has been cropped and looped with crossfading in Live 9's Sampler.

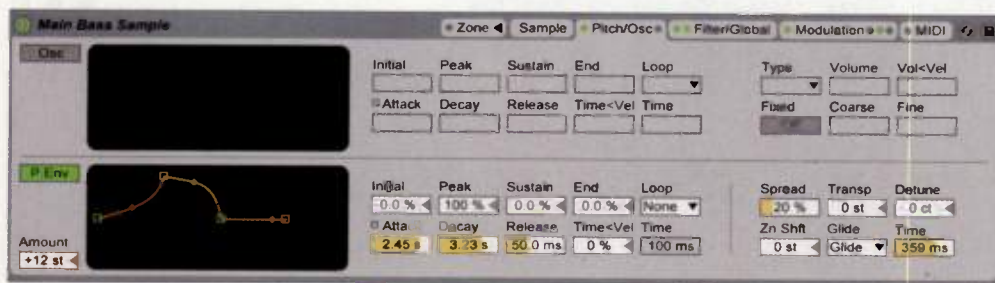


Fig. 5. The Sampler settings for the Main Bass sound's Pitch Envelope, Spread and Glide.

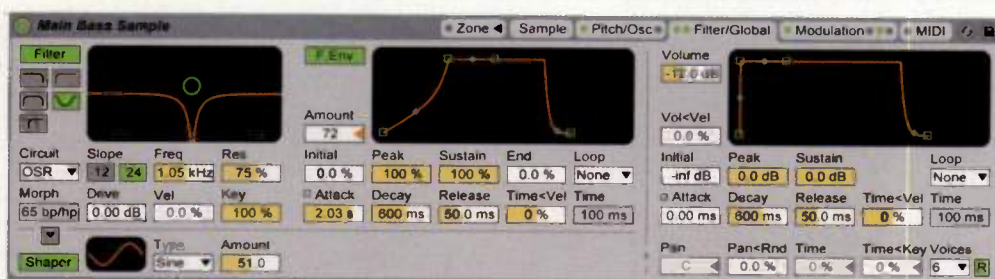


Fig. 6. The Sampler settings for the Main Bass sound's Filter, Filter Envelope and Shaper. The Global settings remain unchanged.

tor 1 to the Square64 waveshape or similar square wave. Set it to its full level (+0dB). Make Oscillator 2 a sine waveshape, and turn its level down somewhat to -12dB while tuning it down by one octave. Oscillator 3 should also be a Sine wave, turned down even further to around -20dB. Also tune this one down by an octave, but then fine-tune it up by a few cents to give it some drift (see Figure 1).

Now, record a single note for about four bars, and bounce that MIDI track to audio. (Write down or remember which note you recorded, so you can repeat it again later for the sub-bass.) The bounce function works differently in different DAWs; in Live 9, right-click on the MIDI clip and choose Freeze, and then right-click on the frozen clip and choose Flatten to create a new audio track with the bounced audio. There should be various kinds of phasing going on in the audio file; trim the audio to isolate the part that sounds the fattest and most appealing to you.

## STEP 2 APPLY MULTIBAND DISTORTION

Plug-ins like the D16 Devator Multiband Distortion Unit (\$29) are great, but if you don't have a multiband distortion, you can simulate one like this. Make an Effect Rack with three Chains in it, and name the chains High, Mid, and Low. Put a Multiband Dynamics plug-in in each Chain, and for the High Chain, solo the High band of the Multiband Dynamics plug-in; solo the Mid band of the Multiband Dynamics plug-in for the Mid Chain, and solo the Low band of the Multiband Dynamics plug-in for the Low Chain. Now put a distortion plug-in in both the Mid and High Chains. (Leave distortion off the Low Chain.) In the Mid Chain, the distortion shouldn't be too drastic, so keep your wet/dry settings to about 15 to 40 percent wet. On the High Chain, feel free to go overboard with the overdrive, so to speak. You can even chain more than one distortion if you want, applying overdrive on each one at wet/dry amounts of 25 percent all the way up to 100 percent if you like. However, distorting the high band produces a lot of extra high frequency data, so it's a good idea to also apply some kind of lowpass filter or high-cut EQ and cut off the frequencies at around 16kHz (see Figure 2).

Put a saturator plug-in on the whole track (rather than one of the multiband Chains). You could use your DAW's stock saturator or something like the Brainworx bx\_saturator V2 (\$199). For the saturator, find a "warm" preset you like and keep the dry/wet setting to around 60 percent so as to not overdo it.

After the saturator, put a multiband EQ in the chain and cut off frequencies below 100 Hz with a low-cut curve, so the sub-bass will have that room later. Listen for any "muddy" frequencies in the sound—likely around the mid range—and put a bell curve on them to keep them in check. Then because it's a bass sound, ease off the high frequencies with



Fig. 7. Perhaps the heart of the bassline, the Aux envelope mimics the Pitch Envelope and modulates the LFO 2, which modulates the Filter Frequency.

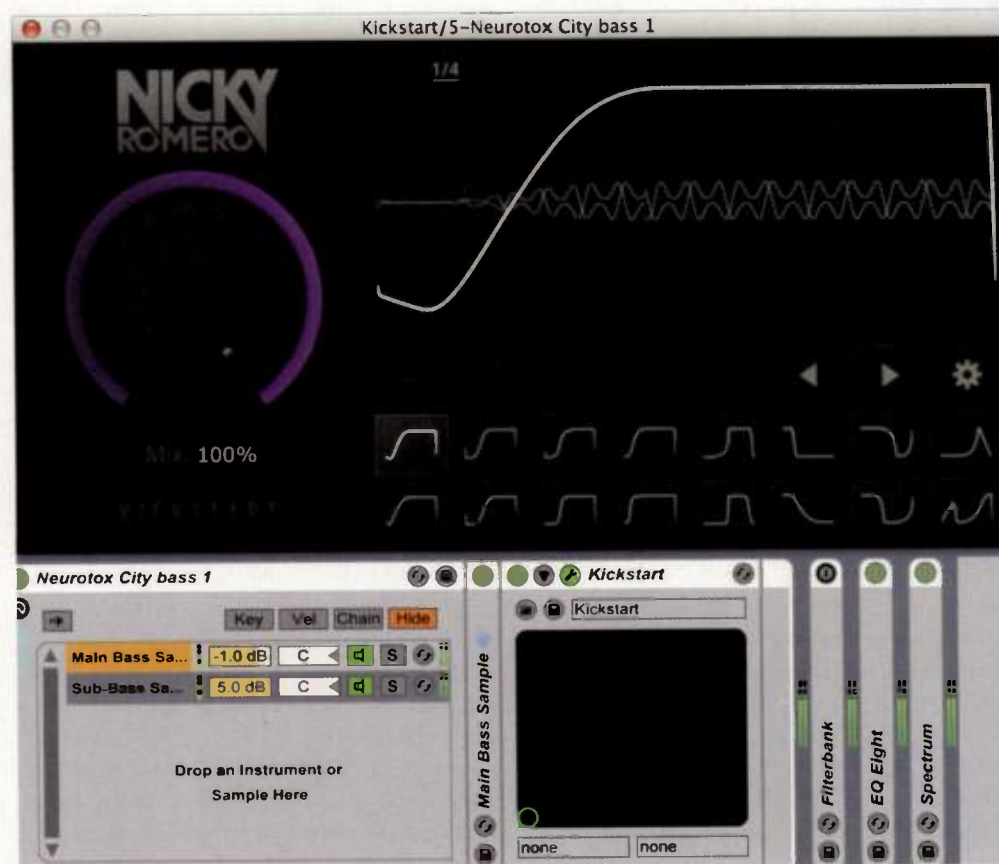


Fig. 8. The Sub-Bass together with the Main Bass in one Instrument Rack; each bass part has its own processing chain. Here, only the Sub-Bass goes through the Kickstart sidechain compression plugin.

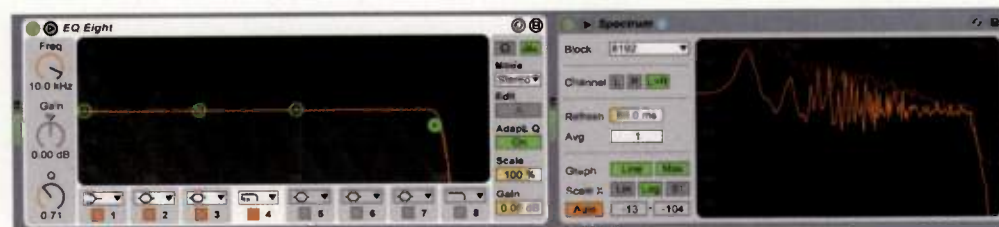


Fig. 9. A final multiband EQ on the bass rack cuts the highs down to as low as 10 kHz, and the Spectrum analyzer shows the results.

a high-shelf curve around 5 kHz and a hard high-cut curve at around 15 kHz (see Figure 3).

Now, again, bounce this audio with its processing down to another audio file, which will be the audio we load into a sampler.

### STEP 3: INSTRUMENT RACK SAMPLER

Load your stock (or preferred) sampler plug-in on a new MIDI track, and drag your main bass audio file into it. Now use the loop braces or selection tools to highlight just the portion of it that you

like the best for playback. In Live's Sampler, you'll set the Crossfade amount to taste, so that when the sample playback loops, it will sound smooth, without clicking. If your bass sounds wrong at this point playing back from the sampler, make sure that the RootKey setting is at the correct note, so it's not being pitched (unless of course you prefer to pitch it at this point) (see Figure 4).

Now, we'll work on getting some characteristic modulation going for this bass. These modulation settings will be a good starting point for you to familiarize yourself with the process, and then you should certainly try your own variations.

Go to the Pitch/OSC window of Live's Sampler or your sampler's equivalent, and activate the Pitch Envelope. Give it an amount of 12 semitones (one octave) with the attack at 2.5 s and the decay at 3 s. This will pitch up your bass by one octave and back down over the course of 5.5 seconds. Feel free to manually alter the slope of the envelope's curve between those two stages to get a different feel.

A great trick here is to add some Spread in Live's Sampler, which generates two detuned voices per note. The result is to fatten up the sound significantly—similar to what a chorus effect does, except without coloring the signal. Also, using Glide between notes is very popular in bass music, so turn that on and set a Glide Time to something less than 1s (see Figure 5).

Now, go to the Filter/Global window of Live's Sampler or your sampler's equivalent, and turn on the filter to a bandpass filter with a frequency of about 1 kHz and resonance of about 75 percent to make its frequency response curve look similar to Fig. 6. Also add Live Sampler's Shaper, with a Sine wave and an Amount of 40-60, to add a lot of extra presence and depth to the sound. Turn on the Filter Envelope and set it to its full amount, with the Sustain at 100 percent and the Attack at either 2s or 3s, so it's different from the Pitch Envelope (see Figure 6 again).

Now, go the Modulation window of Live's Sampler or your sampler's equivalent, and turn on the Aux envelope. Give the Aux envelope the same time and slope settings as your Pitch Envelope: 2.5s Attack, 3s Decay, and whatever slope settings you settled on. Set one of the Aux envelope's destinations to LFO 2 Rate, with an amount of 100 percent. Now turn on the LFO 2 with a Sine wave shape and Rate that is synced to the tempo. Assign an LFO 2 destination to Filter Freq, with an amount of at least 50 percent. If you've been auditioning the bass sound throughout this process, you'll notice that this last step—which increases the LFO speed as the pitch increases and vice versa—really distinguishes the sound, so the Beats Rate that you assign it can be key. Set it to 1/16 notes or higher for rapid-fire filter modulation, or something like 1/12 or 3/16 for a triplet timing (see Figure 7). Pick one for now and then Group your



Fig. 10. The reverb Effect Rack for the Send channel.

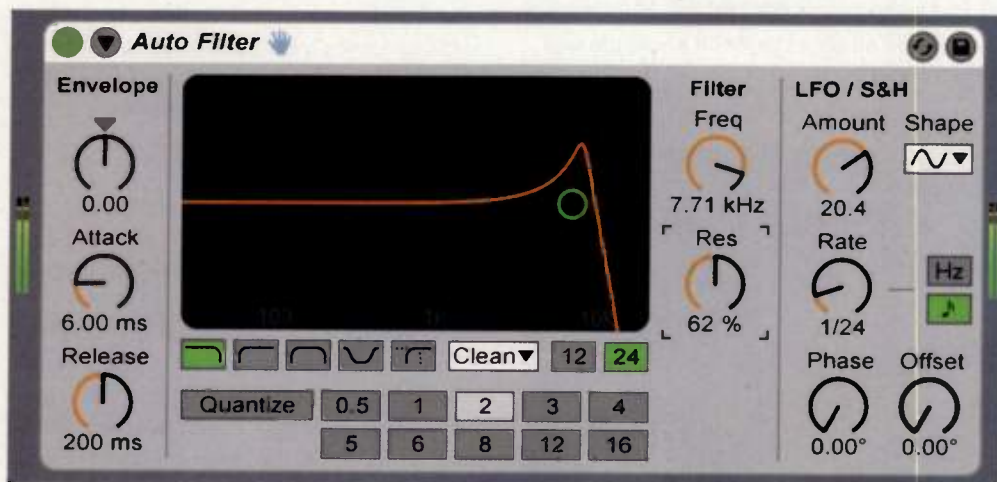


Fig. 11. Put an Auto Filter on your bass track and automate its on/off, as well as the Rate, Freq and Res in time with the music for some irresistible ear candy.

then a compressor. With the EQ, roll off the low end at about 500 Hz and the high end at about 10 kHz. Use the same reverb settings, but you can turn off the Lo Cut and Hi Cut. For the compressor, you could use a “Generic Compressor” preset, but the main idea is, you want a ratio of 2:1, a moderate Attack, a quick Release, a low-ish Threshold of around -15 dB, and no make-up gain (see Figure 10). With these effects settings, you should be able to crank the Send channel to 100 percent if you want to.

#### BONUS TIP 1 VOCODE THE BASS

Bass music producers often use vocoders to make their bass sounds even more nasty and edgy, and they occasionally seem to vocalize the bass sounds as well. Place your vocoder in your bass Instrument Rack track after the basses but before the multiband EQ. Vocoders can be very complicated, so if you’re not already familiar with them, load up some presets, and when you find your favorite one, experiment with Formant settings and Dry/Wet settings. When working on your tracks’ arrangement, I highly recommend adding some automation that bends the Formant and/or the Dry/Wet mix in rhythm with the bass line for some epic style.

The vocoder effect can sound even more massive if you do some more complex routing. Start a new audio track and Group it into a group track along with your bass track. Drop the vocoder onto the new audio track, and in the I/O routing section, send the audio of the bass to the vocoder track. Set the vocoder to receive audio from the bass track and send its audio out to the Group track. Then to warm up and fatten the Group track, use an effect chain on it like this: saturator > limiter > multiband EQ > reverb.

#### BONUS TIP 2: AUTOMATE THE AUTO FILTER

One last bit of flair for your bass part: When arranging your song after you’ve recorded the bass line, put an Auto Filter at the end of the effect chain and use automation to turn it on just occasionally—say, whenever a certain note or part plays, or on the “4” beat of every 8th measure, etc. This will give the bass an occasional ear-candy trill that you can have a lot of fun with. Set the Auto Filter’s LFO to any wave shape, but set its Amount high and its Rate fast, so it’s very noticeable when it comes in (see Figure 11). When the Auto Filter turns on, it also sounds very cool to automate a quick sweep to its cutoff frequency and resonance, for example, from low to high values for both. ■

Sampler into an Instrument Rack (Command-G in Live 9), name the bass chain something like Main Bass and save your Instrument Rack to the Library, so you can recall it later.

Many bass music producers get meticulous with programming variations into the bass line, sometimes even note-by-note. You’ve learned how to sync some envelopes, vary other envelopes, and set modulation destinations. Now see what happens when you change the LFO 2 wave shape and Rate, change the filter type and settings, change the destination of the LFO 2, and so on. It’s possible to set user automation curves to vary the Rate of the LFO for example, so controlling a lowpass filter cutoff with automated varying LFO rates often causes the rhythmic wub-wub-wub sounds you hear in bass music. So you can play with automation when you’re arranging your track, but for now, because you want to lock in your Sampler settings before adding a sub-bass layer to the Instrument Rack, save a new instance of the rack under a sequential name (Dope Bass 1, Dope Bass 2, etc.) every time you find new settings you like.

With the main bass patches finished, inside each Instrument Rack you created, duplicate the bass sampler (right-click > Duplicate in Live 9) and name the new chain “Sub-Bass.” Now we’ll create a sub-bass audio file to replace the original bass audio in the second sampler.

To create the sub-bass, open Operator (or whatever synth you used in Step 1) again in a track and choose your favorite sub-bass preset. Now repeat

the process from Step 1 for the sub-bass: Record a 4-bar note (using the same note as before), bounce that note to audio, and drag the audio into the Sub-Bass sampler for each bass Instrument Rack you made. Now the sub-bass will run through the identical sampler settings and effects as your main bass. However, you can boost or cut each one’s levels to sound right together, as well as add separate processing to one bass or the other, so that, for example, you could add a sidechain compression simulator like Nicky Romero Kickstart (\$15) to just the sub-bass, but not the main bass (see Figure 8).

#### STEP 4: FINAL MIX

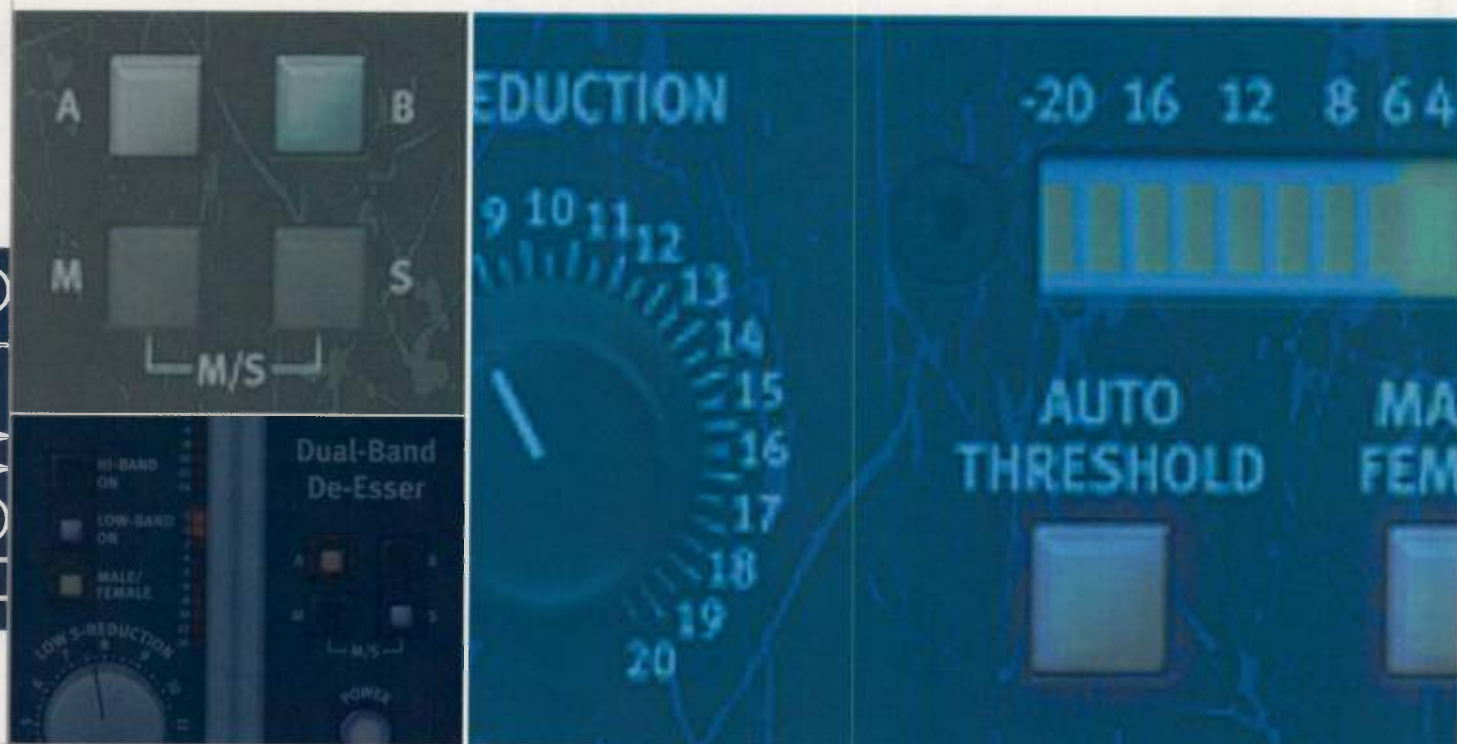
Like we did in Step 2, we’ll put a high-cut filter after the bass Instrument Rack to cutoff frequencies at around 15 kHz. You can do this with Live’s EQ Eight or another multiband EQ and use the most extreme high cut mode. You can use a frequency analyzer like Live 9’s Spectrum to compare the difference you get with the high-cut filter, and you could even adjust the high-cut frequency to as low as 10 kHz (see Figure 9).

Adding some reverb to the sound is a must, but it’s better if you can roll off some of the low and high frequencies going into the reverb. Live 9’s stock Reverb has a Lo Cut and Hi Cut for the input signal, and you want the settings to have a very large room Size, a low Predelay, and a Decay Time of about 1s. For even greater control over the sound, build an Effect Rack that you put on the Send track. In the rack, put a multiband EQ first, then the reverb and



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# Phase-Based De-Essing

Put down that compressor and try this instead

BY MICHAEL COOPER

Michael Cooper is a recording, mix, mastering, and post-production engineer and a contributing editor for *Mix* magazine. You can reach Michael at [michaelcooper@bendbroadband.com](mailto:michaelcooper@bendbroadband.com) and hear some of his mixes at [soundcloud.com/michael-cooper-recording](https://soundcloud.com/michael-cooper-recording).

When most of us are faced with the task of de-essing, we reach for either a multiband or frequency-sensitive wideband compressor to do the job. But there's another way to skin this cat: phase cancellation. Formerly available only in a few analog processors (models made by SPL and Valley People come to mind), phase-based de-essing is the keystone of the SPL De-Esser and Dual-Band De-Esser plug-ins.

## HOW THEY WORK

Instead of compressing a frequency band in which sibilance occurs, the De-Esser and Dual-Band De-Esser (which are sold together in a bundle) invert the phase of sibilant frequencies and combine the processed and dry signals to cancel out the sibilance. The band or bands in which sibilance occurs are automatically detected, and processing is limited to only those frequencies. The result is less collateral damage.

The De-Esser is a single-band affair (see Fig. 1),

while the Dual-Band De-Esser can process up to two frequency bands at once (see Fig. 2). The two plug-ins include an innovative Auto Threshold function—which you can bypass in the single-band De-Esser—that keeps the intensity of processing proportionally the same no matter how much the input level varies. Using a compressor to de-ess, you'd need to constantly adjust the threshold control to deal with a sibilant singer who varies their distance to the mic or to de-ess cymbals in a highly dynamic mix. Using either of the SPL de-essers in these situations, sibilance is



Fig. 1. The SPL De-Esser uses phase-cancellation to tame sibilance in a single frequency band.



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Fig. 2. For more demanding de-essing applications, the Dual-Band De-Esser allows processing in two frequency bands at once.

consistently tamed without ever having to touch a threshold control. In fact, aside from the De-Esser's Auto Threshold activation button, neither plug-in has a threshold control.

A single S-Reduction rotary control adjusts the intensity of processing in the De-Esser, while the Dual-Band De-Esser's two S-Reduction controls respectively regulate the amount of de-essing in high and low frequency bands. Switches for Male/Female modes and mid-side processing help you to selectively apply de-essing without marring pristine elements of the track that don't need it. Let's look at a couple examples of how to use these features.

#### HISS OFF

The single band De-Esser is typically all you'll need to tackle sibilance on a discrete lead vocal track. If you're treating a female vocal, engage the Male/Female button to enter Female mode; the center frequency for the plug-in's sibilance recognition will be set to 7.6 kHz. For male vocals, leave the Male/Female button disengaged to lower the center frequency to 6.4 kHz. Raise the S-Reduction control until sibilance—but not any vowel sounds—excites the gain-reduction meter and is audibly reduced to taste. I like to use the plug-in's A and B workspaces to save alternate settings for the Auto Threshold button—active and bypassed—and toggle between the two to see which sounds best.

The Dual-Band De-Esser is your ticket for reducing sibilance in stereo mixes. If cymbals are the culprit, engage the S button to process only the mix's side channel. The mic selections and positioning used to record the cymbals, and any equal-

ization applied during mixdown, will determine which bands—high, low, or both—should be processed. I often find low-band processing in Female mode works best, but you may also need to process the high band (which has a center frequency of 11.2 kHz) if, for example, high-shelving EQ boost was applied to cymbal tracks recorded with small-diaphragm condensers. Set each S-Reduction control so that processing is triggered by cymbal hits but not by electric guitars in the side channel.

#### COMPRESSOR KILLER?

SPL's de-esser plug-ins work great for the above-mentioned uses, but there are some situations in which nothing but a full-featured multiband compressor will get the job done without throwing the baby out with the bathwater. For example, it can be extremely difficult to de-ess a lead vocal on a full mix without also dulling kick and snare hits. For this highly discriminating task, you really need a mid-side, multiband compressor with freely adjustable sidechain filters, a key-listen function, super-fast attack and release times, hard knee, sky-high ratio, and very fine threshold control. (FabFilter's ProMB is one of the very few plug-ins that can pull this off.) But that's a subject for another article.

For all but the most surgical de-essing applications, the SPL De-Esser and Dual-Band De-Esser offer ease of use and transparent results. Especially where a track's input levels are all over the map, they offer a fast and hassle-free solution for taming sibilance that would otherwise be a real pain in the ess. ■

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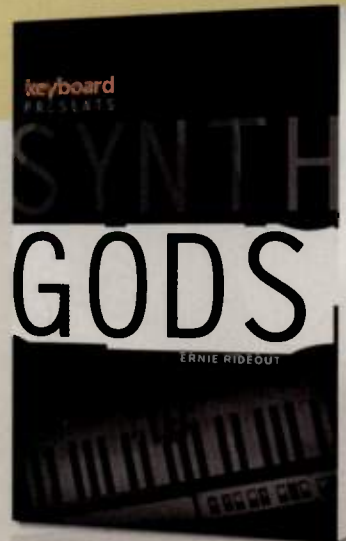


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# Howard Massey

*The Great British Recording Studios* author talks about his five-year immersion into the golden age of UK recording.



BY SARAH JONES

**T**he *Great British Recording Studios* is a sweeping account of the golden age of UK recording. In it, author Howard Massey chronicles the cultural forces and technological innovations that shaped the sound of landmark records by The Beatles, The Who, the Rolling Stones, and many others. His profiles of iconic studios from Abbey Road to AIR to Olympic leave no stone unturned, detailing everything from construction history to equipment lists to discographies to session anecdotes, including vintage marketing materials and many never-before-seen photos. I asked Massey to share some highlights from his years of research.

**So how did an American end up writing a book about the history of British studios?**

Basically, because I was asked. The APRS (Association of British Recording Services) approached me with the idea of writing a book to help preserve the legacy of the iconic UK recording facilities from the '60s and '70s, many of which are closing, or have closed, at an alarming rate. They knew that I had cut my teeth as a recording engineer in England back in the '70s, first at a

small studio in north London called Pathway, then at Trident.

**Can you describe the aesthetic of the "British Sound" for the uninitiated?**

It's a bit more "rough and ready" than the sound of American records being made at the time—less polished, more gritty. There was more of a "let's break the rules" attitude on the other side of the pond, as exemplified by The Beatles' groundbreaking recordings and those of other prominent English artists of the era such as The Who, The Kinks, Queen, and the Sex Pistols.

**You make a case for the British Sound being shaped by both cultural and technological evolution. Talking about Trident's room acoustics, Tony Visconti says, "No one was interested in the artifacts of a room sound. Everything was dead and in your face—the close-miked snare drum with a tea towel over it." Can you sum up the way recording techniques, the rooms themselves, and cultural phenomena all factored into the British Sound?**

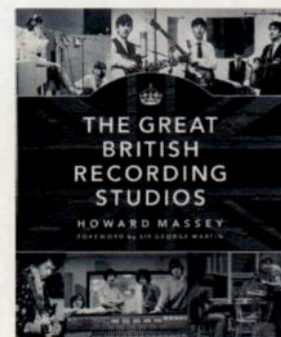
Well, I think the kind of dead recordings Tony is talking about were being made on both sides of the Atlantic at the time, but there's no question that many of the techniques and equipment in use differed vastly in the two countries, as did the construction approaches and acoustic treatments used in the rooms. The cultural factors were mostly down to the different types of music that artists, producers, and engineers grew up with, which in turn influenced the sound of the records they would go on to make. Jazz and blues, for example, are uniquely American idioms; on the other hand, there was never any equivalent here to the British music hall tradition or the kind of pub "sing-songs" that John Lennon, Paul McCartney, and their peers were steeped in. Many of the engineers I spoke with talked about how difficult it was to achieve an American drum sound in English studios, something they were often asked to do. Interestingly, they attributed that mostly to the feel of the musicians, since British drummers tended to play with more precision and less swing than their American counterparts.

**Your studio profiles and session stories offer details on everything from the 4-track cassette effects used on the Rolling Stones *Beggar's Banquet* sessions at Olympic to the mic mods at Decca. How did you approach your research?**

Fortunately, I was given access to the APRS archives, and the organization was also very helpful in connecting me with many of the key players from the era, although sadly some have passed on. In the end, nearly 300 people were interviewed for the book! I also relied heavily on contemporaneous articles and studio advertisements in UK magazines, which provided the bulk of the equipment listings and details such as room dimensions. The biggest challenge was piecing all of this information together, which was kind of like detective work. It took five years to accomplish—the world's longest term paper!

**You include so many fascinating "Stories from the Studio"—what were you most surprised to learn?**

I already knew from personal experience that innovation was a hallmark of British recording, but I guess I didn't realize just how much everyone was flying by the seat of their pants! The story behind the origin of the gated Phil Collins drum sound—a creative accident which would come to characterize the sound of many popular recordings for more than a decade, on both sides of the Atlantic—is a good example of how English engineers, producers, and studio designers were willing to take chances that their somewhat more conservative American counterparts probably wouldn't have taken, at least in those days. ■



EM is giving away a few copies of Howard Massey's *The Great British Recording Studios*! For a chance to win one, visit [emusician.com/britishstudios](http://emusician.com/britishstudios).



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