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Q&A:
**MARTIN
GORE**

**LYRICS
BORN**

THE REAL
PEOPLE
RECORDING
SESSIONS
pg. 38

**SPEC
OUT
YOUR
STUDIO**

Tips for
outfitting *any*
recording
space

pg 24

**BUILDING
YOUR
BRAND**



**AUTOMATED
MASTERING**
CAN A ROBOT REPLACE
AN ENGINEER?

**HUDSON
MOHAWKE**

HIP HOP
MEETS
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REVIEWS

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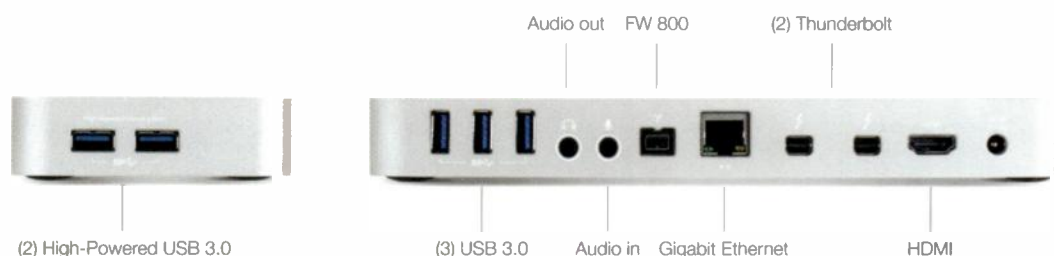
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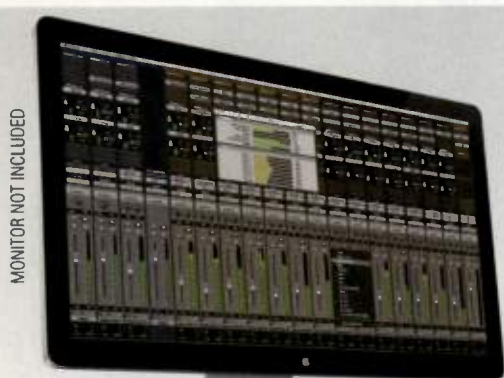
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12
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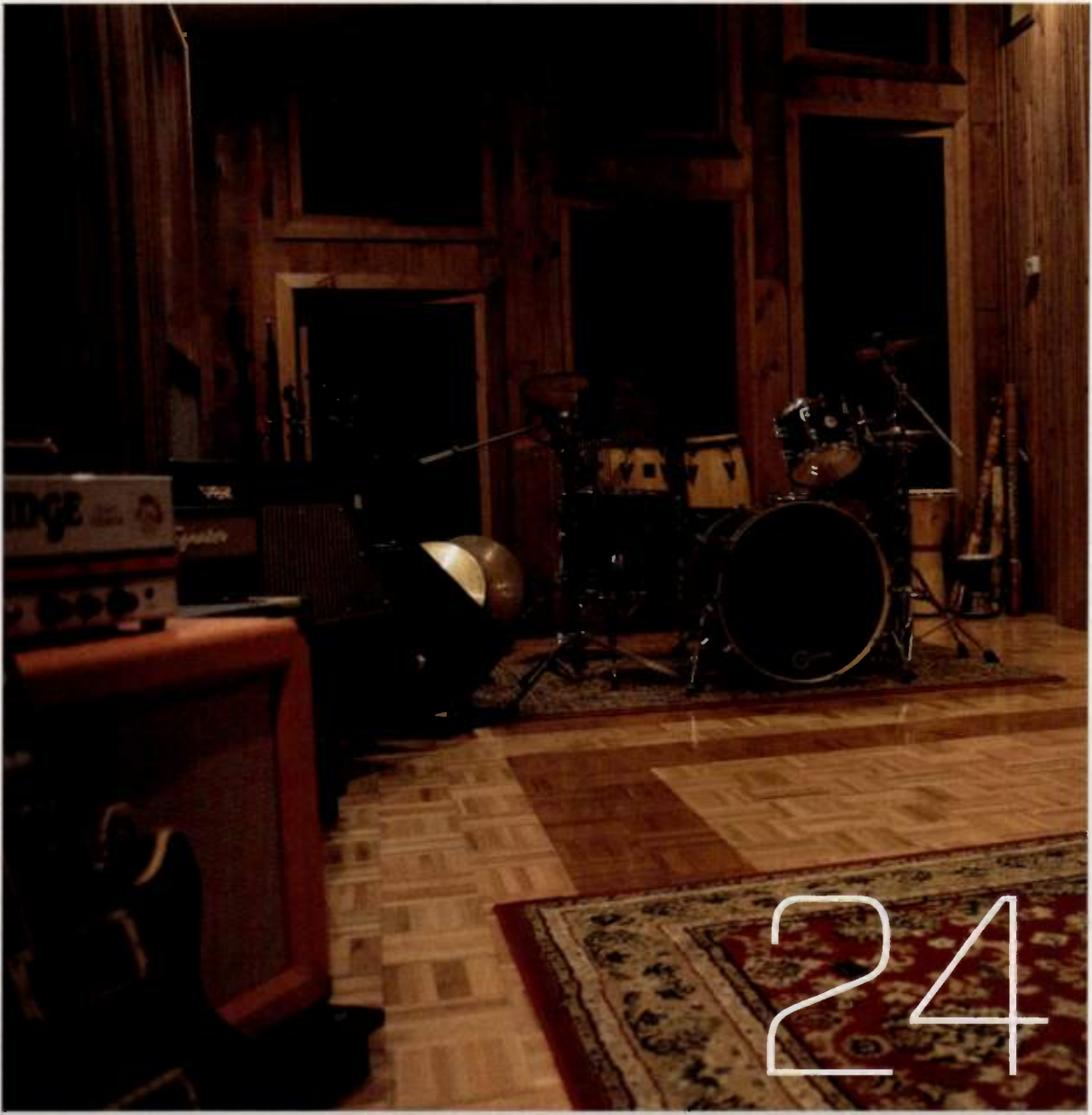


20
MOD SQUAD

Snazzy FX Tidal Wave

82
ROUGH MIX

Mr. Robair goes to Washington



24

A STUDIO FOR ANY SCENARIO

Check out our gear lists and tips to outfit three typical recording spaces: the sound-for-picture composer studio, a band rehearsal/tracking setup, and an almost no-money-in-the-box laptop rig.

70

MASTER CLASS

Automated Mastering: Can a robot replace an engineer?



HOW TO

76
CAREER

Create a persona for you and your music



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**HUDSON MOHAWKE**

The Scottish producer and DJ comes out from behind the turntable for *Lantern*, his first artist album in six years.

**JENNY HVAL**

On *Apocalypse, Girl*, the Norwegian artist zooms in on the sound of each word she sings.

56

PLAYLIST

New releases from Paul van Dyk, Jaga Jazzist, Good Old War, and more!

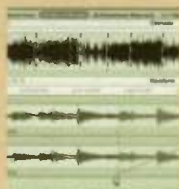
**LYRICS BORN**

The Bay Area rapper travels to New Orleans and recruits Galactic members/producers Ben Ellman and Robert Mercurio to make *Real People*, an album full of Crescent City music and influences.

GEAR REVIEWS

58

**APOGEE ENSEMBLE
THUNDERBOLT**
Audio Interface



62

**AUDIOFILE
ENGINEERING
TRIUMPH 2.5**
Audio Editor



66

ROLAND 7X7-TR8
Drum Machine
Expansion



68

APESOFT iVCS3
iOS App/Synth



69

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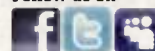
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insight

Your Technology Comfort Zone

WHEN WE were going to press, the Internet was abuzz with debates over new research suggesting that music fans are finished discovering new music by the time they reach their 30s. The study, which focused on data from Spotify and the EchoNest, theorized that listeners, overwhelmed with choice, tend to “spiral out” from the mainstream, evolve during their twenties, and then reach “maturity” by age 33.

An analogy for “song discovery fatigue” can be made for technology. As

audio technology evolves, we have access to ever more tools and features, and better quality. We can essentially create anything we want, any way we want. But instead of being liberating, infinite choice becomes overwhelming, and our comfort zone shrinks.

Certainly, audio quality is subjective; everyone develops unique sonic preferences and workflows, which are further defined by budgets and client needs. Staying on top of the newest technology can be a struggle. But we

owe it to our craft to push beyond the familiar.

Our cover story, “A Studio for Any Scenario” (p. 24), presents three hypothetical recording scenarios and offers sample studio rigs for each. Some products are classics; some you’ve probably never heard of. (Some are even free.)

We hope these ideas serve as points of departure to help you break out of your comfort zone, in your evolving quest to find the best ways to make the music you want to make.



SARAH JONES

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emusician.com**

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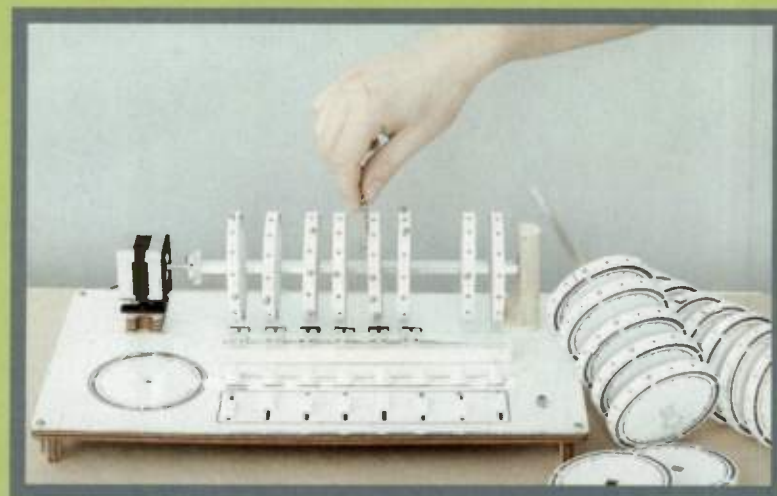
Video Interview: Robert Rich

The DIY Advisor: 28 Places to Get Your Music Heard

...and lots
more!



gadget geek



X0XX Composer Future-Retro Drum Machine

The X0XX Composer, from London-based industrial designer Alex Bluhme, takes the drum machine interface to a new level. The prototype, which Bluhme says began “with a curiosity to understand when, why and how people take their first steps into producing music,” employs adjustable magnets attached to eight rotating discs to activate samples—picture a mechanical music box drum, and you’ll get the idea.

Magnets can be placed freely anywhere along each disc’s perimeters; discs are quantized to four bars, each divided into four steps; as the discs rotate, the magnets interact with electrical switches to play samples. Eight volume faders and an effects knob round out the system. See the X0XX in action at Axelbluhme.se.

Three-track song sketchpad saves to cloud, opens in Reason

PROPELLERHEAD'S RECENT updates to its Figure and Take for iOS (free in the iTunes App Store) make them free apps with cloud storage, so you can upload their audio to the new Discover community for others to use or for yourself to open into a

larger project in Reason. This makes Take 2 a versatile mobile song sketchpad with three tracks, effects, Voice Tune, and Figure beat importing.

Each track can have one of 18 Channel Effects—a variety of stylized vocal settings—with adjustable character and wet/dry mix. The new Voice Tune keeps notes in key; you can apply it subtly, in full force, or turn it off.

1. In a new song, hit Browse Beats on the Beat page. Any 3-track (drums/bass/lead) Propellerhead Figure beats saved to the company's cloud will show up in Take's browser for importing. Take stretches/transposes Figure's beats to conform to its key and tempo.

2. Go to the Take page and use headphones to monitor the beat. Hit Record to capture a vocal or acoustic instrument performance. Recordings can be as long as you want, and the beat will loop. A swiping Erase feature lets you edit out unwanted parts.

3. On the Mix page, adjust levels for the Beat and three audio

4. On the Song page, name your song and set cover art from the photo library or camera. Save it and press Drop. That takes you to a Prepare page, where you can trim the song's start and end times, as well as apply one of eight mastering settings (including unmastered). Drop it to Propellerhead's cloud, as either public or restricted to yourself and others whom you send a link.

5. Go to your profile page at Propellerheads.se for a list of your uploaded Take songs. Click one and select Open in Reason to create a Reason 8.1 or later session in the tempo of your song with the Take song as one audio track.



ASK!

I AM IN THE MARKET FOR A USB CONTROLLER, BUT THERE ARE SO MANY AVAILABLE THAT I CAN'T MAKE UP MY MIND. CAN YOU RECOMMEND A GOOD ONE?

DENISE PALMER
AUSTIN, TX
VIA EMAIL

A good way to narrow down the field of potential products is by figuring out exactly how you will use it. For example, keyboardists who plan to use their controller for recording MIDI parts into their DAW or play-

ing software instruments will prioritize the keyboard itself. They would choose one that has the type of response they prefer (e.g., weighted and piano-like vs. synth- or organ-style) with enough keys that they can play parts comfortably without using the octave button too often to reach the upper and lower notes they use. In addition, having

extra keys allows you to utilize the lower octave for keyswitching, so you can easily switch between sam-

pled instrument articulations in many libraries—very handy! The downside is that a controller with many octaves and weighted keys is heavy and takes up more space than a controller with only one or two octaves.

In contrast, musicians who will play simple melodies and bass lines need only an octave of keys and can get away with a smaller, lighter, and less expensive controller.

Of course, controllers can provide other functionality, as well. If the device has knobs and sliders, you can map them to different aspects of your software synths and DAW. In the most obvious case, knobs can control panning or EQ in a software

mixer, while the sliders control the volume faders for each channel. Musicians who make beat-based music will want a controller with pads for playing drum machines and samplers. The most useful ones are velocity sensitive and have Aftertouch, so you can play more expressively.

Many devices offer a mix of these controllers. The trick is to anticipate your musical needs in the future so that the controller you buy now will have the functionality you need later. But if you focus on a keyboard today and want other tools down the road, no problem: Portable knob-and-fader or drum-pad controllers are available for well under \$100. **THE EDITORS**



A controller such as the Samson Graphite 49 not only provides 49 keys (four octaves), but it includes knobs, sliders, pads, and buttons that can be assigned to various parts of your DAW or soft synths.



Got a question about recording, gigging, or technology? Ask us! Send it to ElectronicMusician@musicplayer.com.

FIVE QUESTIONS WITH Martin Gore

BY LILY MOAYERI



TRAVIS SHINN

MARTIN GORE is not one to take time away from making music. Immediately upon returning to his Santa Barbara, CA home after the end of Depeche Mode's *Delta Machine* tour, Gore went right into his home studio to start writing *MG*, a cinematic instrumental album. Closer in impetus to his work with former bandmate Vince Clarke on their 2012 VCMG album, *Ssss*, *MG* focuses on strictly electronic sounds. Gore has always been far ahead of his time where music technology is concerned, and as it turns out, he's on also on the trendsetting tip of electronic dance music.

What are five key pieces you used in making this album?

Seventy five percent of the sounds were made with my Eurorack modular system. That was the most inspiring. For the other 25 percent, I used an Elka Synthex, Gleeman Pentaphonic, Moog Voyager, a system 88 DOTCOM, an old Aries modular system, a small Digisound 80 modular system, and an Arturia MiniBrute.

What is the appeal of the Eurorack and DOTCOM, the only two new pieces used on the album?

Music technology is such a blooming industry at the moment. There are so many manufacturers

making modules. It's also a very creative environment because the modules that are coming out are often multifunctional and have different applications than your normal modular synth. The DOTCOM system, for instance, is mainly based on old Moog systems. Most of the manufacturers who work in the 5U format; they're all based in the '70s sound of the Moog. In the Eurorack format, on the other hand, people are pushing boundaries, moving forward, and trying to create new things.

You've always been on the cutting edge of technology. What are some elements of progress that stand out for you?

It's been an amazing turnaround over the past 10 years the way the industry has gone back to analog. Everyone's still using DAWs and computers and actual synths, but musicians who use electronic equipment are using so much analog stuff now. And things have gone back to the modular stuff, which is so popular. Even Moog is re-creating its old '70s systems exactly to the spec sheets

they were made from in the 1970s. I have a friend who had a lot of time to work on the Moog and he says there's always that big bass with the Moog clones and the Moog stuff in general but that there was some top missing on the clones.

What carried over to this album from your VCMG project with Vince Clarke?

With the VCMG project, [Clarke] and I set out with a very definite goal in mind to make a techno album and we didn't stray from that one iota. All of the tracks were within about three bpm of each other. It was fun to do and I love techno music. But now I feel like if I bring out another techno album, it would be so predictable and exactly what everyone would be expecting me to do. The idea of bringing out a more atmospheric instrumental album is something new and something different for me and for fans.

There are some very definite techno-sounding tracks on the album. Do you frequent techno clubs?

I can't remember the last time I went to a techno club. The only time I do that is when I DJ, which is not very often these days, but I do it occasionally and I play techno. I'm often looking for techno online and downloading stuff. On the album, "Brink" is in the techno realm, and "Crowly" is uptempo, but the rest of it is very different. I took each track one at a time. The only thing that I kept in mind was I wanted things to be diverse. If anything started to be too similar then I would dump it and try something else. I felt that it was okay to have one track that was in the techno field on the album.

It seems like techno has been cooler for a much longer time in Europe. America just seemed to get stuck in a house rut. With Depeche Mode, every time the record company was suggesting people to remix our record it was always these top house producers. The names they were suggesting in 2010 were the same couple of names they were suggesting in the '90s. In Europe, there's been a whole blossoming techno scene with all kinds of movements. America is behind in all that. Maybe it's catching up a bit now.



>> Waxahatchee with Kyle Gilbride

IVY TRIPP, the third album recorded by artist/songwriter Katie Crutchfield's project Waxahatchee is inventive, homemade, dynamic. The album rocks hard at times, but there's air to the songs as well—enough room for atmospheric synth and guitar sounds to swell or go quiet.

Crutchfield writes on her own—using her phone and Garageband to capture ideas—but develops arrangements with the help of her longtime collaborator Keith Spencer. “I bring a skeletal version of the song to Keith and we’ll flesh ideas out and put drums to things,” Crutchfield says. “Then in the recording process, we build everything up.”

Crutchfield and Spencer played just about all the instruments on *Ivy Tripp*, starting with Spencer cutting all of the drums in a middle school gym near the musicians’ and Gilbride’s homes in Philadelphia, Pa.

“I have a mobile-recording setup: a UA Apollo 16 interface, Mac mini, Pro Tools, a few racks of preamps, and my mics,” Gilbride says. “We set up in the gymnasium to get a big drum sound; there’s no reverb on the drums at all.”

Gilbride put up a Sennheiser D112 outside the kick drum and an Audio-Technica Pro 37 inside. On snare, he placed a Beyer M201 on top and a Shure 57 with the transformer removed on the bottom. “With the transformer ripped out, it’s a little fatter sounding,” he says. “It’s a *Tape Op* mod that gives it a little more low end. We also used my normal overheads, which are a pair of AKG 451s. I wanted to be able to drop the room mics and have a normal drum sound that’s not so bombastic.”

Waxahatchee had use of the gym for just a few days, so they quickly laid down drums for all the songs, and then moved Gilbride’s rig to Crutchfield’s home, where they proceeded to work through the songs one at a time.

“We’d start a new song and then stick with it till it was finished,” Crutchfield says. “We’d leave everything set up, and since we were playing all the instruments, it was never like anyone wanted to get their part over with and leave. We were all just kind of around, which I like—you can really focus if you just open up one song at a time. It’s also the way I like to do vocals, because it means I space it out; doing vocals all at once is just exhausting.”

Gilbride took keyboards (Moog Sub Phatty, Rhodes, Yamaha digital piano) direct, but he miked up bass guitar with a AT 4033 and an Electro-Voice RE20. “We had a few separate rooms where we could isolate guitar and bass amps,” Gilbride says. “That was great because I could sit back and listen over the monitors. On guitars, we usually used a [Cascade] Fat Head ribbon and the Audio-Technica Pro 37.”

On Crutchfield’s vocals, which were captured to a Shure SM7 mic through a Focusrite mic preamp, Gilbride took advantage of the house’s natural reverb, or lack thereof, as the case may be.

“Some songs, we recorded in my garage, which is detached from the



waxahatchee

ivy tripp



PHOTOS: MICHAEL RUBENSTEIN

house,” she says. “The walls were paper-thin, so you could hear cars driving by and you could hear rain happening, but that room was really live. Other times, we would go into my basement, which is finished, and warmer-sounding.”

Varying room sounds also gave Gilbride more tools to work with in instrument tracks. “The song ‘La Loose’ has a Casio drum beat underneath it, but it sounded stale at first,” he explains. “So, we ran that through a bass amp and played it out in the garage. That room tone gave us the opportunity to physically manipulate some sounds rather than try to fix it later. That’s something I try to do more and more.”

But some of the sonic manipulation on *Ivy Tripp* definitely came from Gilbride’s equipment. “I made one of those Hairball Audio 1176 kits,” he says. “That was a big revelation for me. It sounds fantastic, and that would find its way onto the vocal quite often. Also I used a lot of the UAD Pultec plug-in. It does that age-old boost-and-attenuate trick on kick drums and bass guitars. I never knew how to make the low end sound as controlled and as forward at the same time before I was able to use that.”



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HIGHLIGHTS Records high-definition MOV files (up to 60 fps/720p) and four tracks of audio (time-stamped WAV, AAC, or as part of a MOV file) • supports most of Zoom's interchangeable mic capsules; X/Y stereo capsule included • 24-bit, 96kHz audio resolution • phantom-powered XLR/TRS combo inputs with -20dB pad • color touchscreen LCD • scene and auto-gain presets • runs on rechargeable lithium ion battery, AC, or USB bus power

TARGET MARKET Musicians

ANALYSIS In addition to recording, the USB port allows for streaming.

zoom-na.com

All prices are MSRP except as noted



5

MACKIE PROFX SERIES VERSION 2

Mixing consoles
\$169.99-\$1,149.99

HIGHLIGHTS Six models that feature built-in USB recording and playback • available in 4, 8, 12, 16, 22, and 30 channels • new Vita Class A mic preamp design • new ReadyFX effects engine offers 16 reverb algorithms as well as chorus and delay • multiband GEQ

TARGET MARKET Live-sound engineers, houses of worship, educational facilities

ANALYSIS A fully updated and affordable series of mixers comes in configurations designed to fit nearly any budget.

mackie.com

6

YAMAHA TF1, TF3, AND TF5

Digital mixing consoles
\$2,950-\$4,200

HIGHLIGHTS TF Series (TouchFlow Operation) consoles have D-Pre mic preamps, wireless control capabilities, motorized faders, and are available in three configurations: TF5 (32 analog inputs; \$4,200), TF3 (24 analog inputs; \$3,500), and TF1 (16 analog inputs; \$2,950) • 1-knob Comp and 1-knob EQ controls • USB dual inputs and dual returns • GainFinder automatically sets optimum input levels

TARGET MARKET Live-sound and recording engineers

ANALYSIS With their effects, expansion capabilities, and rackmount kit, these mixers are configurable for many applications.

usa.yamaha.com

7

ROLAND AIRA MODULAR

Eurorack/standalone synth modules
\$299-\$599

HIGHLIGHTS The semi-modular System-1m (\$599) supports Roland's Plug-Out system for loading software synth emulations—in this case, with voltage control over parameters • effects modules include the Torcido Distortion, Scooper, and Bitrazer (\$299 each); all are 21HP Eurorack modules that work standalone and feature CV/gate control, USB audio interfaces, and stereo I/O

TARGET MARKET Musicians, beat producers, synth users

ANALYSIS Roland has re-entered the modular synth world with products offering extended digital functionality.

rolandus.com

8

ANTELOPE MP8D

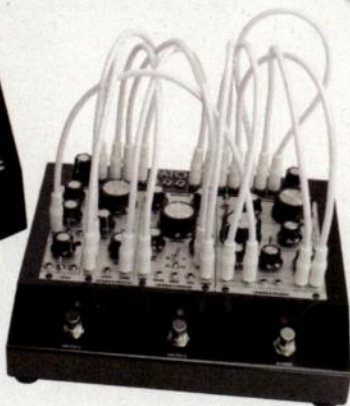
8-channel mic preamp with A/D converter
£1,995 (about \$2,225)

HIGHLIGHTS Eight Class A microphone preamps • XLR/TRS combo jacks accept line-level input • two front-panel high-impedance instrument inputs • two rear-panel inserts • line-level direct output from preamps on D-Sub 25 connector • USB port • AES/EBU connectivity • Word Clock I/O • coaxial and TOSLINK S/PDIF output • MADI I/O • two ADAT Lightpipe outputs • 24-bit/192kHz resolution • 1/4" headphone jack with level control

TARGET MARKET Recording engineers and musicians

ANALYSIS Designed to handle 24 inputs and outputs at full resolution.

antelopeaudio.com



NEW
GEAR

9 PRESONUS STUDIO 192

USB 3.0 audio interface/
studio controller
\$1,199.95

HIGHLIGHTS 26x32 audio interface with 24-bit, 192kHz resolution • eight digitally controlled Class A XMAX mic preamps • StudioLive Fat Channel signal processing • onboard talkback mic • speaker switcher with Mute, Mono, and Dim • UC Surface control software • two front-panel mic/instrument combo inputs • S/PDIF and Word Clock I/O • ADAT Lightpipe I/O • 10 balanced analog outputs

TARGET MARKET Musicians and personal studio owners

ANALYSIS An all-in-one interface and master studio controller utilizing the latest technology from PreSonus.

presonus.com

10 PITTSBURGH MODULAR PATCH BOX

Eurorack modular-based
stompbox
\$349 - \$1,199

HIGHLIGHTS True bypass stompbox case that holds Eurorack modules with input preamp and buffered outputs • available empty (\$349) or in several configurations: Time Box Core and Complete (\$779 and \$1,199), Filter Box Core and Complete (\$739 and \$1,149), Phase Box Core and Complete (\$799 and \$1,029), and Dwarf Box Core and Complete (\$689 and \$1,199) • expression pedal inputs • includes patch cables

TARGET MARKET Guitarists and other instrumentalists

ANALYSIS Customizable processing system for use in the studio and onstage.

pittsburghmodular.com

11 MODAL ELECTRONICS 008

Analog keyboard polysynth
\$TBA

HIGHLIGHTS 2-part multitimbral 8-voice synthesizer with 16 VCOs • 16 sub-oscillators • four modes: Polyphonic, Monophonic, Unison, and Stack • 16 analog filter types • two multi-waveshape LFOs (with MIDI synchronization) that go into audio range • sequencer • arpeggiator • Animator parameter sequencer • modulation matrix • color display • stereo audio input • 5-octave semi-weighted keyboard with Aftertouch • joystick • eight analog outputs • digital output option

TARGET MARKET Keyboardists and synth users

ANALYSIS Sophisticated modern polysynth with Ethernet connection for control, editing, and connection to the Web.

modalelectronics.com

12 AKAI MIDIMIX

USB bus-powered
control surface
\$99.99

HIGHLIGHTS 8-channel MIDI-over-USB controller offering nine faders (eight channel faders and one master), 16 Mute/Solo and Record Arm buttons, and 24 knobs (arranged in three rows of eight) • Bank Left and Bank Right buttons • Send All button • buttons are assignable • lightweight and portable at 1.5 lbs and 1.2" thick

TARGET MARKET Producers, musicians

ANALYSIS The MIDImix offers plug-and-play mapping with Ableton Live, while supporting most other DAWs.

akaipro.com



13



15



14



16

13 OUTPUT SIGNAL

Virtual instrument
\$199

HIGHLIGHTS A collection of 500 pulse instruments, all of which lock to tempo • each pulse instrument has its own set of 4 macro sliders • load 4 pulses/rhythms at a time • arpeggiator, LFO, step sequencer, and looper • effects include convolution reverb, filters, saturation, and delay • 40 GB of uncompressed content organized by tags • synth-like editing capabilities

TARGET MARKET Musicians, beat producers, composers

ANALYSIS A unique take on a sample playback instrument.

outputsounds.com

14 LINE 6 RELAY G70

Wireless guitar system
\$699.99

HIGHLIGHTS Locking 1/4" input • lossless 24-bit digital signal • less than 1.5ms latency • more than 120 dB of dynamic range • standard AA batteries provide 8 hours of use • sleep mode for power conservation • price includes one receiver and one transmitter • additional transmitters are \$279.99 each • Relay G75 (\$699.99) provides the same functionality in an amp-top format that works with the optional footswitch

TARGET MARKET Guitarists

ANALYSIS Pro-level system with a receiver that holds user presets and supports multiple transmitters.

line6.com

15 IMPACT SOUNDWORKS PEARL CONCERT GRAND

Virtual instrument for Kontakt
\$119

HIGHLIGHTS 40GB sample library based on a Yamaha C7 concert grand piano with sustain and pedal release samples • 16- and 24-bit • four mic perspectives (Hall, Stage, Pedal, Close) with volume and panning • round-robin selection for each note • eight dynamic layers • effects include tape saturation, EQ, compression, and convolution reverb with 30 impulse responses • supports Kontakt and free Kontakt Player 5.3 or greater

TARGET MARKET Keyboardists, composers

ANALYSIS Extensive sound shaping along with customizable velocity response and tuning.

impactsoundworks.com

16 WMD/SSF MONOLITH

Eurorack modular/keyboard controller
\$2,599.99

HIGHLIGHTS 37-note keyboard with 15 Eurorack modules: two oscillators, 4-pole lowpass MOSFET filter, wavfolder, two 4-stage EGs/VCA's, buffered mult, passive attenuator, 4-channel voltage controlled mixer, and other processing functions • Keyscan module offers Glide and supports MIDI with Velocity and Aftertouch • stereo output • headphone jack • sustain pedal input • 16HP of open space for additional modules • includes power supply and patch cables

TARGET MARKET Keyboardists, modular synth users

ANALYSIS Eurorack-based monosynth that includes MIDI In, Out, and Thru.

wmdevices.com

SNAZZY FX



In addition to providing a 4-pole resonant lowpass filter, VCA, LFO, voltage-controlled crossfader, and waveshaper, the Snazzy FX Tidal Wave can be used as a complete synthesizer voice. In addition, the built-in feedback circuit can inject a fair amount of unpredictability into a patch.

Tidal Wave

A UTILITY MODULE AND SYNTH VOICE ROLLED INTO ONE

BY GINO ROBAIR

No matter how big your Eurorack case is, space is always at a premium, and it can be difficult to make room for everything you need. Often, the best value in terms of rack space is found in a module that can be tapped for different tasks.

Similarly, musicians who like having a traditional synthesizer setup (e.g., VCO -> VCF -> VCA) will often buy a module that provides a complete voice. Not only does this maximize case real estate, the plug-and-play aspects of a semi-modular panel simplify the process of getting a playable sound, especially when gigging.

Tidal Wave (\$465) from Snazzy FX (snazzyfx.com) fits both scenarios. As a 20HP, skiff-friendly utility module, it includes a voltage controlled mixer/crossfader, a waveshaper, a VCA, a VCF, and an LFO, all of which you can tap into individually. Flip a few switches and you've got a remarkably powerful and rich-sounding semi-modular synthesizer voice.

The biggest hurdle is figuring out the module's interface, which takes a bit of study if you want to get the most out of it. I will start by describing the basic functionality that Tidal Wave provides and then explain how the features can be combined to do very interesting and useful things.

FILTER

The Tidal Wave has a pleasant sounding, 4-pole resonant lowpass filter with enough control capabilities to give it some attitude. Knobs are provided for filter cutoff and Q, while the VCF CV and Q CV inputs have bidirectional controls to set modulation level. I love resonant VCFs that give you the option of dialing in negative modulation, because things can get especially glurpy when you put the filter on the verge of resonance. A linear FM input and a direct VCF output are also included.

SINE WAVE OSCILLATOR

Next, you can turn up the Q to make the filter resonate, which changes the VCF into a surprisingly malleable sine wave oscillator. Use the filter cutoff knob

and VCF 1/V input to control pitch. There are three Q Modes: Comp levels out the sound as the Q knob is increased; NRML lets the resonant tone's volume decrease naturally as Q is increased; and High-Q/Sine mode increases the range and intensity of the resonant tone and works in conjunction with the routing switch (in its down position) to send the sine wave through the waveshaper. (More on this in a moment.)

LFO

You can use the LFO on its own or incorporate it into the synth voice using the bus switches. Sine, triangle, and square wave shapes are provided, and a CV input allows you to modulate the speed.

VCA

With the VCA, you get Attack and Decay knobs to shape the retriggering envelope while the LFO knob controls the speed. Use the Envelope Trigger Source switch to select a triangle, square, or random waveform. When an external signal is patched into the VCA's CV input, the normaled connection is interrupted, though you can still use it internally as a control source.

WAVEFOLDER/WAVESHAPER

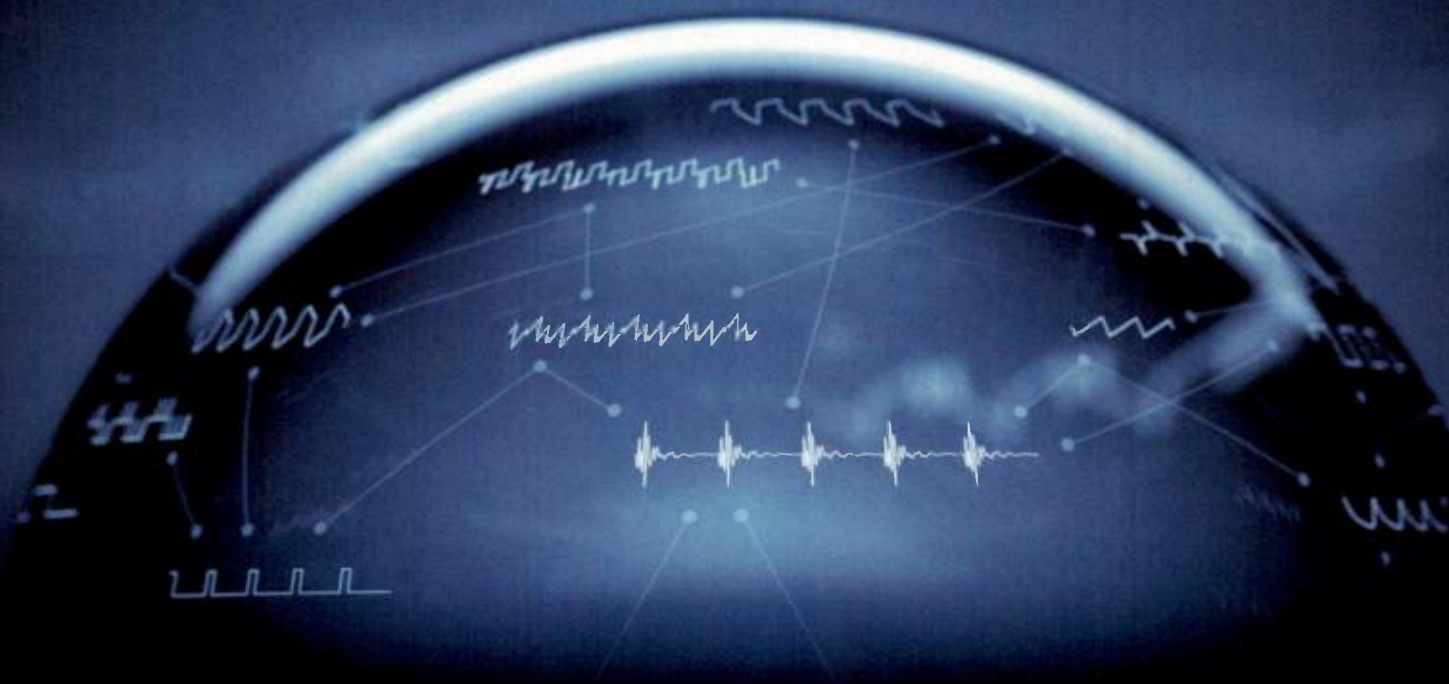
In addition to a gain/offset control, you have three interactive knobs—Crest, Tide, and Floor—to sculpt the wave shape of an external audio signal or the internally generated sine wave. The bi-



OMNISPHERE

2

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polar WS Mod knob determines the amount of modulation coming from the internal LFO and/or an external CV.

VC MIXER/CROSSFADER

With the Tidal Wave's voltage-controlled crossfader and mixer, we start to see some of the module's upper-level functionality. Depending on the position of the Mix Source switch, you can fade between the waveshaped and filtered signal, or move between one of those choices and whatever is patched to the Input jack. If no input is present at the Input jack, you can mix between silence and either the waveshaped or filtered signal. Overall, this feature is designed to give you the ability to crossfade between two timbres using externally or internally generated signals, and it yields very interesting results.

For example, I patched a drone into the audio input and sent the VC Mix output to my mixer. I set the Mix Source switch to VCF/Dry and switched the LFO Bus to the lowest position in order to use a sine wave to control the VC Mixer. With the LFO speed set to a slow rate and the VC Mixer knob to the 11 o'clock position, the module crossfaded between a filtered version of the drone and the unprocessed signal (favoring the latter).

Next, I patched a stepped LFO into the VCF CV input and placed the Filt Mod control to 11 o'clock to exaggerate harmonics in the filtered sound. The result was a rising and falling set of filtered bell tones that crossfaded in and out of the original drone.

By switching the Mix Source to Dry/WS, I could then crossfade between a waveshaped version of the drone and the unprocessed input. At this point, the external CV added subtle pulses to the waveshaped side while the WS Mod control allowed me to inject a bit of modulation into the distortion using the internal LFO.

Switching Mix Source to VCF/WS allowed me to crossfade between the stepped bells of the filter and the modulated waveshaping timbre. Because the VC Mixer is normalized to the VCA Input, you can take any these signals from the VCA Output and adjust the attack and decay times to add more variety to the signal.

Just for fun, I patched a different waveform from the same oscillator into the Tidal Wave's VCA input, sending the VCA output to another mixer channel: I wanted to see what happens when you use different functions of the module separately. When I set the Env Trig Source to triangle or square, the internal LFO opened the VCA in time with the panning speed of the VC Mixer.

However, when I set the trigger source to Random, the output became rhythmically var-

ied. By adjusting the Random Trigger Threshold control, I could pulse the VCA in more complex ways than simply opening and closing it in time with the panner (though not in a chaotic sample-and-hold way that I had expected). The Random setting also worked well when I patched the crossfaded signals out of the VCA and adjusted the attack and decay.

All of this may sound complex, but it really isn't. It is the type of thing you might do with a collection of single-function modules. But here, it can all be done within a single panel.

RISING TIDES

Now it's time to combine the Tidal Wave's internal signal routing features, which can increase timbral complexity. For example, using the Routing switch you can place the VCF before or after the wavefolder, whether you are processing an external audio signal or the internally generated sine wave.

Even more interesting is that the internal CV busing matrix patches the envelope to one destination and the selected LFO shape to the other. Whichever side you set the CV Bus switch, that CV is sent to the Filter Mod while the opposite side goes to Q Mod. For example, if you set CV Bus to Env, the envelope gets patched to Filter Mod, while the LFO goes to the Q mod.

On the left side of the LFO Bus switch you will see three choices—sine wave, triangle, and Off—used to control the VC Mix. I integrated all of these selections in the crossfading example above.

In a final push toward sonic madness, the Tidal Wave includes a Feedback switch that sends the output of either the filter or VC Mixer back into the waveshaper. Once you engage the Feedback circuit, you can have fun setting the Random Trigger Threshold to build rhythmic variations between various parts of the patch.

TIMBRAL TSUNAMI

There is a lot to wrap your head around here and it will take you some time to grasp fully how signals are bused to different places within the module. But if you put in the effort to learn the Tidal Wave's more esoteric features, you will soon realize the module is not a one-trick pony: It's an entire circus!

Crank everything up and the module excels as a noise machine. Yet, it cleans up very well to provide warm and juicy timbres. With all the useful things it can do, you'll find that the Tidal Wave is a great way to spend 20HP of your modular case. ■

Special thanks to Guy Taylor of I/O Music Technology (io-mt.com) for loaning us the module for this article.

The **DLS** lets me catch
creative magical moments.
It allows me 'worry-free' mixing!

DiGiGrid Creative Audio Interfaces.

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

Jack Joseph Puig

U2, Lady Gaga,
Black Eyed Peas,
John Mayer



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process and offload Waves and third party SoundGrid plugins with LLM™
(real time low latency monitoring)."

BY MIKE LEVINE, GINO ROBAIR, AND MARKKUS ROVITO

A STUDIO FOR ANY SCENARIO



We offer affordable (or free!) gear lists for three typical recording spaces, and share tips for building your own.



Each year, a few *Electronic Musician* editors get together to comb through hundreds of audio products to assemble hypothetical studio setups that music makers will find affordable, musically and ergonomically useful, and, most of all, artistically inspiring.

This time, we've focused on three scenarios that musicians commonly encounter—creating sound for picture, recording rehearsals and jam sessions, and assembling a collection of shareware/freeware audio tools for making electronic music.

We've chosen products that provide the best features for the money, while remaining relatively affordable: Even with software freebies, it's important to know what you'll get when developers try to upsell you.

Of course, personal preference plays a major role in any sound-related purchase, so use these suggestions as a starting point as you define a system that meets your own needs. All of these setups will give you a firm foundation from which to begin. (For brevity's sake, we've assumed that an acoustically ideal space complete with mic stands and other accessories is already in place for each scenario. And unless otherwise noted, street prices are quoted throughout this article.)



Universal Audio Apollo Firewire Quad

The Composer Studio

Music creation for visual media

BY MIKE LEVINE

This studio is designed to provide a TV or film composer with the tools necessary to do his or her job. A composer needs a large selection of virtual instruments, a DAW with strong video support and score-friendly features, and reliable monitoring. I am also building in the ability to record a live musician or vocalist, which is often necessary during a composing job. I have tried to keep the cost reasonable, but I didn't skimp on necessities purely for the sake of economy.

I could've chosen any number of DAWs, but Logic Pro X (\$199) offers an unbeatable all-around combination of features for the film composer on a Mac, including markers, advanced tempo calculation tools, support for multiple frame rates and SMPTE, and the ability to bounce to a QuickTime movie. It offers a fine selection of virtual instruments, the superb Drummer and Drum Kit Designer features, and a host of solid audio-processing plug-ins. It even has a large selection of built-in Apple Loops, which are handy for throwing together quick ideas or to use for inspiration or temp tracks when composing. Considering what's included, its price is incredibly low—and no subscription is necessary.

For the deepest set of film-scoring features of any DAW, including support for streamers and punches, a visual click, tempo calculation, and much more, the cross-platform MOTU Digital Performer 8 (\$499) is the ticket. If your work will include sessions with live players working to picture, these features could make DP8 your best bet on either platform. It also provides a strong set of processing plug-ins, including a very good amp modeler. So, while Logic's virtual instrument collection is much deeper and its price a lot lower, many film composers swear by DP8, so it is a strong option.

Both software apps have relatively full nota-

tion sections, which will let you print out parts for musicians as needed. But if you work extensively in notation, you might want to add PreSonus Notion 5 (\$149) to the studio. It offers video support so you can work on your scores in it standalone or ReWired to your DAW. It brings a good selection of orchestral sounds, which will augment the virtual instruments I am including with the studio (see below), and it gives you greater flexibility than the DAWs do when creating charts for musicians. In addition, the inexpensive Notion for iPad (\$14.99) lets you open your scores and tweak them on the go.

In addition to a DAW, an audio interface is the heart of a studio setup. Universal Audio's Apollo interfaces offer a number of advantages, including access to the excellent universe of UAD-2 plug-ins (the Realtime Analog Classics Plus bundle is included, and others can be added à la carte) and the ability to track through UAD-2 preamp emulations—the Universal Audio 610-B preamp is included and others are available for purchase. The excellent and easy-to-use Console application makes controlling the preamps and plug-ins (not to mention setting up cue mixes) a breeze. The DSP mixer feature provides low-latency tracking.

For my studio, I chose the Universal Audio Apollo FireWire version (\$1,999) because so many Mac Pro tower systems, not to mention Windows computers, don't have Thunderbolt ports. This interface is future-proofed to a degree, because if you do get a Thunderbolt-equipped computer, you can update the Apollo with a Thunderbolt card. If you already have a Thunderbolt-equipped computer, substitute the Apollo 8 (\$2,499), which also has a Quad UAD-2 system and similar software features and I/O. Either way, you can't go wrong.

In terms of virtual instruments, Native Instruments Complete 10 (\$499) was probably the easiest choice of all the items I put in this studio. Not only does it give you industry-standard instruments such as Absynth 5, Massive, and Reaktor, as well as new synths like Rounds and Monark, you also get the Kontakt 5 sampler. In addition to its own vast and comprehensive instrument collection, Kontakt 5 comes with drums, pianos, strings, horns, and more. What's more, third-party instruments are available for it, as we will see in a moment.

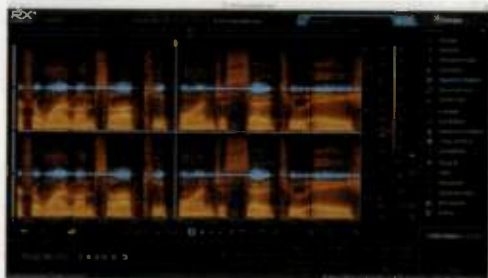
Complete 10 also includes excellent compressors, reverbs and other effects. If your budget allows, go for Complete 10 Ultimate (\$999), which



MOTU Digital Performer 8



Native Instruments Kontakt 5

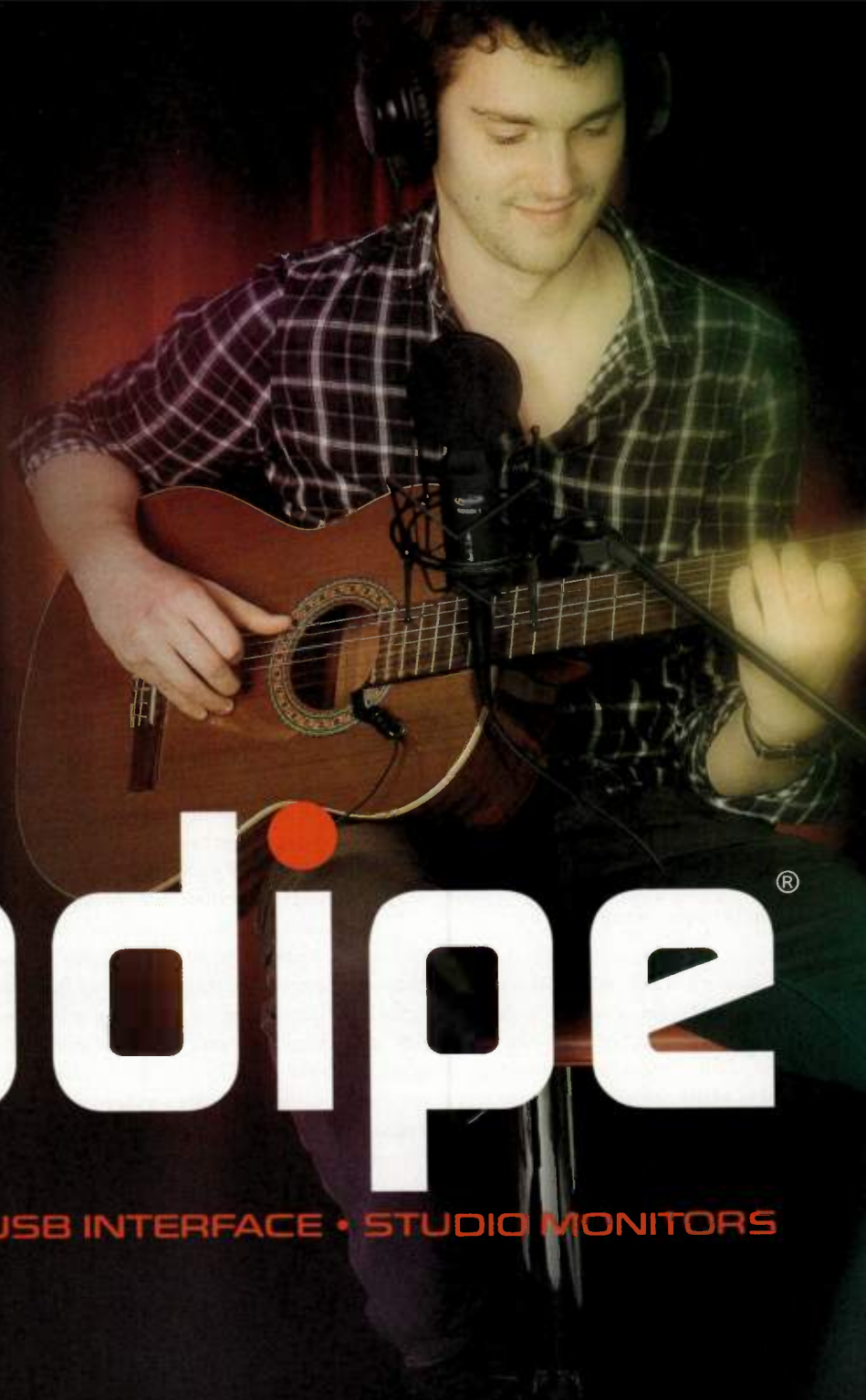


iZotope RX-4



iZotope Ozone 6

provides an even larger collection of instruments and content. But you will be well set up even if you only get the regular Complete 10.



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Apple Logic Pro X



Spectrasonics Omnisphere 2

Speaking of Kontakt libraries, Spitfire Audio Albion 1 (£349) offers a range of orchestral instrument sections including strings, brass, woodwinds, and percussion. Its pre-blended-section architecture makes MIDI orchestration faster and easier than with a lot of other libraries. All the captured sounds are meticulously miked and exquisitely performed.

Between the synths included above, you have a lot of synthesis power already. But if your productions lean toward the electronic side, and you want to really ramp up your synth power, Spectrasonics Omnisphere 2 (\$479) is a great choice. Offering wavetable, granular, and FM synthesis, as well as a huge selection of filter and modulation options, it can produce an enormous variety of timbres, including the sound-design-style patches so often heard on soundtracks. Omnisphere 2 comes loaded with more than 10,000 sounds and provides the creative tools that let you add rich and complex electronic textures to your scores.

With the amount of cues you have to crank out for many scoring projects, it's handy to have a fast and effective way to get them sounding their best before submission. The iZotope Ozone 6 Mastering Suite (\$299) does exactly that, offering both standalone and plug-in operation, and featuring EQ, Dynamics, Maximizer, Harmonic Exciter, Stereo Imaging, Post EQ, and Dithering, all in an integrated modular environment. Ozone's plug-in version can also be useful

as a processor for individual tracks during mixdown.

It's not a question of whether you'll have to deal with noisy or glitchy audio, it's a question of when. That's why you need an all-around audio restoration suite such as iZotope RX4 Audio Repair Toolkit (\$349). Whether you have to remove ambient noise or hum, or take out an inadvertently recorded sound from a decaying note, RX4 gives you a potent collection of modules to deal with virtually any kind of audio issues.

For recording live instruments, I have chosen a small selection of quality microphones. The Audio-Technica AT4033/CL (\$399) is a single-pattern, large-diaphragm condenser that gives you excellent quality for recording vocals and voiceovers. It records with low-noise and good transient response, offers high SPL handling, and has the versatility to handle a wide range of sources.

For accurate recording of acoustic instruments, the Oktava MK-012-01 (\$599 for a matched pair) offers excellent sound quality at a good price, and three interchangeable capsules are available—cardioid, hypercardioid, and omni. For everything from acoustic guitar to piano to violin, this versatile pair of pencil condensers will come through for you.

For headphones, I have two choices. The Audio-Technica M70-X (\$299) offers premium performance at a reasonable cost. Comfortable and well-built, the closed-back circumaural M70-X offers good isolation for tracking, and accurate frequency response for mixing.

I would add three pairs of the Shure SRH440 (\$99/pair) so there are enough cans to go around when musicians and clients visit for live sessions. The SRH440 provides good isolation and excellent sound at a reasonable price.

Because this studio has no mixer, you'll need something to replicate the functions of a console monitoring section, including talkback and monitor switching. Luckily, the PreSonus Monitor Station V2 (\$299.95) deftly handles both of those ap-



Audio-Technica AT-4033



Focal Alpha 80



Audio-Technica ATH M70x



Oktava MK-012-01



Avantone Active MixCube



plications. What's more, it is equipped with four amplified headphone outputs, so there's no need to purchase a separate headphone amp.

Accurate monitoring is crucial for a composer, especially when mixing. Included are two very different types of monitors that you can switch between during mixing sessions to provide different sonic perspectives.

Focal monitors are renowned for their accuracy, and the Alpha 80 (\$549 each) brings that to your studio at a surprisingly affordable price. Equipped with an 8" woofer and 1" tweeter, these biamped monitors give you the frequency response to judge everything from the lows of timpani or sub bass to the highs of strings and other acoustic instruments.

Sadly, not everyone will hear your music on large biamped speakers, so it's good to have a way to check how your cues will sound on TV sets, computers and other "real life" devices that offer more midrange than top or bottom. The diminutive Avantone Active MixCubes (\$479/pair) feature 60W of total power and provide combo inputs that accept XLR and 1/4" input.



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always listening

Capturing Inspiration

Tool sets for recording rehearsals and gigs

BY GINO ROBAIR

Nearly every top musician will tell you: If you want to take your playing to the next level, record yourself practicing and performing and listen to the results. To do this, you need a recording system that matches the number of musicians you have, the situations in which you play, and, most importantly, your budget.

Of course, recording in a practice space or noisy club doesn't always provide the best sound, but that doesn't mean you should skimp on audio quality: You will be surprised how often a recording device captures the essence of a song, which trumps any detrimental sound of the environment itself.

Rather than assume one size or type of ensemble, I will describe a couple of scenarios that I have come across and offer some affordable and reliable ways to record them.

Let's start with a duo—a pair of singer/songwriters, both of whom sing and/or play an acoustic instrument (guitar, mandolin, banjo, etc.). The easiest way to capture the two with a decent degree of separation between the channels—musician A on the left, musician B on the right—is to use a portable digital recorder, preferably one with directional mics (e.g., cardioid pattern) that face away from each other. (In stereo-miking terminology, this is referred to as an NOS or ORTF configuration, depending on the angle of separation and the distance between mic capsules.)

My favorite recorder for this scenario is the



Audix DP4 drum pack



Cymatic Audio uTrack 24

Tascam DR-40 (\$179), a clean-sounding, lightweight yet durable recorder that lets you position the built-in mics in a spaced or x/y position. It can capture WAV files up to 24-bit, 96kHz resolution as well as MP3s for longer sessions (such as lessons). It accepts SD and SDHC cards up to 32 GB.

A major plus is that the DR-40 can record four channels—two stereo files simultaneously. To do that, the device includes phantom powered XLR/TRS combo-jack inputs that accept external mics or line signals. Or, you can set the device to record the second stereo file as a safety track with a lower input setting to avoid distortion. Best of all, this recorder is easy to use, making it convenient to set up quickly and capture songwriting sessions, shows, and lessons without fuss.

For larger groups who want to record while they practice, JamHub has several solutions designed to reduce the audio level of your rehearsal as far as the neighbors are concerned, while al-



Roland HS-5

lowing the musicians to hear each other clearly via headphones. There are three configurations to choose from: BedRoom (\$299) accepts 15 audio channels, supports five musicians and has



JamHub Tracker MT 16

analog line outputs for recording; GreenRoom (\$499) and TourBus (\$699) each handle 21 channels and seven musicians, and provide USB ports for tracking to your computer-based DAW. However, the TourBus also includes a metronome and built-in stereo recording capabilities to SD card—a complete system for capturing your jams, songwriting sessions, and pre-production work.

All of the JamHub models have TRS and phantom-powered XLR inputs, allowing you to use mics for voice, a drum overhead, or on a bass cabinet, while sending signals from keyboards, electronic drums, and guitars. Each musician has input level controls for their instrument and microphone, a pan control for their own instrument, as well as the ability to create a mix of the other players in his or her own headphones or earbuds. There is also a built-in master effects processor for the XLR inputs, and each musician has his or her own effects level control.

The JamHubs come with one or more wired remote jacks, depending on the model. This gives as many as four musicians control over the mix going to their headphones while standing at a distance from the main unit. (TourBus comes with two SoleMix remotes, while the GreenRoom includes one. Additional remotes are \$75 each.)

If you want to do a multitrack recording from the JamHub, the company offers the Tracker MT16 (\$399). It comes with the single Connect cable that sends output from JamHub directly to

All-round Rehearsal Kit

When you set up a rehearsal space, it's a good idea to have some basic tools around for both recording and P.A. amplification. For example, a handful of dynamic mics are great for vocals and amps: The Shure SM57 and SM58 (\$99 each) are as rugged as they are inexpensive, and they work well on everything.

However, I recommend keeping a separate set of mics around just for drums, and fortunately most mic makers offer drum packs at reasonable prices. For example, the Audix DP4 (\$449) puts three i5 dynamics together with a D6 kick mic and clamps. Better yet, the i5s work well on guitar amps and vocals, so they can serve double duty. Lower-cost drum packs worth checking out include the CAD Touring7 (\$299) and Samson 8Kit (\$299.99). (See our June 2014 issue at emusician.com for a roundup of drum mic packs.)

DI boxes are indispensable, and the more the merrier. Radial Engineering makes a wide variety of passive and active DIs, all of which are housed in rugged cases. They range from the basic, passive ProDI (\$99.99) to the PZ-DI (\$229), which is optimized for use with piezo pickups.

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PreSonus StudioLive 16.4.2



Jam Hub Tour Bus



Tascam
DR40

the Tracker MT16, which records 16 simultaneous tracks of MP3 or WAV files to SD card or a USB drive with resolutions up to 96kHz. (The highest resolution reduces the track count.) Cards up to 64GB are supported. Moreover, the Tracker MT16 is WiFi-enabled and has an Ethernet port for updating the software.

On the other hand, if you're using an analog mixer in your studio or onstage, you can use the JamHub's breakout snake (\$75) to patch audio from the mixer's TRS inserts to the eight TRS inputs of the Tracker MT16. (Read a full review of the Tracker MT16 in the November 2014 issue at emusician.com.)

The Roland HS-5 Session Mixer (\$599) is another option for silent practice that also provides built-in recording capabilities. In this case, it offers 16-bit,

44.1kHz stereo WAV recording directly to USB flash drive (up to 32GB supported). To make a multitrack recording, connect the HS-5 to your computer via USB.

The HS-5 accepts five inputs and lets each player create his or her own mix (including individual reverb level control). Four of the input channels have XLR jacks, as well as 1/4" jacks for line- and instrument-level signals. The fifth channel is stereo line input only on 1/4" and 3.5mm jacks. Roland's COSM amp modeling is provided for guitar and bass instruments, with EQ, delay, compression, and reverb effects included. Two HS-5s can be connected together to handle eight musicians.

For all of these systems, you will need closed-back headphones for proper separation from external sounds. Among my favorite affordable models are the Audio-Technica ATH-M40x (\$99), the Shure SRH440 (\$99), the Sony MDR-7506 (\$99), the Samson SR950 (\$69), and the Sennheiser HD 280 Pro (\$99). Like with mics and speakers, the sound you prefer from a pair of headphones is subjective, and I encourage anyone who visits my studio to bring their preferred pair so that they have something they're comfortable with in terms of feel and sound quality.

Many artists and bands want the ability to record directly from the house mixer with little or no fuss, using an affordable recorder that will stand up to the road. The Cymatic Audio uTrack 24 (\$999) can be used to record 24 channels at 24-bit/48kHz resolution (8 channels at 24-bit/96kHz) directly to a USB

drive. You can use the uTrack 24 not only to record your rehearsals or shows, but to capture your sound check so that you can evaluate the mix while off-stage; the front-panel LEDs display input levels.

You can also use the uTrack 24 to play backing tracks during your show or as an audio interface when you're back in the studio. The internal DSP mixer lets you create a stereo mix for the headphone outputs and features level controls, pan, mute, and solo. You can set markers and loop points as needed. The unit can also playback Standard MIDI Files.

The 1U device has all of its analog I/O on D-Sub connectors. For pro applications, the uTrack 24 includes Word Clock I/O and a slot for an optional MADI card. The Ethernet port provides a way to control the uTrack 24 wirelessly. Just connect a WiFi router to the recorder and use the free uRemote software to view and control all 24 tracks using a laptop or iOS device. Cymatic Audio also offers uTool software for file conversion and playlist editing.

For a complete rehearsal or gig recording system that includes mixer functionality and makes the process a breeze, it's hard to beat PreSonus. Starting with any of the company's StudioLive AI-series digital mixers, you can track immediately to your computer over FireWire using Capture 2, a cross-platform multichannel recording application that comes bundled with each mixer. (Read a review of the StudioLive 16.4.2AI in the June 2014 issue at emusician.com.)

After you've set up your mix and connected the mixer to your computer, launch Capture 2. When the Capture Now button appears, hit it; a session is created and recording begins immediately. If you engage the Prerecord feature, Capture 2 will grab up to a minute of audio before you press Record. Engage Big Meter mode to see large level meters instead of the timeline, and set Session Lock to keep the recording from inadvertent interruption. The program also saves the mixer scene within your Capture 2 session.

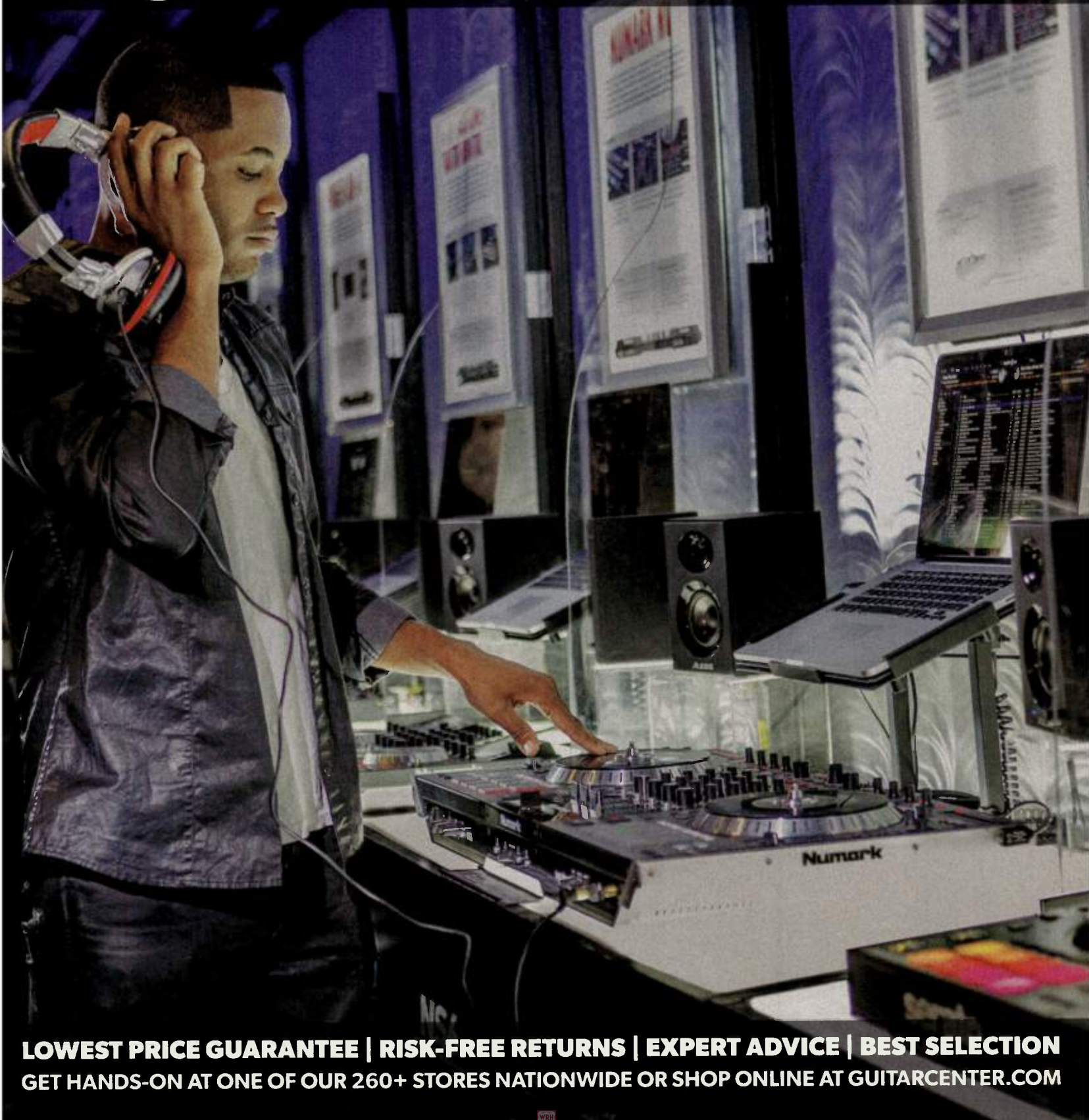
One of the handiest features in this setup is Virtual Soundcheck, which allows you to play back a previous recording from a gig or rehearsal in order to automatically set up the mixer for the new session. Once the band arrives and gets set up, all you'll have to do is a line check and make any final adjustments, then you're ready to roll. The number of tracks you can record in Capture 2 is determined by your StudioLive AI and RM (the rackmountable version) mixer's channel count. And if you've hooked up a router to your mixer, you can control it wirelessly using the StudioLive Remote for iPad.

When it's time to edit and mix your recording, open your Capture 2 session in PreSonus Studio One 2.0. StudioOne configures automatically to the mixer, and the mixer scene is recalled, including Fat Channel settings—everything except the reverb and delay settings. In addition to mixing and editing your tracks, you can further edit the scene, then send it back to the mixer for recall. All told, it's a well-integrated system.



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The Free Stuff Studio

What can no money down do for you?

BY MARKKUS ROVITO

If you're old enough to remember when Run-DMC said "hard times are spreading just like the flu," you're probably old enough to have a couple of bucks lying around. But it's okay if you're broke or just don't feel like shelling out for music gear. If you have a decent laptop, you can definitely collect enough free tools to make some high-quality electronic music.

You're going to have to sign up for accounts, and possibly fill out surveys. You may have to maneuver around donation solicitations and deal with some GUIs that are a bit gooier than the \$300 competition. Such is the burden of the musical freeloader. Not only that, you're going to have to use the laptop's built-in mic. (Hey, Erykah Badu did it!) As for monitoring, I hope you have some decent earbuds.

A free DAW is kind of like a free lunch; some will say it doesn't exist, while others will say it depends on how you look at it. Apple GarageBand is quite good for a free DAW, if you have a Mac and only want to use 64-bit AU plug-ins (which limits your current free options significantly). But we'd like to keep this list cross-platform, since the low-cost computers live in the Windows space, and there are lots of free VST-only plug-ins.

The new update to the open-source DAW, Ardour 4.0, deserves a shout-out, because of its many improvements and support for OS X (AU plug-ins only), Windows (VST plug-ins only) and Linux. It's not the slickest interface or fastest workflow, but it is a high-level DAW you can use professionally. However, it is only sort of free. If you don't donate at least \$1, plug-ins will be disabled and the program goes silent after 10 minutes. But everyone has \$1. Everyone.

My highest recommendation goes to Cockos Reaper, which is really only free on a technicality. You can "evaluate" the fully functional Reaper 4 DAW officially for 60 days, but unofficially for as long as you want, because Cockos is cool. Licensing Reaper costs \$60 (personal use) or \$225 (commercial license). If you have the \$60, supporting Reaper—perhaps the world's greatest DAW value—is well worth it. It specializes in efficiency

and stability, but gives you an advanced feature set for multitrack recording, audio and MIDI editing, AU/VST plug-in support, and a well-rounded suite of effects. It also has a crucial Virtual MIDI Keyboard, so you can input notes from your QWERTY.

Whereas free DAWs are a little bit squirrely, the free instruments are where this gets really fun. And you can do a lot of sonic damage with no cash spent. First, let's cover a lot of the basics with two sample-based instruments: Magix Independence Free and IK Multimedia SampleTank 3 Free (both are AU/VST). Independence Free comes with 2.2GB of drum, percussion, guitar, bass, piano, synth, and other instrument sets and has the feature set of a full-fledged sample workstation like Kontakt or Halion. Upgrading to a paid version gets you the 12 or 70GB sound library. SampleTank 3 Free limits you to 22 instruments, but they sound great and will round out your palette a bit with things like flute, brass, and violin. Plus, it's an easier interface with excellent effects, and mixing for up to 16 parts built-in. You can use it in stand-alone mode for a live performance option and buy tons more sounds from within the software.

Many of these free instruments take inspiration from vintage hardware, such as the Cwitec TX16Wx (AU/VST), based on vintage Yamaha samplers. It's great because it has astounding

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PowerTube™ tube preamp

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PowerPre™ mic preamp

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

Q4™ state-variable parametric

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

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

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

"The EXTC is a must-have for any 500 Series owner. It gives you the ability to use low-cost guitar gear in a studio setting. It gives mixes a kick in the pants!"
~ Mix

"The Q3 behaves like no EQ I have ever used... it can be a bit tricky at first, but it turns into a fun 'turn the knobs until something cool happens' type of box."
~ Professional Sound

"It took me about 10 seconds to land on something that worked perfectly. The Q3 is a useful, refreshing and simple tool. And it's fun."
~ TapeOp

jensen
transformers
inside

sound-shaping capabilities and lots of format support (including WAV, AIFF, Logic EXS, Akai AKP, REX, and SFZ), which opens it up to lots of free sample collections (see below).

Now look up the u-he Tyrell Nexus 6 (based on vintage Roland Juno synths), Ichiro Toda Synth1 (modeled on the Clavia Nord Lead 2), Datsounds Obxd (inspired by Oberheim OB-X models), and the Digital Suburban Dexed, based on the Yamaha DX-7 FM synth. These range from fairly simple (Obxd) to complex (Dexed). None are as advanced as today's mega soft synths, but many have a lot of great presets, and they should all challenge your synth patch creation skills.

On that tip, if you're learning synthesis or just want some instant gratification, try Archetype Instruments Lokomotiv (AU/VST), a simple but big-sounding virtual analog synth with two oscillators (plus noise and sub-osc) where you can dial in sounds fast or check the presets and deconstruct what the controls are doing with the sound.

Finally, for something completely different, load up u-he Triple Cheese, a synthesizer that uses three stages of comb filtering to generate signals, rather than oscillators or samplers. It's not difficult to use if you understand basic synthesis, and it's good for making weird and yes, cheesy sounds, like a circus organ out of Alice's Wonderland.

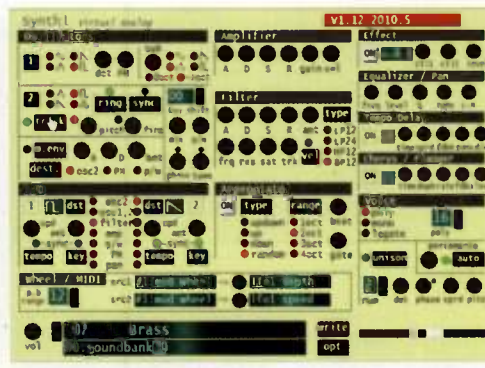


Cwitec TX16Wx



Magix Independence

Windows users have a lot more basic-to-bizarre free VST effects they can pluck from the Internet, but we'll still hook up with a well-rounded selection of freebies for both Mac and PC. IK Multimedia Amplitube Custom Shop starts you out



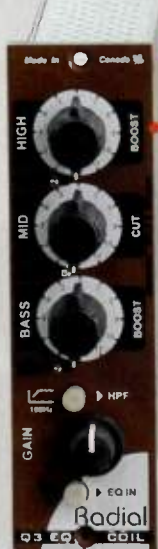
Ichiro Toda Synth1



Sound Magic Piano One

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EXTC™ guitar effects interface

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



Tossover™ frequency divider

Works double duty as filter or frequency divider! As a filter, you can set it to 12, 18 or 24dB per octave slopes to roll off unwanted frequencies or create a band-pass filter to accentuate the mid range. As a frequency divider you can pull apart the bass and highs and process them separately to apply effects to one register while leaving the other alone. Think outside the box.

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Datsounds Obxd



Archetype Instruments Lokomotiv



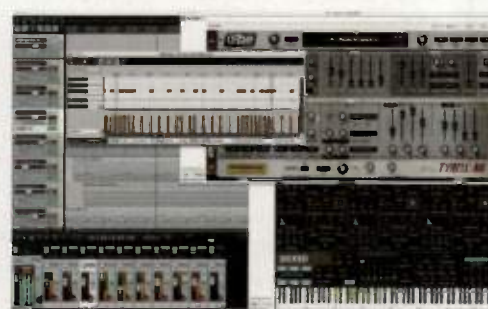
u-he Triple Cheese



Digital Suburban Dexed



Ardour 4.0



Cockos Reaper



Lkjb Plugins Luftikus



Tyrell Nexus

iOS IOU

With many iOS app developers relying on in-app purchases, you can snag a ton of cool music apps for free now and pay later if you decide you want the upgraded features. Here are some quick hits for cash-strapped iOS music-makers:

- **WORKSTATION:** Axy. Beat Studio. Create and edit multitrack drum, bass, and synth pieces quickly in a user-friendly sequencer. Extra \$: MIDI support.
- **GROOVE MACHINE:** Novation Launchpad. Trigger, mix and process the included loops and one-shot samples in this engaging app version of the hardware. Extra \$: more sounds and more effects.
- **SYNTHESIZER:** Steinberg Nanologue. Great app version of the VST 3 Retrologue. Easy to create versatile sounds or call up the 50 presets and use Inter-App Audio to record into GarageBand.
- **SYNTHESIZER:** Novation Launchkey. Cool arpeggiator- and morphing-based synth that makes good use of the touchscreen to modify sounds and includes a healthy preset section.
- **AUDIO EDITOR:** TwistedWave Recorder. Audio recording and detailed waveform editing that you can save to several audio formats. Extra \$: Advanced editing functions and audio upload options.

drums and whatever else you want to try, with many more varieties up for purchase within the software.

A couple of outfits are very generous with free-ware and will complete your setup. First, Togo Audio Line (TAL) has a flanger, bit crusher, tube amp, delays, EQ, filter, vocoder, chorus, and even more synths if you want them. The installation is easy, so why not grab them all?

Next peruse the offerings of the Smart Electronix developer collective. There's a ton to choose from, so I'll recommend the Ambience reverb, SupaPhaser, SupaTrigga auto-glitch, and the Mad-Shifter pitch shifter. The developer Smart Electronix MDA also has a one-click collection of a couple dozen free VSTs you should grab.

Lastly, Lkjb Plugins Luftikus (AU/VST) is an analog-modeled 5-band EQ with a high-boost control and nice transparent sound, and the Audio Assault Defacer is anything but nice. This multi-format "audio mangling" plug-in lets you blend between bit-crushing and distortion combinations, so you can add just a sliver of grit or outright destroy the sound.

It's slim pickins for free mastering-grade plug-ins, but there are a few to add to your collection of giveaways (all are AU/VST). Tokyo Dawn Records has two: the TDR Kotelnikov stereo compressor and TDR VOS SlicEQ. Next get the A1Audio A1StereoControl for expanding or limiting the stereo width of a single track or group of tracks. Finally, the LVC-Audio ClipShifter 2.3 wave-shaping limiter can function like a brickwall, a compressor or a soft saturator. A paid version adds Mid/Side processing, oversampling and more.

Need sounds? Free loops and one-shot WAVs are pretty easy to find online. Start at Looperman.com for more than 60,000 of them. But it would also be great to have some free, prepared sample sets that load up with metadata applied in the TX-16Wx sampler. Boldersounds.net has more than 30 free collections, most in EXS24, SFZ, or Kontakt formats (if you need to, download Kontakt Player; it's also free). There's plenty more spread out in different places. Use your searching superpowers!

Now you need somewhere to put your work. Splice.com is a music collaboration service with a desktop app that syncs your musical projects, including all their audio material and presets to the cloud, so that different Splice members can collaborate on them. It supports GarageBand, but if you're using a different free DAW, you can use Splice with just the audio stems. You can keep your projects private if you like, and best of all, the cloud back-up is free, with unlimited storage! ■

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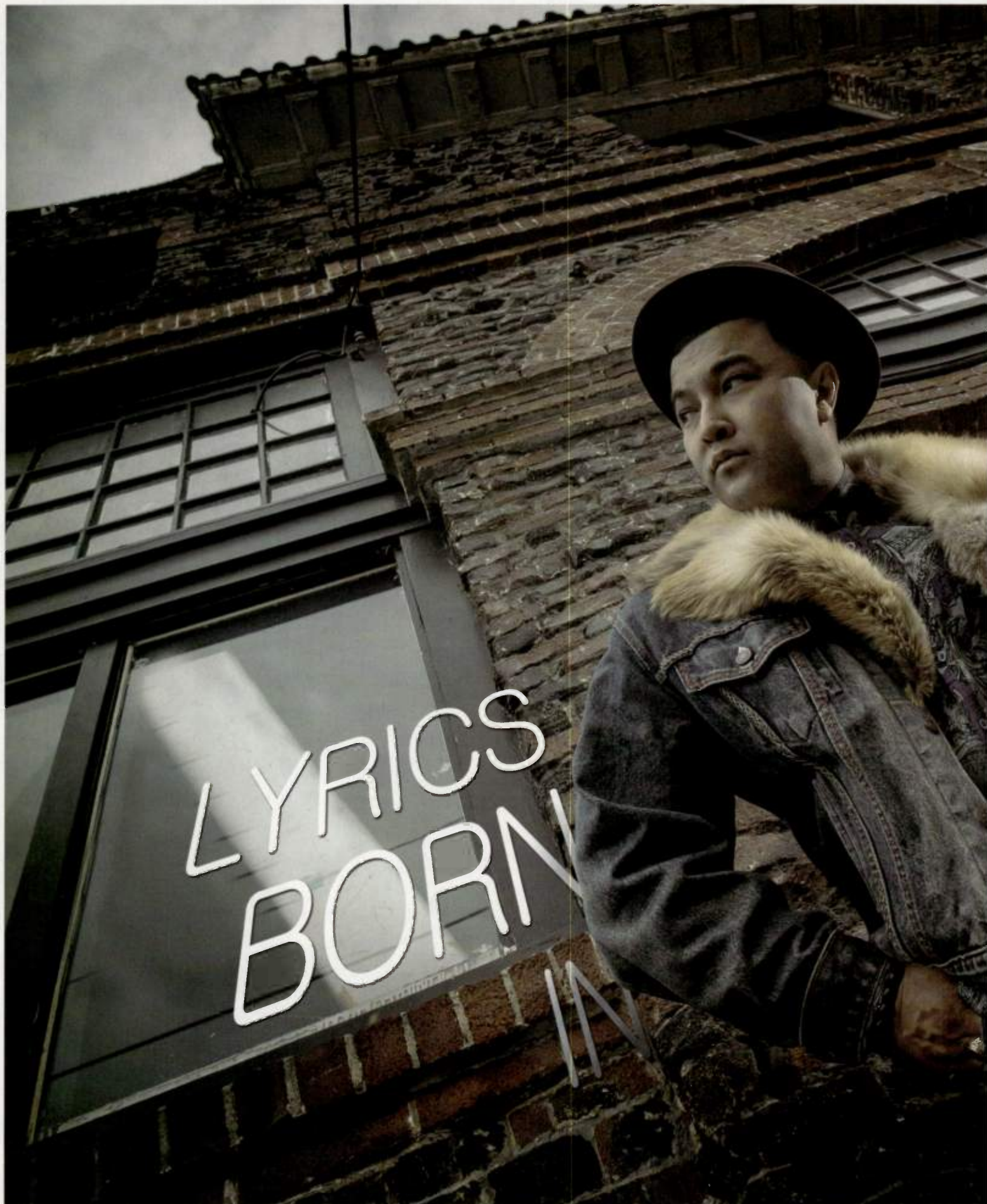
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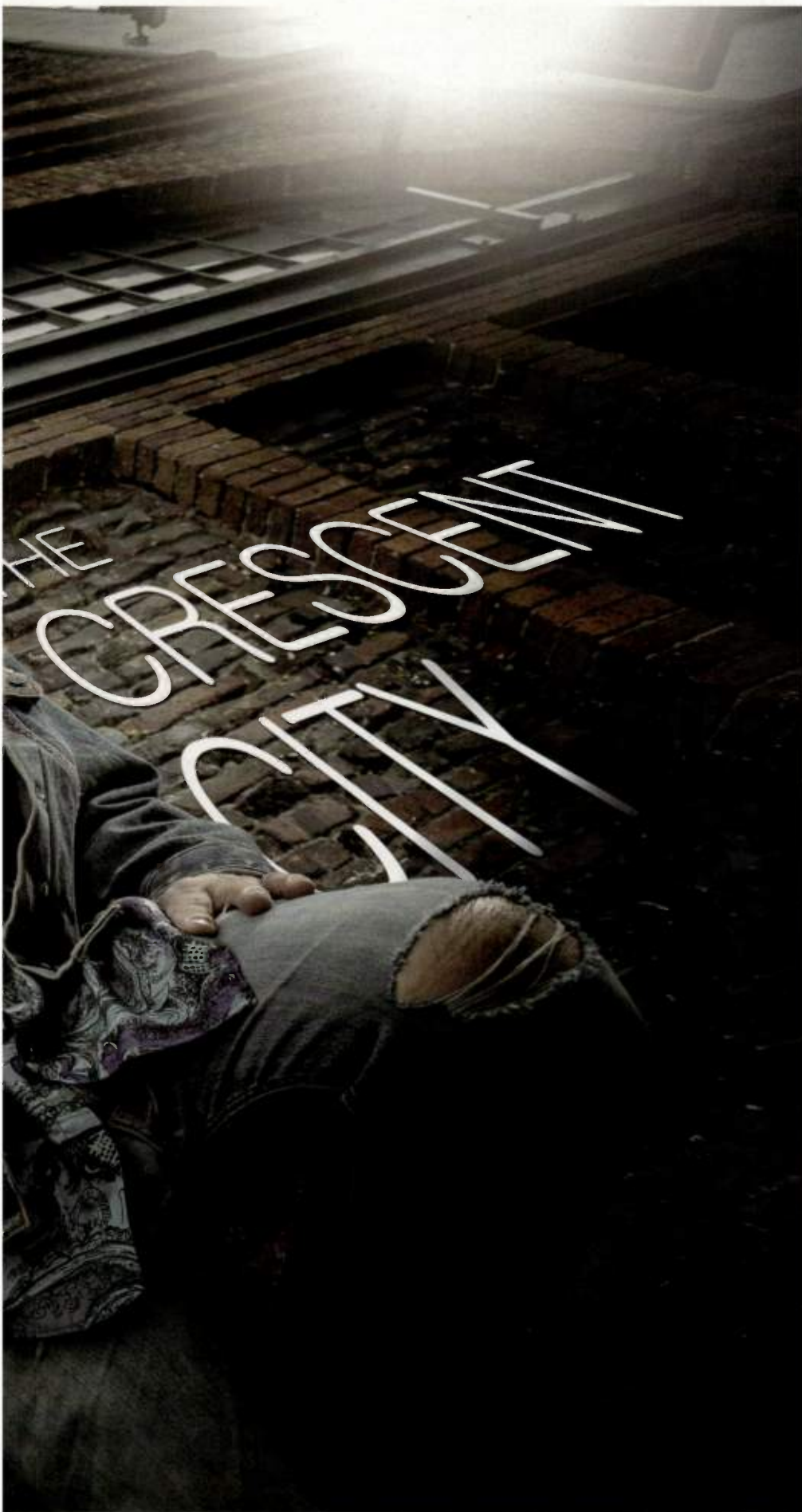
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Rapper taps New Orleans musicians and vibe on his new album, 'Real People'

BY BARBARA SCHULTZ

"*Real People* is my eighth album, and being a career musician I never really wanted to make the same album twice," says San Francisco Bay Area-based rapper Lyrics Born. The words "career musician" make an important distinction: LB is an artist who's continually stretching, who's always more interested in what inspires him now than in what sold units last year.

LB's latest definitely offers a new way into his writing, as he fronts a band of mainly New Orleans-based musicians. Produced by Ben Ellman and Robert Mercurio of NOLA funk group Galactic (celebrating 20 years as a band this year!), *Real People* is a wild ride, with vocals in your face and the melting pot of New Orleans music on full display.

"I grew up listening to a lot of hip hop, but when I started to make my own music and produce, I discovered that a lot of my favorite hip hop from the '80s and '90s was sampling New Orleans bands," says LB of his connection to New Orleans music. "Big Daddy Kane, Queen Latifah, Kwamé, De La Soul—they were sampling the Meters and Dr. John. I started to get interested in this incredibly funky pocket of America.



"When I was in college, I started making buying trips to New Orleans. I would visit all the local record stores and find tons of records that I couldn't find elsewhere. That's how I discovered what a special music town it is. When I started to tour, I made sure it was a regular stop, and I'd play there every year. It just gets in your blood."

Around the time LB released his live album *Overnite Encore: Lyrics Born Live!*, he was invited as one of several rappers to appear on Galactic's 2007 album *From the Corner to the Block*.

"We formed a great relationship with LB," says Galactic brass player/producer Ben Ellman. "He came out on tour with us, all over the world. He knew that I and Robert, Galactic's bass player, do all the production for the Galactic records, and so when he decided to make an album with New Orleans musicians, he enlisted us to be his producers."

LB, Ellman, and Mercurio developed the material for *Real People* together—long distance at first, and then digging into sounds in Galactic's studio.

"They started sending me backing tracks and demos just to see what I was vibing with," LB says.

"We talked a lot about sound and what style was appropriate for what we were going for, and they would keep honing in on demos going for that sound."

"Then I did two two-week-long sessions in New Orleans over the course of eight months," he continues. "I rented a cottage in uptown, about three blocks from The Maple Leaf, where Rebirth Brass Band plays every Thursday. Every morning I'd wake up, go have a *café au lait* and beignets, and I'd write for four or five hours. By two or three in the afternoon, I'd go into the studio with [Ben and Robert], and we would record demos and record the vocals over the music, and just sort of vibe and discuss the music more. Then I would go home and they would finish off the music, and I would finish off my vocals here in the Bay Area, at Robot Envy Studio in Berkeley."

Ellman handles a lot of horn parts on the album, while Mercurio plays some guitar as well as bass, and Galactic's Stanton Moore played drums. But the producers and artist also recruited an impressive group of local musicians to help realize LB's hybrid vision of rap-meets-NOLA-funk. Ap-

pearing on *Real People* are Ivan Neville, Trombone Shorty, Corey Glover from Living Colour, Billy Martin of Medeski, Martin & Wood, the Preservation Hall Jazz Band, and more.

Ellman says the process of each song began with drums. "We have a small, modest studio using Pro Tools and Lynx converters," Ellman says. "We have some Neve preamps. We also use a bit of [Native Instruments] Kontakt and Maschine, but this record was made very organically."

"We recorded our drummer, Stanton, to a lot of different BPMs, and we'd craft everything pretty much around the drums. On these tracks, all the guitars and bass, and almost all of the drums, are real. When we were making demos for LB, we used some soft-synth stuff, but those things were later replaced with real instruments."

Ellman and Mercurio have a go-to drum-miking setup, to capture Moore's kit in the middle of their live room. "The idea is to put up a lot of mics, so we'll have a lot of options later," Ellman says. "We don't always know if we're going to want a huge John Bonham sound or a tight, '70s sound."

They put up a pair of Coles 4038 room mics, a Royer SF-12 stereo overhead, Shure 57s on snare top and bottom, Electro-Voice RE20 on kick front and an Audix D6 on the kick beater, and Beyer M88s on toms. "And we usually put up a trash mic to give us even more options," Ellman says.

Whether played by Mercurio or a guest musician—such as Jeff Raines, Zach Feinberg, or Daniel Kartel—guitar was played through the producers' favorite Vibro Champ amp and miked up with a tried-and-true Shure 57 and/or a Sennheiser MD421.

In addition to Ellman's horn playing on the sessions, an equal measure of brass playing and arranging was farmed out to musician Adam Theis. "My parts were recorded in the Galactic studio, and Trombone Shorty we did here, too," Ellman says. "We use just a Coles in the room, through a Neve 1073 mic pre. We did [Trombone Shorty's] first two albums here, too, so he's really familiar with our studio."

Ellman and Mercurio learned most of their recording techniques from one of their, and LB's, go-to engineers, Count (DJ Shadow, Tycho, Trombone Shorty, Galactic), who mixed several of the tracks on *Real People* in his personal studio in Oakland, Calif.

"Mike Cresswell and I shared mixing duties on this," Count says. "We each mixed several tracks. I've been working on a documentary for a couple of years, about the impact that the Internet revolution has had on the creative world. So I wasn't as involved in this album in the earlier stages as I have been in a lot of other Galactic-related stuff."

Both Count and Cresswell (Ledisi, ALO, Third Eye Blind) mix mainly in the box. Cresswell's Fell Street Studio (San Francisco) is fitted with Pro Tools

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VIRTUALLY RAPPING WITH PRESERVATION HALL JAZZ BAND

The explosive title track from the Preservation Hall Jazz Band's most recent album *That's It!* appears second to last on *Real People*, with a Lyrics Born rap over the top and loads of clever liberties taken with the sound. It's the only song on LB's album that isn't an all-new recording. Instead, the New Orleans trad torch carriers—who have never shied away from crossing over into different genres—gave LB and his producers the stems from their song, and permission to make something new.

"When we got their stems, we realized what was really cool was, they had recorded their percussion separately," Ellman says. "Having that isolated from the horns gave us a lot of leeway. We ended up doing a lot of pitching down their percussion, in [Native Instruments] Maschine, in increments. I worked on the cowbell a lot, especially: there's one cowbell that matches down on 32nd notes throughout. I also did drum programming in Maschine for that track. And I use Ableton as well, so I put all the stems in Ableton to get bpm locked in, and then I'd throw it back into Pro Tools to do my editing and drum programming.

"I really love the vocal LB did on this track, too," Ellman continues. "He learned the whole trumpet solo—which is like a bebop solo—and wrote lyrics to it. He nailed it. The chorus is super-hot."

"We took what was already a hot jazz track and turned it into a crazy gypsy, disco, madness track," says Count, who mixed the song. "We basically took Preservation Hall's tracks and deconstructed them as samples. I actually think it's my favorite track on the album, not just because I like it, but also it's so unique.

"It was also the most difficult to mix because it's meant to be manic and spastic—it's like Balkan wedding music, so it's all very rhythmic—but you have a lot of things competing," Count continues. "I had to take some things out in the low end: you have these low tuba and sousaphone, and low rumbling kick drums, and a lot of toms in that are also low and rumbly. I had to create enough space to give the track more dynamics. I switched back and forth between the live drums and the electronic drums [that were added]. There are parts where I rolled off the low end of the original drums to make space for the electronic drums.

Even with all that struggle for sonic space, LB's voice erupts on this track. "The vocals have an overall saturation with [PSP] Vintage Warmer and the Mix Saturator," Count says. "There are also layers of different EQs and compressors, all at different settings. And all the crazy stutter effects on the song were done with [iZotope] Stutter Edit. You start dialing in this wacky effect, and you're only going to use a few little snippets of it. Then there was a lot of manual cutting and pasting to get the exact rhythm that we wanted, to get those little stutter vocals that come in here and there.

"It's all definitely meant to be teetering on too much. The song is supposed to be at that point where, if there were any more, it would be too much and you couldn't even listen to it!"



HD 8, a few key outboard pieces, numerous plug-ins, and Dynaudio monitors. "I've done several records with Tom [short for Tsutomu Shimura, Lyrics Born's given name]," Cresswell says. "He's always very particular and will always keep pushing me. On this project, he was pushing more for an old-school feel, which came in a lot through the live instrument tracking, but we ended up pushing harder with a quite a bit of added saturation and distortion in the mix.

"Everything I mixed got a lot of SoundToys' Devil-Loc, in addition to their FilterFreak and Tremolator—the saturation parts of those plug-ins. I also have various spring reverbs and tube preamps that I use—old, rare stuff like a Berlant, part of an old 2-track. I used a combination of all those things on everything, because he just kept pushing for more distortion, more saturation on everything."

Count also has his favorite plug-ins—in fact, he has pared down his processing arsenal to products he values, not only for their sonics, but also for reliability. "Plug-in companies tend to come and go, or they might have cycles when they are lacking in innovation. I decided awhile ago that it makes the most sense to me, even if I like a certain company's plug-ins, that it screws me up more than it's worth if the company is lagging behind updating their software," Count says.

"I find that when you have more limitations it makes you more creative. Endless possibilities can just be overwhelming, and at the end of the day, you're not necessarily hearing any progress. So, tools-wise, I'm almost exclusively using PSP and SoundToys, plus a few Waves plug-ins that are crucial to me.

"PSP is maybe the most underrated company in the world—there's a different thing going on about the saturation in their plug-ins that's very pleasing to me," Count continues. "It doesn't get fuzzy or crackly; it just gets more badass."

Getting specific, Count says PSP's Vintage Warmer and Mix Saturator are all over *Real People*. "They appear on things that you might not even think sound saturated," he says. "They just have a wonderful tone to them. Particularly, the Vintage Warmer has something that just doesn't exist in hardware or software that I've found. Most pieces of gear are emulating something else, but this is its own thing. It's so natural—the organic-sounding way it deals with everything you put through it. The attack is never destroyed. It doesn't sound artificial. It gets used in a variety of ways on everything I work on.

Like Cresswell, Count also makes extensive use of Devil-Loc. "One of the amazing benefits of doing something with modern gear is that a lot of compressors finally have a mix wet and dry knob that you can use to adjust the percentage of the dry signal coming through. It allows me to dial in

something very specific. I can get an overall vocal sound, and if I want a tiny bit more edge to the distortion, I can put Devil-Loc up at 1; just 10 percent of the Devil-Loc sound gives it that little bit of edge. Especially if a track is super-dense, which makes it difficult to get things to cut through. That plug-in really helps with that."

Both of the mix engineers also appreciate the Dangerous D-Box, for sonics as well as for summing. "Everything I do is mixed in Pro Tools, but it's all summed out through the D-Box and put back through the Burl [Audio] B2 Bomber," Cresswell says. "Driven hard, the Burl adds another level of saturation—a 2-track tape kind of warmth."

"That Dangerous box is the only important piece of outboard gear I'm using," Count adds. "It lets me push further with my EQing; I can go extreme and it never sounds like things are internally digitally processed. It's a huge help in my mixing. I didn't actually want to need anything outside of the computer, but this piece of gear has been a huge help."

After Count and Cresswell's mixes received initial approval from the producers and LB, they asked Count to go back into the album and adjust all of the mixes to make the album as a whole more cohesive. "Each track got a little microsurgery," Count says. "That were a lot of minuscule adjustments just to make sure everything was in

the same zone."

Count also mastered the album, and he swears by his Genelec 1030 monitors for tracking those minuscule changes. "These Genelecs are great, especially on music like this where the low end is so important," he says. "Now a lot of the artists I

the digital age are used to producing themselves, but this work let me get outside myself and reach beyond my limitations and my own habits. And Ben and Robert have great ears for arrangements. Sometimes I would send them a verse that was 16 or 20 bars, and they would cut me down to 8 or 12.

Rap vocalists in the digital age are used to producing themselves, but this work let me get outside myself and reach beyond my limitations and my own habits.

—Lyrics Born

work with have them. DJ Shadow has them. Tom has the exact same Genelecs. So, when they come over, it's not different from what they were listening to at their own place a couple of hours earlier."

It took a lot of super-skilled hands, on the Gulf Coast and the Pacific Coast, to make *Real People* into one revved up, genre-bending, soulful stew.

"One thing that was surprising for me about this album was how great it was working with outside producers," LB says. "Rap vocalists in

They were nice about it, but the songs needed to be to the point. We didn't need to go on any five-minute musical excursions. But at the same time it was never about getting the perfect take. In New Orleans, production is so not about that. It's about getting the spirit and the soul of the project to sound authentic and robust." ■

Barbara Schultz is the managing editor of *Electronic Musician* and *Keyboard*, and a contributing editor to *Mix* magazine.



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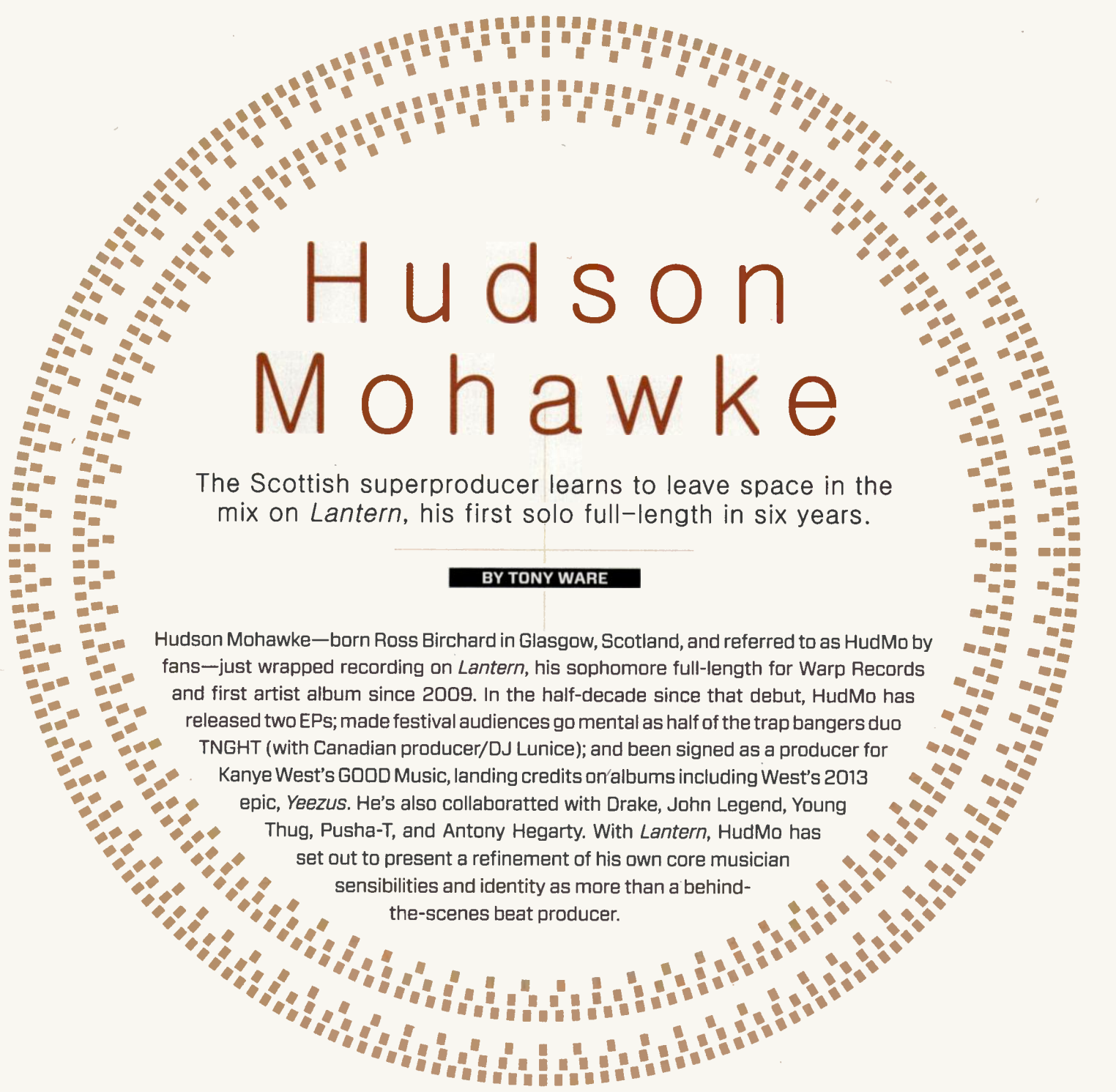


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Hudson Mohawke

The Scottish superproducer learns to leave space in the mix on *Lantern*, his first solo full-length in six years.

BY TONY WARE

Hudson Mohawke—born Ross Birchard in Glasgow, Scotland, and referred to as HudMo by fans—just wrapped recording on *Lantern*, his sophomore full-length for Warp Records and first artist album since 2009. In the half-decade since that debut, HudMo has released two EPs; made festival audiences go mental as half of the trap bangers duo TNGHT (with Canadian producer/DJ Lunice); and been signed as a producer for Kanye West's GOOD Music, landing credits on albums including West's 2013 epic, *Yeezus*. He's also collaborated with Drake, John Legend, Young Thug, Pusha-T, and Antony Hegarty. With *Lantern*, HudMo has set out to present a refinement of his own core musician sensibilities and identity as more than a behind-the-scenes beat producer.

Set up as a dawn-till-dusk arch that bounces from melodic to kinetic and back, *Lantern* gives you access to HudMo's colorful aesthetic, weaving patterns of metallic resonance full of neon, wobbly, soaring wails. Entry to his thought process, meanwhile, comes during an hour-long phone conversation from his current home base in London.

Topics range from establishing a workflow to the pros of happy accidents to sometimes putting faith in ears over meters, but no examination of HudMo's often itchy style is complete without a glimpse at his preproduction accolades as a turntablist and the youngest U.K. DMC finalist at the age of 15.

"When I was still in grade school I got some re-

ally, really cheap turntables for Christmas one year ... belt-driven,” recalls HudMo, now 29. “And it’s a really good way to learn, because when you have sh*tty equipment you have to put in the hours of work to get it to do what you want, while if you go in with an industry standard [direct-drive, high-torque, quartz-controlled] Technics [SL-1200s] you can do whatever from the get-go. I definitely think that learning different scratch techniques contributed to how I would first treat samples, as a sort of unconscious thing. It didn’t occur to me till much later that there was a link, but eventually I realized early on I was chopping things in these scratch patterns that were embedded in me.” (Indeed, listen to the track “Shadows” on *Lantern* and you can still hear transformer and crab scratches in its DNA.)

While learning how to command the crowd and demolish competitors with the wheels of steel’s wow and flutter, HudMo also started playing around with music, somewhat literally. In 1998 Jester Interactive released a UK-only PlayStation music creation program called simply “Music,” which was HudMo’s first introduction to workstation-style production.

“This was before I had any production equipment and before there were affordable all-in-one DAWs; we didn’t even have a family computer, let alone a dedicated music platform, so the fact you could get what was essentially a game that could make full songs was mind-blowing for me,” he says. “And in the follow-up to that game [1999’s ‘Music 2000’—‘MTV Music Generator’ in North America] there was a feature where you could take out the game disc and put in an audio CD and sample it for maybe 10 seconds, but that was my introduction to sampling. I think my first sample was just experimenting with chopping ‘Amen’ breaks [the drum solo from The Winstons’ 1969 single “Amen, Brother”], learning how to intricately chop drums.”

It wasn’t long before HudMo put down the gold-plated Vestax mixer, left the battle routines behind and picked up his first, and still primary, digital audio workstation, Fruity Loops (which he now augments with some Pro Tools sessions).

“I picked up Fruity Loops [now known as FL Studio] because it didn’t seem as complicated as some other things, and I’ve stuck with it since; now I know the workflow so well that by the time some people are still setting their MIDI track, etc., in Logic I’ve already got something up and running,” he explains. “I’ve been using it so long, it’s very tactile to me. And I’ve always liked things that are hands-on. Around 2007 I made the backward decision to collect hardware at the same time a lot of people were selling. So I’ve got hardware synthesizers with the foundation always being FL.”

HudMo’s source and synthesis collection—which includes the Ensoniq VFX, Roland D-550, Moog Little Phatty, Rhodes “suitcase” piano, Novation MiniNova, Teenage Engineering OP-1, ROLI Seaboard, and Dave

Smith Instruments Prophet 12—runs the gamut of FM grit, analog growl, and funky gleam. His gear isn’t always intuitively or infinitely tweakable, but he prefers the “width, the size of the sound compared to what I would get out of some VSTs or other keyboards ... it’s just so much more up-front.” And the combination of hardware and Fruity Loops has led to some unforeseen, fortuitous consequences.

“No sort of disrespect to the designers of Fruity Loops ... but it’s not designed to work with a large number of pieces of outboard gear, so you have to find ways to make it work for you,” he explains. “Like the belt-drive turntables, you quite often find your own path through things like transmitting wrong notes here and there, or when it’s lagging a bit. You’ll move a knob on a synth and it will change a random preset in FL for no reason. So these happy accidents showed me where I’d never think to change a parameter, but a bizarre MIDI signal I never set up has changed a parameter and had a knock-on effect ... it’s a bit idiosyncratic. But I stick with it because with Fruity Loops it’s open and I’m off.”

HudMo’s embrace of idiosyncrasies was reinforced in 2007 when, as a participant in the Toronto edition of the yearly roving Red Bull Music Academy, he sat in on an impactful lecture. “Seeing [tech-house and electro funk-jazz producer] Theo Parrish working on an [Akai] MPC rather than working on software was something I thought was really interesting. I always associated an MPC as being strictly hip-hop. I had never seen it applied to dance music, and so seeing him work with samples and how he also bounced his final mix even in 2007 to MiniDisc ... little things like that helped me realize everyone has their own ways of working and you should just go with what’s right for you.”

Going with what felt right during the first phase of his career led HudMo to be branded “maximalist,” meaning “lots of layers, lots going on constantly ... a lot of what I used to do was having a panner on every track so everything was randomly all over the stereo image at all times. There wasn’t anywhere to fit things. When I would send tracks out at that point to vocalists and MCs they were in my mind all instrumentals, but the feedback I was getting were they were full tracks with no space for vocalists and they didn’t know what to do with them.”

“I realized I could pursue my enjoyment of making music but I’d have to learn the art of leaving space, so for [*Lantern*] I’ve transitioned into wanting things simplified, more song-based, where less can give a greater effect.”

HudMo’s conscious decision to tone his production’s lean muscle came during the sessions for 2014’s *Chimes* EP. It showcased a balance of hyper-percussive and more pared-down material, and signaled HudMo’s commitment to achieving less congestion in his recordings.

It was also with the *Chimes* EP that HudMo

“I realized I could pursue my enjoyment of making music but I’d have to learn the art of leaving space, so for *Lantern* I’ve transitioned into wanting things simplified, more song-based, where less can give a greater effect.”

—Hudson Mohawke

started working with Edward J. Nixon, the Grammy Award-winning mix engineer for the Atlanta, Georgia-based J.U.S.T.I.C.E. League production group (although Nixon hails from the Lake District in north-west England). The two struck up an initial conversation through Twitter, and quickly found they had common ground in a mutual love of sample-based hip-hop and early rave music — forms infused with rhythm, euphoria, and a quality of real performance.

“We both come from places with huge landscapes, and we love raw, hard-hitting, emotional music,” says Nixon. “I want music that has that feeling of seeing a performance live, where it’s huge, feels like it’s right in front of you. A lot of artists start with something not so polished, then while trying to make it fit a format or style, they polish the essence out of it. Uniqueness is something I value and Hudson’s music has his nonchalant ‘being me’ attitude. So if he’s got a synth or an entire song going in a certain direction it becomes about how far I can help take that in the same direction.”

“The biggest thing for me is you can’t hit what you can’t see unless you get lucky, and I’m not interested in getting lucky. I’m interested in accuracy,” he continues. “The biggest thing that dictates that is the ability of your own hearing, acoustics, conversion, and monitoring. As long as that is extremely accurate you can paint a picture that is representative of what you intended. So we wanted to determine if he heard the true value of his gear.”

HudMo says this philosophy fed in nicely to

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his upgrade path. "I started to notice how a lot of VST emulations of hardware would muddy up the sound instead of making it bigger and more exciting sounding, so I wanted to rely more on hardware but I needed to invest in the signal chain to not blur the sounds," he explains. "For inputs I bought the Thermionic Culture Fat Bustard II ... it's a valve summing mixer but rather than using it to sum signals after making something I run my hardware into it in the first place and process. So I can widen it, add some top shelf, overdrive it, and make it much larger sounding in general on the way in rather than trying to achieve that after recording a dry song.

"I also really like Crane Song convertors and I use the RME Fireface UFX with the Avocet II D/A monitor switcher for the digital out."

At the end of chain is a cadre of monitors: Tannoy DMT 215 fed by a Bryston SST2 amp for mains with an 18-inch sub, Dynaudio BM15 active midfields, and ProAc Studio 100 nearfields with a Lindell AMPX. The ProAc Studio 100s in particular, which HudMo describes as having "the tone of [Yamaha] NS-10s but with extended low end," immediately caught his attention when he first heard them while working with Kanye West on *Yeezus* at Rick Rubin's complex.

Rubin lauds the Studio 100s, which he says

were introduced to him by New Jack Swing pioneer Teddy Riley. Rubin considers monitors with intelligibility to be integral studio components. "The less hypey and more natural the sounds, the better, and getting used to them and hearing how the music transfers to other familiar systems like the car would be helpful," he advises.

Rubin's influence on HudMo extended beyond gear and into process, as well. HudMo says Rubin's focus and his willingness to turn off the screen and monitor with his ears as opposed to his meters was a valuable example. "Listening with eyes closed, in context, beginning to end, is very helpful," says Rubin. "Sometimes we focus on small parts and they work differently as snippets out of context."

Nixon agrees: "I often say loud noise distorts vision. When things are loud, you can trick yourself into saying it's good because it gets your attention. But when you force everything into a small space with no headroom you lose movement and impact. Just because your meter isn't going into the red doesn't mean you're not losing some quick transient information that defines your dynamics. Bringing your mix down overall and learning to listen with your ears means the mastering engineer won't receive something so pinned it becomes fatiguing at louder levels. Gain staging is a very boring thing to discuss, but headroom is everything in terms of filling both a virtual and physical space."

A clear vision doesn't necessarily mean a clean tone, however. HudMo hasn't given up on his signature overdrive, he's just more judicious in its application. Getting the right amount of crunch can be as simple as pulling out an old E-mu SP-1200 and using it to process samples to apply a signature dirt. Sidechained white noise and compression as coloration, through the Fat Bustard, as well as a gauntlet of Universal Audio plug-ins, can be other means to add hiss as texture, rather than trying to minimize it as a by-product. One example is on the track "Ryderz," which is a tribute to the continuum of hip-hop stretching from DJ Premier to Madlib. HudMo stresses, however, that his decisions prioritize musicality over technicality.

Another production facet HudMo approached differently while arranging his clusters of 808, helium-pitched samples, and portamento-lofted synths was that most complex of instruments: the vocal.

"The instrumentation on Hudson's records is so attention grabbing that for someone to be on his records you have to be able to keep up with this incredible musical display he'd conducting," says Nixon. "The record can easily outdo you, out-perform you."

"When we started working together I'd ask, where do you want [the vocal]? Behind, acting as the horizon of the image, as a godlike vocal; or do you want something more animal-like and at the front — smaller but moving around dynamically to grab your attention. Before you use the gear, you need the vision of how you want things to sit. Then it's a combination of com-

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pression and time-based effects, reverb, and delay. I use Universal Audio pretty much exclusively, and my favorite compressor in the world as a plug-in is the 1176 anniversary [model], because it allows me to have a 2:1 ratio and it allows me to have finite control over both attack and release. To be able to augment the beginning of a transient and the release you can push something back in the image and lift it. Once I got that putting it in a space takes it to the next level, and one of the things we used was the Lexicon 224 reverb from Universal Audio."

Instead of shoehorning in vocal takes recorded remotely, HudMo worked to get contributors (including Irfane, Ruckazoid, Antony Hegarty, Miguel, and Jhene Aiko) to track in his studio, using a Brauner VMX microphone running through a BAE 1073 preamp/EQ and Universal Audio 1176 limiter.

"I like to EQ a little on the way in, just find the right tone that fits over whatever instrumental I've been working on and suits the vocalist," says HudMo. "Sometimes I find that it's fairly obvious that if you record something completely dry then it can be harder to work on in terms of positioning in the mix than if you tried a little EQ on the way in."

While willing to bake some effects in, HudMo kept a healthy ratio of wet and dry tracks, adding additional processing through his own suite of Universal Audio plug-ins. This meant that when

sending mix-ready material to Nixon, who works solely in the box, HudMo could include a snapshot of specific plug-in settings, input levels, and compressor tweaks, etc., allowing for a more accurate re-creation on the other end without everything needing to be folded in stereo.

Nixon promotes printing to capture a performance, committing to two-track information when, say, a group of synth patches are arranged in unison as a single instrument, but he also appreciates having separate elements. At the same time he cautions against over-delivering stems that will be heavily dependent on replicating time-based effects to gel. He sees a lot of artists get frustrated when what they bounce multi-tracks and the mixdown don't feel the same as their initial sessions. This problem is often caused by latency and master bus processing of each rig, which changes the integral timing of the parts. He stresses finding a way to mix on your platform or be ready to calculate how things need to be nudged, because

staying in the pocket is everything.

"Hudson uses a DAW some people might look down on because its monetary value is low, but he performs his all off with it," says Nixon. "So we had to retain all the feel, which meant he went to the detail of working out exactly how many samples of delay affected timing, then we manually corrected everything he bounced down. That level of detail to keep his rhythm and musicality is the difference between Hudson Mohawke and everyone else. That's far more important to consider than something like parallel compression, which to be honest means nothing unless you have musical content." ■



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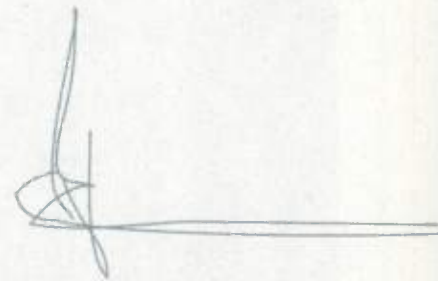
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Jenny Hval





'Apocalypse' Songs, No Structure, No Borders

BY KEN MICALLEF

Like Scarlett Johansson's femme fatale in the sci-fi film *Under the Skin*, Jenny Hval sings as if her mind and body are not her own, as if she is performing the will of an alien being in strange and wondrous ways. Norwegian vocalist and songwriter Hval uses her delicate and often searing four-octave range to create well-formed, original characters. Playfully bent, knowingly sensual, and intensely erotic, Hval's music can also take you places you've never been before.

"Did you learn nothing in America?" she speak-sings in "Kingsize," from her latest album, *Apocalypse, Girl*. "In New York I don't dream/I always wanted to be less subculture-ly lonely/But here I see no subculture, no future, no big science, no big bananas/I move the bananas/I rock them gently back and forth/I sing to the bananas, the skin is getting thin and brown..."

Produced by Norwegian noise/metal/jazz artist Lasse Marhaug and recorded at several Oslo studios, including his The Best Studio in Oslo, *Apocalypse, Girl* brims with Marhaug's subtle sonic experimentation, from cassette tape-distorted drums and sinister found sounds to no-name reverb units purchased in India from an 80-year-old amateur electrician. Marhaug proves the perfect foil for Hval's rich musical world, which includes her previous albums, *To Sing You Apple Trees* (2006), *Medea* (2008), *Viscera* (2011), *Innocence Is Kinky* (2013), and the collaboration with Susanna Wallumrød, 2014's startling *Meshes of Voice*.



Over streamlined beds of nocturnal and eerie sounds, Hval's vocals form rich rivers of precisely pronounced, immaculately enunciated words and phrases. Unlike most vocalists who rely solely on a song's message to carry the weight, Hval concentrates on the *sound* of the words.

"Lyrics and production go hand in hand with my work," Hval notes. "A lot of the music is produced already, just by the way the words sound. When Lasse and I discuss production, we focus not only on the words, but how I say them and how they can be presented in a recording. More than anything we were trying to figure out how to make the vocals sit within a specific type of production that we were developing.

"I worked with a Gefell UM70 mic some," she continues, "but I don't like it because it sounds very natural [laughs]. I don't really like natural-sounding microphones. I don't like my voice very much; I want it to sound unnatural. Also, I am creating characters with my voice, so natural is bad. That's why I like lo-fi because it doesn't sound natural and pristine. Natural-sounding mics lack that texture of being super close."

Working at The Best Studio in Oslo, which Marhaug says is "situated over a bicycle shack,"

Hval and Marhaug conducted microphone shoot-outs, settling on her favorite U67 clone.

"We recorded Jenny's vocals with her Wunder Audio CM67," Marhaug explains. "That, into a Neve 1073 mic pre, API 550B EQ, Drawmer DL251 Spectral Compressor, Neve 8816 summing mixer into a Lynx Studio Technology Aurora 16 AD/DA. But after the initial tracking, I didn't feel comfortable with the recordings. So we went to Tomas Oxen's proper studio and recorded everything over so I didn't have to wear both producer and engineer hats. Jenny's voice is so rich and incredible and has so many nuances. The way she uses her voice—which is very delicate and has so many variables—I need to hear it all immediately with full attention."

And with a voice as idiosyncratic, delicate, and sometimes beautifully freakish as Jenny Hval's, full attention is a necessity. "We were trying to create a world for the voice and the words," Hval adds. "We spent a lot of time making the words fit. The production for my vocal is specific in both how I think of creating characters with my voice and how everything was produced with lots of layers of found sounds and synthesizers. We had to record the vocals many, many times."

There are moments in the songs "Sabbath" and "The Battle Is Over" where Hval's voice turns into a buzzing bee, its squirming tone splitting in two and criss-crossing like chemtrails arcing across the sky.

"I'm just doing it, no effects," Hval explains. "I have always done those kind of timbre things on my own. People who are interested in doing vocal tricks, you have stuff you just do. Like how some people fiddle with their hands. I have a lot of those things I do with my voice and with other people's songs that I don't usually make part of my actual work. This album was a lot about trying to take those elements into my artistic practice rather than thinking, 'This is just for the shower.' Because a lot of those elements are quite soft and feminine. I really felt like going back to childhood with my lyrics and also with the way I sing."

Hval's voice is one of the most stunning sounds since Bjork's seminal howls, but with an intimacy, tactile closeness, and sensuality that is thoroughly her own.

"In my singing there are many consonants," Hval says. "In most pop music it's just a bunch of vowels compared to what I am doing. I love using consonants, they're very sensual. You can create a lot of different energies with them. It doesn't have to be just too wordy or annoying it can also have elements of sensual sound that you just can't get without them. It's like having a very detailed image of a body, one that includes all the wrinkles, how that can be more sensual than a body that is airbrushed. There are elements of airbrushing even down to lyrics and what people to do with their mouths in lots of pop music. At the same time, everything is presented as hypersexual but they lose out with language. For me it's about pronunciation. That is more important for me even than singing in key. I think pronunciation is very emotional."

After working up demos using Reason and her Universal Audio Apollo Twin interface, Hval went into The Best Studio in Oslo to cut vocals where Marhaug works in the relatively new editing software program, Reaper. Hval's vocal tracking process includes multiple complete takes, punching-in, and comping.

"We worked with mostly digital software, rather than hardware," she says. "The instruments are mainly analog, [but] we did some tracks on my Juno 106. I forgot to tune it, so we got some interesting results when we added instruments later. There was a lot of tuning going on. I also have a small Casio keyboard; it's three octaves and has a lot of sounds like flute that doesn't sound like flute, but it sounds good—that '80s sound.

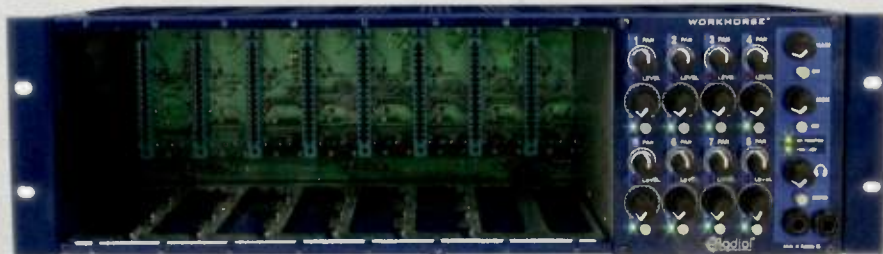
"Sometimes we put things through pedals that Lasse bought from India and China. Lasse's a noise musician, so most of his stuff is really unusual. When we started, he said, 'Oh, you have a keyboard, with keys on it.' He doesn't work with melodic mu-

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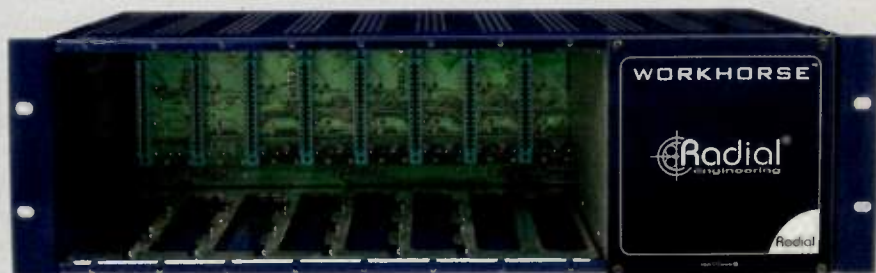
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sic. That was an interesting experience because I write melodies and pop songs, and although they sound strange they're still pop songs. He hears textures instead of music tones. That added to the record's sound-scapey qualities and made it more of a narrative experience than an experience with songs and parts and musical terms. To me this record is completely free of musical terms."

Keyboardist Øystein Moen also contributed to *Apocalypse, Girl*, bringing old- and new-school technology to bear. "I mostly added on top of what Lasse and Jenny had recorded earlier, and replaced some of the synths Jenny had recorded," Moen says. "Jenny asked for the synth sounds to be analog and warm, so I brought a SQ Prophet 600, Korg MS20, Moog Voyager, and a Mellotron M4000D. We often ran them through a Roland RE-201 or/and a Strymon Timeline, to get some room to the sound. I think Lasse used a RME Fireface 800 for recording it to his Reaper DAW. We didn't add much FX to the synths after we recorded them, because we spent quite a lot of time tweaking the sounds in preproduction.

"I just started putting out ideas on each track, both in terms of melodic/harmonic stuff but also the sounds itself, so when we found something that worked, we recorded it. My musical suggestions were merely based on me improvising, as this is something I often do in my more experimental bands."

Additional recording was done by Thomas Oxem at The Worst Studio in Oslo, as well as by performed by Rob Halverson at Halversonics Recording, Austin; Sam Grant at Blank Studios, Newcastle upon Tyne; and Hval at MoE HQ, Oslo. *Apocalypse, Girl* was mixed by Marhaug and mastered by Marcus Schmickler (aka Pluramon) at Piethopraxis, Cologne.

Apocalypse, Girl also features the work of many musicians, including Hval on effects and keyboards; Håvard Reite Volden, guitars and bass; Kyrre Geithus Laastad, drums; Okkyung Lee, cello; Rhordri Davies, harp; Lars Myrvoll, beats, and Syster Alma, sampling. But the instrumental accompaniment sounds more often like gasping synths and eerie, rustling rhythms than like anything conventional. The apparent sound of a casket being dragged across a floor is actually cellist Okkyung Lee manipulating her strings. Whirring tones in "Heaven" are the detritus of an ancient pump organ. *Apocalypse, Girl* overall is the sound of Hval's vocals soaring from consoling to scary ("Heaven") with accompaniment that could be blood curdling and vocal jabber ("Why This"), symphonies squashed and streamlined ("Heaven"), deep-space alien surgery ("Some Days"), or an alternate *Phantom of the Opera* soundtrack ("Sabbath").

"My background is in experimental and noise music," Marhaug says. "This is the first time I produced a pop record. I've mixed and mastered a lot of experimental and jazz and improvised records. The idea for Jenny's record was to bring my manipulation techniques into the world of pop music. The drums, for instance, were recorded properly with a bunch of mics in a nice studio, but when I mixed it I dumped the drums onto a cassette recorder then back into the mix. We tried all these things just to give the sonics color. Plug-ins didn't work.

"You can't hear it," Marhaug continues, "but I also distorted sounds and placed them really low in the mix to give the music texture and color. Often Jenny would do other things so I would sit for a week adding texture and color. I would run stuff to guitar pedals or echo machines to distort it. I used a Japanese pedal from Far East Electric quite a lot. They have many wonderful hand-made fuzz pedals that I love. I would also take one recording and copy it, add effects to that, then put it back in the mix. I'd bring everything way down in volume then slightly up until you can just hear it. Or you might not hear it—that gives a texture.

"There's also a lot of atmospheric sounds: recordings from outside the studio at the end of some songs. Just so you feel ambient sound seeping through. It's more like a movie. Every song was not recorded in the same room. It's the same movie, but with different scenes; that was the idea. A cinematic use of color and sound was our goal."



Jenny Hval's vocal mic is a Wunder Audio CM67. "Lyrics and production go hand in hand with my work," she says. "A lot of the music is produced already, just by the way the words sound. When Lasse [Marhaug, producer] and I discuss production, we focus not only on the words, but how I say them and how they can be presented in a recording. More than anything we were trying to figure out how to make the vocals sit within a specific type of production that we were developing."

Marhaug also ran various hardware effects through old reverb units, a cassette deck, and a TEAC X2000 reel-to-reel. "I have a digital echo I bought in India, built by this guy who is 80 years old," Marhaug says. "He's been building effects for use in Indian music and he has a store in Mumbai where I bought it. Everything I run through it sounds amazing. But if I leave it on too long it gets smoky and warm. I ran a few tracks through it to get it sound rich and colorful. We put a lot of drums and synths through the Teac."

Marhaug's effects kit may be ancient and obscure, but his Reaper DAW is modern. "I went from Pro Tools to Logic to Reaper," Marhaug recalls. "I find it incredible. I was frustrated with Pro Tools and Logic. Reaper is very intuitive and everything works. That's what I like about it. I saw the new Logic Pro X, and like everything with Apple it's more big-market friendly. You open something and it asks 'Would you like to publish your song on iTunes?' They added all these features aimed at the broad audience of people recording at home, which is great but then it becomes just too much stuff I have to push away to get to what I want, which is working with audio. It's like inviting someone into your house and they rearrange the furniture when you're away."

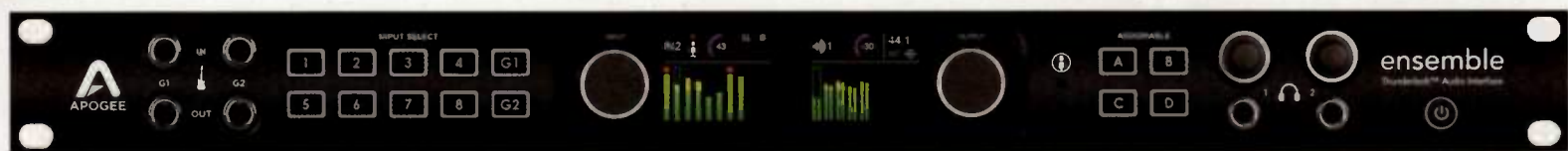
So, in the end, is *Apocalypse, Girl* pop music? There are slivers of Joy Division, Tangerine Dream, and Phillip Reich in some songs, strains of Bjork's anthemic swirls in others. Hval is both a vocal innovator and a production pioneer. There are no easy comparisons to *Apocalypse, Girl* and its unique journey through emotions and female identity. Sometimes Hval sounds as if she's experiencing an identity crisis, with lyrics about the "death of the body," and "getting paid, getting married, getting laid, getting pregnant," her childlike/bird-like/trance-like vocals, and her spectral, minimalist songs. Perhaps Jenny Hval belongs in a different world, one where art and music are one, where borders don't exist.

"If I manage to be influenced by the arts, I am flattered," Hval says. "I sometimes feel like I fit more into an arts scene than a music scene. I constantly hear from others that my music is not immediate but to me it's super immediate. Maybe that's a Norwegian thing.

I think of immediacy as in the art world where you reach out to someone very directly and that's immediacy. In pop music immediacy means easily recognizable parts: four chords, drums, guitars—that premeditated structure. But structure can often kill a good song. A lot of music is being ruined by structure and formula. In the pop songs I love the structure doesn't take away from the song or the joy of listening to the song." ■


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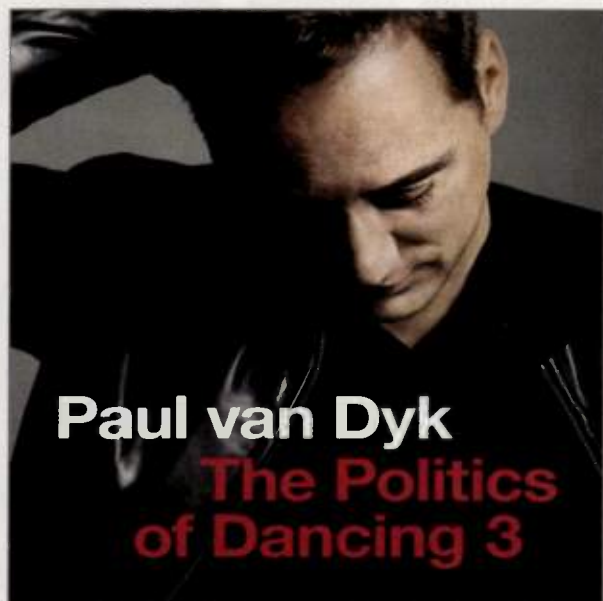
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ULTRA MUSIC

A spiritual sequel to mix CDs released in 2001 and 2005, Berlin-based DJ/producer Paul van Dyk's latest progressive trance showcase emphasizes all original material, collaborations, and unflagging euphoria. PvD produces unabashedly stadium-sized anthems, sequencing waves of chords that part like clouds to let satiny harmonies billow through, free from equilibrium-shattering bass drops. The utopian undertones of finding unity and sanctuary alongside buoyant, one-note bass and breathing synth riffs are pure halcyon floor filler.

TONY WARE



JAGA JAZZIST *STARFIRE*

NINJATUNE

The innovative Norwegian eight-piece ensemble Jaga Jazzist continues to evolve, their mid-'90s electronic-forged style now blossoming into an arresting progressive jazz-meets-space funk with a vocals approach that is as stunning as a sunspot exploding in your brain. As analog synthesizers rip and snort like pillaging Humpty Dumptys, pizzicato strings dance, counter melodies and rhythms pulsate, while co-founder and songwriter Martin Horntveth's drumming exudes a squirming, multi-tentacled friction. Madness and merriment.

KEN MICALLEF



GOOD OLD WAR *BROKEN INTO BETTER SHAPE*

NETTWERK

Good Old War's latest is a pop album straight out of Nashville—big, dense, bright harmonies bend in a barely perceptible bow to roots music. At the same time, crunchy guitars stutter and pop like fireworks, occasionally giving the album a psychedelic edge. Produced by Grammy winner Jason Lehning (Dolly Parton, Alison Krauss & Union Station), *Broken* lives somewhere between The Lumineers and older vocal pop groups like Edison Lighthouse or The Foundations. It's all very well-crafted and very good fun.

BARBARA SCHULTZ



CRAIG LEON *BACH TO MOOG*

SONY CLASSICAL

This record's selling point is the combination of the reissued Moog Model 55 with violinist Jennifer Pike and the Polish-based Sinfonietta Cracovia. While Pike and ensemble do a fine job, it's Craig Leon's patches and processing that ultimately grab your attention—or distract. The synth mix is at times cloudy and out of tune, and its timbres lack the subtlety of its acoustic neighbors. It sounds like it was slapped together in a hurry. Tough assignment, but it gets only a passing grade.

GINO ROBAIR



OMAR SOULEYMAN *BAHDENI NAMI*

MONKEYTOWN

Syrian wedding singer Omar Souleyman emerged beyond gritty market stall bootlegs in 2013 with *Wenu Wenu*, a Four Tet-produced studio album. This time, Souleyman worked with Four Tet, Gilles Peterson, and Modeselektor, and this second album is more sonorous and removed from red-lining live-performance cassettes. With his associates acting as translators more than interpreters, Souleyman's dabke—an electronic folk dance using electric saz, finger drumming, and synthesized woodwinds—sounds wider and windier, without losing its bangin' quality.

TONY WARE



JOHN MORELAND *HIGH ON TULSA HEAT*

OLD OMENS

The third full-length from John Moreland is a singer/songwriter album in the vein of Springsteen's *Nebraska* or early Tom Waits. The landscape is bleak, the singer's heart is broken, but the beautiful songs that emerge are worth his trouble. The acoustic song "Cherokee" is a moving example of the poetry-from-pain here, as Moreland sings an addict's story: "I've given up on ever being well ... and I wish you were here to softly say my name and calm down all the chemicals tearing through my brain."

BARBARA SCHULTZ



ATOMIC *LUCIDITY*

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Norway's Atomic quintet plays jazz like vampires, drawing from multiple eras of improvised music with a zeal reserved for the immortal. Atomic's 13th album, *Lucidity*, swings all over the map, from '30s gut-bucket to '70s Euro freestyle to glistening cool jazz replete with third-stream piano references and stark, clear-eyed phrases. A "New Junction" takes a found-sound Cage approach; "Start/Stop" serves spectral sounds as solace; "Major" emerges from mist to swing like Bird in flight.

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BY MIKE LEVINE

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

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JACKS ARE WILD

Audio interfaces with Thunderbolt connectivity are all the rage these days because their wide bandwidth allows for very low latency, and high track counts and high-sampling-rate recording that doesn't stress your CPU. Apogee's entrant in the Thunderbolt derby is the Ensemble Thunderbolt (Mac only), a redesigned version of its previously released Ensemble interface. The new design combines the power of Thunderbolt with Apogee's highly regarded preamps and converters, as well as a generous selection of I/O, to create a powerful and expandable studio hub.

The Ensemble Thunderbolt is a 30-in/34-out interface, offering a nice variety of both analog and digital I/O. It provides eight analog inputs with mic preamps, four of which utilize XLR/TRS combo jacks that accept mic, line, and instrument signals. Two balanced analog inserts are located on the back panel next to the first two combo jacks; their sends can also be used as preamp line-level outputs. The unit also offers pairs of front-panel guitar inputs and outputs, which I'll talk about later.

The interface has two 1/4" TRS balanced monitor outputs, eight additional balanced analog outputs on a D-Sub 25-pin connector (breakout cable not included), and a pair of independent 1/4" stereo headphone outputs on the front panel, each with its own volume control.

It features quite a bit of digital I/O, as well. You get two pairs of optical inputs and outputs that handle 16 channels of 48 kHz ADAT signals or eight channels of S/MUX up to 96 kHz. A pair of coaxial S/PDIF jacks and Word Clock I/O are also included.

And then there are the stars of the show—two Thunderbolt 2 connectors. These not only connect the Ensemble to your computer, but they can handle a chain of Thunderbolt peripherals. And because it's Thunderbolt 2, it will even support a 4K display.

My only disappointment from an I/O standpoint is its lack of a MIDI port. Other Apogee interfaces, such as the Quartet and Duet, offer USB/MIDI inputs for connecting controllers. But this omission is hardly a deal breaker, since virtually every modern MIDI controller can be plugged directly into your computer through a USB port, but it would have helped round out the feature set.

UNDER CONTROL

Many of Ensemble Thunderbolt's basic functions can be controlled from its front panel, although you need to use Apogee's free Maestro 2 software to control the unit fully. The front panel includes large Input and Output knobs that sit on either side of the OLED display. The Input knob functions as a switch when pressed. The display provides level indicators and can also be used in conjunction with the Input and Output knobs for parameter selection, switching, and adjustment.

Ten Input Select buttons correspond to inputs 1 through 8 and guitar inputs 1 and 2; press one to control its corresponding channel with the Input knob. If you press and hold the Input knob, you'll see the various channel options: input source; Soft Limit; Group, which lets you assign the channel to one of five groups whose input levels are linked; polarity reverse; 48V phantom power on/off; and

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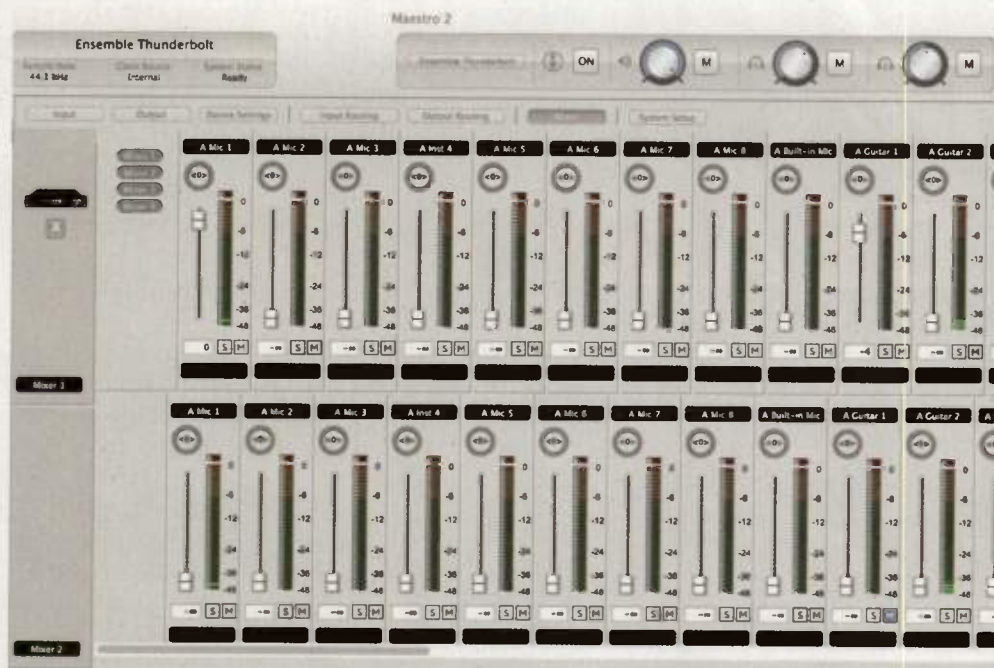


Fig. 1. Maestro 2 software allows you to control all functions of the interface, including many that can't be accessed from the hardware controls.

High Pass Filter on/off. (These are not available on the guitar-input channels.) The Insert option, only available for channels 1 and 2, activates the return from the channel's corresponding rear-panel insert.

Buttons labeled Assignable (A through D) comprise one of the unit's handiest features. Each button can be assigned to control one of a variety of options, which are easily accessed from the Device Settings

menu of the Maestro 2 software. Choices include Talkback on and off, Dim, Clear Meters, Sum to Mono, toggling one or both of the guitar inputs from software to thru, and more. You can even set the buttons to switch among speaker sets, assuming you have additional monitor pairs connected to outputs 3/4 and 5/6, both of which are accessed from the D-Sub connector on the back panel.

MAESTRO, START THE MUSIC

All Apogee interfaces offer software control via Maestro software, and for a complex unit like Ensemble Thunderbolt, it's an essential tool (see Figure 1). I found its implementation for Ensemble Thunderbolt to be powerful but not always intuitive. For instance, the input and output routing windows are not particularly user-friendly.

Nonetheless, you can configure up to four different monitor mixes in Maestro 2, using Mixers 1 through 4—a powerful feature for large tracking sessions where alternate mixes are required. Maestro 2 also lets you toggle between hardware monitoring and software monitoring, if you want to eliminate latency while tracking. Because latency is so low with Ensemble, software monitoring is almost always an acceptable way to track, allowing you to monitor with plug-ins such as reverbs, guitar amp simulators, and so forth.



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Maestro 2 was very stable when I was using Ensemble Thunderbolt, but if my computer went to sleep or if I unplugged the Thunderbolt cable, it crashed and I had to force-quit it. While that didn't cause me any problems with my sessions, it was an annoyance.

GUITAR HEAVEN

The built in guitar I/O in Ensemble Thunderbolt offers a number of welcome features for guitarists. First, these inputs sound great for DI recording. The inputs feature JFET circuitry and a "bootstrapping" circuit that Apogee touts as providing an "ultra-high impedance load" to your guitar's signal for maximum authenticity of tone. And that's not just marketing speak: The guitar inputs sound and feel better than any other guitar DI I've used before.

Another important aspect of the guitar I/O feature is that it lets you use the two outputs for reamping; as far as I'm aware, Ensemble Thunderbolt is the only interface with reamping outputs built in. You can reamp existing DI tracks, or simultaneously record a DI and amped tracks.

LET 'ER RIP

I tested the Ensemble Thunderbolt over a couple of months, using it on my own sessions and during a multi-musician tracking session for an acoustic

ensemble. Overall, I found its performance to be superb. For just about all the tracking I did, I was able to keep the buffer set at 64, enjoying virtually no latency in most cases. As a result, I rarely had to use Ensemble's ample direct monitoring features.

Ensemble Thunderbolt works with any Core Audio DAW, and I tested it with several, including Apple Logic Pro X 10.1.1, Avid Pro Tools 11.3, and Ableton Live 9.17. Apogee has always had good integration with Logic, and Ensemble continues that tradition. In fact, some of the channel controls show up in Logic, including input level, phantom power on/off, highpass filter, polarity reverse, and input select (Mic, +4 dBu, -10dBV). Ensemble's performance was also excellent while using Live.

Things weren't quite as smooth when testing Ensemble Thunderbolt with Pro Tools under the Mavericks OS on my 2.6 GHz Intel Core i5 MacBook Pro. To put it to the test, I set the buffer to 64 during a 96 kHz tracking session, which Apogee said I should be able to do without a problem, but I got clicks and pops and had to raise the buffer to 256 to get clean audio. However, it may have been a glitch that was related to something in that session file, because I tried to re-create the problem on a new Pro Tools session, and couldn't. In other Pro Tools tests, however, the transport stopped more than normal and gave me the dreaded "out of CPU" error message.

One of the advantages of Apogee's Thunderbolt driver is that its wide bandwidth stresses your computer's processor less than what FireWire 800 or USB would do. I setup a session with 40 tracks and 120 plug-ins in Pro Tools at 44.1 kHz, and it used less than 50 percent of the available CPU power. That's pretty impressive, considering I was recording on a laptop.

Another benefit of Ensemble Thunderbolt is that it features Apogee's renowned converters and mic preamps, which performed excellently. My recordings were clean and present, and very realistic sounding, whether I was tracking vocals, acoustic instruments, or miked guitar amps.

JOIN THE ENSEMBLE

Ensemble Thunderbolt represents a sizable investment compared to some other interfaces with similar I/O counts, but you get a lot for your money. This versatile piece of hardware could easily function as the sole piece of outboard gear in your studio, because it handles not just the functions of an audio interface with eight mic preamps, but also a monitor controller and a high-quality guitar DI and reamping box. When you factor in the vaunted Apogee sound quality, super low latency, Thunderbolt bandwidth, and the flexible and generous I/O, it starts to look like one heck of a deal. ■



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AUDIOFILE
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Fig. 1. A screenshot of Triumph's GUI. Note the Layers List, with effects, in the Workspace on the upper left.



Triumph 2.5

AN AUDIO EDITOR THAT BREAKS THE MOLD, ONE LAYER AT A TIME

BY MIKE LEVINE

STRENGTHS

Unique workflow provides more options than typical stereo editors. Layer feature. Reasonably priced. Work with multiple file formats in one project. Renders multiple formats at once. Powerful features for entering CD and audio-file metadata. Change pitch and trigger slices from an external MIDI controller.

LIMITATIONS

Unintuitive structure.

\$79
audiofile-engineering.com

Audiofile Engineering Triumph (Mac OS X) is a powerful audio application that offers a different take on the traditional stereo-editor paradigm. Billed by its developers as an “audio designer,” it can function as stereo editor, mastering and CD-authoring environment, or sound-design platform.

Getting started with Triumph is challenging due to its non-standard structure. When you open a new project, you start with an empty Workspace. A Workspace is like your canvas into which you import audio, and then edit it, manipulate it, add effects, and so forth.

You can create multiple Workspaces and easily switch among them. One way to utilize this capability would be to make comparisons; for example, if you were mastering, you could compare limiter settings by duplicating the workspace with the original setting, changing the duplicate to the new setting, and then switching back and forth between them. It's very flexible. You can also use multiple workspaces for source/destination editing by selecting sections of audio in one Workspace and having them copy automatically to another.

KICKING YOUR ASSETS

When you import audio into Triumph, either with the Import command or by dragging and dropping, the audio file shows up on the lower left in what's called the Asset List, which is part of the Sources Sidebar (see Figure 1). You then have a couple of options for getting the Assets from the Assets List into a Workspace. You can drag them in, or, when you have a group that you want laid out in a linear fashion in the timeline (as when you master an album), you can open the Actions List,

which offers an array of macro-like actions and is another innovative feature. Here, you choose the Action called “Add Assets as Layers and Arrange.”

Audio files that are moved to the Workspace become Layers, which show up in list form on

the left side of the screen and as Waveforms in two different displays: the Waveform View and the Overview. The latter is a zoomed-out view of your project from start to finish, and the former is a timeline in which you actually cut, copy, paste, and manipulate audio.

Layers can be placed end-to-end in the Waveform view or literally layered. If you drag Assets into the Workspace rather than using the “Add Assets as Layers and Arrange” action, they'll end up on top of each other because by default, they get imported at the beginning of the timeline. To move the Layers around in the Waveform view, you must make a Layer active by clicking its name in the Layers List and dragging it to the desired location.

Triumph's layering capabilities provide a Photoshop-like workflow: Typically, you would use a multitrack DAW to layer sounds, but being able to do it in a stereo editor is quite handy. Each layer can have its own effects, which you drag in from the Effects List and order however you like. Included is a small collection of Triumph effects such as dither (a new dither algorithm, Goodhertz Dither, was added in Version 2.5), a unique headphone-monitoring effect called FHx, a variety of meters, an MS Decoder and Encoder, and Polarity Reverse. It also supports Audio Units plug-ins installed on your computer. In addition, each Workspace features a Master Layer, which you can use for master effects.

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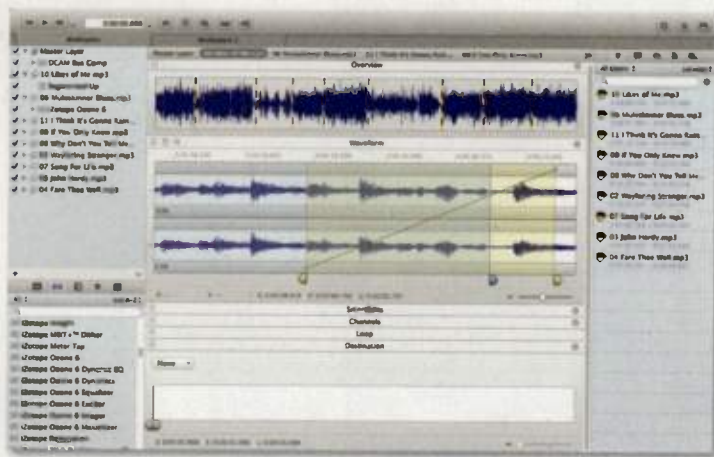


Fig. 2. In the center of the screen you see SmartEdits in the Waveform View and also represented below in the SmartEdits List.

GET SMART

As mentioned, when assets are imported into the Workspace and become Layers, they show up in the Waveform View. Unlike a traditional waveform editing interface, this display features waveforms encased inside a container called a SmartEdit (see Figure 2). Each time you Splice (split at the cursor) anywhere in the Layer, the new region you create is considered another SmartEdit. Drag either edge of a SmartEdit to adjust its length or to add a linear fade. If you want other fade curves, you can choose them from a pop-up window accessible from the SmartEdit. You can drag SmartEdits around the timeline at will and they'll show up in the SmartEdit list, where you can choose to edit only the left or right channel if desired. You can also numerically enter new start and end times and durations.

Add volume automation to a Smart Edit by dragging in a shape from the Shapes List, which offers 30 curve types that can be dragged into the Waveform View at the desired spot and manipulated with breakpoints. Effects in Layers can be automated by dragging shapes onto the Effects in the Workspace and opening a pop-up menu that lets you choose the effect parameter.

CHANGING SPEEDS

Other notable features include the FHX effect and Varispeed control. Varispeed uses a very good-

sounding algorithm, though I wish it was possible to automate it and that it offered the option to change speed without changing pitch. Because Triumph responds to MIDI, you can change the pitch of an audio

file by playing a note on a connected MIDI keyboard. MIDI notes can also be used to trigger slices. FHX is a psychoacoustic effect for headphone listening that adds spatial characteristics designed to increase realism and reduce fatigue. The image feels like it's higher up in your head, and you can adjust parameters such as the virtual speaker angle, the amount of the FHX effect, and even switch to mono, swap channels, and reverse phase.

ABLE LABELER

A large list of Labels can be dragged into the waveform; many perform more complex functionality than just marking spots. Available Labels include Markers, Notes, Track start and end markers, index markers, loop markers, slices, and more: This label implementation is by far the best I've seen in any audio software.

Triumph's export options are very flexible; you can render your finished product in a wide variety of formats including WAV, AIFF, MP3, FLAC, Ogg Vorbis, and Sound Designer 1, among others. What's really cool is that you can simultaneously render in multiple formats. Unfortunately, a batch processor is not included; this would be really useful alongside the multiformat render feature. Triumph can, however, open audio files in multiple formats as Assets, and use them in a single Workspace without requiring conversion.

Rendering directly to a SoundCloud or Dropbox account is supported, and the software

even offers integration with Gobbler for storing your files to the cloud. You can burn Red Book CDs directly from Triumph, and you can create DDP files for CD duplication. Entering track labels, ISRC numbers, album names, artist names, and other metadata is very easy to do.

REAL LIFE

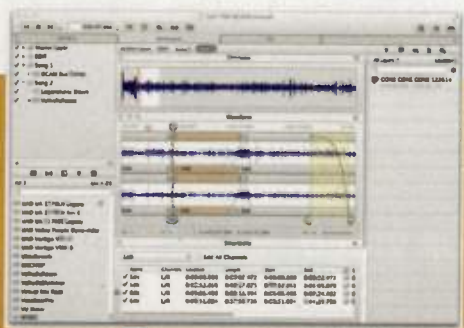
I wouldn't say Triumph is especially intuitive to use. It requires you to learn a new platform, and I found myself consulting the manual constantly as I worked.

I used Triumph to master an album I was working on and found its options for processing audio, adjusting spaces, adding fades, and entering metadata to be extremely useful. Note that once Assets are added as Layers, whether manually or with the "Add Assets as Layers and Arrange" command, you will still need to add Track Labels before burning a CD. Otherwise Triumph won't know where one track ends and the next begins. Triumph lets you add Track Labels, either manually by dragging and dropping or by using the "Add Tracks at Layers" command, which does it automatically.

I found Triumph to be handy in more standard stereo-editing situations, such as removing breaths and inadvertent words from a spoken-word recording. I also used it to experiment with combining and processing sounds in a sound-design context: Its layering capabilities set it apart from the competition. Triumph would be really great for designing sound effects, where layering is a huge part of the workflow.

After using Triumph for a couple of months, I can see why Audiofile Engineering markets it as an "audio designer." Triumph's unique and flexible architecture provides the user with powerful options for manipulating audio that makes it an excellent environment for mastering, audio editing, sound design, and a variety of post-production tasks.

I applaud the developer for breaking the mold and coming up with a new and exciting workflow. Overall, I was very impressed with the capabilities of Triumph 2.5.3. It provides a very enticing, powerful, and cost-effective alternative in the stereo editor market. ■



When automating effects, you can easily select parameters from the drop down in the Automation menu.

QuickTip: How to Automate an Effect in Triumph

Here's how you automate an effect in Triumph. Assuming you have some Layers created, drag an effect from the Effects List (one of the bottom-left choices) onto the Layer. Next, switch to the Shapes List (also on the bottom left) and drag a shape onto the effect.

You'll see the name of a parameter open up under the effect. Click its disclosure triangle to open the pop-up, which is the Automation window. It has a pull down menu showing all the parameters available to automate (see Figure A). It also lets you enter the time you want the effect to stop and start, and change the shape. You'll see the effect as a colored overlay in the Waveform View with breakpoint handles.



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The 7X7-TR8 expansion adds a wealth of classic drums and Latin percussion to your AIRA TR-8.



ROLAND

7X7-TR8

CLASSIC DRUM MACHINE EXPANSION FOR THE AIRA TR-8

BY FRANCIS PRÉVE

Francis Prêve is a music producer, DJ, electronic musician, and an Editor at Large for *Keyboard* magazine.

STRENGTHS

Flawless re-creations of the original TR-707 and TR-727 drum machines. Tuning and decay parameters added. New TR-808 and TR-909 sounds. Additional flam modes.

LIMITATIONS

8-bit crunchiness can be a love-it-or-hate-it affair for some users.

\$95

rolandus.com

I'm really impressed with Roland's AIRA lineup. Every product is a winner, and several have become mainstays in my production workflow. In the February 2015 issue of our sister magazine *Keyboard*, I took the System-1 SH-2 Plug-Out for a spin and came away suitably impressed. This month, I installed the new 7X7-TR8 upgrade into my TR-8, adding a slew of new sounds that are based mostly on the classic TR-707 and TR-727. For the uninitiated, the TR-707 was Roland's first sample-based beatbox, with a character that was fairly ubiquitous to '80s pop and new wave: INXS's classic "Need You Tonight" incorporates a few TR-707 sounds.

Released in 1985, the TR-707 was decidedly drum-centric, and the 8-bit character of these sounds will either come off as charming or cheesy. But as additions to the TR-8's existing arsenal, they add a lot of diversity to the overall sound of its grooves, especially the readily identifiable rim shot, toms, and tambourine.

Arriving shortly after the TR-707, the TR-727 focused exclusively on Latin percussion, with bongos, congas, timbales, agogo bells, shaker, vibraslap, whistles, and a star chime effect. While these are also 8-bit, they're somehow less plastic sounding than the TR-707 drums. In fact, adding these drums to a TR-909 groove makes the combination sound surprisingly modern in the context of today's retro house renaissance, largely due to the fact that countless Detroit techno tracks relied heavily on it back in the day.

In light of the TR-707 and TR-727's heritage, it would be easy to assume that Roland simply added a bunch of samples to the TR-8 that could just as easily be found on the Internet, but that's not the case here. As with the 808 and 909, Roland dug into the original architecture, emulating the gritty 25kHz 8-bit DACs (complete with a whisper of noise) and the curves of the original envelopes. Speaking of envelopes, the TR-8's decay and tuning

knobs work on the 7X7 sounds, as do the kick and snare compressors and attack/snappy parameters, giving these sounds a lot more flexibility than the originals, which had no sound-editing features.

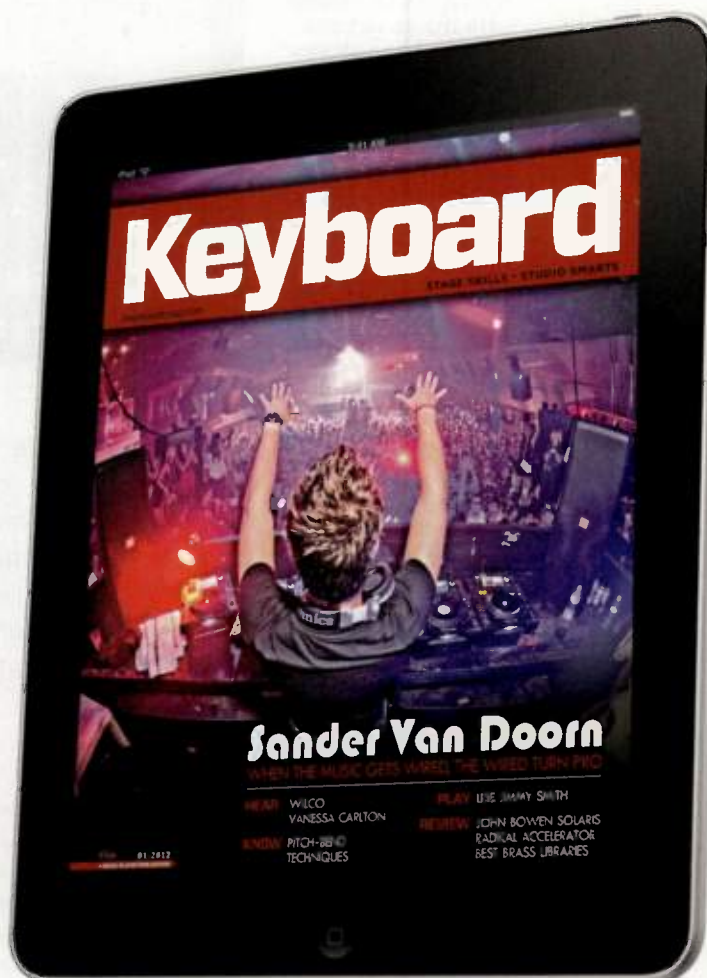
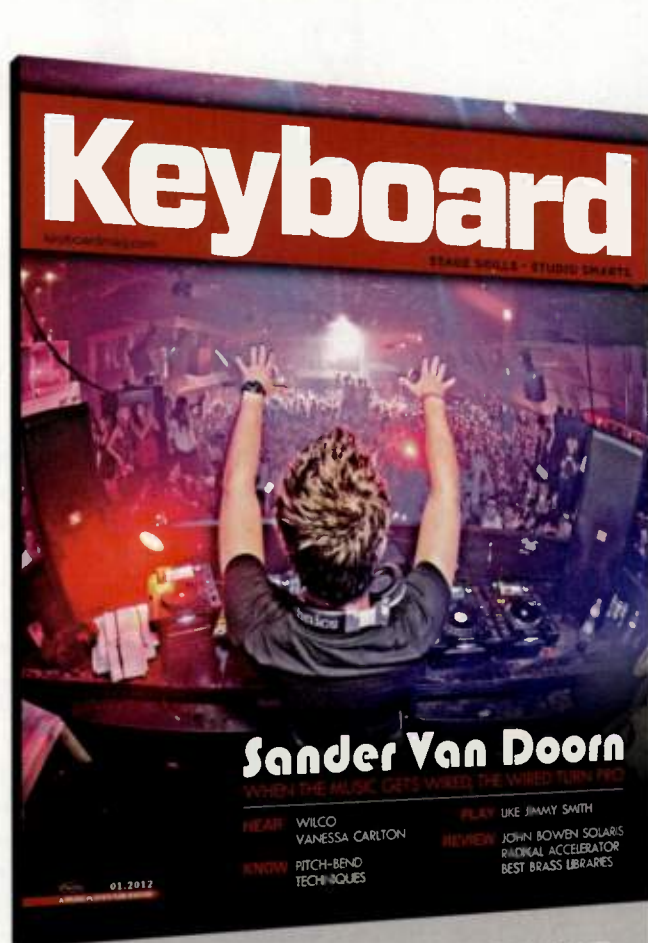
The 7X7 upgrade also includes a new batch of 808/909 sounds that are tonal variations on several of the originals—a punchier 909 kick and snare, a noise burst based on the original 808 clap, tuned-noise "toms," and an analog finger snap that would have sounded right at home on the CR-78. Naturally, the TR-8 parameters work appropriately on these too.

Roland has added a nifty color-coding scheme for selecting the new sounds. When you switch to Instrument Select mode for a given drum, the integrated LEDs change to gorgeous jewel tones that correspond to the different drum machines. And rounding out the package are some new flam options, cribbed from the TR-909 and TR-707, that were missing from the original AIRA implementation.

All in all, the 7X7-TR8 is a must-have for TR-8 owners. Even if the 707 sounds aren't your cup of tea, the 808- and 909-based additions are top-notch, and the 727 percussion adds a lot of flavor for house and forward-thinking hip-hop production. The TR-8 is on track to become the go-to drum machine for vintage connoisseurs. ■

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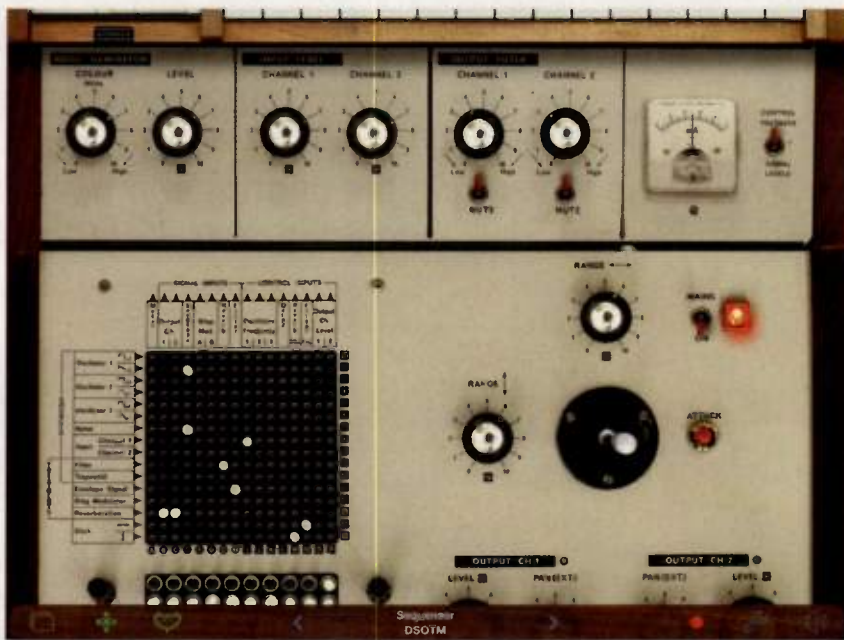
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The iVCS3 re-creates both the sound and interface of a classic '70s-era synthesizer, complete with virtual pin matrix, spring reverb, and audio processing capabilities.

APE SOFT



iVCS3

A POPULAR '70S-ERA SYNTH FOR YOUR IPAD

BY FRANCIS PRÉVE

STRENGTHS

Note-perfect re-creation of the EMS VCS3 synthesizer. Integrated sequencer and joystick. Receives audio via Audiobus, Inter-app, or the iPad's microphone/input options. Comprehensive CoreMIDI implementation.

LIMITATIONS

Even seasoned synthesists will be lost at first.

\$14.99

alessandro-petrolati.it

The British-made EMS VCS3 synthesizer had an exotic, yet flexible set of features that made it a deep resource for experimentation, and it quickly became a favorite for legendary rock artists such as The Who, Pink Floyd, and Brian Eno. It was also the source of countless *Dr. Who* effects, as it was one of the crucial synths in the BBC's Radiophonic Workshop.

As iVCS3 is an iOS app, it would have been easy for a developer to get the VCS3 “mostly right” and still elicit rave reviews, but Italian developer Alessandro Petrolati (aka apeSoft) has re-created every detail that could be virtualized; the result is inspiring.

The synth's three oscillators focus on specific, blendable waveforms and pitch ranges, with oscillator 1 producing sine and saw waves while oscillator 2 produces square and triangle. Oscillator 3 works as an LFO with square and triangle options as well. There's also a noise generator with adjustable color and two audio channels that can process sound via the iPad's various input options (including Audiobus and Inter-app) or imported samples.

Processing options include a semi-traditional resonant lowpass filter, ring mod, “spring” reverb, and two additional output “filters” for the audio channels, but with a quirkier vibe. There's also an envelope shaper unlike anything else in synth history. Sure, there are attack and decay knobs, but there are also knobs labeled “trapezoid” and “signal,” making the integrated user guide a *must* for novices and pros.

The nerve center of the original VCS3 was its innovative pin matrix for routing both audio and control voltages. Sources are arranged vertically on the left of the grid, while destinations are arranged horizontally. Connecting components was achieved by inserting a pin at the intersecting point in this grid,

delivering modular functionality in a relatively intuitive manner. This system is duplicated on the iVCS3, and if you already grasp the basics of modular synthesis, it's a powerful resource for serious experimentation. Adding to the fun are a 16-step sequencer and joystick control for whipping

up vintage sequencer riffs that immediately evoke quintessential VCS3 tracks like “Won't Get Fooled Again” or “On the Run.” The iVCS3 also includes a thorough MIDI implementation with options for 14-bit NRPN (Non-Registered Parameter Number) assignments via CoreMIDI. Calling this design “comprehensive” would be a gross understatement. In fact, it's hard to find *any* significant omissions in this app.

With such a unique and complex set of features, programming the iVCS3 is not for the faint of heart. At times, even pros will feel lost and in a state of what Buddhists call “Beginner's Mind”: This app invites pure experimentation without preconceptions.

Fortunately, the software comes with a well-rounded and nicely organized collection of presets. In addition to banks by various sound designers, it includes several groups organized by design approach. These starting points include sequence-based patches, along with playable keyboard presets and others that make use of the iVCS3's sampling and audio processing options. Considering how deep this synth is, I found them to be welcome additions, even for seasoned synthesists.

As for the sound? It's darn convincing for an iOS app. Richly textured and oozing warmth, the iVCS3 delivers far more than an authentic interface and is a must for iPad-toting vintage fanatics. ■

SPITFIRE AUDIO

The Grange

DRUM LIBRARY FOR NATIVE INSTRUMENTS KONTAKT

BY MARTY CUTLER

£199 (about \$308)
spitfireaudio.com

THERE'S NO disputing the unique vibe and sound that Headley Grange added to Led Zeppelin's most iconic tracks. Spitfire Audio invited rock heavyweights Roger Taylor (Queen), Chad Smith (The Red Hot Chili Peppers), and Andy Gangadeen (Massive Attack) to the legendary site and recorded them to 2" tape on their own kits for The Grange, a library for Kontakt 5 (and higher) and the free Kontakt Player instrument.

The 27GB collection comprises six drum kits and a collection of loops, sorted by mic perspective. The Easy Tweak folder lets you quickly mix mics placed at different overhead perspectives, from the ground to a second-floor position, whereas the Mics folder holds individually close-miked kit pieces, each with a subtle bit of leakage to add realism. The Stereos folder contains overhead perspectives from different positions and distances, the number of which varies from kit to kit. Consistent maps for each drummer allow you to load corresponding kits from each folder and mix perspectives as a multi. The package also features an Unmapped Kits folder, which includes templates for building drum kits to suit different controllers.

The sound of each kit can range from close and intimate to roomy and huge. Among my favorites were Gangadeen's brush kit, which might be a bit rough-hewn for cocktail hour but sounds great in rock, pop, and ambient settings. The loops can sync to tempo and are stylistically varied. The majority are in 4/4, with a few 6/8 and other meters included. You'll find plenty of interesting grooves, with mixers providing a variety of mic perspectives.

Overall, Spitfire Audio's The Grange presents great-sounding drums and loops with plenty of attitude, and a virtual multitrack drum-mixing environment with tons of flexibility. ■



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Can a robot replace an engineer?

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 mastering work at soundcloud.com/michael-cooper-recording.

Since the turn of the century, audio production has become increasingly transformed—some would say degraded—by shortcuts. Instrumental loops and MIDI packs offer instant partial takes that you can readily arrange and record. Plug-ins tender factory presets that promise perfect-sounding kick drum, electric guitar, and vocal tracks at mixdown without breaking a sweat. Even mastering software has entered the game, with developers claiming to assure clearer, wider, and bigger-sounding releases without the aid of a professional mastering engineer.



However, even the new tools require at least one warm body to decide which loop or preset sounds best. Therein lies the rub with mastering: Unless you have a super-flat room and neutral monitoring chain—not to mention highly trained ears—you can't possibly know whether or not the bottom end really needs to be bigger, the lead vocal louder, or the cymbals softer. Not to mention that with mastering, processing that improves one element of a mix can damage another if it's applied incorrectly. This is one stage of the production process where you need the chops.

A company called MixGenius wants to change all that. Its online, subscription-based service offers completely automated audio mastering that promises "...results that rival professional studio work... at a fraction of the cost of studio mastering" (see Figure 1). The underlying processing, dubbed LANDR, first uses an algorithm to determine your uploaded song's genre. An adaptive engine then purportedly makes frame-by-frame adjustments in processing, adding multiband compression, EQ, stereo enhancement, limiting, and aural excitation to the degree the algorithm determines they're needed. Minutes later, your mastered track

Is automated mastering the next step in the evolution and democratization of pro audio, or is it a pipe dream?

is ready for download in MP3 or uncompressed WAV (16-bit/44.1kHz) format. Monthly subscription rates for the service range from \$6 to \$39 per month; only the most expensive rate provides masters in WAV format without paying additional fees. Nonsubscribers can get two low-resolution MP3 masters delivered and listen online to unlimited previews of their LANDR-mastered tracks for free.

Predictably, high-profile mastering engineers have publicly and fervently denounced LANDR, saying its processing lacks the finesse and subtlety required for professional results. But no doubt LANDR's relatively low price and near-instantaneous turnaround will appeal to some for whom

professional mastering has always been financially out of reach. So is automated mastering the next step in the evolution and democratization of pro audio, or is it a pipe dream?

To answer that question, I compared three very different mixes I had previously mastered to the same mixes mastered by LANDR, and to the unmastered mixes. In this article, I'll describe the sonic differences I heard in my three A/B/C tests, to delineate what automated mastering can and can't do.

I went into this process with an open mind, and I advise you to do the same. Some of LANDR's results surprised me, and I think they will surprise you, too. But before we go to the A/B/C-comparison

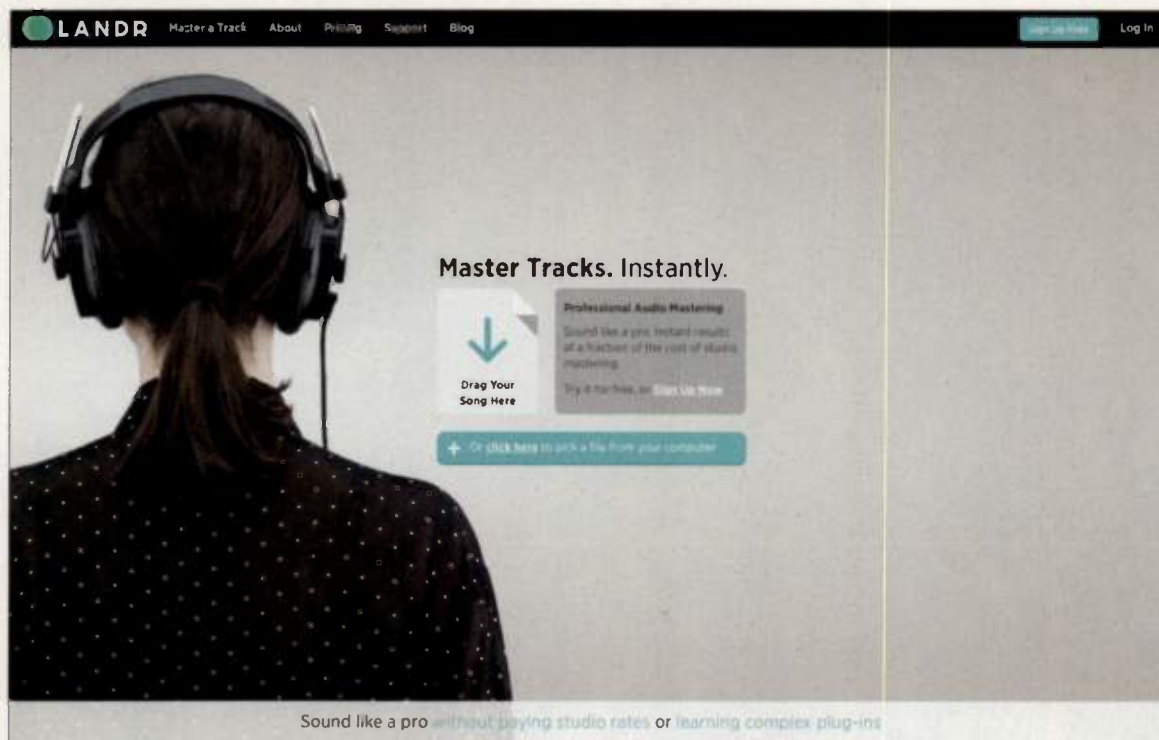


Fig. 1. MixGenius' LANDR website offers automated mastering at very low cost and with almost instant turnaround.

The first thing I do after receiving mixes from a client is to discuss what their objectives are for the project. How big of a bottom end do they want their master to have? How important is competitive loudness compared to better sound quality?

results, it's important to talk about what mastering engineers do before they touch a single control.

FIRST LISTEN

When I am asked to master a project, the first thing I do after receiving mixes from a client is to discuss with them what their objectives are for the project. How big of a bottom end do they want their master to have? How important is competitive loudness compared to better sound quality (higher resolution, lower distortion, tighter stereo imaging, greater dynamic range, more air and nuance)? Are there any odd elements in any of the tracks—an unusually bass-y guitar track, for example—that they want me not to “fix”? Is there any element they *do* want me to fix, such as a lead vocal they feel is too loud in a particular song's chorus?

Try giving such discriminating instructions to a robot. An algorithm can't be programmed to take subjective judgment into account. I may feel the lead vocal is the perfect volume during a song's chorus, but if my client thinks it sounds too loud, I'm going to lower it. The robot can't possibly recognize and act on the client's specific wishes; af-

ter all, they're not on speaking terms. Who do you think will make the client happy?

Once the mastering session is under way, there are many other aspects to address: Checking for (and avoiding introducing) phase issues, spectral imbalances, ephemeral frequency masking, selective dynamics control and enhancement; correcting and enhancing imaging, and so on. To understand how LANDR handles these details, it's helpful to get a brief overview of how the automated service works.

A QUICK TOUR OF LANDR

LANDR's interface is set up to take the guesswork out of mastering that undertaking the job yourself would entail and to provide the service quickly and at very low cost. (Remember, this service is not designed for those who already know how to master.) To accomplish all that, and to keep you from making choices that would return bad results, LANDR necessarily gives you just a few options.

LANDR defaults to an automatic mastering mode that applies an arbitrary amount of dynam-

ics processing to your mix. Alternatively, you can select from three loudness options (called Intensity Levels): Low, Medium and High (see Figure 2). In my tests using the service, the Low setting essentially preserved the original mix's dynamic range but normalized the file so that peaks approached 0 dBFS. Selecting the next highest intensity level generally reduced the mix's crest factor 2 to 6 dB, depending on the original file's dynamics. As best I could tell, the Med setting sounded (and, judging by my meters, looked) like it provided the same depth of dynamics processing as the Automatic Mastering mode. (At the time I performed my tests, the website wouldn't allow me to A/B Automatic mode and the Med setting in real time.)

As expected, the High setting caused a highly noticeable increase in audible artifacts: distortion, squashed transients and bottom end, smeared imaging,

very diminished depth and nuance, and so on. But those artifacts would also occur if one were to ask a professional mastering engineer to make their master stupid-loud by severely limiting their mix's dynamic range (an all too common request, as evidenced by the many horrible-sounding major-label releases over the past decade-plus). LANDR's High setting is for people who want their master to be competitively loud at any cost.

NOW I KNOW MY ABC'S

As the High Intensity Level in LANDR caused too many artifacts and the Low setting left the dynamic range virtually untouched, I chose the Automatic Mastering setting—virtually the same as the Med setting—for LANDR's mastering of the three mixes I would use for my A/B/C tests. I deliberately chose three mixes that differed widely in quality to see how LANDR would handle each: The first was an excellent mix that needed only a very light touch-up; the second was good but not great; and the third was a horrible mix with many serious flaws that cried out for deep mastering.

Opening a new project in Digital Performer,

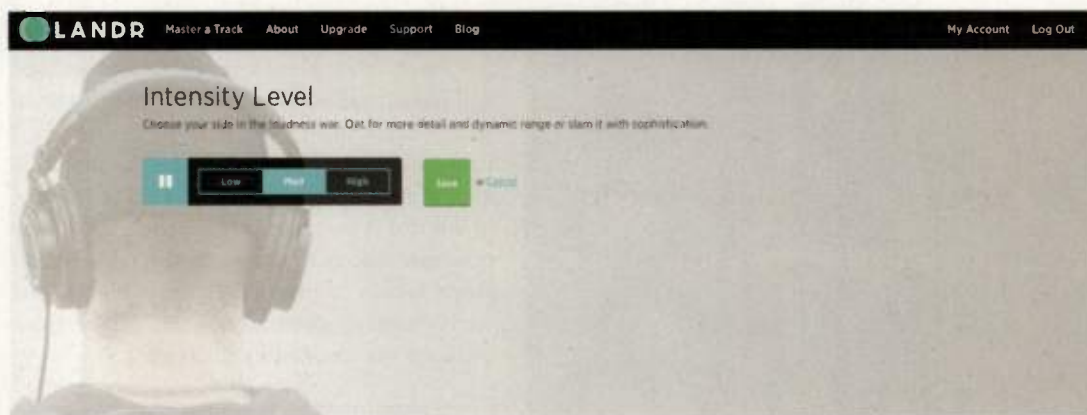


Fig. 2. LANDR lets you choose from three Intensity Levels for your master, affecting its loudness.



Fig. 3. Sample Magic's Magic AB plug-in allows you to load and play back up to nine mixes for comparison purposes. The names of the loaded tracks have been blotted out here to protect client confidentiality.

I instantiated Sample Magic's Magic AB plug-in on a stereo master track. (Magic AB provides outstanding facilities, including looping and gain matching, that are highly useful when performing A/B/C tests; see Figure 3.) For each of the three songs used for the tests, I imported the unmastered 24-bit mix, my 16-bit/44.1kHz master (for CD release) and LANDR's 16-bit/44.1kHz master into separate playback slots in Magic AB. That set-up allowed me to listen to and compare all three versions of the same mix—unmastered, mastered by human, and mastered by robot—while looping the same song section. First up was the excellent mix that needed very little done to it. Would LANDR handle it with kid gloves?

LIGHT MASTERING, PLEASE

If there's one overriding precept for mastering, it's this: First, do no harm. In other words, if ain't broke, don't fix it. The last thing you want is a master that sounds worse than the unmastered mix.

To see if LANDR would only do what was necessary, I first fed the robot an excellent mix of a contemporary country ballad.

In this case, the master LANDR returned was not nearly as loud as my master. To match the playback levels, I lowered my master's playback volume 2.4 dB in Magic AB; doing so made both masters sound equally loud during playback. It also gave the LANDR master a very slight advantage, as no dither could be applied to my attenuated master post-fader in Magic AB. More important, it illustrated one of the inherent pitfalls of automated mastering and LANDR in particular: With limited and widely contrasting options for dynamics processing depth, and no in-between settings available, you can't nudge your way to the best possible setup but must accept one of the arbitrary three. But I digress.

Comparing the two masters to each other and to the original mix was an eye-opener. LANDR's WAV master sounded thinner in the midrange

band, suffered a narrower stereo image, and had noticeably less depth compared to both my own master and the unmastered mix. It sounded to my ears like LANDR had applied a smiley curve (hyped bass and highs, and attenuated midrange) to the mix. Compared to my master, the vocal on LANDR's master had very noticeably receded into the background, lessening the song's impact and undermining one of country music's primary production goals: Keep the lead vocal up front. Also, the bass guitar's bottom end sounded a tad flabby and less focused on LANDR's master. The automated master also amplified an inherently resonant upper-bass band in the male lead vocalist's chest register, making some frequencies occasionally sound a bit boomy on my Yamaha NS-10Ms (a red flag that monitor is famous for waving). The high end on LANDR's file also sounded a bit zingy. Along with the attenuated midrange, this made the LANDR master sound overall a little edgy and thin.

In my own mastering of this country mix, I had automated the fader higher at the beginning of the song to correct for a sparsely arranged intro that had been mixed too low. LANDR's master didn't execute the same compensation, and the intro sounded relatively weaker (if subtly so) as a result. Although my master had more dynamics processing applied—again, it was noticeably louder than LANDR's master before I attenuated its level in Magic AB—it sounded warmer and more supple than the LANDR file. In short, LANDR degraded much of what sounded great in the original mix.

THE ROBOT SURPRISES

My next A/B/C comparison used a mix of an electronica ballad as the source material. The original mix was good, if unexceptional. LANDR did a surprisingly good job mastering this track; so good that, frankly, I was initially taken aback. But the electronica mix was far simpler than the country one, which had much more extensive and varied instrumentation; on the sparser electronica track, LANDR had less risk of fixing one thing only to break another (always a danger when processing a complex stereo mix). Nevertheless, LANDR made



Fig. 4. Very mild bell-curve EQ is applied to only the mid channel of a well-mixed electronica track, using FabFilter Pro-Q. (The title of the custom preset no longer reflects the control settings, as the preset was edited substantially.)



Fig. 5. Very intricate and deep mid-side equalization is applied to an extremely muddy and boomy mix, using FabFilter Pro-Q to restore clarity and add punch.

the electronica track's bottom end sound slightly tubby. My master for the same track had a tighter bottom end.

In my mastering for this track, I had also brought the lead vocal slightly forward using mid-side processing. I boosted the mid channel's level ever so slightly. I also applied very mild bell-curve EQ only to the mid channel: a broad 0.6dB cut centered at 271 Hz, and less than 0.7 dB boost in narrower bands centered at 1,022 and 3,934 Hz (see Figure 4). LANDR's master produced a comparatively understated vocal. This was not what my

ears told me the track needed, but in this case it wasn't an open-and-shut case as to who addressed the vocal better, me or the robot. My client liked how I mastered the track, but it's possible she would've also liked the robot's treatment—the two masters sounded quite similar.

Still, my master had a noticeably tighter bottom end. This was partly due to the slight EQ tweaks I'd made in the mid channel. While evaluating the mix during the mastering session, I could hear the bottom end was slightly muddy and the vocal slightly understated—a serendipitous coinci-

dence. My subtle EQ tweaks in the mid-channel fixed both issues at once, clarifying the bass band and pulling the vocal slightly forward. Based on what I heard in all three of LANDR's masters, I doubt mid-side processing was ever applied. And even if the robot could perform M/S processing, in this case it obviously couldn't "hear" that more than one discrete element in the mid channel would benefit by having the same subtle EQ and stereo-imaging adjustments applied. The robot could see the forest, but not the trees.

THE HORRIBLE MIX

The last test involved a track that was a cross-genre blend of industrial and heavy metal. Produced in a modest home studio, the mix was incredibly cloudy and boomy, and presented a very narrow soundstage. My mastering was very deep on this cut and included mid-side equalization, multiband and wideband compression, stereo-image widening, subtle harmonics enhancement, and limiting (see Figure 5). While there was no possible way to turn this track into an audiophile release—technology has its limits—mastering dramatically improved the mix. The soundstage became a lot wider, and the track much clearer, punchier, richer, and louder.

On this cut, LANDR showed its deepest limitations yet, completely failing to address the many severe problems with the mix. After mastering by LANDR, the track still sounded very muddy and boomy, and had a very narrow soundstage.

TAKE ME TO YOUR MASTER(ING ENGINEER)

Based on my tests of LANDR, several conclusions can be drawn. When presented with an excellent and complex mix, automated mastering doesn't know when to leave well enough alone and is likely to do damage. With horribly flawed mixes that require intricate analysis and highly selective mid-side processing, the robot doesn't know where to begin to address the many problems. For relatively sparse mixes that fall in between these two quality extremes, the robot might do a good job.

The problem is, the engine's apparent analysis of the mix as a whole—focusing on the forest, ignoring the trees—and the algorithm's broad (vs. selective) application of processing affect individual elements of a mix in ways that are unpredictable. And we haven't even touched on how cohesively (or not) a robot might handle mastering multiple tracks for an album or other compilation.

Finally, if you're not completely happy with what a mastering engineer did for a particular mix, you can always ask for specific revisions. The robot doesn't currently take calls (or adapt to feedback). Until that day arrives, the mastering engineer's job is safe. ■

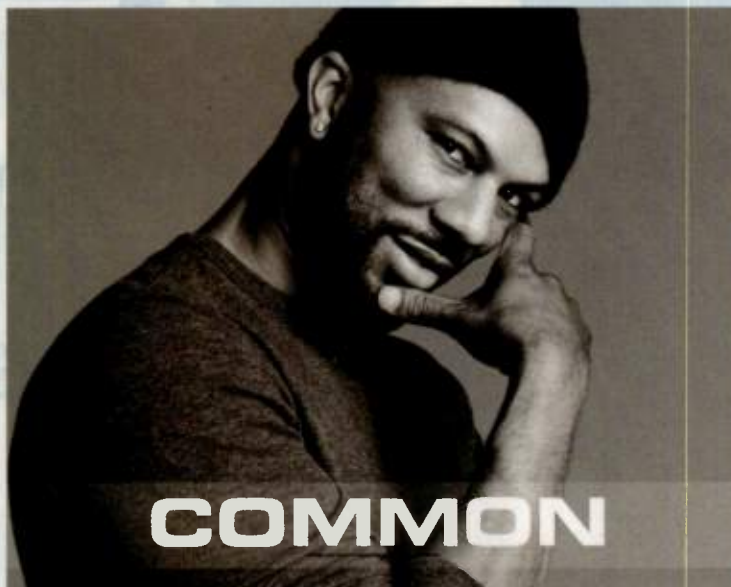
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What's in a name? When choosing a stage name for yourself of your band, think about what that name evokes. Rapper Common's name says he is a man of the people.



The band Friends W/O Benefits call themselves "skate punk disco." A few words can say a lot.



Your look should fit the message you want to convey about your music. In the case of Pretty Reckless frontwoman Taylor Momsen, her look, band name, and music all fit together perfectly.

Create a Persona for You and Your Music

BY RANDY CHERTKOW AND JASON FEEHAN

Most people who hear your music will never be in the same room as you, let alone meet you in person. Yet, once you put your music online, it's out there for the entire world to hear. As people listen to your songs and interact with your online presence, what impression are they getting about you?

Listeners form impressions about you not only based on your music, but also from everything else associated with you: your look; how you interact with your fans; how you appear on stage; your logo fonts, images, and colors; your web, social, and mobile presences; the words you write and your tone; even the icon you use in the MP3 files that you distribute. All of these components come together to form your public image—your *persona*—and become your identity in their minds.

That's why it's worth it for you to take control of your persona so you can shape their perception of you and your music, and give your fans an identity they can relate to. Otherwise, fans will decide for themselves who you are, based on whatever inconsistent or haphazard perceptions may be out there. It's also worth the time because the elements that make up your persona form the ingredients of your merchandise, press materials,

and social presences.

Your persona is made up of the following major elements:

1. YOUR MUSIC

Your music is at the heart of everything you do and as you release it, consider how it represents you and your persona. This will also help determine the rest of the elements that you put into your persona. For example, if your music is dark and moody, the logo and colors that you use should evoke the same vibe.

2. YOUR NAME

If you haven't chosen a stage or band name yet, choose one that matches your music and find one that's unique, has a domain name open, isn't trademarked by anyone else, and can be understood if someone shouted it in a loud bar.

3. YOUR MUSIC DESCRIPTION

Find a way to describe your music clearly in a few words. For example, we recently met a band called Friends W/O Benefits (fwobband.com) who called their music "skate punk disco." Those three words immediately give you an idea of what they sound like and make you want to find out more.

4. LOGO

Your logo will be used online and off, and is a key ingredient for your merch. Consider using vector line art because those images are resizable, as large or small as you want. That way the image looks perfect on large banners onstage, or within tiny avatars and MP3 images.

5. FONTS

You should experiment with fonts; thousands are downloadable all over the Web. Some fonts will be better than others to use within your imagery in order to evoke the feel that you want to create for your persona. Don't limit yourself to the fonts that are available on your computer; there are lots of options out there, to help express who you are.

6. COLOR PALETTE

Colors evoke moods and provide a way to create an emotional dimension to your persona. The colors you use should complement your music, but

most importantly, all of the colors in your palette should work well together. If you can, chose Pantone colors because they will look the same on a computer screen as they do printed on merch.

7. IMAGE OR LOOK

Artists who have gained a significant following usually develop an image beyond their logo, colors and fonts to help their fans identify with them. That image includes how they dress, interact with fans, their attitude, and how they appear onstage. Some artists choose a style that's gimmicky; some even wear costumes (Daft Punk, Insane Clown Posse). Some artists' images are even entirely drawn or animated (Gorillaz). Other performers choose a look that is simply genuine and straightforward.

8. PHOTOS

The photos you choose to show form your persona as much as the rest of your graphical imagery. Be sure to pick the shots that complement your look.

9. YOUR WRITING VOICE

The way that you write forms your persona as much as your imagery. We're not just talking about songwriting here; the way you express yourself on social media, or in any public forum, says a lot about who you are. In every situation, your writing should be in-

fluenced by your music, your personality, and the impression that you want to make on your fans.

Once you've established these elements and created your persona, test it out and talk with others you trust to find out what kind of impression you're making. Once you're satisfied, apply your persona consistently across everything you do, including your merchandise. Go back through all of your online presences, MP3 files, and places where people can find you and your music and update everything with the new elements.

Take control of your persona. Give your fans an identity they can relate to.

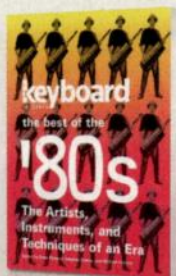
However, keep in mind that your persona is never static; it will continue to grow and change over time. Establishing who you are and what people think of you is an ongoing process that requires constant refinement and adjustments. After all, we're talking about your identity, which is as much of an aspect of your music as the songs themselves. ■

For more career tips, follow Chertkow and Feehan's DIY Advisor blog at emusician.com.

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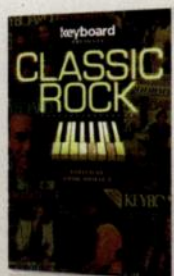


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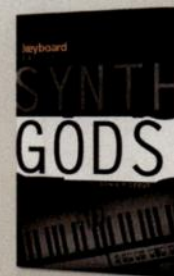


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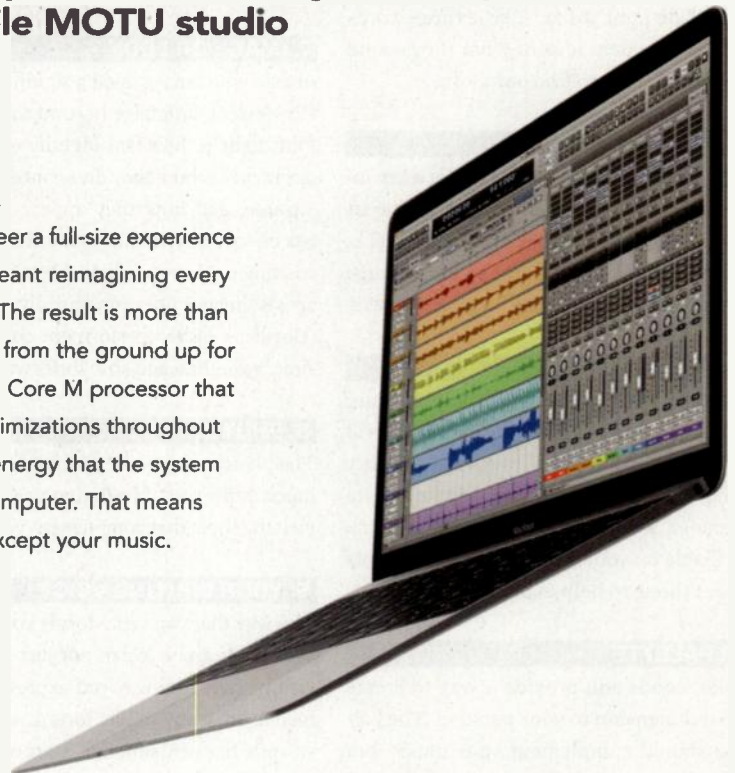
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BY GINO ROBAIR

Pandora, Spotify, YouTube—we all like to complain about how these and other online music-delivery platforms are not paying artists fairly. We've read the horror stories about major hits earning dismal online royalties, such as Pharrell Williams' "Happy" bringing in a paltry \$2,700 for 43 million streams on Pandora. We've seen the breakdown of income that these services provide indie musicians thanks to the transparency of artists like Zoë Keating. For artists with careers great and small, there seems to be no light at the end of the tunnel except the headlamp of a corporate freight train barreling down on our assets.

In fact, 2015 has the potential to be a watershed year for American musicians, composers, and producers in terms of copyright and how artists earn money for their work.

In late April, the House Judiciary Committee conducted its final hearing regarding copyright law, with U.S. Register of Copyrights Maria Pal-

lante delivering the message that the morass of conflicting and unfair legislation must be corrected immediately. This follows the release earlier this year of the U.S. Copyright Office's far-reaching music licensing study "Copyright and the Music Marketplace," spearheaded by Ms. Pallante. (The document can be read online.)

Meanwhile, a bipartisan bill going through the House of Representatives is intended to provide fair compensation and increase transparency across the board in terms of performance royalties. H.R. 1733, known as the "Fair Play, Fair Pay Act," would ensure that every type of performance of recorded music is subject to the same rules, and that music creators receive fair market value for their work. During her testimony, Pallante referred to the bill as an "excellent legislative framework," and it is backed by musician-based organizations such as The Recording Academy.

Some of the inequities addressed by H.R. 1733 include the enforcement of royalty payments for digital performances of recordings produced before 1972. Up until now, SiriusXM and Pandora have been playing pre-1972 tracks without compensation, based on what they see as a loophole in federal law. This bill would settle the matter in favor of the artists.

Another aspect of the bill would require FM and AM stations (aka terrestrial radio) to pay performance royalties to artists and copyright owners of sound recordings just as online services do. The U.S. is the only industrialized country that doesn't collect and dispense this class of royalty from terrestrial radio play, even when stations simulcast digitally over the Web.

This omission in the law has global implications for American artists: While other countries collect this type of royalty when they play U.S.-made recordings, our artists do not receive the money because the United States doesn't have a reciprocal agreement with these nations. Consequently, the foreign-collected royalties stay in those countries. In 2013 alone, that cost artists and labels \$60 million, according to SoundExchange CEO Michael Huppe.

That terrestrial radio has an unfair advantage in royalty requirements is a reasonable complaint by Pandora, Spotify, and the other online services. But rather than remove the performance royalty altogether, which is what the digital services are pushing for, H.R. 1733 would bring our terrestrial stations up to international standards.

Another important bipartisan bill, H.R. 1457—the "Allocation for Music Producers Act" (aka the AMP Act), which is also part of H.R. 1733—requires SoundExchange to pay royalties to engineers and producers when a featured artist directs the organization to do so. (This is already being done voluntarily, but the Act puts it into law.) The good news is that the AMP Act doesn't take away royalties that are due to other rights holders.

As you would imagine, there is serious opposition to these bills. Among the threats are the members of the MIC Coalition (mic-coalition.org), a lobbying group made up of some of the biggest players—Google, iHeart Media, Pandora, NAB (the National Association of Broadcasters), Amazon, and, somewhat shockingly, NPR (National Public Radio). The coalition not only wants to keep the status quo in terms of what they pay, but they hope to lower the rates further.

Of course, every business wants to reduce its bottom-line costs. But with that perspective in mind, the MIC Coalition's claim that the group includes "artist advocates" is disingenuous. While their mission statement offers lines such as "making music affordable and accessible so that consumers can continue to enjoy it..." and "connecting audiences with musicians for the betterment of the entire music industry," the message is clear: If artist compensation is made equitable, how can these companies justify the expense of delivering this type of data? These services want you to believe that it is in the artist's best interest that their music is used to sell advertising and subscription services without appropriate remuneration.

Remarkably, the MIC Coalition's fourth and final mission statement includes "the need for transparent and direct ways to access music and compensate artists." I think everyone can agree with this statement.

The tech industry regularly uses the term *disruptive* to describe something that shakes up the marketplace. Now that digital delivery is firmly in place, it's time for music makers to disrupt the dominant paradigm of unfair compensation.

Make your voice heard. Contact your congressional representatives and let them know you support "Fair Play, Fair Pay." All it takes is a simple email to request that the law be changed to protect your right to be fairly compensated no matter how your recordings are delivered. ■



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