

electronic MUSICIAN

RECORD • PRODUCE • PERFORM

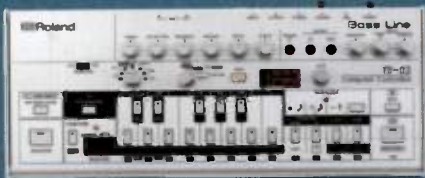
Austra
The Future
Politics
Sessions



2017 Grammy
Nominees
Talk Tech



Back Up
Data the
Foolproof Way



ANALOG BEAT-MAKING TOOLS



Q&A
MR. BILL

REVIEWS



ARTURIA
DrumBrute



ROLAND
DJ-808



EMPIRICAL
LABS
Arouser



WAVES
Abbey
Road Vinyl



KORG
iWavestation

The Korg
ARP
Odyssey
23 P
Tric



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PRODUCTION ASST
TRUTH BROADCASTING
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A MUSIC PLAYER PUBLICATION



serato × Roland

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THAT PUSHES THE BOUNDARIES OF WHAT IT MEANS TO DJ

- ▶ Built-in Roland TR drum machine and sample sequencing for custom drum parts and live remixes
- ▶ The most responsive platters for fast, accurate cuts and scratching
- ▶ VT Voice Transformer for automatic pitch matching of mic input to Serato DJ tracks
- ▶ Connect and sync Roland instruments with a single USB cable for production, collaboration and live sets
- ▶ 16 velocity sensitive RGB pads for triggering hot cues, playing the TR, drum rolls, sample sequencing, and more

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Anthology

X

Anthology X is a suite of 17 plug-ins that span 40 years of legendary Eventide sounds. From advanced EQs to otherworldly reverbs to an entirely new generation of pitch-shifters, you will find inspiration and solutions galore.

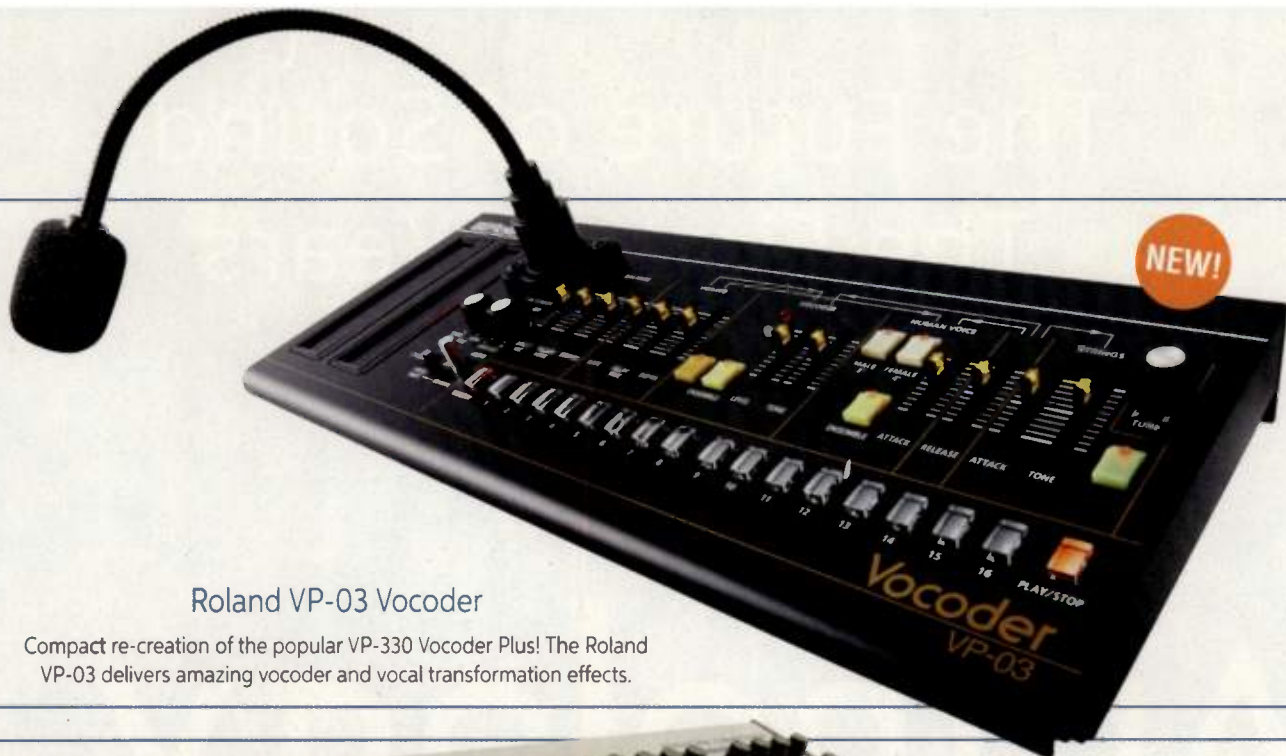
Available for AAX, VST, and AU with no dongle required.



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Roland VP-03 Vocoder

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Roland TR-09 Rhythm Composer

The original TR-09 defined the sound of '90s electronica — Roland's TR-09 Rhythm Composer delivers that iconic sound with more performance potential than ever!



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Universal Audio Apollo Twin DUO

A premium recording interface with innovative preamps — plus incredible UAD Powered Plug-ins!



NEW!

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NEW!

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ANALOG BEAT-MAKING TOOLS

In our cover story this month, we curate dream gear rigs for any music-making scenario.

GRAMMY NOMINEES

Learn the production secrets behind the year's most celebrated albums.

MR. BILL

Australian producer Bill James Day digs deep into Ableton Live, and makes the case for ditching DJing.

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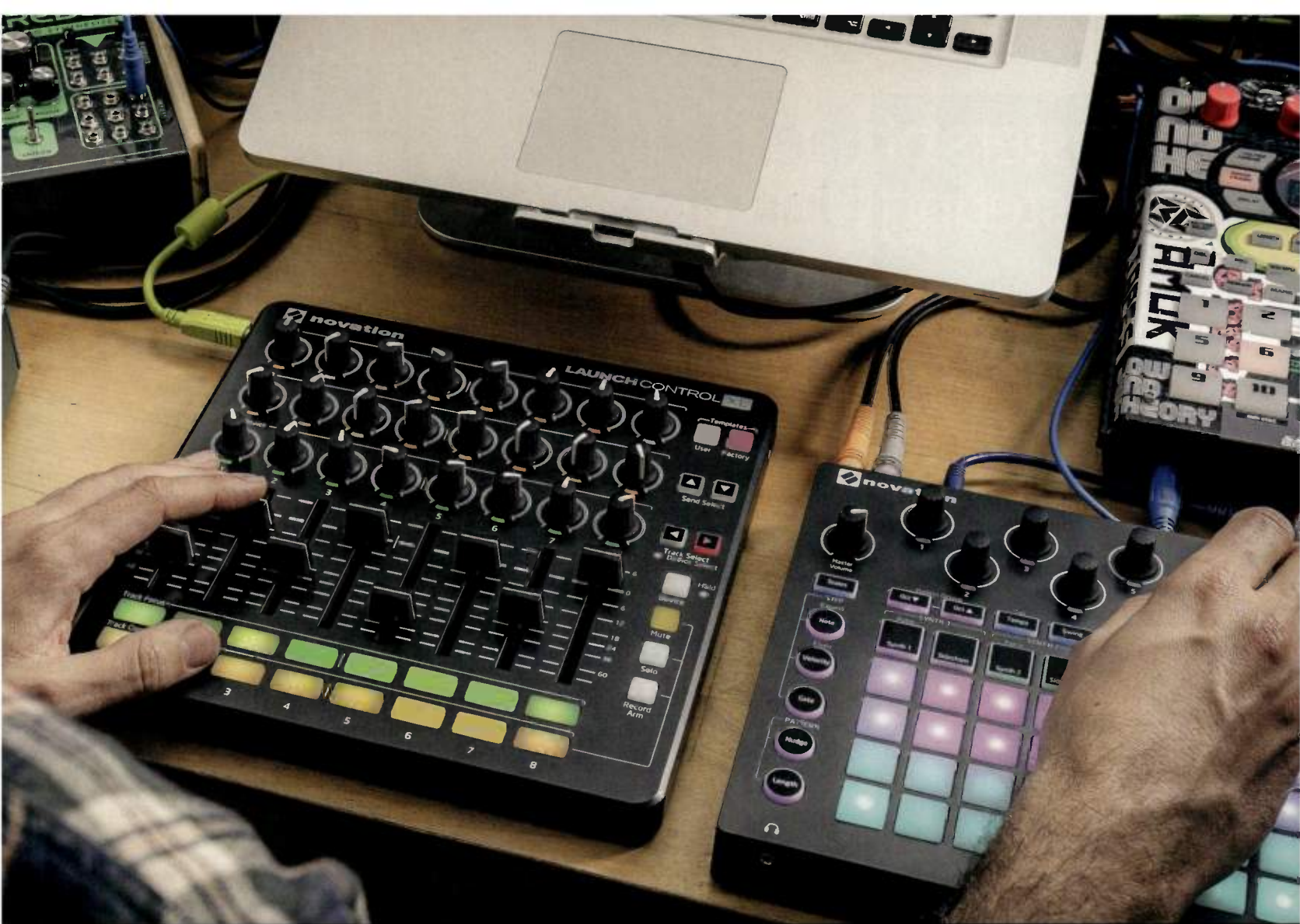


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KORG IWAVESTATION
iOS synth

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Get total command over Circuit with Launch Control XL

The Novation Launch Control XL controller gives you total control over all of the functions within Circuit, Novation's standalone groove box. When paired together, you can control the volume levels of each synth, add resonance to a Nova Synth patch, or enhance your snare drum with an expansive reverb or delay all in real time.

With 8 faders, 24 knobs, and 16 multicolour buttons, Launch Control XL compliments the Circuit, which features two Nova Synth engines, a 4-part drum machine, and FX enabling you to make electronic music in minutes.



novationmusic.com/launch-control-xl

LAUNCHCONTROL XL

The perfect companion for **Circuit**

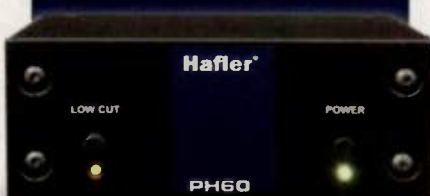
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PH60 phono stage

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headphone amplifier

- 12AX7 tube drive circuit
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Eric Boulanger

Mastering Engineer - The Bakery (Stax)

(Imagine Dragons, Neil Young, Colbie Caillat, One Republic, Kate Bush)

"I installed the Hafler PH50 to the pickup of my Neumann VMS70 cutting lathe. This phono preamp is such an accurate window on the world for me."



Emily Lazar

Mastering Engineer - The Lodge

(Coldplay, Foo Fighters, Beck, David Bowie, The Killers)

"The PH60 translated so incredibly well in conjunction with not just one, but all of our turntables that have moving coil cartridges!"



Tom Coyne

Mastering Engineer - Sterling Sound

(Adele, Taylor Swift, Beyoncé, Marc Anthony, Maroon 5, Sade)

"The HA75 is a compelling choice. The extra depth in the soundstage and fullness to the bottom translates nicely to what I'm used to hearing on the big monitors in the mastering studio."

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15" 2-WAY
POWERED
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insight

Merit vs. Metrics

WHEN THE Recording Academy announced the 59th Annual Grammy Awards nominees last December, there was something different about the list. Although honorees in the 83 award categories tend to vary in name recognition and commercial success, the “top” categories are usually populated with the Beyoncés and Rihannas of the world: artists whose careers are built on the old-guard industry paradigm, the “one-percenters” in album sales.

This model was upended this year

with the recognition of Chance the Rapper, who not only offered his *Coloring Book* mixtape exclusively via streaming, he gave it away. Chance is up for seven awards, from Best New Artist to Best Rap Album.

Previously, qualifying for a Grammy required music releases to be available for sale at retail outlets. Yet, a month after Chance released *Coloring Book* (which debuted at Number 8 on the Billboard 200), the Academy made streaming-only releases eligible—not

only an overdue response to an evolving industry, but also a message that artistic merit doesn't have to be validated by commercial success.

From a production perspective, the nominated projects always reflect some of the best work in our craft. We take you inside some of those projects in our feature starting on page 24, and we will be cheering on them and everyone in the music community when we watch the Grammy Awards on February 12.



SARAH JONES

EDITOR

sjones@musicplayer.com

electronic
MUSICIAN

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WEB HIGHLIGHTS

This month on emusician.com

**Winter NAMM 2017:
Full Report**

Plus...

Behind the Scenes at Grammy Week

The DIY Advisor: 7 Legal Mistakes Made By Musicians

Releases Reason 8

...and lots more!

Software



gadget geek

KOMA Electronic
Electroacoustic Workstation

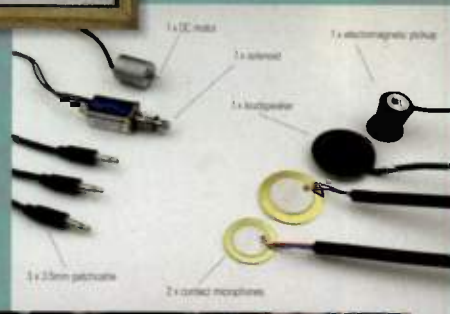
Get Funky With Found Sounds

Berlin-based KOMA Elektronik's (koma-elektronik.com) newest tool for musical tinkers, the Electroacoustic Workstation Field Kit, allows users to capture sounds via contact

mics and pickups, sensors, and switches, and process them through a Eurorack-ready unit offering seven building blocks focused on receiving or generating signals, including a 4-channel mixer, envelope follower, and even a CV-controllable radio receiver. The kit in-



cludes a handy booklet offering 50 configuration examples to help you imagine the possibilities: an expansion pack adds patch cords, DC motor, loudspeaker, pickup, and contact mics. Kits start around \$200 and will be shipping this spring.



Arrange or record a session-style drum track and send it to your DAW

DRUM SESSION (for iPad with iOS 9.0 or later, drumsession.org) features 11 drum styles/genres. Each style has three of its own kits, and each kit has 73 sounds, from the basics of multiple kick and snare sounds to woodblocks, splash, and china cymbals. Each genre has 10-30 groove sets, and each groove set has a tempo and 20 related pattern variations, totaling several thousand well-arranged patterns, from basic and sparse to creative and complex.

1. Begin creating a drum song arrangement by picking a kit, style/genre, and groove/fill set from the pattern selector and then dragging patterns into the timeline. You can also record patterns from scratch in real time or compliment existing patterns by recording from the drum pads and/or piano keyboard. Drum Session works with iPad-compatible MIDI controllers, as well.

2. Drag preset or recorded patterns into the lower controller to open the piano roll editor. Here you can move, copy, paste, delete, and in-

put new notes, as well as snap notes to a specific time division and edit note velocity.

3. You can use the Audiobus app to send Drum Session's output to hundreds of other apps, or use Inter-app Audio to export MIDI or Audio from Drum Session to iOS DAWs like Cubasis, Auria Pro, and GarageBand.

4. Hit the export button to send either the entire timeline, loop region, or piano roll into the Audio Copy app to be pasted into other

compatible apps, or to send either the audio or MIDI to the iTunes file folder, which you can retrieve on your computer for further use.

Double-time it to the iTunes App Store and get Drum Session for \$24.99.



CLASSIC EM

Bob Moog's DIY Theremin, February 1996



Build the EM Theremin

This classic electronic instrument gives good vibrations and oscillations.

By Robert Moog

Most electronic music people have heard of the theremin, a unique electronic instrument that produces sound by using two antennas to control pitch and volume. But few have heard of the EM Theremin, a unique electronic instrument that produces sound by using two antennas to control pitch and volume. But few have heard of the EM Theremin, a unique electronic instrument that produces sound by using two antennas to control pitch and volume.



The EM Theremin was designed by Bob Moog and built by the author. It is a unique electronic instrument that produces sound by using two antennas to control pitch and volume.



The EM Theremin was designed by Bob Moog and built by the author. It is a unique electronic instrument that produces sound by using two antennas to control pitch and volume.

in order that adjustments to the volume antenna be made by moving the volume antenna up and down.

The volume antenna is adjusted to produce a tone that is just below the hearing range of the listener.

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THE CABINET

"The cover should fit snugly over the base. You may fasten the pieces together with any combination of nails, wood screws, and wood glue...The front panel should be made of 1/18-inch sheet aluminum. It should be about nine inches long and should have bends at the top and bottom for mounting and stiffening."

THE ANTENNAE

"Making the antennae can be tricky. They should be metallic, rugged, attractively finished, capable of being rigidly mounted, and easy to fabricate by a home hobbyist. I have found that 3/8-inch, soft copper tubing of the sort that plumbers use with bathroom sinks works well."

PLAYING THE THEREMIN

"Pay particular attention to shaping envelopes and dynamics with your left hand. The left hand can also be used to articulate discrete notes by momentarily dipping into the volume antenna as the right hand quickly moves from one pitch to another. Try combining audible glides and discrete pitch changes within a musical phrase."

To read the entire article and try your hand at Bob Moog's DIY Theremin, visit emusician.com/BobMoogTheremin.



IN FEBRUARY, 1996, *Electronic Musician* worked with Bob Moog to develop an article detailing how to build a theremin from scratch. Their collaboration took almost a year, but when it was done, they had a classic tutorial. Here are a few short excerpts.

THE MAIN CIRCUIT BOARD

"All circuitry (except the antenna circuits and front-panel components) is mounted on one circuit board. A plug-in for prototyping board of the sort used to assemble computer I/O circuits provides the space, connection provisions, and solidity that you need."



2



1



4

3



NEW GEAR

1 CAKEWALK SONAR HOME STUDIO

DAW for Windows
\$49.99

HIGHLIGHTS Supports 64 audio tracks and 128 MIDI tracks • guided setup on first launch • the Lenses feature provides tools for various areas and styles of production • Overloud TH3 Cakewalk amp simulator • Rapture Session soft synth • step sequencer • video file support • includes 700 loops and 400 1-shots • upload files to social media • Help module • optimized for Windows 10

TARGET MARKET Personal studio users, students

ANALYSIS A low-cost way to get the basic features of this Windows-only DAW.

cakewalk.com

2 WAVES ELECTRIC 200

Virtual instrument
\$69

HIGHLIGHTS Based on the Wurlitzer 200, using samples from two different instruments • loads presets from the Waves Electric 88 • onboard compressor, limiter, and 3-band EQ • two types of Drive • front-panel controls for velocity curves and formant • mix in hammer, key-up, and mechanical sounds • effects rack includes tremolo, phaser and auto pan that sync to tempo • chorus and reverb

TARGET MARKET Keyboard players, composers

ANALYSIS A classic electro-mechanical keyboard emulation that you can use as a plug-in or in standalone mode.

waves.com

3 MOTU 624

Audio interface
\$795

HIGHLIGHTS 32-channel interface • Thunderbolt and USB 3.0 • 2 mic inputs • AVB/TSN networking capabilities • DSP support for 48 channels, 12 stereo buses, and 32-bit floating point processing • reverb, EQ, and compression • audio analysis displays include real-time FFT, oscilloscope, X-Y plot, phase analyzer, and waterfall-style spectrogram • works as standalone mixer, controlled wirelessly from smart-device or tablet over shared Wi-Fi

TARGET MARKET Musicians and recording engineers on the go

ANALYSIS High quality, low price, and expandable with the new 8A interface (\$795).

motu.com

4 IK MULTIMEDIA IRIG NANO AMP

Guitar amp/iOS interface
\$49.99

HIGHLIGHTS 3W Class A/B power amp with 3" speaker and kickstand • 1/4" I/O • stereo minijack headphone out • use as a guitar amp in Amp mode, with British-style sound and two output settings—Normal and Bright • 1/4" speaker output can drive 4"x12" speaker cab • works as interface and monitor for iOS products in Device mode • includes 3 AA batteries and TRRS cable for phone/iPad connection

TARGET MARKET Guitarists

ANALYSIS Using AmpliTube iOS apps, you can play through headphones or use the built-in speaker.

irignanoamp.com

All prices are MSRP except as noted



6



8



5



7

5

BEST SERVICE CHRIS HEIN SOLO STRINGS COMPLETE

Sound library for
Kontakt Player

€599 (approx. \$625)

HIGHLIGHTS Bundled with Chris Hein's Solo Violin, Solo Viola, Solo Cello, and Solo Contrabass libraries • Solo Cello includes Modern Cello and Romantic Cello libraries • more than 10,000 samples, 38 articulations, and 4 legato transitions for each instrument • articulation presets • 8 dynamic layers • legato in up to 4 dynamic layers • Hot-Keys • two convolution reverbs • DSP effects • Dynamic Modes • Note-Head Designer • Key-Vibrato

TARGET MARKET Composers, performers

ANALYSIS A complete library of bowed strings designed for use in classical, pop, and folk music productions.

bestservice.de

6

PRESONUS FADERPORT 8 PRODUCTION CONTROLLER

USB 2.0 control surface

\$TBA

HIGHLIGHTS 8 motorized, touch-sensitive faders • transport controls • 57 illuminated buttons that can handle 78 functions • four programmable buttons • eight digital scribble strips • dedicated buttons for track arming, mutes, solo clear, and various DAW views • additional functionality when used with Studio One DAW • Session Navigator for scrolling through Studio One Session Track • supports HUI and Mackie Control protocols • no USB driver required

TARGET MARKET Musicians, recording and mix engineers

ANALYSIS Works with most major DAWs, but enhances productivity for Studio One owners.

presonus.com

7

FOCUSRITE SCARLETT OCTOPRE AND SCARLETT OCTOPRE DYNAMIC

Audio interfaces

\$TBA

HIGHLIGHTS 8-channel, 24-bit/192kHz interfaces with phantom-powered mic preamps • ADAT inputs on OctoPre • ADAT I/O on OctoPre Dynamic • 2 instrument inputs • 8 line outputs • OctoPre Dynamic includes D/A converters and analog compressor with controls for soft-knee and ratio doubling • word clock I/O

TARGET MARKET Personal studios, performing musicians, houses of worship

ANALYSIS Provides an expandable recording system with high-quality audio and enough inputs and headroom to handle loud instruments such as a drum set.

focusrite.com

8

UVI WORLD SUITE

Sound library

\$299

HIGHLIGHTS Region-based Traveler instruments offer 6 tracks for loops and phrases, with mixer functions, Sparkverb, and pitch shifting on each track • two Vocal Traveler instruments • randomizer for creating new instrument combinations • 320 instruments • more than 8,000 loops and phrases with key-switching • velocity and ADSR envelopes • 3-band EQ with sweepable mid frequency • convolution reverb • support for Falcon and UVI Workstation

TARGET MARKET Musicians, sound designers, media composers

ANALYSIS The content is categorized into 12 regions with editing tools provided for customizing each sound.

uvi.net

The Chord provides an elegant way to add diatonic harmony to your patches from a 28HP, skiff-friendly module.



QU-BIT

Chord

INSTANT 4-VOICE POLYPHONY AND A WHOLE LOT MORE

BY GINO ROBAIR

Assembling a polyphonic modular synth can be expensive, but QU-Bit has an elegant, cost-effective solution. The Chord (\$399) is an oscillator that creates 3- and 4-voice diatonic chords, and automatically harmonizes them based on CV input from a keyboard, sequencer, or other source. The module is simple to use: There are no hidden menus or multiple button presses to remember. All of the features are at the top level. And you don't need to know any music theory to get very sophisticated results.

The Chord provides individual outputs for each chord tone—root, 3rd, 5th, and 7th—as well as a summed Mix output. Each jack delivers a 10V peak-to-peak signal. To hear 3-note chords (root, 3rd, and 5th only), press the Triad button. This limits the output to basic major, minor, and diminished chords (and their modal counterparts) without the added 7th.

Overall tuning is set using the Coarse and Fine knobs in conjunction with the 0-5V input, which determines the root pitch of a chord. The Coarse control covers about a four-octave range when no CV input is present, whereas the overall range of the oscillators seems to be about six octaves, depending on the note spread and inversion.

Each of the four parameters in the lower half of the module has a dedicated trim control and 0-5V CV input for modulation. The Waveform CV input is used to morph between the module's four basic wave shapes: sine, triangle, ramp, and square. The waves sound digital and organ-like, and the square wave, in particular, can be a bit brash. (I heard occasional aliasing artifacts in the upper registers when the voices were isolated). Nonetheless, there's a certain cheerfulness to the sound of the voices because of their identical timbre and the solidity of the tuning.

The Voicing control and CV input set the distances between chordal tones, starting with a close harmony and extending to three octave displacements. The Inversion parameter determines the lowest note in the chord—from root position through third inversion when you are using 4-note chords: When the Triad button is engaged, the third-inversion setting gives you a root-position

chord an octave higher. The Quality knob and CV input are used for selecting major, minor, or diminished chords when Triad is engaged, or any of the four 7th chords when you're in 4-voice mode.

An especially welcome feature in this module is its Harmonize mode. The CV input is used as the bass note around which the module creates modal and diatonic harmonies based on a major scale. Modulating the Voicing and Inversion parameters while using Harmonize yields very musical chord progressions with very little effort. The module saves your most recent Harmonize settings when you power down.

On its own, the Chord is very satisfying to use, but the module really comes to life when paired with filters and delays. For example, I used the four sections of the Koma Elektronik Komplex Sequencer to coordinate the modulation inputs of the Chord with those on a resonant filter and a pair of delay modules to create some wicked Tomita-esque soundscapes that slowly shifted and evolved over time.

Although the Chord is a fairly specialized module, it is a lot of fun to use, even in non-tonal settings when bathed in distortion. But if you're looking to add traditional chordal sounds to your patches, this is definitely the go-to module. ■

7
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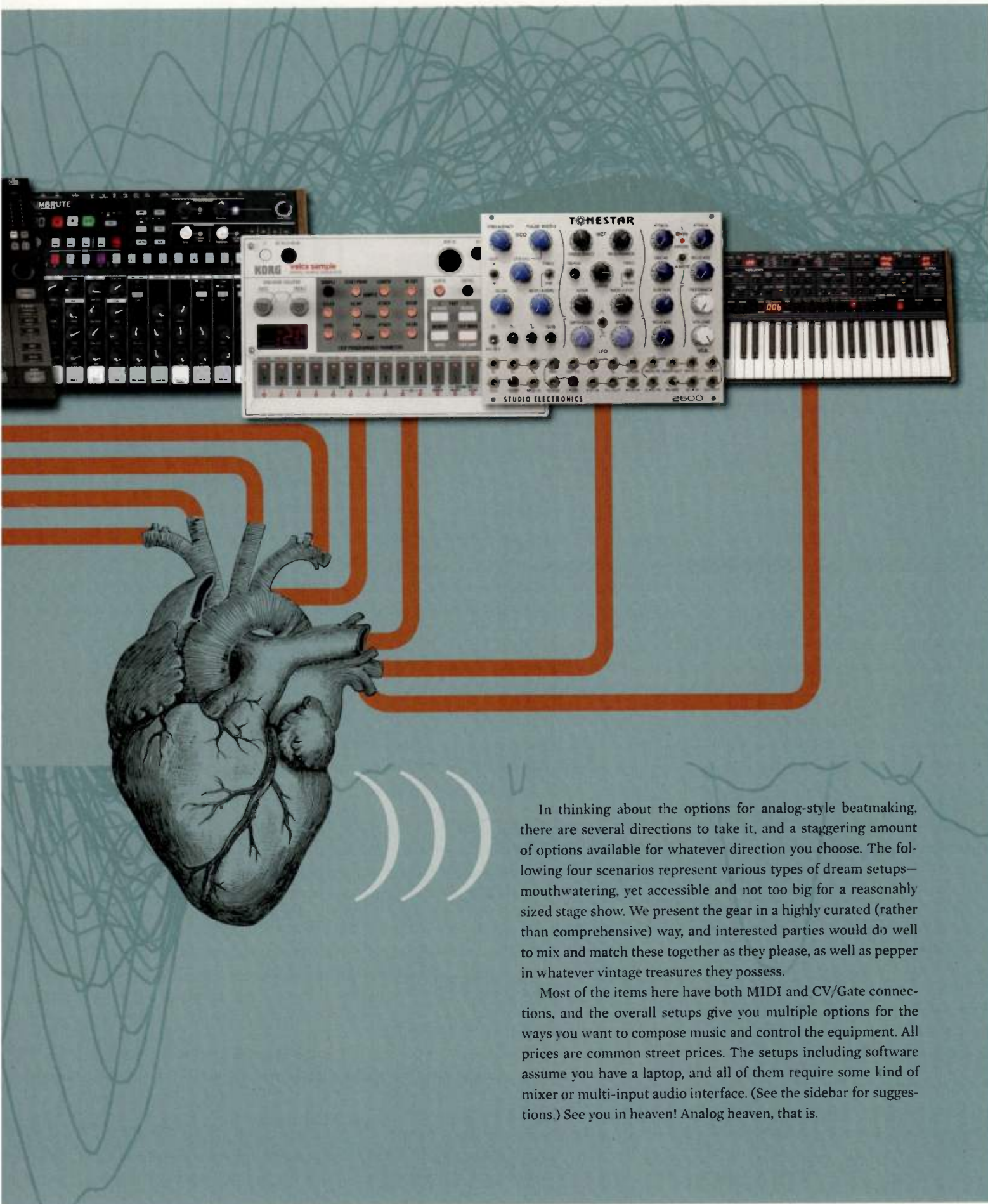


Analog-Style Beatmaking

Knob-twisters, cord patchers, and button sequencers, unite! Join us in this deep dive into hardware-based gear for improvisational performance and production.

BY MARKKUS ROVITO

It's no mistake that the current trend of old-school meets new-technology analog gear has followed along with the returning trend of hardware-based live electronic music and improvisational recording. Electronic music has always been beat-oriented, using "beat" in the hip-hop sense of also including melodic instruments and phrases that could be created on an MPC sampler. However, this analog-style beatmaking relies less on the drum pad sampler and more on step sequencing, real analog sound (or exceptionally precise analog modeling), and the most square footage of hands-on, physical controls as possible.



In thinking about the options for analog-style beatmaking, there are several directions to take it, and a staggering amount of options available for whatever direction you choose. The following four scenarios represent various types of dream setups—mouthwatering, yet accessible and not too big for a reasonably sized stage show. We present the gear in a highly curated (rather than comprehensive) way, and interested parties would do well to mix and match these together as they please, as well as pepper in whatever vintage treasures they possess.

Most of the items here have both MIDI and CV/Gate connections, and the overall setups give you multiple options for the ways you want to compose music and control the equipment. All prices are common street prices. The setups including software assume you have a laptop, and all of them require some kind of mixer or multi-input audio interface. (See the sidebar for suggestions.) See you in heaven! Analog heaven, that is.



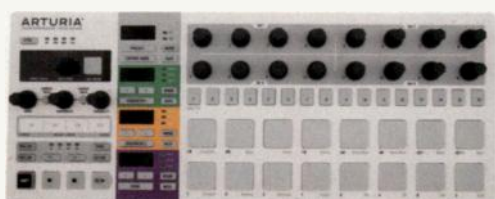
Korg volca keys
Analog Loop Synth



Korg volca sample



Roland Boutique Series JP-08
module



Arturia BeatStep Pro



Arturia DrumBrute



Roland Boutique Series
TB-03 Bass Line

LOW-COST, ALL-TABLETOP SETUP

The knob-and-fader fiddling, head-bobbing-while-hunched-over-a-table-of-beat-and-synth-boxes style of electronic music performance helped many of us fall in love with the genre. It also continues a years-long resurgence, except now with easier compatibility, flexibility, and expandability. Mass-production of new analog gear also adds another ability: affordability.

As the centerpiece of this rig, Arturia's excellent BeatStep Pro (\$249) acts as a controller, three-part sequencer, and master clock for any MIDI, CV/Gate, and DIN Sync gear, as well as computer software and most other analog clockable gear, including the Korg volca clocking standard. Sets of 16 encoders, step sequencer buttons, and velocity-sensitive drum and MIDI note pads help form a portable, road-worthy, and highly creative tool for composing beats and musical parts, and playing them back with literally infinite variations using the per-track Randomness, Swing, and Roller-Looper controls.

Let's inject some real analog sound into the mix right away with the Korg volca keys Analog Loop Synth (\$159), which packs three voices of huge and beautiful analog sound based on the circuitry of the 1974 MiniKorg-700S into a tiny box at a tiny price. However, it still has a 27-note touch keyboard, tons of hands-on control, delay and ring modulation, a sequencer, and MIDI and Sync connections.

For this computer-less setup, the Korg volca sample (\$159) will let you play any sound and tweak, effect, and sequence it in an analog-style box. The

volca sample includes 100 percussion, bass, vocal, instrument, and other sounds, and you can input your own material through the use of an iOS app. It has 11 editing parameters, as well as reverb, MIDI, and Sync I/O. It even has an analog-circuit Isolator for injecting warmth. Both volca units' sequencers record the motion of parameter edits, as well.

We can get all our monster analog drums in one place with the Arturia DrumBrute analog drum machine (\$449). It has 17 rich and highly variable analog drum and percussion sounds, from booming kicks to lush snares and claps, as well as special treats like reverse cymbal and "zap." It has an analog lowpass/highpass resonant filter and a built-in sequencer with discrete tracks for every sound. Its Polyrhythm mode is an amazing innovation that lets you create long-evolving patterns where every sound repeats using individual step lengths.

Now, add some re-creations of timeless classics at much lower prices. Roland's Boutique Series uses the company's state-of-the-art ACB (analog circuit behavior) modeling technology to reproduce the sound of analog classics as closely as we've heard. No vintage electronic tabletop setup would be complete without the screaming filter and wet synth squelches of the TB-303, and the new TB-03 Bass Line synth (\$349) provides the same layout and feel of the original, except with a new LED display, overdrive, and delay effects.

Neither '80s New Wave nor '90s rave music would be the same without the Roland Jupiter-8 analog polysynth, and its beautiful pads and gorgeous leads

sound just as special today. The JP-08 module (\$399 or \$498 with the K-25m keyboard) offers the sounds, feel, and 36 front-panel controllable parameters of the original in a compact, 4-voice module that adds extra LFOs and extended oscillator range. Both Roland modules have built-in speakers and operate on either battery or USB power. They both have MIDI I/O and can work as an audio interface over USB.

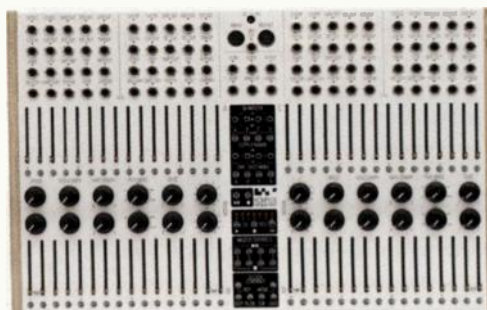
FULLY ANALOG TABLETOP SETUP

Try to contain the drool as you peruse the Koma Elektronik Komplex Sequencer, (1,699 Euro, approx. \$1,782), a unique 4-part sequencer for MIDI and CV/Gate gear with four fully featured 16-step sequencers and an 87-point patch bay for patching both internal and external CV sources. Any sequencer parameter can control another, making for some wild possibilities and improvisation. For example, Sequencer B could control Sequencer A's start point, while Sequencer D transposes Sequencer A, and so on. Adjust the glide, clock division, speed, sequence start point, random play mode, gate length, reverse play mode, ping-pong play mode, "ratcheting repeat" mode, skip-step behavior, and more.

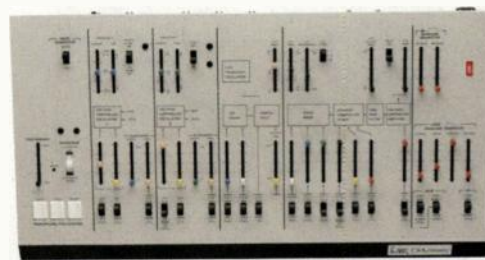
Inspired by the control set, circuit path, and sound of classic '70s products from Oberheim and Moog, the Analog Solutions Nyborg-12 semi-modular analog monosynth (\$999) uses digital MIDI-CV conversion, MIDI In and Thru ports, and two audio inputs for processing external sounds. With two oscillators; a 12dB/octave, 4-mode filter made in the style of Oberheim; LFO, and a selection of



Elektron Analog Keys



**Koma Elektronik
Komplex Sequencer**



**Korg ARP Odyssey
Synthesizer Module**



**Dave Smith Instruments/
Roger Linn Tempest**



Analog Solutions Nyborg-12

modulation patch points, it can spew forth dirty or smooth basses, ripping or sparkling leads, special effects, and drum sounds from an upright tabletop (or rackable) frame.

Continuing with the '70s theme of the Nyborg and the white-fader-box theme of the Komplex Sequencer, the Korg ARP Odyssey Module Rev1 (white, \$599) fits right into the mix with its unique, fully-analog sound that sticks like glue to the character, controls, and circuitry of the 1972 original. So many recognizable blasts from the past emanate from this box, it's a steal at this price, and this modern version has USB, MIDI, CV/Gate, and an external audio input.

We're spoiling you with all this analog synth goodness. The criminally overlooked Elektron Analog Keys 4-voice multitimbral synth (\$1,349) adds some keys to this setup but stays on the theme of super-legit, vintage-sounding analog basses, organs, tinkling ear candy, leads, and pads. Its sound and programming are both highly diverse. It has expressive controls and even a 4-track sequencer, as well as USB, MIDI In/Out/Thru, CV/Gate, and analog inputs. Consider the Elektron Analog Four synth module (\$1,249) if you want to save space and some money.

Here come the drums. The OG of drum machines, Roger Linn, teamed up with analog syn-

thesis legend Dave Smith for the DSI Tempest analog drum machine/synth (\$1,999), and it's a full-featured, comprehensive beast of beats. It starts with six analog voices with 2 VCOs and 2 DCOs each, but has hundreds of sounds and 32 tracks per sequencer pattern. It includes analog compression and distortion but digital conveniences like a high-res display and FX touch strips. With 16 performance pads, it's made to compose, manipulate, and arrange full beat-oriented musical pieces in real time.

ADD-ONS FOR ANY SETUP

With any of these analog-style beatmaking setups, you may want extra syncing, controlling, and interfacing devices. These suggestions could slip right into any of them to expand its overall capabilities.

The Roland AIRA SBX-1 Sync Box (\$499) will wrangle sounds and messages together from computer software and MIDI, CV/Gate, and DIN Sync hardware. It simultaneously converts MIDI and DIN Sync and sends to CV/Gate outputs. It can be the master clock with fine tempo tuning and can even work as an LFO generator.

For an incredibly mobile and nearly indestructible keyboard controller, the Keith McMillen Instruments QuNexus (\$179) tops the charts. Its expressive Smart Sensor illuminated keys react to velocity, pressure and location/tilt. With the right cables, it can control, MIDI, USB MIDI, CV, and OSC devices at once.

With so much hardware, you may need many audio inputs, as well as 5-pin MIDI ports, to mix and send your gear to main outputs. A couple suggestions offer you different options. The MOTU UltraLite mk4 (\$595) has eight analog audio inputs and 10 outputs—including the main



Roland AIRA MX-1 Mix Performer

continued on page 20



Dreadbox Hades



Dave Smith Instruments OB-6

MACHINE JAM BASED STEP-SEQUENCING SETUP

With its recent Maschine Jam (\$399), Native Instruments added an intriguing, step sequencing-based button grid controller with a great workflow to the Maschine line. You can't get much more analog style than a hardware step sequencer, and you can't get much more digital style than the way the Maschine hardware syncs up with and operates the powerful Maschine 2 production software. Luckily for us, the software MIDI preferences can be configured to use a Maschine 2 Virtual Input and outputs to different connected hardware gear in order to control external instruments from the Maschine Jam's step sequencer. Every Group in the software could control a different synth on multiple MIDI channels.

If your audio interface only has one set of MIDI ports, you'll want something like the MOTU micro lite MIDI interface (\$139) to reach all the in-



MOTU micro lite



Native Instruments Maschine Jam



Elektron Analog Rytm



Moog Music Mother-32

struments below. It has five MIDI Ins and Outs, connects to a computer, and receives power over USB, and features MOTU's rock-solid syncing and timing.

With the Maschine Jam, you can step-sequence up to four parts simultaneously, so we have four analog, MIDI-ready gems to help create this analog-to-computer connection. Dave Smith Instruments/Tom Oberheim OB-6 desktop 6-voice polyphonic analog synth module (\$2,299) re-creates the thick and punchy sound of the vintage Oberheim SEM products in stunning fashion. It offers tons of hands-on control, as well as an arpeggiator, analog distortion, and high-res digital effects.

To complement the versatile OB-6, the Dreadbox Hades analog bass synth (\$339) specializes in low end, with one VCO and two suboctaves. Hands-on filter, envelope, LFO, and overdrive controls combine with an 8-point, Eurorack-compatible patch matrix.

Along the same semi-modular lines, the Moog Music Mother-32 analog monosynth (\$599) works as a standalone tabletop instrument for distinctively Moog sounds, or as a rackable module for expanding with other Mother-32s or with Eurorack systems. It has sequencer buttons that can be played like a keyboard, 32 patch points for interacting with other Eurorack gear, and of course, that creamy Moog filter and space-age sound.

For drums, the Elektron Analog Rytm drum machine (\$1,449) gives you 12 total drum tracks and eight simultaneous, fully-analog voices, so you can take advantage of sequencing parts over multiple MIDI channels from the Maschine Jam. The Rytm even supports digital sample import, so you can layer samples over analog sounds. It has an analog filter for every track, as well as analog distortion, compression, and digital delay and reverb. Of course, it also has its own sequencer for standalone use.

continued from page 19



Keith McMillen Instruments QuNexus



Roland AIRA SBX-1 Sync Box

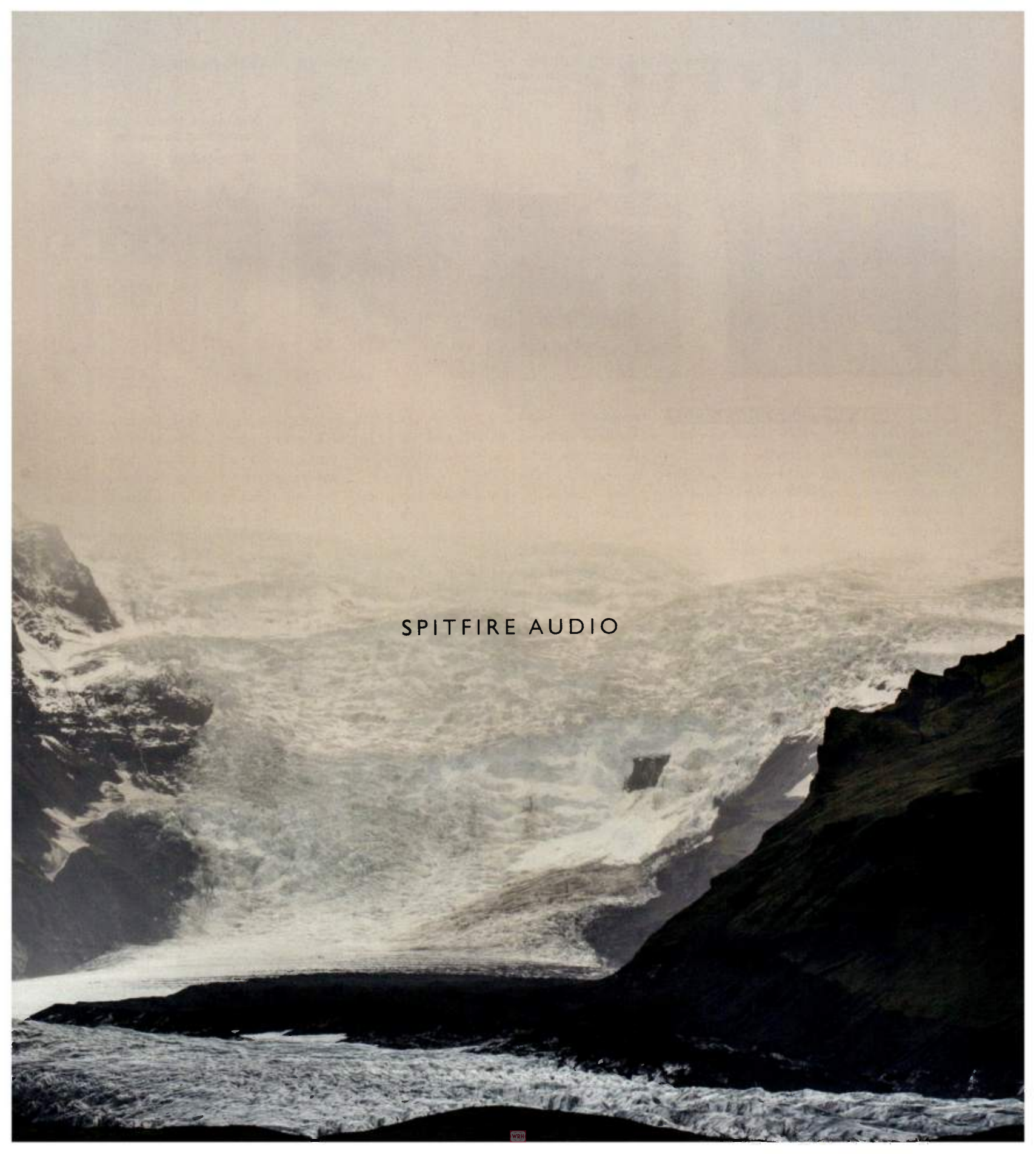


MOTU UltraLite mk4

outs—as well as MIDI I/O, USB, and an internal mixer with DSP processing. You can save mixer setups to be recalled and used either with or without a computer.

A different beast altogether but used for similar ends, the Roland AIRA MX-1 Mix Performer (\$599) has six audio inputs and stereo mix outputs, as well as MIDI I/O and USB for working as an audio interface. It's also a unique mixing instrument for performing and recording, with channels for the audio inputs,

computer input and other AIRA instruments connected over USB. Each channel includes a Tone/Filter knob with 10 types of processors, fader, mute, and effects switches to separate Beat FX and Master FX engines. The FX engines even have a 16-step sequencer for adding customized rhythm to the effects.



SPITFIRE AUDIO

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Tiptop Audio BD909

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Percussion Sequencer



ABLETON LIVE + MODULAR SYNTH SETUP

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Start with the Ableton Live 9 Suite + Push 2 bundle (\$1,118) which will give you the most integrated step-sequencing, playing, and performing controller there is for Live 9. You'll also get access

to Max for Live devices, which can add deeper capabilities for interacting with modular gear besides the basic MIDI syncing and controlling in this setup.

Add a little analog-style software, such as the incredibly deep FXpansion Geist2 (\$199) beat production software. It provides advanced step sequencing, as well as an old-school MPC-style workflow, but also adds a horde of sampling, beat slicing, effects, scenes, and song mode features. For re-creating the litany of hallowed vintage ana-

log synths, as well as classic FM, wavetable, and other instruments in a software environment, you can't get much more complete than the UVI Vintage Vault (\$499) a gargantuan collection of 36 instruments and 80+ drum machines in 116 GB of WAV or 63 GB of FLAC files.

On the modular side, we'll begin with the awesome Pittsburgh Modular Lifeforms System 301 Modular Synth (\$1,799), which combines the pre-configured Lifeforms SV-1 2-oscillator complete analog modular synthesizer voice with the Life-

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~ **Tommy Lee**
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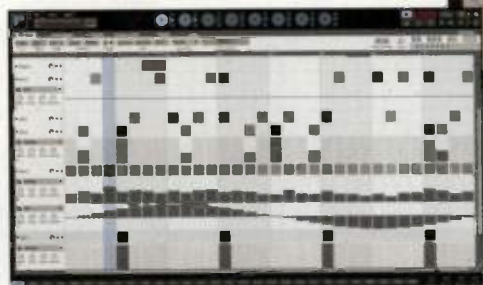
~ **Butch Walker**
Engineer/Producer - Avril Lavigne, Fall Out Boy, Pink, Sevendust, Hot Hot Heat, Simple Plan, The Donnas.

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



Tiptop Audio BD808

FXpansion Geist2



Pittsburgh Modular Structure EP-208 Eurorack enclosure

Pittsburgh Modular Lifeforms System 301



forms KB-1 pressure-sensitive touch keyboard, which has a 7-octave range and houses a playable 10-note, three-octave arpeggiator and a versatile 64-step sequencer. These two units come housed in a Structure EP-208 Eurorack enclosure with 112hp of empty space to expand with other Eurorack products. It includes patch cables and a MIDI adapter cable.

For the expansion units, let's also add Pittsburgh Modular's Lifeforms Percussion Sequencer (\$349), a 4-part, 32-step sequencer designed for creating

drum sounds and beats from any input sound. It has four built-in, percussion-tuned envelopes and VCAs for shaping sounds from modular VCOs. Six powerful pattern effects—Shift, Glitch, Density, Morph, Swing, and Add/Drop—add character, unpredictability, fills, and other variety to patterns.

For feeding sounds into the Percussion Sequencer, you can't go wrong with classic 808/909 kicks sounds, so we selected both the Tiptop Audio BD909 and BD808 analog bass drum modules (\$180 each). These are real analog kicks with tone-

shaping capabilities in the style of the originals. For a more diverse voice that you can use either as a standalone synth voice or with the Percussion Sequencer's VCA and envelope for drum sounds, the Studio Electronics Tonestar (\$499) is a complete analog VCO/VCA/VCF/LFO synth voice with two envelopes and a sub-oscillator. Its tone was inspired by the ARP 2600 and ARP Axe and sounds fantastic. With those tools in place, there's still 44hp of space left in the rack for building out a modular powerhouse. ■

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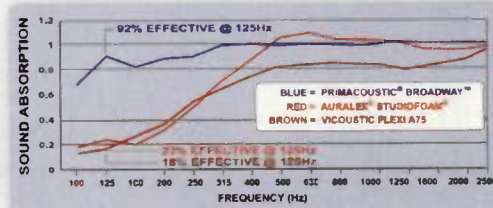


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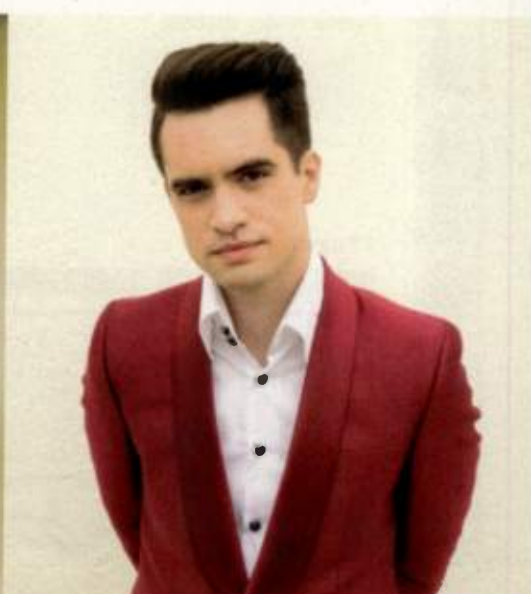
"Not only does my room sound amazing, it's also really beautiful!!!" ~ John Rzeznik - Goo Goo Dolls.



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2017 Grammy Nominees

Inside the albums being honored on music's biggest night

BY DAVID BRYCE, SARAH JONES, MIKE LEVIN, KEN MICALLEF
JON REGEN, MARKKUS ROVITO, AND BARBARA SCHULTZ



From an industry perspective, the 59th annual Grammy Awards nominations offer some interesting surprises; Beyoncé's nomination for Best Rock Performance for "Don't Hurt Yourself" raised a few eyebrows, despite featuring Jack White and incorporating a Led Zeppelin sample; on the other hand, newcomer Chance the Rapper made history with *Coloring Book*, the first nominated album to be released exclusively through streaming.

But from a production perspective, Grammy nominees always represent artists, producers, and engineers at the top of their craft. We've asked some of this year's honorees to take us inside these celebrated albums; hopefully you'll be inspired to try some of these techniques on your next session.



PANIC! AT THE DISCO

Best Rock Album

Panic! At The Disco's fifth album, *Death of a Bachelor*, is a hyper-extreme sonic circus, created by what is essentially a one-man-band, songwriter-vocalist-instrumentalist Brendon Urie. "I wanted each song to feel like a special event," explains Urie. "I wrote songs on piano or guitar, moved them into Logic Pro 10, then I used a lot of UAD and FabFilter plug-ins, even a lot of demo plug-ins."

"I had a concept to take Brendon in a future Sinatra route," says producer Jake Sinclair. "We put that element in every song. We layered Arturia synth lines with a big-band horn section. That added depth so the songs take on a different life. And it really helps that Brendon is the best on every instrument of anyone I've recorded. As a singer you can use his last take and it sounds perfect."

"We build everything around the vocal rather than the vocal being built around the track," Sinclair adds. "That gives us a starting place productionwise that is different than if you cut vocals at the end. You could say we use the scratch track, but with Brendon the scratch track is the final vocal."

Urie says that as a multi-instrumentalist, it's important to solicit second opinions and keep perspective. "When recording everything yourself, if you get tired of an idea, don't spend more than ten minutes stressing about it. If I'm working on a keyboard line, if I get stressed for more than ten minutes—and I set a timer—I will move on. Don't let yourself get too bummed if an idea isn't working. Don't lose that initial excitement of the song."



FLUME

Best Dance Recording, Best Dance/Electronic Album

After his 2012 debut eponymous album *Flume* went double-Platinum in his native Australia, Harley Edward Streten was able to build himself a studio in Sydney (*Flume* was recorded in his bedroom), including his dream speakers, the \$22,000-a-pair Barefoot Sound MiniMain12s that he'd seen when he met Skrillex. "Now when I hear the music, it's actually how it sounds," Streten says.

However, a nice new studio didn't stop him from feeling some anxiety about making the follow-up album, *Skin*. "Having equipment doesn't make your music better," he says. "When it comes to the ideas and the melodies and all the important stuff. That's all in the head. I put a lot of pressure on myself personally to make something as good or better than what I've already made. I set a bit of a benchmark, and to be happy I really had to work hard and make sure I was proud of what I was putting out."

Pleasing himself ended up pleasing millions of people who have enjoyed huge hits like "Say It (feat. Tove Lo)" and the Grammy-nominated "Never Be Like You (feat. Kai)" on streaming services and mainstream radio. Those and other vocal collaborations with the likes of Beck, Little Dragon, and Vic Mensa found a sweet spot for Flume's tastefully spare electronic slow jams.

Streten says his work with singer Kai fits his ideal scenario for a collaboration. "I prefer to get into the studio with a person," he says. "Specifically, melody is what I'm into. I really like to work with them closely on that. With Kai, I sent her some ideas online and she sent me some ideas back—just 20 minutes of her basically improvising and riffing. Then I carved out just a few seconds of key moments that I thought were really beautiful—a potential verse hook, a potential chorus hook, a potential bridge. Then we got in the studio together and fleshed out the idea and elaborated on the melody and the lyrics. I just love getting huge loads of ideas and then carving and sculpting them and then getting in the studio with the person."



BEYONCÉ

Best Rock Performance

In case there was any doubt, taking a look at this year's Grammy nominations for Best Rock Performance, which include a 10-minute avant-garde track by David Bowie and a mellow, piano-and-synth song by Twenty One Pilots, confirms that rock music isn't what it used to be. Nor is it made the way it used to be. Evidence of that fact is Beyoncé's unlikely teaming with one of the last remaining rock stars, Jack White. Speaking with long-time White collaborator and four-time Grammy-winning producer/mixer/engineer Vance Powell (pictured, left), we learned that White originally wrote and recorded the music for what eventually turned into "Don't Hurt Yourself" about five years ago in his Third Man Studios in Nashville, with Powell as the recordist.

"When we recorded it, there was no concept of it ever being a Beyoncé track," Powell says. "It was for a soundtrack that Jack was working on that ended up not being used. It was this song we had on the reels that had no lyrics or anything other than drums, bass, guitar, a fantastic violin and [background vocals by] Ruby Amanfu. At that point, it just disappeared into the vault. Maybe a couple years ago Jack told me he had written lyrics to it and was pitching it to Beyoncé. Then it just happened."

That original music was cut to 2-inch 8-track tape, the way Powell says White always does it. "It was a very cinematic. It was meant to evoke the dusty Wild West or something," Powell says. "It went on for four or five minutes and there were a couple of movements in it. Those two parts they just cut up and looped up and made into whatever it was."

Plenty of additional production went into the final version of "Don't Hurt Yourself." Another frequent White collaborator and Powell's former assistant Joshua V. Smith pitched in with additional overdubs and recording in Los Angeles. A 36-piece string ensemble was added. The members of Led Zeppelin even got a writing credit for the inclusion of a sample from "When the Levee Breaks." All told the song racked up 60 people in its credits, and that doesn't even include Memphis Minnie (Lizzie Douglas), the original author of "When the Levee Breaks." At least if Beyoncé does the unpredictable and wins a Rock Grammy in the 21st century, it will pay some kind of karmic debt to an African-American woman (Douglas) born in the 19th century.

Three chords and a cloud of dust it is not, but "Don't Hurt Yourself" reveals the strange state of rock music in 2016.





RICKY REED

Producer of the Year, Non-Classical

Ricky Reed is one of the most sought-after producers in L.A., thanks to his chart-topping collaborations with artists like Meghan Trainor, Twenty-One Pilots, and Pitbull.

Reed favors an impactful, concise mix approach: “We don’t use that many sounds but the sounds we do use [have to] matter and hit, and have their home,” he explains. “It doesn’t sound anything like a Quincy Jones production, but I still think of him a lot in terms of how the writing and arranging of parts means so much when you get to mix stage. Like the choices you make of sounds and how many sounds or how few sounds is going to directly impact the sonic takeaway at the end of it.”

Reed generally outsources mixing, usually to engineer Manny Marroquin. “A lot of what I do is trying to get a song to a place where a label is going to freak out about it and make it a priority, way before we even mix it. So I have to get things sounding pretty damn good. But I do most of my mixing with Manny Marroquin. We have an amazing workflow.”

Reed runs his label, Nice Life Recording Co., with an artist-friendly approach. “There’s a lot of things that people have talked about for years: lyrics in songs and misogyny. Aside from that, there’s lots of behavior that goes on behind closed doors, not just between creatives, but also on the business side... I think there’s a subconscious trickledown effect of the way that we treat each other, and treat women, inside the industry. We export culture around the world. I think that we need to make sure that the culture is right here at home.”



TYCHO

Best Dance/Electronic Album

San Francisco electro-gaze band Tycho surprised fans last August with the unannounced release of their fourth album, *Epoch*, which is nominated for Best Dance/Electronic Album. “I’ve never been fond of the ‘hand in the album then wait four months for it to come out’ release schedule,” says Tycho founder and producer Scott Hansen. “With the prevalence of streaming and digital distribution, it felt like the right time to step outside that way of doing things and be more connected to the people consuming the music.”

Epoch showcases more aggressive bass and drum parts than on previous albums; the resulting spiked energy was part of Hansen’s plan all along. “I’ve always been really interested in pushing drums as far as I can,” he said. “For this album I wanted to get back to that—really put the time and thought into the rhythm section. I wanted this album to feel more aggressive in that way, more driven. I think it’s part of an overall trend on this album toward more defined parts. I wanted each part of the songs to stand on its own and hold a space.”

KEITH URBAN

Best Country Solo Performance, Best Country Song, Best Country Album

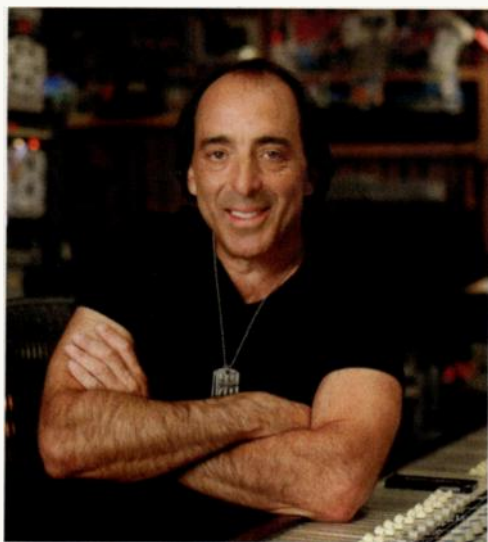
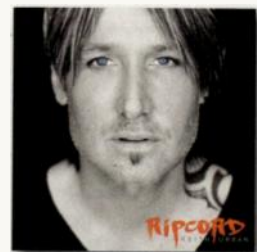
Ripcord, Keith Urban’s tenth studio album, takes the country artist into new musical territory, infusing his familiar, rootsy style with a bright, synth-pop aesthetic.

“Keith is always looking to try new things, and as long as you center the feeling around his voice, everything else falls into place,” says mixer Chris Lord-Alge (pictured, left). “The challenge was to keep it honest to the song and the performance.”

Nowhere is this stylistic approach more evident than in the spare waltz ballad “Blue Ain’t Your Color,” which is nominated for both Best Country Song and Best Country Solo Performance. Regarding the song’s minimalist arrangement, Urban has said he was inspired by legend Don Williams, who liked to say that the track should frame the picture and the power of the picture, “just minimal frames for the vocal”—an aesthetic reflected in the mix.

“I started out with a big, bold frame and switched gears to a more intimate one after I heard the demo, which had more of a singer’s approach,” says Lord-Alge. “It made the story all that mattered.” The ballad adheres to a classic structure, while incorporating “nontraditional” elements, such as drum machine—yet the mix feels cohesive and true to the emotional intent.

“In that situation, I had such a great vocal that I kept the groove very stark and really did my homework on listening to the demo and rough mix,” explains Lord-Alge. “But I also just thought about the feel of a soul record from the ’60s, and went with it.”



“

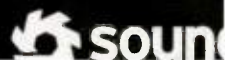
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JEAN-MICHEL JARRE

Best Dance/Electronic Album

Jarre is nominated for Volume 1 (*The Time Machine*) of his ambitious two-album project, *Electronica*, which includes collaborations with Pete Townshend, Tangerine Dream, Hans Zimmer, Vince Clarke, Cyndi Lauper, Moby, Laurie Anderson, and more.

"I'd had in mind for quite a while this collaboration between me and some people who have been all sorts of inspiration to me, and covering more or less four decades of electronic music—people who have the same kind of instant recognizable sound and also the same organic approach to sound," Jarre says.

The electronica icon felt that his "organic" approach required human interaction as well: "[These] days, we have so many albums with featured artists, and most of the time the people never meet," Jarre observes. "It was actually the reverse with this project. I physically went to every collaborator."

Also key to the success of Jarre's project were the importance of melody, and an openness to using any tool that's right for the sonic job: "I've always been a big fan of the Revox. I use both Revoxes with varied speed and a click track, then sync the rhythm with the click track until the click track is giving me the right pace," Jarre says. "I've been really frustrated with plug-ins and even hardware delays, because I could never find the same kind of thing. At one stage I said, 'Okay, I would like to do a plug-in myself to get the kind of delay I want,' until [I found] Native Instruments Replika. It's quite interesting, quite close. I also use analog stuff—an old Vox AC-30 on some sounds."

STURGILL SIMPSON

Album of the Year, Best Country Album

Simpson made headlines this year when he called the Academy of Country Music disingenuous for creating its "Merle Haggard Spirit Award," when mainstream country had failed to recognize Haggard's talent during the late singer/songwriter's lifetime.

Simpson also tested the boundaries of the genre itself with his experimental concept album *A Sailor's Guide to Earth*. With lush orchestral strings, the Dap-Kings horn section, and nautical effects, the album is a thing of exceptional and unusual beauty.

"It's a letter from a man lost at sea," says engineer/producer David Ferguson, who co-owns (with John Prine) The Butcher Shoppe studio, where Simpson recorded the album. "Our cutting room is about 30 by 28, and we put everybody out there in the room. These are almost all live vocals; a big part of the drum sound is because it's a live vocal and he's sitting close to the drums. And he didn't wear any headphones to cut. We had a little monitor speaker set up for him."

On the songs that include acoustic guitar, such as the second track, "Breakers Roar," Simpson plays while he sings and Ferguson captured his guitar with an AKG 451, into a UA 2-610 preamp, and to Pro Tools HD11.

"We also took a line off Sturgill's guitar and ran that into a DI into the other side of the 2-610," says assistant engineer Sean Sullivan. "That was occasionally used to make the acoustic guitar stereo, or if we wanted to add an effect, we used that so we didn't have to worry about the vocal bleed."

RYAN FREELAND

Best Engineer, Non-Classical

This is the second time Freeland has been nominated in this category. In 2010, he was considered for engineering Ray LaMontagne's *God Willing and the Creek Don't Rise*, which won for Best Contemporary Folk Album. This year, his work on Bonnie Raitt's *Dig in Deep* gets the nod.

"We recorded the whole band live at Henson Studio D and then did guitar, percussion, vocal overdubs, and mixing at my Stampede Origin Studio in Culver City," Freeland says. "Pablo Hernandez was our second engineer for these sessions. The bulk of the performances came from the live takes at Henson's, including a majority of the lead vocals."

Freeland captured Raitt's guitar playing with a Shure SM57 and Royer 121 into an API 312 pre and UREI 1176 compressor. Her vocal went to two mics, as Freeland will often do: a Neumann M49 and AEA A440 to a BEA 1073MPF preamp and a Summit TLA-100 compressor/limiter.


"These choices allowed me to capture Bonnie's killer guitar tone and stunning vocal nuance effectively for the rockers as well as the mellower tunes without having to change mics from song to song," Freeland says. "I like using two sonically different mics on each source, because it allows me to change the blend of the mics, depending on requirements of the song without needing to stop the session."

"I'm always trying to dig a little deeper on every album I make," he continues, no pun intended. "Trying to find the exact right balance of sonics to effectively translate the music from the studio to an iPhone, while preserving the heart and soul of the performance, can be tricky, but I love it."



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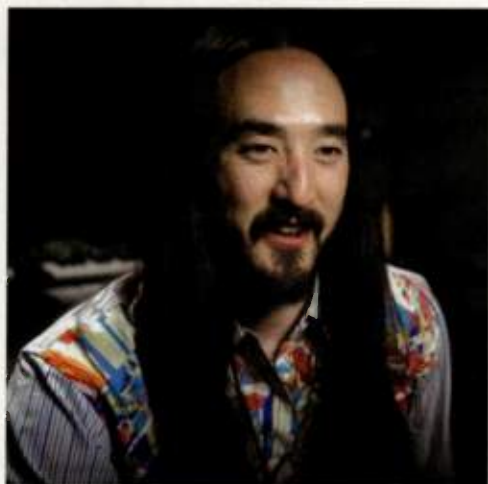

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STEVE AOKI

Best Music Film

In the Netflix documentary *I'll Sleep When I'm Dead*, we learn how Dim Mak label boss and now superstar DJ Steve Aoki had to work his way tirelessly to the top with little to no support from his wealthy and famous father Rocky Aoki, the founder of Benihana restaurants. Going from untrained Tuesday-night bar DJ to a globe-trotting, caked-up star in less than 10 years, Aoki hit Number 5 on the Forbes EDM Cash Kings list again in 2016, playing 198 shows despite getting vocal cord surgery.

The movie succeeds, however, by balancing Aoki's party life with his family life, peering into Aoki's relationships with his parents and the various pitfalls of his career. "The process of doing this film evolved," Aoki explains. "As the story unfolded, the director Justin [Krook] and I became really close. He was always with me. It allowed me to feel free to talk about more intimate stuff, and I don't usually know how to approach that. Once I gave him that access, we were going through all the harder, darker moments. In many ways, that's why I can't watch this film... It's like watching yourself go through therapy sessions."

Aoki spent all year working on his upcoming 2017 album, *Neon Future III*, and didn't have any major music releases, so his Grammy nomination took him by surprise. "It was like, 'Hold on, I'm nominated for what?'" he says. "I was blown away. I'm alongside the Beatles, Beyoncé, and Yo-Yo Ma. I'm just over the moon that people liked it. I see the feedback it gets online and that really makes me proud about the doc and how it has connected with people."



JUAN PATINO

JOEY ALEXANDER

Best Improvised Jazz Solo

Not only is 13-year-old piano prodigy Joey Alexander nominated for a Grammy this year, for his performance of "Countdown," on his album of the same name, but also he's nominated in a category that speaks to the depth of his inventiveness, creativity, and feel—truly an exceptional accomplishment.

"Before I arrange a song, I always try to *feel* the song first. When I play a song, it's not just a melody. There's a *story* behind it. I always try to understand the lyrics too, so I know what the song means and what it's about. I want to give that joy too. That's really important for me," Alexander says.

"I try to just be 'one' with the song and explore it," he continues. "And of course, you've got to feel that *groove* too. Every time I play with my band, I try to feel that and have an interaction. For sure I know the risks, because songs like these are hard to play because of the amount of patience you need. Especially 'Countdown,' because it's not just the harmonies—I find the *space* of it really difficult."



Producers and Engineers Wing Honoree: Jack White

Jack White is the tenth person to be recognized by the Recording Academy's Producers and Engineers Wing, which holds an annual celebration honoring notable artists, producers, and engineers for their contributions to the craft of recording.

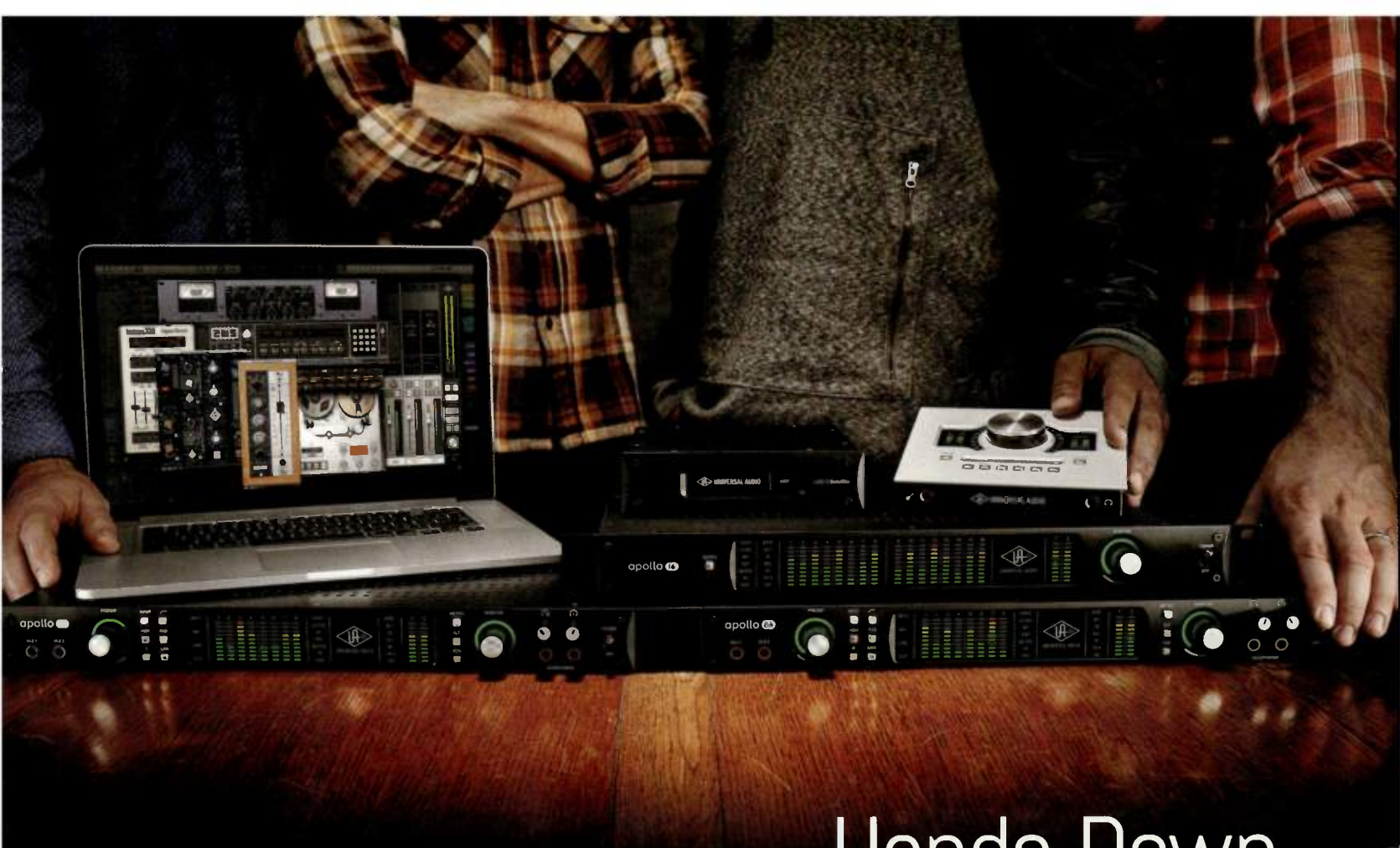
"For years, we've marveled at Jack White's prodigious musicianship and have revered him as a guitar-playing mastermind, but we think it's important to recognize his significant contributions 'behind the glass' as well," says Recording Academy president and CEO Neil Portnow. "There seems to be no limit to Jack's pioneering creativity and unbridled passion, and it's those qualities that embody the spirit of all of our Producers & Engineers Wing members."

The singer and multi-instrumentalist is best known for fronting the White Stripes, The Raconteurs, and Dead Weather; he also heads up a record label and store, Third Man Records, and a studio, Third Man Studios, in Nashville. White has been known to be an analog loyalist, has eschewed compression in mastering, and seems most comfortable making resolute recording decisions in the moment, as he explained when he talked to us about recording *Blunderbuss*, back in August, 2012.

"I make my decisions early on and eliminate right from the get-go so I don't have to make those choices down the road, because that just makes it harder on you," he said. "There's a consequence to making quick decisions," he added. "But it's like any mentor or parent will tell you: Just go with your gut. You're going to be wrong sometimes, but in the end you'll at least know that you went with what you felt was the right thing to do at the time."

White will be celebrated at a dedicated Grammy Week event at The Village Recorder; Past P&E honorees have included Nile Rodgers, Neil Young, Quincy Jones, Al Schmitt, and Rick Rubin.





Hands Down.

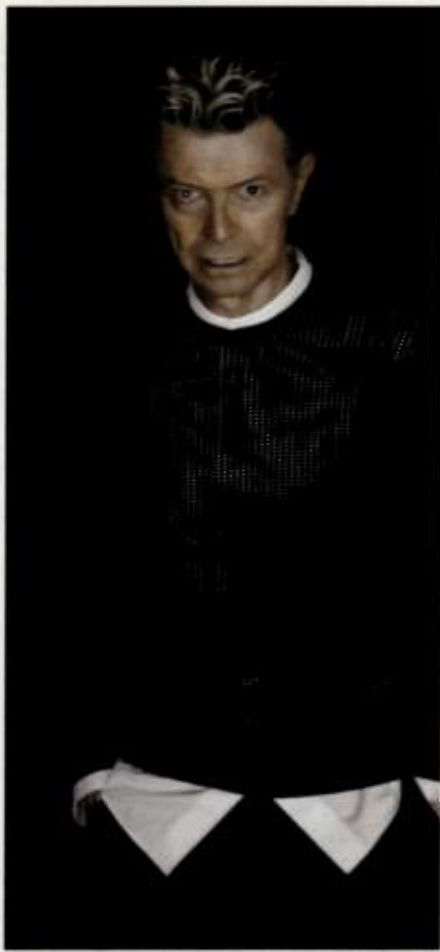
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DAVID BOWIE

Best Alternative Music Album, Best Recording Package, Best Engineered Album, Non-Classical, Best Rock Performance, Best Rock Song

This year, we were forced to reflect upon a rare musical genius, David Bowie.

The consummate artistic chameleon succumbed to an 18-month battle with cancer in January.

Produced by Tony Visconti and engineered by Kevin Killen, *Blackstar* was recorded over three separate weeks in January 2015, would be Bowie's final work. Tapping the Donny McCaslin quartet and their innovative aesthetic to forge a new sound in a career that traded in stylistic changes, Bowie ran the *Blackstar* sessions loosely, relying on the band's exploratory skill set, never requiring more than three takes to nail a keeper.

"The tracking process was live," explains assistant engineer Kabil Hermon. "They would do mostly full takes in the 1,000-square foot live room; after takes, they would come into the control room and listen. As they listened, the band, Tony, and David would discuss what they were hearing and if needed, make adjustments.

"David usually offered conceptual advice so that he engaged your imagination," McCaslin adds. "He always engaged our creativity. David would pore over every detail and work really hard until he got it exactly as he wanted it. He was fully engaged in the process. He'd take in every detail...The fact that *Blackstar* became a Number One album is both surreal and bittersweet. That will always stick with me."



ROBBIE FULKS

Best American Roots Song, Best Folk Album

The lovely opening track on Robbie Fulks' album *Upland Stories* began its life as part of a play that the singer/songwriter had been writing with Brian Yorkey. "We had decided [on] a scenario about James Agee and Walker Evans, who had written this book called, *Let Us Now Praise Famous Men* about Alabama sharecroppers—cotton tenants during the Great Depression," Fulks explains.

The play was put on hold when Yorkey took on a TV writing assignment, and Fulks wound up using three songs, including "Alabama," as the foundation for his album, which he recorded live with a versatile cast of musicians, in his old friend Steve Albini's studio, Electrical Audio.

"Everything went great guns and everybody played as I imagined they would, but also brought stuff to the table that I never would have imagined," says Fulks, who's been recording with Albini on and off since 1986.

"Steve keeps the clock moving, which is useful. He has an unemotional, pragmatic approach where if you do something two or three times in a row and it doesn't get better, he comes on the talkback mic and says, 'The learning curve is not going in any appreciably decent direction. Let's either change something or, you know, give up.'" Fulks says.

"I've also come to appreciate his aesthetic, which is unfussy and folkloric, I would say. He approaches each session like there's an event, and he's there to record it and not show his fingerprints much. When I was younger, I was not as down with that, but now I'm much more fond of it. It's more interesting to have that contrarian approach to creating beautiful music, to avoid the temptation to turn to the easiest and cheapest and most contemporary tool of the time, when tape sounds so great and when good musicians just always sound like good musicians." ■



The 2017 Technical Grammy: Alan Dower Blumlein

In his short life, British audio inventor Alan Dower Blumlein revolutionized the way we listen to recorded sound.

Although he grew up poor and did not learn to read until he was 13 years old, Blumlein became one of the most prolific inventors of the 20th century: Before he died in 1942 at the age of 38, he been awarded 128 patents, most notably for the invention of stereophonic sound.

The notion of stereo sound came to Blumlein in 1931 when, attending a movie with his wife, he grew frustrated hearing voices emerge from a fixed, single location even as characters moved onscreen. Later that year, he filed for a patent for a 2-channel system—he called his invention binaural sound, but we know it as stereo. This patent comprised 70 claims, including a crossed-figure-eight two-microphone stereo recording configuration that would ultimately become known as the Blumlein pair, a technique still in use today.



A senior engineer at EMI's Central Research Laboratories (CRL), Blumlein also invented a stereo disc-cutting head and a moving-coil microphone, and held patents for innovations in a broad range of telecommunication fields, from telephone measuring equipment to cathode ray tubes and circuits to radar systems.

Military radar research led to Blumlein's death in 1942, when he was killed in a plane crash during a covert test flight. The military kept his death a secret to protect the research project, and for a time it seemed Blumlein would be forgotten. Interest in stereo sound grew in the 1950s, however, and in 1958 Blumlein was honored posthumously by the Audio Engineering Society. Today, guests at Abbey Road Studios can visit an IEEE Milestone plaque commemorating Blumlein's remarkable achievements.

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TIPS & TECHNIQUES

From the Pros

1 Be Smart with Your Time: Listen in Solo as Little as Possible

Try not to spend too much time working with soloed instruments. You should be listening to instruments within the context of the entire mix or while listening to two or more instruments that are competing for the same frequency range. For instance, trying to EQ and compress a kick drum without the context of the bass or the rest of the track will often leave you disappointed and frustrated.

2 Use Harmonic Distortion on Low End for Laptops and Earbuds

More often than not, people listen to music on their laptop, phone, or through terrible earbuds without proper bass representation. Low end frequencies don't tend to cut through these platforms, so you must mix accordingly for translation. Take your low-end tack—bass, 808, etc.—send it to an auxiliary channel, notch out everything but the bass with EQ, and add harmonic distortion to emphasize the sound's overtones. When you edge this aux track back into the mix, it'll translate better to laptops and such.

3 Know When to Automate

Volume automation is your friend—it can lend power to a chorus and bring out an otherwise inaudible word or phrase. But don't reach for automation too quickly, because mixing is a balancing act: as your mix changes, you'll have to keep going back to tweak your automation, which can become a hassle. Automation can also take up CPU power and slow down your DAW. If you save it for the end, it'll speed up your workflow.

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Mr Bill

By Markkus Rovito

The hardcore Abletioneer produces thunderous bass music at the speed of lightning, educates the youth about music production, and finds time to develop live shows as a one-man crusade against DJing

Many have said that dubstep is the heavy metal of Millennials. However, you can only go so far by trying to paint an entire generation of Westernized young adults with a single brush. For 28-year-old Australian Bill James Day, better known as Mr. Bill, his heavy metal was... heavy metal. Before turning to electronic music in his late teens, he wrote rock music on keyboards as a boy and picked up a guitar to play in metal bands as a teenager. But after an exposure to a psytrance beach party, he decided that working with other musicians in bands was holding him back, and he turned toward DJing and producing electronic music. Soon he was opening for other acts and studying audio engineering at Sydney's SAE Institute.

By 2008, the young Mr. Bill released his first album, *Cell Abrasions*, which revealed his knack for stylistic complexity, blending the genres of IDM—"intelligent" dance music—and psytrance, which snobs refer to as, well, dumb dance music. The ever-prolific producer dropped two more albums in a short time, and they started to form what would become his signature sound, which can move fluidly between tempos and styles like glitch-hop, electro, drum 'n' bass, dubstep, and other sub-genres of bass music, but which always display a keen talent for layering expertly designed sounds and employing

addictive, bouncy rhythms that work an off-kilter, jilted angle while staying just in the pocket.

MR. MUSIC-PRENEUR

Mr. Bill's output suggests a simple motto: Make music—often and quickly. His work ethic echoes an old-school attitude but with a decidedly nonchalant shrug toward the old-school music industry release schedule. Whether it's his many solo productions or frequent remixes and collaborations—often done remotely over the Internet—with names like Circuit Bent, Tom Cosm, ill.Gates, and Electrocado (his duo with producer Ryanosaurus), his music flies out as singles, EPs, or albums, perhaps on a label like Gravititas or perhaps straight to the streaming delta of Spotify, Bandcamp, YouTube and that whole growing list of online options.

He's also gone down another formerly non-traditional path that has become more and more commonplace—that of the entrepreneurial music producer using the "freemium" model. Besides mixing his paid music releases with free and "pay-what-you-want" downloads, he's become one of the preeminent music production YouTubers, doling out his expertise for designing crackling, distorted percussion; thick, filthy basses; and punchy lead sounds, as well as his methods for Ableton

Live software, which he has used for most of his career. At his website, Mrbillstunes.com, he maintains a paid "Hardcore Abletioneer" subscription, where for \$15/month or \$120/year, members get access to tutorials not available on his free channels and tons of Ableton Live project files, stems, production footage, exclusive music, and more.

Mr. Bill still thinks the sky is the limit for teaching, exploring, and producing electronic music, and that even though the market can seem saturated with an eternity of EDM releases, it's still in its infancy. "Electronic music is still such a primitive thing," he says. "It's sort of like asking Django Reinhardt playing acoustic guitar in the '30s or '40s, 'do you think we are gonna figure out much more with the guitar?' I think there is so much further to go with electronic music at this point."

ONE MAN + INFLATABLE BAND

Despite having this little side-hustle going as a music educator, Mr. Bill always focuses primarily on his music. He doesn't chase YouTube views by, for example, making sure he always has the latest software updates in order to create the newest click-worthy tutorials. "For this tour I haven't updated to [Ableton Live] 9.7 yet," he says. "I stayed on 9.6 because I know it's stable and I know that it



runs my set fine. I am not trying to write too much music anyway on the road. When I get back to the studio I'll start writing more music, which is when I will start looking into new tools."

Mr. Bill's live performance used to be mostly him playing WAV files off his computer, but that began boring him about a year-and-a-half ago. "I am kind of excited for DJing to stop," he says. "We have been doing it for 20 years now and people are still treating it as this important thing. I love that people can go out and listen to the same music together and have this experience, but I think it could be way more exciting than that, and I am really excited to see the change into more eloquent, electronic-based performances."

For the latest Mr. Bill tour, he brought his friend "Hutch" from Australia to play a drum kit live alongside him. The other two members of the tour, Pickles and Saucemonster, handled the lighting, visuals, and live projections that were cast within and on an oversized inflatable rendition of the Mr. Bill logo character. The audio and visual elements were synced up in a way that facilitated both tight integration and improvisation from Bill and his partners.

"We have this cityscape stage and do all sorts of crazy projection mapping on it and custom content," he explains. "We're not just using standard videos; we have pretty much customized the visual perfor-

mance. I think A/V is another thing that is just starting and not really reaching its potential yet."

Bill references inspiration from Amon Tobin's "Isam" live spectacle that mixed cinema and live performance with projection art as a way to "animate" static objects, as well as deadmau5's amazing Nokia Lumia 800 launch performance in London, during which the side of an entire sky scraper came to life through projection mapping. And there's also the freaky-deaky Anklepants, who uses a technically intricate mixture of prosthetics, robotics and controllers woven into costumes to create a kind of electronic music performance art. "He wears like a leotard with accelerometers through it, and as he moves it's effecting things in Ableton," Mr. Bill says. "I think this stuff is gonna get super exciting in the next 10 years."

He has been performing with Roland SPD-X drum pads, a Livid Instruments DS1 MIDI mixing control surface, and a portable MOTU soundcard to re-create his productions with spontaneity without massively departing from the originals.

"It is still very much a Mr. Bill show, but we are playing a lot of the parts live," he said. "The way I would describe it to people, it's sort of like a DJ has the ability to change tracks on-the-fly. With my performance, I have to play the tracks in a linear way, but I have a lot of flexibility with the way I play the

part live. I put a lot of live improvisation over the top, as well. With the live drummer and video, it's this whole interactive thing to see. For me, a show like this is kind of like producing an album except I am producing a thing you can't take home."

A LIVE LAYOUT

I recently watched Mr. Bill expound on his live performance tools at San Francisco's Pyramid music production school and creative studios, where instead he presented master class to a packed room of appreciative students and other curious producers.

He showed the group how he prepared his recorded music to be performed in Ableton Live: To play parts on the SPD-X really fast, he needed to run the Live session at a very tight 64 samples of latency, so he needed to simplify the Live session significantly so it would run smoothly. There he created sets of four stems: drums, bass, music, and vocals. He rendered all the stems through limiters as a "stupid" way to make them sound like the mastered material.

He then created "chunks" of material that he has the ability to trigger from the drum pads by re-editing the stems and sometimes mixing them up between tracks. Huge Mr. Bill fans may have noticed that each chunk might have drums, bass, music, and vocals from six or so individual songs.

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Mr. Bill shared a trick he does with the Ableton Pitch MIDI effect plug-in, which he uses to jump quickly to different samples while hitting the same drum pad. With several Pitch devices set to a certain number of semitone increments in front of the Drum Rack holding the samples, he can map the On/Off buttons to a control and hit them to jump to a different set of samples in the Drum Rack. “So I bet you all are locking at me like, ‘you big liar!’” he said to the class. “I am lying, but not as much as DJs.”

In the Drum Racks’ Input/Output sections, he also sets them all to Choke from MIDI channel 1 so that the Drum Rack won’t play more than one sample at a time, and he uses a gating plug-in on the Drum Rack’s audio so that it won’t go through with bad timing.

As an example of the audio syncing to

the projections on the Mr. Bill inflatable, he showed how he drew MIDI info into the piano roll of a track, which was then turned into OSC messages and assigned to a PNG image of different mouth shapes for the character. Sending that channel to a Network output, those PNGs then projected onto the inflatable, which made the character look like its mouth was singing the synced “aah” and “ooh” vocal sounds.

Bill said that his next live show may use Ableton Live’s Simpler devices to cut up audio into different triggerable slices, but he wasn’t ready to upgrade to Live 9.7 in time to use that feature. “I’m still not that good at making a live set,” he modestly claimed. “I think no one is really good at it yet. But it’s still better than DJing! I’m kind of doing this whole tour just to get that message out.” ■

How Mr. Bill Makes Glitch and Bass Sounds

During an in-person demonstration at the music/audio-production school Pyramid in San Francisco, Mr. Bill shared tips for creating great sounds on the spot, starting with “Foley stuff” (any recordings) and then combining those sounds with synthesis.

For his live demo, he started with a Foley sound of a branch breaking and then recording a repeating loop of it with some experimental distortion presets from iZotope Trash 2 (\$99) first and GlitchMachines Fracture (free). “Just keep reprocessing stuff,” he said, “but you have to arrange the sounds well for it to sound good, like Amon Tobin. You can make the craziest sounds, but if they don’t do anything musically, you might as well just listen to noise music.”

In a matter of a couple of minutes he had a cool, four-bar glitched-out sequence all starting with that single branch sound. Then he started playing around with pitching bits of it up and down. He also ran it through a granulator plug-in and emphasized the importance of that step. He used the new glitchy audio to enhance a drum loop by fading the glitchy bits in and out on top of the drums.

“The plug-ins used are totally arbitrary,” he said. “The point is to overly process them and some type of granulizer is the most important part.” He recommended Ableton’s Granulator if you have Live Suite with Max for Live, or otherwise the \$50 Melda Production MMultiBandGranular plug-in. “Glitchy sounds have so much to do with artifacts, that it’s often good to put a bunch of saturators and limiters on them to bring out the artifacts,” he added. “Do shit that’s not normal.”

For basses, Mr. Bill usually starts with some fairly simple synthesized bass and then bounces it to audio to tweak it around with plug-ins like Trash 2. He said basses in electronic music often start just with a sine wave or a saw wave run through a really good filter for aggressive basses. His common bass synths include an analog Moog Mother-32 semi-modular synth (\$599) for sub-basses or plug-ins like Xfer Serum (\$189) and U-he Zebra 2 (\$199).

He recommended keeping sub-bass parts simple because the sounds are slow and need time to develop, and to give them space by EQing the low frequencies out of your midrange bass. Finally, he said that once you have the drums and bass working together in a mix, you’re most of the way there, so he ducks most everything out of the way of the kick to keep it super loud and punchy, which he does most often with automation curves rather than sidechain compression.



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IN THE STUDIO

BY BARBARA SCHULTZ

>> Austra with Alice Wilder

“I thought my vocals sounded better than they’ve ever sounded on a recording before,” says Katie Stelmanis, the singer and musician/recordist behind Austra. On Austra’s new album *Future Politics*, Stelmanis’ voice is certainly captured in all its dynamic glory: As serves the song or the moment, she will sound close and intimate, soft and ethereal, or powerful in a Björk-esque way.

Stelmanis had long felt that she sounded better in a concert setting than she did on record. And now it seems she has found the key to capturing that live vocal sound: She recorded and produced the album herself (with additional production from bandmember/electronic artist Maya Postepski on a few tracks), and then enlisted her live engineer, Alice Wilder, to mix.

Stelmanis created almost all of the instrument parts in the box. “I used to do everything with [Native Instruments] Massive,” the artist says. “I remember I was staying in England with some musicians once, and they were shocked, because Massive is such an EDM synth, and I was making different music from that. Later, I got into Arturia softsynths—their vintage [emulations].

“We did a lot with vintage synth sounds on my second record [*Olympia*], and I’m partial to the Prophet-5—those beautiful pad sounds—but I also am also into Native Instruments. I’ve gone back to those [NI] digital sounds on this one; I got really into Rounds.”

Stelmanis used a lot of rhythmic sounds: repeated, pulsing tones and keyboard notes with her voice soaring above them. With the exception of very few instrument parts performed by Dorian Wolf (bass on two tracks), Jennifer Mecija (violin, track 1) and Wilder (guitar, track 3), Stelmanis’ voice is the only element that saw a microphone.

“This was a very mobile record,” she says. “I wrote it in four different cities; I also was writing a lot on tour, and the way it was produced reflects that. It was mostly in-the-box, MIDI stuff—mostly samples—and I was traveling around with a preamp and a mic I bought off eBay in Russia.

It’s like a LOMO ripoff. The LOMO I wanted cost around \$3,000, but I found a guy who makes ‘Frankenstein’ mics, and it was \$700. It ended up being amazing.”

She created the songs in Ableton Live, and Wilder mixed in the same format. “I really like the flow of Live, and I had used it before,” says Wilder, who has been Austra’s live sound mixer since 2011. The engineer—who has also mixed concert sound for MIA, Third Eye Blind, and others—had previously recorded and mixed friends’ tracks, but this was actually her first time mixing a commercial release.

“In the beginning, I was learning; I was trying to reverse everything I knew about live sound because it’s completely different,” Wilder says. “I was just getting to know plug-ins and working on my laptop when we were [on tour] in Mexico last year. Katie wasn’t completely done with the songs at that point, so I tease her that I was basically making really nice demos for her.”

“It was a learning process for both of us,” Stelmanis says. “I would give her songs, she would mix, and then we would find holes. So, I’d reproduce them and she’d mix them again, and we’d find holes, and we’d do that until we got it right.”

Stelmanis and Wilder created the final mixes in Union Sound Company, Toronto, and Transmitter Park Studios, New York City. Most of the heavy lifting in terms of processing happened in Toronto, with Wilder making extensive use of Audio Ease Altiverb and Waves H Delay on Stelmanis’ voice.

“Compressor-wise, I used Fabfilter Pro C a lot, but I put very light compression on her vocals.”

Wilder recalls using Thermionic Culture Vulture on “basically everything,” as well as some Strymon pedals: “Those were for texture,” she says. “SoundToys’ Crystallizer snuck in at moments, too. I had a good time experimenting with that. If there was a gap somewhere, we would fill in with a weird sound.” ■



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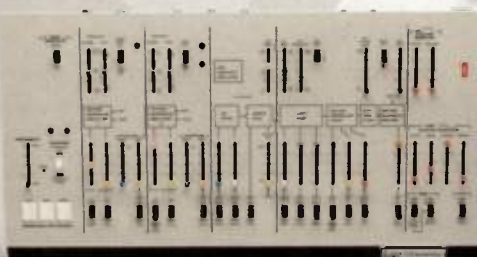
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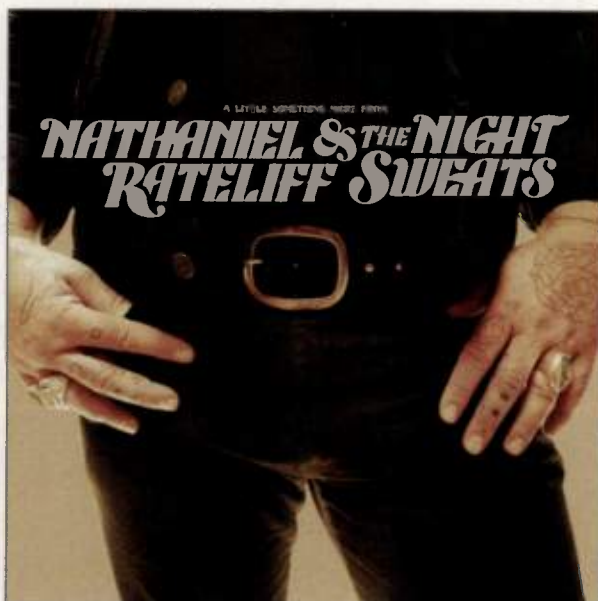
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NATHANIEL RATELIFF AND THE NIGHT SWEATS A LITTLE SOMETHING MORE FROM NATHANIEL RATELIFF AND THE NIGHT SWEATS

STAX

This EP from one of the breakout bands of the past year acts as a sort of companion to the group's smash eponymous debut album. Included are outtakes from the album sessions, studio takes on some of their live material, and conversely, a live version of the album track "Wasting Time" that was recorded at the Stax Museum of American Soul (Memphis). Crooning or stomping, Rateliff and band serve up a fantastic, Band-like interpretation of American soul.

BARBARA SCHULTZ



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ESL MUSIC

Washington, D.C.-based producers Rob Garza and Eric Hilton emerged as Thievery Corporation at the height of mid-'90s blunted, blissed-out downtempo. Mastering rare-groove acid jazz forms, they tailored bespoke soundtracks for gentleman spies and bossa nova lounges. Through it all ran a tasteful dub thread—now the roots and branches of these 15 tracks—recorded and steeped in Jamaica. Flushed keys, pillowy bass, percussive sway, and viscous reverb unify with toasting and torchy vocalists.

TONY WARE



EMPTYSET BORDERS

THRILL JOCKEY
London/Berlin-based duo Emptyset epitomize intellectual electronic music. Past works were commissioned for London's Ambika P3, Tate Britain's Performing Architecture program, and Deutschland Radio. *Borders* was borne out of a self-made stringed instrument and home-made drum, producing sounds processed through various electronic instruments. The final sound is confusing, bludgeoning, and brutal, as if you're being repeatedly smashed to a pulp by massive cylinders. Each song works the same brittle, bestial terrain, from the *Alien*-like howl of "Descent" to the shuddering "Retrieve."

KEN MICALLEF



DIRTY PROJECTORS DIRTY PROJECTORS

DOMINO
The first release from David Longstreth since 2012, Dirty Projectors' eighth full-length is made from formant-shifting, cold-riveted beats; and pitched and pinched vocals. A production-built break-up record (hence the absence of guitarist/backup vocalist Amber Coffman), these nine tracks concentrate idiosyncratic spiritual turbulence through a signal chain of collaborators and modular synthesis. Brass choirs, string quartets, live percussion, lurching samples, and dilating harmonies are nudged and refined into collective, reflective isolation.

TONY WARE



RICHARD PINHAS AND BARRY CLEVELAND MU

CUNEIFORM
These four tracks began as improvisations featuring Heldon-guitarist Pinhas, and were later transformed by Cleveland into elegant soundscapes that slowly evolve, yet never settle into predictability. The two guitarists, masters at phrase looping, deftly navigate the time and mood changes along with the killer rhythm section of drummer Celso Alberti and bassist Michael Manring. The playing on *Mu* is solid and imaginative throughout, and the album's high production quality lets the array of colors from each musician shine brightly.

GINO ROBAIR



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The first new NIN studio release since 2013, this five-song EP, featuring Trent Reznor and Atticus Ross—with guest cameos by Dave Grohl, Dave Navarro, and Maraqueeen Maandig (Reznor's wife)—has a darkness reminiscent of the band's '90s heyday. Reznor calls the album "unfriendly" and "fairly impenetrable," but its songs are captivating in a gritty way. Distorted vocals, machine-like synth and drum lines, and punky rhythm guitars abound—all condensed in a low-fi, imaginatively panned mix.

MIKE LEVINE



THE MICRONAUT FORMS

ACKER

German sonic traveler The Micronaut (Stefan Streck) crafts bouncing, jugular-draining, big-beat mini-symphonies touched by sincerity, but existing somewhere in Alpha Centauri. *Forms* is quite nostalgic and sentimental, as if The Orb and Mixmaster Morris had a baby and crowned it forever the boy in the plastic bubble. Songs with such curiously plainspoken titles as "Rhombus," "Triangel," "Kite," and "Oval" propel us into outer space comforted by sensual soul sensitivity.

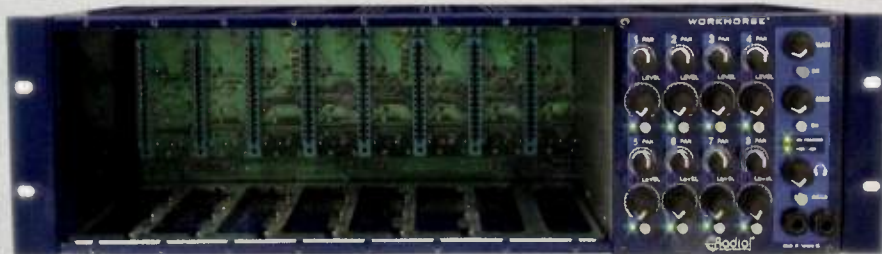
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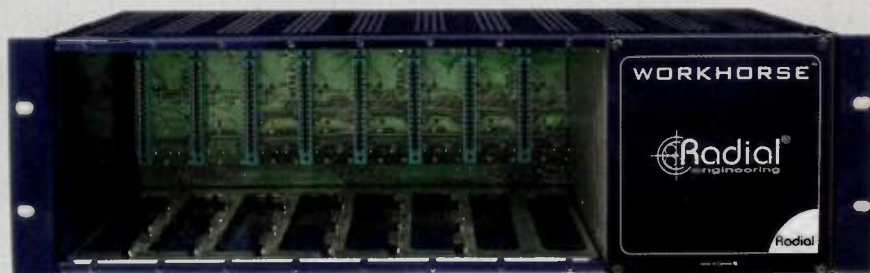
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Fig. 1. DrumBrute supplies 17 full-bodied analog drum and percussion sounds across 12 channels, and includes an analog highpass/lowpass filter, 64 internal patterns, and powerful pattern effects.



ARTURIA

DrumBrute

OLD-SCHOOL SOUNDS WITH NEW-SCHOOL TRICKS

BY MARKKUS ROVITO

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

STRENGTHS

17 satisfying analog percussion sounds, each with its own sequencer track and hands-on controls. Swing and Randomness values are saved for each pattern and can apply to individual instrument tracks. Roller touch. Polyrhythm mode.

LIMITATIONS

Filter and instrument control movements are not recorded into patterns. Encoders do not send MIDI. No audio input for routing through the filter.

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Many people like to shout out area codes as if they matter, but electronic musicians have their own coveted three-digit codes that speak to a primal nostalgia and tribal sense of belonging: 808 and 909 send two of the strongest impressions. However, as the world shrinks and progress marches on, hallowed relics can become less and less precious. While analog 808 and 909 drum sounds may always saturate certain genres like trap and deep house, the analog renaissance we're fortunate to be living through continues to put sacred cows out to pasture.

The next in a line of hungry young analog beasts, the Arturia DrumBrute is emblematic of the embarrassment of riches we now get to enjoy. This 17-sound, fully polyphonic drum machine has an all-analog signal path, 64 patterns of up to 64 steps, velocity-sensitive pads, software programmability and data backup, and full compatibility with the panoply of analog and digital gear of the past and present (see Figure 1). Beyond that, the instrument features a truckload of sequencing and live performance options to make its patterns funky, natural, and endlessly varied—all at a price that should make you feel good to be alive.

BUILT FOR BATTLE

A drum machine such as the DrumBrute, which begs to be thrown onto an impromptu folding-table stage and tweaked until daylight, has to be ready for the abuses of traveling and performing. Arturia answers the call by packing the 8-pound DrumBrute into a solid metal casing with sturdy wood panels that lend the unit good looks as well as a stout, roadworthy build. The copious encoders feel resolute in their mounting, as well.

When performing with the DrumBrute, what else are you going to balance on that creaky folding table? Why, just about anything you desire, because it will connect to and sync up with it all. It sends and receives MIDI Note and clocking data from its MIDI I/O ports, syncs to DAW software and sends MIDI over USB (the USB port does not supply power or send audio), and syncs with many

types of analog gear, new and old, over its Clock I/O. You can set the Clock I/O in Arturia's MIDI Control Center (MCC) software to send and receive clock signals as 1 pulse per step (pps); 2 parts per quarter note (ppq), the Korg volca standard; 24 ppq (DIN sync, including start/stop); and 48 ppq.

The back panel also has 12 individual 3.5mm instrument outputs, including one for the metronome sound; using any of those outputs removes those sounds from the 1/4-inch master Mix Output, as well as from the two headphone outputs.

LOWER THE BOOM

The DrumBrute's appeal really stems from two main attributes, including its many new and/or modern methods for modifying its patterns and creating spontaneous variations. However, all that would be for naught if not for the other main attraction—the 17 drum and percussion sounds, using an all-analog signal path. Spread over 12 channels—five of which host two sounds—the DrumBrute's instruments comprise two kicks, a snare, clap, rim/claves, closed and



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open hat, high and low tom, cymbal/reverse cymbal, maracas/tambourine, and a Zap. Each channel has its own level control and at least one other control, usually Pitch or Decay. While there are 12 channels, each of the 17 sounds gets independent controls and its own part in the sequenced patterns.

When I mention the DrumBrute in the company of the TR-808 and TR-909, that's not to say that its sounds will replace those of the all-time greats, and I consider that a positive thing. The DrumBrute's sounds both exhibit characteristics of the classics and take on qualities of their own. In general, they live up to the lofty standards that make certain people seek out analog over digital sound: lush presence and warmth, deep and round low end, biting and crisp high end.

Kick 1 has an attack-like Impact control and a great Sweep control that can thrust the sound into a more musical and special-effect territory. Kick 2 tends toward a more sub-bass sound and is great for huge booms. When used together, especially with the Polyrythm feature detailed below, Kick 2 provides a thumping anchor, while Kick 1 can be great for variations and an additional accent layer. The versatile Snare has both a Drum Tone and Snap Tone, as well as Snap Decay and Snap Level controls, and it ranges from thin and quick hits to dense and long-decaying bashes.

A real treat, the Clap has long potential decays and a wonderful Tone control that sweeps the sounds through an invigorating bath of resonance. The Rim/Claves and Maracas/Tamb channels both provide some essential percussive ear candy, and the fairly epic reverse cymbal makes for a rare delight when used moderately. The high-energy Zap is also a great addition and adds a little 303-style flavor to the DrumBrute.

An analog multimode filter affects the master output and has Cutoff and Resonance encoders. One button bypasses the filter and another toggles it between lowpass and highpass modes. It is a 12dB/octave Steiner-Parker filter based on the late-1970s Steiner-Parker Synthacon analog monosynth, a now-obscure Minimoog competitor. It has an amazingly creamy and smooth sound; the only drawback is that it doesn't have the same sweeping depth of a Minimoog filter or other comparable analog filters. Because of that, it doesn't have the same range for screaming resonance, although it still can pull off that sound within a shorter window. However, that capability arguably is more important for an analog synth than a drum machine, whereas the highpass/lowpass toggle—something you don't find in all vintage analog filters—helps a lot for isolating and sweeping through different frequency ranges of a drum pattern.


PATTERN RECOGNITION

The DrumBrute's 64 patterns (four banks of 16 each) are 16 steps long with 1/16-note steps by default. This can be extended to 32, 48, or 64 steps and can also have step times of 1/8-note, 1/8-note triplet, 1/16-note triplet, and 1/32-note. However, using the Last Step function, you could actually set a pattern to be any length of 64 steps or less.

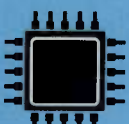
You record patterns using either traditional step sequencing on the row of 16 backlit buttons or with real-time recording on the 16 velocity-sensitive pads. The pads are very responsive and playable, but I didn't get the same wide range of velocities out of them as easily as I'm used to with most pad controllers. However, you can enter exact velocity values for every step of saved patterns in the MCC software.

In Accent mode, the step buttons add notes with extra volume to them. Song mode lets you string any 16 patterns together to play sequentially and has 16 song memories. There's also comprehensive Copy and Erase functions; you can copy/paste a single instrument part to another instrument in the same pattern or a different pattern, copy entire patterns, songs, or even entire banks of patterns.


The Sync button determines whether the DrumBrute's internal clock will act as the master or whether it will sync to devices connected to




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the USB, MIDI, or Clock ports. When in Internal mode, the DrumBrute's transport buttons control the internal sequencer, and clock messages are sent to all the connected outputs. You can set the tempo from 30 to 300 bpm and use fine-tuning to adjust the tempo to within 0.01 of a beat. As a slave to another clock input, the DrumBrute's tempo controls won't work, but you can still start/stop the internal sequencer and record patterns, and the clocking outputs will pass the master clock input through to other gear.

THE SPICE OF LIFE

There's a lot to love about an analog drum machine with basic step sequencing, track soloing, and track muting, but a handful of extra tools set the DrumBrute above and beyond the norm for extracting fresh and intricate patterns from a beatbox, starting with the Pattern Effects section.

The Swing function applies a really funky shuffle to patterns, but even better, it can apply to only the currently selected track, meaning you can have separate Swing settings for every track. Each pattern gets its own Swing settings. By pressing and holding a Step event, you can also use the Swing encoder to shift a note's timing either behind or ahead of the beat by 1 to 50 percent of the note's time-division. That lets you affect the feel and energy of a beat in ways that are commonly used in

genres like hip-hop, with the only caveat that you have to enter the value for each note event, rather than entire instrument parts.

Randomness (ranging from 0 to 100) also applies to either an entire pattern or single instrument parts. At a value of three, for example, the Randomness introduces small fills and subtle note additions or subtractions that keep a pattern constantly fresh and interesting. By the time you get to a setting of 50 or more, it's pretty much varying degrees of chaos—lots of fun for experimentation.

The touch-sensitive Roller strip, which we've also enjoyed on Arturia's BeatStep Pro sequencer, can be used during recording or playback as a looper for spontaneous note repeats of 1/4-, 1/8-, 1/16-, and 1/32-note length. In Step mode, it can enter Step Repeat commands into a pattern without you having to alter the timing data for the pattern. It creates drum rolls in time division values, including triplets.

One of DrumBrute's greatest innovations, the Polyrhythm mode allows potentially every instrument track in the sequencer to repeat at different lengths. For example, you could have a single kick repeat every four steps to anchor the beat, a single clap repeat every three steps, a single tambourine repeat every five steps, a hi-hat pattern repeat every 13 steps and so on. This would create extensive variations that won't play back exactly for a very

long time. It probably won't suit you for every pattern you make, but it's very fun to work with and presents endless possibilities.

WINNER BY BRUTALITY

Software editors don't often merit much detail, but the MCC program that comes with Arturia products goes a few extra yards when used with the DrumBrute. It manages the import/export of the pattern data and device settings to and from a USB-connected computer and sets the MIDI values for the transport controls and drum pads. (The encoders do not send MIDI.) Beyond that, however, MCC also lets you edit the drum patterns, set Step Repeat values for the Roller strip, edit track Polyrhythm settings, and much more, from a familiar software interface. Such edits can even live-update to the DrumBrute for instant gratification while performing or recording.

Dictionaries define "brute" basically as a savage, nonhuman beast. While there's a tired tradition of slagging off drum machines for being inhuman, the DrumBrute's intricate Swing, Randomness, and Polyrhythm features ironically bring a rarely-seen level of nuance to its patterns that will only sound better in the hands of practiced Homo sapiens. Together with its 17 rich, fully analog percussion sounds, the DrumBrute has all the potential of a future classic of the stage and studio. ■



ZEN TOUR

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Fig. 1. The TR-S unit across the top makes the DJ-808's improvisational appeal all the greater, and there are an additional four modes for the velocity-sensitive performance pads that take advantage of the TR-S's drum sounds and patterns.

DJ-808

THE SERATO CONTROLLER WITH A MEAN, GREEN BEAT MACHINE

BY MARKKUS ROVITO

STRENGTHS

Full-featured, 4-deck Serato DJ controller. Serato Sampler sequencer syncs to Serato's tempo. Serato DJ and Pitch 'n' Time DJ software. Vocal auto pitch, effects. 13 performance-pad modes. High audio quality. High output levels. AIRA Link USB ports. 4-Channel FX on mixer.

LIMITATIONS

Can't adjust TR-S pattern length. Only one bank of TR-S patterns. No instant EQ kill switches. Can be hard to keep track of all the pad performance-mode functions.

\$1,499 street
roland.com

You know Roland never misses a chance to call upon its rich legacy of formative electronic music instruments. For the brand's first foray into the DJ controller world, it had to be something more than just a top-shelf, 4-deck Serato DJ controller, which the DJ-808 certainly is.

However, in keeping with Roland's recent mission to expand its digitized AIRA line far and wide, the DJ-808 also includes a full step-sequencing TR-S drum machine and a VT "voice transformer" section, which clearly borrow technology from Roland's AIRA TR-8 and VT-3. Therein lies the DJ-808's unique value: It builds in elements of live production, sequences samples from Serato's sampler, and syncs the TR-S, as well as connected external gear, to Serato's tempo. A few more surprises await inside, too.

IT'S KIND OF A BIG DEAL

While drool-worthy as a DJ controller, the DJ-808 cuts a wide swathe in terms of features, which will be a factor to some prospective users. At 23.6" wide and 16.8" deep, it demands a lot of space, as many deluxe 4-deck Serato controllers do. However, it weighs only 15 pounds—much less than competitors such as the Numark NS7III (32 lbs.) and Pioneer DDJ-SZ (23 lbs.). It probably shaves off a few pounds by utilizing plastic for much of its casing, while the top plates are brushed metal. Similar to Roland's System-8 keyboard, it still feels sturdy.

Utilizing a 24-bit/96kHz soundcard inside, the DJ-808 comes with both balanced XLR and unbalanced RCA main outputs, as well as balanced 1/4-inch booth outputs with a separate level control. The controller is bundled with

Serato DJ software, but it is compatible with a Serato DVS upgrade and has four stereo audio inputs (two phono/line and two line) for external players. Additionally, the two AIRA Link USB host ports for compatible Roland units will provide power and tempo sync, and run audio into channels 3 and 4 of the DJ-808 mixer.

The front panel has channel-input selectors and channel and crossfader curve-type switches. The mixer section includes hands-on control for track browsing and selection, a dedicated volume fader for the TR-S patterns, and four built-in Channel FX with dedicated controls: Dub Echo, Jet (flange), Noise, and a highpass/lowpass filter.

Each deck has its own set of performance pads, effects, and looping controls. Moreover, almost every feature has an alternate Shift function to address nearly everything you'd need to do with Serato DJ on the DJ-808. The two hardware decks control software decks 1-and-3 and 2-and-4 separately, or control both software decks simultaneously. The very responsive, touch-sensitive jog wheels utilize separate top and edge surfaces to alter playback speed and do rapid track searching. They work with selectable Vinyl and Slip modes, as well as with a toggle Reverse or a temporary Censor reverse.

The DJ-808 also comes with the Serato Pitch 'n' Time DJ expansion, which normally sells for \$29. This expansion makes Key Sync possible, so that you can make sure successive songs have their analyzed key matched up. The DJ-808 includes a dedicated Key Sync button, as well as hands-on control for adjusting beat grids, turn-

ing on quantization, and changing the software layout. The only things I could note as missing from the DJ-808's software controls that some competitors include are dedicated Serato Flip controls: Flip is another popular \$29 Serato DJ expansion for creating custom track edits and remixes. I also really miss instant EQ kill switches for the channels' 3-band EQ.

BANG ON THE DRUMS ALL DAY

The best Serato controllers of the past few years all feature eight illuminated performance drums pads for each side, with eight or so color-coded modes. The DJ-808 follows suit, except with a whopping 13 performance modes, several of which take advantage of the TR-S drum machine. These modes include cue-point triggering, cue-point instant looping, "roll" for inducing beat repeats of different lengths, a mode for jumping to saved loops, two slicer modes that chop a song into looped and stuttered segments, two sample modes of playing Serato's Sampler with full velocity or velocity sensitivity, and a pitched play mode for playing a track at varied pitches.

On top of all that, you have three TR-S pad modes—one for triggering TR-S patterns and two for playing the four active TR-S drum sounds with either full velocity or velocity sensitivity. Both of those modes also employ the bottom four pads to play drum rolls when the pad is held down. The greater the pressure you apply, the faster the roll will be.

That leads us to the marquee attraction to the DJ-808—the TR-S drum machine. It manages to pack many of the abilities and pattern sequencing style of Roland's AIRA TR-8 into a much smaller space, although with fewer sounds per kit. Each of its 909, 808, 707, and 606 kits from Roland's vintage beat boxes has the signature kick, snare, and open and closed hi-hat sounds. You can quickly swap kits or mix and match individual sounds into a group of four.

Once you hit Start, you can trigger the 16 preset patterns from either a deck's pads in Pattern mode or with the 16 numbered TR-S buttons. From there, you can clear instrument parts or en-

tire patterns and record new instrument parts either in real time from the performance pads or using step-sequencing input from the TR-S buttons. You can alter the rhythmic values of the pattern notes, such as three steps to a beat (eighth-note triplet), four steps to a beat (sixteenth-note), etc., but the patterns cannot exceed 16 steps in length. Patterns are also subject to a Shuffle setting for swing, and you can back up a set of patterns to your computer.

Four knobs alter the TR-S drum sounds—Attack (kick and snare only), Trim (individual volume), Tune, and Decay—and there's a mixer with four faders for varying individual drum volume. However, the more robust sound-shaping tools come from the Serato software itself, because the TR-S master output can run through either one or both of the Serato DJ effects decks, which makes it possible to process the TR-S patterns with up to six effects at a time. That's a huge win for DJ-808 users: Serato lets you expand the effects selection beyond the Base Pack of 12 standard effects, the decks toggle between one effect with more parameters or three effects with fewer, you control the beat sync values from 16th note to 8 bars, and you can do it all manually from the DJ-808's effects controls.

This all adds up to the TR-S being an excellent live tool for creating beats quickly, copying and pasting them to a new slot if you want to, changing the beat, and then working with it endlessly with a wide variety of effects. However, that's still not all. As one of my favorite TR-S perks, it can also sequence all eight of Serato DJ's Sampler slots, making it really a 12-part sequencer when you add the four internal sounds.

Missing the signature cowbell or rimshot from the "x0x" drum kits? Just add them—and any other sounds you want—to one of Serato's four 8-slot Sampler banks, and you can sequence and play them along with the other sounds. The limitations here are that, of course, the TR-S sequencer does not vary pitch for sequencing melodic samples and that the TR-S will only sequence from one Serato sample bank at a time. If you switch over to one of the other four sample

banks, the saved notes in a pattern will apply to those new sounds.

EVERYONE HATES THE SOUND OF THEIR OWN VOICE

The DJ-808's VT section works like a miniature version of the Roland VT-3 Voice Transformer except without the special effects processing settings and saved presets. With the VT turned on, the DJ-808's combo XLR/TRS mic input runs through the VT's Level, Hi (EQ), Low (EQ), Pitch, Formant, and Reverb controls. A Duck setting lowers the music output while you're using the mic, and the Auto Pitch mode pitch-corrects the mic input to match the key of the selected Serato deck.

While the full VT-3 is much more versatile, the DJ-808's VT makes things more fun and interesting. Even if you don't plan to use the Auto Pitch to sing over music, just playing with the Pitch knob while the Auto Pitch is turned on can create some cool chorus-type effects. Pitching my voice down with the Formant turned to the "masculine" side gave me the 1970s' "quiet storm" DJ voice of my dreams.

MORE BOUNCE TO THE OUNCE

With the DJ-808, Roland takes an appropriately small step toward fusing DJ and production hardware. The addition of the TR-S drum machine, which very importantly also sequences from Serato's 8-slot Sampler, makes original beats that sync to the DJ software easy and convenient to those with drum machine experience, and it is immediately accessible to those learning for the first time. It's well integrated and leaves the door open for users to sync up external gear, as well. And it does this all at a price that lands in the upper range for controllers, but stays firmly in the realm of its competitors. Perhaps an update could even allow recording the TR-S patterns to load them in a Serato deck for further manipulation.

Regardless, I'm thrilled to see Roland entering the DJ hardware world with the DJ-808 as part of its expanding AIRA universe, and I'd wager that there's more to come. ■



Fig. 2. Along with generous audio I/O, the DJ-808 includes a mic input, MIDI Out for synchronizing external gear, and two AIRA Link USB host ports for interfacing with compatible Roland instrument and effects units.

EMPIRICAL LABS

Arousor

A PLUG-IN THAT REKINDLES YOUR PASSION FOR COMPRESSION

BY BARRY CLEVELAND

Barry Cleveland is a San Francisco-based journalist, guitarist, composer, recording artist, and audio engineer. Learn more at barrycleveland.com.

STRENGTHS
Superb sound. Intuitive interface. Super-flexible. Price includes two iLok activations.

LIMITATIONS
Comparatively pricey.

\$349
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Attack Modification

Additional Ratios

Soft Clipping with variable Saturation

Empirical Labs' Arousor includes soft clipping and variable saturation, among other features that differentiate it from the company's popular Distressor.

When I reviewed the Empirical Labs Distressor for *Mix* magazine in 1996, I was blown away by its superb sound, operational ease, and outstanding versatility. I achieved such impressive results on vocals, guitar, saxophone, flute, clarinet, cello, percussion, drums, and bass that I wrote, "Once in a while a product comes along with 'classic' written all over it. And in a sense, this product is actually a classic already." That proved to be true, with more than 30,000 units sold.

Though the Arousor is ostensibly a plug-in version of the Distressor, the two are not identical either in features or functionality. For example, although the Arousor sports virtual representations of the same large Input, Attack, Release, and Output controls found on the Distressor, those controls don't behave in precisely the same way, and directly editable parameter values are displayed on the virtual knobs.

Other differences include major revisions to existing features and the way they are implemented. The Distressor's Detector function, for instance, affects compressor response by modifying the control signal using fixed highpass and band-emphasis filters, and a single button cycles through eight settings that not only select the filters but also combine them with the Stereo Link function in various ways.

Instead, the Arousor's Detector section provides a widely variable highpass filter for preserving the uncompressed sound of lower frequencies such as bass and kick drum, and a fully parametric sidechain equalizer that allows you to zero in on the frequencies you want to emphasize or de-emphasize.

The Distressor's Audio button cycles through combinations of a highpass filter (this time in the audio path) and two flavors of fixed distortion, but the Arousor offers a Soft Clipping section with a variable

Saturation control that gradually increases the amount of mostly odd-order, tape-like distortion. Also, the Arousor features an Attack Modification control that shapes the attack characteristics differently from the Attack control, and a Blend control for parallel compression. Two more compression ratios (1.5:1 and 8:1) were added, as were 22 factory presets.

One Distressor feature missing from the Arousor is Opto mode, which emulates the performance of vintage optical compressors, though it will be added in a future update—which brings us to an important consideration regarding cost.

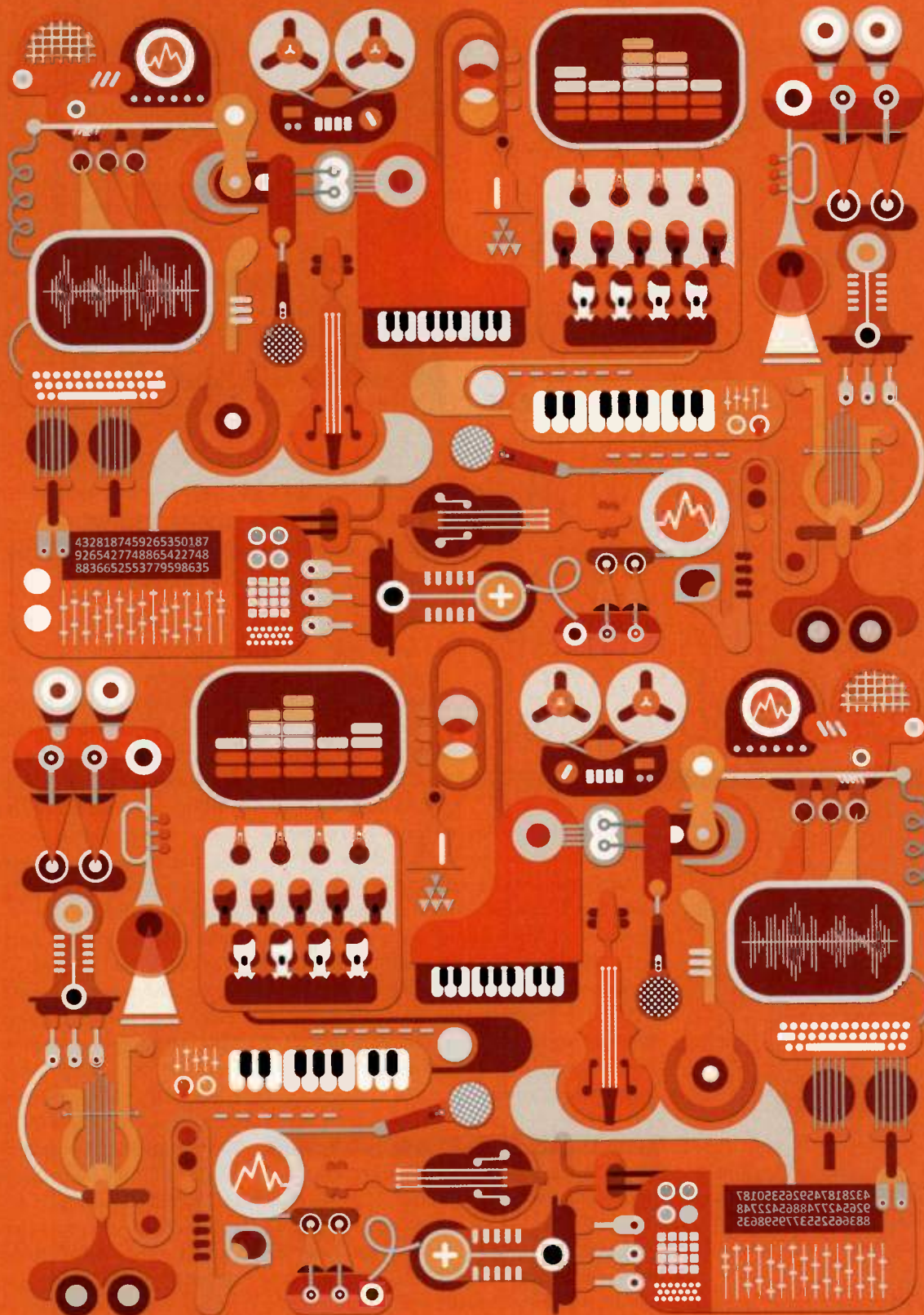
At \$349, the Arousor isn't cheap. However, in addition to receiving the current version, purchasers will be entitled to free updates until 2020, and many will be significant, according to designer Dave Derr. "Backward and forward compatibility are critical," he says. "Sixteen additional functions have already been provided for, including Opto mode, which I'm very excited about, as virtual opto is capable of far more than any physical optical circuit."

I tested the AAX version of the plug-in in Pro Tools 11. Like its hardware forebear, the Arousor worked wonders with both male and female vocals and a wide range of instruments, as well as on the stereo mix bus. I also got excellent results using it on modern electronic sounds from ambient atmospheres to synthetic percussion, as well as on sampled orchestral mixes.

The Arousor is a unique compressor that imbues any sound with increased vibrancy and presence. Download the 14-day trial and see if it doesn't arouse your compression passions. ■

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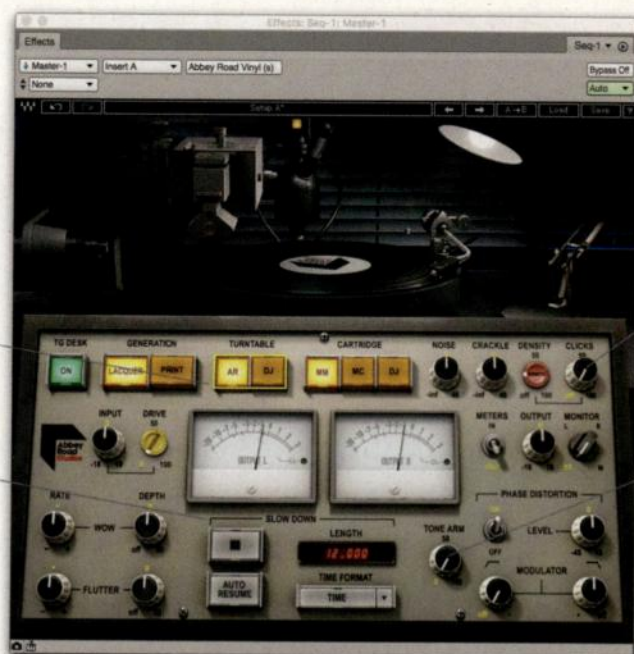
Fig 1. The full version of Abbey Road Studios Vinyl with the Lacquer setting selected.

T6-series mastering console

Set the Slow Down time

Add vinyl-record artifacts

Select tone-arm position



WAVES

Abbey Road Studios Vinyl

PUT THAT SNAP, CRACKLE, AND POP BACK INTO YOUR RECORDINGS

BY MIKE LEVINE

Mike Levine is composer, producer, and multi-instrumentalist in the New York area.

STRENGTHS
Accurately reproduces the sound of vinyl. Simulates different generations, turntables, and cartridges. Mastering console effect. Includes clicks, crackle, noise, and phase distortion. Input Drive adds crunch.

LIMITATIONS
A bit pricey.

\$249
waves.com

vinyl artifacts, from limited bandwidth to the addition of crackles, pops, hiss, and clicks.

Vinyl supports all major DAW formats and installs with both a full version and a light version, which has a stripped-down feature set and uses less CPU. Although I didn't find the full version's processor load to be problematic (running on a 2013 Apple MacBook Pro), the Light version is handy if you have an older or slower system, or when you want to open more instances than your computer can handle.

TURN THE TABLES

Vinyl provides sonic emulations of the gear found in the famed mastering facilities of Abbey Road Studios. Open the plug-in and you see a graphic depiction of a turntable that changes based on the emulation you select (see Figure 1). A series of eight buttons across the top of the control area let you mix and match the generation (see below), turntable type, and cartridge type. On the left is the green TG Desk button for toggling on and off an emulation of Abbey Road's TG12410

mastering console, which adds a little more clarity to the sound.

By default, the plug-in opens with the Lacquer option activated, which models the sound of an acetate disc cut on the studio's vinyl lathe. The other choice is Print, which represents a disc that has been pressed and is therefore another generation away from the original. Not surprisingly, the Lacquer option has subtly better fidelity than the pressed one. Even more apparent is the difference between the two virtual turntables: The Abbey Road turntable and the DJ turntable. The latter gives you a sound that is more hyped in the high end and not as clean.

You also have a choice between three cartridge types that can be used with either turntable. MM (Moving Magnet) is the default and was what was used in Abbey Road's turntables, whereas MC (Moving Coil) is based on an "audiophile" cartridge and DJ is from a direct-drive DJ turntable. All three give you slightly different results, with MC seemingly providing the most balanced audio quality.

The Tone Arm parameter lets you move the virtual cartridge anywhere on the disc. On a real album, the frequency response is slightly different as you get closer to the center of the record, with a tad more distortion. However, in this plug-in the difference in sound between the tone arm near the center and on the outside is barely perceptible to the naked ear.

THE NEW STANDARD

Roland completely redefined electronic drumming with the iconic V-Drums in 1997. Outstanding dynamics, realistic sound, great response and playability have been hallmarks of V-Drums, and has set the standard by which all other electronic drums are measured. With the TD-50 Drum Sound Module as the centerpiece, Roland has elevated the expressiveness, response, and playability to a new level. All new sounds have more realism, natural resonance, clarity, and a wider dynamic range to capture every nuance of the player's technique.

TD-50KV

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Fig. 2. The list of presets, including the Factory Default choices

The incoming audio level is controlled by the Input knob and is reflected by the VU-style meters, which can be toggled to show Output. A Drive parameter adds harmonic distortion. As you might expect, cranking up the input makes the distortion even more pronounced.

IT'S THE LITTLE THINGS

Most of the remaining controls facilitate the addition of other artifacts and characteristics peculiar to vinyl. The Noise knob lets you dial in that low-frequency noise that resides in the background, depending on the quality of the turntable and the condition of the record. Crackle re-creates the sound with the same name, which, on a real LP, is particularly noticeable when you first put the needle down and before the music starts. The Clicks parameter provides the clicking noises that are caused by dirt or other material getting in the grooves, while the Density control governs how frequently this artifact occurs.

On vinyl media, wow and flutter are caused by such factors as inconsistent turntable speed and wobble on the platter itself. With Abbey Road Studios Vinyl, you can control the simulated wow and flutter parameters separately; each has its own Rate and Depth knob. The warbling it creates is especially noticeable on pitched in-

struments. Use low settings to realistically simulate these artifacts from an actual turntable, or set it high for wild modulation effects.

Phase distortion, another quirk found in vinyl playback systems, can be switched in and out of the signal path and adjusted with the Level knob and the highpass and lowpass modulators. The latter two affect the frequency content of the distortion. Moderate settings are good for authentic emulation, but more extreme settings yield nasty-sounding distortion.

LOW AND SLOW

Although the vinyl Slow Down effect has become a bit of a cliché, it's dramatic nevertheless, and it is well implemented on Abbey Road Vinyl. Pressing the Stop button slows the audio down to full stop, with the corresponding drop in pitch. The duration of the slowdown is user-adjustable, either in musical bars or actual time (in seconds). If you press the Auto Resume button, it will bring the audio back to the original tempo as soon as the slowdown finishes. You can also automate the timing of the slowdown if you want to control it even more precisely.

Unless you're going for a unique effect, Slow Down is best used on the master bus or a mixed track of some sort. If you use it on an individual track in a multitrack mix, that will be the only

track that slows down, while the others continue at normal speed.

OBSERVATIONS

The Abbey Road Studios Vinyl plug-in has numerous applications. If you're just going for a straight-ahead vinyl simulation, insert it on the master bus, start with one of the factory default Lacquer or Print presets and tweak it from there (see Figure 2). Not only will you notice the expected artifacts, but you will also hear a subtle lowering of the fidelity, as you would if you A/B'd a real record with a WAV or AIFF file.

Alternatively, the plug-in works nicely on individual tracks where it can be used to add color or a crunchy compression. For instance, I used it to add life to blandly recorded drums by inserting it on the drum bus. Put it on a guitar, bass, or vocal track to add warmth, a hint of distortion, or a subtle edge. It's also fun to experiment with extreme settings to come up with unusual textures.

THE SPIN

If you're into the sound of vinyl, you're going to appreciate this plug-in. It is the most realistic sounding vinyl plug-in that I know of. As with its other Abbey Road plug-ins, Waves clearly was striving to make this simulation as accurate as possible, and has succeeded. ■

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Kaoss Pad

iWavestation

THE CLASSIC VECTOR SYNTH WITH WAVE SEQUENCING IS NOW ON IOS

BY MARTY CUTLER

Marty Cutler is busy putting the finishing touches on his new book for Hal Leonard.

STRENGTHS
All of the sonic power of a Korg Wavestation available for iOS devices.

LIMITATIONS
Documentation is a little shy on how-to info.

\$19.99
korg.com

Wavestation A/D, a hefty two-rackspace synth that added analog I/O, among other features. Korg later introduced the Wavestation SR, a single-rack instrument with improved multitimbral capabilities. Though out of production for some time, that instrument remains popular, evidenced by its release as a virtual instrument for Mac and Windows computers. I traded in my hardware Wavestation when the software version became available.

Now Korg has released iWavestation, a version for iPad, iPhone, and iPod touch (requiring iOS 9.3 or later). Priced below \$20, the iWavestation delivers the original synth's sound and features, but with a few welcome additions.

iWavestation opens in Edit mode, with all patches and wave sequences accessible. Swiping up or down on any sample in a wave sequence changes the sample, and you can change levels in a similar fashion. The app's color coding provides helpful visual cues in an instrument that is considerably complex.

There are no solo buttons, but a quick tap on the Mixer section lets you selectively mute parts for focus. The Effects section is elegantly laid

I first encountered Korg's Wavestation during a trip to the company's offices to upgrade my M1's 4MB sample ROM to 8 MB. While I waited, Senior Product Manager and programming genius Jack Hotop led me into another room to hear a bread-boarded keyboard that issued unearthly, animated tones—nothing you'd hear from a stock sample player. Jack treated me to pads that evolved in unexpected ways, syncopated rhythmic loops, and the music from a particularly hokey *Star Trek* episode, played on a patch named "Vulcan Harp."

That instrument was soon to be released as the Wavestation, which featured vector synthesis that let you mix and morph four oscillators using a joystick, as well as offering waveform sequencing. I eventually sprang for the

out with a signal-flow diagram that reflects your choice of serial or parallel processing, along with wet/dry settings, effects parameters, and MIDI control immediately accessible in one screen.

The iWavestation carries over the resonant lowpass filter, which was markedly absent from the hardware instruments. And the iOS app can randomize wave sequences—the heart of the instrument's animation capabilities—either individually or as a whole. Randomization proved remarkably useful most of the time, and you can return to the original, should you lose your way.

Another button brings up the joystick and a Kaoss Pad, a new feature to Wavestation. The joystick allows crossfading between four Mix Envelopes that correspond to the four patches; the Kaoss Pad lets you play different modes and chord inversions, depending on your finger position. It is fun and useful for those dance-music chord-on-a-key patches.

You can download Korg's collection of PCM and program cards as a \$4.99 in-app purchase. It's worth recalling that these cards were close to \$100 a pop back in the day.

As I write this on my iPad Pro, I am playing a wireless MIDI guitar that is communicating with the iOS device and controlling an iWavestation patch called "Debussy on wheels." It sounds great and weighs a lot less than the original hardware version. iWavestation may be the coolest synth to hit the App Store. ■

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Korg's ARP Odyssey

Flex the programming features of this powerful synth re-issue

BY FRANCIS PREVE

Producer Francis Prève has been designing synthesizer presets professionally since 2000. You can check out his new soundware company at symplesound.com.

Back in the early '70s, the Moog vs. ARP "war" was just as passionate as the Mac vs. PC debate is today. At the time, the Minimoog and ARP Odyssey were the two dominant mainstream monosynths. On the Moog side, the Mini offered three oscillators, Bob's massive filter, and ease of use. On the ARP side, the duophonic Odyssey included lowpass and highpass filters, hard sync, ring mod, and incredibly sophisticated modulation resources.



Korg's ARP Odyssey re-issues are available in a tabletop version, a module version, and the Odyssey app.

Even now, the classic Odyssey's features are capable of textures that we normally associate with modular gear, which makes sense as the Odyssey was basically a slimmed-down version of the 2600—arguably the synth that first brought modular to the masses. So with Korg's reissue of the Odyssey available in three formats (keyboard, module, and the Odyssey iOS app), it's high time we took a closer look at its vast capabilities, using the tabletop version as our frame of reference.

OSCILLATORS

The Odyssey's oscillators are quite complex, featuring independent variable pulse-width, hard sync, duophonic operation, and a slew of modulation options. Here are some tips for making the most of their features.

Single LFO detuning. Each oscillator includes its own independent modulation section for both pitch and pulse-width, so together they can do lots of animation tricks. For example, many sound designers rely on detuning to thicken a two-oscillator sound, with each oscillator retuned by a few cents in either direction. That's certainly possible with the Odyssey, but a slicker move is to apply a touch of sine wave LFO

to only *one* of the oscillators, while leaving the other properly tuned. Because the synth's sine wave LFO is bipolar (its modulation affects the source both positively and negatively, with the base parameter setting being the "center") applying a sine wave to only one oscillator adds motion to the detuning effect (see Figure 1.)

Pulse-Width Modulation. These modulation resources also allow for LFO-based pulse-width modulation to be applied independently to each oscillator, so you can use the sine wave to modulate the pulse-width of oscillator 1, while using a sawtooth on oscillator 2 (perhaps with a touch of the above mentioned pitch modulation) for a really thick sound.

Fig. 1. Oscillator 1 is set up with a touch of LFO modulation on its pitch, which is a great way to add animation to detuning tasks. Note the Audio switch at the top: In LF mode, it allows Osc 1 to serve as an LFO via the S/H Mixer section. Oscillator 2 is configured for envelope modulation of the pulse width. Note that hard sync is active and the S/H generator is configured for pitch modulation.



Another approach is to modulate the pulse-width of one or both oscillators via the Odyssey's ADSR envelope. This adds a timbral sweep with a lot of harmonic character. Here are some rules of thumb for this type of envelope modulation:

1. Medium to long decays combined with a lot of modulation depth offer the most pronounced effect, which is great for sweeping leads and drones.
2. Increasing the attack slightly with a short decay gives the attack of each note a brass-like effect, especially when combined with a bit of pitch modulation on the other oscillator.
3. Setting all envelope parameters to their minimum (with maybe a tiny bit of increased decay) is great for adding a click-like transient to the attacks of notes.

Hard Sync. The Odyssey was arguably the first mainstream synth to offer hard sync on its oscillators and is enhanced greatly by their range of modulation options. In a nutshell, hard sync causes oscillator 2 to reset its waveform every time oscillator 1 completes a cycle. Classic examples of this sound can be found in the main leads for "Let's Go" by The Cars or "Atomic Dog" by George Clinton. It was also a key component in many of Billy Currie's leads for the '80s UK band Ultravox.

To create this effect on the Odyssey, turn Sync "on" for oscillator 2, then move its coarse pitch slider. You should immediately hear a flanger-like harmonic effect in oscillator 2's spectrum.

While merely changing the tuning can be a great resource for new textures, the hard sync effect really comes to life when it's modulated. Here are some tips for modulating oscillator 2's pitch when sync is active.

1. Using the ADSR envelope is the secret for re-creating The Cars' lead (which incidentally, was originally done on a Prophet-5). Increasing the attack slightly adds the squawk from "Atomic Dog."
2. Low-rate sine-wave LFO modulation is cool for slowly evolving timbral sweeps.
3. Applying extreme Sample & Hold modulation—especially when combined with keyboard triggering (described in the next section)—is a dramatic effect that randomly changes the harmonic content of each note event.

Fig. 2. The Odyssey's S/H section is capable of modular-like routing of modulation signals. Here, it's configured for classic "random" effects, with a touch of lag for that R2D2 sound.



4. Another unusual approach relies on using the Odyssey's duophonic capability to actually play the sync. To begin experimenting with this technique, turn on sync, hold a note with your left hand, then play an arpeggio with your right. Because oscillator 2 has high-note priority, whatever is played with your right hand will appear as a harmonic "melody" applied to the drone note.

MODULATION

Oscillator 1 has some cool tricks up its sleeve too, as it can also be used as an LFO when the aptly named "LF" switch is active. The Odyssey's modulation section includes a sample-and-hold mixer, LFO, and lag generator that can be combined in several unique ways.

Sample-and-Hold Explained. On most modern synths this classic LFO effect is simply labeled "random," but sample-and-hold is useful for much more than just random stepping. The way it works is quite simple: A source waveform—often white or pink noise—is captured in "snapshots" by a sample-and-hold generator, then the resulting value (or voltage) is used to modulate a given parameter.

The Odyssey's S/H generator captures these voltage "snapshots" via either the LFO rate (for the classic "random waveform" effect) or, more interestingly, via the keyboard trigger, so that each note samples and holds (a-ha!) the voltage cap-

tured from the source. Adding to the complexity, different input sources create different effects.

Here's a handy reference for the Odyssey's S/H mixer inputs, which are used as the voltage source for the sample-and-hold generator.

1. **Sawtooth (osc 1):** Set to LF mode, applying osc 1's sawtooth will create a rising, stepped effect. In normal pitch mode (LF off) the effect will have a more random sound.
2. **Pulse (osc 1):** Set to LF mode, osc 1's square/pulse will create an alternating effect as the voltage changes between the "up" and "down" state, but in conjunction with the S/H generator's LFO, it's more complex than standard square wave modulation. As with the sawtooth, turning osc 1's LF mode off will generate a semi-random sound.
3. **Noise generator:** This creates the classic "random" effect that we're familiar with on other synths.

Key Trigger vs LFO Trigger. Understanding this switch is essential for creating rhythmic effects with the S/H generator. In LFO Trig mode, the LFO determines the rate of the stepping. Since the Odyssey's LFO can't be synced to tempo, the results are useful for old-timey computer sound effects and other textures that don't require synchronization. In Kybd Trig mode, each key event captures the voltage, so if you feed the Odyssey a sequence via MIDI (or use the trigger input jack) each new note will change the output voltage.

Pro Tip: Applying keyboard-triggered S/H modulation to the filter cutoff with a touch of resonance is a great way to emulate early-'80s Depeche Mode riffs.

Output Lag. More commonly found on modular gear, a lag generator slows the rate of voltage shifts, thus changing the output of the S/H generator from stepped to smooth. Lag generators are used to create portamento on real analog synths, by smoothing the voltage transitions between keys.

Pro Tip: Increasing the amount of Output Lag when creating a random effect via noise is the secret to



Fig. 3. The Filter module includes the mixer section (with ring mod selected and set to maximum). Note that oscillator waveshapes are selected here, instead of on the oscillator itself.

replicating R2D2's electronic "voice" (see Figure 2).

S/H Mixer. While the S/H Mixer is the input source for the sample-and-hold generator, if you look closely at the filter and osc 2 modulation sections, you'll see that "S/H Mixer" is one of the source options. With this mixer, you can combine the voltage outputs from osc 1 (in either LF or audio mode) with the noise generator or osc 2's square and use that blended voltage as a modulation source for the filter and/or oscillator 2. Since the oscillators can be used in the audio range, this is a fantastic resource for nasty, aggressive textures. Here are some options for further exploration.

1. Noise: Setting the second slider to noise and raising it to maximum (while leaving the first slider at zero) is the method for applying noise modulation to osc 2 or the filter cutoff. It's great for pseudo-distortion effects, but be forewarned:

A little goes a long way.

2. VCO 1 (LF): Although the LFO is sine or square wave only, you can get sawtooth or variable pulse modulation from osc 1 when it's set to low-frequency mode via the mixer.

3. VCO 1 or 2 (audio rate): Both oscillators can be combined and used as sources for fil-

Fig. 4. The Odyssey's AR and ADSR envelopes can be freely assigned to a variety of destinations. In this configuration, the ADSR is set to repeat in sync with the LFO frequency.



Fig. 5. The back panel lets you force the Odyssey to function monophonically (instead of standard duophonic operation) by connecting the CV out back into the CV in. It also features an external input for processing audio through the filter and VCA, as well as a trigger input that's compatible with Korg's volca series.

ter FM effects. Because everything is analog, this won't sound anything like software-based FM synthesis. Instead, the results will be extremely harsh, but great for industrial and techno effects.

FILTER

The Odyssey filter design is extremely straightforward, with audio mixing and modulation sources clearly laid out and highpass included for added color. What's more, with Korg's reissue, you can switch between the various lowpass circuits that were used in each of the three revisions that were released during its original run—including the Moog-like circuit used in Rev 2.

The Odyssey's filter mixer section is where its Ring Modulator resides, on a fader that serves double-duty as the source for mixing white or pink noise into your audio signal (see Figure 3). While ring mod is generally used for radical, inharmonic tones, there's a secret for getting really musical results from the Odyssey's unit: Tune the oscillators' intervals to either an octave or a fifth, then lower the volume of osc 1 and 2 in the filter mixer and raise the Ring Mod to maximum. From there, use the oscillators' fine-tuning parameter until the ring mod effect "locks in," creating a new harmonic resource. At that point, you can decide whether to add the oscillators back into the filter mix for added flavor.

ENVELOPES

It's important to keep in mind that the Odyssey's attack-release and ADSR envelopes can be swapped between the filter and amp—or assigned to a variety of other destinations, like oscillator pitch and pulse width as described previously (see Figure 4). Here are some areas for further sonic exploration:

1. Modulate the pitch of osc 1, while it's used

in conjunction with ring modulation or as a low-frequency oscillator in the S/H mixer.

2. Assign the AR envelope to both filter and amplifier, then use it to create swells, while you assign the ADSR to other destinations.

3. Set the attack and release of the AR envelope to zero and use it like a gate envelope, while the ADSR modulates filter cutoff.

Pro Tip: Both of the envelopes also include the ability to repeat rhythmically when triggered by either the LFO or an external trigger input. If you want to "latch" the retriggering, so that you can take your hand off the keyboard and comp or solo on another, toggle the envelope settings to Auto Repeat.

THE BACK PANEL

Finally, the Odyssey's back panel has a few of its own surprises that are worth exploring:

1. Monophonic mode: You can switch off the Odyssey's duophonic behavior by simply connecting an 1/8-inch mono cable from the back panel's CV out to its CV in (see Figure 5). A Eurorack modular cable or MS20 Mini cable will do the trick.

2. External Input: You can run another synth, guitar, or even an effects insert into the Odyssey's filter and VCA by plugging it into the external input. This is a great resource for processing old toys and other noisemakers you may have lying around the house. For extra credit, sequence the Odyssey to create rhythmic, gating effects with these sources.

3. Trig In: The trigger input on the back of the Odyssey is compatible with Korg's volcas, so if you want to sync the envelope's Auto Repeat to your volca beats, this jack is the ticket.

So there you have it. Whichever Odyssey you own, a treasure chest of rich and complex textures awaits. It's just a matter of understanding the programming nuances of this legendary beast. ■



If the price of hardware is too steep, there's an app for that. Korg's ARPODYSEY for iOS does an excellent job of recapturing the vibe of the original—with the addition of integrated effects. It also includes a step-sequencer for expanded modulation resources.

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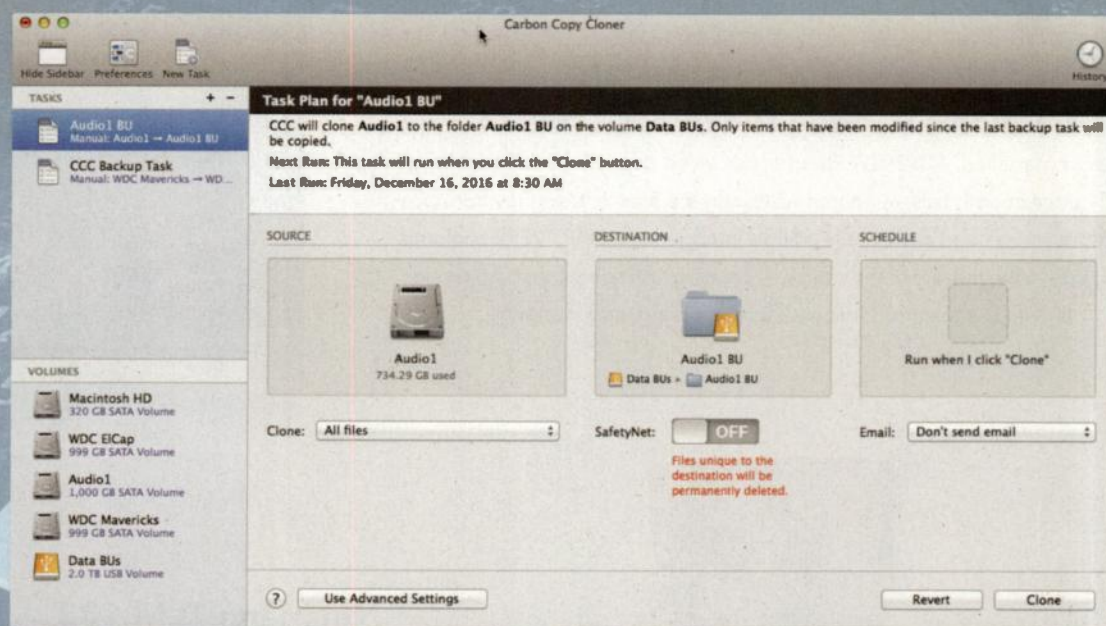
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Fig. 1. Carbon Copy Cloner backs up audio files on a 1TB internal drive (named Audio1) to a folder on a 2TB external hard drive (Data BUs>Audio1 BU).



Back in a Flash

Instantly restore lost and corrupted audio files and sample libraries

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 michael-cooper@bendbroadband.com and hear some of his mixes at soundcloud.com/michael-cooper-recording.

Savvy engineers store their audio applications, audio files, and sample libraries on separate magnetic or solid-state drives for fastest data retrieval and glitch-free studio sessions. By distributing the workload among three drives, different types of data can be accessed simultaneously, keeping your DAW humming along at a brisk clip.

Unfortunately, the same data is vulnerable to loss or corruption from a hard drive failure, an operating system malfunction, or a malware attack. It's essential you develop and use a robust backup routine before the Grim Reaper pays your precious data a visit.

If you use the ideal three-drive approach to data storage, you'll want to back up each drive discretely so it can be quickly and precisely restored without you first having to manually segregate three types of data merged together. Your backup software should also let you restore your data instantly when loss or corruption occurs, so you can get back to work in a flash. This article will show you a super-easy way to accomplish these goals on your Mac.

In my article "Protect Your Mac from Ransomware" (visit emusician.com/ransomware), I detailed how to clone and instantly restore a Mac boot drive using Bombich Software's Carbon Copy Cloner (CCC). This article shows how to use CCC to back up your non-bootable Mac drives—the ones containing your audio files and sample libraries—to separate folders on an external drive for instant recovery.

Using CCC, you can back up multiple hard drives

to respective folders stored on one large external hard drive (Figure 1). If you have all your sample libraries stored on one 1TB drive and all audio files for your current projects stored on another 1TB drive, you can back up each 1TB drive to a separate folder on a single external drive that's 2 TB in size or larger.

If a drive containing your sample libraries or audio files fails, connect your backup drive and open the folder containing the relevant backup data. All your files will be instantly available and organized with the same folder hierarchy as they were on the original drive before it failed. You can continue to work with the backup drive (as long as it's connected to a fast enough data bus) until you have time to transfer its data to a new hard drive.

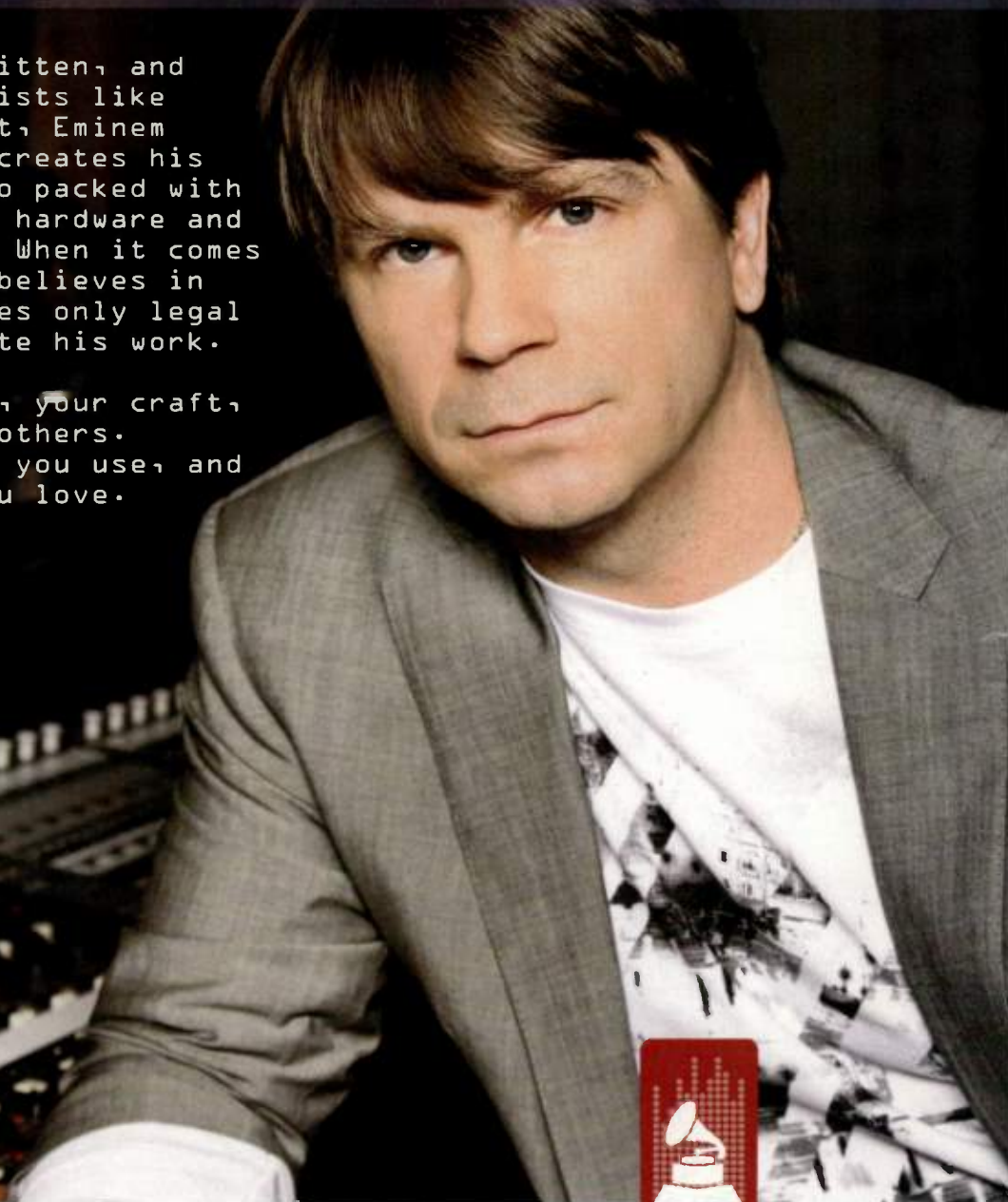
Having your hard drive backups stored in folders gives you another important benefit besides great organization and instant access: It requires no extra data-restoration steps that can potentially fail. I recently had Time Machine fail to restore data—from any of its three most recent backups—after one of my boot drives died. Luckily, I had an alternate CCC backup. I now use CCC to back up all my data. ■



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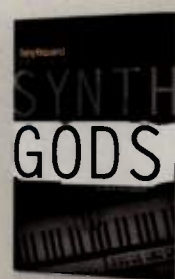


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Eron Bucciarelli

The indie-punk drummer takes us inside Soundstr, his startup that's rethinking the way music venues negotiate performance licensing and royalties

BY MARKKUS ROVITO



Bucciarelli (left) and Soundstr's Pulse system

Former Hawthorne Heights drummer Eron Bucciarelli started his company Soundstr about two years ago to identify the music that's played in real-world businesses and help songwriters get compensated for it. With its Pulse device, Soundstr provides transparent music-use data to businesses that license music. They can use that data to negotiate licenses based on actual usage instead of a general blanket license that may send more money to certain performance rights organizations (PROs) than they need to pay.

Soundstr officially launched late last year with the goals of bringing more businesses into the system, helping them pay for only what they use and directing license money into the correct songwriter's pockets.

Why leave a successful band to start a music technology company?

We were performing all over the world, and every night the concert promoter would deduct a small percentage of every ticket sold. This money was supposed to go back to the PROs. Well, two problems were happening: The promoter was deducting performing rights fees for every PRO. We were only registered to one rights

organization, so essentially extra money was coming out of all of our ticket sales, and it was going to songwriters whose music was not being performed that evening.

Hawthorne Heights only performed original music, written by us, so this money deducted from our ticket sales was supposed to come back to us from our PRO. One night I looked at all my royalty statements and saw that the money wasn't coming back to me. I did a little research, talked to other bands and found that they had a similar problem. At that point I realized there was a greater issue than just a simple accounting error.

Why do you feel that PROs don't always distribute money to songwriters fairly?

PROs collect money from businesses and don't have data on how to distribute it, so they use radio as a proxy. They assume whatever's played on the radio is the same as what's played in a business, and they take money that gets collected from different bars, clubs, and concert venues, and pay it out to whomever's on the radio.

We looked at music played in a handful of establishments in Cincinnati and compared that data to Nielsen BDS, the industry standard for radio charts—basically the same metric a PRO would use—and found that out of about 3,000 songs we identified over a two-week period, only 19% were played on the radio. Therefore, 81% of the songs heard in a business weren't getting compensated. That money was going to other people.

Many US entertainment establishments that broadcast music do not pay license fees. How do you get them to comply?

To some degree, the PROs try to track down these businesses and persuade them to pay. ASCAP announced that it is suing 10 businesses for not paying licenses. That doesn't seem like a very good business model. You're spending tens of thousands of dollars in litigation to license a business that's going to probably pay you a couple thousand dollars a year. I contend that if we provide technology that lets businesses pay a fair license based on their real music usage, then it will in turn save them some money, and they'd be more apt to obtain a license. This in turn puts more money back into the system for songwriters, and if that money goes to the correct people, then everyone should be happy.

And that's where your Pulse system comes in. What does it cost?

We charge a monthly subscription fee based upon the capacity of your establishment to access your music performance data. The bigger the establishment, the higher the license fee that it pays to the PROs, and that goes in line with the potential savings it may reap from our data.

Some of these venues don't pay their music license fees because they're not well-informed on the subject. The PROs will even tell you, the number-one request from unlicensed businesses is to prove that the money will go to the correct people who earned it, and [the PROs] can't—without our technology, that is.

How much more needs to be done for the PROs to support your platform?

We have the new U.S. PRO called Global Music Rights; they're supporters and will accept our data. We're doing a pilot with SOCAN in Canada, and they're very excited about this, as are other PROs around the world. The U.S. PROs are slower to react; there's a lot of bureaucracy. But we're doing our part to get more people into the system and more money back into the pockets of creators and the people who support those creators.

Visit www.emusician.com/soundstr for an extended video interview with Bucciarelli. ■

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