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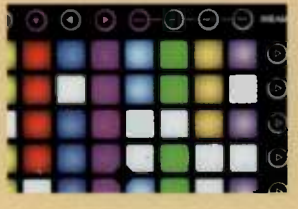

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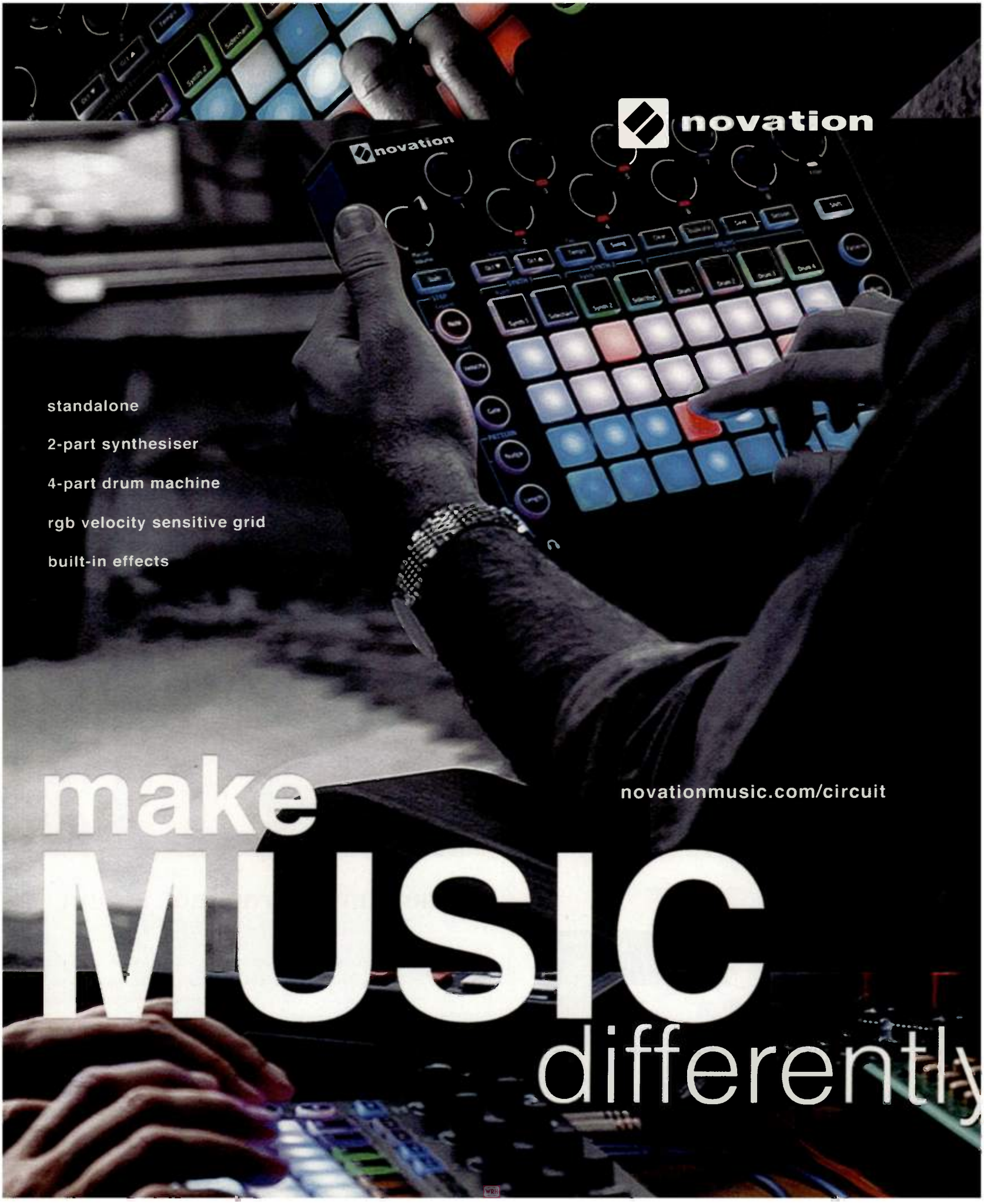
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COMMUNITY

insight

Your Earnings Potential

2016 IS poised to be a landmark year for music-makers, with legislation moving through Congress that could radically impact the livelihood of artists, songwriters, producers, and engineers.

The Fair Play Fair Pay Act (H.R. 1733) would institute terrestrial radio royalties for artists and producers. There's a lot of money at stake: The Recording Academy estimates that those unpaid royalties add up to 100 million dollars each year.

The Allocation for Music Producers Act, or AMP Act (H.R. 1457) is aimed at studio professionals; it would codify into law the right for producers and engineers to receive royalties managed through SoundExchange.

But while these bills have the potential to significantly increase your income, the fact is, you might already be leaving money on the table. Bad documentation—from missing metadata to incomplete PRO registration—jeopardizes your ability to collect money you've already earned.

In "Musician's To-Do List," (p. 52), we offer a refresher on the basics of copyright and royalty structures, and walk you through seven essential steps to ensure you receive royalty income the minute you release your music.

Here's hoping that 2016 is the year that everyone who creates music earns the compensation they deserve. But in the meantime, make it your New Year's resolution to get your data in order, so when that big payoff comes, you're ready to collect it.

SARAH JONES
EDITOR
sjones@musicplayer.com

electronic MUSICIAN

WEB HIGHLIGHTS

This month on emusician.com

Video QuickTip
Tweaking Drums in NI Komplete

Plus...
#30YearsofEM: Craig Anderton's memories
The DIY Advisor: Copyright Musts

...and lots more!

gadget geek

Dynamount Microphone Mount
Your Robotic Studio Assistant

Overburderned studio interns everywhere will have less work to do thanks to the latest entry in the "why didn't I think of that?" category: the Dynamount remote-controlled robotic mic mount. Control your microphone's distance and angle from your sound source without ever getting up from the sweet spot, using any computer or mobile device via WiFi. The system has programmable presets for A/Bing positions, and the mount is stable enough to point mics horizontally, vertically, or at an incline. Four models are available, offering varying complexities of positioning and rotation. Prices start at $299; dynamount.com.

app tip Alexandernaut Fugue Machine

BY MARKKUS ROVITO

Create instant MIDI variations from four playheads; send them to a DAW

CHANCES ARE you don't make Baroque music, but Alexandernaut Fugue Machine for iPad 2/ iOS 7 or above (alexandernaut.com) takes cues from Baroque and Serialism to refine the piano roll and let you quickly sketch beautiful, evolving polyrhythmic melodies and themes for any music. Fugue Machine's four playheads dance across the screen in both directions and at various tempos and pitches to take one or more lines of music in many directions.

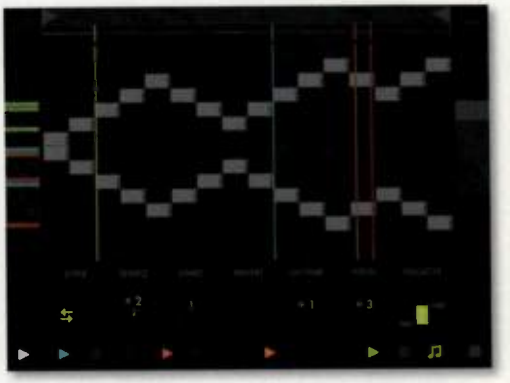
1. In Settings, choose a preset pattern or an empty slot. Set the tempo, key, scale, and loop length (1-8 bars) for new patterns.

2. In the piano roll, simply tap and drag in notes at the lengths and pitches you want. Hold the option key and tap notes to delete them. The app has plenty of polyphony so you don't have to limit yourself.

3. The four playheads have their own Play/ Stop buttons and settings. For each playhead, you can choose four forward/backward motions, divide or multiply the tempo, set the playhead Start position, change the volume of the part, and alter pitch by either octaves or steps.

4. Use the left bar to navigate and resize the piano roll, the right bar to pitch the whole composition up or down, and the top bar to scroll and to resize the loop brace..

5. In Settings, set the MIDI Out to either send Fugue Machine's notes to another iPad instrument or to send it over your wireless network, where you can connect it to your DAW to record and play the notes from any of your synths.



Fugue Machine costs $9.99 in the iTunes App Store.

EM Contest EastWest Composer Cloud

TO HELP celebrate EastWest's launch of its new Composer Cloud subscription service, we're giving away three subscriptions, valued at $360 each.

The Composer Cloud collection features more than 9,000 instruments and 1 million sounds that would cost more than $11,000 if purchased separately; instruments cover a wide range of electronic genres, from techno and hip hop, to mainstream house and drum and bass.

To enter the contest, visit emusician.com/composercloudcontest. Contest runs through December 15. Interested in learning more about Composer Cloud? Detailed information and a free trial can be found at ComposerCloud.net.

CLASSIC EM

Electronic Music of the Eastern Bloc, 1987

"THE LIFE of Eastern Bloc musicians isn't glamorous or easy...today in fact, there are several artists in the Eastern Bloc who are producing adventurous electronic music within the context of state-financed cultural programs and record companies...As communication between countries increases, we can probably expect to see even more interest in electronic music from behind the Iron Curtain." ***—Archie Patterson, "Electronic Music Behind the Iron Curtain." March 1987***

Life got a lot easier for Eastern Bloc musicians after the fall of the Berlin Wall on November 9, 1989 which marked the beginning of the end of the Cold War.

IN THE STUDIO

BY BARBARA SCHULTZ

>> Scott Woodruff's **Stick Figure**

From left: Kevin Offizer (drums), Kevin Bong (keyboards), Cocoa the Tour Dog, producer/composer/artist Scott Woodruff (vocals, guitars), Tommy Suliman (bass)

WHILE REGGAE/DUB project Stick Figure is a four-man band that brings frontman Scott Woodruff's songs to life onstage, the process of composing, arranging, and recording is a solitary affair; in the studio, it's mainly about Woodruff, his creative ideas, his gear, and his adorable canine second engineer, Cocoa.

Stick Figure's new album is *Set in Stone*, half of which Woodruff made in his rustic new studio in the beautiful Santa Cruz, Calif., mountains. Woodruff was attracted to his four-bedroom home in Santa Cruz because the property feels remote and next-to-nature, but is minutes away from town and the beach. The artist helped lay the foundation for the studio about 50 yards from the main house, and then went on tour while a couple of music-loving contractors continued the work. When Woodruff returned, he couldn't wait to start making new music.

"Some of these songs I started a few years ago, and I always knew they could be good songs if I could finish the lyrics, or in some cases *write* the lyrics," says Woodruff. "When the studio went up, everything started coming together. I felt so comfortable; I wrote several songs in the first couple of days. All the lyrics that I had been waiting for the inspiration for—it call came to me because of this new studio."

Woodruff's arranging and recording platform includes a Mac pro running Propellerhead Reason and Pro Tools.

Working on his own and bouncing from song to song, as his creative process dictates, Woodruff uses a chart to stay organized.

"I control everything from the computer," Woodruff says. "I do all the beats, drums, bass, the keyboard with MIDI keyboards."

Woodruff records his vocals to a Neumann TLM 103 in his one-room facility. He says that another key ingredient to his tracking process is the uplifting playback he gets on his ATC 100 monitors. "They're new for this studio, and they're extremely loud," he says. "It really helps me get into it while I'm making the music to turn them way up. Fortunately, the studio walls are double-thick so the sound won't bother my housemates or neighbors."

"When we play live, we're a four-piece band," Woodruff says. "We have drums, bass, keyboard player, and I play guitars and sing, but on the recordings, sometimes I'll lay down seven different keyboard parts. So the live versions are sometimes a little more basic, but that's cool—it just means the songs have a more natural feel."

Woodruff: "On this album, I mainly played my Fender Stratocaster and Taylor Acoustic. I have an Orange amp and a Fender Twin Reverb. Sometimes I plug straight in to get a super-clean sound, but on these songs I usually miked up one of my amps with a Shure SM57."

1

KORG

VOLCA SAMPLE OK GO SPECIAL EDITION

Sampler

$159

HIGHLIGHTS Contains 100 samples from the album *Hungry Ghosts* • limited edition of 750 units in the U.S.A. with numbered and band-signed certificate • multitouch keyboard with 8-voice polyphony • 16-step sequencer with 10 parts and 10 patterns • 6 songs and 16 sequences • built-in speaker • MIDI In • Sync I/O • headphone jack • runs on batteries or included AC adapter

TARGET MARKET Musicians, composers, DJs

ANALYSIS A great (and legal) way to add the unusual pop sounds of OK Go to your own musical projects.

korg.com

2

UVI

FALCON

Software Synthesizer

$349

HIGHLIGHTS Hybrid soft synth and sampler • 64-bit standalone or plug-in operation • features 15 oscillators and 80 effects (many of which can be used globally or per note) • wide range of filters • IRCAM-designed time stretching and granular playback engines • drag-and-drop modulation assignment • custom script processor • supports MIDI, OSC, and host automation

TARGET MARKET Film composers, sound designers, musicians

ANALYSIS A deep and feature-rich sound design environment that can be as simple or complex as you want.

uvi.net

3

ELECTRO-HARMONIX

CRASH PAD

Analog drum synthesizer

$156

HIGHLIGHTS Percussion synth that can be triggered with the built-in button or from an acoustic trigger using the 1/4" input (no MIDI I/O) • expression pedal/CV input for controlling the filter • audio input for processing external sound through the resonant filter • runs on 9V battery or included power adapter

TARGET MARKET Musicians

ANALYSIS An affordable and portable old-school drum synth that can generate or process sounds. Feed a sequenced pulse to the Ext. Trig input for even more fun

ehx.com

4

IZOTOPE

OZONE 7

Mastering software suite

$249; Advanced $499

HIGHLIGHTS A suite of mastering tools that can be used standalone or as a plug-in • Advanced version includes four additional modules (including tape emulation) and Codec Preview to hear how various codecs will alter your project • Export options allow you to encode audio to AAC and MP3 formats • includes style- and genre-based presets

TARGET MARKET Mixing and mastering engineers, musicians

ANALYSIS A powerful update to a winning set of tools designed for high-quality mastering duties.

izotope.com

All prices are MSRP except as noted

5

AVID

PRO TOOLS | DOCK

Controller and iPad dock

$TBA

HIGHLIGHTS Using high-speed, Ethernet-based EUCON technology, Pro Tools | Dock is designed to work with the Pro Tools | Control iOS app (free) and Pro Tools | S3 control surface • 8 touch-sensitive, push-top knobs • mouse-free access to short cuts, key commands, functions, and other interface elements • create custom key assignments • 12 automation buttons

TARGET MARKET Recording and mix engineers

ANALYSIS Combine your iPad's touchscreen with a scrub wheel, fader, and buttons to gain tighter control over your project.

avid.com

6

WAVES

AUDIO ELEMENT 2.0

Virtual analog synth

$TBA

HIGHLIGHTS Polyphonic VST softsynth using Virtual Voltage 2.0 technology that keeps all parameters on the front panel • 16-step arpeggiator/sequencer • Unison algorithm with 2- and 4-voice models • redesigned envelope shapes and behavior • zero-delay feedback filters • reverb and crusher effects • high-resolution oscillators and improved anti-aliasing technology • MIDI Learn • presets are backward compatible with earlier version

TARGET MARKET Keyboardists, composers, sound designers

ANALYSIS Significantly upgraded sound and performance that is also backward-compatible and loads presets from the original model.

waves.com

7

MACKIE

CR4BT AND CR5BT

Multimedia monitors with Bluetooth

$259-$329

HIGHLIGHTS 50W systems that allow you to use a variety of input connections—Bluetooth, 1/4", 1/8", or RCA • plug your smart device into the front panel • CR4BT has 4" woofer and frequency range of 70Hz-20kHz • CR5BT has 5" woofer and 60Hz-20kHz frequency range • 0.75" silk-dome tweeter • front-panel headphone jack • rear bass port • wood cabinet • acoustic isolation pads

TARGET MARKET Multimedia users, educational institutions, mobile users

ANALYSIS Lightweight and highly portable playback systems that can be used wirelessly for convenience.

mackie.com

8

PLUGIN ALLIANCE

BRAINWORX BX_CONSOLE

Console emulation plug-in

$299

HIGHLIGHTS Modeled after Dirk Ulrich's Neve VXS 72 console • using Tolerance Modeling Technology (TMT), the plug-in takes into consideration the component tolerances for each channel to provide 72 variations • 4-band EQ with highpass and lowpass filters • EQ and dynamics mods • noise control parameter • supports EUCON mapping for Avid products • fully functional 14-day demo without dongle

TARGET MARKET Recording and mix engineers

ANALYSIS By modeling the tolerances between channels, bx_console can better capture the inter-channel interactions of the hardware version.

plugin-alliance.com

9

RADIAL

MCBOOST

Ribbon and dynamic mic gain booster

$199

HIGHLIGHTS Class A, phantom powered dual-FET signal booster for use with ribbon and dynamic mics • level control to provide as much as 25 dB of boost • 3-position highpass filter for mitigating low-end build-up from the proximity effect or localized rumble • 3-position impedance selector • standard XLR connectors • 100 percent discrete components

TARGET MARKET Recording and live sound engineers, educational institutions

ANALYSIS A great tool for integrating low-output mics with low-powered preamps and interfaces.

radialeng.com

10

MODARTT

HOHNER PIANET N

Virtual keyboard instrument

$59

HIGHLIGHTS Physically models a popular electromechanical, plucked-reed keyboard instrument that was popular in the mid-'60s and used by the Beatles, among many other bands • part of Pianoteq's *Hohner Collection* instrument pack (requires Pianoteq version 5.4) • additional notes extend the instrument's range to 7 octaves • sustain pedal

TARGET MARKET Keyboardists, musicians, composers

ANALYSIS A low-cost, high-quality way to get unusual vintage keyboard sounds into your studio DAW or onstage.

pianoteq.com

11

SHURE

QLX-D

Digital wireless system for 900MHz

Starting at $973

HIGHLIGHTS A 24-bit system that focuses on the 900MHz ISM (Industrial, Scientific, Medical) frequency band, for instances where using the UHF television band becomes an issue • supports 12 compatible channels per frequency • works with Shure's new UA874XA Active Directional Antenna and UA834XA In-Line Antenna Amplifier, which also support the 900MHz band

TARGET MARKET Live sound engineers, houses of worship, educational institutions

ANALYSIS A sure bet that can take advantage of, as the manufacturer suggests, "regional variations of the 902-928MHz spectrum."

shure.com

12

STEINBERG

UR22MKII

USB 2.0 audio/MIDI interface

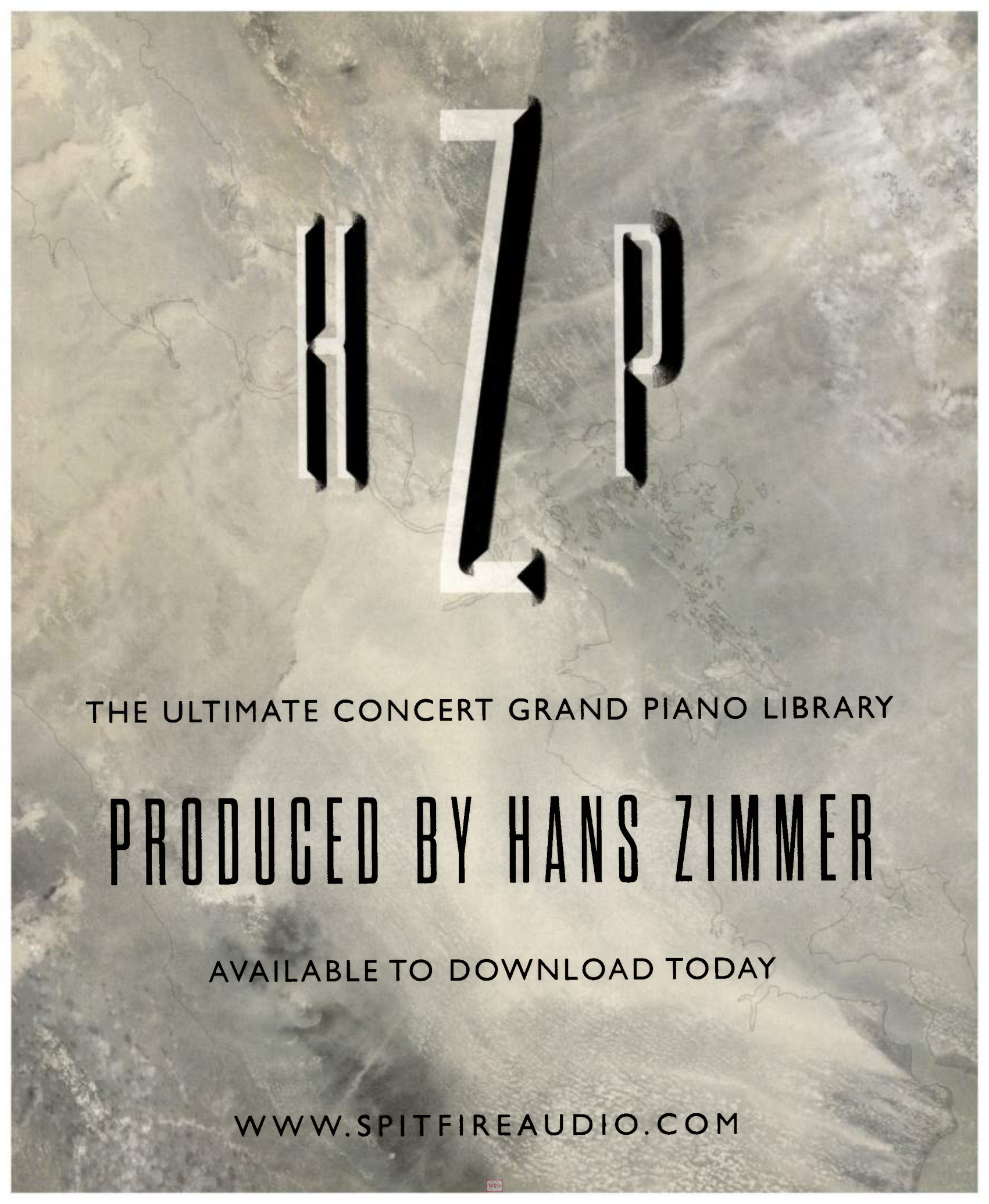
€159 (about $173)

HIGHLIGHTS 24-bit/192kHz interface featuring two Class A D-Pre mic preamps with +48V phantom power • 2 combo jacks, one with a high-impedance switch for use with guitar or bass • 1/4" TRS outputs • headphone output • MIDI I/O • supports iPad use as well as Mac/Win OS • loopback feature for live streaming • USB micro socket for powering • includes Cubase AI and Cubase LE app for iPad

TARGET MARKET Personal studios, remote recording, educational facilities

ANALYSIS Upgraded feature set on an affordable, highly portable interface.

steinberg.net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The skiff-friendly Dual Oscillator provides extensive modulation and timbral capabilities. It requires +5V from your power supply, in addition to ±12V, so be sure your power bus offers it before installing the module.

SPUTNIK MODULAR

Dual Oscillator

ONBOARD WAVESHAPING AND RICH MODULATION ARE AT YOUR BECK AND CALL

BY GINO ROBAIR

One of the things that defines a West Coast-style module is its functional density, which provides the capabilities needed to create complex and evolving textures. Buchla & Associates set the standard for this in the early '70s with products such as the legendary Model 259 Programmable Complex Waveform Generator, a wonderful-sounding dual VCO with integrated modulation capabilities.

While Buchla-inspired modules are common today, Sputnik Modular (sputnik-modular.com) brings the original functionality and sound quality of these classic products to the Eurorack format at an affordable price.

As you might expect from its name, the Dual Oscillator ($549) takes its cue from the Model 259. Although Sputnik's 28HP panel layout differs from the Buchla original, the feature set is very similar, including the frequency indications (and corresponding flashing lights) near the tuning controls.

The Dual Oscillator's VCOs—named Generator 1 and Generator 2—can be used independently or internally patched together. With its switchable LFO capabilities, Generator 1 can act as the "modulation oscillator" using the bus switches: AM, FM, and Timbre modulation can be added individually or combined. Then, you can adjust the modulation amount manually or alter it with the CV input and its attenuvertor.

Each Generator has its own 4-octave CV input (1V/octave), coarse and fine tuning controls, an additional exponential CV input with bipolar control, and a linear FM input with depth control. Generator 1 also offers a soft-sync input for use with an external oscillator, and you can soft-sync Generator 2 to Generator 1 by flipping the Sync switch.

Generator 1 provides a triangle output, a selectable output (your choice of triangle, ramp, or square wave), and a 0-5V CV (positive-cycle) version of the Select output. Generator 2 has three audio outs—sine, square, and Final—the latter of which will include any AM, timbre modulation, or waveshaping you add. If you use frequency modulation, it will be heard on all three Generator 2 outputs.

The highlight of the Dual Oscillator is its flexibility in sculpting the spectral content of Generator 2 using a waveshaper. Turn the Timbre control clockwise to add partials to the sine wave oscillator, then use the CV input and bipolar control to modulate the amount of wavefolding.

From there, you can emphasize the odd (square wave) or even (ramp wave) harmonics using the Symmetry control and CV input, as well as prioritize the low- or high-order harmonics manually or using a control voltage. Together, the Harmonics, Timbre, and modulation bus are capable of providing extremely rich results depending on the amount of modulation you dial in—and that's before you've even added a patch cable.

Because of its broad harmonic complexity, the Dual Oscillator's output responds very well to VCA shaping, and it sounds particularly wonderful when patched through a lowpass gate.

I compared the unprocessed output of the Dual Oscillator to a pair of original 259s, and it did a fine job of capturing the original Buchla sound. In fact, the tones were nearly spot on when using the waveshaping features, as well as the AM and timbre modulation.

Comparisons aside, the Dual Oscillator is a highly versatile module that sounds fabulous and is a blast to use—a winning combination. ■

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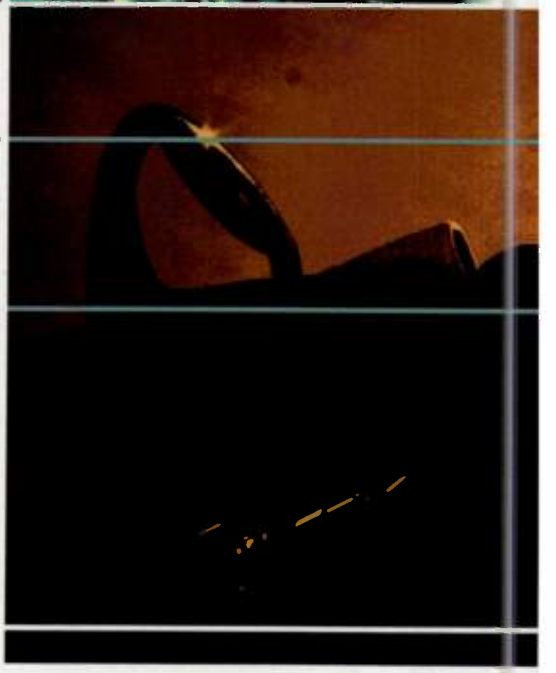

Recording on the Go

The *Electronic Musician* Guide to Portable Multitracks

BY STEVE LA CERRA

Sometimes a computer running DAW software is too much aggravation, especially when you step outside the controlled environment of a recording studio. For field or live recording, you need the ability to plug in and press record—not to worry about routing tracks, navigating a rat's nest of cable, or running a 50-foot AC cable through the bathroom window. *Electronic Musician* surveyed audio manufacturers for the latest in multitrack recording on the go and divided them into two categories: field units and "tabletop" models designed for plug, arm, and record—no stereo recorders, no handheld 'point and shoots,' and no recorders with built-in mixers.

HOW FAST CAN YOU RUN?

When shopping for a dedicated recorder, look for a device that records audio at no less than the two "standard" sample rates of 44.1 and 48 kHz, with either 16- or 24-bit resolution. It'd be nice if the recorder runs at sample rates up to 192 kHz but in reality, you probably won't need to record at 192 much, if at all. Note that some recorders sacrifice track count at higher sample rates so do your homework to find out if that is the case.

If your plans include capturing audio for video you may not need a high track count, but you will need to make sure that your recordings can sync to picture. Look for SMPTE timecode compatibility at a variety of frame rates and word clock I/O. A pre-record buffer that stores a few seconds of audio before you actually press Record can help make sure you don't miss the start of a take. Most field recorders have at least two XLR mic inputs; it'd also be a good idea to have AES/EBU and S/PDIF digital I/O because you don't know what might come up in the field. Add bonus points for field recorders that employ more than one type of power supply and accommodate a backup.

I/O options on these devices vary wildly, ranging from a few XLR mic inputs to networking cards accommodating dozens of tracks. At least one or two multitrackers do not feature analog I/O of *any* kind. Knowing which console you plan to interface and whether it has compatible I/O helps ensure they'll play nicely together in the sandbox. A headphone output is a must for auditioning tracks.

Almost all of these machines store data as WAV files and may provide the option to write "monophonic" or "polyphonic" WAVs. A monophonic WAV is the traditional WAV: one track of audio. A polyphonic WAV combines multiple audio tracks into a single file, making it easier to transport and share—but that file will need to be split out to the individual tracks if you want to import the tracks to a DAW. You may need file conversion software so find out if there is any hidden cost involved.

A very useful feature is the ability for the unit to function as a USB or FireWire DAW interface, allowing the recorder to do double duty when you are home. Other pluses include the ability to sync multiple units for increased track count, Ethernet connectivity, and access to iOS apps for remote operation.

ROLAND R-44

Roland's R-44 4-channel field recorder has onboard stereo microphones as well as locking Combo inputs with independent level control. The R-44 writes BWFs to SD or SDHC cards at a variety of sample rates from 44.1 to 192 kHz, with 16- or 24-bit depth (stereo only at 192 kHz). A pre-record function buffers audio input, so audio is actually written for a few seconds prior to pressing the Record button.

In addition to its mic/line inputs, the R-44 features S/PDIF I/O and four RCA line outputs. A variety of effects are built into the R-44, such as compression, limiting, lowcut filter and EQ. A USB port (Mini, type B) allows the R-44 to be connected to a computer for file transfer, and the unit may be powered using an external power supply or four AA batteries. Street price is $795.

Look for devices that record at least 44.1kHz and 48 kHz.

ROLAND R-88

Designed specifically with location recording and sound design in mind, Roland's R-88 records eight tracks plus a stereo mix, with the ability to route the stereo output back to a camera for recording reference audio. Files are written as BWFs, with the option of recording poly WAV files. Supported sample rates range up to 96 kHz (four tracks at 192kHz/24-bit resolution).

Eight balanced XLR mic inputs have individually switched phantom power, and each input features a delay that is variable from 0.05 to 20 ms for surround mic applications. The R-88 can record to SDHC while simultaneously serving as a 10x8 USB interface for backup recording to a DAW, and provides AES/EBU digital and timecode I/O, and DC power input. It weighs less than six pounds, including eight AA batteries. Street price around $2,000.

SOUND DEVICES 633

A six-input mixer with a 10-track recorder, the 633 from Sound Devices records mono or poly BWFs or MP3s with timecode metadata, and stores files to SD or CF cards. The 633 has three high-bandwidth mic/line inputs on XLRs with phantom power, highpass filter and input limiter, plus three line-level inputs on TA-3 connectors. The 633 features a unique Quad Power supply with PowerSafe technology: It can be powered via external DC (12-18 V), two removable lithium ion cells or six internal AA batteries, and automatically switches from one power supply to another when one is exhausted or removed. When all power sources are removed or depleted, the 633's PowerSafe circuitry keeps it operating for up to 10 seconds to ensure a safe shutdown. Street price is $3,995 including CS-633 Bag, 3x XL-2F Cable, 2x XL-2 Cable, XL-LB2 Cable, 2x XL-B2 batteries, and 16GB CF/SD Card.

SOUND DEVICES 744T AND 788T

The 744T and 788T are portable multitrack machines designed for production audio. Both units store files to internal hard drive, external FireWire drive, or CF card. Powered by standard camcorder batteries, the 744T and 788T write uncompressed mono or poly BWFs at sample rates from 32 to 192 kHz with 16- or 24-bit resolution. Sync capabilities include word clock I/O from 32 to 200 kHz, timecode reader/generator with rates of 23.976, 24, 25, 29.97DF, 29.97, 30, and 30DF, an ultra-stable crystal clock generator, and Broadcast Wave and iXML metadata TC stamp in WAV and FLAC file formats. Files may also be recorded as MP3 stereo files at 64, 128, 192, 256, or 320 kb/s.

The 744T records four tracks via two XLR inputs that may be switched to accept analog mic or AES/EBU digital signals, plus two line-level inputs on balanced TA-3s. Mic inputs feature Sound Devices' high performance, low-noise preamp with 48-volt phantom, adjustable highpass filter, peak limiter, and polarity reverse. Two BNC jacks accept S/PDIF or AES/EBU digital input. Analog audio output is available via a pair of balanced TA-3s, or from a 3.5mm headphone jack with level control.

Designed for similar applications, the 788T is a 12-track recorder with eight analog mic/line inputs (four XLR, four TA-3). AES3 inputs are provided via DB15, and clock input may be accepted from any pair of AES inputs. Four TA-3 balanced analog line and two unbalanced analog outputs (1/8-inch TRS) enable a user to route individual tracks when necessary. For critical applications, the 788T has the ability to record to any or all of the media simultaneously. The 788T does not record MP3, but has the ability to play MP3 files at a variety of rates. Street prices: 744T: $4,549; 788T: $6,589 or $6,849 with internal 250GB SSD.

TASCAM HS P82

Tascam's HS-P82 is capable of recording eight individual tracks plus a stereo mix track. Intended for use in TV and film production, the HS-P82's eight XLR mic inputs feature phantom power, highpass filter, analog limiting, and a very low noise rating (-125 dB, EIN). A DB25 port carrying eight AES/EBU digital I/Os may also be used for audio I/O. Audio files are written onto two CF cards as BWFs up to 192 kHz/24-bit (8 tracks at 96 kHz/24-bit; 4 tracks at 192 kHz/24-bit), and may be simultaneously recorded to both cards for redundancy. Stored files embed iXML metadata for easy transfer to a wide variety of audio or video editing systems, and files may be transferred using the HS-P82's USB port.

Power options include an AC adapter (included), external DC, or an optional V-Mount battery adapter. A battery tray holding ten AAs is included for emergency operation. Additional features include a TFT color touchscreen, five-second pre-record buffer, Mid-Side decoding, SMPTE and word clock I/O, and an internal slate microphone. Street price: $2,399.

ZOOM F8

The F8 from Zoom is an 8-track field recorder intended for sound design and film use. Audio is recorded as 16- or 24-bit BWAVs at standard sample rates up to 192 kHz. The F8 can also record MP3 files with bit rates of 128, 192, or 320 kbps. Two SD/SDHC/SDXC card slots are provided, and the F8 can write simultaneously to both cards for redundancy or split recordings. A pre-record function allows capturing six seconds of audio prior to pressing the Record button.

Analog inputs are eight locking combo jacks with preamps providing up to 75 dB of gain. Phantom power (24 or 48 V) can be individually switched for each input. Main stereo outs are on TA-3s along with 1/4-inch and 1/8-inch stereo headphone jacks. The F8 can be powered using eight internal AA batteries, 9-16 volt DC external battery packs, or a 12-volt AC adapter (included). The F8 is the first field recorder to employ Bluetooth LE protocol, enabling it to run the Zoom F8 Control iOS app for comprehensive wireless remote control via iOS devices. Street price is around $1,100.

ALLEN & HEATH ICE-16

As its name implies, Allen and Heath's ICE-16 records 16 tracks of audio to USB flash or hard drive. The ICE-16's front panel includes dedicated transport controls, signal present and peak LED indicators per channel, and monitor select buttons for quick eavesdropping on any of the 16 channels via the unit's front-panel headphone output. Audio is recorded as WAVs at 44.1/48 kHz with 16- or 24-bit resolution.

Rear-panel analog I/O is via RCA and 1/4-inch TRS, with the option for D-Sub I/O connectors (ICE-16D). The unit performs double duty as a USB or FireWire audio interface for your DAW; ASIO and WDM compliance ensures communication with the major DAW programs. Sync jacks permit daisy-chaining of multiple units for increased track count, and virtual sound checks are possible by patching the ICE-16's outputs back to the analog inputs of a mixing console. Street price is $995 for the ICE-16 and $1,199 for the ICE-16D.

CYMATIC AUDIO UTRACK 24

Packaged in a single rack space, Cymatic's uTrack 24 functions as a standalone 24-track recorder and doubles as a 24x24 DAW interface. Audio is stored onto external drives (Cymatic recommends traditional hard drives for best results) in multichannel WAVs at samples rates up to 96 kHz with 16-or 24-bit resolution. Cymatic offers a free application called uTool which converts these files into separate mono WAVs. Rear-panel analog audio I/O is on DB25s wired to the Tascam pinout standard. A separate stereo monitor output can be used to feed a pair of monitors when the uTrack 24 is used as a 24x24 USB audio interface for your DAW.

Front-panel features include 24 three-color LEDs indicating signal level per channel, and the display can be switched to show a single channel across all LEDs for fine resolution metering. An internal mixer provides a stereo mix via front-panel headphone jack as well as the aforementioned monitor outs. Word clock I/O, USB, and network and MIDI output (for SMF playback) are standard, and Cymatic offers a MADI option card with co-ax and optical connectors. Street price: $1,000.

A very useful feature is the ability to function as a USB or FireWire DAW interface, allowing the recorder to do double duty when you are home.

CYMATIC AUDIO LR-16

Cymatic Audio's LR-16 is a 16-track recorder built for fast, easy use. Sixteen analog line inputs are provided on 1/4-inch TRS insert-style jacks, enabling the LR-16 to be patched into the TRS channel inserts of any mixer without interrupting the default signal flow of the mixer channels. The LR-16's tabletop chassis includes transport controls, navigation buttons and an LCD display. Sample rates are 44.1 or 48 kHz with 16- or 24-bit resolution.

A USB port allows the LR-16 to function as a 16x2 USB audio interface with zero-latency hardware monitoring, compliant with Mac OSX, Windows or iOS 5 or higher. As a bonus it can function as a Mackie Control and MMC Transport Control for your DAW. The LR-16 records to USB flash drives or USB 2.0 hard drives, in which case the LR-16 can furnish power for the external drive.

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JAMHUB TRACKER MT16

Reviewed in the November 2014 issue of *Electronic Musician*, the Tracker MT16 from JamHub is a very compact device that records 16 tracks of WAV or MP3 audio to SD card or USB hard drive. The Tracker MT16 accepts audio through its TRS inputs or JamHub port, allowing direct connection to a JamHub studio. An interesting feature of the Tracker MT16 is onboard WiFi and Ethernet which—along with enabling the unit to automatically download firmware updates—facilitates file sharing via TrackerConnect.com. Once the files have been transported they can be shared by musicians or imported into a DAW. The Tracker MT16 can record 16 tracks at 96 kHz to an external drive but there is a six-track limit when recording at 96 kHz onto SD card. The Tracker MT16 sells for $400.

JOECO BLACKBOX BBR1

Several years ago the JoeCo Blackbox recorder sort of ignited renewed interest in standalone, digital multitrack recorders. The Blackbox can record 24 tracks of audio at sample rates up to 96 kHz/24-bit, and multiple Blackbox units can be linked for applications requiring a higher track count. Audio is recorded to external USB2 hard drive or USB2 flash drive. The BBR1 is available with a variety of I/O configurations including balanced or unbalanced DB25s, Lightpipe or AES/EBU digital I/O. Recently JoeCo announced two new variants of the BBR1: the BBR64 Dante and BBR64 MADI recorders, both of which are capable of recording and playing 64 channels of audio via Dante network or MADI interface, respectively. Street prices range from $1,995 for the BBR1 to $3,995 for the BBR MADI.

TASCAM DA-6400 AND HS4000

Packing more tracks into a single rackspace than you can shake a drumstick at, the DA-6400 from Tascam writes BWAVs (64 tracks at 44.1 or 48 kHz/24-bit, or 32 tracks at 88.2 or 96 kHz/24-bit) to an internal 240 GB SSD held in a removable, hot-swappable drive carrier. This drive caddy (AK-CC25) includes a USB3 jack for standalone use, facilitating file transfer to DAWs. A color LCD on the front panel provides track metering with peak indication, and shows timecode and clock status, and elapsed and remaining recording time.

Two rear-panel expansion slots accept a variety of audio I/O cards including a MADI card with optical and co-ax I/O, and a Dante networking card. Other than a headphone jack, there is no analog I/O built into the DA-6400. Sync connections include video/word clock I/O, SMPTE time code I/O, RS-422 and Ethernet ports. For critical applications the DA-6400 is available with dual redundant power supplies. Street prices start around $3,500.

Tascam's HS4000 is a rackmount 4-track recorder capable of simultaneous recording to two CF cards for redundancy. The HS4000 writes up to four tracks at 96 kHz/24-bit, and can provide confidence monitoring (file playback while recording) when recording in stereo. Files are stored as BWAVs and can include a timestamp derived from a SMPTE source through the rear-panel time code I/O.

Analog I/O is via balanced XLRs with an extra set of outputs for monitoring. Four channels of audio may also be input via AES/EBU digital I/O. Additional rear-panel facilities include video/word clock I/O, Ethernet, remote transport control, RS-422 and parallel ports. Street price is around $5,400. ■

Steve La Cerra is an independent audio engineer based in NY. In addition to being an *Electronic Musician* contributor, he mixes front-of-house for Blue Öyster Cult and teaches audio at Mercy College Dobbs Ferry campus.

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ZOE WISEMAN

CHARLIE CLOUSER

From Nine Inch Nails to the *Saw* series: mastering the darker side of sound design

BY EMIKO CARLIN

High above the Hollywood Hills, I drove to visit award-winning composer, multi-instrumentalist, producer, and remixer Charlie Clouser. Clouser is best known as the keyboard player in Nine Inch Nails and some may know him as remixer for Rob Zombie, but increasingly people are getting to know him as the composer for soundtracks to such notable television programs and films as *Wayward Pines*, *American Horror Story*, and the *Saw* franchise.

As I came to find out, Clouser is a very visual composer—an "aural painter" of sorts.

I sat down with Clouser at his home studio—an impressive musical mad scientist's laboratory outfitted with racks of recording gear, a Haken Continuum, and a wall of Eurorack modules—where we spent the afternoon talking about everything from contemporary minimalist composers to the one kick drum sample he's been using for more than 20 years.

Many people know you from your time with Nine Inch Nails. How did that prepare you for a career as a composer?

Now, that's where I really increased my skills for sound design, programming, and elaborate sound abuse! Clearly, the Nine Inch Nails camp is very forward thinking in terms of manipulating sounds, working with samples, distorting things, and so forth. So that

ZOE WISEMAN

definitely increased my vocabulary from the sound design and programming standpoint. But compositionally, it's very different. Scoring to picture, where the roadmap of what's going to happen and how long things are is often completely arbitrary compared to a pop song where you might have an intro, a middle section, and a chorus, and so forth, so the Nine Inch Nails era for me was more about growing my skills designing sounds and working with the technology.

You've been in the business for more than 20 years. How has technology changed the way you compose, not just technically but artistically?

When I was studying electronic music in college, it was before even MIDI existed. So in those days, electronic music meant a giant ARP modular synth, some reel-to-reel tape machines, maybe a spring reverb unit. I'm glad I started on that kind of crude technology because it was obviously much more difficult to get the desired results and you weren't lured into a false sense of security by fantastic-sounding sample libraries. I do find myself using many techniques and sounds that go way back in my history. I still have a kick drum sample I use on just about every scoring cue: It's just a little piece of data I use, like a comfy old ragged T-shirt I like to roll out. I know how it's going to behave, what it sounds like in big theaters or on small TV speakers.

Do you see an image in your head when you're composing your own music that may not necessarily be part of a film or TV project? And when you're scoring, if you don't have the full brief or any sort of visual, do you feel having a vivid imagination helps or hinders the composition process?

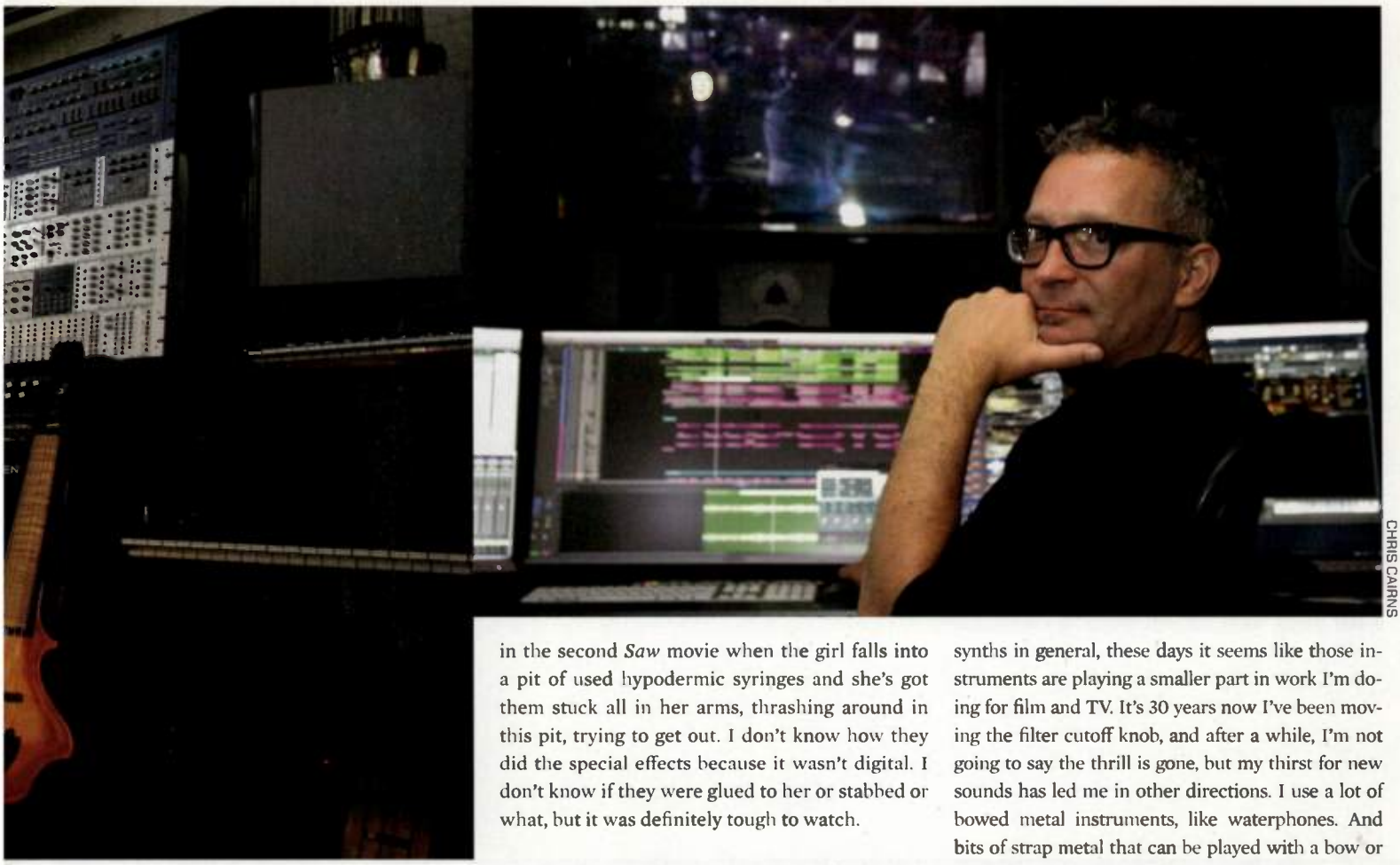
I've been fortunate that there have only been a few projects for scoring that I've had to start work on before there was some visual to go on. I've had better luck in those situations working on melodies, chords, and the actual musical data that's going to be there instead of focusing on the orchestration. But in terms of what instruments to use and how to orchestrate things and how thick vertically a piece of music needs to be, I have to see the picture. So many times whenever I've written sketches based on reading a script, I kind of can get started, but I know that once I see what the pictures look like, I'm going to have to undo much what I did—all the way down to the point to where all I'm keeping is the notes—the printed sheet music, basically. I think of sounds, melodic patterns, and phrases in terms of how they look to me as much as how they sound.

What's your favorite film or TV theme or soundtrack of all time?

For classic film scores, my favorites are *2001: A Space Odyssey* and *The Shining*. Even though a lot of the music in those is from preexisting pieces by composers like Penderecki and Ligeti, they work so well, were just so striking, and have become absolutely iconic to me. As for TV, it would have to be the original *Mission: Impossible* theme—everything about that theme screams cool, sleek, espionage. The instrument choices, the riffs... you know exactly what the show is going to be about after hearing two bars of that theme.

Can you name a film or show you watched, and thought of the soundtrack, "I would have done that differently"?

I generally have those kinds of thoughts when I'm watching Marvel movies or action films with big, epic orchestral scores. I tend to think they miss a few opportunities for interesting sonics that would pull you into the characters' heads a little more. Movies these days often seem to have massive-sounding orchestral scores, and sometimes it just feels too forced, like they're trying a little too hard to have the score be as gigantic as the visual effects. I feel like the biggest movies could benefit from a bit more contrast between big and small, a bit more time spent on musical sound design in the small scenes. One composer who I don't feel this way about is Harry Gregson-Williams. His scores always have a tasty mix of slick electronic sound design and orchestration. I've



CHRIS CAIRNS

never heard one of Harry's scores and thought, "He really missed the mark on that cue."

You are best known for your work on darker-themed projects, so I can't help but wonder what would it sound like if you scored a children's cartoon.

I don't know if I'd have it in me to do a children's cartoon, but I have done some less dark music. I scored the music to *Las Vegas* that was on NBC for five or six years.

It was a fun show. In every episode there would be one aspect of it that was a deadly serious suspense/drama/heist kind of thing. But it would also have some lighthearted kind of caper element to it; the guys working in the casino are tracking card counters on the floor, but in order to do it, they have to dress up in a chicken costume and a hot dog costume. There was some wacky music in there—high-speed jazz with goofy bongo solos...so much fun.

Have you ever gotten to a place with the visuals for something you're scoring and you look up only to see something so frightening is happening that you literally scare yourself and say, "Okay, I have to stop for a second. I've got to take a walk"?

More than once. The most memorable one was in the second *Saw* movie when the girl falls into a pit of used hypodermic syringes and she's got them stuck all in her arms, thrashing around in this pit, trying to get out. I don't know how they did the special effects because it wasn't digital. I don't know if they were glued to her or stabbed or what, but it was definitely tough to watch.

In what format does a picture arrive for you to score?

These days the picture usually comes to me as a QuickTime movie, usually in h.264 format, and goes into the video slave machine, which is slaved to MIDI Time Code coming from the Logic machine. This video slave computer is running software from Non Lethal Applications, which I helped to design and test.

To what degree do you record acoustic musicians, as opposed to generating all the sounds yourself?

It's about eighty/twenty in my favor. I generally play almost everything on my scores, unless there are orchestral instruments involved. Drums were my first instrument, and I also play guitar just well enough to get into trouble, so I can cover a lot of ground right here at my place. Besides the keyboards, synths, and wacky electronics, I use the Haken Continuum to give me a more organic control over samples and software instruments, so I can take a fairly simple sample-based instrument and give it real-time inflection and some semblance of humanity.

Do you have specific types of sounds you reach for in modeled instruments versus sampled ones? Do you have any go-to ones, and any stories that illustrate why you choose those?

Despite my history with analog synthesizers and synths in general, these days it seems like those instruments are playing a smaller part in work I'm doing for film and TV. It's 30 years now I've been moving the filter cutoff knob, and after a while, I'm not going to say the thrill is gone, but my thirst for new sounds has led me in other directions. I use a lot of bowed metal instruments, like waterphones. And bits of strap metal that can be played with a bow or stroked with a rubber ball to be ethereal but still organic. It's not R2D2. It's not bleeps and bloops.

There's one amazing musician, who I was fortunate to work with: Chas Smith, a pedal steel expert, metal sculptor, and fabricator. He builds the most amazing sculptures, which are musical instruments, using exotic metals like titanium and other aerospace materials that he plays with bows and with mallets. I was able to hook up with him before I did the first *Saw* movie and was able to record some of his instruments in those movies. Obviously I process them a lot once they've been recorded. But having the original DNA of the sound come from an acoustic place is less distracting in the context of a movie score than having some sawtooth waveform that might pull the viewer out of the picture. In terms of modeling type of instruments, I've got to give a shout out to these instruments made by Line 6—Line 6 Variax guitars, which I just love. By manipulating them in the editing software and playing the instrument either with a violin bow or an E-bow, you can create sounds that sure don't sound like a guitar anymore!

In listening to your work, I drew a comparison between the space you leave in your compositions and contemporary classical minimalist composers such as Arvo Part and John Adams. Have they had any influence on your compositions or your process?

I'm not schooled in some of those composers' work; I didn't study them in college. But that's the kind of thing that I prefer and those are the simplistic forms that have some space in between them and room for the story. Obviously if you're scoring for picture there's dialog, there's action. To me, I don't want to clutter up the listener with too much musical data to interpret. I prefer maximum minimalism. I just want to see the form. I think that definitely is a part of how I approach compositionally too.

I'd like to speak with you about your work on *Wayward Pines*, *American Horror Story*, for which you wrote the theme, and the *Saw* series. What were the general thematic differences in how you approached *Wayward Pines* versus for instance, a *Saw* film?

I tend to categorize sounds and musical phrases as either "indoors," "outdoors," or "inside your head"—so big, epic drums and large string sections sound "outdoors" to me, while more processed, murky tones sound "indoors," and things like dry guitar feedback and glitchy electronics sound like they're happening "inside your head." With a Saw film, most of the stuff was "indoors" because the action was all taking place inside claustrophobic spaces like dungeons, trap rooms, that destroyed bathroom in the first movie, etc. For *Wayward Pines*, some of the score wanted to sound like it was happening inside the main character's head, as he's recovering from a traumatic brain injury, so in those scenes there was lots of dry guitar feedback, little glitchy electronics, processed orchestral atonal stuff. Then in the outdoor sections, I unleashed the larger string sections, war drums, and other sounds. Oftentimes, I'll take my lead from the character's journey and if they're in an unhealthy state then I'll add more "wrong" notes, clashing harmonies, and do things like modulate the root notes... it just feels right to follow the character's state of mind down and down and down.

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~ Jack Douglas
Aerosmith, John Lennon, Patti Smith, Cheap Trick.

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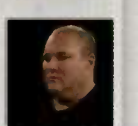
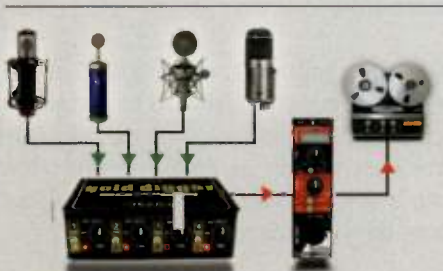
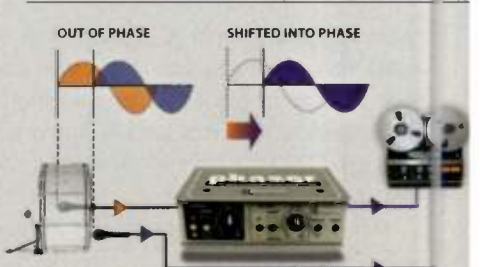


"The Phazer is incredibly easy to use - the results are nothing short of dramatic."
~ Jay Baumgardner
Evanescence, Godsmack, POD, Papa Roach.





Is there one synthesizer or virtual instrument that you would take with you if you were stranded on a desert island?

Besides obvious samples like EXS24 and Kontakt, I'd have to give it to Omnisphere 2, which is ridiculously full featured. I'm still just scratching the surface, but it's huge and I love it; it's so deep and sounds so good that I doubt that I'll ever get to the bottom of that one, it's really, really good.

I'd like to talk about your relationship with Moog—specifically, that you appeared in the Bob Moog documentary and composed a piece for the film.

I had always been a huge fan of Bob Moog, having owned a variety of his instruments over the years. I remember going to NAMM and seeing Bob at his booth—the tiny little booth at the time. This was before Moog exploded into the level that they're at now. It was just three or four people and there's Bob Moog standing there giving demonstrations of his Moogerfooger pedals and stuff. It was so out of character with the rest of the stuff you see at a NAMM trade show, which is, you know, big giant booths from Roland and Korg etc., and just sort of industry functionaries. I remember thinking, "Here's the village toymaker and he's still manning his little toy shop." When I got to know the man, because I had some involvement with him in my years in Nine Inch Nails getting synths and Theremins from them, I realized he really was a unique character. He thought creative people were like antennas and their receivers were tuned into the frequency of creativity and they were just receiving ideas that were beamed in from the galaxy. He had a very cosmic and abstract view of art and creativity and I remember thinking, "Somebody needs to make a movie about this guy. But I'm not a filmmaker." I soon found out that such a movie was taking place. I can't remember how I first got in touch with Ryan Page and Hans Fjellestad, who did the movie, but I offered my involvement and help. We filmed some of the documentary at my old house up in Hollywood. I composed a song that's used in the movie. I was just happy to contribute in any way I could because he was such a unique and fantastic force in the industry. It's very gratifying to see the success Moog are having. Between their products, the Bob Moog Foundation, and MoogFest, it's a hugely warm feeling to know that he wasn't just an oddball who drifted off into obscurity, but his legacy is growing even after his death.

Any words of wisdom for up-and-coming composers and songwriters who want to get into film and television scoring—in terms of creative process and also the sorts of pieces of gear they should look to as staple tools?

These days, with a copy of Logic and just the included instruments and plug-ins, that's 90 percent. You're 90 percent of the way there. In fact, all of the Saw movies and all the TV series that I've done were done just using Logic and the included instruments and plug-ins. I used Omnisphere maybe 10 times out of 100, just for one little sound here and there. Ninety nine percent of all the sounds that I've ever put into a movie or a TV show have come from EXS24, which comes included for free with Logic. For $200, you can't go wrong using that as a starting point. Then as you discover limitations, you can expand.

What's next for you?

I'm looking at a couple of TV series for this season, and possibly a movie. I won't know about those for a couple more weeks. But, more of the same. I like doing scary movies. I like doing anything where characters are under stress and in trouble. Those seem to be the kind of movies that my musical style and my sound design style work best with, so I'm quite happy to have found a niche in that world, and I think it's a good place to be.

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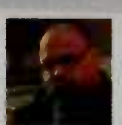

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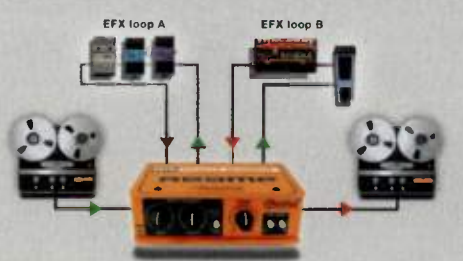
~ Vance Powell
The White Stipes, Radiohead, Kings of Leon, Buddy Guy.



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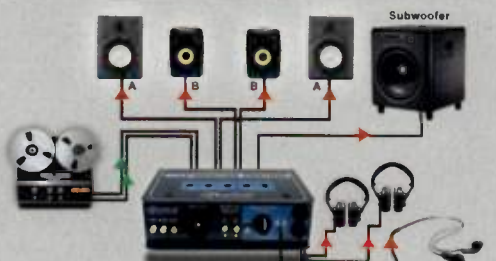
Alison Krauss, T-Bone Burnett.



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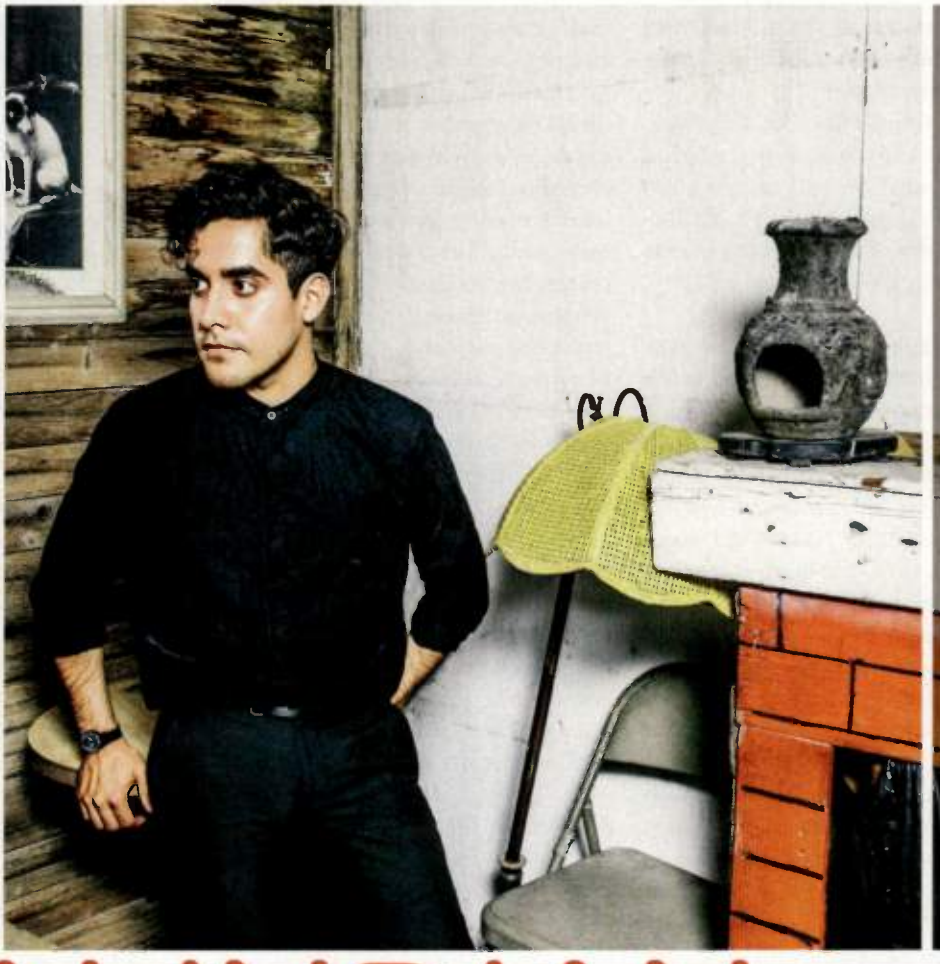

NEON INDIAN

For *VEGA INTL. Night School*, Alan Palombo worked to create a collage album that "plays genres like an instrument"

BY KEN MICALLEF

Though Neon Indian majordomo Alan Palomo talks film school and Tarantino when speaking with *NPR*, music geeks will quickly understand what the twenty-something's third album, *VEGA INTL. Night School* (Mom + Pop), is all about. Recalling a tongue-in-cheek splice-merging Scritti Politti, Pet Shop Boys, and a young Prince, *VEGA INTL. Night School* is the perfect "chillwave" party record that time forgot. Palomo's clever use of irony informs his effects-laden miracle pop with picture-perfect '80s snapshots, from Sade-sleazy saxophone solos and chorus-heavy guitar squalls to a collection of super-vintage hardware synthesizers providing both freaky psychedelic color and nostalgic buzz. Though confessing a debt to "Balearic" and "Belgian Beat" styles, *VEGA INTL. Night School* is as old school as an '80s-themed episode of *Nick at Nite*—and more enjoyable.

Composed and recorded in a cabin aboard a cruise ship, DFA's Plantain Recording Studio in New York, Pure X's practice space in Austin, and engineer Ben Allen's studio in Atlanta, and mixed in Brooklyn with Alex Epton (currently of XXXchange and formerly of Spank Rock), *VEGA INTL. Night School* was created entirely in the box, using Ableton Live and a bevy of classic synthesizers and drum machines.

Quoted as describing his first album, *Psychic Chasms*, as "being surprised by the instrument," and his sophomore effort, *Era Extraña*, as "trying to turn the tables and surprise the instrument," Palomo explains that *VEGA INTL. Night School* is about "having a symbiotic relationship *with* the instrument. On the first two records I wouldn't know what I was doing and then suddenly I'd hit a button and something cool would happen; that would be the basis for a new song. Now I'm going to get the results that I want out of the instrument. I finally have enough control and understanding that I can make the instruments do some pretty complex things, and that is satisfying."

And master the instruments he has, even building his own DIY synth, a Bleep Labs PAL1980X, which he used on his latest effort alongside such vintage behemoths as a Moog Minimoog Voyager, E-Mu Emulator II, Korg M1, and Korg PS-3100.

"The Korg M1 is more synonymous with early '90s house, those ubiquitous piano and organ sounds," Palomo says. "The Moog is clunky, but beautiful; the factory had to build a little lock panel function for it because the parameters would arbitrarily change because of the power supply. So if you're making a patch and you step away for a couple minutes, one of the oscillators might go wildly out of tune and create a completely different wave shape. I would make the patch as quickly as possible, lock the panel, and then record and try to finish the song that day 'cause once I turned it off there was a 50/50 chance that the patch would change. I also used the Korg PS-3100; it's the closest thing I've heard to modular polyphony. It sounds like a lot of Krautrock records; it's basically a polyphonic version of the MS20, which is why I gravitated to it. It sounds very ethereal, like Ash Ra Tempel."

VEGA INTL.'s highlights include the Ray Parker-sounding "Annie," the sample-stuffed day-glow hypnosis of "Smut!," the guitar hook/irresistible melodic goodness of "Dear Skorpio Magazine," and the greatest songs that Duran Duran never wrote: "Slumlord" and "Slumlord's Re-lease."

"The intent was to create a collage record that plays genres like an instrument," Palomo explains. "One where you could have these changes in non-sequiturs that happened from one section to the next that played with genre. They take you out of the song to slowly create some tangential shift into something that would be an entirely different palette."

In describing *VEGA INTL.* Palomo happily spills the beans regarding the various tricks of his trade, as with the distorted, watery guitar solo of epic *American Gigolo*-worthy sad song, "Baby's Eyes."

"There's this Korg MS20 trick where you can run a guitar or any signal into its external input processor," Palomo divulges. "It takes the velocity and the pitch of whatever you're feeding into it and applies it so it's triggering both the envelope and the pitch. The envelope is controlling the filter so the harder we played the guitar the more the filter would open up and squelch. The guitar solo on 'Baby Eyes' felt too perfect as far as psych-rock sensibilities were concerned. So we un-muted the MS20 channel and it sounded insane so we blended the two. It's hard to get those really expressive aspects when you're just opening and closing a gate on an individual key. When you can combine the player's sensibility with that approach then you really get a unique performance."

Palomo doesn't use soft synths and he shies away from plug-ins, but he does admit to the occasional Soundtoys fetish. "There are plug-ins I like for processing," he says. "I generally use an Eventide H3000 and other preamps, such as a Roland VP-330 Vocoder. But at DFA studios they have this ethos: Take the best things about old-style recording and integrate it with the tricks of modern production to get this hybrid

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"I like modulating my voice to the extent that it sounds like multiple people—that's the sweet spot, just enough that it creates that roomy element."
–ALAN PALOMO

result that is either/or. That's more interesting to me than a revivalist band that only wants to sound like 1982. I want to be able to touch on that then take you out again. That is more akin to records that I really love from J Dilla or Negativeland, artists who define themselves more as collage artists than the narrative of a band going into the studio to write a record.

"I like Soundtoys' Decimort for bit crushing," Palomo reveals. "It overdrives in a nice way. If I was mixing a band like a rock band, I'd use the real thing for echo, but once you're in this complex soup of stuff I don't find the need to painstakingly pursue this one effect. The context is not going to get showcased for its true character, anyway. That's when I use Echoboy. I've done the Pepsi challenge between it and the H3000. They all have their things they do well."

Palomo ran a Roland Juno 6 through a Moog Moogerfooger on *Era Extraña*, and he continues to play hardware rope-a-dope tricks on *VEGA INTL. Night School*.

"The Eventide H3000 offers a pretty complex set of algorithms," Palomo says. "Ben Allen came up with this trick using it and a Korg Kaoss Pad. The 3000 isn't an intuitive box to operate but it's pretty deep as far as its routing capabilities go. We assigned these parameters of delay time and feedback to the Kaoss Pad to run like channels, doing aux sends from the song into this one component. The guitar in 'Annie' gets mangled by this Eventide trick where the feedback is blaring, then it closes up. Those were literally performance takes, not automation on the Ableton screen. I always find it awesome when you can fine-tune a trick from an older piece of gear. I like to bust out the Roland RE501 too, but I only really use its chorus and reverb. It makes really spooky sounds if something sounds too plain. And we had a great Yamaha CP70 electric grand piano at Midnight Sun Studio in Brooklyn. The CP70 has character but if I wanted it to sound more haunted, I'd glaze everything in chorus. I become obsessed with chorus. I've got various rack-mounted stuff and Ibanez chorus pedals. The Electro Harmonix Poly Chorus is fantastic too, and the Moog MF-108M Cluster Flux. The 108 mangles and overdrives the signal when you need that boost."

Like much of *VEGA INTL.*, drum sounds are mixed tightly within the album's "complex soup." Designed to resemble the sound of an '80s car radio, the songs' individual components sacrifice clarity for consistency. Palomo followed suit, mixing and matching analog rhythm machines to achieve ultimate character.

"We used a Sequential Circuits DrumTraks on some songs," Palomo states. "It sounds best when you layer the kick with the snare; it's got this very contained, tightly-wound sound that doesn't require much compression since it shoots out of the box that way. We also played around with the Roland TR-909. And I have this fantastic old Russian-made Formanta UDS synth; it's a rip-off of an old Simmons brain. It has great preprogrammed rhythms, such as 'waltz' or 'disco,' but what a Russian thinks that was in the '80s. Polka! It's got these bizarre rhythms; I use its synth modules as white-noise hi-hats. It came with an oscillator, a white noise generator, and a filter so it was easy to just use its different channels. It's super cheap and has more character than a lot of gear, and these bizarre built-in rhythms."

Palomo's brother (who goes oddly unnamed in multiple interviews) played bass on the album, working both electric stringed and fingered synth versions. "We have an old Roland GR77B Bass Guitar Synthesizer which has an output but also a MIDI pickup that you assign to this brain that basically sounds like a Roland Juno 6," Palomo recalls. "The filters in the envelope are all tied into the MIDI pickup. It's one thing to play the part on the keys; it's another thing to listen to the percussive multi-harmonic components he will incorporate and just really get more of the synth sound from it but still feel like it's in the spirit of something he would do on bass."

And while Palomo painstakingly pursued exacting effects with ancient hardware throughout *VEGA INTL. Night School*, when it came to his own vocals, which fill the album, he was oddly casual in his tracking approach, barely remembering his primary microphone, a Neumann U67.

"The chain varies from song to song: a UAD 610 preamp usually on vocals, and I used the Eventide H3000, again, because it has a lot of character," he explains. "I never like the sound of my naked voice; I like to crunch it and add layers. After the UAD 610, the signal goes to a Symetrics 501 Compressor/Limiter, invariably. I always add some spring reverb and a touch of chorus. I like modulating my voice to the extent that it sounds like multiple people—that's the sweet spot, just enough that it creates that roomy element. For reverb, I like the Lexicon PCM80 which is great at creating more of a room reverb sound, not a trail or something dramatic. But the PCM80 gives the song a time and space. And that's where the more cinematic elements crawl in. I love songs like the Rolling Stones' 'Emotional Rescue' and Queen's 'Crazy Little Thing Called Love,' where you can hear the room they're recording in. It just sounds like this subterranean sewer space and that to me is infinitely fascinating. That's where the stories are."

DIY has been a big part of Palomo's process, his experience building Bleep Lab's PAL1980x affecting his musicianship both on the road and in the studio. "I was always a fan of Bleep Lab's Thingamagoop and all their different noisemaker instruments," he recalls. "I wanted that synth to embody the aesthetic of the last record. That really opened up a few things for me in terms of learning DIY electronics and other instruments and having dynamic variables within the song. This time around it wasn't as much about that as it was getting controlled performances and Frankenstein-ing them together.

"Understanding more of the basic components

that comprise the instrument will help you when things break but also give you a better understanding of the sound of the machine you're after," Palomo advises. "You'll better understand what the individual ingredients are and you'll be able to isolate them to apply that one aesthetic to any instrument.

"I have a small Doepfer Eurorack kit but it's limiting 'cause it doesn't do polyphony very well," he adds. "It's very challenging to figure out a pragmatic polyphonic setup on Eurorack; it's more about effects processing and sequencing. The module I use the most is the Intellijel Metropolis module, which is really great, it's the most dynamic hardware sequencer I've ever played around on. It sounds like Model 500 and Detroit techno. It lets you set individual scales you're operating in and it lets you silence and repeat certain steps up to eight times. The one problem with using the old Korg SQ10 or MS20 is you get that goofy sequencer riff syndrome that doesn't let you break outside of wanting to play every note. It gets something that sounds like it's in no particular key which is dope if you want to get all Paul McCartney 'Temporary Secretary' with it. But I can't write a song with that. The Metropolis aids me as a songwriting tool, which is what I was after with Eurorack. I don't want to make bug sounds. I already know how to do that. I want the thing that will help me bring a song to that next level."

Palomo offers solid advice to anyone looking to delve into their own DIY Stew: Start simple and as always, do it old school.

"Start with Doepfer Eurorack," he says, "then you'll get into a mindset where you're not looking at the instrument as a whole but for its individual components. It's very useful when you're have to make those informed decisions. Eurorack has blown up; it's become the most ubiquitous language in DIY. It occupies little space; it's not the clunky modulars of the '70s. And a lot of manufacturers make cool stuff for it. I like the Roland SH101, I just wish it had a different filter on it or I wish the envelopes were tighter on this Voyager 8. I find myself in that position often, but if you know enough about the instrument you can rig it in a way where you can apply things from other gear you like."

Though *VEGA INTL. Night School* trades in song genres, old synthesizers, and effects like a stand-up comic teaching 1980s history through a series of ironic bits, Alan Palomo insists his music is from the heart, not from the intellect.

"I never want the irony to outweigh the sincerity of making a fun, interesting record with some themes and narratives that are very close to me," Palomo says. "Consider Tarantino's movies; I like that he plays with form. He will make a genre film but he'll deconstruct what that genre even is. That's an example of post-modern filmmaking. You're aware of the reference, but nothing is original because everything has been done; everything is a variation on some concept. But you can't exist in a vacuum. I like embracing the idea that listeners might catch a reference or that they get inspired by something. Instead of concealing that, I would rather celebrate it because who fucking cares? It's 2015. There's 1,000 years of pop music behind us." ■

KILL THE NOISE
OCCULT CLASSIC
OWSLA

In its first decade, dubstep transitioned from a forum for moody production to a template centered on wobble bass and distorted drops. On his 10-track post-dubstep debut album producer Jake Stanczak brings EDM festival-pleasing intensity, expanding his endorphin-rush arrangements to include elements of electro house, drum 'n' bass, dancehall, and trap bangers. Stanczak minimizes sound design fatigue, however, by effortlessly swinging between metallic and melodic alongside the chopped samples and petulant synths, while also peppering in humor.
TONY WARE

FOOD
THIS IS NOT A MIRACLE
ECM

Saxophonist Iain Bellamy may provide the warm and fuzzy factor in Food's bittersweet ambient palettes, but it's fellow members Thomas Stronen's drums, electronics, and Fender Rhodes and Christian Fennesz's guitar and electronics that push their strange sounds over the edge. An album of brooding, chilling surreal-scapes that recall some lost journey over an airless Irish bog, *This Is Not* . . . is all percussive rattles, electronic warbles, and Bellamy's soulful sax–horror-show central.
KEN MICALLEF

DAVID WAX MUSEUM
GUEST HOUSE
THIRTY TIGERS

It already was challenging to pigeonhole David Wax's group. Tex-Mex, folk, blues, rock 'n' roll—this band always has a lot going on. But this record is altogether different, with bursts of processed vocals and airy and weird synth textures bending the familiar accordions, guitars, fiddles, horns, and hand claps on several songs. But whether they keep the music raw or blow those production values up, DWM takes a joyous approach to music that speaks to the heart.
BARBARA SCHULTZ

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The bespoke concept is amplified on James Lavelle of Unkle's contribution to the rejumpstarted legendary Global Underground series *Naples #GU41*. The double-disc collection is Unkle-heavy with exclusive edits of Unkle tracks plus Unkle remixes of Lana Del Rey, Noel Gallagher, London Grammar, and Jagwar Ma, among others. Unkle signatures—hollow tones, spooky vibes, and magnetic rhythms—flow smoothly. This custom compilation doesn't sacrifice cohesion for diversity, yet it avoids retreads and predictability. A definite collector's item.
LILY MOAYERI

BARBARA MORGENSTERN
DOPPELSTERN
MONIKA ENTERPRISE

A *doppelstern*, or binary star, is two luminaries orbiting a common center of mass, but on this album of international collaborations Berlin's Barbara Morgenstern proves the greater force. Morgenstern has spent nearly 20 years exploring the melodic side of Teutonic electro-pop and dubby microedits, anchoring them around delicate piano ballads. No matter her neo-classical or laptop production partner, Morgenstern centers the tender drones, murky filters, fragile synths, glimmering chamber pop, and dramatic baroque chorales into coherent, compelling trajectories
TONY WARE

JOJO MAYER & NERVE
GHOSTS OF TOMORROW
SELF-RELEASED

Manhattan's instrumental drum and bass innovators Nerve return with their third album, embracing a future where "creativity and improvisation will become the new strategy for cultural evolution." Though Nerve think big, there's no denying the buzzing bass worm holes, tweaked up/trilling snare sounds, and jerky programming of yesterday's jungle currency. But perhaps embracing the past is key to realizing the future; amalgamation conserves capital, "smart robots" do the thinking.
KEN MICALLEF

WAINWRIGHT SISTERS
SONGS IN THE DARK
PIAS RECORDINGS

Two of Loudon Wainwright III's talented offspring, Martha Wainwright (Kate McGarrigle's daughter) and Lucy Wainwright Roche (Suzzy Roche's), have recorded a tender and sometimes spooky collection of western-style folk ballads and lullabies. The debut album by the Wainwright Sisters includes songs by Simon and Garfunkel and Jimmie Rodgers as well as by their famous parents, in spare acoustic arrangements. The sisters' vocal harmonies are inspiring in their beauty, whether evoking sweetness and light, or darkness and mystery.
BARBARA SCHULTZ

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Fig. 1. The Launchpad MkII, like the Launchpad Pro, adds full RGB backlit pads to match the color of your Session View clips exactly in Ableton Live 9.

NOVATION

Launchpad And Launchpad Pro

THE RGB TWO ARE THE DROIDS YOU'RE LOOKING FOR

BY MARKKUS ROVITO

Novation's original Launchpad helped popularize the 8x8 pad grid, and it became a classic for Ableton Live users who performed with the software's iconic Session view for multiple clip launching. Since then, Ableton itself unleashed the deluxe Push controller, with all the bells and whistles for controlling Live from a single device. Now Novation is back with a product-line refresh to make you fall in love with the Launchpad all over again.

Two new devices, the Launchpad MkII (aka the Launchpad RGB) and the Launchpad Pro, add RGB colored pads so they can exactly match the colors of your Session view clips in Live 9. (The older devices only had red, yellow, and green backlit pads.) They are also USB class-compliant, making them driverless for computer and iOS use. Finally, instead of having four rubber feet, their entire bottom panels are layered with rubber, so they really don't budge from a tabletop when you're working the pads.

That's about all the news for the Launchpad MkII, which is a nice improvement over the original for the same price (see Figure 1). The real revelation here, though, is the Launchpad Pro, which adds velocity-sensitive pads with Aftertouch, MIDI I/O with external power for controlling hardware gear, Note mode for playing instruments using a chromatic scale, two rows of highly valuable function buttons for Live 9, and lots of other details under the hood—for about half the price of Ableton's Push (see Figure 2).

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

STRENGTHS

Driverless operation. iOS compatibility. Full RGB LEDs. Rubber bottom surface. Velocity-sensitive pads with Aftertouch (Launchpad Pro). New Note mode (Launchpad Pro). External MIDI use added (Launchpad Pro). Open firmware API (Launchpad Pro).

LIMITATIONS

Instrument Note mode limited to C major chromatic scale; External MIDI use requires included cable adapters (Launchpad Pro). External power required to use iOS.

Novation Launchpad Pro
$299 street
Launchpad MK2 $169 street
novationmusic.com

LIVE AND DIRECT

Both the Launchpad MkII and Launchpad Pro come with Ableton Live Lite 9, so you can get started immediately. I tested both with Live 9 Suite: With the units powered on, launching Live 9 adds the Launchpads as Control Surfaces in Live's MIDI Preferences right away and adds the blue outline around Live's Session view tracks, which shows you the clips that are currently active on the Launchpad. You can move through those clips with the arrow keys on the hardware.

The Launchpad Pro has new Live mode keys at the top of the device: Session, Note, Device, and User. The Session mode lets you launch and stop clips and clip scenes just like the older Launchpads, except now the pad colors exactly match the colors on your screen. (When using USB power, the Launchpad Pro's pads are slightly dimmer then when you use the included AC adapter.)

In the Live Note mode, the Launchpad Pro detects whether you're using a Live Drum Rack or other type of instrument. For Drum Racks, you get a yellow pad for every Drum Rack slot with a sample in it—64 at a time—and you can scroll up and down to cover all 128 potential Drum Rack slots. For other instruments, Note mode lays out a chromatic scale of notes, with the root notes colored pink, the other notes in the scale colored blue; notes outside the scale are dark but still playable. The problem here is that you only get a C major chromatic scale to play, whereas other controllers with scale assist modes, such as the Push or the Na-

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Fig. 2. The Launchpad Pro's pads now have velocity sensitivity and Aftertouch. New function buttons make recording and mixing in Ableton Live 9 much more mouse-free.

tive Instruments Kontrol S, offer all kinds of scales and keys. But since you're using Live, one option is to drop the Pitch MIDI Effect on your track and dial in a scale that's stepped up or down from C.

The Live Device mode treats the Launchpad Pro's eight pad columns as faders for either the eight macro controls of a Live device on your current track, or for eight of the top device parameters when faders are not present. The left/right arrow keys shift focus to different devices in an instrument or effect rack.

I find these faders most useful when macro controls are assigned, so you know exactly what you're going to get with them. Also, with the Launchpad Pro's new velocity-sensitive pads, the fader moves are timed according to the velocity of the pad press. So, if you're going from a zero value to the highest value, pressing the top pad of a column with high velocity executes the fade very fast—almost instantly. Pressing the pad at lower velocities progressively slows down the fade. That's a welcome addition, because the older Launchpads were prone to jarringly stepped fades since there are only eight segments to split the values from low to high. And these progressive fades apply to every case that the Launchpad Pro's pad columns are used as faders, whether in Live, other software, or for controlling external MIDI gear.

The final Live mode, User, is for mapping your own controls. However, if you use it in its default setup, it provides an alternative way to play instrument notes (mapped chromatically in ascending rows of four).

The new Note mode already goes a long way toward making the Launchpad Pro a next-level instrument for composing and playing music in Live, but the Pro's two new rows of function and mixer buttons for Live go several steps further. On the left side, a set of recording/composition assists let you turn the metronome on/off; undo/redo; delete clips, scenes, or drum notes; quantize/record quantize; duplicate clips; double clip length; and start recording. Across the bottom, mixer buttons let you select tracks, record-arm tracks, mute or solo tracks, stop clips or clip scenes, and control track volume, panning, and effect-send amounts. All of those new functions, along with the Note and Session modes, mean that you can do a huge amount of recording in Live without resorting to the mouse. It's easy to start by making a simple clip on a track, duplicate it, add to it, and then repeat until you have a whole composition's worth of clips in each track.

MO' MIDI, MO' MIDI, MO' MIDI

Clearly, Ableton Live users are the target audience here, but many of those people also bounce around between software apps and work with hardware gear, and the Launchpad Pro has those cats covered, as well. It comes with 1/8"-to-MIDI DIN adapter cables for the minijack MIDI I/O ports, and it works in several MIDI modes for external gear or MIDI software (see Figure 3).

Holding the Setup button brings up color-coded options to help you quickly jump between using the Launchpad Pro for Live or for other purposes. The Setup page's bottom two pad rows represent MIDI channels 1-16, and the top row selects different layouts to use the hardware as a standalone MIDI controller: Note, Drum, Fader and Programmer. The Note and Drum layouts are quite similar to the Live Note mode—a chromatic scale for playing instruments and a 64-pad drum grid, respectively. The Fader layout turns the columns into eight faders, while the Programmer layout lets advanced users design their own firmware for the Launchpad Pro, though it requires knowledge of the Programmer's Reference Guide.

The Setup page is where you set Aftertouch to Off, Channel, or Polyphonic (the last requires compatible software or equipment); the Aftertouch threshold to one of three levels; and the velocity sensitivity to one of three levels or off (full velocity).

CLEARED FOR TAKEOFF

The Launchpad Pro strikes a near-perfect balance between the smaller and less featured Launchpad MkII and the deluxe Ableton Push. It doesn't have the displays, encoders, or touchstrip of the Push, nor does it have certain features of the Push like a step sequencer, arpeggiator, or scale and key selection for note input. I can't wait for some enterprising programmers to take advantage of Novation's open firmware API to add some of those software features. But to its benefit, the Launchpad Pro also doesn't have the same size, weight, and price of the Push.

Despite two new rows of function buttons, the Launchpad Pro is still very compact and lightweight, yet its layout doesn't feel cramped, and it's definitely robust enough for road use. In fact, it is actually the ideal size, weight, and build for taking to gigs, on trips, or to a friend's studio in a modest-sized laptop bag.

It also performed admirably. The only problems I had were occasional hardware freezes when working with Ableton Drum Racks, but a firmware refresh seemed to resolve that entirely.

While the flashiest updates to the Launchpad Pro—the RGB lights, as well as the ability to program cool light shows using incoming MIDI notes—look great, I was most impressed with the progression from the Launchpad as mostly a clip-launching, mixing, and drum-playback device to the Launchpad Pro being an extremely useful tool for all of the above plus composing and arranging instrument parts. The addition of velocity sensitivity, Aftertouch, Note mode, and many more dedicated Ableton Live function buttons make the Launchpad Pro a Swiss Army Knife for Live 9 production *and* performance while maintaining its portability and affordability.

When you factor in the near certainty that it will only get better with added functionality from the user community, Launchpad Pro looks like a sure winner for Live 9 aficionados. ■

Fig. 3. Using external power, the Launchpad Pro can control external MIDI gear without the use of a computer. (Power and MIDI adapter cables are included.)

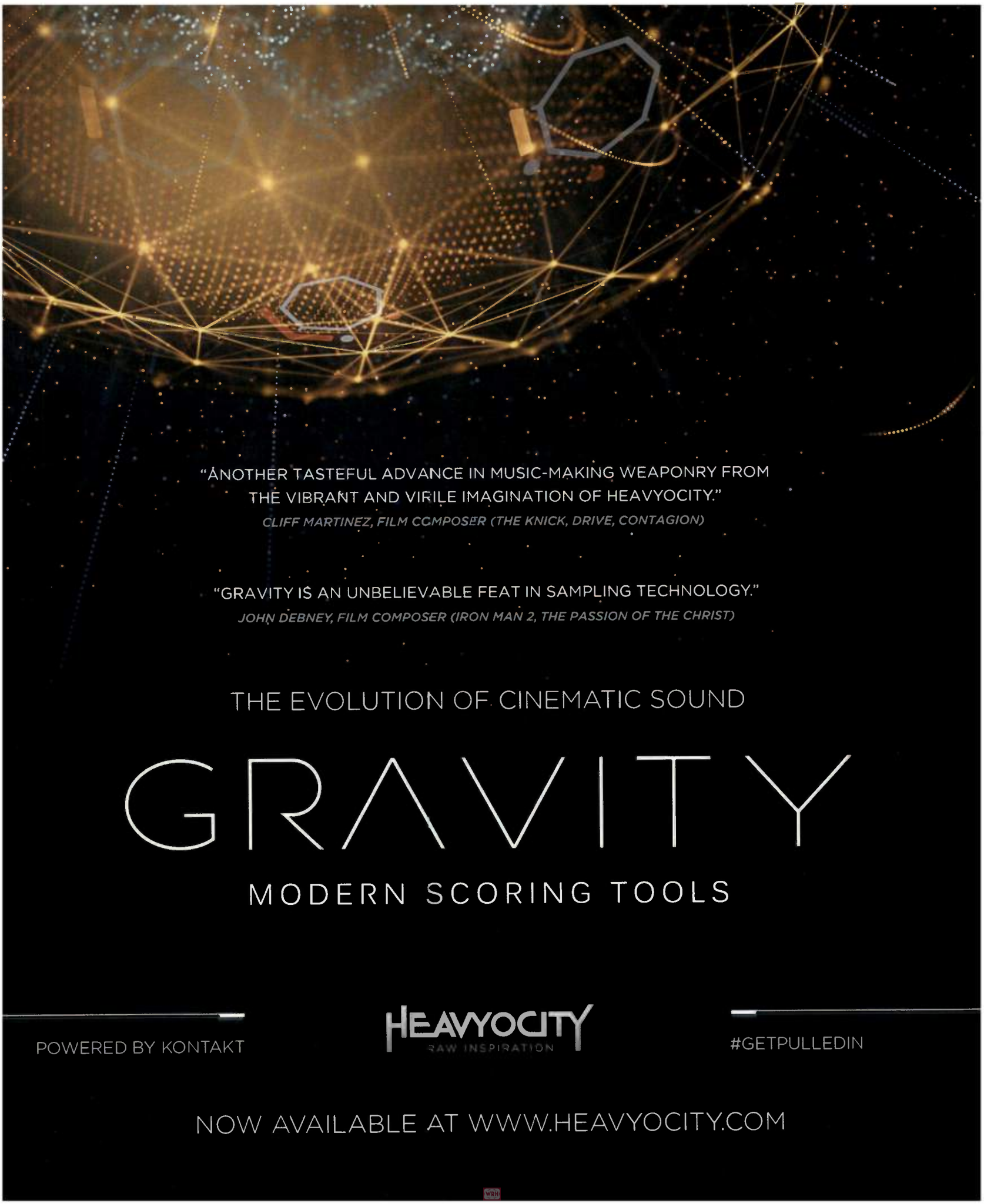
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Fig. 1. All the iD14's physical controls are available from the top panel.

AUDIENT

iD14

RAISING THE BAR FOR AFFORDABLE USB AUDIO INTERFACES

BY MIKE LEVINE

Mike Levine is a multi-instrumentalist, producer, and music journalist from the New York area.

STRENGTHS

High-quality mic preamps and converters. Excellent-sounding DI. Easy workflow. Eight-step metering. Individual phantom power switches. iD Mixer software. Low-latency cue mix. ScrollControl.

LIMITATIONS

Phantom power requires external power supply. Only one stereo main output for monitors.

$299
audient.com

These days, you might think that a compact USB 2.0 audio interface would hit the market with a resounding yawn, what with all the buzz around units equipped with faster formats such as Thunderbolt and USB 3.0. But the reception for the iD14, a tabletop interface from British console maker Audient, has been anything but sleepy. Because it has preamps like the ones in Audient's consoles and Burr-Brown converters, and is expandable via an optical input, the iD14 offers users a level of quality not usually found in interfaces at this price point (see Figure 1).

AROUND THE UNIT

The iD14 has two input channels, each with an analog mic/line combo input, and similar features to its bigger brother, the iD22 ($599), minus the monitor control functionality. Channel 1 also has a 1/4" instrument input. The rear-panel optical input allows you to connect an external preamp with up to 8 channels of ADAT at 44.1 or 48 kHz, 4 channels of ADAT at 88.2kHz or 96kHz (SMUX), or 2 channels of S/PDIF TOSLINK between 44.1 and 96 kHz.

For outputs, the iD14 is equipped with 1/4" TRS jacks (referred to as Main Loudspeaker Outputs) and a stereo headphone jack. There are input level controls for channels 1 and 2, as well as a 48V phantom power switch for each. Additional channel functions, such as phase reverse and -10dB pad, are available via the free iD Mixer software (Mac/Win), which extends the iD14's capabilities well beyond what's available on the physical unit.

Another key feature is the oversized rotary encoder, which has three Mode buttons below it and can be used for controlling output volume: Press the speaker button and the encoder controls the main outputs; press the headphone icon and it controls the headphone output. Pressing down on the encoder mutes whichever output is selected. When an output is muted, the light underneath its button blinks, making it easy to see what's going on. The front panel also includes 8-step LED ladder meters.

In the middle is the iD Function button, which allows the encoder to mimic the control functions of the scroll wheel on your mouse. Audient calls this ScrollControl mode. Anything in your DAW or other software that your scroll wheel controls, the encoder can control, too. Many DAW and plug-in functions can be controlled by hovering the pointer over a button or slider and then turning the scroll wheel, so it's cool to be able to do it from the iD14's encoder. When you use the iD14 in tandem with the iD14 Mixer software, the iD Function button can also be set to control several other features. I'll go into that more, below.

The iD14 runs via bus power, unless you want to access its phantom power, which requires you to use the included 12V power adapter. So unless you exclusively use the DI or line inputs, or mics other than condensers, you're going to need to plug the iD14 into the AC outlet.

YOUR ID PLEASE

In the iD Mixer software, each input channel has a level control and a pan knob, phase and pad switches, and a Cue section with its own level and

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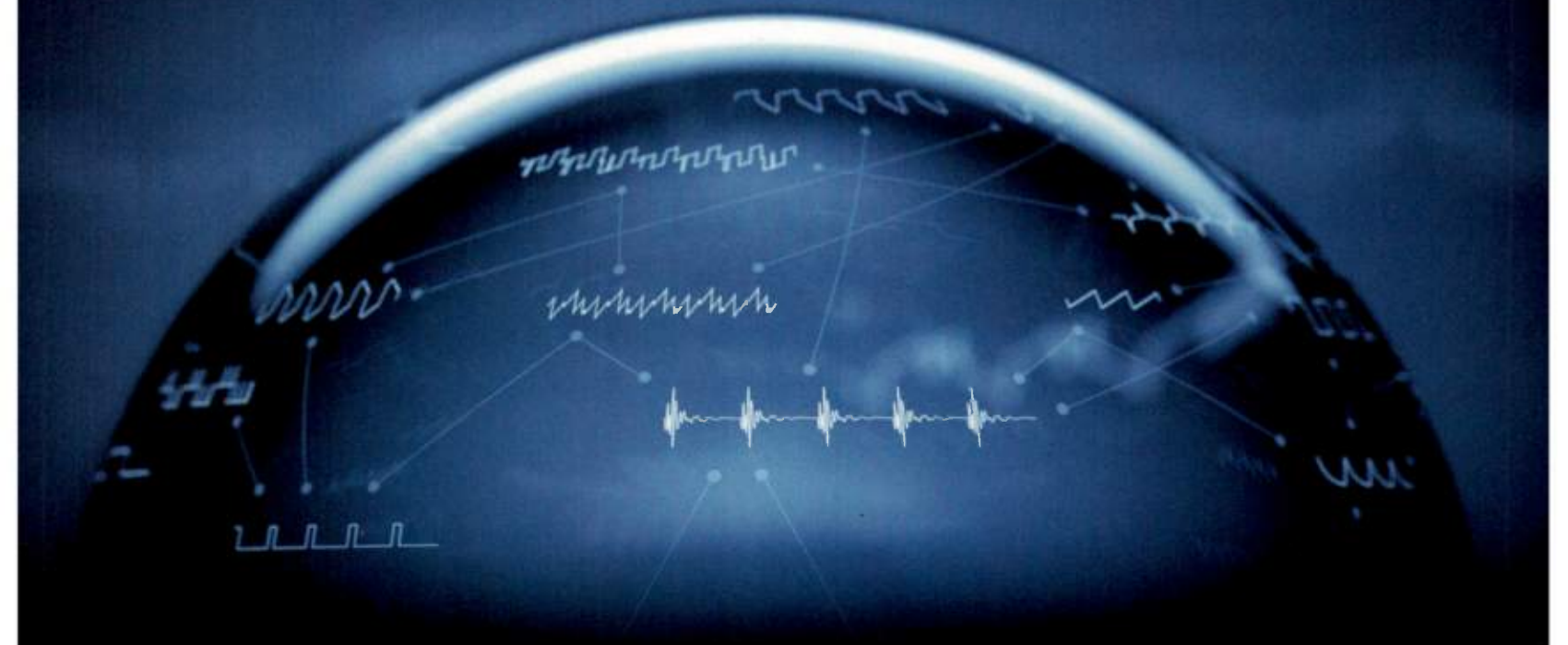

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pan controls. Three mixes are available—Main Mix, Cue Mix, and DAW Mix—and you can route your choice of these to each of the two physical outputs on the interface (main or headphone). The DAW Mix passes the signal directly from your DAW, bypassing the iD software's input-channel volume controls. DAW Mix mode is useful if you're setting up cue mixes from within your DAW, rather than using iD Mixer's excellent low-latency Cue features.

A software talkback system is also included with iD Mixer. But unlike using a hardware console or monitor controller, you have to provide a mic and use one of the input channels for it, so its usefulness is rather limited in a 2-input interface. If you expand the system via the optical input, then it becomes a lot more handy.

The functionality of the iD Button on the top of the unit can be programmed from inside the software. Mono lets you toggle between stereo and mono output to check compatibility. Mono+Polarity cancels the center channel letting you listen to the sides of the mix. Dim drops the level by 15 dB, and Talkback toggles the talkback on and off.

IN THE STUDIO

I used the iD14 in place of my main interface for a couple of months and was impressed with the clean sound of the preamps. The results were consistently good, both for vocal and miked-instrument recording. I was also pleased with the sound of the instrument input, which was crisp and full on the direct guitar and bass tracks I recorded through it.

When I first read about the iD14, I wondered what its performance would be like in terms of latency, considering it was a USB interface rather than a Thunderbolt or FireWire unit. But I was pleasantly surprised by the lack of latency with the iD14. When using the Cue Mix, which takes advantage of the system's low-latency DSP monitoring feature, I could even record my guitar with the buffer set as high as 512, which is very impressive.

Even though I didn't find much need for Scroll-Control, I did take advantage of some of the additional modes available via the iD Function button, such as Mono and Mono+Polarity.

When I needed more inputs, I appreciated the unit's expandability. Audient provided an ASP800 for this review, which I connected to the iD14's optical input to bring my input count up to 10 (see the sidebar below: Add 8 with the ASP800).

So for about $1,000 between both units, you can have 10 channels of Audient mic preamps along with an interface—very impressive. The biggest limitation to the system is the lack of outputs; you only have the main and headphone outs. If you wanted to use more than one set of monitors, you'd need to also get a monitor controller. (I suppose an inelegant workaround would be to feed one pair of speakers from the headphone output using a splitter cable.) Of course, you could always opt for the iD22, which has multiple outputs.

FOURTEEN IS THE TICKET

As a low-cost interface, the iD14 is hard to beat; priced under $300, it ups the ante in terms of quality. And when used in combination with the well-designed iD Mixer software, you get a flexible and full-featured workflow to go along with the impressive sonics. On top of that, the optical jack provides expandability on the input side.

The iD14 is so reasonably priced that it would also make a good portable interface to use with a laptop recording rig. Nice work, Audient. ■

Add 8 with the ASP800

Although you can expand the iD14's input count with any mic preamp offering an optical connector, it works really well with the Audient ASP800 ($799). In addition to eight channels of mic/line combo inputs, 1/4" DI inputs are available for channels 1 and 2, as well as coloration options (see Fig. A).

I would have gladly done without one of those DI jacks if it meant Audient could have fit one of the combo jacks on the front. As it is now, you always have to go to the back of the unit to connect cables to the combo jacks, which, depending on the placement of your rack, might not be so convenient.

Each channel has its own buttons for 48V phantom power, a -10dB pad, and peak and signal indicators. Additionally, channels 1 and 2 include Audient's HMX and Iron tone coloration features, which can be switched into the signal path and adjusted individually on both channels to change the characteristics of the audio.

HMX is a tube-saturation emulation, and its knob changes the balance between Sweet and Thick. Iron, which is a transformer-based circuit, is designed to replicate the "coveted transformer 'zing' of British audio in the 1970s." Its knob lets you dial in Sparkle, Growl, or a combination of the two. Both of these tone circuits are subtle, but are nevertheless audible. I found them to be well suited for character tweaks when recording acoustic guitar, bass guitar, electric guitar, and vocals. Audient says the Iron circuit, in particular, is excellent for drums and other sources with strong transients.

I was pleasantly surprised by how easy it was to get the ASP800 working with the iD14. Other than plugging the optical cable in, the only adjustment I had to make was to set the ASP800 as the clocking source. The additional inputs showed up in the iD Mixer software without any other configuration necessary, and they were fully integrated into the system. The only controls of the ASP800 that I couldn't control using the software were the HMX and Iron circuits.

Fig. A. The ASP800 connects to the iD14's optical input, adding eight input channels (two with DI and coloration features).

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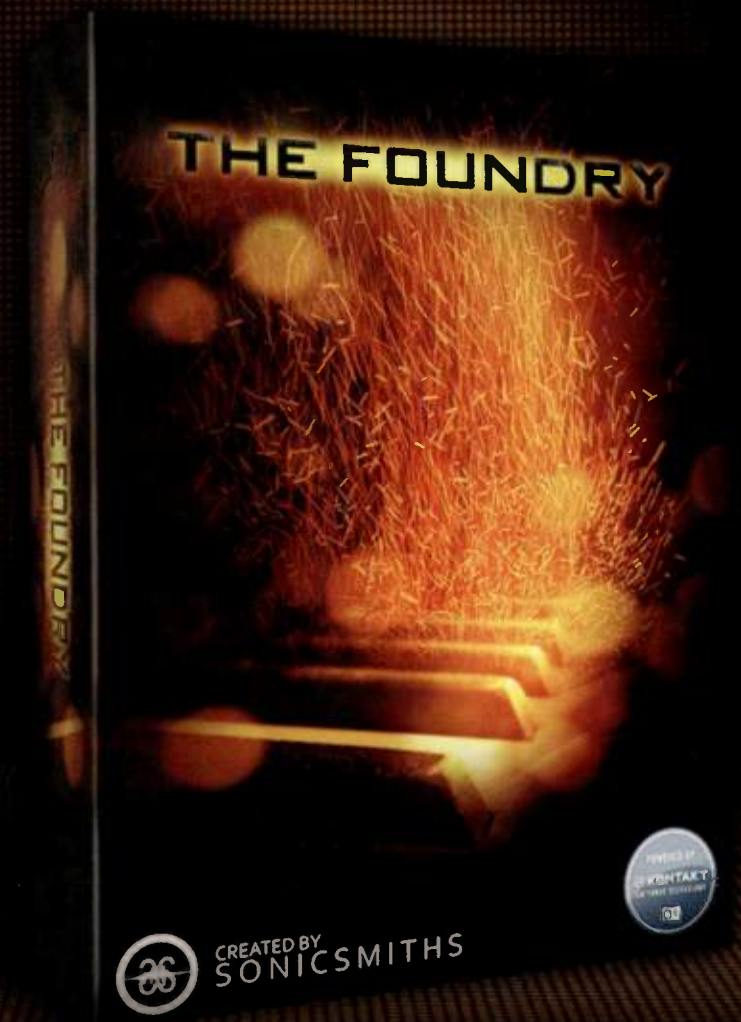

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Fig. 1. The Tascam DR-44WL is a 4-track digital recorder that includes a pair of external mic/line inputs.

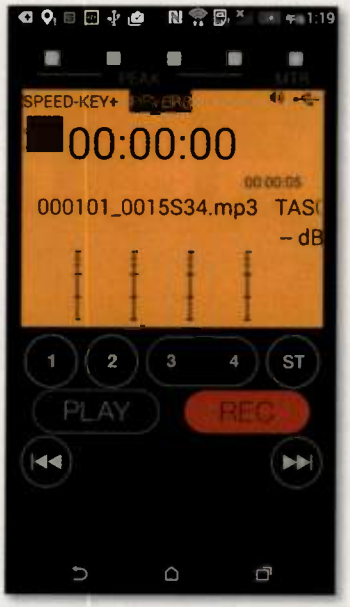

Fig 2. Using the free DR Control app, you can control nearly every aspect of the recorder wirelessly.

TASCAM

DR-44WL

USE YOUR SMARTPHONE TO CONTROL THIS WIFI-ENABLED, 4-TRACK RECORDER

BY GINO ROBAIR

STRENGTHS

WiFi connectivity via free iOS and Android app. Records four tracks. Combo inputs with phantom power. MTR and Dual Record modes. MS Decoder.

LIMITATIONS

Some parameters inaccessible from DR Control.

$249 street
tascam.com

I cannot count the number of times I've been in situations where a portable recorder was set up for a gig or rehearsal but didn't get switched on. With everything else you need to do when preparing to play, it's easy to forget to hit the Record button, even with a simple point-and-shoot product.

That's where Tascam's DR-44WL (Figure 1) has you covered.

Using WiFi and Tascam's DR Control, a free iOS- or Android-compatible app for your smartphone (Figure 2), you can wirelessly access a majority of the recorder's functions from the stage. For example, you can select file format and resolution (16- and 24-bit BWF or WAV, or 32-320K MP3), pick the sampling rate (44.1, 48, and 96kHz), set the record mode, engage the mid/side decoder, select which channels you want to record, and set their levels, drop markers, and start, pause, or stop recording.

Best of all, DR Control just works—quickly. It took only five minutes to get up and running, from downloading the app, through setup and WiFi connection, to recording.

In fact, I preferred using DR Control with the DR-44WL rather than the recorder's own interface. Not because the hardware controls are difficult to navigate: They are very intuitive, and I particularly like the wheel for data entry. It's just that DR Control makes setup a lot easier. And every time you alter a parameter—in the app or on the recorder, itself—the other device will reflect the changes.

But there is much more to like about the DR-44WL. As a 4-channel recorder, it provides built-in mics on top (fixed in a stereo x/y pattern and protected by a roll bar) and a pair of combo jacks at the base. This allows you to use the internal mics at a distance while using spot mics (24V and 48V phantom power provided) or line-level input to capture specific voices or instruments.

You can track four mono files, two stereo files, or a stereo file and two mono files. Like other Tascam recorders, the DR-44WL lets you engage Dual Record mode, which captures two stereo files from the same mic source, one of which is 6 to 12dB lower than the other—perfect for situations with wide dynamics. The recorder also offers MTR mode for non-destructive sound-on-sound-style recording.

As you would expect, the DR-44WL includes a pre-record buffer, so you don't miss the beginning of a song, as well as reverb for the internal and/or external inputs, and a lowcut filter. The recorder has a USB 2.0 HighSpeed port for data transfer, a small built-in speaker, a headphone jack that doubles as a stereo line output, and support for SD, SDHC, and SDXC cards up to 128GB. The DR-44WL can be powered by four AA batteries, USB bus power, or the provided USB AC adapter. The package also includes a pouch for the recorder, a windscreen, a hot-shoe adapter, a USB cable, and a stand adapter/handle.

While the DR-44WL is not the smallest or lightest portable recorder, it fits nicely in the hand and easily supports a pair of mic cables when stand mounted. But most importantly, the sound quality is high and the self-noise is very low. Combined with the recorder's flexibility, this makes the DR-44WL perfect for a variety of pro-level or casual uses, whether you're tracking concerts, rehearsals, and lessons; collecting sound effects; capturing audio while shooting video; or recording interviews. ■

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Performer/artist/producer - Goo Goo Dolls.

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

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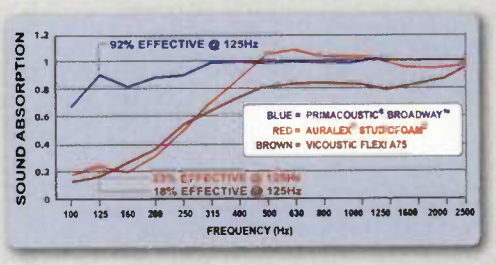

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Two instances of The Foundry loaded into Kontakt 5: The upper screenshot is the default window with the four synth channels and their respective effects settings and randomization buttons to the right. Clicking on the Randomize button opens the AARE window (shown in the lower screenshot).

SONICSMITHS

The Foundry

HAVE FUN CREATING NEW SOUNDS WITH CONTROLLED RANDOMIZATION

BY MARTY CUTLER

Marty Cutler is hard at work on a book for Hal Leonard about digital applications for guitar.

STRENGTHS

Complete or a la carte randomization of patches. Nice selection of waveforms with plenty of animation. Granular and convolution DSP.

LIMITATIONS

Cannot use Kontakt's patch-selection arrows.

$299
sonicsmiths.com

One of the more interesting, albeit imprecise ways to create new synthesizer sounds is through parameter randomization, though it can often leave a sound designer miles from his or her goal. For that reason, many patch-randomizing features let you randomize a select group of parameters instead of tossing the dice on the entire program.

Sonicsmiths' The Foundry (for Kontakt 5.3 and Kontakt Player) follows the latter course, offering patch randomizing to the Nth degree while giving users the ability to greatly hone their search.

The Foundry launches as a single 4-channel instrument with no multis. Each channel starts with a default patch, where you can load different presets into each channel.

Although The Foundry comes with nearly 14 GB of samples, don't expect to find realistic orchestral instruments, pianos, or guitars: This instrument is about creative sound design, and its timbres veer toward non-representational pads, rhythmic synths, and less conventional tones. Many of its samples develop interesting characteristics over time, including vocal utterances, subtle detuning, and eerie motion.

Each channel offers a row of eight buttons that enable effects, such as granulators, filters, convolution, a rotary speaker, and a sequencer. Editors for individual channels can be muted or enabled.

The Foundry's Adjective Assignable Randomizing Engine (AARE) operates like a typical search engine, in which you can specify the properties you need. Click the Randomize button and a panel appears with a list of general sonic qualities arrayed in columns of buttons. The first column offers general functional categories: Pitched or Non-pitched, FX/Hit, Texture, Simple, or Complex. The other three columns carry aesthetic preferences, such as Dark, Mellow, Cold, Mysterious, Breathy, Muted, Organic, Synthetic, Pulsing, and Nasty. Selecting a button randomizes the sounds within your choice of qualities.

I found that selecting fewer categories resulted in more desirable results. There is room for variety here, but I wish there was some facility for user-generated tags, or a more varied set of adjectives.

A pull-down menu adds sound-shaping tools by way of templates for sequences, voice morphing, envelope settings, and more. These, too, can have their parameters randomly changed, which proved very helpful in targeting performance characteristics. You can also randomize individual parameters.

The Foundry gives access to each channel's envelopes, effects, filter settings, LFOs, and just about any other parameter. If randomization comes close to something desirable, you can easily fine-tune it. If not, design your own sound without using randomization. A number of wholly or partially initialized templates are included so you can work with neutralized modulation or effects settings, for example.

I particularly appreciated the Grainer, whose granular effects provided radical departures from the timbres, and Body, which applies convolution from a nice collection of impulse responses.

At present, recalling saved user patches using the Kontakt patch-selection arrows leaves a jumble of graphics onscreen, so you must use the Load button or the browser instead. Nonetheless, The Foundry is valuable for creating new sounds and adds a sense of fun and discovery to the details of sound design. ■

SIMMONS

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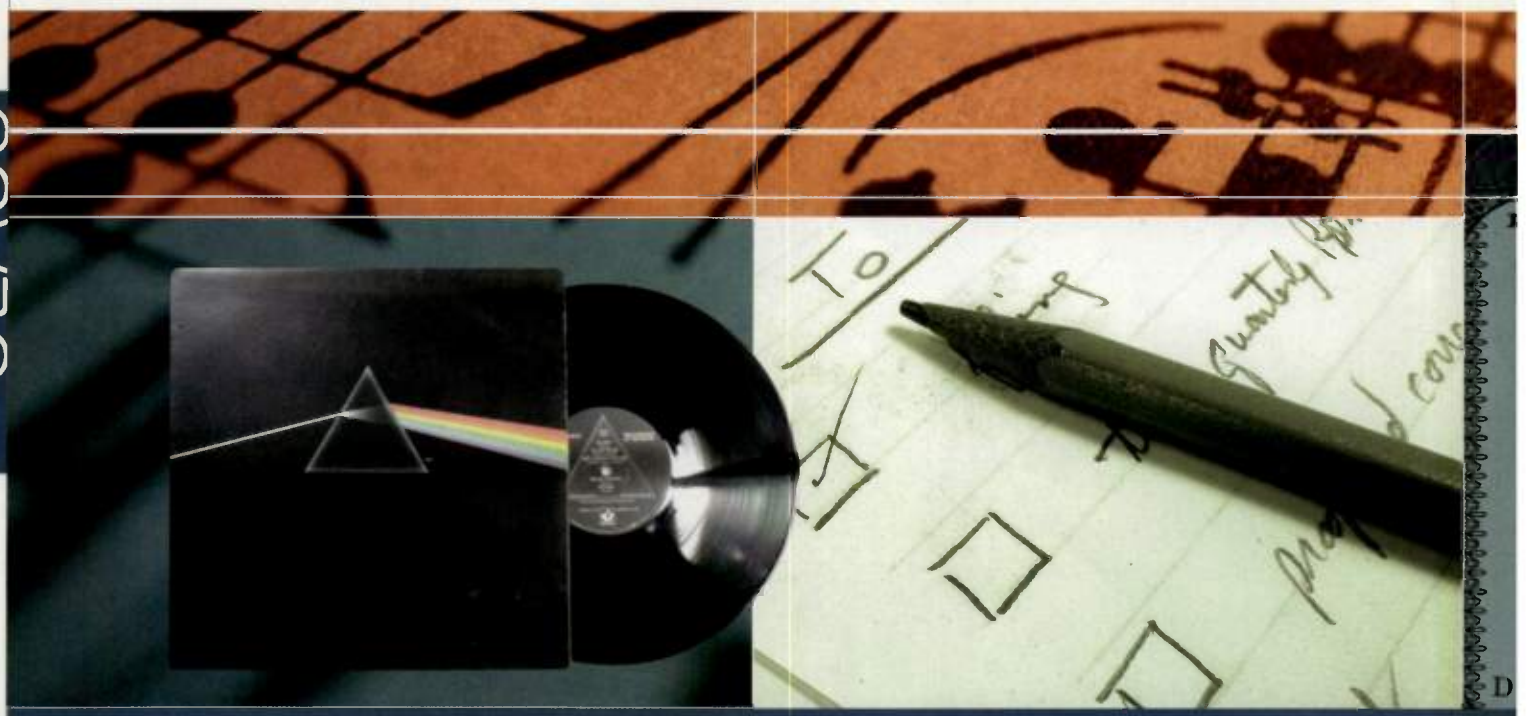


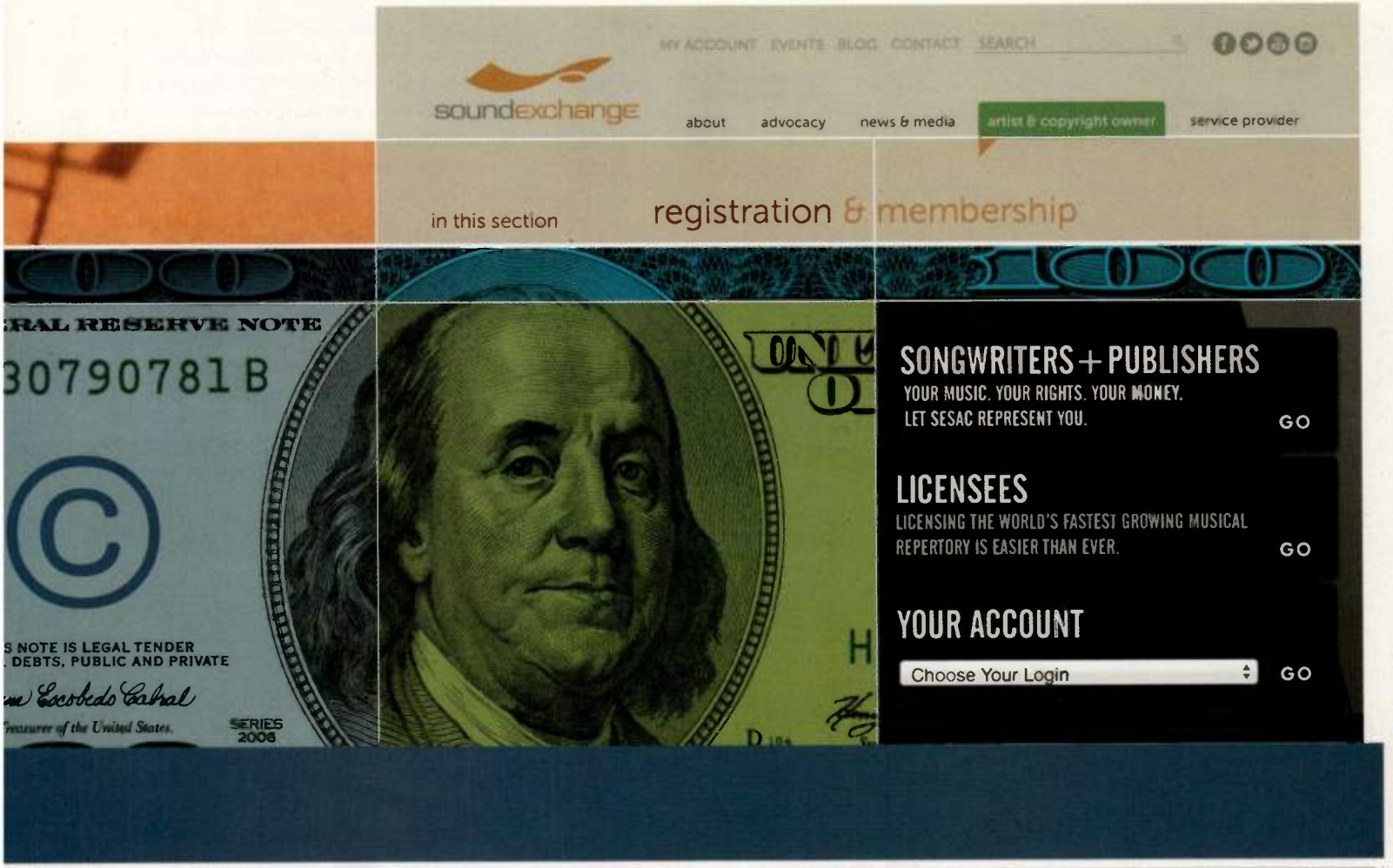
Musician's To-Do List

7 Registrations for Every Song You Release

BY RANDY CHERTKOW AND JASON FEEHAN

Randy Chertkow and Jason Feehan are authors of *The Indie Band Survival Guide* (St. Martin's Griffin), now in its second edition.

Today it's extremely easy to release a song and get it distributed worldwide. With the click of a mouse, you can upload your latest track and sell it on iTunes or stream it on Spotify and Apple Music. Within a few hours, the music can be in the ears of fans around the globe.



So, distribution is no longer a mystery, but musicians still often make the mistake of skipping the essential steps that music labels know they must take *before* they distribute music into the world, to protect artists' rights and prepare to earn royalty income. There are seven simple registrations you need to take care of if you're not working with a label.

But first, let's review a basic understanding of copyright, as well as the steps to prepare your music business so you're ready to register songs when you release them and can collect royalties starting on day one.

COPYRIGHTS

All seven registrations flow from the two copyrights you receive once you create a new original song. These copyrights give you ownership of the work. Some musicians make the mistake of only registering one of the two, but once you understand the two copyrights at stake—and the royalties you can make from them—you won't miss the necessary registrations.

The first copyright is for the composition: the song itself. This is about the underlying work you created that can be recorded, performed, or covered by other bands. No matter how many different versions, arrangements, or recordings of the song are made, you only need to register the song once using the Performing Arts (PA) form. This is normally registered by the songwriter(s) of the song.

The second copyright is for the sound recording—sometimes called the master recording. Each sound recording you make of a song creates a separate copyright; for example, a live recording, a studio recording, and an alternate acoustic version are three different sound recordings and therefore three different registrations. To register each of these, you'd need to use the Sound Recording (SR) form.

Labels usually own the SR copyright and the songwriters usually own the PA copyright. But if you're an independent artist and composer, you're both the label and the songwriter, and you own both.

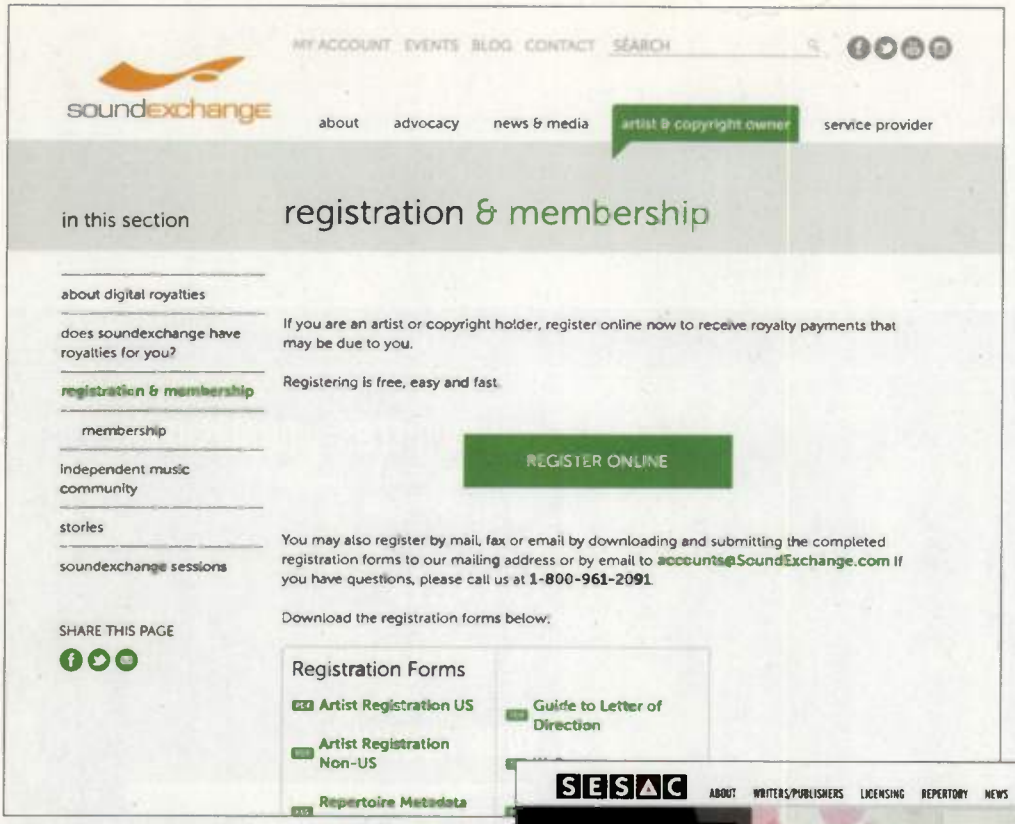
Registration with the U.S. Copyright Office is not required because copyright law *automatically* gives you a copyright in an original song as soon as you capture it in a fixed format (digital recording, sheet music, etc.). Most labels register the copyright, however, because it grants additional rights, including the ability to sue for damages and attorney's fees. (And if you don't register within three months of release, you lose some of those benefits, although you still own the song and can still register it in order to sue someone for infringement.)

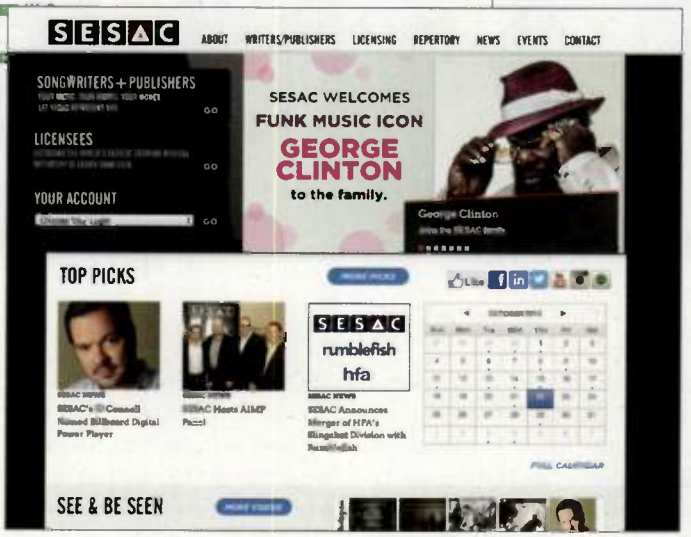
ROYALTIES

The composition copyright can generate money for you each time the song is performed live, played on the radio, or performed as a cover by another artist. Royalties are set by statute: 9.1 cents per copy/play. Composition performance royalty organizations (PROs) collect money from radio stations, TV stations, restaurants, live music venues, and websites, and they distribute royalties to copyright owners. These royalties are based on surveys and other data, and each PRO does its research differently.

What some musicians miss is that the royalty system splits royalties between two roles: the songwriter and the publisher. If you're independent and you haven't contracted out your publishing rights, you must register *twice*—as a songwriter and publisher—to receive all the money the song generates.

The sound recording copyright generates royalties administered by the sound recording PRO,





SoundExchange collects sound recording royalties, while SESAC (along with ASCAP and BMI) collects composition royalties.

SoundExchange (soundexchange.com). SoundExchange collects money from streaming services such as Live365, Pandora, and Radionomy. The royalties are based on reports created by the streaming services (required by law), assisted by a digital fingerprint called an ISRC code, which the sound recording owner needs to generate and register. Similar to the composition PROs, royalties are split between multiple roles: the sound recording owner, and the featured performers and producer. Unless others own the recording or were featured performers, you are entitled to all the royalties that SoundExchange collects for these roles. Again, similar to the composition PROs, you need to register yourself as both the sound recording owner and the performer so you can get all the money you're owed.

PREPARATION STEPS

Perhaps one of the biggest barriers to musicians successfully securing all seven registrations is the preparation steps that need to be done ahead of time. If you haven't joined a PRO, it can take a few hours to apply to become a member, plus around two weeks to process your application and accept you as a member. Because of this, we advise you set aside an evening or two to perform the steps below as soon as you can. These are revenue-generating activities, so although they do take you away from creating the music, they're worth spending a night or two doing, so you can enjoy a lifetime of royalty checks.

1. Create an account at eCO—the Electronic Copyright Office. Registering at the U.S. Copyright Office's eCO system (eco.copyright.gov) is free and simply requires your email address and some basic information, such as name, address, and phone number. It takes just a few minutes.

2. Choose a composition PRO. You'll want to evaluate which PRO to join based on your needs. The main ones in the U.S. include ASCAP (ascap.com), BMI (bmi.com), and SESAC (sesac.com). (Although to become a member of SESAC, you must be invited by a current member to join.) Each PRO has different methods for surveying music and for determining royalties for radio or TV play. Some accept live set lists so you can get paid when you perform your own music.

Perhaps the most important factor in determining which PRO to choose is that each song can only be registered with a single PRO, and that means all of the songwriters on a song must belong to the same PRO to get royalties. And if you work with other songwriters who belong to different PROs, you can join their PRO, but only if you create a legal entity such as an LLC or corporation to register with them. Note that the single-song-per-PRO limitation still exists, so you'll need to carefully track the registrations.

3. Register as a publisher with the composition PRO. A music publisher's job is to create licensing opportunities for your music—getting it placed in TV, film, or advertising. Publishers get a cut of licensing fees and the publisher royalty generated by the composition PROs. If you're not working with a publisher, you need to fill this role yourself. You'll have to generate the opportunities but will collect all the licensing fees and the publisher's royalty share—but only if you register as a publisher with the PRO.

Don't leave this money on the table; follow the PRO's steps to register as a publisher. This process usually requires a contract with the PRO and may take a few weeks to process. That's why you should do this ahead of time—weeks before you release any music into the world. Once you finish, however, you'll have a publisher's account that you can use to register each song you release. You also have the option of acting as a publisher for other songwriters under this account.

4. Register as a songwriter with the composition PRO. Songwriters get the other half of the composition performance royalty. You'll need to register with the same PRO as you did in step 3 above. Similar to setting up the publisher account, this requires a contract and may take a few weeks to process. Once this is completed, you'll be able to register each song under your name.

5. Register as a "both" account with the sound recording PRO (SoundExchange). SoundExchange will allow you to register an account as a performer, sound recording owner, or both. As an independent musician, you'll want to choose the "both" option so you can register your recordings under both roles and collect both sets of royalties that your recordings will generate.

6. Choose a method to create ISRC codes. ISRC codes are digital fingerprints that allow SoundExchange to track your sound recording

when it's streamed. You'll need to choose a method to generate them for each sound recording you have. If you make a lot of mixes and sound recordings, it may make sense for you to pay the fee to register your own ISRC codes by going to US ISRC (usisrc.org) and creating an account. You can also pay organizations like mastering houses or CD-duplication services to create these for you at a small cost per song or album.

7. Set up a tracking system for your music. If you release a lot of music, you'll want to create a spreadsheet or tracking system to make sure you're performing all seven registrations on all your music. This becomes especially important if you use multiple PROs to ensure the same song isn't registered at more than one.

PERFORMING THE SEVEN REGISTRATIONS

Once the preparation steps are completed, you're ready to perform the seven registrations for all the music you release. This should take less than an hour per album of music.

1. Register each song at copyright.gov using the PA form. Registering the composition copyright requires you use the PA form. Before starting this process, make sure that you know the names and contact details for all the songwriters of each song. Note that it may be possible to bundle the sound recording (step 2 below) under the same registration if the *exact* same people are both songwriter and owner of the sound recording. If so, choose Sound Recording as the registration type and choose the "register both" option so you save money. Otherwise, register using the PA form. To get full statutory benefit, register the song before it's released to the public—and yes, making it available to people via SoundCloud or other internet sites does count as a publication under the law.

2. Register each sound recording at copyright.gov using the SR form. Each sound recording you make, including all alternate mixes, is a separate sound recording. All can be registered using the SR form. Similar to the above, make sure that you know the names and contact details for all the sound recording owners of each song. Just like with the PA form, in order to get full statutory benefit, you need to register the sound recording before it's released to the public. Note that even demos can result in YouTube hits and might end up generating royalties, so they are worth registering in your collection as well.

3. Register the song as a publisher at the composition PRO. Log in to your publisher account at your composition PRO and register your song(s). Doing this will generate the other half of performance royalties generated by the composition. You can register a song that's already been released, but it will only generate royalties going forward.

4. Register the song as a songwriter at the composition PRO. Log in to your songwriter account at your composition PRO and register your song(s). Doing this will generate half of the performance royalties generated by the song. Similar to the above, you can register a song that's already been released, but it will only generate royalties going forward.

5. Register the sound recording as a sound recording owner at SoundExchange. To collect one-half of the royalties the sound recording produces, log in to your SoundExchange account and register your sound recording(s). Note that you can register sound recordings even after they've been released. Simply search SoundExchange's database to find out if they've already been collecting royalties for your sound recording.

6. Register the sound recording as a performer at SoundExchange. To collect the other half of the royalties that the sound recording produces, you need to make sure you're listed as the per-

former under each recording. Just as with the sound recording owner royalties, you can register this even after it's been released by searching SoundExchange's database, where you'll be able to see if they've already been collecting royalties.

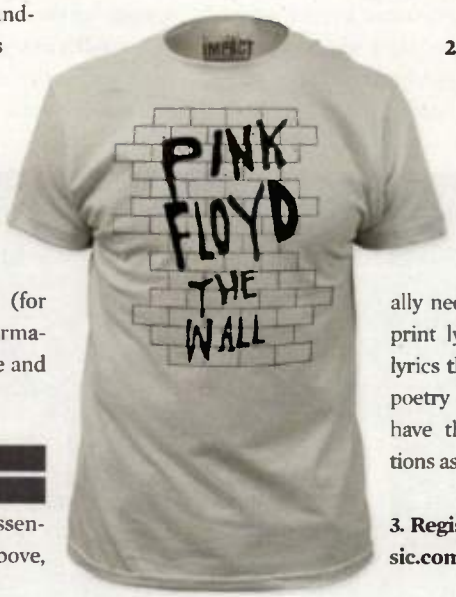
7. Generate an ISRC code and register it. Generate an ISRC for each sound recording and register it according to the ISRC instructions. This will increase the likelihood that the recording gets tracked by SoundExchange and generates streaming royalties.

Once you've completed the seven registrations, log everything into in your spreadsheet and save all documentation that the services generated for you (for example, the registration information from the Copyright Office and PROs).

OPTIONAL REGISTRATIONS

In addition to the seven essential registrations described above, there are a handful of optional registrations you may want to consider.

1. Register the copyright for the cover art. The cover art for your album or song can be used to make merchandise, or might be useful for TV and video purposes. It's not necessary to register the art, but if you sell a lot of merchandise and are concerned about infringement, it may be worth the basic fee to protect it.



2. Register the copyright for the lyrics. If you've ever wondered why lyrics are rarely printed for cover songs in liner notes, it's because the lyrics are copyrighted too, and the artist covering a song usually needs to pay for the rights to print lyrics. You can register the lyrics the same way you'd register poetry or a literary work so they have the same statutory protections as your music.

3. Register the release at AllMusic.com. AllMusic collects all the credits of music releases in its database, which is used by the Grammy Association and other external agencies to track the musicians, engineers, producers, and others who worked on the album. AllMusic's database can sometimes be used to prove that a person is entitled to royalties. Fans also use AllMusic to find out more about their favorite music, so it's worth the time to register.

CONCLUSION

Once you've registered your music, the next step is to promote it. After all, only music that's performed will generate royalties. Talk to music supervisors to get your songs used on TV or film, or act as a publisher by running a radio, podcast, or streaming campaign. Then, track key performances of each song. For example, if you know that your song was played on TV, get the cue sheets; if you play your music live, submit your set lists to the PRO. Some PROs have programs like ASCAP Plus that may still pay you some royalties even if the music didn't generate any survey-tracked plays within their database.

But, these programs will only be successful for you if you submit back up documentation that proves your music was played. Stay on top of when and where your music is performed, and all your hard work can protect your music while helping you generate income from it. ■

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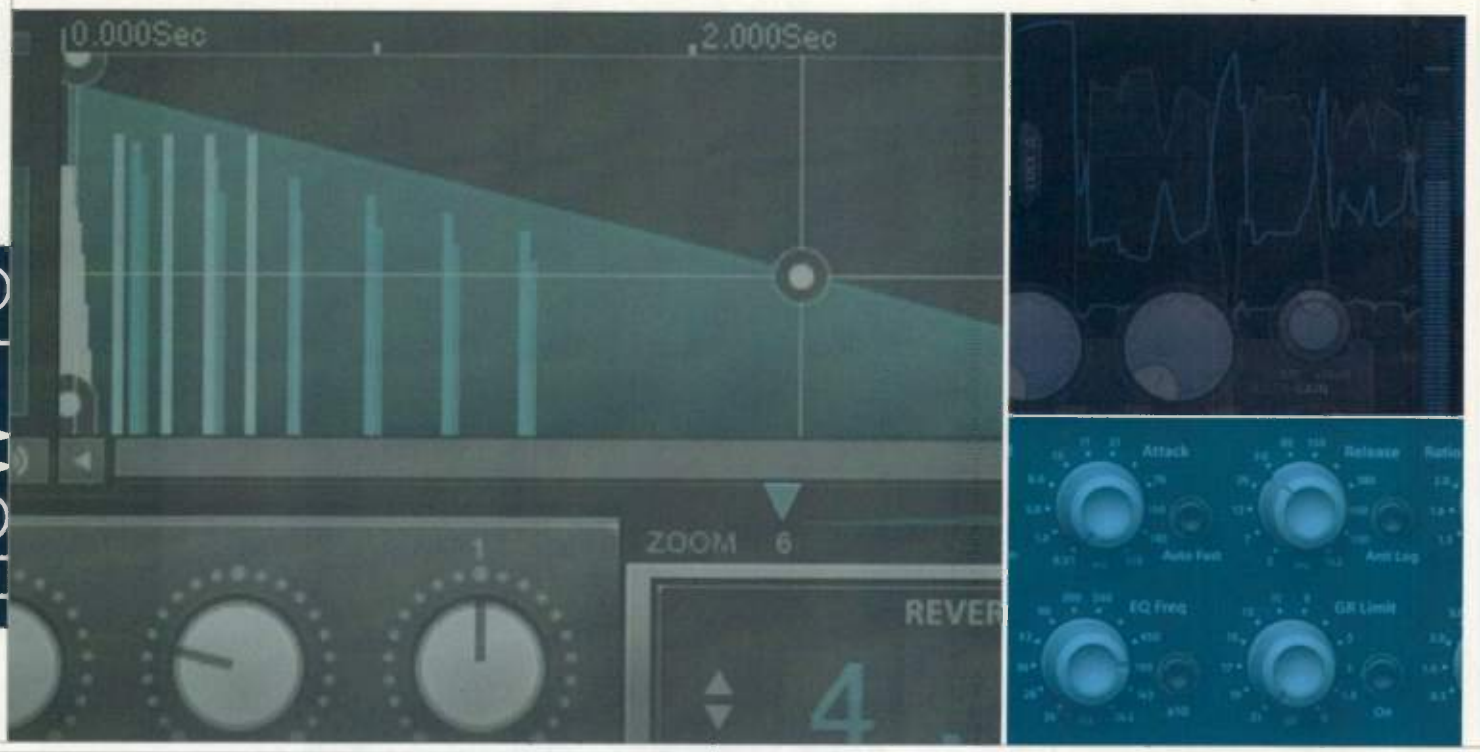

Master Ducked Reverb

Use this production trick to clarify vocals and create extreme effects

BY MICHAEL COOPER

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

Reverb can be a double-edged sword in production. While it can add ambience and a third dimension to a track, it can also make it sound less clear and discrete. Fortunately, there's a way to keep the gooc while ditching the bad and the ugly.

In this article, I'll show you how to use ducked reverb to add depth to vocal tracks without gumming up the works. I'll also demonstrate radical uses of the technique to create outrageous effects. I'll point out a plug-and-play product that produces ducked reverb, but I'll also show you how to design your own ducked reverb patch from plug-ins you likely already own. But first, what exactly is ducked reverb?

NOW YOU HEAR IT, NOW YOU DON'T

Ducked reverb automatically lowers its output when its input signal exceeds the threshold level you set. Slap it on a vocal track and set a low enough threshold, and ducked reverb will decrease in intensity whenever the vocalist sings, drying up and clarifying the track. At the end of vocal phrases, when the singer's level falls below threshold, the reverb's output will regain full volume to create an enhanced sense of space.

The Waves H-Reverb plug-in does the heavy lifting for you (see Fig. 1). Simply select Duck mode in the GUI's Dynamics section, and lower the Threshold control until you hear the reverb's output decrease during vocal phrases. The Recovery control governs how quickly the reverb will recover to full output during any gaps in singing. Make sure the plug-in's reverb time is long enough—and Duck mode's recovery time fast enough—that the tail is still decaying after the recovery time has elapsed; otherwise, the effect will already be finito by the time the plug-in's output level recovers. Because H-Reverb lacks an input control, place it on an aux and bus the vocal track to it (vs. placing the plug-in on the track's insert); you'll often need to use the bus' send to lower the vocal track's level far enough below the plug-in's threshold to achieve deep ducking.

ROLL YOUR OWN

You can produce ducked reverb using plug-ins you probably already own. Bus the vocal track to a stereo aux. On the aux's inserts, instantiate a compressor plug-in followed by a reverb plug-in. The best compressors to use for this application offer threshold and release-time controls and provide high ratios, very fast attack times, a hard knee and lookahead detection.

The FabFilter Pro-C 2 compressor plug-in fits the bill perfectly (see Fig. 2). Dial in the fastest possible attack time, the hardest knee, an infinity:1 ratio, and 60dB range. Using about 10 ms of lookahead detection

prevents transients at the start of vocal phrases from spiking the reverb before the compressor's attack time has completely elapsed and peak gain reduction is achieved. Lower Pro-C 2's threshold until reverb is attenuated the desired amount when the vocalist is singing on the track. Set the release time to be fast enough that the compressor's output level fully recovers (producing no gain reduction) in the gaps between vocal phrases and before the downstream reverb's tail has completely faded; after the compressor's release time has expired, the reverb's input will fully receive the vocal track's send signal at its set level, causing the reverb's output level to blossom.

If you set the compressor's release time too short, the reverb may bloom during very brief gaps between sung lyrics within a vocal phrase. Conversely, if you set the compressor's release time too long, the reverb may not bloom enough before the following vocal phrase causes it to be attenuated once again. Keep in mind that the lower the threshold and the higher the gain-reduction range you set, the quicker the release time will need to be in order to restore the reverb's level enough that the reverb's bloom will be readily discernible. The reverb's tail must also be longer than the time it takes the compressor's release to restore signal level. When you find the sweet spot for all these controls, the reverb's output level will decrease during singing and rise at the tail end of each vocal phrase.

GETTING RADICAL

The best conventional compressors will duck reverb only so much, attenuating it perhaps 30 dB but not eliminating it. To completely dry up a vocal track during singing, you need a compressor that offers negative ratios. With negative ratios selected, the higher the compressor's input signal, the lower its output level becomes.

The elysia mpressor, a hard-knee compressor, is the only compressor plug-in I know of that offers negative ratios (see Fig. 3). The mpressor can produce extreme ducked-reverb effects in which loud, bone-dry vocal phrases end with exploding reverb. (Make sure you turn off mpressor's GR Limit switch—deactivating a range function—to allow the deepest possible gain reduction.) The mpressor's only shortfall in this application is its omission of lookahead detection, which results in transients at the start of vocal phrases sometimes triggering reverb bursts. Fortunately, the mpressor includes an external-sidechain input, which you can use to make the plug-in respond as if it is using lookahead detection. To learn how, please read my article "DIY Lookahead Detection" in the June 2015 issue of *EM* (available at emusician.com).

Whether used to clarify vocal tracks or create explosive effects, ducked reverb is a powerful weapon every creative engineer should have in his or her arms depot. ■

Fig. 1. The Waves H-Reverb plug-in uses controls situated in the lower-left corner of its GU to produce ducked reverb.

Fig. 2. FabFilter Pro-C 2's comprehensive control set makes the plug-in an eminently capable ducker for reverb placed downstream.

Fig. 3. The elysia mpressor's negative ratios can be used to create extreme ducked-reverb effects.

HOW-TO

Make Multitrack Stems with NI Stem Creator

The five-track MP4 Stems files let DJs be more creative with music and sell tracks for premium prices

BY MARKKUS ROVITO

We've all made stems of DAW sessions before, but Native Instruments' Stems file format refers to a new standard of packaged MP4 that compatible software can open as four individual stem tracks so that DJs and live performers can get more creative with mixing them. Stems files will also play back in normal stereo mode on any audio player that reads MP4.

Fig. 1. The four Stem Parts (tracks 2-5) here are at unity gain, with no clipping, which must be the case before you import them to Stem Creator.

Fig. 2. In Stem Creator, use the compressor and limiter to match the levels of the Stem Mix to the Master File and to add metadata and artwork to the Stem.

Advantages of mixing with Stems can include muting entire parts of tracks, soloing a vocal track to mash it up live with another track, applying effects/EQ only to certain parts of a track, looping one part of a song, etc. When you mix with Stems, each of the four parts is subject to all the DJing tools and tricks you're used to on full tracks.

At launch, Stems only worked inside Native Instruments Traktor Pro 2, and the company's Traktor Kontrol S8, S5, D2, and F1 controllers have instant plug-and-play integration with Stems' controls. However, NI is releasing a Stems developer's toolkit so that Stems can be an open format. Already, dance music stores like Beatport, Juno, Traxsource, and others sell Stems music at a premium. The more the format is supported, the more opportunities you'll have to sell Stems of your own music at a tidy markup. This quick tutorial will help you prepare any of your new or existing DAW sessions as Stems files.

PREPARATION

Before you create a Stem, you need to have a finished, mastered stereo file and four submixed Stem Parts that you can create in your DAW or audio editor. The Stems convention is to break down the four parts as: drums, basses, instrumentation (melodies, hooks, etc.), and vocals. Following that pattern assists DJs in mixing Stems. Bounce each the four submixed parts down to its own track, and open the stereo master into a DAW track to make sure that all five tracks are perfectly time-aligned, so that they play back correctly as a Stem file.

It's suggested that you master all four Stem Parts with the same processes that are used on the full-mix stereo master. But you must play back all four Stem Parts together and make sure that when each one is at unity gain, there is no clipping in any individual track or master fader (Figure 1). Use limiting to eliminate any clipping, and then do not use level normalization when bouncing each part to an audio file (WAV, AIFF, or ALAC at 16 or 24 bits and 44.1 or 48kHz sample rates).

LEVEL THEM OUT

Get the free Stem Creator software (Mac/PC) at stems-music.com. Open it and drag your stereo master and four Stem Parts into the Stem Creator interface. There you can rename the parts and assign them colors that will factor into Stem-supporting performance software. But most importantly, you want to use the Dynamics section to make the Stem Mix equal the level and character of the Master File (Figure 2). Your pre-mastering of the four Stem Parts should have helped, but the Stem Mix may still need some attention.

Hit Play, and then use the switch to toggle from the Stem Mix to the Master File, listening for any differences. To adjust the Stem Mix, you can use the Dynamics Basic mode, which includes some presets and input, output, and dry/wet controls for the compressor. The Expert mode gives you access to the limiter and more compressor controls: ratio, attack, release, and highpass cutoff. If making adjustments to the compressor and limiter isn't enough to match the Stem Mix with the sound of the Master File, you'll have to revisit the Stem Parts in your DAW and make sure they're being mastered in the same way as the main mix.

FINALIZATION

In the top section of Stem Creator, add your artwork image for the song, as well as relevant metadata. Now just hit Export to create the Stem .mp4 file. The software will save the new file with the same name as the Master File, except with the extension ".stem.mp4" at the end. Now you can live-remix your song in Traktor Pro 2, as well as future Stem-supporting software, and distribute it to others. Stems could be great add-ons to deluxe packages in your online store, ways to interact with fans through contests, or simply a new revenue stream. ■

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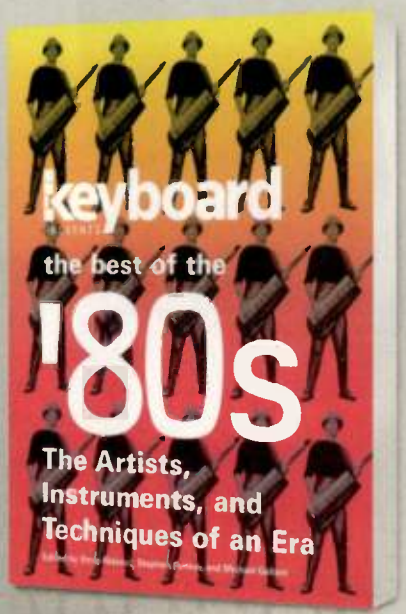

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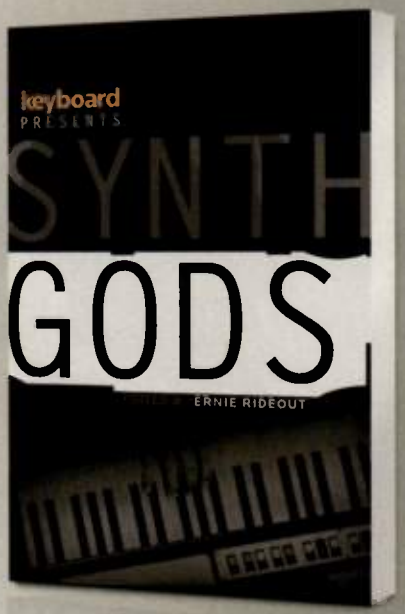

SYNTH GODS

Culled from the pages of *Keyboard* magazine, this book spotlights artists who did much more than just play synthesizers: they changed the course of music history and inspired generations. Featuring in-depth profiles of Jan Hammer, Wendy Carlos, Rick Wakeman, Brian Eno, and others, this book delves into how these new, untested boxes of circuitry captured the imagination of so many legendary artists.

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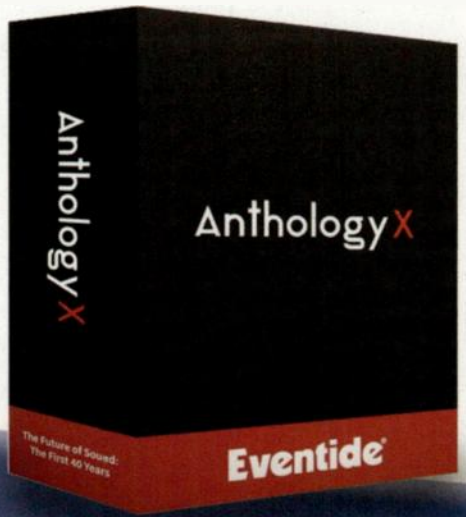

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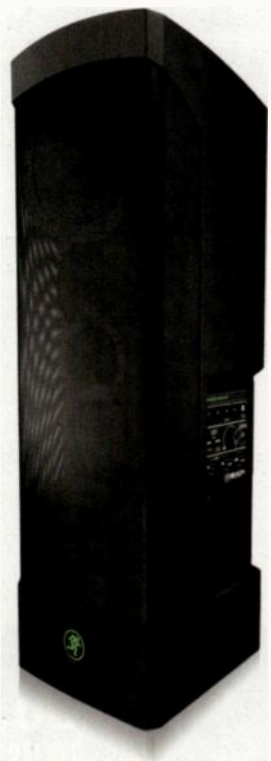

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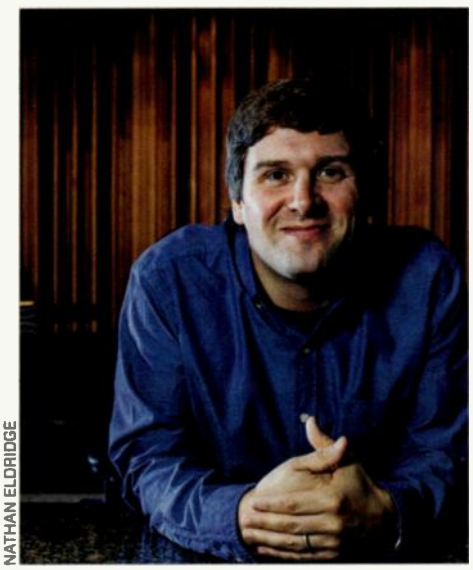
FIVE QUESTIONS

Adam Ayan

A Mastering Veteran's Views on Evolving Technologies, Career Paths

BY SARAH JONES

Since 1998, Grammy-winning engineer Adam Ayan has been a fixture at Gateway Mastering, where he honed his craft under the guidance of legendary engineer Bob Ludwig. To date, Ayan has mastered more than 100 Gold, Platinum, or Multi-Platinum projects from the likes of Paul McCartney, Madonna, the Foo Fighters, and Katy Perry. When I caught up with Ayan, he had just been nominated for Latin Grammy Awards for his work on Juan Luis Guerra's *Todo Tiene Su Hora*.



NATHAN ELDRIDGE

Working at Gateway, you were mentored by one of the best. You also have a degree. How should aspiring mastering engineers balance their education and apprenticeship?

I always tell students that they should first pursue a four-year degree in audio and music, similar to the program I graduated from at the University of Massachusetts at Lowell. That's not to say that a degree makes a great engineer, or that there aren't great engineers that do not have degrees, because there are many. But in 2015, I really believe a degree is an imperative step. But, it must be coupled with finding a good mentor/assistant situation.

I benefitted from coming into the industry in the '90s when it was somewhat easier to find work at an established facility. I knew I wanted to work with Bob at Gateway and was very fortunate to get the opportunity to do so, starting as a production engineer and editor. I then became Bob's direct assistant, and within a relatively short period of time we both realized that I had the aptitude and ears to master records. Most studio situations today are much more insular, and I feel lacking in the cool stuff that happens when a young engineer can learn from a great mentor, and also when peers can learn from each other.

You've been working in mastering for almost 20 years: how has your role evolved?

Starting in the early and mid-2000s, I found I was being asked a bit more to evaluate mixes ahead of mastering sessions, and to help clients get used to their new recording and mixing environments (project studios vs. commercial facilities). It makes for a better end result overall, and also allows me to be a bigger part of the production team and to develop hopefully career-long relationships with my clients.

I've also found that I am being asked to have a more creative role in the sonics of every project. Historically speaking, mastering was first the job of translating what was achieved in the studio onto the consumer medium (vinyl); it's evolved to be a much more creative step.

We've seen a lot of self-mastering tools, even automated mastering software, emerge of late. How do you educate musicians on the importance of working with a professional mastering engineer?

I've found that once a musician has experienced good mastering and how it positively affects their music, they never will go back to skimping on the process. My overall feeling, and what I try to relay to potential clients is this: They've worked very hard to make a recording that as a piece of art and as a part of themselves should be something that they are forever proud of. Mastering is a big part of the process.

As for automated software—it might hype a mix, make it louder and brighter, etc., but that is not what mastering is. A piece of software or automated process just can not make human judgments, and can not replicate the feeling a human gets when the music and recording are just right.

What's your perspective on evolving streaming options and their impact on fidelity and loudness?

Streaming has the potential to change the loudness issue in a positive way for good. Most streaming services deal with loudness and level matching of recordings in the opposite way that FM radio does: Instead of compressing everything more, and trying to bring the quieter recordings up to the same loudness level as the loudest recordings, streaming services lower the level of the loudest recordings to match the level of the quietest ones. When you do that, you take away the first-blush "louder is better" perception. You also quickly expose the flaws of overly compressed super-loud records. This means that the incentive to make super-loud records will go away, and more dynamic records will be more desirable.

I think that streaming sounds way better than most want to admit. Yes, there are low bitrate streams that need to be improved upon. Mobile is the driver there—but that is going to change.

You've mastered thousands of projects for artists ranging from Megadeth to Cirque Du Soleil. Can you talk about a couple of your favorite sessions?

Within the first few years of my mastering career, I had the opportunity to master a live record/DVD for Rush. I was a huge fan of the band as a young musician. Fast-forward about 10 years, and I'm mastering *Rush in Rio* with Alex Lifeson attending the session!

In this past year, I had the opportunity to master Lana del Rey's latest record, *Honeymoon*. Lana did not attend the session, but I have to say it is one of my favorite projects of recent memory—a masterpiece of an album! ■

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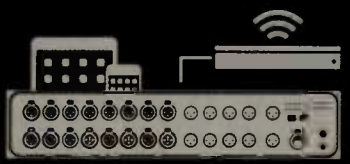

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