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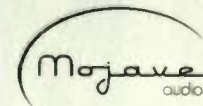
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COVER FEATURE

- 20 **How to Record Vocals Like Allen Sides** In more than 40 years in the studio, five-time Grammy-winning engineer Allen Sides has recorded thousands of albums with artists ranging from Frank Sinatra to Green Day. This month, he shares his favorite tips for capturing killer vocal tracks—even if you're recording at home.



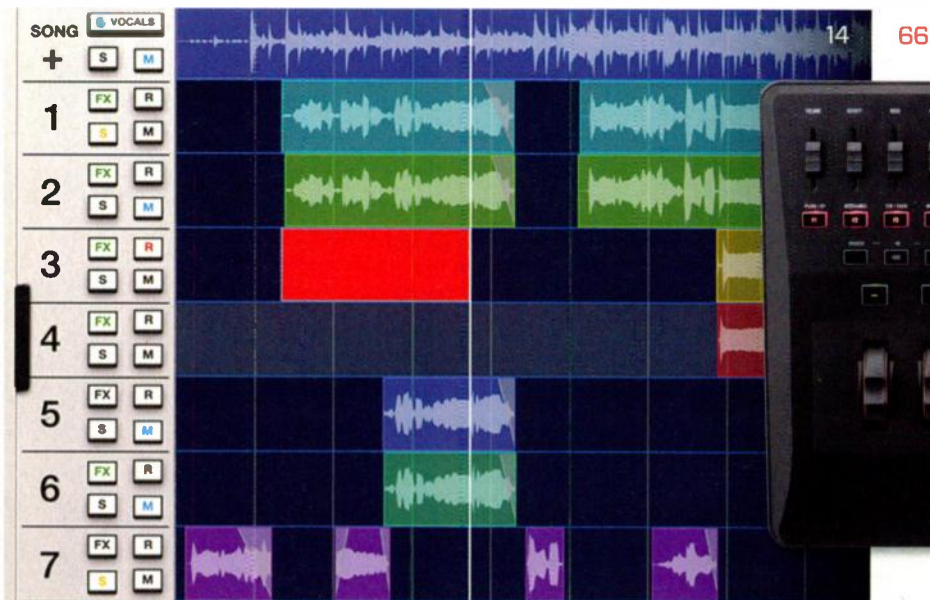
FEATURES

- 28 **Flying Lotus** *You're Dead*, the fifth album by electronic artist/producer Steven Ellison, was a free-form experimental odyssey in the studio.
- 34 **White Sea** M83 collaborator Morgan Kibby taps into her love of '80s synths to produce the epic breakup album *In Cold Blood*.

GEAR

- NEW GEAR** 14 Production tools to help you make better music
- MOD SQUAD** 18 **Soundmachines LP1lightplane** Use this gestural controller to shape sounds with your finger, then loop them
- ROUNDUP** 42 **Microphones** Top engineers reveal their favorite mics and applications
- REVIEWS** 52 **Dave Smith Instruments Pro 2** Keyboard monosynth
- 60 **Blue Mo-Fi** Powered Hi-Fi headphones
- 62 **JamHub Tracker MT16** Multitrack recorder
- 66 **Korg Triton Taktile-25** All-in-one MIDI keyboard, control surface, drum pad, and synth
- 68 **Soniccouture Mallets** Sampled mallet percussion for Ableton Live

11.2014



68 **Zivix PUC** Wireless MIDI interface

70 **Spitfire HZ02 Hans Zimmer Percussion—Los Angeles** Jason Bonham drum sample library

HOW TO

MASTER CLASS 72 **Virtual Venues** Learn how to stream concerts online with our complete guide to tools and techniques.

TECHNIQUES 80 **Recording** Placing Room Mics for Drums

82 **Recording** Getting Started With KMI SoftStep 2

84 **Career** Plan the Right Crowdfunding Rewards

DEPARTMENTS

10 **Community**

PLAYLIST 40 Music reviews from *Electronic Musician* contributors

CRAIG S LIST 90 **Five** Artist Contract Lines Explained



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It's What Goes in that Counts

IN ONE sense, a microphone is only as good as the person it's recording. Several of the engineers I talked to for this month's roundup noted that a great artist will be identifiable no matter what mic is used. Of course, the recording engineer's job is to capture as much musical subtlety as possible, and that begins with an appropriate transducer.

What makes a mic right for the job? That's a complex and personal question, and it involves not only the tastes of the artist and engineer, but also the artist's musical style and the intended audience. While a vintage Neumann U47 is highly prized for use on voice and acoustic instruments in jazz, classical, and pop, you probably wouldn't use it to mic a snare drum for a metal record. It's all about the mic's design and how good it sounds in a given context.

Two of the same model of a mic can sound noticeably different, even when used on the same instrument. The mic that sounds right for the song is always the correct choice, period. How much that mic costs has nothing to do with it: A drummer might have a \$99 mic on the snare and a \$5,000 mic as an overhead. If that's what enhances the track, then you're off to a fine start.

But, of course, if you haven't got a killer song or a memorable performance, the best microphone in the world is not going to make it any better. As they say in the biz, "Garbage in. Garbage out."



GINO ROBAIR
TECHNICAL EDITOR

COMMUNITY

"WHEN WE START TO OVERREACT TO THINGS LIKE LYRICS BY ANY BAND, INCLUDING EXODUS, AND START ARRESTING PEOPLE, WE ARE CAVING IN TO PARANOIA AND ARE WELL ON OUR WAY TO BECOMING AN ORWELLIAN SOCIETY."

Statement released by Exodus guitarist Gary Holt, after a fan was arrested for alleged terrorist threats for posting the lyrics to the song "Class Dismissed (A Hate Primer)" on Facebook; September 4, 2014

download of the month

Propellerhead Take

Hands up if you've sung song sketches into your phone. Want a cooler way to save those ideas? Check out Propellerhead Software's (propellerheads.de) Take app, which offers voice-memo simplicity in a one-tap, three-track recording interface, complete with mixer, built-in loops, clicks, and beats, and effects that will help you make the most of your phone's micro-mic. Instantly share files via Facebook, Twitter, and email. Available for free in the App Store.

SARAH JONES



First Look

Native Instruments Complete Kontrol S-Series

BY SARAH JONES

Native Instruments' Complete Kontrol S-Series keyboard controllers offer a new level of hardware/software integration for the Complete Instrument line. The keyboards, available in a choice of 25, 49, or 61 keys, deliver tag-based access to all Complete Instrument presets from one plug-in interface.

Instead of browsing by instrument, users can now search by sound; Native Map technology maps key parameters for each Complete Instrument to touch-sensitive hardware controller knobs.

Complete Kontrol's Light Guide function displays key switches, zones, and other parameters on multicolor LEDs placed directly above each key, giving you the instrument's layout on the keyboard at a glance without having to dig into the software. These lights also provide performance feedback (and an awesome light show) as scales, chords, and arpeggios illuminate across the keyboard as they are played.

Complete Kontrol's Smart Play arpeggiation function offers a variety of modes, including integrated scale mapping and ready-to-play progressions; common scales can even be mapped to the white keys for a clam-free performance.

Two touch-sensitive, complex Touch Controls offer complex software control ranging from re-creating the behavior of pitch and mod wheels to mimicking physical objects like springs and bouncing balls for interesting modulation curves.

Complete Kontrol keyboards integrate seamlessly with the tenth generation of NI's Complete instruments and effects suites, which now come with six brand-new instruments and more than 440 GB of content.

Stay tuned for a comprehensive review in our January issue. Complete Kontrol S25 is \$499, Complete Kontrol S49 is \$599, and Complete Kontrol S61 is \$699. For more information, visit the-complete-instrument.com



ask!

I DO A LOT OF CLOSE-MIKING OF VOCALS, AND PLOSIVES OFTEN RUIN THE TRACK. POP FILTERS DON'T REALLY HELP MUCH. WHAT'S THE BEST WAY TO GET RID OF PLOSIVES? IS THERE SOME SOFTWARE PLUG-IN LIKE A DE-ESSER FOR PLOSIVES?

DON MACKENZIE
DES MOINES, IA
VIA E-MAIL

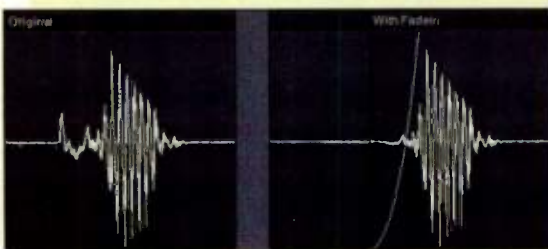
Start by reducing plosives as much as possible at the source. If your mic has a low-cut filter, enable it. Also note that some pop filters are more effective than others; at \$299, the PaulyTon Superscreen (paulyton.de) is expensive but extremely effective. Moving just a bit away from the mic or angling it slightly can help, and many swear by rubber-banding a pencil vertically in front of

the mic element to deflect a plosive's "direct hit" on the mic element.

For recorded plosives, insert a steep lowcut filter to take out frequencies below the lowest frequencies you want to keep. At that point, multiband compression that affects only the lowest frequencies might be enough to do the job. This is similar in principle to a de-esser.

For a more surgical option, split an audio clip immediately before the plosive, then fade in over the plosive. By varying the fade-in's shape and duration, you can remove as much or as little of the plosive as desired. Generally, you'll want to retain a little of it in the track—you just need to keep the level well under control.

THE EDITORS



The screen shot shows a plosive before (left) and after (right) reducing it by adding a fade-in.



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

AES 2014

Audio Engineering Society president Jon Krivit shares some of this year's highlights

BY SARAH JONES

THE AUDIO ENGINEERING SOCIETY convention returns to the Los Angeles Convention Center on October 9-12. We caught up with new AES president Jon Krivit to learn what to expect at this year's show, and throughout the upcoming year.

Why don't you start by telling us a little bit about your background.

I've been teaching audio production at three colleges in Boston for the past 18 years. When my academic department chairman asked me to organize an AES Student Chapter, I didn't really know what I was getting myself into, so I just invited all kinds of interesting people to our campus; famous engineers and producers, hardware and software designers, authors, and historians; we even hosted a wax cylinder recording session. These AES events brought a lot of attention to our small school. Students and professors from other nearby colleges started to attend, and it really put us on the audio map.

In 2007, I organized the first Boston Area Definitive Audio Student Summit (BADASS), which was an excuse for hundreds of regional college audio students and educators to get together under the AES banner for a full day of recording studio workshops, tutorials, demos, and exhibitions.

I've been the AES Education Chair for the past four years, running all student and education events at U.S. and European conventions. My goal has always been to create a community where audio students feel connected and welcome. Students make a great leap of faith when they head to an AES convention for the first time. They don't really know what to expect, so my modest goal is to try to make sure that they have the most productive and engaging four days of their lives.



What are your plans as incoming AES president?

It's quite an honor to be elected to lead the 14,000 AES members from all corners of the globe. Since 1948, we have published the technical standards and papers that have driven the industry. Our peer-reviewed *Journal of the Audio Engineering Society* chronicles the scientific discovery of audio that advances academia. No organization has the credibility and gravitas that the AES has. The top producers, engineers, educators, designers, researchers, students, and end-users all look to the AES as the connection point for the world of audio. If you are an AES member, you are part of that important community.

What are some of the program highlights of this month's convention in Los Angeles?

Here's something new: On each of the 137th convention's four days, a legendary recording engineer will present the multitracks of a classic song from an iconic band. Who wouldn't be excited to see *Rumours* producer Ken Caillat break down one of Fleetwood Mac's most beloved songs track by track? Ken Scott will do the same with the multitracks for David Bowie. Then, Mark Linett with the multitracks for the Beach Boys' "God Only Knows." We wrap it up with Andrew Scheps and the Red Hot Chili Peppers. Make sure to arrive at these events early!

The brilliant educator Alex Case will pack rooms with tutorials on the decibel, phase and polarity, timbre, and critical listening. Beatles engineer Geoff Emerick is always a huge draw. So is *Dark Side of the Moon's* Alan Parsons, who delivers the Day 1 keynote at the opening ceremonies. The legendary Wendy Carlos is on a panel celebrating Moog synthesizers. Dave Pensado and Herb Trawick bring their show to

AES. There are so many great sessions on game audio education and careers, broadcasting and streaming audio, programming drums, mixing, live sound, studio design, acoustics, mastering, audio forensics, product design, an education and career fair, student mentoring, a project studio expo, a football field-sized exhibition of almost every audio company that matters, and great parties all over L.A.

Why should recording musicians attend the AES show?

All of the great recording, mixing, and mastering engineers will be there walking through the exhibition hall, and they're all very approachable. They've got the same goals that you have: They want to connect with the AES community of audiophiles. They want to see the new gear, say hi to old friends, and make new ones. It's great for their careers and it'll be great for yours.

What are the most important reasons to become an AES member?

There are a lot of people who are interested in audio, but when I meet someone who is an AES member, I know they are the real deal. Learning doesn't stop when someone graduates from college. The audio world is always chasing an ever-moving target where technology creates new ideas, techniques, and discovery. The Audio Engineering Society is the best way for the audiophile of any age to advance this knowledge and to stay connected. I sure hope that you can join us in Los Angeles, October 9-12 at the L.A. Convention Center. Where else would you rather be?

Learn more about this year's Audio Engineering Society Convention, download a mobile show app, and register for a free badge at www.aes.org.

IN THE STUDIO

>> The Frail at Different Fur

BY BARBARA SCHULTZ

THE FRAIL'S LATEST, *LOVE DEATH LEGEND*, HAS THAT COMBO OF SYNTH-POP glamour and darkness that have captivated San Francisco Bay Area's indie/club scene, now with a percussive punch that producer Patrick Brown feels is essential to taking the band to the next level.

"The demos of these songs had thinner drums, but on the final versions, some of the songs have five bass tracks. Some have three drum kits going," Brown says. "And we made sure the kick came through. To make that low end really happen, they needed to go the extra mile."

Brown was in on The Frail's song creation from almost the very first writing sessions between lead singer/musician Danny Lannon and his bandmate multi-instrumentalist Kevin Durr.

"In the past, Kevin and I would email parts of songs back and forth and piece them together until we had a clear sense of what the song was, musically," says Lannon, whose at-home composing tools include Logic, Garageband, and Ableton Live as well as traditional instruments. On *Love Death Legend*, however, with Brown producing, they shook up and slowed down their process. Writing sessions mainly happened with Brown in the mix, in the rooms above Different Fur, the longtime San Francisco studio that Brown has owned and operated for 10 years.

"I was Patrick's assistant at the time, and I was actually crashing in the third story office above Different Fur," recalls Jorge Hernandez, who engineered the album. "A lot happened in that upstairs room."

Brown and Hernandez set up a Pro Tools system and a few mics for live band recording. "I live in an apartment above the studio, too," Brown explains. "We were writing up there for a couple of months with a simple drum kit—kick, snare, hi-hat—a tiny practice amp, some synths, bass direct, and everything into Pro Tools. We laid down all these sketches, and by the end of those sessions I think we had about 60 demos."

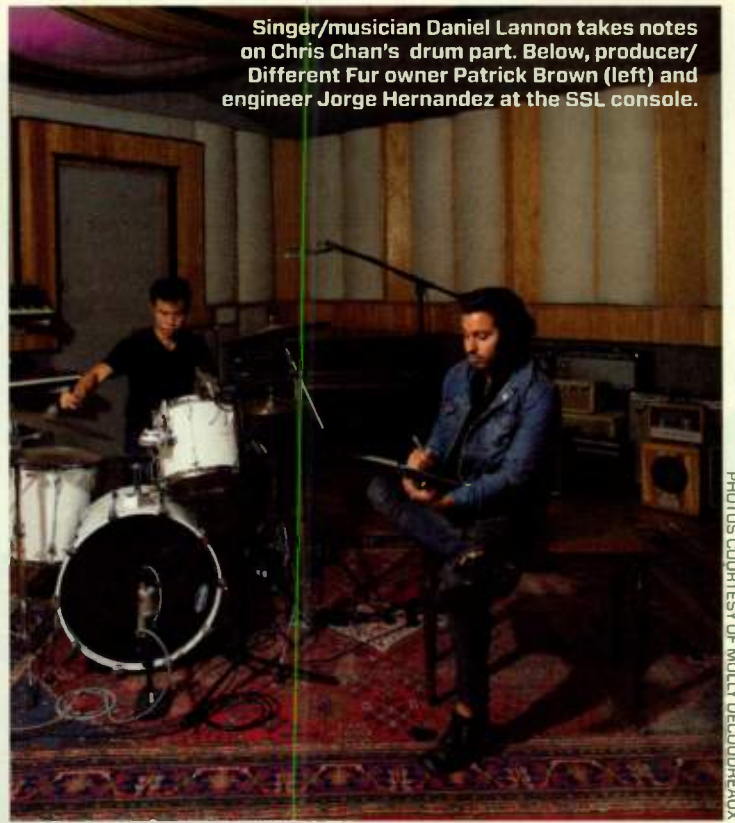
"We would let those demos marinate; Patrick and the musicians would decide which songs had potential, Izzy [Israel Chavarin] would add a bass line and make everything sound funky," Hernandez says. "They had other friends come in and play. Everybody was into it. The chemistry was a big part of the record."

"A lot of the things we did in the songwriting process, we kept," Brown says. "We were essentially refining demos over and over. Kevin would build something and I would say, 'It's great, but let's replace the stock Ableton sound you used with a real instrument. I'm a big fan of mixing electronic and live; add a live bass line or have somebody play keys, and it will all swing a bit more.'"

All of the sounds from the demo stage were on the table, to be kept or replaced; eventually the project moved down to Studio A, with a bigger kit and bass and guitar amps in the main room, and synths all D'ed in the control room, where Hernandez manned the SSL 4000 console.

"We had skeleton tracks, demos, and keepers from upstairs," Hernandez says. "Then Patrick would decide to layer a whole track with live drums, or to take out the electronic drums and just leave the live drums or vice versa. Drums were the first things we knocked out in Studio A. Then came bass lines, which by then were all already written;

Singer/musician Daniel Lannon takes notes on Chris Chan's drum part. Below, producer/Different Fur owner Patrick Brown (left) and engineer Jorge Hernandez at the SSL console.



PHOTOS COURTESY OF MOLLY DECOUDREAU

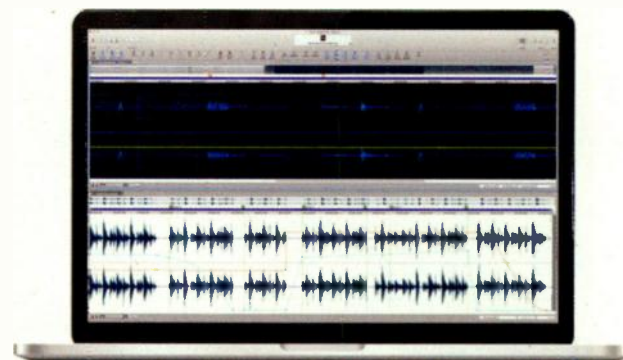
we just had to re-record them through Izzy's RC Davis amp, live. Then came all the synths, and some of those parts we definitely kept from the demos. Some of those tones were irreplaceable."

Lannon's vocals were among the last elements to be overdubbed, with Lannon standing in the center of the tracking room, singing into his favorite mic. "I really like the Shure SM7B. Since my voice is a little bit high, it picks up the register of my voice really well."

Hernandez used the preamp, EQ, and compression in the SSL console, as well as an LA2A compressor on Lannon's voice. "Everything went through the SSL during recording and mixing. That SSL is my favorite console," says Hernandez, himself a valued asset to the project.

"I made sure Jorge engineered it because I've worked with him a lot and I know his style," Brown says. "There are a lot of beats on the album where you can't really discern what's electronic and what's a live kit—a lot of it is really overlaid—and then a hi-hat or a tom will pop out in certain spots and come into focus. Jorge comes from a hip hop perspective, and I knew he could make the tracks hit the way we wanted."



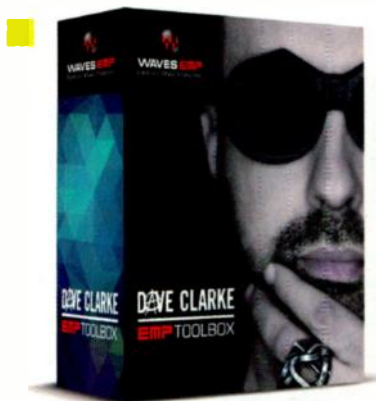


1
 Zoom
TAC-2
 Thunderbolt audio interface for Mac OS
\$399.99 street
HIGHLIGHTS Two-channel, bus-powered 24-bit/192kHz interface with XLR/TRS combo inputs and balanced 1/4" TRS outputs • front-panel headphone jack and instrument input • MixEfx software offers reverb and echo effects and control functionality (48V phantom power, lowcut, polarity switch) • supports Mac OS X 10.6.8 and later • includes Thunderbolt cable
TARGET MARKET Musicians, DJs, producers, home-studio owners
ANALYSIS The lowest-priced Thunderbolt interface available, and it doesn't require an AC adapter: a new alternative for mobile recording.
zoom-na.com

2
 MOTU
1248
 Thunderbolt audio interface
\$1,495
HIGHLIGHTS 24-bit, 192kHz Thunderbolt and USB 2.0 connectivity with word clock • 4 mic, 2 instrument, and 8 TRS line-level inputs • 32 inputs, 34 outputs at 1x sample rates • 48-channel digital mixer • two 8-channel ADAT I/Os • AVB Ethernet networking with MOTU 8M and 16A interfaces (\$1,495 each) • standalone mixing via wireless and web-app control
TARGET MARKET Pro and personal studios
ANALYSIS A fully redesigned interface and software package for high-quality audio recording.
motu.com

3
 The Loop Loft
Matt Chamberlain Drums
 Audio and MIDI loop library
\$49 (48kHz stereo loops); \$79 Deluxe Edition (96kHz multitrack loops)
HIGHLIGHTS Three drum kits and 76 samples • 9 tempo/styles that provide 387 grooves, fills, breaks • WAV, REX2, Stylus RMX, and Apple Loops file formats • includes mallet and brushes • high-res Deluxe Edition provides up to 15 tracks • recorded at Sound City, Van Nuys, California
TARGET MARKET Songwriters, composers
ANALYSIS A pro-level collection of samples and loops in a broad range of styles and with a wide palette of colors.
thelooploft.com

4
 Sony Creative Software
Sound Forge Pro Mac 2
 Waveform editor for Mac OS X
\$99.95
HIGHLIGHTS Supports 24-bit/192kHz-resolution recording up to 32 channels • 64-bit AU/VST processing • WaveHammer compressor/limiter • CALM metering • batch processing • FLAC support • includes iZotope plug-ins: Nectar Elements, 64-bit SRC, Denoiser, Declicker, Declipper, and six mastering processors • renders more than a dozen popular audio file formats including AAC, AIF, MP3, MP4, OGG, W64, and WAV • available from the Apple App Store
TARGET MARKET Recording engineers, sound designers, musicians
ANALYSIS Provides a broadcast-quality toolset and interoperability with SpectraLayers Pro 2.
sonycreativesoftware.com



5
Waves
Dave Clarke EMP Toolbox
 Native plug-in bundle
\$599
HIGHLIGHTS Electronic Music Production bundle, chosen by producer/remixer Dave Clarke, including seven plug-ins: Aphex Vintage Aural Exciter, API 560 Graphic EQ, Dorrrough Meters, LoAir Subharmonic Generator, Kramer Master Tape, MetaFlanger, and Scheps 73 EQ/Preamp • works with Waves MultiRack Native and StudioRack Native plug-in hosts
TARGET MARKET Producers, DJs, and musicians working in dance genres
ANALYSIS A selection of top-notch Waves products for styles that lean toward techno and electro.
waves.com

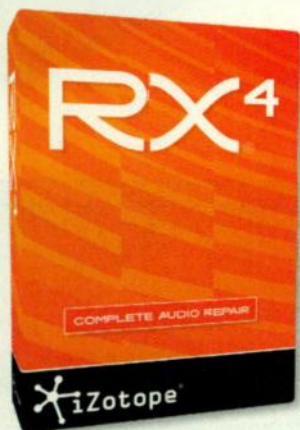
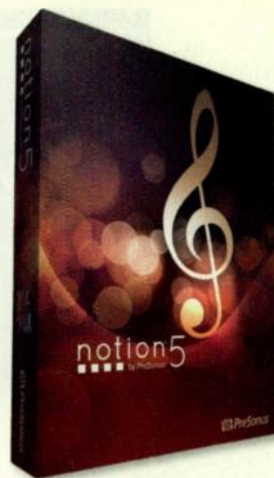
6
XILS-lab
XILS Dees
 De-esser plug-in
€89
HIGHLIGHTS Controls for Detection Freq and Reduction • intended to be easy to use as a dynamics processor • dual signal path with sections to alter Voiced EQ and Sibilant EQ using frequency, resonance, and gain parameters • plosive detection • 32- and 64-bit versions available • AAX/RTAS/AU/VST
TARGET MARKET Musicians and engineers
ANALYSIS Designed to provide transparent dynamics control for vocal tracks as well as instrumental tracks with high-frequency content.
xils-lab.com

7
Propellerhead
Reason 8
 Digital audio workstation
\$449
HIGHLIGHTS Updated GUI with new toolbar and transport controller • new browser and search windows • drag-and-drop functionality for instruments and content • new amp and speaker models from Softube • note-editing improvements • Reason Essentials 8 (\$129)
TARGET MARKET Musicians, DJs, and producers
ANALYSIS The added browser/search functions, along with the drag-and-drop facilities, are major workflow enhancements to an already mature and powerful product.
propellerheads.se

8
Roland
SBX-1
 Universal synchronization hub
\$499 street
HIGHLIGHTS USB and standard MIDI connectors as well as DIN Sync and CV/gate jacks • can distribute clock signals or serve as clock source • Tempo, Fine, Shuffle, and Tap • MIDI-to-CV/gate conversion • generates LFO and trigger signals • designed to work with Aira TR-8, TB-3, System-1 synth, and older instruments
TARGET MARKET Musicians, DJs, composers
ANALYSIS In addition to interfacing modern and vintage synths, the SBX-1 can act as a signal source when you need one.
rolandus.com

Continued

NEW GEAR



9
iZotope
RX 4 Advanced
Audio restoration software
\$1,199
HIGHLIGHTS Full-featured version that features four new modules: Leveler with target RMS settings; EQ Match with Learn functionality; Ambience Match for dialogue editing; and Loudness for broadcast applications • updated GUI • RX Connect plug-in to improve workflow • nondestructive clip gain • Dereverb • RX 4 standard (\$349) now includes Dialog Denoiser module
TARGET MARKET Recording studios, post-production, broadcast, mastering
ANALYSIS In addition to getting an updated look and new modules, RX 4's algorithms have been enhanced.
izotope.com

10
SPL
Phonitor mini
Headphone amplifier
€649
HIGHLIGHTS Stereo, mono, and mute settings • 1/4" headphone jack • XLR and RCA inputs selected on the front panel • Crossfeed and Angle controls for simulating speaker position • Matrix switch • 120V rails • weighs 4.5 lbs.
TARGET MARKET Personal studios, mobile recording
ANALYSIS SPL put much of the high-quality audio technology of its Phonitor 2 into a portable version that has simplified settings and is more affordable.
spl.info

11
IK Multimedia
VocaLive 2
iOS recording app
Free—\$26.99
HIGHLIGHTS New Studio section (available as an in-app purchase) provides editing tools and ability to view audio waveforms on a timeline • regions can snap to grid • handles 4 tracks on iPhone, 8 tracks on iPad • five vocal effects: pitch correction, 3-part harmonization, doubler, de-esser, and pitch/formant shifter
TARGET MARKET Singers, musicians, and producers who use iDevices
ANALYSIS Geared toward vocalists using iRig microphones, the app provides DAW-like flexibility with a simple GUI.
ikmultimedia.com

12
PreSonus
Notion 5
Notation software
\$149 street
HIGHLIGHTS Includes London Symphony Orchestra sample library • onscreen keyboard, fretboard, and percussion-pad input • MIDI recorder and editor • supports standard audio formats, VST instruments and ReWire • video window with timecode view • runs in 32- or 64-bit mode • optimized for Windows 8 touchscreens
TARGET MARKET Musicians, songwriters, composers, arrangers
ANALYSIS The score files from this full-featured, cross-platform program can be opened in Notion for iPad (\$14.99), making this a suitable program for touring artists.
presonus.com



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Soundmachines LP1lightplane

Use this gestural controller to shape sounds with your finger, then loop them

BY GINO ROBAIR

GESTURAL CONTROLLERS are an important part of any performance instrument, and modular systems are no exception. Using a capacitive touch-surface, the Soundmachines LP1lightplane (\$160 street) generates control voltages based on the position of your finger in three dimensions—x, y, and z (pressure)—as well as a gate signal when touched. Meanwhile, an integrated microcontroller provides modern, performance-oriented features that make this module stand out among its peers.

The LP1 is very light and skiff-compatible because the front panel is also the main circuit board; all components are attached underneath. To fit your playing needs, the LP1 can be positioned with the outputs at the top or bottom. A jumper on the back matches the touchpad's behavior to the orientation of the module. Jumpers also independently set the range of each CV output (0-5V or 0-10V), and whether the gate jack sends or receives a signal. (More on this shortly.)

The z axis, pressure, is determined by the amount of skin contact on the panel: As you press harder, the surface area of your finger spreads out, and the microcontroller interpolates the values and smoothes the voltage output.

As a digital controller with a 9-bit output DAC, the input resolution of the touch surface (128 points for x/y axes; 32 to z axis) does not offer the fully continuous voltage you'd get from an analog capacitive touchplate. Consequently, you will hear some stepping and the output can be a little jumpy if your finger moves subtly when you hold a note.

Still, the LP1 isn't relegated to broad

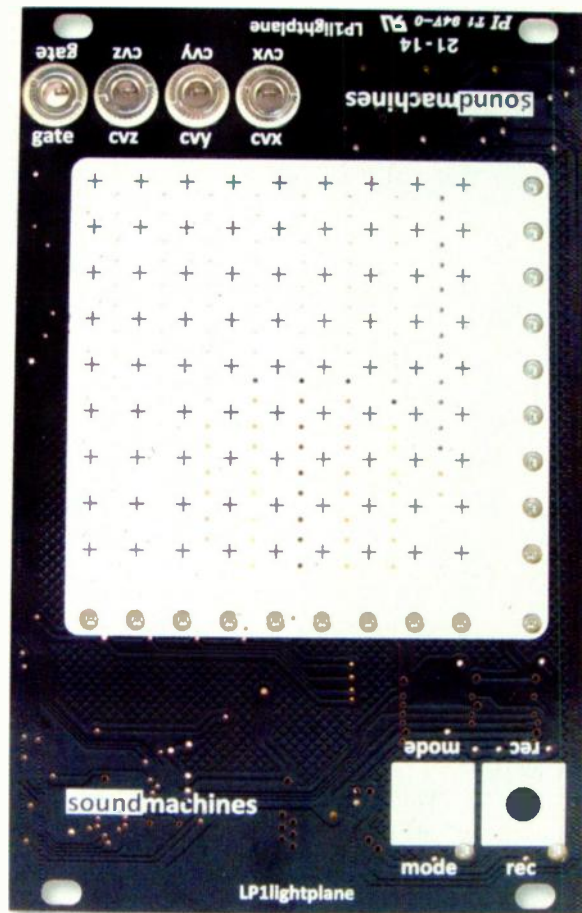
brushstrokes, but provides a surprising amount of subtlety.

A La Mode Even with three performance modes, the LP1 is very easy to use. In Live mode, the module tracks your finger position and sends a gate signal only when you touch the playing surface. Tap the Mode button to enter Hold mode and freeze the x and y CV output levels to the last spot you touched on the matrix. While in Hold mode, the gate stays at full positive value until you return to Live mode, but you retain continuous control over the z-axis voltage level.

The most exciting feature of the LP1 is its ability to immediately loop 4.5 seconds of your performance using the playing surface. To record, touch the Rec button with one finger as you move another finger around the control matrix. As soon as you let go of the Rec button, the module begins repeating the loop. This allows you to draw and repeat custom voltage contours instantly.

You can still play the touchpad while a loop is repeating, although touching the matrix temporarily interrupts the loop. To pause the loop, tap the Hold button, or touch the Rec button again to stop the loop altogether. Unfortunately, you cannot save or recall your looped performances once you stop them.

The controller offers two modes for record/playback resolution—Standard and High Quality. In High Quality mode (the default), the x and y axes and gate are recorded with a sampling resolution of 15 ms, but you forfeit the ability to record the



Vertical and horizontal LEDs show the x and y position of your finger, while the LED in the corner indicates when the gate is on. The lights behind the capacitive Rec and Hold buttons show which of the three performance modes you are in. The z axis, pressure, is not indicated with LEDs.

z axis (pressure). Standard mode allows you to record all three axes and gate, but with a lower timing resolution of 30 ms. Switching between modes is as easy as holding the Rec and Hold buttons until the x and y LEDs flash.

If you set the gate jack to accept an external signal, you can use an incoming voltage to trigger the loop from the first sample. It was fun using a VCLFO to restart the loop from different spots in its cycle: I wish the module had a dedicated external-gate input or at least a front-panel switch for the gate jack.

Although there are other touchplates on the market, the LP1's performance modes, looping feature, and low price make it a must-have for nearly any performance-oriented rig.

(Special thanks to Control Voltage in Portland, Ore., for the review unit.) ■

SOUND SUPERIOR.



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- 10dB attenuation switch
- Includes pop filter, shockmount and carry case



• MTR201 CONDENSER MIC

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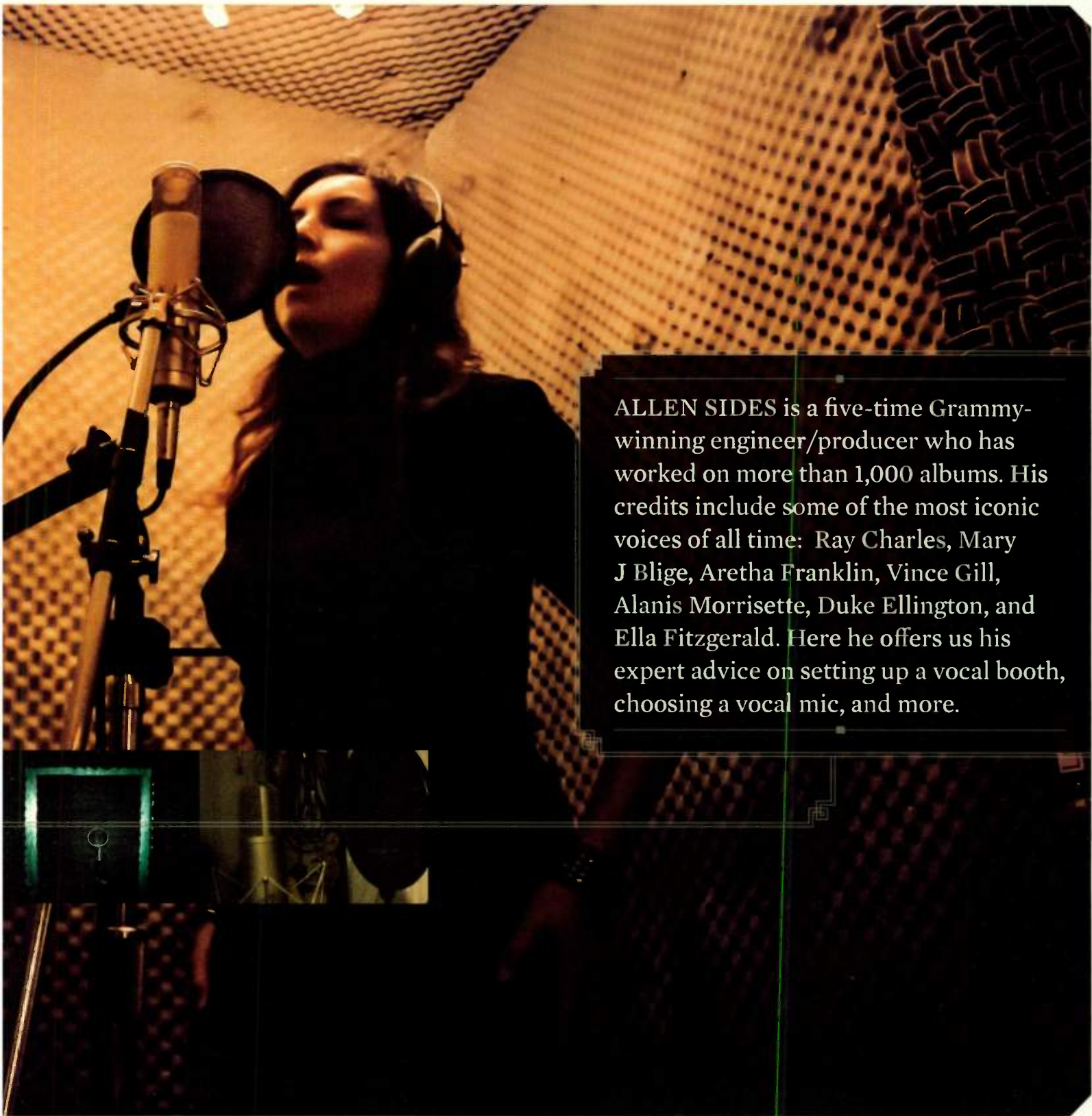
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HOME

TRACKING TIPS FOR PERSONAL STUDIOS

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can track vocals in homemade booths.

ANGELAJOSEPHINE.COM



ALLEN SIDES is a five-time Grammy-winning engineer/producer who has worked on more than 1,000 albums. His credits include some of the most iconic voices of all time: Ray Charles, Mary J Blige, Aretha Franklin, Vince Gill, Alanis Morissette, Duke Ellington, and Ella Fitzgerald. Here he offers us his expert advice on setting up a vocal booth, choosing a vocal mic, and more.



FREEDOM OF CHOICE

ALLEN SIDES shares tips for selecting the right microphones for your studio

BY SARAH JONES

When looking for microphones, is there anything we should know about modern design, as far as the characteristics that various elements impart?

I'm not sure there's anything really particularly new that's transpired in the last 30 years. My original AKG-C-12s from the late '50s had nine patterns, remote-controllably switchable at the power supply. Generally speaking, patterns determine how much information the mic will receive from different directions, but different patterns also affect the overall frequency response. One of the more important issues is the microphone's off-axis response, which from an engineer's perspective can determine how well any one mic will work on a drum kit, a horn section, or string section with multiple other mics. Even though you're putting a mic on a specific instrument, that mic is also going to pick up other instruments around it, and if its off-axis response is unpleasant, it will tend to make the sound of the whole section sound unpleasant.



ONE OF the toughest things to record is a vocal. You don't have to have a multimillion-dollar microphone collection or be at the best studio in the world to get a great vocal sound, but there are certain things you can do to obtain maximum recording results at home.

One size clearly does not fit all when choosing a recording method, as singers vary dramatically in regard to microphone technique, ability to stay in tune, tonality, and clarity of full-out voice vs. delicate delivery. Some of the typical challenges you can face when trying to get a good vocal sound are:

Every room or space you record in can sound totally different. Every microphone has its own unique color and sound.

The distance and axis alignment of the source in relationship to the microphone can drastically alter the sound.

It can be difficult to determine how much—if any—compression should be used.

It can also be confusing to determine which mic preamp to use and how to optimize the gain to maximize resolution when recording into digital audio workstations.

Here are some of the techniques I use to get the most out of recording a vocal at home.

Isolating the Singer The first thing I look at is the space in which I am going to record the

vocal. Most spaces at home, whether a bedroom, living room, etc. are usually much too live and have lots of first- and second-order reflections echoing back and being picked up by the microphone. The singer may sound fine to you in the room, but when you listen back to him or her through the mic in the control room, you may hear unwanted ambience that you were unaware of while you were in the room.

Part of the reason for this is that since you hear in stereo, when you listen to the singer live in the room, your brain allows you to focus in on just the singer and ignore much of the room ambience. But when you hear the singer through the mic, in the control room, you can no longer separate the voice from the room sound.

Luckily this problem can easily be solved by hanging packing (moving) blankets on three mic stands that are placed to the left, behind, and to the right of the microphone. This forms a sort of insulating "U" shape around the microphone,

E A S T W E S T / Q U A N T U M L E A P

HOLLYWOOD ORCHESTRAL PERCUSSION

HOLLYWOOD ORCHESTRAL PERCUSSION is an utterly unique orchestral percussion virtual instrument that completes the Hollywood series, featuring one of America's very best orchestral percussionists and his inspiring arsenal of instruments. Orchestral percussion staples like timpani, snare drums, cymbals, bass drums, and metals are sampled with such astounding detail and variety that you will find exactly the right sound for EVERY piece of music. HOLLYWOOD ORCHESTRAL PERCUSSION perfects techniques pioneered in Stormdrum 3, using unique repetition sampling techniques and 8 way round robin, that deliver a virtual live performance. HOLLYWOOD ORCHESTRAL PERCUSSION also focuses on the speed of a performance and has specific samples to handle extreme tempos. Timpani and cymbals truly come to life when sampled as part of a musical performance, and HOLLYWOOD ORCHESTRAL PERCUSSION has the most extensive and fluid timpani ever sampled. For the first time, an extensive array of epic anvils has been sampled. Truly the holy grail. Orchestral chimes were sampled in a way that mimics the sound of real church bells, as the instrument was originally intended. HOLLYWOOD ORCHESTRAL PERCUSSION has an inspiring array of vintage field drums. Epic Bass Drum Ensemble and Mahler Hammer give this collection some serious punch. For the first time, the celeste has been captured in a multi mic position environment with extremely low noise. In fact, the entire collection uses zero noise reduction resulting in a spectacular sound that will jump out of your speakers. HOLLYWOOD ORCHESTRAL PERCUSSION has 5 user-controllable mic positions, including main pickup (Decca tree), mid pickup, close pickup, surround pickup, and an alternate vintage circa 1945 RCA ribbon room pickup.



EASTWEST/QUANTUM LEAP VIRTUAL INSTRUMENT AVAILABLE AT SOUNDSONLINE.COM/HOLLYWOOD-ORCHESTRAL-PERCUSSION

Are there any other design characteristics that might not be so obvious?

Once again, I'm not sure there are that many significant differences between ribbon and condenser microphones of 40 years ago and today. The same problems and solutions still apply. Quality control and consistency is still a major issue. In regard to condenser microphones, I do tend to prefer some of the older tube-type microphones, but it's certainly fair to say there are some excellent new microphones available. It's also fair to say that there are a lot of really bad-sounding mics out there, and price and appearance do not necessarily determine how great they will sound. I do however feel that some of the newer ribbon mics available today are more consistent and generally flatter than their older counterparts.

If you can only have, say, three or four mics in your locker, what should you be looking for?

For a setup at home, I think what would be most important to me would be finding a microphone that works well as a great vocal mic, but also, if I had a second one, would work well as a stereo pair to record stereo piano, guitar, or percussion, etc. Usually at home, you are only recording one instrument at a time, so all you need is one great stereo pair.

How do you determine which preamp is right?

My choice for mic pre is strictly sonics, whatever sounds the biggest, widest and most open. That is assuming that I am looking for an accurate reproduction. There are instances where I am looking for a particular color or extra smoothness for a particular singer or instrument in which case I am looking for character not necessarily true high fidelity.

Have you seen any mics debut in the past five to ten years that are destined to become classics?

The Sony C-800-G, which George Massenburg and I consulted on, is in my view a true classic, comparable with the best of the past, but unique in its own right.

I remember the Ocean Way Mic Locker was on CD-ROM. Can you talk about how that project has evolved into a mobile app?

The original DWR Mic Locker was our first attempt at trying to allow people to hear the difference between various great mics on the same instrument and to be able to A/B instantly at matched levels. At the time we did it [in the 1990s], we were right at the edge of what was possible with CD-ROMs—now commonly referred to as Dead Sea Scrolls. We were able to get fabulous studio musicians with great instruments, but it took forever to do. It was very successful and became very popular with music and recording schools all over the country. As technology moved ahead and CD-ROMs faded away, so did our microphone cabinet.

Then one day a good friend of mine, [guitarist/producer] Steve Vai called me and told how much he had liked our microphone cabinet and had even used it for drum samples. He told me he still thought it was an invaluable tool and would like to see it turned into an app. I said it would be nice to see it out again after all that work, and Steve made it happen. Clearly, if I was doing it today, I would have a lot more mics and every sample would be in stereo, but it still sounds great and is very informative. *[The Ocean Way Microphone Locker app is available on iTunes for iPhone and iPad, for \$9.99.—Eds.]*

How does someone at home become familiar enough with the vast number of mics out there to choose the right model for his or her situation?

I try to stay as current as possible and listen to as many new mics as I can. I usually listen first on my electrostatic headphones, using just my voice as a reference. I have been doing this for so long that I really know what to listen for, and will usually compare directly to some of my best tube mics. If I find something that is interesting, I will take it down to one of my tracking dates and double up with a mic that I might normally use on a particular instrument, and A/B live. There are some very decent mics out there, but I haven't been knocked out with anything recently. I try to keep an open mind, but my standards are high and I love the classics.

and will virtually eliminate all unwanted room ambience so the mic picks up a cleaner and more direct sound from the singer. Problem solved! I've set up suitable recording spaces in houses for major bands and producers all over the world and it still amazes me what you can do with a couple of well-placed moving blankets.

Choosing a Mic When choosing a microphone, I will usually put up three that I know from experience will work well for a particular singer. Some of the mics I might typically select from would be a Telefunken 251E, a Neumann U47, a Sony C-800G, a Neumann U67, or an Ocean Way 6050.

Before placing an EQ or compressor in the signal chain, I usually position my three test mics so that their capsules are right next to each other; then I'll set their gains to match and perhaps record a bit of a quiet verse or big chorus and then listen back with the artist to decide which mic works best. Recording and listening back can also help save the singer's voice while I'm choosing a mic.

I recorded one singer that actually sounded much better on a Shure SM58 than on any of the other, fancier mics. You could even put up a mic that might not normally be considered a good vocal mic, such as an AKG 451 or a Neumann KM84, but by placing it at a distance of approximately 8 inches from the source and with the appropriate windscreen, those mics can actually sound quite good.

Once you've picked your mic, position your windscreen at the exact distance you want the singer to be when he is closest to the mic (typically 4 to 8 inches), to keep him from moving in any closer. This distance is very important, because if the singer moves too close to the mic the sound can become dark and muddy, due to excessive proximity effect. When I'm mixing, it's not unusual to receive poorly recorded vocal tracks that have this problem (as well as excessive pops), which usually requires major EQing and finessing to fix these anomalies before I can mix. But if the singer keeps the right distance from the mic, the recording can be clear as a bell.

Another technique I use to retain the presence and highs of the tone is to place a small red dot in the dead center of the windscreen, on-axis to the center of the microphone capsule. I'll then direct the singer to sing into the dot. These simple steps can make a huge difference later on when mixing.

The Signal Chain Some of my choices for microphone preamps might include an original

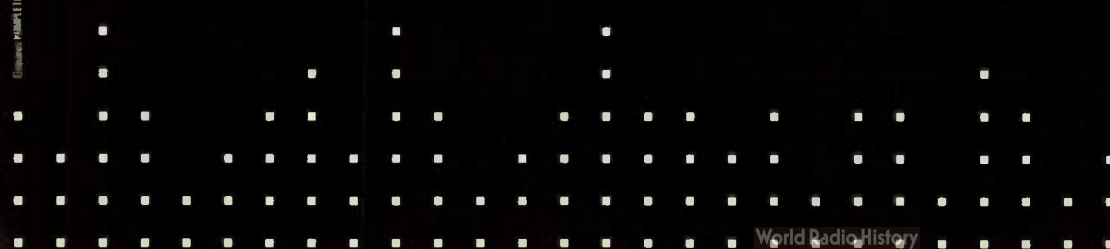
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quieter sections on that channel, that are not clipping, will have much more effective high bit resolution because they were recorded so much hotter. This way, when I comp the vocal track, I can use the hotter track for the softly performed sections and the softer track for the louder performed sections.

After I have created my vocal comp, I typically spend an hour or so precisely tweaking the levels for every single syllable so the vocal perfectly lays into the track I'm mixing. As I'm doing this, I will also take out harshness and clarify dark moments by automating digital EQ plug-ins. And since I'm not fond of any de-esser, plug in or otherwise, I prefer to manually set the level of every "s" and "t" to taste.

In regard to EQ, I try to find the best mic to match the timbre of each singer's voice. I rarely add EQ on the whole vocal. I use EQ to fix specific words that may be a little harsh, or are not as clear as I would like. However, if you only have one mic and the vocal sounds a bit dark in the track, don't be afraid to add whatever EQ may be necessary to make the track sound right. For this purpose, I generally find high-frequency shelves to be much more natural sounding than any sort of peaking EQ.

Another vital tool in getting a great vocal performance is having a killer headphone mix that sounds as close as possible to the intended finished mix. Reverb, effects, etc. that will be on the finished track should be there for the singer. This can make a huge difference in the way the singer delivers a performance.

With all this in mind, your final home-recorded vocal track can have optimum resolution, rich dynamic range, and an even flow without any distracting sibilance.

I'm a firm believer that there's not just one way to do something, but I hope you will find some of these concepts as useful to you as they have been for me. Best wishes and happy recording to all. ■

Grammy-winning engineer/producer Allen Sides designed and built the Ocean Way Studio group, which includes Ocean Way Hollywood, Record One Sherman Oaks, Ocean Way Nashville, and Ocean Way Saint Barths. Sides is CEO of Ocean Way Audio, which comprises Ocean Way Monitor Systems, Ocean Way Drum Sample libraries, Ocean Way Microphones, OWR Studio Designs, and The Allen Sides Microphone Cabinet App. His most recent product is a collaboration with Universal Audio, The Ocean Way Room plug-in.

discrete API mic pre, a custom Ocean Way mic pre, an SSL J mic pre (insert out), or a Neve 88-R mic pre (insert out). But there are lots of mic pre's out there that sound perfectly acceptable.

When setting the gain on a microphone, I usually start with no compressor in line and then set the peak level at about 4 dB from clipping or hitting the red on the Pro Tools channel meter. Once a singer gets rolling, she almost always sing louder than she does on the first run-through. Give yourself some headroom so you don't clip a great vocal. I also find that Pro Tools tends to sound better and more natural, particularly on vocals, when you're not right on the edge of clipping.

Next, if needed, I insert a compressor on the channel and set it for unity gain with typically a 6-to-1 ratio. Depending on the singer, I might set the threshold for about 2 to 3 dB of compression, although there are certainly some circumstances where it may require significantly more.

With many singers, I prefer to record with no compression at all and balance any gain changes later in Pro Tools. But if I find I need a small amount of compression, my compressors of choice are the Teletronics LA2A or Summit Audio TLA 100A. If I need a lot of compression, I prefer the original dbx 160.

Sometimes, for monitoring purposes only, I will insert a compressor plug-in across the vocal track within Pro Tools. This helps things sound more even during the recording process, and by not recording compression to the track, the integrity of the dynamic range of the performance is retained.

I often find compression can eat some singers alive and take all the life out of their vocal, but by recording with no compression and adjusting the levels with clip gain, I can

balance the track later while retaining the personality and life of the performance. I find this technique to be particularly useful when recording artists such as Josh Groban or Andrea Bocelli, who are both absolutely incredible singers, but compression is not their friend.

On the other hand, I was recently recording a vocal with Katharine McPhee, who has a very bright, clear voice that really kicks ass, dynamically. I found myself needing as much as 14 dB of compression to balance her track, but the compressor didn't compromise her vocal at all; she still sounded great.

Another amazing singer I recorded recently was Eric Benét. I added just three dB of compression to his track, and it sounded perfect. And last week I was recording Johnny Mathis for a Dave Koz Christmas album. He walked up to the mic, never got closer than 10 inches to it, and without any compression, he sounded flawless. I found the same to be true while recording Frank Sinatra many years ago.

The point here is that every singer is completely different in regard to his or her vocal performance, so you need to adjust accordingly for each.

Session Tricks Here is a trick I use for maximizing resolution when recording singers with a wide dynamic range and for whom compression is not a friend: I record each vocal pass onto two channels within Pro Tools. I record one of these channels so the loudest stuff is at least 3 dB below clipping and the other channel eight to 10 dB hotter. (I usually adjust the Pro Tools analog input gain to create the difference.) Even though the high-gain channel will be totally clipping when the singer is singing full out, the

Mad Aunt Maud says...

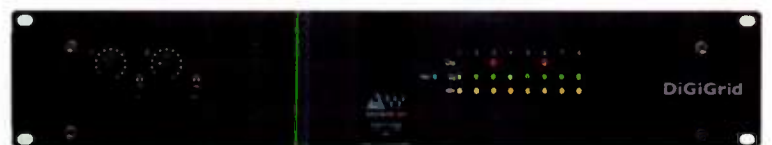
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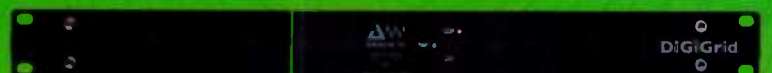
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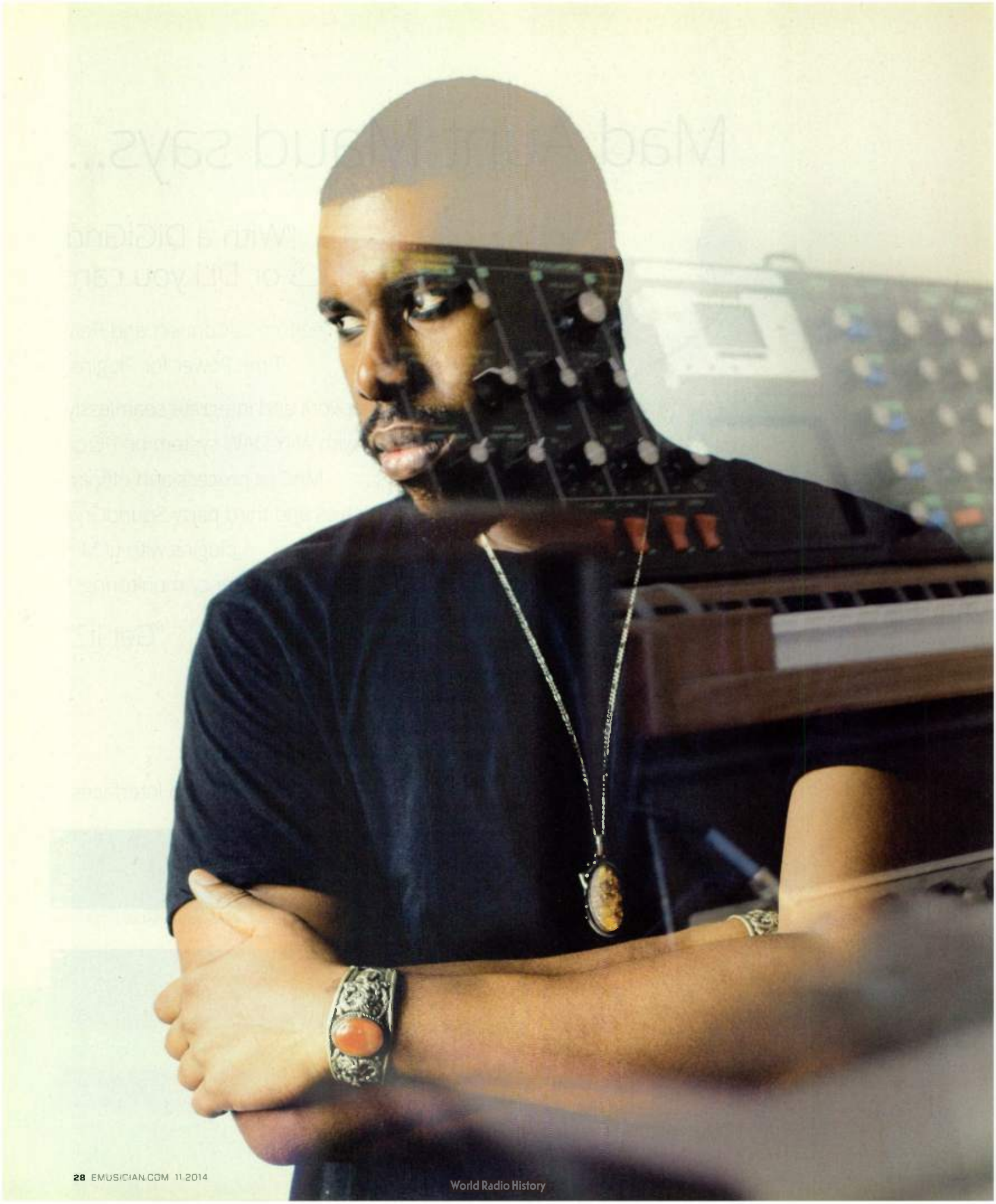


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Flying Lotus

Gets Live With *You're Dead!*

Steven Ellison's most collaborative studio effort to date is an homage to experimental jazz, manga, and the spirituality of death

BY TONY WARE

Steven Ellison wants to be clear: He's good with being distorted.

Ellison, better known to fans of jazz-leaning beathead odysseys as Flying Lotus, FlyLo, or just Lotus, is reflecting on his recently completed fifth full-length album, *You're Dead!*, his most collaborative effort to date and a record that crackles with life.

"I hate the way a lot of records, especially jazz records, sound now, so f*cking clean, so I wanted to do my thing with one or two mics in a space and that's it," says Ellison. "And it wasn't a good acoustic space, just a regular room in my house. I tried to keep things dirty, give it that texture. There are room reflections and they are a true reflection of what we did. I had a big rug and that's it; we were just working in my living room."

“ I HATE THE WAY A LOT OF RECORDS, ESPECIALLY JAZZ RECORDS, SOUND NOW, SO F*CKING CLEAN, SO I WANTED TO DO MY THING WITH ONE OR TWO MICS IN A SPACE AND THAT’S IT.

—STEVEN ELLISON

”



Ellison has sprinted into his role as a veteran producer of concept albums and interstitial music whose compositions can swing effortlessly between lucid sequences, transient sprawls, and holographic melodies. He established himself through highly acclaimed releases through Warp Records, efforts to promote likeminded limit and limiter pushers on his Brainfeeder label, playful bumper music for the Cartoon Network [*Adult Swim*] and seismic live shows, among other projects.

Now 30, Ellison has proven he is far more than the “hip-hop beat guy wanting to be J Dilla,” as he feels he was pegged on his early releases. Years separated from pounding out patterns in his grandma’s house, as quick to admit his appreciation for George Duke, King Tubby, and Madlib as he is early ’90s G-funk, Lightning Bolt, and *Queen II*, Ellison has continued to master his ability to manifest a one-man ensemble through Ableton Live even as he’s extended his workflow to include an increasing number of collaborators.

“I opened up so much more of my space to other people with this record,” reflects Ellison. “Even though there’s never a full band playing, even though all the instruments are recorded individually, I wanted it to sound like there were all these people in the fold together. And to get that, I had to learn how to communicate my ideas differently to each person in order to get the best performances. Everyone has his or her own energy and workflow and you have to adapt to that and find the things that make people good for

the music and help bring that essence out. I went at it like a classic producer, more in terms of being a Quincy Jones type with lots of personnel and an overall vision, not a beatmaker.”

Moogs and Manga Ellison’s SoCal home studio is much the same as it has been since the production leading up to 2012’s *Until the Quiet Comes*, a less-sample-based excursion that opened up the path to the spatially expansive *You’re Dead!* His production platform of choice remains Live, with Propellerhead’s Reason ReWired in. His rig includes Focal Professional Twin6 Be three-way active nearfield monitors, an Access Virus TI synth, a sticker-encrusted Akai MPK49 USB/MIDI performance controller, and the Ableton Push controller.

Keyboards include Moog Voyager, Fender Rhodes, and Wurlitzer electric pianos, as well as a Gibson guitar, a Carvin Legacy 3 all-tube 3-channel amp head, a bank of six Moogerfooger analog effects modules, two Technics SL-1200 turntables, and shelves of vinyl inspiration spanning early rave underground hardcore breakbeat, IDM, boom-bap, free jazz, breakcore metal, and psychedelic prog-rock, among other genres.

“*You’re Dead!* all started with me and [thrash-funk-fusion bassist/producer] Thundercat geeking out to records and talking about how we could go places where people weren’t, how we could make some sh*t Miles Davis would trip on, saying silly stuff like that,” says Ellison.

“At first it was a joke, then we realized

we really wanted to add something to the conversation, and then the whole concept expanded as we pursued the idea. At one point it was going to be an album of 30 jazz breaks that were each a minute long, just the best parts without solos and stuff, like library records, straight and to the point. Then, over time the album revealed itself as something different, but still nothing like that background cocktail sh*t you can ignore.”

“A lot of the time I compare me and Lotus working to [Japanese comic/TV series] *Dragon Ball Z*’ with Goku and Vegeta in the Hyperbolic Time Chamber,” says Stephen “Thundercat” Bruner, Ellison’s frequent contributor, collaborator and even co-producer on swatches of *You’re Dead!*, as well as a fellow manga/anime *otaku*, or fanatic. “When we’re in our zone, you don’t realize exactly what’s going on, but when stuff starts to shape up and a person puts ... a smart endpoint on it, you realize how much stuff has been happening and how long you’ve just been in the moment. I sat there for every moment, helped sway where the music was going, felt out each scenario and figured out what was called for, and then watched him continue to morph it. It’s more often than not a thoughtless, process in the best way.”

The “Hyperbolic Time Chamber” is a “room of spirit and time” where a year inside is equivalent to a day in the real world, and exploration is possible without boundaries. Armed with his custom Ibanez Artcore semi-hollowbody four-string, MTD custom shop six-string, and an



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upright bass, Bruner taps into his love of '70s jazz fusion, '80s punk-funk, R&B, neo-soul, hip-hop, Italian horror films, anime sound design, and much more to bring fluid chords and percussive rhythm to the clips Ellison arranges.

Jacked in to an Apogee Ensemble multichannel FireWire interface or miked with a RØDE NT1-A cardioid condenser through a Rane MS 1b single-channel mic preamp (the setup used for almost everything on the project), Bruner would sit with Ellison for hours, days even, to translate concepts into tone and texture through his basses and guitar. It's a process that has been seamless and congruent since the finishing touches of *Until the Quiet Comes*, one Bruner likens to both continuous line drawing and Japanese pop culture.

"Numerous musicians cycled through Ellison's home for *You're Dead!*, including strings arranger Miguel Atwood-Ferguson, saxophonist Kamasi Washington, and drummers Justin Brown, Deantoni Parks, Gene Coye, and Ronald Bruner, who contributed invaluable source material alongside featured artists Herbie Hancock, Kendrick Lamar, Snoop Dogg, (Ellison's MC alter ego) Captain Murphy, Angel Deradoorian, and Niki Randa.

"Sometimes I would record drummers for an entire day on this mutt kit in my house, just re-creating ideas from records or that I'd hummed into my iPhone voice memos," says Ellison. "I bought this Neumann mic that cost a fortune, but we didn't even use it because it sounded too sterile. I wanted warmth, rawness, to dive into the unexpected headfirst. Once I had all that, I could dial in the EQ, draw in all the automation, really manipulate things. And one of the reasons I like Ableton's Push controller is it has a real inviting *Star Trek* vibe to it, so anybody who knows a little bit about production feels comfortable quickly and can get on it in conjunction with whatever I'm doing."

You're Dead! Contains dark themes and imagery, but Ellison stresses that the record isn't intended to be a scary descent, but rather an acknowledgment that the end is a condition we all share and dark moments are dark to allow the light moments to shine brightest. "It's like, 'Hey, you're dead, who knows what's next, but our spirits live forever, and you lived through the good and bad sh*t,' not, 'Hey, you're dead, it's over,'" Ellison explains. "The path to understanding isn't always playful, but the resolution is positive." This idea of transformative experiences is perfectly manifested by the cover art of *You're Dead!*, which comes from Japanese manga artist Shintaro Kago.

Kago works extensively in the genre of body horror, showing mutations and dissections, the unnatural emergence of people and parts in/on/



ELLISON EXPLAINS...

"THE PATH TO UNDERSTANDING ISN'T ALWAYS PLAYFUL, BUT THE RESOLUTION IS POSITIVE." THIS IDEA OF TRANSFORMATIVE EXPERIENCES IS PERFECTLY MANIFESTED BY THE COVER ART OF *YOU'RE DEAD!*, WHICH COMES FROM JAPANESE MANGA ARTIST SHINTARO KAGO.

from others, and he disregards the conventions of page layout when he sees fit. Similarly, *You're Dead!* is an album that represents the struggle of individual vs. collective, that explores the ingesting and regurgitating of others to create a greater whole, that recognizes a boiling need for

self-expression so great it threatens to burst forth from the skin. And it's a record that approaches layering and EQ as needing to be done "wrong" whenever it feels right.

"I understand why certain things work, and what rules to break," says Ellison. "I've learned a lot over the last few years, stupid sh*t everybody knows but I didn't care at first, like how you should cut things to highlight parts and get more headroom, not EQ up to bring them out. When I started out, my instinct was to make things darker, murkier, wet or grimy. But a lot of times now, I've been pursuing a different energy. My sh*t is still really loud, I can have 40 or 50 layers in there easy, but I've been thinking more about when to make a cut instead of a boost, and how to leave more dynamic range for mastering."

An embrace of subtractive EQ and starting tracks at -8 dB is certainly a blessing, because Ellison still hits the master hard and has established his own signature "positive distortion," to get back to an earlier point. And the openness to outside contribution that brought in so many musicians to *You're Dead!* extends to the final stages of production, as well.

Mastering *You're Dead!* "Of all the records I've mastered for Flying Lotus, this one definitely had the most dynamic range, and a lot of that was him gain staging correctly in the mix... and leaving the mastering stage more for compression and limiting," concurs Daddy Kev, Alpha Pup Records label head and one of the key figures behind Los Angeles' weekly "Low End Theory" club night/artist showcase, where he's been giving out free mix/mastering advice for years. "I'm happy we've reached that trust point where he can give me more dynamic mixes knowing once I work with them they will be loud enough."

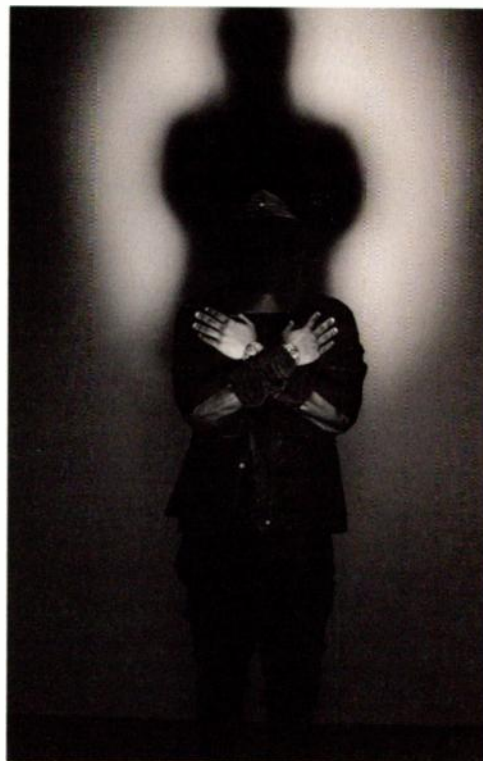
"At one point he went into a studio with a big-name engineer to try some mixes, and what that revealed was something I already knew: There is no one else that can mix Flying Lotus except Flying Lotus," continues Kev. "They were using an SSL desk and it was sounding really large, but it wasn't maximizing the frequencies or having the presence the way he does. His approach to EQ and layering, the way he balances a wall of sound and subtle details, is something someone else can't re-create. And this is his most dialed-in album yet, in part because of something I was pushing on him, and that's low-level monitoring, trying to listen as close to 83 dB SPL as possible. It's obvious he concentrated on the true discipline required for quality mixdowns."

Visit Daddy Kev's Twitter feed (@daddykev) and you'll be fed a wealth of thoughts on subjects such as the Fletcher-Munson equal-loudness

contour, how to monitor longer without fatigue, having your perception tricked into perceiving energy, how to “zoom out” to avoid having your brain steered by certain sounds, as well as many other more technical points on everything from delays vs. EQ/compression to stacking limiters to prepping output level for MP3s (try -0.3 dB to avoid inter-sample peaks). The free mentoring is often sparked by whatever album Kev has at hand, and copious thoughts have been shared in the months leading up to *You're Dead!* (Visit emusician.com for more tips from Daddy Kev.)

Monitoring with Focal Professional's CMS 65 and the CMS SUB in Pro Tools 9 on a Mac Pro at 24/96 minimum whenever possible, Kev approaches EQ as the most integral element of mastering, establishing a highpass filter with a gentle slope on everything except the sub and using the Brainworx bx_digital V2 EQ and Sonalksis SV-517 mk2 Equaliser plug-ins to work on points in relative pitch to each other: “If I'm dialing around and find something at 2.5 k, I'm also notching out 5 k and looking around 1.25 k, trying to make moves as a harmonious effort one octave up and down from where I find the issue, because invariably, if I find some ring or clash, it's spreading that far, if not more.”

After tweaking, often in the low-mid to



compensate for subharmonics on compressed modern listening platforms, he sends the signal out an Apogee Symphony I/O into Avedis E27

EQs boosting slightly at 28 kHz, through an Empirical Labs EL7 FATSO Jr. for the Warmth circuit (a type of high-frequency gain-control circuit) and an SSL FX-G384 gray-faced stereo bus compressor for less than 1 dB of analog reduction. Once back in the box, the signal meets the Sonnox Oxford Limiter, which imparts a punch and sheen fans of the Flying Lotus sound recognize as “hyper-real,” says Kev.

Ultimately, the most hyper-real factor remains Ellison's mind. Using basically the same gear for years, finding new ways to flip it as he orchestrates increasingly cooperative sessions, Ellison has pumped more flesh into his machine. Between the bass drops and angular runs, drums ricochet and wallop, sequencing moments of frantic, dizzy stutter before being stripped down to eerie recesses of elongated melody. In the world of Flying Lotus, jazz isn't dead; it's spiritual, crisp, dense, and ephemeral. ■

Tony Ware is a writer and editor based outside of Washington, D.C.



More Online
Daddy Kev shares more mastering tips.
Emusician.com/November2014

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BY
KEN
MICALLEF

Morgan Kibby's White Sea

A big, wet hankie and Kate Bush inspired the greatest breakup album of 2014.

As a member of Andy Gonzalez's M83, Morgan Kibby applied her multi-octave vocal range, classically derived keyboard technique, and serious songwriting skills to his electronic dreamscape.

But Kibby's debut as alter ego White Sea is a far different and more personal affair that draws on her love of '80s synth pop as well as her prowess as a remixer and soundtrack composer. White Sea's *In Cold Blood* reaches back to the 30-year-old's childhood for inspiration and solace. Musically, the album seems to imagine Kate Bush leading an anthemic army of gossamer strings, heaven-stretching synths, orchestral percussion, and driving dance beats. But for all this grandeur, *In Cold Blood* is ultimately intimate in scope.

"This is a breakup record," Kibby explains. "I made a choice that I wasn't going to hide behind my ego. I wanted to be honest; that was the overarching feeling when going through the trauma of [the breakup]. Everyone has these life events that affect us in ways that you don't necessarily ever fully recover from."

As co-writer of such M83 hits as "Kim & Jessie" and the multi-Platinum "Midnight City," Kibby has proven herself an astute songwriter, and her dynamic hyper-vocals could probably shatter glass. Kibby has also remixed tracks for Britney Spears, Demi Lovato, Imagine Dragons, and School of Seven Bells; her soundtrack projects include TV's *State of Grace*, *Boston Public* and *Judging Amy*. *In Cold Blood* seeks to unite Kibby's many experiences, the album's often dark (and sometimes profane) lyrics, and sky-spanning synths expressing an emotional, soul-scarring message. Self-producing the album, Kibby focused on her core skills.

DI and amp combo—Shure Beta 52 on amp, very minimal, a little compression. But he is such a great player that what you're hearing is really coming from his fingers. He does a lot of the work to get those great bass tones. All the other bass players want me to get his sound, but it's not just me."

"My go-to [vocal] mic is always a Bock [Audio] 251. It sounds very close to an actual [Telefunken ELA M] 251, but it captures a little more of the natural low end of a voice."

—Mike Schuppan

And for Kibby and White Sea, *In Cold Blood* is not simply her contemporary story, but also the result of years of musical training, going back to her childhood in Los Angeles. As well

as vocal training, Kibby studied classical piano and cello from her pre-teen to mid-teen years.

"I am just lucky to have a super-reliable voice," Kibby says. "My range is constantly being strengthened and tested because I sing a lot. On this last tour with M83, I was conscious of how Anthony wanted me to sing. He wanted

this smooth, angelic sound—no vibrato, a nonintrusive approach. I wanted to show off a little bit. I am first and foremost a vocalist. I wanted to feature that as an instrument on my record as much as my production skills and songwriting."

And as for the album's '80s-centric sonic zeitgeist?

"I just gravitate toward those sounds," she says. "They were

not a huge part of my growing up. I heard a lot of classical and jazz like Nina Simone, Charlie Haden; that's what my parents listened to. And singer-songwriters—Nick Drake, Joni Mitchell.

And my dad was a banjo player. But when I heard NIN's *Downward Spiral* as a teenager, I realized what was possible in electronic music. I didn't know you could create those industrial sounds while having so much emotion in the music. And Anthony is always turning me on to new things. Through him I fell in love with Tangerine Dream and Ash Ra Tempel."

Returning to the album's central theme of romantic loss and devastation—ideas Kibby expresses so well both instrumentally and vocally—does misery make the artist as depressed as some think?

"These seminal experiences alter the composition of who you are and how you approach life," Kibby says. "It's not necessarily innocence lost, but traumatic experiences create a temperance in one's personality. That's something everyone can relate to in their own way." ■

Ken Micallef also writes for DownBeat and Modern Drummer magazines.



More Online

Read interview outtakes with Morgan Kibby. Emusician.com/November2014

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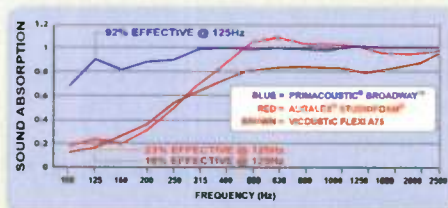
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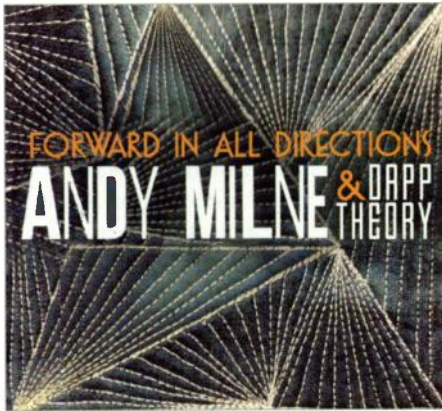
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Andy Milne & Dapp Theory

Forward in All Directions

CONTROLOGY

Keyboardist Andy Milne isn't afraid to push his jazz into outer space. Milne swings for sure, but the groove is more funk-endowed than swing-nostalgic. Hip-hop gets its due in "Photographs," with John Moon adding "vocal poetics." But no sooner does it end than the band zips away to the outer regions in the humid forward flow of "In the Mirror, Darkly," where drummer Kenny Grohowski sails through rhythmic squalls and chunky beat stabs. Somewhere between stoner jam band atmospheres and serious jazz improvisers, Milne & Dapp Theory make a case for jazz in the 21st century.

KEN MICALLEF

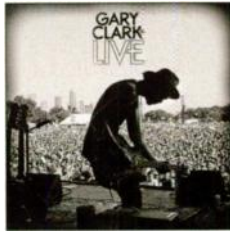


The Bug
Angels & Devils

NINJA TUNE

Amplifying sounds both hateful and beautiful, Kevin Martin mills his first full-length as *The Bug* since 2008, and it's another uncompromising showcase of his hybrid aesthetic. Less focused on digital dancehall and more on bruising dub, still swallowed by subbass and caked with grime, Martin cycles from spectral austerity to brutally machined ragga across nearly 50 unrelenting minutes. Increasing amounts of menacing klang and scorched guitar static buffets in between acid-tongued MCs, wielding density as a weapon.

TONY WARE

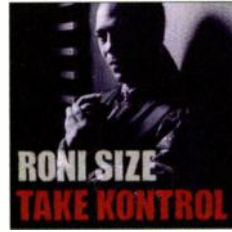


Gary Clark Jr.
Live

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These mind-bending concert recordings capture the beautiful noise and sweet voice of Gary Clark Jr. onstage. Clark's electric guitar wizardry is legend by now, and his setlist-free live performances can be life-changing, especially for other guitarists. Virtuoso, but always tuneful and rhythmic, Clark plays the blues the way Hendrix did—stretching the bounds of what other players imagine the instrument can do, without ever leaving his roots, or the melody behind.

BARBARA SCHULTZ

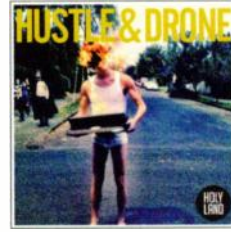


Roni Size
Take Kontrol

MANSION SOUNDS

Releasing his first solo album since 2004, Bristol's drum 'n' bass OG Roni Size leans toward the recent decade rather than the jazz-laced riddims that gained universal acclaim on 1997's *New Forms*. Indeed, much of *Take Kontrol* could be called familiar forms, as it shares a jump-up sound design akin to Sub Focus and RAM Records, as well as DJ Fresh. These are big room sounds, crowd-friendly drums 'n bounce that pushes air more than pushes things further.

TONY WARE

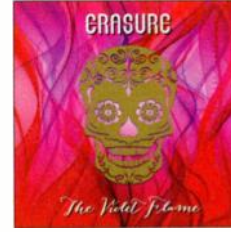


Hustle & Drone
Holyland

RED BULL SOUND SELECT

Portland trio Hustle & Drone offer enough catchy vocal hooks, epic synth squalls, and cracking beats to fill an '80s dance music top ten. But Ryan Neighbors, Ryan Moore, and Andy Black are also thoughtful, their moody songs like Spandau Ballet and Pet Shop Boys working from a single controller. The dolefully skipping "Bhiskshu" creates late night solace; "Night Light" is all shimmering harmony vocals and pulsating synths; "The Glow" attempts industrial menace but achieves sing-a-long pop bliss.

KEN MICALLEF

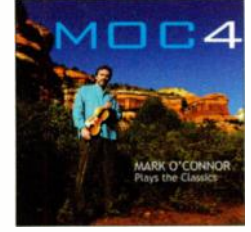


Erasure
The Violet Flame

MUTE

For decades, Erasure has consistently released relevant music. The Richard X-produced *The Violet Flame*, the duo's 16th album, is masterfully crafted pop—as expected. Without resorting to breakdown-driven songs, *The Violet Flame* is current, easy to listen to, and free of extremes. The rare precious or predictable moment aside, Erasure's handle on dance-pop is steadfast. Cases in point: the bubbly "Dead of Night," the electro-ballad "Smoke and Mirrors," and the unfussy throwback number, "Under the Wave."

LILY MOAYERI



Mark O'Connor
MOC4

QMAC

The wonder and tenderness of Mark O'Connor's violin playing are always remarkable, but this album is most memorable for its inventive interpretations of iconic jazz compositions, including W. C. Handy's "St. Louis Blues," Duke Ellington's "It Don't Mean a Thing if It Ain't Got that Swing," and Dave Brubeck's "Take Five." The fluid way O'Connor makes these melodies his own, and new, re-awakens the listener's appreciation for these, and a host of other American classics.

BARBARA SCHULTZ



eDNA

ELECTRONIC DNA

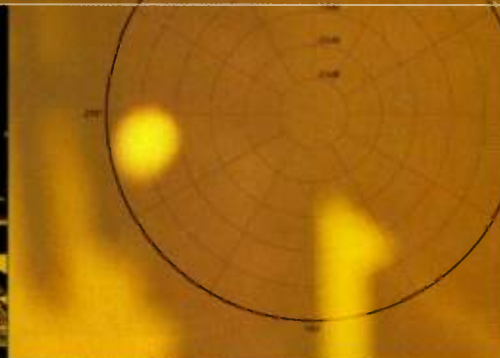
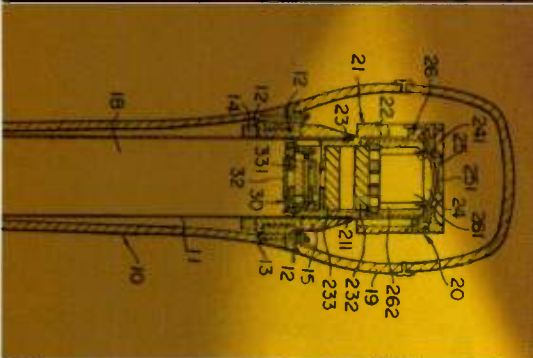
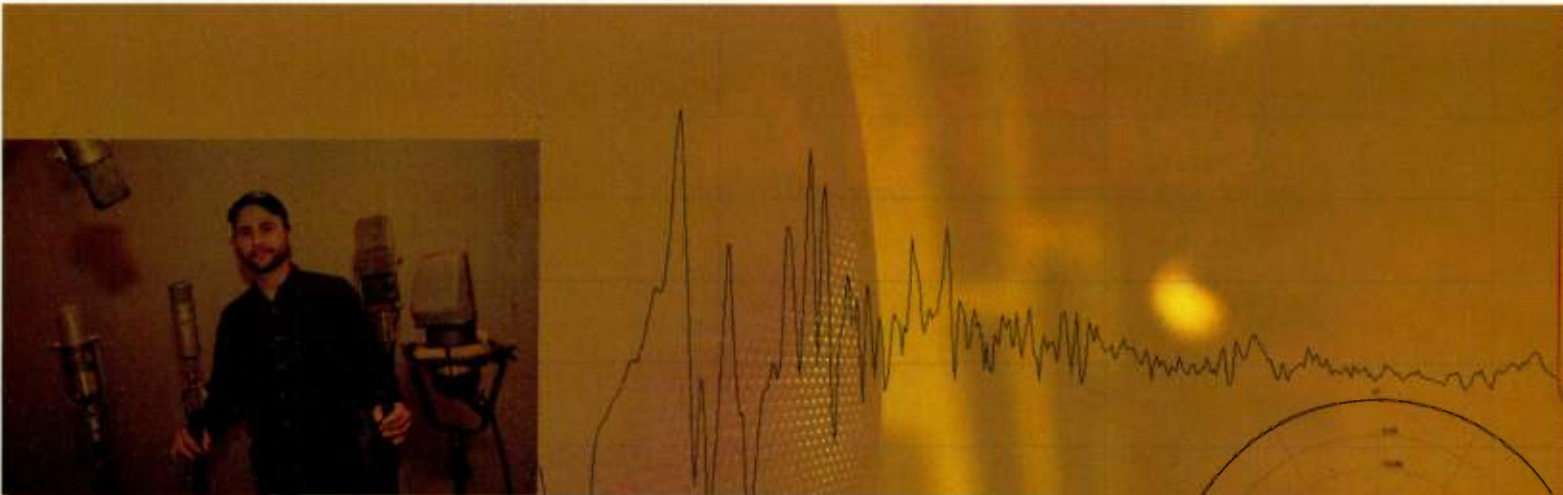
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GEAR

Top engineers list their modern must-have mics (and share some unusual recording tips)

BY GINO ROBAIR

IF YOU had only three mics at your disposal—one dynamic, one condenser, and one ribbon—what would they be? Although most of us would love to choose classics such as an AKG D19, a Neumann U47, or an RCA 44, price and availability of sought-after vintage models can be barriers for many of us.

So, let's narrow it down to three mics that are *currently in production*. What three would you pick, based on your needs and musical tastes?

I recently put this somewhat unfair question to seven world-class engineers—Malcolm Addey, Vince Caro, Joel Hamilton, Leslie Ann Jones, Tucker Martine, Michael Piersante, and Andrija Tokic. I say “unfair” because, clearly, no single mic would be used by a professional for everything he or she records. (In fact, it was difficult for a couple of them to choose something other than the mics they've been using for years—or even decades.)

Nonetheless, each engineer named at least one favorite mic that is not only still available (perhaps somewhat updated) but also relatively affordable, though some are by no means budget-priced.

Malcolm Addey Addey's career spans six decades and covers a breadth of styles: pop, rock, jazz, classical, and film soundtracks. After making a name for himself at EMI (aka Abbey Road Studios) in the late '50s and early '60s cutting tracks for Cliff Richard among others, he was offered a job in New York ("stolen from Abbey Road; it was a very willing theft") that gave him the opportunity to work with some of the greatest names in American jazz and pop. Having worked at Bell Sound and RCA, he now frequents Avatar studios and provides "sensible budget remote recording" services that require a wide variety of mics, as well as duplicates.

"You've got to have at least one backup. I have multiples of everything except the C24 and my U47, and I think you can see why," he explained during our phone interview. "I don't go into a studio that only has one mic of everything. Let's say you are making an album, and you get halfway through and one stops working: How are you going to continue to get the sound?"

As befits a man working to capture uncompromised audio, Addey's go-to mics are among the finest. About modern condensers, he admits that he thinks a lot of them are "too

damn cheap to be any good," relying instead on tried-and-true standards such as the Neumann U87, of which he has no fewer than 10.

"I consider the U87 to be the workhorse of the condenser mics. There's no question—it gets used on pretty much everything, unless there is some specific sound I want. Let's say I wanted a warmer sound from a tenor sax: I would put a 4038 on it. They go hand in hand, although each one has quite a different kind of response." Addey's collection includes several original STC 4038 ribbon mics, which he prefers over the modern version sold by Coles.

Another condenser he uses is the DPA 4006. "Those are omnis, and I have four of them. For pop as well as jazz, an omni is a great mic on piano. I use it to make a Yamaha sound like a Steinway. I place it very close to the strings—being omnidirectional, you can get very close to things. I use one on the top end and one on the bottom end, pointing away from each other, and I pan them left and right."

When asked about dynamic mics, he named the Sennheiser 421, which he uses to close-mike drums and amps. "For the guitar, a good-quality dynamic like a 421 is what I typically use, because what you're really doing is miking a loudspeaker, which has an extremely restricted bandwidth. There's hardly any point in putting a \$5,000 mic on it, really."

Vince Caro "One thing I learned early on is that, with certain artists, it doesn't matter what microphone you use: It still sounds like them." Caro would know, having worked with some of the biggest names in the music biz and the film industry.

"I learned that lesson recording Eric Clapton: I put an SM57 in front of his Fender amp, next to a more expensive mic. It didn't matter which microphone you listened to: You said 'That is Eric Clapton.' And we ended up using the 57." [Laughs.]

In addition to naming the SM57 and Sennheiser 421 as go-to dynamics, he also leans toward the Electro-Voice RE20. "It doesn't get the respect it deserves. It can handle the level put out by brass, and it's even nice on an acoustic bass. I love an RE20 on a bass amp, too, such as an Ampeg B15."

When asked about ribbon mics, he narrowed it down to three. "If it's a guitar amp, I will use a Royer R-121. Once in a while, I'll use a Coles 4038, but those tend to be a little more fragile. I've also used Cloud JRS-34 microphones. They sort of look like RCA 44s, but a slimmed down version. And they make a passive and an active one. Those are really nice for horns because they're not expensive and you can get them more readily. I've put those on guitar amps and they sound great."

With Caro's experience recording Hollywood A-level talent for Disney and Pixar (his main gig is as the voice-recording engineer at Pixar in Emeryville, Calif.), I couldn't help but ask what he uses for film work. "For dialog, it's all about consistency, so that a take from the first day of production can sit next to a take on the last day of production, which might be four years later. I work a lot with Doc Kane, the mixer/dialog recordist at Disney, and we agreed upon a U87 as our main microphone; not only between his studio and mine, but because we have to record all over the world, and every professional recording studio has at least one U87.

"For my setup, I use two mics: the U87 and what we call the 'scream mic.' That's something

**Neumann
U87**



**Coles
4038**



Vince Caro

- A Native Instruments Maschine Studio Groove
- B sE Munro Egg 150 Studio Monitors
- C Behringer X32 40-Channel, Digital Mixer
- D Neumann TLM 102 Large-Diaphragm
- E Moog Minimoog Voyager Monophonic Synthesizer
- F Neumann TLM 107 Multi-Pattern Large Diaphragm
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I developed with Doc when I was working with Eddie Murphy for *Mulan* and Robin Williams for *Aladdin*, because those guys would go from a whisper to a scream. You'd try to anticipate and watch them, but sometimes they'd fool you.

"So I suggested we set up another microphone and put it 4 inches back. I picked a Neumann TLM170, which has more headroom than a U87, and put it back a little bit to give us a safety. A few years ago, I switched to a Brauner VMA as the scream mic; it has even more headroom than a TLM170. It is a tube mic, but it's a new tube mic, and it's very consistent.

"What's really nice is that, although it's back 4 to 6 inches, it has reach: It sounds like it's in the same position as the U87. And it sounds so good that you can make edits between tracks from the two mics, even within a syllable, and you can't tell the difference. I usually run the backup mic at a lower level, so we usually don't even need limiting—maybe 3 dB lower—not too much."

Joel Hamilton With recording credits that include Tom Waits, Iggy Pop, and the Black Keys, it's not that surprising that Joel Hamilton's mic choices are so personal and somewhat unconventional:

"I'm not sure that there's one dynamic mic I aim at everything. On a kick drum, I use a dynamic coupled with a condenser. I use the Sennheiser e 602 on bass drum almost all the time, regardless of genre. That'll be the one that goes inside the drum. I aim it right at the beater, about 2 to 6 inches away from the head, very close to where the beater makes contact—even for a jazz record, not just to get a metal, super-beater sound. It seems to provide the best transient response. Then I will use another microphone to catch the resonance outside.

"Snare drum is usually a beyerdynamic M201. I've used that on almost every single record I've done in the last 10 years. The snare mic placement is drummer-dependent. I try to catch the center of the drum as much as I can, rather than the edge of the drum, so I aim at the spot where the stick makes contact with the head."

When it comes to ribbon mics, Hamilton definitely has a fave. "I use the Coles 4038 for everything. Those are mics that stay on the stand. They're usually my drum overheads these days, and I'll put them on a stereo bar in that case. Or, I'll use them in front of a guitar amp, for trumpet, or a horn section. I've used them Blumlein-style in order to get an omni-like pattern of two figure-8s on the stereo bar, but flipped up sideways to capture a bunch of people playing horns around them. There are a lot of different uses for great figure-8 ribbon mics."

In the condenser mic department, Hamilton has a special preference. "That's the Sage Bova Ball, a spherical, omni condenser that has wound up—for drums in particular—on so many of my projects as the room mics. I've used a pair of those on everything from Elvis Costello to Pretty Lights. They have incredible transient response and they sound wide-open; they're sort of the life of the drum kit. The Coles can be a little bit dark as overheads, so I wind up with something a little more zingy and lively by using the Bova Balls as spaced omnis in the room. I like to use them as an ambient mic, in particular: Because it's a spherical omni, it works well pulled back in the diffuse field.

"They're beautifully

made (built in Canada) and they're some of the mics I'll always bring with me, because you don't find them at the session. I don't need to bring my 87 with me, because the studio usually has one. So I bring the unique stuff with me, such as those two. Placid Audio Copperphones also make it in my travel kit right away."

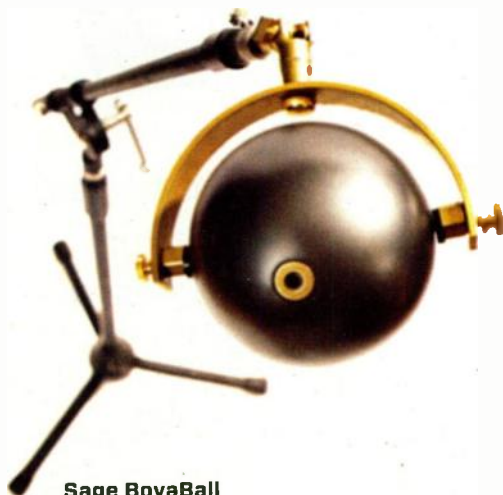
Leslie Ann Jones "What you're really asking for is a desert island collection." Leslie Ann Jones, Director of Music Recording and Scoring at Skywalker Sound, always cuts to the chase. "For me, it would be an SM57, an AEA R92, and a Neumann TLM103. I'm picking mics that are the most cost-effective. Of course, there are more expensive mics that might be better tools for different things."

But when it comes to real-world sessions, Jones needs more than one dynamic. "I really have two dynamic mic choices. The other would be the Sennheiser 441. The SM57 is more versatile, but for different things: There are situations in which I would use the 441, where I would never use the 57. I use the 441 a lot on saxophone, placed a little closer than I would place a tube

mic or a condenser mic—probably an inch or two away, usually right over the bell, depending on the range of the sax. If it's a tenor or baritone, it's more over the bell, and if it's an alto, it's more on the side of the bell. Dynamic mics, for my purposes, are not really made to be far-away mics. They're made to get a certain amount of impact and to be used closer because the frequency response is better.



Leslie Ann Jones



Sage BovaBall



Sennheiser 441

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“Having said that, I wouldn’t put a 441 on a snare, necessarily. I wouldn’t use it on toms. I think there are other Sennheiser mics that are better for those things. But if I had to pick one dynamic, it would be an SM57.” And her choice for a modern ribbon mic? “One I use a lot is an AEA R92, which is a standard ribbon mic. If I had to pick one ribbon mic, I would probably use that based on price and quality. I’ve had good success with it on electric guitar, and it would be a good horn mic.

“If I had a vocalist that had a lot of midrange to his or her voice, and they needed a little of that removed in a smooth way, a ribbon mic is a wonderful way to do that. Generally it’s an AEA 44 or something like that with a larger diaphragm, although I imagine the R92 would be worth trying out as well.”

For an affordable, yet pro-quality condenser, Jones puts the Neumann TLM103 on her desert island list because of its large diaphragm. “If I had to go with a smaller diaphragm, it would be a [Neumann] KM184. But I would rather have a TLM103, because I can get the same kind of use out of it and still have the advantage of a large-diaphragm mic. The TLM170 has the advantage of five polar patterns and it’s a much more flexible mic, but you still get a lot of that same sound at a better price from the TLM103.”

And if price were no object? “I use a Neumann M149 a lot. It’s my first choice for vocal mics. I also use it in omni as a room mic because I think it has more low end in omni than the M150.

“There are other, less expensive condenser mics, such as the [AKG C] 414—that’s a really great tool. A Shure SM81 is really great for specific things, though I would use a KM184 a lot more. The SM81 is such a fantastic mic for leakage rejection, but the 184 has a much smoother sound.”

I also asked Jones about how she chooses a preamp for a given microphone. “It depends on the microphone and the kind of sound that I want. I tend to use something that is opposite of the mic that I’m using. If I’m using a tube mic, for instance, I tend to use a preamp that is a little bit cleaner. I do that a lot when I’m working with orchestras. If I’m using tube mics for the room, and condensers as spot mics, then I’ll use warmer preamps for the spot mics and cleaner preamps for the room mics. I try not to double up on the same sound.”

Tucker Martine When it comes to his favorite ribbon mic, engineer/producer Martine (My Morning Jacket, The Decemberists, Beth Orton) is adamant. “The AEA R88 stereo ribbon mic. One of the things I love about it is that I can do so many things with it. It’s great as a room mic for drums. I will usually just leave it on a stand in the room somewhere so I don’t have to set one up every time I’m recording. And then, when we switch into overdub mode, I’ll just use that mic where it is for a lot of my overdubs—percussion, backup vocals (if I don’t need them to be super close).

“I love the way that the R88 captures the sound of whatever is happening in the room. I often record piano with it 8 or 10 feet back. There are times when I want a close-miked piano sound, but at least half the time I want the sound of the piano in the room the way that mic picks it up. It’s so rich, even at a distance. The low end doesn’t suffer and the high end is open, but rounded off—not brittle like many condensers can be as room mics. It’s also my new favorite way to record the Leslie for an organ—sounds phenomenal 10 feet back.”

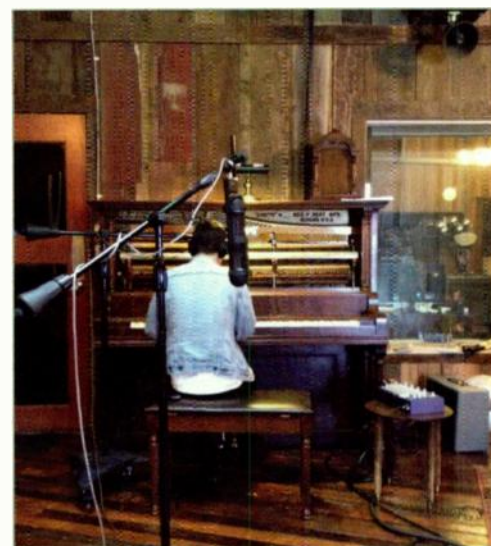
“Sometimes I’ll put it over the drum kit. Occasionally the stereo image is too wide if I have it close to something. If you do want a wide stereo image, it’s a good way to go because you don’t have to fuss around with getting the phase just right. It’s already been done.”

I asked Martine how he approaches room-mic placement for the drums. “It depends on how the player’s playing and what the room is. Sometimes I want a tight sound with the option of a fader or two that I can pull up to make it sound like the drums are in an open space. Other times, I want something that’s bombastic and full of energy. It always varies. If I want to add extreme compression to the room mics, I find that ribbon mics respond better because extreme compression can sometimes bring out harshness. The ribbons are quite a bit more mellow.”

If Martine had to pick one condenser mic, it would be the U87. “I love it on acoustic guitar, and sometimes use it on vocals. It has often won out against U47s and other mics around here when it matches the voice: k.d. lang was in here recently, and that’s her mic of choice. It sounded stunning. If you closed your eyes and didn’t know what it was, you would’ve assumed it was a \$10,000 microphone.

“I also love the U87 as a drum room mic if I want something a little bit brighter than a ribbon. That’s the first thing I grab.”

When it comes to an all-around dynamic mic, Martine shoots for another classic. “The SM7B is my go-to dynamic. It’s used a lot for



JOHN ASKEW

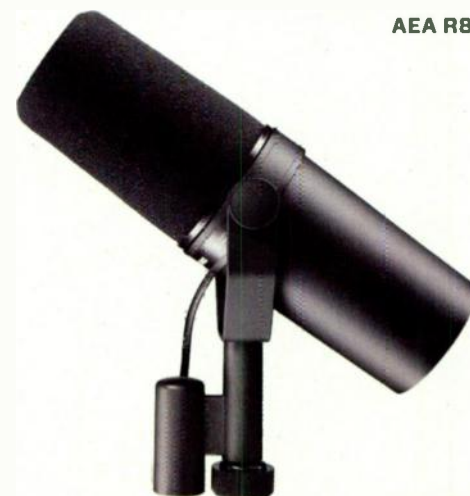
An AEA R88 on the piano in Tucker Martine’s Flora Recording.

vocals, especially if I’m concerned about things bleeding into the vocal mic. It’s got a really nice low end, and it can take as much volume as you’d want to throw at it. Usually if I have to have the singer in the room with the drums, I’ll get less drum bleed with the SM7B than I would with most mics. And it’s usually a pleasant sounding drum bleed.

“Also, you can just throw that mic on a bass drum, or a snare drum,



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or a guitar or bass amp and it won't sound bad—it very well might sound fantastic. I love having mics like that out, so when I make a decision to try a new instrument or switch into overdub mode, I already have mics on stands that I used for basic tracking, so I don't have to start doing mic shootouts."

Michael Piersante "I'm a big ribbon proponent," says Michael Piersante; it's not surprising, considering his impressive resume (T Bone Burnett, Alison Krauss, Diana Krall, Gillian Welch), but I pressed him for a favorite.

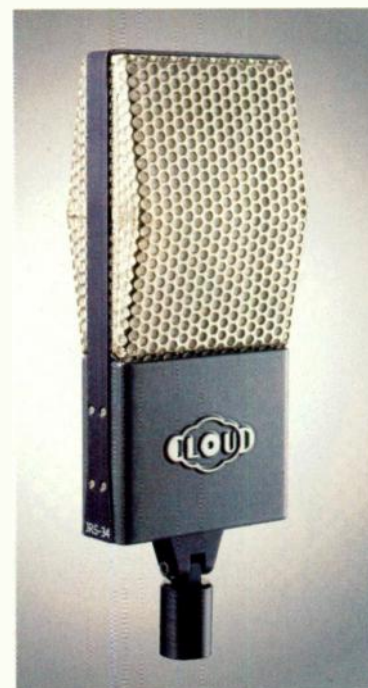
"Overall, it's the Coles 4038. It has a ton of versatility. Often I use it on a drum kit in a different way than other people do. I usually place the mic about 5 feet in front of the kit, usually on the snare side. I'll put it a foot off the ground aiming straight down at the floor, so it picks up the big boom and rumble from the drum kit. You don't get a lot of the direct bright signal in there, but if you have bright enough drummer, you get plenty of brightness in it. If the guy is playing a lot of crazy hi-hat stuff, you can move the mic to the floor tom side to mitigate that.

"Then I'll take that track and cram it through a Chandler TG compressor or an 1176 with all the buttons pushed in, with a quicker attack time and slow release to get that real hard, gluey thing. I will often roll out some woofy stuff and EQ it to taste, and blend that in with the drum kit. It gives you tremendous punch and power, and offsets the close mics so it doesn't sound so artificial. It tends to glue to the kit together."

He summed up his affinity for the 4038 in a story about working with Burnett on the

soundtrack for the film *O, Brother, Where Art Thou?* "We were trying to figure out this song that was supposed to be the 'big hit' within the context of the movie, back in the '30s. It had to sound like a hit song. Alison Krauss's guitar player, Dan Tyminski, was going to sing 'Man of Constant Sorrow' and play acoustic guitar. So we went out to rehearse it, and I had my trusty Coles mic.

"We set up in a big circle with string-band instruments and room mics, but we didn't have something close. So I put the Coles about three feet in front of Dan, aiming between his guitar and his vocal. The background guys were going to rehearse with him, so they stood over his shoulders. I hit record on the tape machine, he banged the first chord of this thing, and I look at the LA2 [compressor] that the Coles is going through and it flattens out: It compresses the shit out of it. And he starts singing and it's just staying there compressed all to hell, which was an accident. But it was a happy one because that rehearsal tape, with the guys singing over his shoulders, ended up in the movie and on the album. It was just a fantastic blend between the guitar and his voice, and I got lucky where I put the 4038. Ever since then, it's hard not to have that as my go-to mic."



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Electro-Voice RE20



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R92

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Andrija Tokic Andrija Tokic (Alabama Shakes, Hurray for the Ruff Raff, Majestic) prefers to track live, work fast, and get the sound right while recording, rather than leave things until the mix. Within his tape-based personal studio, the Bomb Shelter, he has a penchant for vintage condensers (Neumann U67, Sony C-37, AKG C-414 with the original C12 capsule) and ribbons (RCA Type 74-B Jr. and a "weird old Shure thing"). However, his dynamic mic of choice is the trusty Sennheiser 441.

"I use it a lot on vocals. But when I use it, I never blend it with anything. Placement is based more on the amount of ambience I want within a song. If I want somebody screaming way up front, then I put the pop filter a couple inches away and get them way up on the mic. But if it's something where I want more ambience, then I might put the pop filter a foot back.

"I also like the 441 on electric bass. I shove it right in the speaker, aiming it at the center of the cone." ■

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DJ extraordinaire Steve Aoki may have begun his career throwing parties at UC Santa Barbara, but gifted with both an artist's heart and true entrepreneurial spirit, he's built an empire based on having a good time listening to music. With his globe-trotting lifestyle, that means producing on the go. Like many other artists, the software revolution makes this possible for Aoki. The combination of powerful laptops, like the MacBook Pro he prefers, with a dizzying range of music software and the worldwide Internet connectivity that comes with modern mobile devices, means that wherever he is, he can be working. As he explains, "Sometimes, I just land off a plane and I'll come up with an idea and start humming voice memos in my phone—I've got a million of them. Most of them are just rubbish, but some of them have something that I could possibly use in a song."

For his last album, *Neon Future*, Aoki took some time away to find a new perspective. "I rented out a cabin in Mammoth Mountain for two weeks and also one in Big Bear," he explained. "I wanted to be completely isolated from every possible distraction. [It] was all just compiling all of these concepts and ideas that I've been diddling [with] and writing on the road. I was able to flesh all of them out in one go. So I recommend that idea that, if you can't get anything done, sometimes your own studio is your enemy. You need to do something in a new creative space and be away from the world, if you can."

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Fig. 1. The Pro 2 offers so many directions for sonic exploration that it could keep you up all night creating new sounds for years to come.

Dave Smith Instruments Pro 2

Meet the new boss: the return of the mighty monosynth

BY GEARY YELTON

SUMMARY

STRENGTHS: Spectacular sound. Impressive programming depth. Intuitive user interface. Excellent analog filters. CV connectivity. First-rate construction.

LIMITATIONS: Monophonic signal path. No balanced audio I/O. Can't sequence chords in real time.

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THE SECOND synth I ever owned was a Sequential Circuits Pro-One. In 1981, it gave me everything I wanted in a monophonic instrument: analog oscillators, a noise generator, a fat lowpass filter, ADSR generators, a choice of LFO waveforms, surprisingly flexible modulation routing, a rudimentary step sequencer, and the first arpeggiator I'd ever used. It had no MIDI and no presets, and it deleted its sequencer data the moment you switched off the power.

Sequential Circuits sold about 10,000 Pro-Ones during four years of production because they sounded so good and they cost just over half a grand. The Pro-One was like a Prophet-5 for those of us who couldn't afford patch storage or polyphony. Today, a used one in good condition commands as much as \$2,000—close to the original price of a new one when you take inflation into account.

Sequential Circuits was founded by Dave Smith, the man who first conceived of MIDI, invented vector synthesis, and launched the first commercial soft synth. His current, eponymously named company recently introduced a direct descendent of the Pro-One, appropriately named the Pro 2. Thirty years after the original ceased production, you'd expect some significant enhancements,

and you won't be disappointed. The Pro 2 blends the rich sound of analog filters with the precision and versatility of digital technology, and it sells for about the same price as a good used Pro-One.

The Pro 2 begins with a single Prophet 12 voice and expands on that foundation. It has four digital oscillators, two analog filters, and one of the most sophisticated step sequencers I've seen in any instrument. Control-voltage inputs and outputs give it modular compatibility. And although it isn't a true polysynth, it lets you play four notes at the same time.

Look Around The Pro 2's black-and-red front panel and wood trim, as well as its user interface and much of its functionality, take their cues from the Prophet 12 (see Figure 1). The Velocity- and Aftertouch-sensing keyboard has 44 keys (the same as a Minimoog), and the pitch bend and mod wheels emit a red glow. Above the wheels are two pressure-sensitive, latching touch sliders (the likes of which first appeared on the company's Tempest analog drum machine), along with the Volume knob, the Distortion knob, and a few buttons you'd want under your left hand.

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The sharp, 3" x 0.75" OLED display is the same as the Prophet 12's and can be read from any angle. The soft controls—four rotary encoders and four buttons that flank the OLED—affect whichever parameters are displayed (see Figure 2). Forty-six knobs and dozens of buttons are dedicated to specific functions. Most buttons either illuminate or have LEDs to indicate status. The front-panel layout is consistently logical and easy to learn.

The back panel has two unbalanced 1/4-inch outputs, a 1/4-inch stereo headphone jack, and an unbalanced 1/4-inch mono audio input with its own level knob on the front panel. In the middle are three MIDI jacks (In, Out, and one that's switchable between Out and Thru), a USB port for MIDI I/O, and 1/4-inch jacks for a footswitch and an assignable pedal. The footswitch can control sustain or toggle the arpeggiator hold on and off. You can reverse the polarity of the footswitch or pedal jack, ensuring compatibility with any brand.

Between the audio jacks and the pedal jack are nine minijacks for control-voltage signals—four inputs, four outputs, and a gate output (see Figure 3). Although I wish these had been 1/4-inch jacks so I could interface it to my Moog Voyager without the need for adapters, they are designed for use with Eurorack gear, such as the company's new DSM01 Curtis Filter module.

Architectural Detail As on the Prophet 12, the oscillators, filters, and amplifiers are monophonic, whereas the delay and output stage are stereo. As with other keyboard synths from Dave Smith Instruments (DSI), the Pro 2's front panel is divided into functional blocks, with controls for the oscillators, filter, and envelopes in the lower half. You'll find lots of dedicated controls, with deeper functions never more than two button-presses away.

Function-specific knobs let you dial in level, tuning, shape, shape modulation, waveform crossfades, and glide amount for each of the



Fig. 2. Four rotary encoders and four buttons control whatever parameters are displayed in the OLED.

four oscillators. Access additional parameters such as FM or AM amount using the four soft knobs and buttons surrounding the display.

Waveform shapes range from 5 virtual analog (including super sawtooth) to 12 more-complex wavetables, 12 super wavetables, and 3 colors of noise—the same as the Prophet 12 supplies, with the addition of the super waves. Super waves duplicate the standard waves, but additional iterations are stacked and detuned for extra thickness, and their bigger, fatter sound makes an audible difference. A sine-wave suboscillator pitched an octave below Oscillator 1 supplements the four main sound sources.

Filter 1, a 4-pole lowpass that self-oscillates at high resonance settings, is a new design based on the original Prophet 5 (but without using a Curtis chip). Filter 2 is a 2-pole design that effectively emulates the classic Oberheim SEM filter. Like the original, it lets you sweep through lowpass, notch (band-reject), and highpass responses. Pressing the Bandpass button inverts the notch filter, and changes

are graphically displayed. Sweeping between responses has always been one of my favorite Oberheim capabilities, and the Pro 2 lets you modulate the sweep with any source.

You can enable just one of the two filters, or use both in series or in parallel. You can even dial in a mix of series and parallel, thanks to a continuously variable knob. Engaging the Oscillator Split button routes two oscillators to one filter and the other oscillators to the other filter.

Although each filter has its own 5-segment (DADSR) envelope generator, dedicated knobs affect only the ADSR segments and the envelope amount; use the soft controls to change the initial delay segment and the effect of Velocity on envelope amount. The amplifier's envelope generator has the standard four ADSR knobs, with other parameters accessed by the soft controls.

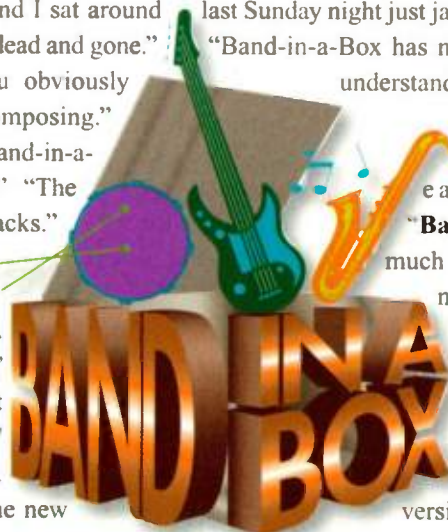
Although the two freely assignable 5-stage envelopes are functionally identical to the filter envelope, you change their settings using



Fig. 3. If you have other instruments or modules with control-voltage connections, the Pro 2 lets you assign any CV input to any destination and any source to any CV output. It can scale and invert control voltages in either direction.

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the soft controls. Dedicated buttons switch between the two envelope generators. All envelopes are loopable, meaning their attack, decay, and release segments will repeat as long as you hold down a key. Route control signals from any of the five envelope generators to any modulation destination.

In my Prophet 12 review (see the January 2014 issue of *Electronic Musician*), I wrote that its modulation scheme approaches a modular synth in its flexibility. The same is true of the Pro 2, but the routing possibilities are even more extensive. The Pro 2 allows you to easily patch any of 51 mod sources to 142 destinations. Audio input and output are among the mod sources, and the mix of parallel and serial filter routing is one of the destinations that can be modulated. Twenty-five of the mod routings have fixed sources—LFOs, envelopes, and sequencer tracks—and 16 are freely assignable. When you press the Assign Source or Assign Dest button, all the modulation paths are listed in the display.

The four LFOs let you specify their destinations using a dedicated knob. Each LFO can run freely or sync to the internal sequencer, arpeggiator, or an external clock source. You can also specify that an LFO cycle will be reset whenever you press a key. Settings include phase and slew rate, and LFO frequencies extend into the audio range for some awesome FM sounds.

One Equals Four One of the Pro 2's most unusual features for a monosynth is its ability to play four notes at the same time. In the 1970s, a monophonic synthesizer that allowed you independently and simultaneously to control the pitch of more than one oscillator

with the keyboard was *parapolyphonic*, which literally means like or almost *polyphonic*. In very few recent instruments, manufacturers have resurrected the concept and shortened this term to paraphonic. I hope we'll see other new monosynths with this capability soon.

When you press the Misc Params button and change the key assignment from Low Note, Hi Note, or Last Note to Paraphonic, the keyboard will trigger the four oscillators independently. Only the first key you press triggers the filter envelope; subsequent key presses will trigger notes instantaneously at the current cutoff level, with no filter envelope. Each of the four notes does have its own amplifier envelope, however.

Sometimes when you're playing paraphonically, it's easy to forget that the Pro 2 isn't truly polyphonic. The playing technique is different enough that I'd be hard-pressed to reproduce some of the paraphonic sounds with a true polyphonic instrument. And it sounds so analog, I occasionally forgot I was playing a synth with digital oscillators.

Everything in Sequence The Pro 2's internal sequencer borrows its design from the analog step sequencers in modular synths of the 1960s and '70s (see Figure 4). You get a choice of either an 8-track sequencer with a maximum of 32 steps or a 16-track sequencer with a maximum of 16 steps. Although the first track always controls oscillator pitch, you can route other tracks to any modulation destination you wish. That means you can automate as many as 31 parameters—filter cutoff, amplifier attack, pitch bend, or whatever—so that their values change with every step.

Record a sequence of notes simply by entering sequencer mode, selecting 16x16 or 8x32, and playing one note at a time. The notes you played will be shown in the display,

along with their Velocity, and the LED for each step will illuminate. You have the option of changing the tempo, turning off notes to create rests (by pressing the button for that step), or changing a note's pitch or Velocity. You can tie two or more notes by holding down the button for one step while pressing the button for a subsequent step. You can also slide between notes by selecting a note and turning the Slew knob. While you're viewing the track, soft knobs let you view and alter the pitch, Velocity, slew, and length of each note.

Because the sequencer accommodates rests and ties, notes in a sequence can be of different lengths, yielding more musical results than the constant barrage of eighth or sixteenth notes typical of some step sequencers. And because it also lets you program sequences of any length up to the maximum, you can easily create ostinato patterns in odd time signatures. Having so much versatility enhances the Pro 2's sequencer considerably. However, although the sequencer can play up to four pitches simultaneously, you can't record chords using real-time or step recording. To sequence chords, you'll need to layer notes one track at a time.

To record step-by-step parameter changes, choose a destination, press and hold a step's button, change the parameter's value, and your change will be stored and displayed. To record parameter changes in real time, press the Record button while playing a note sequence and change the parameter's value as the sequence plays. Each time you change a different parameter, your changes will automatically be recorded on the next available track, and the value for each step will be displayed. If you want to smooth the transition between values, increase the slew amount.

Each preset can store a different sequence, which can be triggered from the keyboard or by pressing the Play/Stop button when the sequencer is enabled. In many of the factory



Fig. 4. The refined step sequencer gives you as many as 31 tracks that serve as independent modulation sources, enabling performance capabilities that would be impossible on most synths.

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Paul Vnuk Jr. – Review in *Recording Magazine*, May 2014

"This is one of the very finest microphones I have ever purchased, period. Classically identifiable sound quality, amazingly well made, astonishingly Quiet and customer service second to none. I will be buying more of these microphones!"

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Frank Sinatra, Neil Diamond, Tupac

"First thing I noticed was the significantly lower self-noise of the Z-67 (vs. favorite U-67). On pick-strummed guitar, however, the Z-67's presence bump highlighted the plectrum-on-string detail I was looking for. On JT's voice **this mic was just stunning**. It complimented his true tone with a clarity that I've been searching for. It was head and shoulders above the U-67..."

Ryan Hewitt – Review in *Tape Op*, Issue #100

"It is a perfect microphone for critical vocals and female voices and compare very favorably to any U-67 I have heard. It also shines on acoustic guitars and anything that needs an open top end without over pronounced upper midrange. **I love the ADK Z-67!**"

Michael Wagener – Legendary Engineer –
Mötley Crüe, Metallica, Megadeth, Dokken



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presets, you'll notice illuminated LEDs in the Sequencer section, indicating that a sequence has been preprogrammed and is waiting for you either to press a key, press Play/Stop, or both. Even if no LEDs are lit, pressing the Sequencer button will often reveal a hidden sequence.

The very handy Cue feature lets you select a sound, play its associated sequence, and then select another sound to finish the current sequence before progressing to the next sound's sequence without interruption. Cue allows you to string one sequence after another, using different presets or copies of the same preset with alternate sequences, to play a complete song in real time.

The Pro 2 lets you assemble sounds from the ground up using raw waveforms and timbre-shaping tools that give it a distinctive character—one that would be impossible to achieve with other synths.

Chain of Effects If you're familiar with the Prophet 12, you may already know about the Pro 2's breadth of effects processing. Like its 12-voice counterpart, the Pro 2 offers four stereo delays, tuned feedback, distortion, and DSI's unique Character processing.

In the Delay section, three of the processors offer standard digital effects, and the fourth emulates an analog bucket brigade. Each lets you specify the delay amount, feedback, and time (up to 1 second). By enabling Sync, you can set the delay time to a multiple of the

tempo for note values ranging from a sixty-fourth to a whole note. You can pan each delay to any position and apply lowpass and highpass filtering. These four delays offer enough flexibility that you can impart discrete echo, slapback, flanging, chorus, or simulated reverb to every user preset you create.

Feedback routes each voice's amplifier output to a tuned delay. The delay's output is mixed with the oscillator output, resulting in a feedback loop. The feedback frequency tracks the keyboard and is quantized by semitones over a 4-octave range, allowing you to play the feedback melodically. Tuned feedback gives DSI synthesizers a quality that distinguishes them from other instruments.

When it comes to distortion, the Pro 2 lets you choose your weapon. Using the dedicated Distortion knob, you can set the amount of analog amplifier overdrive to create effects ranging from subtle warmth to nasty clipping. Increasing the filter's Boost value overdrives the filter to increase harmonic distortion, as well.

The Character section is a collection of five parameters for customizing sounds. Whereas the Prophet 12 has dedicated knobs for these parameters, on the Pro 2 you press the Character button and use soft knobs. If amplifier and filter distortion aren't enough, use Decimate to reduce the digital sampling rate, Hack to reduce the bit depth, or Drive as yet another distortion source. Two spectral parameters, Girth and Air, boost the low and high ends.

It's the Sound Unlike some recent synths, the Pro 2 makes it obvious Smith and company didn't pinch pennies when it came to hiring good sound designers and giving them the resources they needed to come up with some truly inspiring sounds. These are the best bunch of presets I've ever heard from any DSI synth. They do an excellent job of taking advantage of the modulation capabilities, too. Wheels, touch sliders, and Aftertouch breathe life into many of the sounds and give them nuanced expressivity.

The Pro 2 stores 792 programs in 4 factory banks and 4 user banks. The Bank Select knob scrolls through the eight banks, and the Program Select knob scrolls through the selected bank's 99 presets. You can't rewrite the factory banks, but the rewritable user banks duplicate the factory banks, giving you 396 locations to store programs you've created, modified, or downloaded.

The factory sounds are about half monophonic and half paraphonic. Each preset retains its own volume level independent of

the master volume, and most presets include preprogrammed sequences, arpeggios, or both. The Play List function lets you organize groups of 16 presets into 4 Sets, which are useful for quickly recalling favorites during a performance or studio session.

The Pro 2's timbral richness and abundant modulation paths certainly inspired the people who programmed its factory presets. Remarkably, the Pro 2 has some of the fattest tones I've ever heard from any synthesizer, thanks in part to its exquisite filters, stacked super waves, and sine-wave suboscillator, which reinforces fundamental frequencies more effectively than a typical square-wave suboscillator. That's no small feat for a synth with digital oscillators.

You Know You Want It Rather than a synthesizer that emulates acoustic instruments, the Pro 2 is a traditional electronic musical instrument. It lets you assemble sounds from the ground up using raw waveforms and timbre-shaping tools that give it a distinctive character—one that would be impossible to achieve with other synths. Despite its finite set of tools, it is a portable sound designer's workshop that suggests (dare I say it) seemingly infinite possibilities.

Like the Prophet 12, the Pro 2 is loaded with features that simplify programming. Its intuitive nature streamlines your workflow and invites you to explore. I'm sure I've barely scratched the surface of what it can do. I look forward to discovering the kinds of sounds I can coax from its circuitry, what it can do when it's connected to other control-voltage gear, and what happens when I dive deeper into recording sequences with multiple layers of modulation.

Despite three decades having passed, the Pro 2 is well-positioned as a successor to the Sequential Circuits Pro-One. The Pro-One's appeal was that it did as much or more than its competitors at a lower cost, and it sounded terrific. Can anyone say the same of the Pro 2? Lots of new monosynths cost less, but from what I've seen, none offer the Pro 2's versatility and depth. In fact, I can't think of any other keyboard instrument that delivers so much for such a reasonable price.

The Pro 2 exudes quality, thanks to its solid construction, sophisticated user interface, and luxurious sound. Few of its competitors could make that claim so convincingly. ■

Geary Yelton has been reviewing synthesizers for Electronic Musician since its very first issue.



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Blue Microphones Mo-Fi

Headphones with active electronics for work and play

BY GINO ROBAIR

YOU'VE GOT active monitors in your studio; are you ready for active headphones? Blue thinks so, and they've just released the Mo-Fi to prove it.

Although the Mo-Fi can be used in Passive mode just like any standard pair of headphones, they contain a specially designed amplification system to get the best performance from their 50mm dynamic drivers. (At nearly 2" in diameter, these are larger transducers than you will find in your average studio headphones.)

There are two powered modes: The On setting provides approximately 12 dB of amplification, while On+ adds low-end emphasis. It's all done with analog circuitry; no DSP is used.

The overall design is equally unusual. Inspired by the suspension system on a Formula One racecar, the headband uses a four-bar linkage and hinged arms to ensure proper placement of the ear-shaped cups. A flat knob at the top of the headband sets the tension to fit the Mo-Fi comfortably around your head.

Weighing just over a pound on its own, the Mo-Fi includes a removable 10' cable with a 3.5mm plug at the end, as well as 1/4" and 2-prong adapters (the last for use on airplanes). Other accessories include a 4' iDevice cable

SUMMARY

STRENGTHS: Powerful active output. Low-end emphasis. Comfortable fit. Automatically turns off when not in use.

LIMITATIONS: Not fully collapsible. Heavier than standard headphones. Pricey.

\$349.99 street
bluemic.com



Blue Mo-Fi headphones include active circuitry to provide a consistent listening experience, no matter what playback device you're using.

with the requisite controls, a USB cable and AC adapter for charging the internal battery, and a pouch to carry everything.

The internal battery provides up to 14 hours of active power and takes 3 to 4 hours to fully charge. To keep you from inadvertently draining the battery, the Mo-Fi powers down when you remove the headphones (and the ear-cups are less than 1-1/2" apart). A light on each ear-cup indicates when you're in Active mode.

Passive vs. Active According to Blue, amplification was added in order to provide a consistently high-quality listening experience, particularly when using laptops and mobile devices that might not have powerful enough headphone outputs for such high-performance drivers as those in the Mo-Fi. However, I found that the Mo-Fi had more than adequate output level in its Passive mode, even when used with my ancient iPhone 4s: In a crowded café with my iPhone's output level at about 50 percent, I was able to hear my music tracks very clearly.

In fact, the Mo-Fi's passive output—among the hottest of the various headphones I have in my studio—sounds good on its own. It has a remarkably balanced frequency response (though a bit on the darker side than my other headphones) and is surprisingly punchy. When streaming music on my phone and laptop from various services, it was easy to tell the difference between the audio quality

of each station—just what you want from reference headphones.

In Active mode, playback was equally solid and punchy, with a round midrange-oriented sound that was neither brittle nor harsh. Make sure your device's playback level is low before turning these on, because the powered output is significantly louder. The On switch is right above the cable input on the left ear-cup.

Switching into On+ added noticeably more low end, but without overdoing it. This setting sounded best with material that was mixed well and not overly compressed.

Although I wouldn't use the Active settings for editing or mixing, they can be very handy for tracking: Drummers know how tough it is to get a hot enough headphone level that will allow them to play at full volume while being able to hear a click or guide track.

However, there is a bit of sound leakage near the area of the logo. Consequently, they may not work for tracking and overdubbing in quieter situations where mics could pick up the sound.

Overall, I feel the active features are geared more towards general listening than studio work, where output levels are strong enough to drive passive headphones. But in situations where you need high-quality reference headphones for use with consumer-based playback devices, the Mo-Fi's Active modes provide power and fidelity without distortion or hype in the extreme frequencies. ■

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JamHub's Tracker MT16 offers two modes: Split mode, which stores separate WAV or MP3 files per track; and Combined mode, where all tracks are stored as a single integrated .BND file that can then be split to individual tracks.

JamHub Tracker MT16

Portable 16-track
recorder for gigs and
rehearsals

SUMMARY

STRENGTHS: Records 16 tracks as MP3 or WAV files at 44.1, 48 or 96 kHz. Easy integration with JamHub Studio or any analog console with TRS inserts. Supports SD cards up to 64 GB.

LIMITATIONS: Limited playback capability. Minimal signal metering. No indication of headphone volume level.

\$560; Breakout snake, \$75
jamhub.com

STEVE LA CERRA

THE TRACKER MT16 is a perfect example of shrinking technology. In a device that is smaller than a slice of pizza (in Brooklyn, anyway), JamHub assembles eight TRS audio inputs, an SD card slot, a 1/8-inch headphone jack, a USB port, a JamHub connect port, a backlit LCD, an Ethernet port, a DC power jack, four navigation buttons and six status LEDs. Perhaps more impressive, the Tracker MT16 can record 16 tracks simultaneously at sample rates up to 96 kHz (with some limitations, which we'll discuss later). The Tracker MT16 has built in Wi-Fi, enabling it to download and install software updates automatically (so you don't have to) and an Ethernet port that mirrors this function. Very clever.

Audio is patched into the Tracker MT16 via TRS inputs or the JamHub port, the latter allowing you to connect it directly to a JamHub studio or—using JamHub's specially designed Breakout Snake—to the TRS inserts on any analog mixer.

Recordings are made in one of two modes: Split stores separate WAV or MP3 files per track; Combined stores all tracks as a single integrated .BND file that can later be split to individual tracks using JamHub's free BandLab Splitter software.

Two recording modes are provided because, after recording, the Tracker MT16 performs an encoding process that takes way longer for Split recordings than it does for Combined recordings. Combined recordings cannot be auditioned, so Split mode is appropriate for recordings with a low track count (stereo for example) or where auditioning is critical. Encoding a Combined file typically takes no more than a few seconds, so your workflow won't be interrupted when recording in Combined mode.

JamHub's philosophy behind the Tracker MT16 is all about sharing the recordings. Doing so with 16 files is unwieldy and inefficient. A .BND file helps make a recording easier to manage and more efficient to up/download. If you were

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sharing five songs with 16 tracks each, there's a good possibility that a track could be lost or exchanged between takes. The process is simplified by sharing one .BND file per song and allowing each person to split the file once they've received it. Splitting takes anywhere from a few seconds to a few minutes depending on file size and track count, but it is still more efficient than recording in Split mode. (Tip: avoid splitting files while they are on an SD card. It's painfully slow.)

The Tracker MT16 is actually a UNIX computer disguised as an audio recorder so it takes about a minute to boot, and recalls your settings from the previous session. Once I understood that there are three top menu tiers (Play, Record, and Settings) it was easy to get around the Tracker's UI. The Audio menu includes settings for sample rate, file format, Recording mode, track arming and Channel Mapping. Files can be named only prior to recording; once the name is saved, the Tracker returns to record ready, displaying the file name, elapsed time, file format, sample rate, and available storage space. Pushing the Play button again starts the recording process.

I used the Tracker MT16 to make some recordings via the TRS inputs and the JamHub Breakout Snake. Each TRS connector on the Snake is wired with tip and ring shorted: Plugging it into a mixer's insert jack automatically loops the signal back to the insert return (e.g., the channel's path is not interrupted) while still tapping the insert send as a direct output to the Tracker. The Channel Mapping menu is where you choose the audio input, and the Tracker is smart enough that it won't record onto tracks that don't have an audio input (for example, you can't arm track 9 when using TRS inputs 1-8).

Due to the relatively slow transfer rate of SD cards, there's a recording limitation of six tracks via the Snake Cable or TRS input at 96 kHz. You can also record 6 tracks at 96 kHz via the JamHub input to a USB drive. However, I was able to record larger sessions (16 tracks at 96 kHz) using a 1TB Seagate Expansion Portable Drive and, much to my surprise, the Tracker supplied bus power for the drive, which canceled the need for another PSU.

One of my recordings was routed from

a Mackie mixer with channels for three vocals, guitar, bass, two mono keyboards, and two drum mics. Being in a small rehearsal space we certainly did not need the bass, guitar and drums in the P.A. system. Since the Breakout Snake taps the

The JamHub Tracker MT16 is actually a UNIX computer disguised as an audio recorder, so it takes about a minute to boot, and it recalls your settings from the previous session.

The Audio menu includes settings for sample rate, file format, Recording mode, track arming and Channel Mapping.

mixer's insert pre-fader, turning down these channel faders did not cut the feed to the Tracker MT16. Record level is determined by the mixer's mic pre. Your only indication of signal level is the Tracker's Clip LED, and there's only one Clip LED for all tracks. Therefore it's wise to check level for each channel to determine which might be triggering the Clip light.

One thing we hope JamHub addresses in the future is the fact that files are not time/date stamped. In addition, the Tracker is not yet able to transfer audio files via Ethernet or Wi-Fi. (An upcoming rev is planned that will allow you to upload audio files via

Wi-Fi to a server at BandLab.com, which can then be shared via BandLab account holders.). Once recording is finished, files are accessed when you move the SD card to a suitably equipped computer. (You can get a multiway USB card-reader for about six bucks.) You can copy from the SD card to a USB drive (FAT32 formatted), but be warned: You'll get no confirmation of the transfer being completed. I preferred recording to the USB drive and connecting that to my MacBook or MacPro. (Mac users note that if you format a drive for Mac OS, it will not be recognized by the Tracker.)

I was able to import Tracker files into Pro Tools or Digital Performer easily. Several times, I recorded multitrack drums (kick, snare, toms, and overheads), bass, and guitar to the Tracker with fantastic results, and then mixed the session in my DAW. Certainly the Tracker MT16 sounds way bigger than it looks and produces recordings of professional quality—clean and quiet, with a wide frequency response. In fact I was surprised at the amount of low-end weight in the kick drum and bass tracks. Perhaps the limited playback ability of the MT16 enables JamHub to put more resources into the A/D converters (there's no need for multiple channels of D/A). But whatever the reason, recordings will undoubtedly be limited more by the quality of your mics and preamps than by the Tracker's converters. One quick side-note: The Tracker's case gets quite hot, so I'd advise against putting it on top of gear that generates significant heat.

Tracks in Hand By combining a portable computer, line amp, and A/D converter in a compact box that's easy to use, JamHub has created a very useful recording device. The fact that the Tracker MT16 can interface with a JamHub Studio using a single cable makes it a no-brainer for groups already using a JamHub Studio for rehearsal. And the ability to consolidate the tracks into a single file makes file exchange very easy.

If you're looking for an alternative to making recordings with a laptop, and need to share the resulting files, you definitely need to check out the Tracker MT16. ■

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

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Korg Triton Taktile-25

This may be everything you need for your next session

BY GEARY YELTON

THE TRITON Taktile-25 combines features that make it a MIDI keyboard, control surface, drum pad, and synthesizer in a single pint-sized package. Use it to control software instruments, as a standalone synth, or as an external sound module for your computer. It comes with a bundle of downloads, including Korg M1 Le, Toontrack EZdrummer Lite, a \$50 discount on Ableton software, and more.

This unit's onboard Triton sound engine distinguishes this instrument from the standard Taktile-25 (\$349.99). First introduced 15 years ago, the Triton was once Korg's flagship

SUMMARY

STRENGTHS: Versatile and lightweight. USB-powered. Saves setup parameters. Good control connectivity. Generous software bundle.

LIMITATIONS: Can't save edits to presets or performance parameters. Short sample loops. Stereo mini jack output only. No power switch. Small display.

\$500 MSRP
\$349 street
korg.com

synthesizer. Since then, the company has repackaged its versatile sample-playback capabilities in increasingly affordable instruments such as the Triton LE, TR, X50, and MicroX.

It's a MIDI Controller Like the Taktile-25, the Triton Taktile-25 has 25 Velocity-sensing keys and 8 Velocity-sensing trigger pads for playing notes, chords, and drum hits. The trigger pads have two banks, giving you 16-pad functionality when you switch between them. The pitch-bend and mod wheels respond smoothly to the touch. On the front panel are 8 hardware sliders, 31 buttons (23 of them backlit), a 2.5"-square touch pad, and a 2.5" ribbon controller (value slider). The monochromatic OLED display is no bigger than a wristwatch face, but it's bright and crisp.

All connections are on the side panel. Because the only audio output is a stereo mini jack, you'll need an adapter to connect to almost anything except consumer-level headphones. The Triton Taktile-25 has no power switch and turns on when you connect its USB port to a computer or another power source. I was pleased to find a MIDI Out jack alongside USB to accommodate different setups, and even more pleased to find assignable footswitch and expression pedal inputs.

When controlling external instruments, you can assign the eight sliders and the buttons beneath them to send MIDI CCs. The touchpad, in addition to being a real-time XY controller for MIDI CCs, lets you specify a scale and rub or tap it to play notes as you would a KAOSS Pad. You can even use the touch pad to position your computer's cursor.

The Target DAW parameter optimizes the

front panel for controlling specific DAWs, including Avid Pro Tools, Apple Logic Pro, and Ableton Live. Use the sliders to change levels, buttons to solo or mute tracks, and transport control to initiate play, record, and rewind. The internal arpeggiator offers all the usual patterns, as well as a trigger mode that repeatedly plays all held notes simultaneously.

You can store 16 scenes containing setup parameters such as MIDI channel, controller assignments, and so on—extremely useful when you're using the Triton Taktile-25 to control numerous software instruments. It can't save performance parameters, however.

It's a Synthesizer The Triton engine delivers 62-note polyphony and one timbre at a time. Buttons access instrument families (piano, bass, etc.), and the value slider scrolls through selections. The sliders let you modify essential filter, effects, and envelope settings, but you can't save any changes you make to the sounds—easily the Triton Taktile-25's most serious drawback.

The instrument stores 512 presets, some of them in stereo and almost all of them useful. I was surprised when Korg told me it contains the same 32MB wave ROM as the original Triton, as I heard telltale signs that samples had been stuffed into as little memory as possible. The 48kHz audio quality is crystal clear, but I hadn't realized how much romplers have progressed since 1999.

The Triton Taktile-25 is so lightweight and portable that it should have pegs to attach a strap so you can play it like a keytar. It has plenty to offer as a compact controller, and its functional adaptability is impressive for an instrument so obviously designed with economy in mind. ■

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Soniccuture Mallets for Ableton Live

BY MARTY CUTLER

MOST SAMPLED marimbas and vibraphones suffer from reduced keyboard maps and resemble their sources only superficially. Typically, vibes sampled with tremolo (created by motorized fans moving inside resonator tubes) pose a particular problem because it's hard to regulate the rate of a sampled vibrato across the range of the keyboard. Additionally, sampled mallet instruments with few Velocity layers come off as cold and hard-edged.

With that in mind, Soniccuture produced Mallets (\$89, soniccuture.com), a library pack of sampled marimba and vibraphone for Ableton Live. As a library pack, it installs

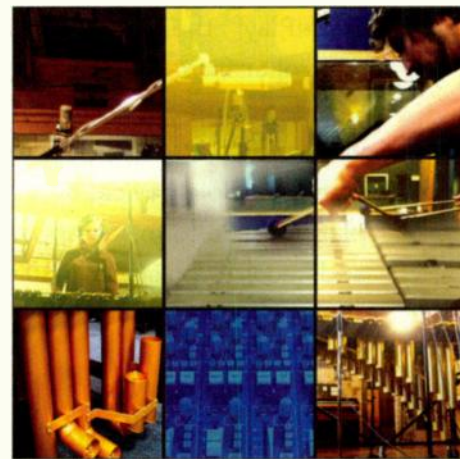
directly into Ableton Live, which handles all of the authorization details; installation couldn't be any simpler.

Soniccuture sampled each note of a 5-octave Yamaha 6100 marimba, with 15 Velocity layers, for a total of 880 samples. The vibraphone comprises the full range of a Yamaha YV-3910M Professional Gold 3.5-octave model, using 10 Velocity layers and a novel approach to getting natural-sounding tremolo: An LFO alternates between samples of the fan in vertical and horizontal position. You can alter the speed with one of the macro controls presented in Live; each patch variation has a custom set of eight control macros. (These mapped instantly to my Novation 61 SL MKII, providing on-the-spot tweaking, free of zipper noise.)

The marimba patches are meaty and detailed, with nine variants ranging from realistic room-sound instruments to resonant marimba-and-synth tones, bolstered by Live's excellent effects. For example, the Tube Drum Delays patch adds a resonator along with delay and reverb for a sweet ambience and vaguely ethnic flavor.

The vibes are sparkling and realistic, with plenty of knock. The Corpus Christi patch, for example, is a beautiful, coruscating vibraphone with sweet tremolo, while Gold Pad's slower attack settings minimize transients, making it a great backdrop sound with brilliant overtones.

Soniccuture Mallets shines; the developer's attention to detail is evident in this collection of expressive and lively instruments. ■



Zivix PUC Interface

BY GEARY YELTON

SINCE *ELECTRONIC Musician's* reviewed the \$2,995 Gambatte! system in 1989, the technology has steadily become more affordable, consequently reducing the cost of wireless MIDI. Now Zivix is shipping a simple, inexpensive wireless MIDI interface for Mac OS X and iOS, thanks to a successful Indiegogo campaign.

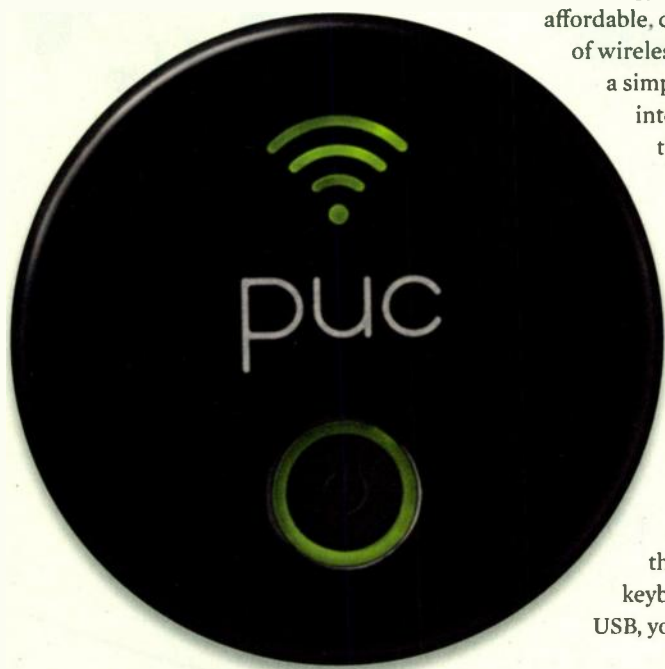
True to its namesake, the PUC (\$129.99, mipuc.com) is the size and shape of a regulation hockey puck. It has a power button and an illuminated wifi symbol on top, with mini-USB and MIDI In ports on the side. The USB doesn't handle data, but a USB power supply can substitute for two AA batteries.

A standard MIDI cable connects the PUC to your controller; if your keyboard or other controller has only USB, you'll need a separate interface.

To set up the PUC, I opened my iPad's Settings and selected PUC as my wifi source. I initiated a link using the free PUC Connect app, connected a keyboard to the PUC, opened Waldorf Nave, and selected the PUC's network as its MIDI input. I played a few notes and turned a few knobs, and it was just as if I'd connected the keyboard directly to the iPad. I also tried playing other iOS instruments wirelessly, and it worked flawlessly.

On my Mac, I enabled a MIDI network in Audio MIDI Setup, selected the PUC as the Mac's wifi source, and completed the connection in Audio MIDI Setup. I opened IK Multimedia SampleTank 3, chose Network Session 1 as its MIDI In source, and started playing from across the room. Then I opened Logic Pro and wirelessly played several AU instruments without a single dropped note.

My only issue using this product was that I needed to disconnect the Mac and iPad from my studio's wifi network in order to connect to the PUC's network. Fortunately, I could easily switch between them, making the PUC a workable solution for MIDI musicians wanting to cut the cord. ■



By connecting a MIDI cable between the PUC and your MIDI controller, you can control any iOS or Mac-based instrument within reach of the PUC's wifi signal.

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Spitfire Audio HZ02 Hans Zimmer Percussion— Los Angeles

BY MARTY CUTLER

EVERY TIME I think I have a surfeit of sampled drum kits, something comes along that tells me “think again.” Spitfire Audio’s HZ02 Hans Zimmer Percussion Los Angeles (£199 or about \$327, spitfireaudio.com) captures Jason Bonham playing his DW Vistalite kit in three different studios; Alan Meyerson, Geoff Foster, and Hans Zimmer recorded and mixed the project.

HZ02 can be used standalone, in Kontakt 5 or Kontakt 5 Player, or as an RTAS/AAX/AU/

VST plug-in. The 23GB download includes samples from a variety of mic perspectives—close, overhead, room, and gated room. You also get a splendid kit derived from Zimmer’s huge analog modular synthesizer.

Apart from Zimmer’s kit, there are subfolders for the three recording locations: Cathedral (Zimmer’s facility); the Sony recording stage; and the Newman stage at 20th Century Fox studios.

While the subfolders contain fully mapped drum kits, the real action lies in creating Multis from individual elements—cymbals, kicks, snares, and toms—whose folders sit alongside the complete kit. Tools to sculpt your sound include Pitch, Boom and Crack (lowpass and highpass filters, respectively), in addition to the mixer where you choose different mic perspectives. I prefer the close-miked kits, which possess a sweet ambience, but it’s nice to have options.

Overall, the kicks are meaty and punchy, with the thunderous Newman bass drum being a cinematic standout. The cymbals sparkle; the Dual Combo cymbal rolls have a realistic attack and generous decay. Round robins for the ride bells keep them lively and pingy, while the hi-hats are kept from sounding mechanistic. The snares have plenty of snap and presence, and

the Gated Room (only available for some snares) can be subtly mixed in for a little sizzle (or way up for some ’80s character). The snares and toms include realistic flams, and some of the crash sounds are accompanied by kicks.

Ali in all, HZ02 sounds fabulous—bombastic and laden with attitude. They’re perfect for standard and progressive rock as well as hard-edged pop. ■



Hans Zimmer Percussion captures Jason Bonham playing in three different studios, including the Sony recording stage.

THE BEST INTERVIEWS

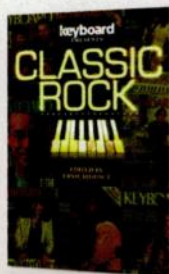
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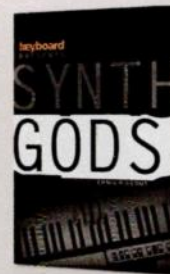
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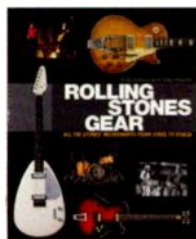
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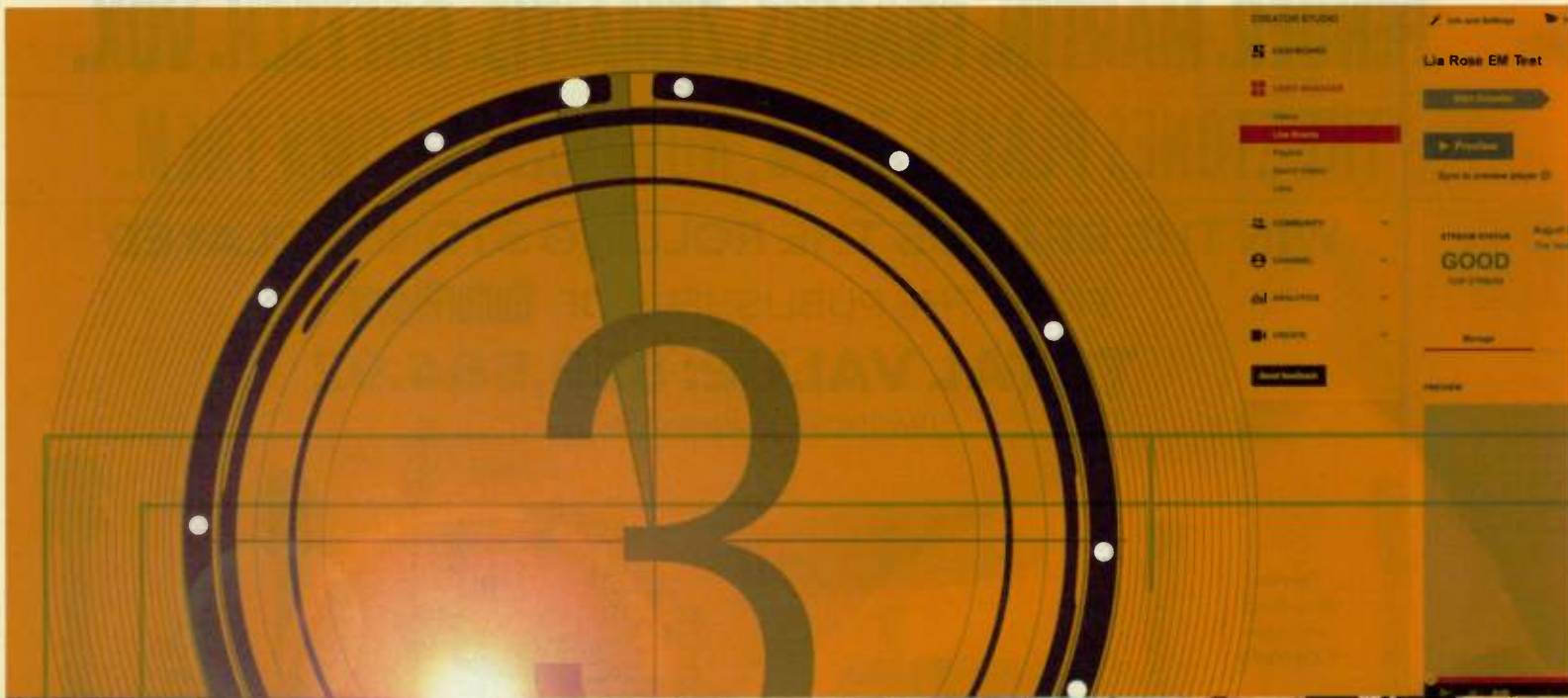
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World Radio History



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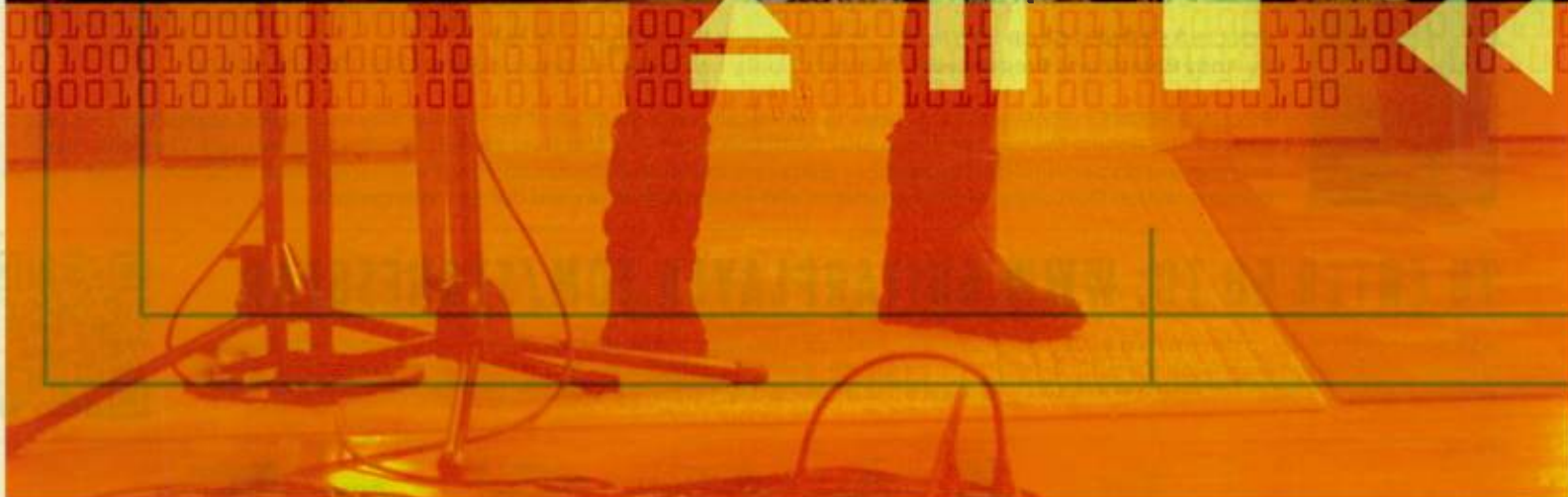
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The studio setup for a webcast at Jingtown, Oakland, Calif.



HOW TO

Master Class Streaming Concerts

Broadcast your performance from any venue

BY PIPER PAYNE

IMAGINE YOU are about to watch your favorite performer sing your favorite song right to you. But you didn't have to save your money for an expensive ticket to a sold out show, wait in a long line in the cold, show your ID, and then pony up for an eight-dollar beer. You didn't have to remember your ear plugs, strain your neck to see past the hulking dude in the front row, hope you can understand the words to the song over that annoying wasted heckler, and you won't have to find a ride home afterward.

Instead, you're watching a concert streamed live online from one of many virtual venues available on the Internet. But what goes into making for an engaging and exciting show? HD video and lighting are essential ingredients. However, most people agree that audio quality and the music's sonic presentation are what actually can make or break the online concert experience—just like in a brick-and-mortar concert setting.

There are many reasons for artists to put effort into performing an online show. They don't have to pick a venue that they can fill with ticket holders; instead, they can perform almost anywhere, and tap into a worldwide number of potential viewers, who enjoy the concert right from their own living rooms. Artists can get support from fans with families (who have a harder time making it to the clubs), and will have many more options for promoting their shows, including possible sponsorships from companies that understand the value of an infinite audience with an exciting new platform. If artists and promoters put in extra effort on the production, they can make the concert seem larger than real life could ever be, with bonuses like cameras backstage and applications for the audience to choose which camera angle or microphones to tune into.

Live online concerts do pose some similar challenges to brick-and-mortar concerts, however: Artists still have to reach a captive audience and keep their attention, compete with other shows and events happening at the same time, convey the right musical message, and monetize the effort of the show. And of course, we can't forget the biggest difference between online and brick-and-mortar concert: the technology, which can be a big challenge. Sending bits of audio and video data down the tubes and expecting them to be reassembled again at the other end, properly and in sync, can seem like wizardry, and it takes a talented tech company to do it, period, regardless of the sound and visual quality they can actually achieve. But in my experience, the benefits of online concerts far outweigh the technical challenges.

The Signal Path Before getting into production details, it is important to understand the signal path. After the sound travels through the artist's instrument, microphone preamp, and analog-to-digital interface, it is picked up in the streaming software. The main software available is Adobe's Flash Media Live Encoder (FMLE), which provides many options for using external A-to-D conversion and external video input. On the other end of the chain—in the concert viewer's living room, for instance—the digital audio gets converted back to analog electrical energy, and then back to acoustical energy through the speakers.

As a mastering engineer, I am constantly in pursuit of the workstation that does that recording and editing at the highest quality

possible, with the goal being to work with software that I cannot “hear.” Too many workstation companies make recording software work and pass audio but stop there, providing no options for perfecting the sound quality or reducing the grunge and distortion inherent in digital audio. As we add more complex factors like video sync and Internet streaming, we must pay even closer attention to precise calculations and programming.

The person to explain this precision is Sonic Studio's CEO and Chief Programmer, Jon Reichbach. He tells us that, “Ensuring the highest level of data precision where we are required to reduce the distortion caused by digital processing is very important for a workstation. Some of the other principles that we feel are important in software audio design are paying attention to details like sound quality, support for multiple formats, support for metadata, and attention to all aspects of the audio processing chain.”

Jon shared with me that Sonic Studio has found that certain audio and software engineering principles can positively or negatively affect the way music sounds. Toward this end, they focused their work on two areas: advanced digital signal processing for audio applications, and optimizing the interaction between the audio processing, the computer hardware, and its operating system. The developers at Sonic also recognize that a computer is a very noisy environment, and by designing their own unique system architecture (Sonic Studio Engine) they have optimized the system, resulting in a clearer and more transparent sound on recording and playback.

With respect to online concerts, the audio processing chain Jon refers to now incorporates the complexities of the Internet. There are so many sound quality

limitations when transferring audio over the Internet, especially due to limitations of network bandwidth—in particular, upload speed. This is why audio is usually encoded and compressed when streamed, which reduces information and causes fidelity loss, higher noise levels, digital artifacts, and other issues. For most encoders, this introduces noise quantization errors and differing results based on playback level. (When a higher bandwidth and bit rate are available, these issues will be reduced.) Codecs used can also introduce delays and cause loss of sync between audio and video. Other streaming challenges include hardware limitations and Internet upload speed limitations.

Every concert-streaming platform I've tried is wildly different from the next. Why don't they all sound the same? Is it the technical quality of the stream? Is it the “live-ness” of the stream? Is it the ease of use of the platform? Could it be future support for other formats, such as surround, Ambisonic, or soundfield arrays? Of course, it is all of these things. To understand the differences, we need to understand the platform's encoding processes, upload speeds, and the way the stream is shared across many users.

Streaming services are paired with content delivery networks (CDNs) that transfer huge amounts of audio and video data. Some are better than others; the differences are largely dependent on where exactly the CDNs put their streaming servers. I performed a streaming test with some of the biggest streaming services available, using the CDNs they provide; you can see my results at emusician.com.

Every CDN seems to have the goal of supporting and delivering the highest-quality video content, and audio quality comes second. When you are streaming a soccer game or CSPAN, the audio probably doesn't need to be high quality. But we are talking about streaming concerts, which are a big part of CDNs' business; unfortunately, they aren't delivering a lot of the audio properly. In my experience, incoming streams have had dropouts, level changes, and sync issues that stretched for more than a minute when measured against the outgoing stream. Overall, I find that Verizon's Edgecast is the best and most reliable, but Akamai is the largest and most widely used.

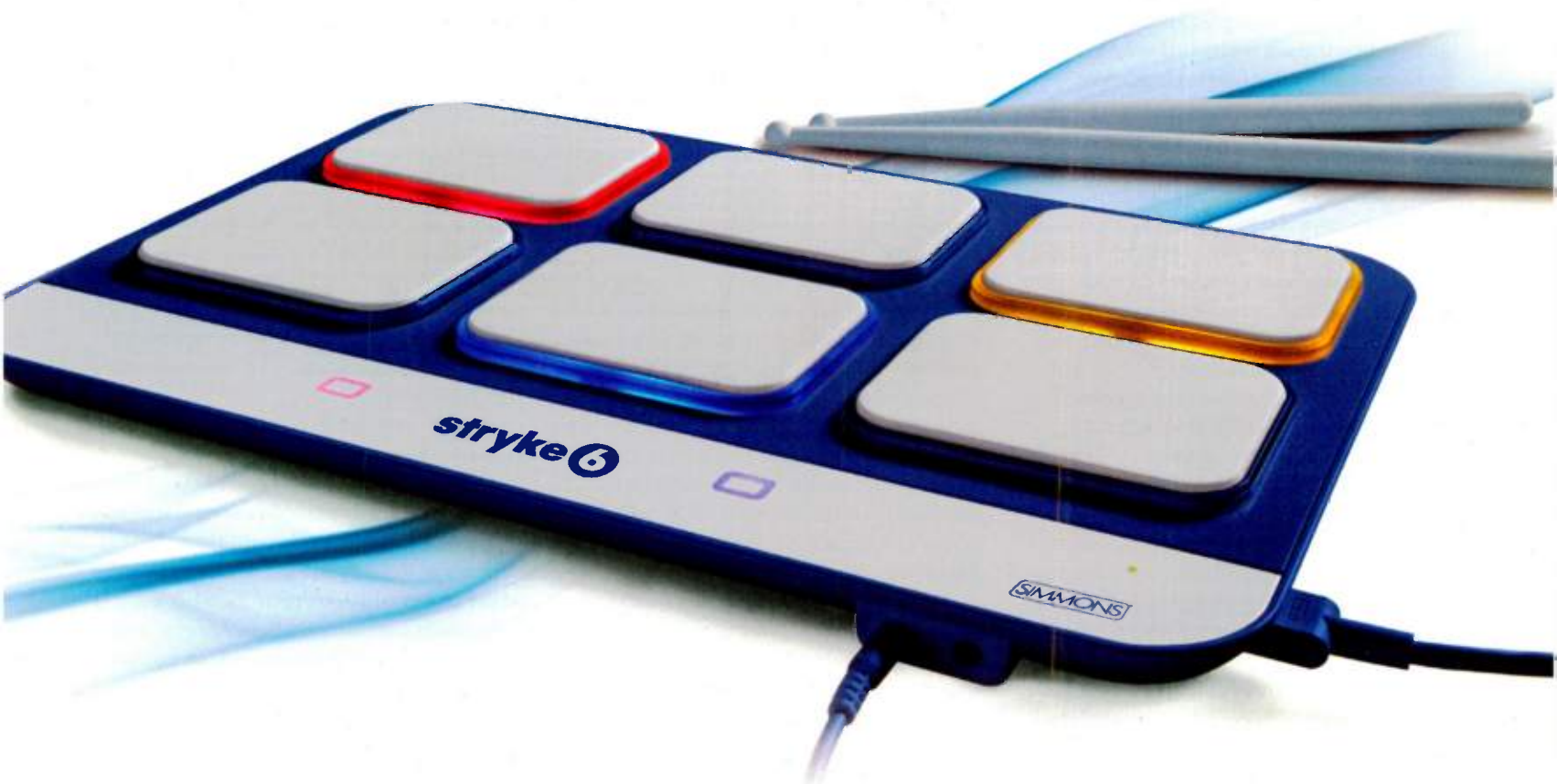
Video Codecs Video codecs are an important and sometimes confusing part of the streaming concert process. All of the streaming services I have mentioned support the H.264 video standard, which supports the highest-quality 1080p compression available, and integrates AAC at 96, 128, 192, 256, and 320 Kbps. This standard will soon be upgraded to H.265 to

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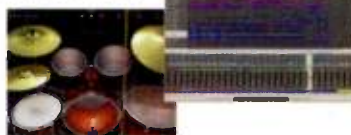


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HOW TO master class

support 4k streaming, which allows about four times the pixel resolution of 1080p but requires a higher bit rate while streaming, and much more processing power.

VP6, the other available codec, is technically more efficient but sacrifices quality and options for audio fidelity. This is ultimately being upgraded to VP9, which will offer higher color quality and new compression priority. The reason we care about video compression is to get the best quality video without having to downgrade the audio rate on a limited Internet bandwidth.

Showtime An engineer needs to do many things that will make or break the concert mix, both artistically and technically. I make sure that my systems are running smoothly by turning off unnecessary computer processes (such as Apple's Spotlight), using an efficient hard drive, spanning separate buses for extra processing power, and using a separate AD/DA converter. Other good practices include using short cables, and employing a power conditioner and cooling fans. Be sure your levels are in a comfortable place without needing to compress the dynamic range before it hits the codecs. As long as you are using 24-bit processing in your DAW, you can mix at lower levels and not hit your limiters or compression too hard on the master bus. Pay attention to what is happening musically so you can make adjustments; this will always sound better than a static, flat mix. Just because you are using data compression, it does not mean you're off the hook for providing a dynamic and interesting mix to draw in the listener.

Then we have the challenge of lighting for video and using the correct type of camera for streaming. This becomes an issue when you're



Giving Stage is an online concert venue that supports causes and nonprofit fundraising.

choosing between an interlaced or progressive video signal: Interlaced video has a lower data stream but requires more processing to interpolate the frames; progressive video is a full, cleaner image from the beginning, so it is easier to process and easier to achieve an audio sync. Progressive video also replicates motion more accurately. Since interlaced video requires more processing, we often lose sync with audio, and the image suffers when movement is involved. I try to work with switchers or cameras that can output a progressive video signal, which I have found streams better through FMLE.

I use a multicamera production with a live video switch for most of my work. I also have help from a wonderful video team (www.somethingelseproductions.com). Most people will use one camera, and that's just fine. Find a place where the whole band can be seen, but be sure to not move the camera around if you can avoid it.

Even if you have done everything you can to run an efficient and great-sounding computer

system, you will still hit your first obstacle when trying to run a synced audio and video feed to the web. The quality and availability of technical support and learning resources vary: You can sometimes find a best-practices FAQ, but it is usually just a video of a person with a laptop or webcam.

Streamed concerts are meant to be scalable. Remote, streamed concerts are even being supported by Teradeck with its Bond hardware, which takes several wireless networks, and adaptively pulls from the best signal and sums them together to create a more powerful 3G/4G network. This lets you effectively webcast anywhere you can get a cell phone signal. Of course, we can't forget about Bob Weir's multimillion dollar streaming studio, a black-box video studio where he streams big name concerts for paid tickets.

I always run a simple test when considering what brick-and-mortar venue to stream from (a recording studio, someone's backyard, a bar,

FREE VS. PAID

Generally all of the streaming services are free. Livestream now requires a special piece of hardware that you can purchase from them. Or, you can use their classic site, which does not support FMLE, though using external audio and video devices gets a bit tough. Livestream also has an option to collect money on a pay-per-view basis or to sell ad time on your stream. YouTube does similar things. You only need to worry about money when you are broadcasting a paid concert.



Just as you want lighting and staging to create a compelling look for your webcast, you need high-quality audio gear to capture studio-quality sound. Here we have a backyard webcast featuring Lia Rose.

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Placing Room Mics for Drums

Techniques for creating hyper-real tracks and capturing natural room ambience

BY MICHAEL COOPER

WHEN USING many mics to record trap drums, most of them need to be placed very close to the kick, snare, and toms to avoid gnarly sounding phase cancellations. But if *everything* is close-miked, your drums are going to sound like they were recorded inside a shoebox. Placing mics farther out into the room helps capture the ambience needed to make the kit sound big.

Exactly where you place the room mics will have a big effect on the sound you get. Do you want to capture the natural ambience of the room, or are you looking to create hyper-real, exploding drum tracks instead? This article will show you how to reach both goals.

Just Reverb, Please If you have a nice-sounding, reasonably large and live room and only want to add its natural ambience to your drum tracks, place a spaced stereo pair of cardioid condenser mics (small- or large-diaphragm, it doesn't matter much) far from any walls and the drum kit. Aim the mics at the room's walls (not the floor or ceiling), with their nulls pointed at the kit. With this setup, the mics will reject the direct sound of the drums and capture their indirect sound bouncing around in your room.

You can get a similar sound, but one with

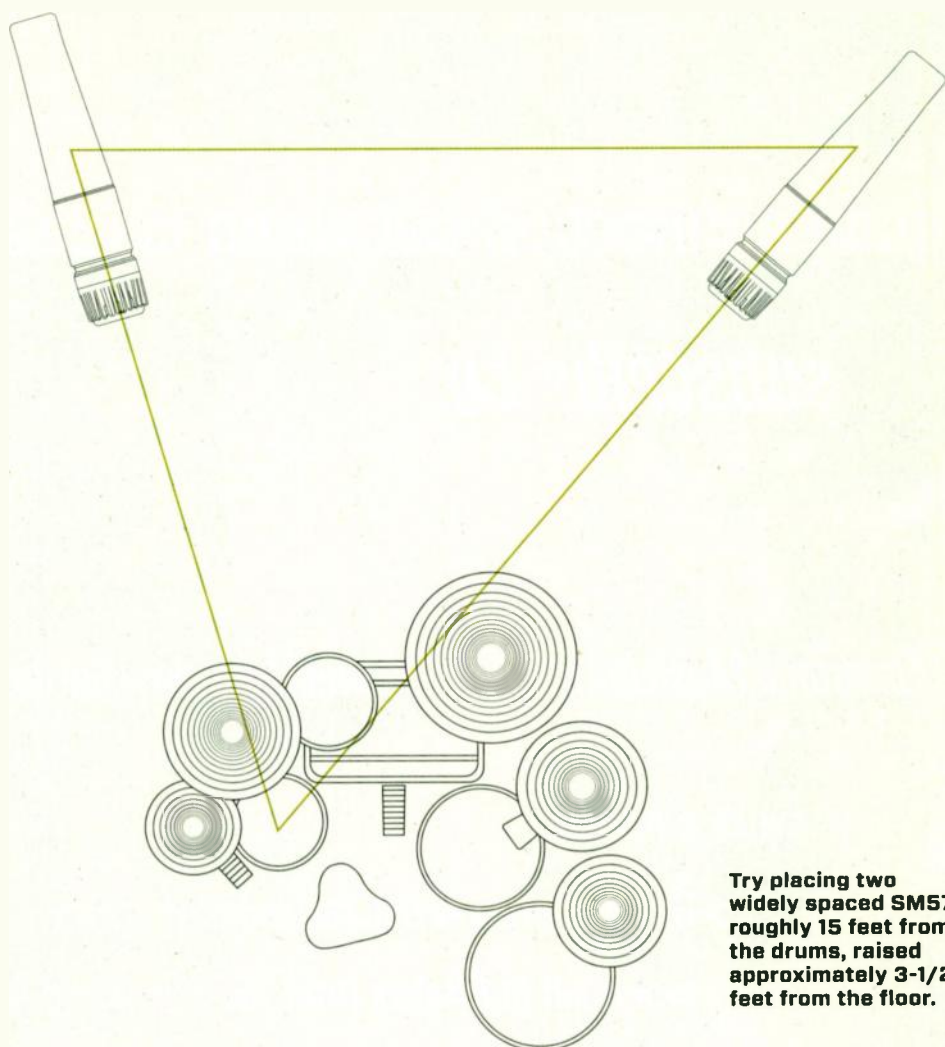
a bigger bottom end, by placing your cardioid condensers in opposite, high corners as far away from the kit as possible and pointing out into the room.

Detonating Drums The key to creating explosive drum tracks is to use very heavy compression on room mics selectively placed for that purpose. (Not every compressor can convincingly produce the effect, but that's a subject for another article.) Where you place and aim the mics will have a profound effect on your results. Compressing tracks captured using the previously detailed mic placements will do little but extend the room reverb's decay time. You want volcanic eruptions! For that, you need the room mics to catch a bit more dry signal.

To me, getting the snare drum and toms to explode are key. I like to place a widely spaced pair of Shure SM57s roughly 15 feet away from the drums and raised on mic stands

so they're approximately 3-1/2 feet off the floor (see diagram above). Don't place the mics too far from the kit, or you'll end up capturing relatively little of its direct sound. The optimal distance will be determined by how live the room is. I like to point the mics directly at the snare drum; it helps if the drummer has his or her cymbals raised high. The SM57's inherent presence peak at 6 kHz will accentuate the attack of the snare drum and rack toms. At the same time, the SM57's slow transient response and high-frequency roll-off will keep the cymbals from sounding too shrill when the tracks for the room mics are compressed during mixdown.

You can use a variation of the preceding setup to capture more bottom end, for a heavier drum sound: Substitute large-diaphragm condenser mics (LDCs) for the SM57s, and place the mics close to the floor. The floor's boundary effect will boost the bottom end and spotlight the kick drum.



Try placing two widely spaced SM57s roughly 15 feet from the drums, raised approximately 3-1/2 feet from the floor.

Alternatively, keep the SM57 room mics positioned for snare and toms, and add a single LDC positioned close to the floor to goose the kick drum's room sound. Just be sure to keep the three mics far enough away from each other to avoid phase cancellations.

A Bird's-Eye View Another classic room-miking technique is to place a coincident or near-coincident pair of condenser mics high above the drummer's head or the snare drum, pointing downward. This placement captures more of the direct sound of stick strikes. But don't try this in a room with a low ceiling. Because the snare and toms will be on stands a few feet off the floor, any mic you place near an eight-foot ceiling will only be, at best, five feet away from the traps (and even closer to the cymbals). You'll end up capturing relatively little room ambience, and combining tracks for the ceiling and close mics at mixdown will simply create phase cancellations and mar the kit's overall sound. To use overhead room mics (as distinguished from "overheads" for cymbals) successfully, you should generally have a ceiling at least ten feet high.

Small Considerations If you must record drums in a tiny room, you can still use room mics—as long as they are placed at least six feet away from the kit. And if you don't have the space or enough mics to record in stereo, a single room mic can still beef up your drum sound nicely.

In such a situation, I like to place a Neumann U87A or Lawson MP47 tube condenser at the far wall opposite the front of the kit. I place the mic where the wall is covered by a fiberglass acoustic panel, and I set the LDC to cardioid mode. I aim the business end of the mic at the kit and its null point at the acoustic panel. This setup greatly attenuates any high-frequency reflections off the wall and into the mic, curbing phase cancellations.

No matter the room size (within reason), you can use at least one great room-miking technique to get explosive-sounding drums. Bombs away! ■

Michael Cooper is a recording, mix, mastering and post-production engineer, a contributing editor for Mix magazine and the owner of Michael Cooper Recording (soundcloud.com/michael-cooper-recording) in Sisters, Ore.



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Getting Started With KMI SoftStep 2

Tips for controlling plug-ins in Ableton Live

BY MICHAEL ROSS

KEITH McMILLEN'S SoftStep filled a niche in the live-performance market by introducing a solidly built MIDI foot controller with functionality that belied its compact size. Version 2 takes it further with cruciform footswitches that make it easier to operate the x/y axis control, and more user-friendly programming software. SoftStep 2 can control software on a laptop or iPad, and provides MIDI hardware control through the use of the (optional) KMI MIDI Expander. For this tutorial, we concentrate on controlling plug-ins in Ableton Live.

First, connect SoftStep 2 to the computer with the included USB cable; the class-compliant pedal is quickly recognized as a controller. We now see SoftStep Share in the input menu at the top and under MIDI ports, as well as SSCOM (Port 1) and SSCOM (Port 2). Use SoftStep Share as the input and SSCOM (Port 1) as the output (See Figure 1).

Controlling software on the computer requires opening the SoftStep editor, which you can download from Keith McMillen's website. Though the Basic Editor allows control over a wide range of the pedal's functions, we want to be able to control Live's Looper plug-in, which requires the Advanced Editor (See Figure 2).

We will create a patch programmed to control an Audio Effects rack (See Figure 3) that simulates a guitar multi-effects. The rack contains Live's Saturator, Auto Pan, and Reverb plug-ins, as well as a free third-party plug-in, TSE Audio's 808 Tube Screamer emulation, and an amp modeler. Here we have Studio Devil, but you can use Live's Amp and Cabinet modeler plug-ins. We will also control Live's Auto Filter plug-in, and two Live Loopers.

Keith McMillen properly calls the footpads "keys" rather than footswitches because they do more than just switching. To program the first key to toggle the Saturator on and off, first click on its number (1) in the Advanced Editor window. This opens up the Key Modulation Window (see Figure 4). The lines with the buttons labeled 1 and 2 are called Modlines—here we determine how Key 1 functions. The numbered buttons can be clicked to enable or disable each Modline. Depending on how many functions you want the Key to perform, you may use one, two, or more Modlines (you can add more by clicking the plus sign at lower left).

For our purpose, we use one Modline, where we set the Mode to None and the Value to 0. Next comes the Data Sources section. Here we determine the type of sensor data to use—key pressure, foot on, foot off, etc.—from a long drop-down menu of possibilities. To create a latching switch in Ableton Live, we use Foot On as the source. The next box to the right, Raw, indicates the level of data coming from the source. Anytime you step on Key 1, this figure will jump to 127. You can modify the incoming data with Gain and Offset, but for the footswitch function, leave the Gain at unity (1) and the offset at 0. We want the Key to toggle the Saturator on and off, so set the Table to Toggle. The Min(imum) stays at 0, and the Max(imum) at 127. We don't need any Smooth(ing) or Delay. The ultimate value will be 127. The Message Type will be CC, or Continuous Control (other options are Note, Program, etc.). Select a CC number (in this case 21), as the input channel, Softstep Share as the output port, and we are done with the SoftStep Editor for now.

Back in Live, hit command M, click on the Saturator's on/off button, step on SoftStep 2's Key 1, and Live automatically recognizes the pedal as sending on/off info on CC# 21. To

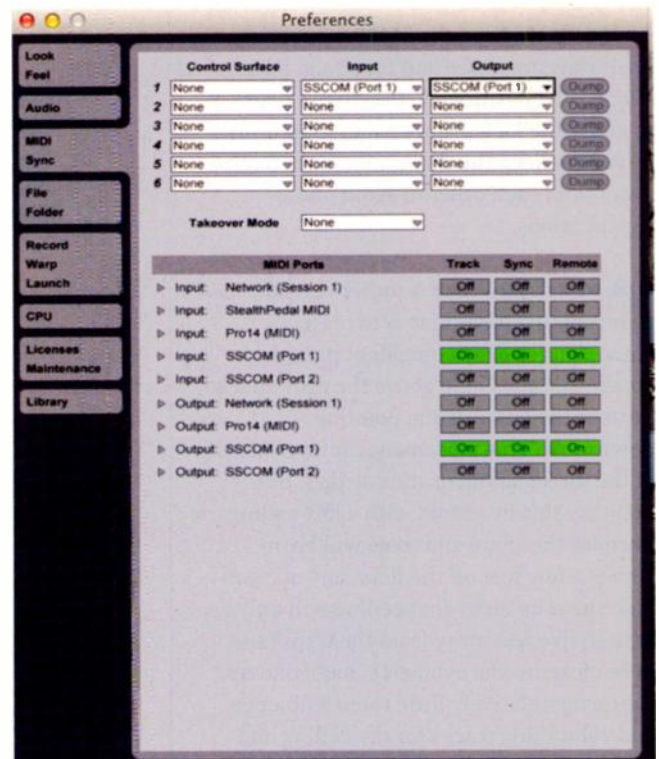


Fig. 1. Set up SoftStep 2's MIDI I/O to work with your computer.



Fig. 2. Advanced Editor allows control of Live's Looper plug-in.



Fig. 3. Create a patch to control a simulated guitar multi-effects rack.

toggle the Tube Driver, Tremolo, and Reverb on and off, copy Key 1's Modline and paste it to Keys 2, 3, and 4. You need only change the CC number for each to have four effect on/off footswitches at your disposal.



Fig. 4. Program keys using the Key Modulation window.

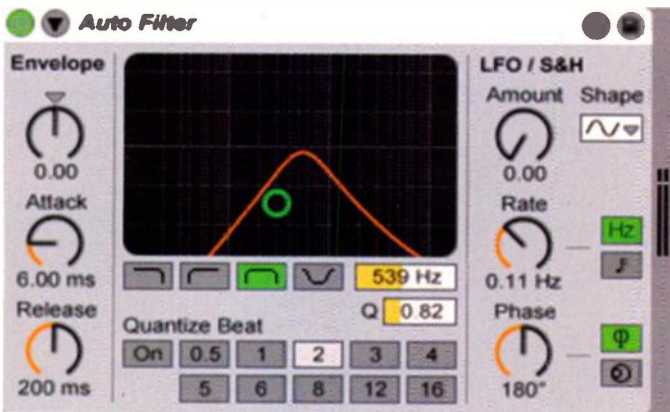


Fig. 5. Ableton Live's Auto Filter effect

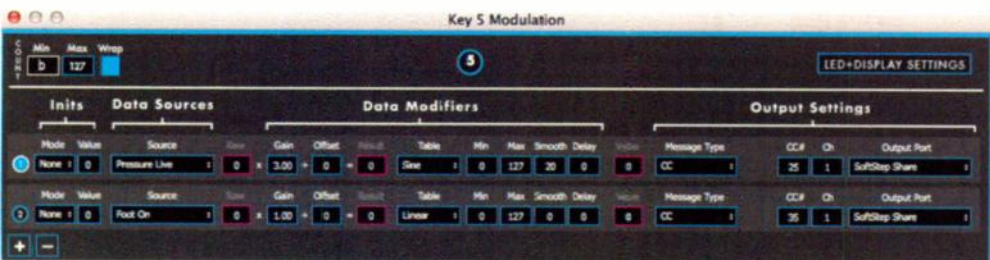


Fig. 6. Pressure is the source used to control the Auto Filter's frequency.



Fig. 7. Ableton Live's Looper effect.



Fig. 8. Here, we program Foot On to control Live's Looper.

We also want to use SoftStep 2 to modify the frequency of Live's Auto Filter in real time (see Figure 5). For this we take advantage of the pedal's key pressure sensitivity, which requires setting up Key 5's Modline (see Figure 6) differently. You can see the Source has been changed to Pressure, instead of Foot On. This effectively turns the Key into a pedal: like a wah, or expression pedal. Note that the gain is now set to 3. The amount of gain will determine how hard you need to press the Key to create the desired change of frequency. Higher gain means less pressure is needed. You should experiment with different amounts: You might need more gain if you are sitting, less when standing. For Table, we chose Sine; also available are Logarithmic and Linear. These determine the arc of change, whether even throughout, quicker at the beginning or end, etc.

You can leave the Min and Max at 0 and 127 and adjust the frequency range in Live's MIDI section, or adjust it by increasing the minimum and/or decreasing the maximum in the Modline. The Smooth option comes in handy here: The transition of the frequency can get jumpy without smoothing; here it is set for 20. Choose 25 as the CC number, perform the MIDI learn operation in Live, and it is time to move on.

Controlling Live's Looper plug-in (See figure 7) is more complicated. When using a mouse, the first click on the big virtual button on the left starts recording, a second click engages looping mode, and a third puts the looper in playback mode. To get Key 6 (See figure 8) to go through these steps involves using Foot On as the source, pumping the Gain up to 127, setting the offset to -1, the Table to Linear, and picking a CC number. To operate the Looper's Clear button, just set Key 7 identically. Then just cut and paste this same Modline configuration into Keys 8 and 9 for a second Looper and Clear function.

Clicking the box in the upper-right corner (labeled Led + Display settings) in any Key modulation window lets you type in a name for that key (i.e. "Fuzz" or "Loop") and determine the action of its accompanying LED.

There you have it: a guitar (bass, keyboard, DJ, or vocal) laptop looping system controlled by SoftStep 2. Of course you can modify this with different effects, or fewer effects and more Loopers. This tutorial should get you started with enough info to employ SoftStep 2 in a number of ways. ■

Michael Ross is a writer/musician/producer living in Nashville who contributes to guitarmoderne.com, Guitar Player, Premier Guitar, Electronic Musician, and Sound on Sound. He is the author of Getting Great Guitar Sounds and All About Effects.

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Setting Your Crowdfunding Rewards

Offering the right gifts at the right levels can get you more backers and funding

BY RANDY CHERTKOW AND JASON FEEHAN

[Editor's note: This is the latest in a three-part series of articles covering music project fundraising; see previous installments in our August and October 2014 issues.]

One of the most popular ways for musicians to raise money for their projects is crowdfunding. Whether it's to cover the cost of producing your next album or to make your tour happen, crowdfunding not only generates dollars, but also helps get fans involved in your projects. When run successfully, a crowdfunding campaign can capture your backers' enthusiasm and help spread the word to other people—which can bring in even more money and build your fanbase.

Planning and sequencing a crowdfunding campaign correctly will help you maximize fundraising. But another component you need to consider is setting the best mix of rewards—ones that encourage backers to pledge the most dollars to your project. Setting the right mix means you'll get more pledges from more people, encourage your backers to pledge at

higher amounts, and help you achieve your goals (and stretch goals) quicker.

Reward "Don'ts" Before considering the reward levels, you will want to keep in mind some pitfalls that can discourage pledging or cause you to lose money—and they aren't always obvious. Avoid these mistakes:

Don't offer a reward that costs more in funding donations than the price someone can reasonably pay elsewhere. For example, a digital album reward should never cost more than it costs on iTunes.

Don't forget to factor in shipping costs! Don't ever offer a physical reward for less than \$25 that requires shipping. Otherwise, the shipping and postage costs will eat your profit. Instead, offer only digital rewards—downloadable MP3s, digital posters—for your lower priced rewards. The key price point where you can offer physical goods as rewards—a CD, a printed poster—is typically around \$25-\$30. But that reward should fit in a 6"x 10" padded envelope and weigh less than 3 pounds. As reward limits grow, size and

postage options can grow, but keep in mind, every dollar paid toward shipping a reward is a dollar that's not going to your project.

Don't have large price gaps between rewards. Offer your backers many different pricing options and reward levels to choose from. Each backer is different—some can't afford to pledge too much while others can afford more. Your goal is to provide options so you can help people find the level they're most comfortable pledging.

Don't make top rewards open to many. A \$10,000 reward should only be offered to one person, for instance. You want to keep them limited so you introduce scarcity and competition. This encourages pledging.

Setting Reward Levels How do you get people to pledge more than just a \$1? What inspires them to pledge higher amounts? The answer is in the types of rewards you offer and the pledge levels you set. Be creative. Offer a lot of special and limited-run rewards at ever-increasing levels—from as low as \$1 to as high as \$10,000, \$25,000, or more.

To get the most out of your pledges, follow these tips:

Set \$1 Rewards: Always have a \$1 reward! This level hooks the people who are only casually interested in your project. The point is, once they become a backer, crowdfunding platforms allow you to message them, and with each update you send you'll get more chances to upsell them to a higher reward. If you follow our advice from earlier columns, you'll be sending messages when you're close to achieving each goal—not just the first goal, but the stretch goals as well. You might influence a backer to pull in other people to help the project succeed. For a good, low-barrier \$1 reward, try offering a single downloadable track.

Set \$10 Rewards: A \$10 reward is the perfect price point for a downloadable digital album. But don't just offer the exact same thing that someone can buy at iTunes or other digital stores. Add something extra so it becomes a true reward. For example, an additional song, or a downloadable PDF of your lyric sheet.

Set \$25 Rewards: Data shows that the \$25 reward is the most common pledge, so offer a variety of rewards at this level to capture this special price point. This is also the first level

where you can consider non-digital rewards. But if you do so, make sure to offer at least two \$25 rewards: a physical reward that you can mail and a digital reward equivalent that you can dub the "save-the-earth" version. Push the non-physical rewards that you don't have to ship—they are better for the earth, and better for you!

Setting Rewards Greater than \$25: Prepare a graduated set of rewards for levels greater than \$25 all the way through \$500 or so. For these levels, there's no end to the type of rewards you can create. Offer previous albums or rarities from your back catalog. Create various packaged rewards—different CD cases, vinyl, USB drives, etc. Offer a souvenir photo book of the "making of" your project. Offer to add funders' names to a "thank you" page in the liner notes. You can also let fans buy some control. For example, let backers who pledge \$100 or more a chance to vote for the album art (from a pre-selection) or create a setlist for a tour stop in their city. Mix and match the rewards to create bundles at various price points. Also, don't forget to continue to offer digital-only rewards at these successive levels.

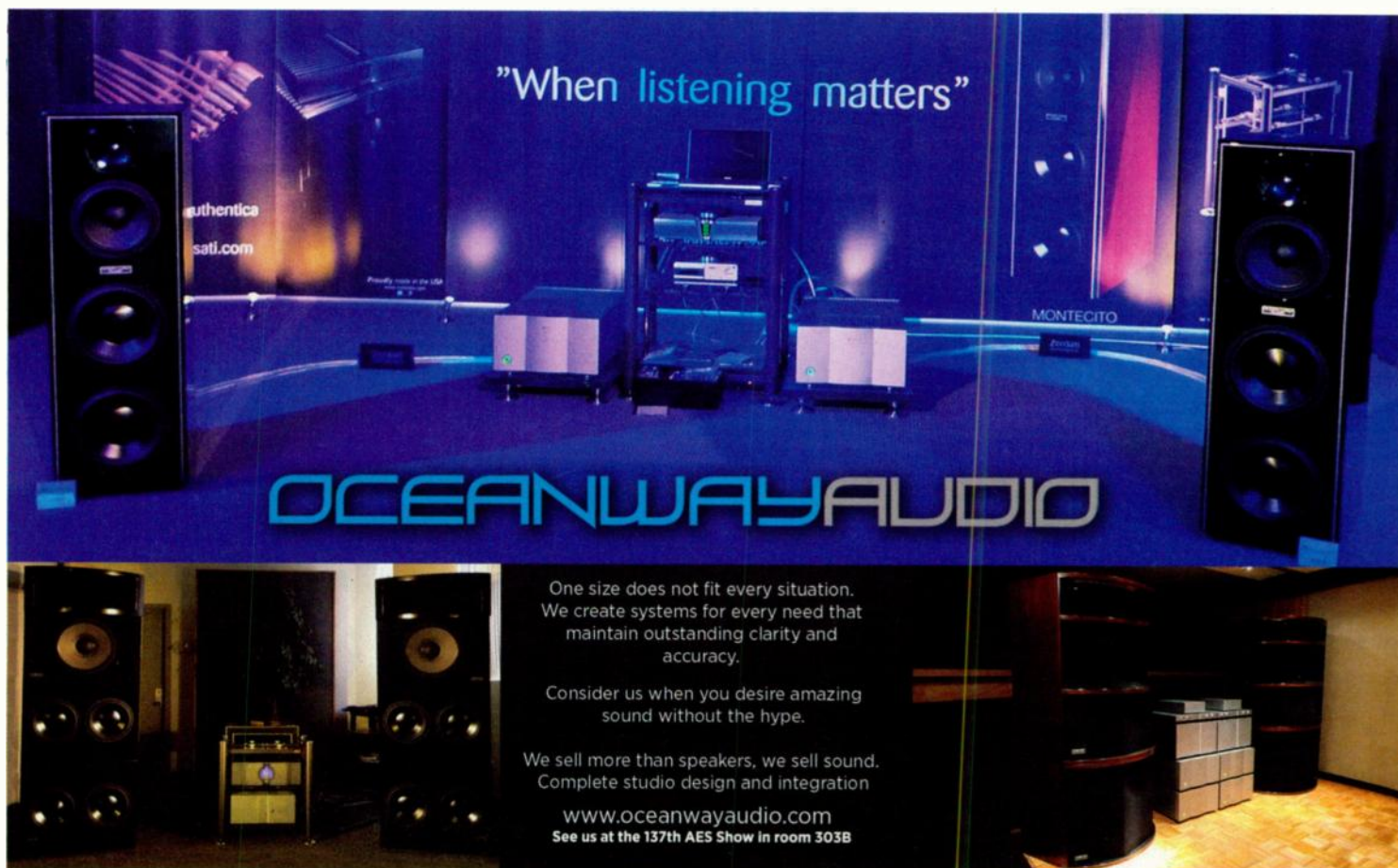
Setting the Top Rewards: Always include

multiple high-level rewards. Some fans really do donate at these levels; you need to ask. Also, offering high-priced rewards makes the moderate-level rewards—\$10, \$25, \$50—seem more affordable. Personalization options are most appropriate for those who pledge the largest amounts. For example, you can offer backstage access, or a day with the band, house concert, or party. Think big, but don't over-commit yourself to something you can't do. Believe it or not, someone might fund your \$10,000 or \$25,000 reward...it does happen!

Before locking in your rewards, research other successful crowdfunding campaigns to find out what worked for others. And don't limit yourself to referencing musicians—ideas can come from any type of crowdfunding campaign. Also, sometimes giving clever names to each reward level can get people to commit.

By following these crowdfunding reward tips (and avoiding the common mistakes), you'll increase the odds of pulling in higher pledge amounts and achieving your project goals. ■

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



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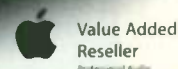
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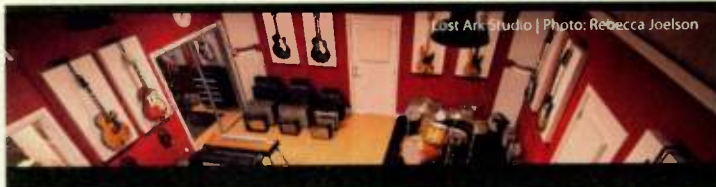


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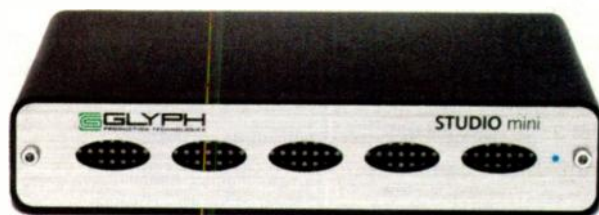
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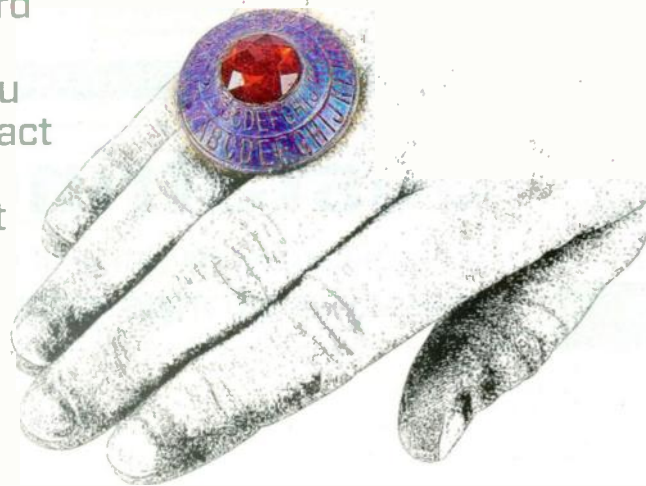
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Five Artist Contract Lines Explained

Whoco-hooo! You got a record contract! And to celebrate, *Electronic Musician* offers you five translations of key contract lines—thanks to having, uh, “borrowed” a lawyer’s secret decoder ring.

BY CRAIG ANDERTON



1

“Subsequent to completion of the Recording, Company may assign its existing rights and obligations hereunder without the consent of Artist.” Well, didn’t you always *want* your music featured in a laxative commercial? Or a KKK recruitment video? Or the music bed behind the cable access TV spot for Honest Frankie’s Quality Used Yugo dealership in Ho-Ho-Kus, NJ? Exciting exposure opportunities await you when a record company president is *highly motivated* to pay off his gambling debts! *Especially* in New Jersey.

2

“In perpetuity and throughout the entire universe.” A bunch of lawyers were drunk one night. “How about ‘throughout the world?’” “Nah, let’s do ‘throughout the solar system.’” [much laughter] “The *galaxy!*” [hearty guffaws] “The ENTIRE EFFING UNIVERSE!” The lawyers all dissolved in gales of laughter and wrote “universe” into a contract as a lark—and the term stuck. (Although to be fair, some believe lawyers are spawned from the evil ice planet Zardox, so “universe” might actually be relevant.)

3

“Right of inspection of books with prior written notice of no less than seven (7) days.” Even accountants who move more slowly than Jabba the Hut can sub the funny money books for the real ones in less than seven days. And if you *do* inspect the books, expect to be locked in a small cubicle with a man who keeps referring to himself as “Thee Avenger,” has a really big teardrop tattoo, and plays absent-mindedly with a knife he calls “my Precious.” Yessiree—you’re “livin’ the dream!”

4

“The recitals contained at the beginning of this agreement are incorporated herein by this reference.” No one has *any* idea what this means. No one ever has. No one ever will. In a brilliant move—given that lawyers bill by the hour—this line is inserted specifically so lawyers can argue about it for hours and hours. And hours. Even days and weeks, if needed. *Ka-ching!*

5

“Covenant of Good Faith and Fair Dealing: Company and Artist agree to perform their obligations under this Agreement, in every respect and at all times, in good faith.” Although contracts are allegedly nonfiction documents, a hallowed legal tradition is that every contract include at least one line that’s totally bogus. This replaces the clause used in older contracts, which was “Company and artist shall slay dragons, turn lead into gold, and cast magikal spells in the company of elves and fairies.” Spoiler alert: That didn’t happen either.

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