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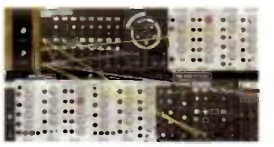

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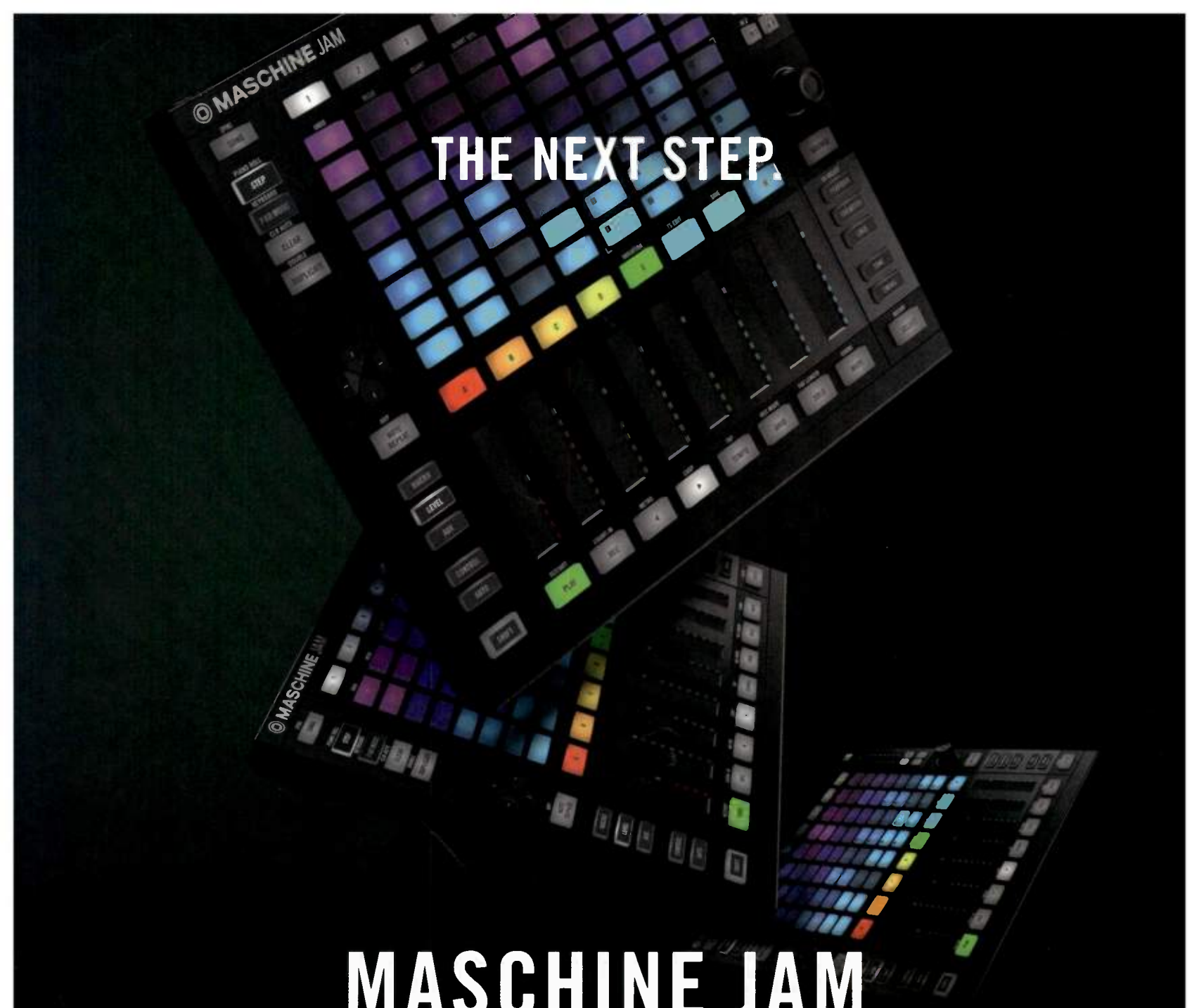

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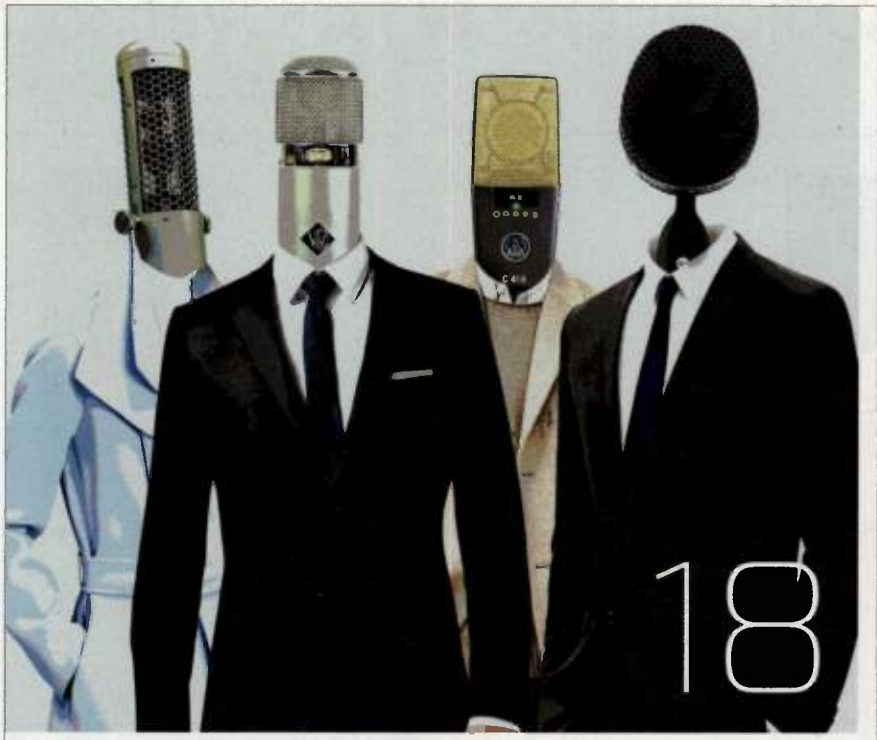

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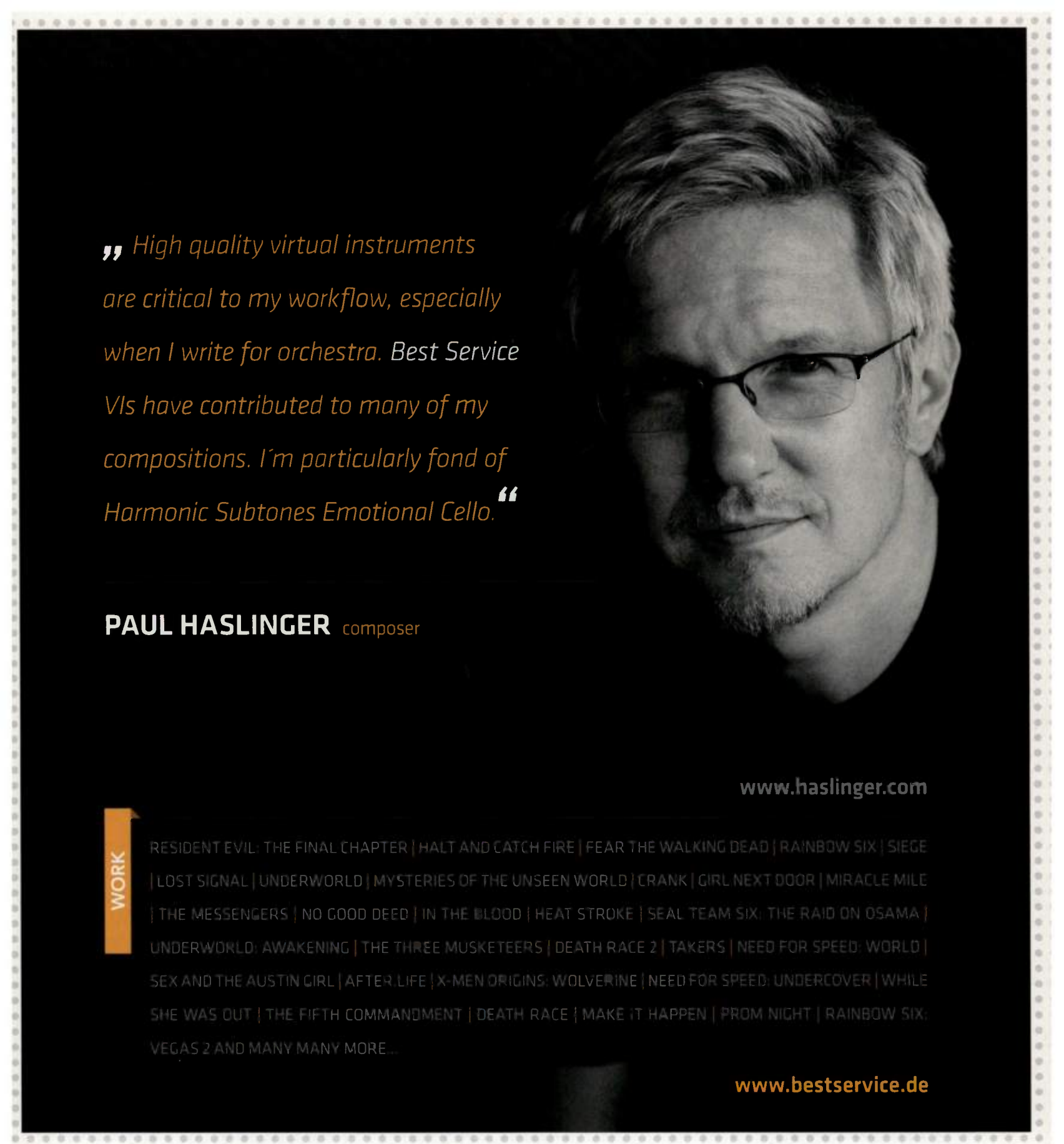
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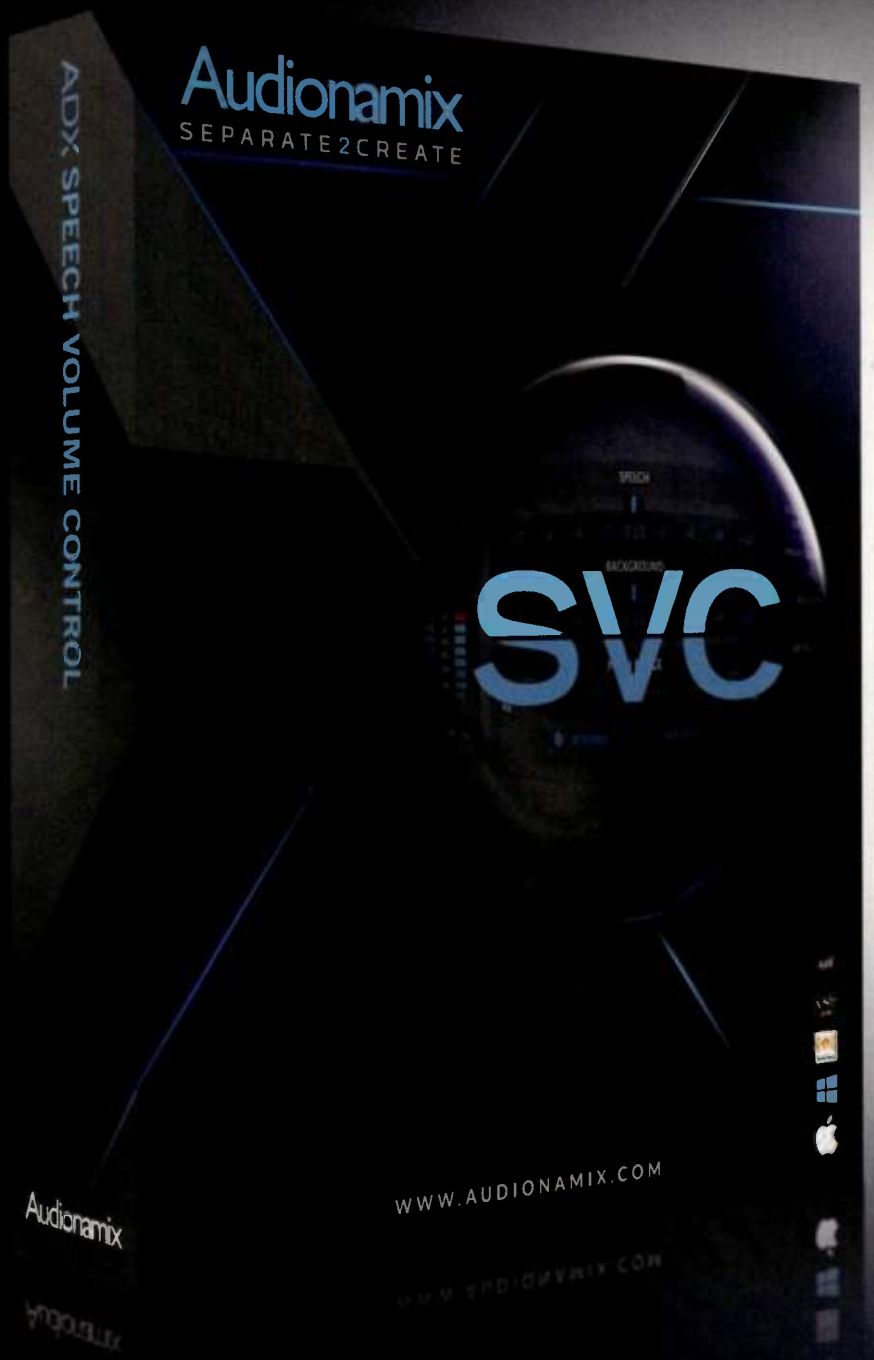

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insight

The Story of Recording

FOR MOST music lovers, the craft of recording is shrouded in mystery; it's a dark art of sorts that happens behind studio doors. And it's rare that a music documentary focuses on the people and technology behind the recording.

The *Soundbreaking* series, premiering on PBS this month, is the last project produced by Sir George Martin, who believed that the impact of recorded music on the modern world was one of the great untold stories of the 20th century.

The series chronicles the evolution of recording from the advent of multitrack and Martin's groundbreaking work with The Beatles, through sampling and the rise of hip-hop, to the ways new formats have defined the listening experience.

Soundbreaking celebrates those who changed the way music sounds, and the ways technology and creativity have influenced each other. The stories behind iconic songs are shared by more than 150 top artists, producers, and tech innovators, including Sir Paul McCartney, Questlove, Debbie Harry, Ruck Rubin, Mark Ronson, Brian Eno, and St. Vincent. (Check out my interview with director/producer Jeff Dupre, on page 66.)

In a time when music has become somewhat devalued, it's inspiring to experience work that recognizes music as an integral part of our culture, and illuminates the power of recording not only to document music but also to transform it.

SARAH JONES
EDITOR
sjones@musicplayer.com

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WEB HIGHLIGHTS

This month on emusician.com

Melodyne Drum Tips: Audio Examples

Plus...
JBL: A Technology Timeline
The DIY Advisor: Song Release Checklist

...and lots more!

Roland #909 Day

24-hour "online festival" showcases 30 new products, artist performances

ON SEPTEMBER 9, as we were going to press, Roland hosted the product launch of the decade with its 24-hour #909Day event, which celebrated 33 years of the TR-909 by debuting 30 new products in eight cities around the world, featuring performances from dozens of artists including Echosmith, She Wants Revenge, Tal Wilkenfeld, and DJ Pierre.

Roland's new DJ tools and electronic instruments include the System-8 plug-out synth, and Roland Boutique ultra-compact re-creations of the iconic TR-909 drum machine, the TB-303 Bass Synth, and the VP-330 Vocoder Plus. We're particularly excited about Roland's first DJ controller, the DJ-808, launched in partnership with Serato. Watch for our in-depth reviews in coming months; in the meantime, for our full event recap and a first look at flagship new gear, visit emusician.com/909Day.

JBL LSR28Ps sit console-top, with JBL acoustic lenses visible in custom soffit-mounted mains, at Cherokee Studios in the early 2000s.

JBL's first employees, assembling products.

JBL at 70

Seven Decades of Speaker Innovation

BY SARAH JONES

NOT MANY companies can claim 70 years of success in the audio industry. The company we know as JBL was founded in 1946; but its history dates back even further, to when a 25-year-old engineer named James B Lansing founded the Lansing Manufacturing Company in Los Angeles in 1927—a time when the film industry was starting its transition to sound—to build dedicated theater speaker systems. (That same year, Al Jolson's *The Jazz Singer* premiered, introducing cinema sound to the moviegoing masses.)

In its first two decades, JBL focused on theater, and then home, speaker systems; the company was acquired by Harman in 1969. At the same time, the recording studio industry was experiencing unprecedented growth; JBL entered the studio market in the 1960s with its 4320 monitors; in 1970s the compact 4310 series became reference standards.

In later decades, JBL became a leader in materials innovations: It was the first company to use Alnico magnets and first to introduce titanium in high-frequency diaphragms. And it debuted the first pro audio neodymium magnet compression driver and woofer. Breakthroughs like these earned JBL Scientific and Technical Awards from the Motion Picture Academy in 2002 and a Technical Grammy in 2005.

In 2009, JBL launched the LSR Series, which brought pro performance features like Image Control Waveguide technology to an affordable price point, with models retailing for less than $200; in 2012, the company launched the flagship M2 Master Reference Monitor, which incorporates the best of JBL's technologies in one product. (There are seven patents in its transducer alone.)

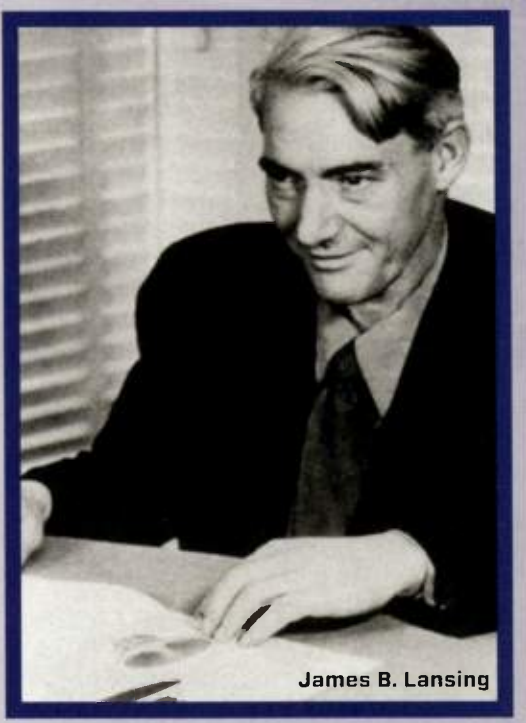
I sat down with Mark Gander, director of JBL technology, to find out where the company is focusing its energies moving forward.

What's been the biggest contributor to JBL's longevity in the pro audio industry?

Making innovative loudspeaker products that fulfill specific customer needs: The standard set by James B. Lansing was to push the envelope, to create the highest-performing products that delivered the finest sonic performance. The transducer components, the "engines" that drive the loudspeaker system, can be mated to different horn waveguides and other electroacoustic devices, and put into many different system configurations. The resulting systems can be specifically configured to provide the tools for each individual market customer type and application.

What kind of developments can we expect to see coming down the line for the studio market, as far as both component/materials design and overall product direction?

Some of the most exciting current sonic frontiers are in the area of immersive environments, from the commercial theater object-based systems like Dolby Atmos, DTS:X, and Auro-3D, to augmented reality and virtual reality. New JBL studio monitor solutions take flagship concepts like the Image Control Waveguide, the D2 dual-diaphragm compression driver, and Differential Drive dual-voice-coil-and-magnetic-gap woofers found in our flagship M2 studio monitor, and make them available in small, affordable monitors like the LSR305 and LSR308, and in complete systems for authoring for immersive environments like our 7 Series integrated monitoring systems.



James B. Lansing

As a maker of products that serve every step of the process, from creation to the listening experience, JBL has been not just a technical influence, but also a cultural influence. How is the company adapting to the evolving ways that sound is being distributed?

JBL has a number of unique advantages: We are one of the few loudspeaker companies that designs and manufactures our own transducer components as well as integrates them into complete loudspeaker systems and audio solutions. And we make those systems not only for many different professional applications, we are also leaders in consumer systems as well as in automotive systems. And as part of Harman, we can draw on Crown amplifiers, dbx and Lexicon signal processing, AKG microphones, and many other product specialists and disciplines in order to create complete, integrated solutions to advance the experience of great sound.

BY BARBARA SCHULTZ

>> The Allah-Las with Kyle Mullarky

THE MEMBERS of So Cal's Allah-Las share an affinity for '60s punk, and vintage British pop and rock 'n' roll. "But we always are into the slow, moody ballad on the record in the midst of all these fast garage-punk songs," says lead guitarist Pedrum Siadatian.

The band found a kindred spirit in musician/engineer/producer Kyle Mullarky, who owns and operates The Pump House Studios in Topanga Canyon. The Allah-Las spent the better part of a year there, capturing demos for the band's new album, *Calico Review*, as well as tracks for a couple of film projects.

Calico Review

Kyle Mullarky at work in Valentine Recording Studios

The Pump House is equipped with Pro Tools and three Tascam tape machines: MSR16, 388, and 38. During the demo process, Mullarky says, the group experimented not only with songs and arrangements, but also with sonics on the recording side, before nailing down the album tracks in Valentine Studios (L.A.), a historic two-studio facility with an unusual story:

"It was started around 1945 by Jim Valentine; he mostly recorded jazz and big bands," explains Siadatian. "But once rock 'n' roll got big, he lost interest in recording and became more interested in restoring these very niche automobiles called Nash Metropolitans. He built a shop next door and started using the studio to store spare parts."

After being closed for 30-plus years, the studios–including vintage tape machines, microphones, and 1960s UA 610 and MCA 416 consoles–were restored by Valentine's grandchildren, who intended to put everything up for sale. However, the studio market being what it is, a sale didn't happen and Valentine's heirs re-opened for business instead, with help from producer Nic Jodoin.

For a band with retro-leanings like the Allah-Las, Valentine's historic studios offered a rare opportunity: "We tracked live in Studio A, which has the same basic specs as Studio A at Capitol: same type of giant echo chambers; we had a C37 miking that," says Mullarky. "And we'd have Pedrum in a side room with his amp, bass on the other side of the room with baffles, and maybe an acoustic guitar in a little booth that we created with panels—kind old Abbey Road-style."

Mullarky captured the sessions to the studio's MCI JH114 and Stephens 811C tape machines. Siadatian's guitar was miked with an Electro-Voice 666 blended with an RCA 44. On drums, Mullarky placed an AKG B12VR on kick, a Sony C37A for sidefill, and an EV RE50 overhead. "That's like a modern-day radio mic," Mullarky says. "It had a nice punch to it, and it rose up to the mix really well because it had such a different sound from the other mics.

"On bass, we had an EV RE20 paired with a [Placid Audio] Copperphone, and that was also a cool blend. Since we were tracking everything to 16-track, we had to blend a lot to make it work. Every pair of mics where we doubled up on an amp or an instrument were blended."

All of the Allah-Las sing, and their vocals were overdubbed in Studio B, via the the UA 610, a Cinema 7080 graphic EQ, UA 175 compressor, and finally the Stephens tape machine.

"It was a great experience, being able almost to go back in time," Mullarky says. "There's no computers in the studio. It's like that technology is not even there. It feels like the real recording experience that you always wished you could have. And I think it brought out more from everybody. Everyone felt like they had to step it up and get it right."

NEW GEAR

2

4

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3

1

LAUTEN AUDIO
LA-220/LA-120
Condenser microphones
$349, $249 street

HIGHLIGHTS Designed for vocals, the LA-220 is a large-diaphragm, cardioid condenser mic with a 1" diaphragm, JFET amplifier, transformer-balanced output, lowcut (120Hz) and highcut (12kHz) filters, and shockmount • The LA-120 provides a pair of condenser mics with interchangeable capsules (cardioid and omni included), lowcut (50 and 150Hz) and highcut (10 and 15kHz) filters, JFET amplifiers, transformer-balanced output, mic clips, and wooden box

TARGET MARKET Recording engineers

ANALYSIS High-quality mics priced for the personal studio.

lautenaudio.com

2

ALTERNATE MODE
DITI 2.0
Drum trigger interface
$499

HIGHLIGHTS The Drum Intelligent Trigger Interface (DITI) 2.0 works with Alternate Mode's FSR pads and supports piezo triggers, membrane switch pads, and electronic cymbals, among other devices • accepts 24 trigger inputs • premapped sounds • 32 notes and gate control per pad • built-in MIDI equalizer and mixer • velocity can be mapped to CCs, Pitch Bend, and note shift • patch programmer • remote editing

TARGET MARKET Drummers, producers, engineers

ANALYSIS A sophisticated MIDI percussion interface that supports a wide range of input devices.

alternatemode.com

3

SPITFIRE AUDIO
NORTH 7 VINTAGE KEYS
Virtual instrument
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HIGHLIGHTS Sample-based virtual keyboard for Native Instruments' Kontakt Player, offering Fender Rhodes 73 MkI, Rhodes Piano Bass, Hohner Clavinet, and Wurlizer EP200A from Britain's North Seven Studios • uses Spitfire's eDNA sound warping engine • motorized effects • virtual DI, mic, and amp choices • 100-plus presets • needs 16.4 GB of disk space • education discount available

TARGET MARKET Producers, keyboardists, songwriters

ANALYSIS A collection of classic electro-mechanical keyboards, including the rarely sampled Piano Bass.

spitfireaudio.com

4

NATIVE INSTRUMENTS
KOMPLETE 11
Software instrument/effects suite
$199, $599, $1,199

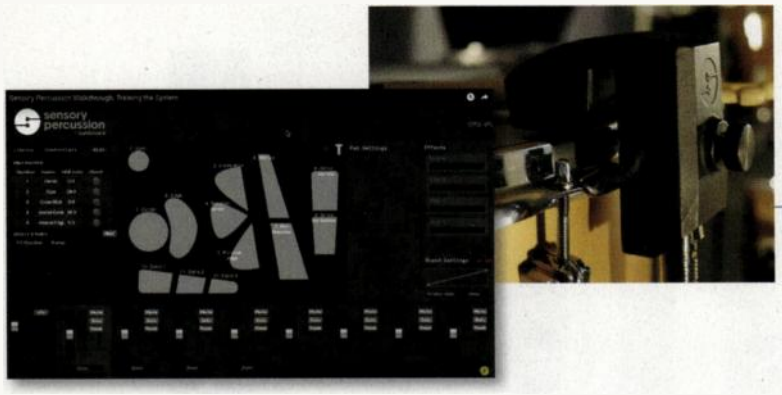
HIGHLIGHTS Introduces new low-cost bundle, Komplete 11 Select • new Form synth • Komplete 11 includes Form and 6 other new instruments • Komplete 11 Ultimate adds Form, Flesh, Symphony Essentials (woodwind, brass, and string libraries), and other instruments, such as Una Corda, Reaktor 6, and Reaktor Blocks • Komplete 11 and Komplete 11 Ultimate delivered on a hard drive

TARGET MARKET Producers, composers, musicians

ANALYSIS With three price levels and many new instruments, this must-have software suite is even harder to resist.

native-instruments.de

All prices are MSRP except as noted



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WAVES

WAVES TUNE

Real-time pitch correction plug-in

$199

HIGHLIGHTS Automatic, low-latency vocal tuning for studio and stage (via MultiRack SoundGrid) • formant correction with control over the percentage of change • real-time and programmable MIDI control • selectable scale, vocal range (from Bass to Soprano), and tuning standard • parameters for controlling vibrato, correction speed, note transition, and tuning offset/tolerance (in both Cents and Time increments)

TARGET MARKET Vocalists, producers, studio, and concert mix engineers

ANALYSIS A low-cost way to add automatic tuning capabilities to your DAW or live-sound rig.

waves.com

6

SUNHOUSE

SENSORY PERCUSSION

Drum transducers

$699

HIGHLIGHTS Phantom-powered, multi-sensor transducers with XLR outputs designed to plug into any audio interface • software analyzes the incoming signal and determines the location and type of strike: It can sense different parts of the head, rim shots, and cross-sticking, and volume level of strike • the software supports 4 sensors • tough nylon housing for the transducers

TARGET MARKET Drummers, producers

ANALYSIS A sophisticated system for mapping 10 sound regions to each drum, with the ability to blend between them.

sunhou.se

7

TASCAM

MINISTUDIO PERSONAL US-32 AND CREATOR US-42

USB audio interfaces for podcasting

$129, $179 street

HIGHLIGHTS Supports 24-bit, 96kHz audio with Mac/Win/iOS • USB 2.0 • USB bus-powered • audio-file (WAV or mp3) trigger pads; 3 sounds included • vocal effects • illuminated On Air button • software provides EQ, compressor, reverb • US-32 has built-in mic, phantom-powered XLR/TRS combo jack, stereo minijack input • US-42 adds second mic input, RCA line outputs with level control, DAW-interface mode

TARGET MARKET Podcasters, AV production

ANALYSIS A well thought-out set of audio media tools for personal studios.

tascam.com

8

TOWNSEND LABS

SPHERE L22

Microphone modeling system

$1,799

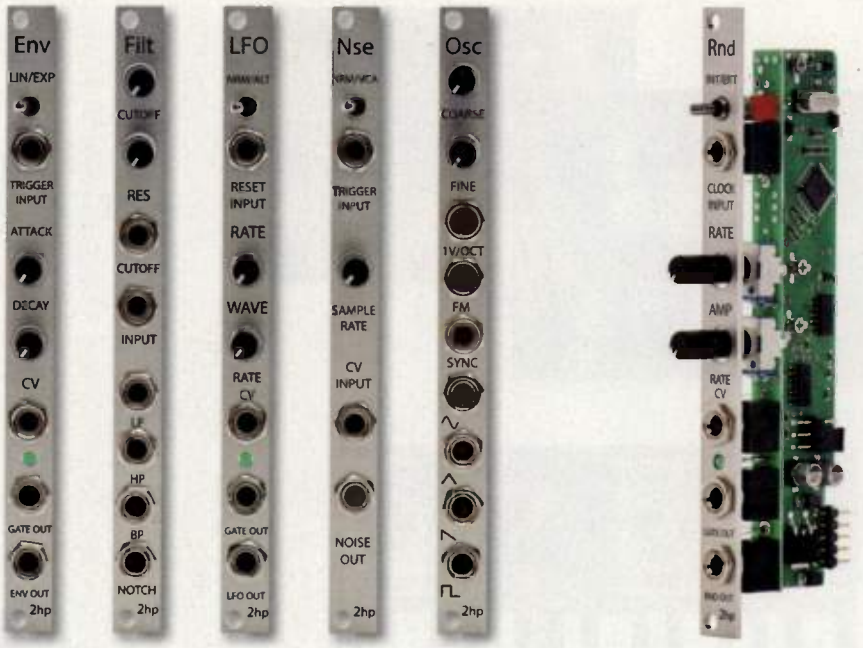
HIGHLIGHTS A high-resolution, dual-channel, large-diaphragm condenser mic that works in conjunction with a DSP plug-in to physically model a variety of popular, vintage large-diaphragm condenser mics and polar patterns • works while tracking and in post-production • supports AAX Native, AU, VST, and Universal Audio UAD-2 • Off-Axis Correction tool for mitigating bleed and room coloration • supports stereo recording

TARGET MARKET Recording engineers

ANALYSIS An interesting combination of technologies we look forward to hearing more about.

townsendlabs.com

Skiff-friendly and with narrow panels, 2hp's six new modules are an affordable way to fill out the features (and fill in the gaps) of your Eurorack system.



2HP

Small-Format Modules

MIND THE GAP WITH THESE SLIM EURORACK COMPONENTS

BY GINO ROBAIR

HP—short for *horizontal pitch*—is the standard measurement unit of panel width in a Eurorack system. One HP equals 0.2" (5.08 mm), and a standard 19"-wide studio rack typically offers 84HP of panel space.

When assembling a modular system, it's not uncommon to end up with a small gap in a row of panels due to the variety of products available. Doepfer and others offer blank panels to fill these gaps—from 1 to 42 HP—and DIYers often wire up a passive mult to fill the empty space. A 2HP panel is about as narrow as you can go and still have usable 3.5mm jacks.

The appropriately named 2hp (twohp.com) goes a step further by offering a line of gap-filling modules that provide basic synth functions. Priced individually at $150, the first six (with character-reduced names to fit the narrow panels) include an analog oscillator (OSC), an analog filter (FILT), a digital LFO, an envelope generator (ENV), a digital noise generator (NSE), and a random voltage/gate generator (RND). I tested OSC, FILT, and LFO, mounting them close together in my case: The panel layouts are well thought out, with the switches and thin knobs positioned above the jacks and kept reasonably away from patch cables. Nonetheless, it can be a challenge to turn these knobs in a busy patch when other feature-rich modules are mounted nearby.

OSC has Coarse and Fine controls; separate outputs for sine, upward saw (despite the front panel marking), triangle, and square waves; and CV inputs for 1V/oct, FM, and hard sync. This analog oscillator has a robust sound, overall, and its wide frequency range—from LFO-range 2.7Hz to 20kHz—is especially useful to have.

The digitally derived Morphing LFO offers two sets of four unipolar waveforms, with the Wave knob interpolating between each group of four. In NRM mode you morph between sine, triangle, downward ramp, and square; ALT mode goes from a phase-modulated sine, through a stepped triangle, upward ramp wave, and a more extreme phase-modulated wave that resembles a moustache. The module also includes a Gate output.

At slower rates, the LFO's wave shapes are stepped rather than smooth, which I was surprised by at first, but found to be handy for creating sequence-like modulation when controlling the rate with a CV or using the Reset input. You'll also hear stepping while slowly turning the Wave knob when the LFO rate is slow. At faster LFO speeds, the wave shapes, and the interpolation between them, sounds smoother.

FILT is an exceptional sounding resonant, analog filter that provides individual highpass, lowpass, bandpass, and notch outputs, as well as inputs for audio and frequency cutoff and controls for cutoff and resonance. Crank up the resonance with no audio input, and the filter immediately sings; here's another sine oscillator with CV tracking in your system. And FILT can get squawky and gritty with an audio input and the resonance on fully, especially with some modulation added.

One can easily imagine having a case full of such narrow yet powerful modules, though, with a power cable required for each, you'd quickly use up power-bus connectors before filling the rack. (It would be feasible only if, like Circuit Abbey's thin line, you could connect adjacent modules together behind the panel and use a single power cable for the group.)

But while other manufacturers offer much simpler modules at this width, 2hp is the only one packing so much power into each panel, while getting a rich sound that belies the diminutive size. ■

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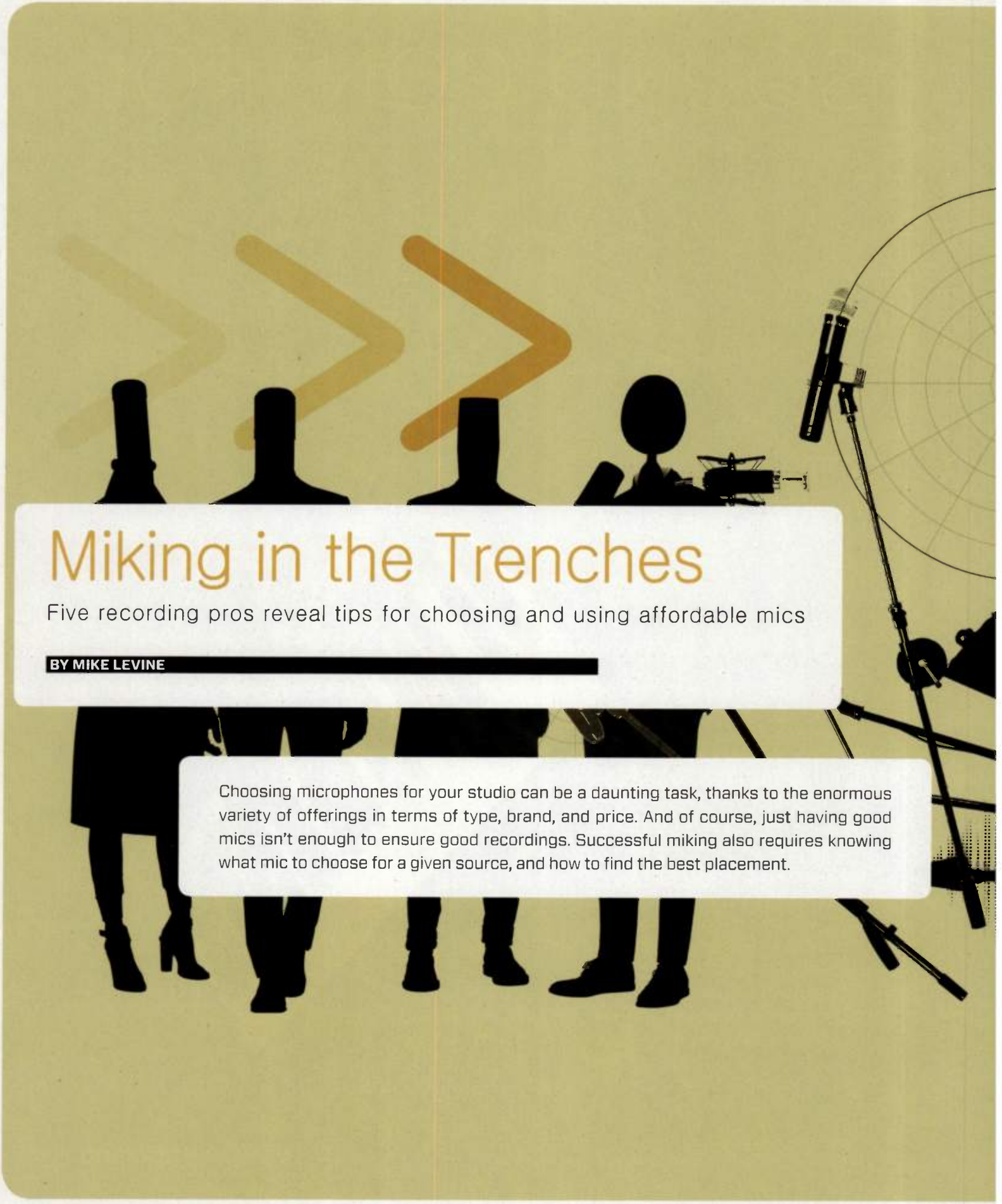


Miking in the Trenches

Five recording pros reveal tips for choosing and using affordable mics

BY MIKE LEVINE

Choosing microphones for your studio can be a daunting task, thanks to the enormous variety of offerings in terms of type, brand, and price. And of course, just having good mics isn't enough to ensure good recordings. Successful miking also requires knowing what mic to choose for a given source, and how to find the best placement.

Given how broad the subject is, and the fact that so much has already been written about it, we thought we might get some new perspective by picking the brains of a number of working professionals—both engineers and recording musicians—to find out what their "go-to" mics are, and to learn some of their miking techniques and tricks.

TOM BRENNECK

A former guitarist for the Dap-Kings, Brenneck has become a top producer of old-style funk and soul music. He's produced multiple albums by the singer Charles Bradley, the Menahan Street Band, and the Budos Band. A long-time Brooklyn resident, he works at his studio, The Diamond Mine, in the Queens, N.Y., neighborhood of Long Island City.

Brenneck takes a "less is more" approach when it comes to miking. Interestingly, his retro-sounding productions get their sound, in part, through the almost exclusive use of dynamic and ribbon mics, rather than condensers. "We use a lot of Electro-Voice RE15s and RE16s," he says. "We also have an Electro-Voice 636. If we were cutting a large rhythm section, we got to this point where we would use the ribbons on the drums, use the same ribbon to overdub the horns, and everything else that's live, just mike it up with similar-sounding dynamic mics.

"When I first started making records, all I had was a Shure 565—an older version of the SM57. I made two records using only that microphone: Charles Bradley's first record, *No Time for Dreaming*, and Menahan Street Band's first record, *Make the Road by Walking*. I had literally bought these microphones really cheap on tour, and went home and made those records on an 8-track in my apartment. And then I mixed them at Daptone [Studios]. People like Mark Ronson would ask me, 'Man, how did you get those drum sounds?' I was like, 'Well... [Laughs] one mic and a half-inch 8-track.' With the limited gear that we had, we couldn't do anything fancy. So it was really about capturing a great performance."

So where did Brenneck place that single drum mic? "We'd move it all around. But the spot that we loved is—if the drummer is facing you—about a foot in front of the kick drum, and a foot off the ground. In between the kick drum and the hi-hat, kind of underneath the snare drum.

"You get a really cool kick drum sound, but you get a very specific snare drum there. And then everything else bleeds. The hi-hat bleeds, your high tom toms are loud, your floor tom is quiet, the ride cymbal is quiet and the hi-hat's really quiet. It was a great spot for doing funk and soul music, where the kick and the snare are the most important things."

These days he uses three mics on the drums, which, most people would still think of as a pretty minimalist setup. "We usually have an RCA 77DX or an Altec 639 pretty far overhead," he says. "About three feet or so above the kit, kind of going for a Motown type of sound. And then a kick and a snare mic. We have a small ribbon mic that we put on the kick. It's an Altec, like the little brother to the 639B, the 671B. We call it the "Mini Bird Cage." We don't put it right in front of the kick, but we'll put it in that spot off to the side of the kick where you might get a little from the bottom of the snare drum and an indirect kick drum sound. Then also an overhead, and a mic pretty much on the snare drum—on top, to blend in, kind of facing away from the hi-hat, just facing the snare, and trying to only get the crack from the snare. And the cymbals and tom toms are kind of in focus because of the overhead, and we have control over the kick and snare."

According to Brenneck, the most unusual miking technique he ever used featured the drummer with a mic wrapped around his neck and hanging down on his chest. "Not wrapped around like a noose," he points out, "but just the cable hanging around his neck. That was before we could afford mic stands. It would be pointing down, right at the snare drum. There were records that we made like that."

EV RE16 EV 635A Shure 565

ELI CREWS

A longtime engineer in the Bay Area, Crews moved to Brooklyn four years ago to help launch a studio called Figure 8 Recording. "It's owned by Shahzad Ismaily," Crews says. "He's been an active studio musician in NYC for the last 20 years. Some of the people he's worked with include Laurie Anderson and Mark Ribot and Yoko Ono. So we kind of hit

the ground running. We've been open for about two years and have had a lot of awesome sessions.

Crews says his two favorite mics "on the planet" are the Josephson C700 and the vintage Brauner VM1KHE (Klaus Heyne Edition). "I just think those mics are the best mics I've ever used, in terms of what you put it in front of them, you get."

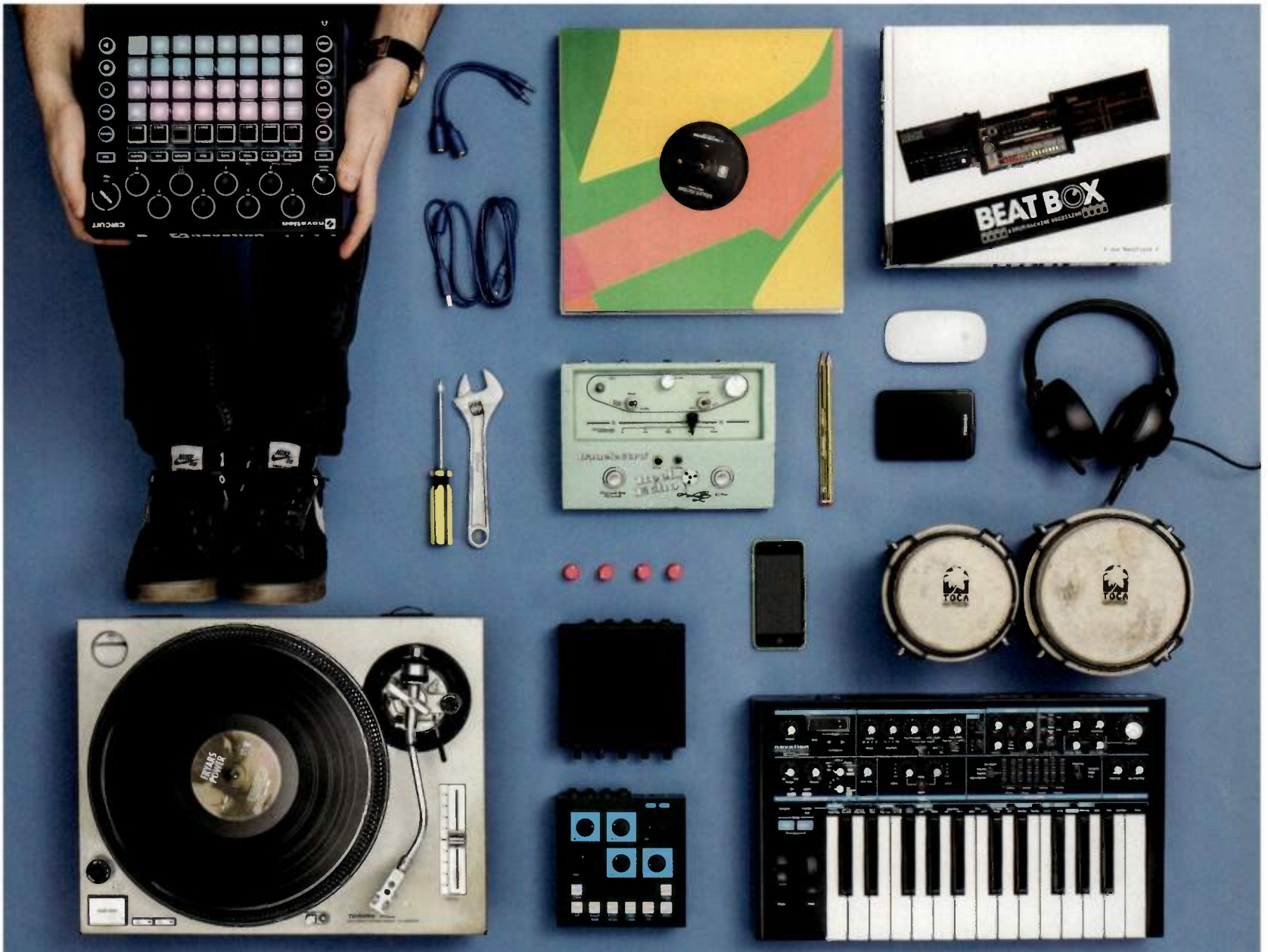
Describing the VM-1, which is a large-diaphragm tube condenser, Crews is effusive: "Particularly for vocals, the VM-1 is like no other mic I've ever used when it comes to really capturing detail."

As for the C700, he says Figure 8 Recording owns the "S" model, which is a three-capsule stereo mic capable of both MS and Blumlein miking. "If I'm going for something where I really want to achieve the highest fidelity," Crews says, "those are my two best bets, those are the mics I'd buy on an unlimited budget."

But Crews also uses much less pricey mics in his day-to-day studio miking chores. "I came up on budget and cheap microphones, so I would say, if I'm recording drums, I'm hardly using any expensive mics. The most expensive mics I use on drums are the overheads, which are Coles, or I use these really nice B&K omni mics. For everything else on the kit, I use budget dynamics. I would say, a lot of them are pretty standard. I really love the Electro-Voice 635A; it's a dynamic omni mic. I'll stick one in the middle of the kit or sometimes kind of as a combination kick-beater/under-snare mic, and put it through a pretty heavy compressor or I have this Bogen P.A. preamp that distorts it pretty well. You can just cram it and it's the best drum distortion I've ever heard."

Crews revealed a trick he uses for getting a great room sound for drums and other sources: Use an old handheld cassette recorder as a microphone. "They're really cheap on eBay. I don't even know the model of the one I have; it's an old Sony. The important parts it has are an onboard microphone and a built-in limiter. You don't put a cassette in it. You trick it into thinking there's a cassette in it. You stick a Q-Tip or something in the little tab, and then put it in record, and you come out the headphone jack."

He places the recorder about six inches in front



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of the kick, toward the right edge of the drum when facing the kit. "It's just peeking around the kick towards the snare. The kick is kind of blocking the snare. And that way it's giving me the most amount of kick, otherwise, it's too snare heavy. But it gives you very attack-heavy kick that sounds really different than if you just stick a mic inside the kick drum. Something about the attack makes it sound more natural."

He even uses the cassette recorder as a secondary vocal mic: "I tape the recorder on a really hi-fi mic, and just use it as a second signal. I try to match them up distance-wise to minimize the phasing. That can be really cool. It's like what people are going for with a Copperphone or any of these low-fidelity microphones, but it has a sound that's really special."

MALAY

Malay (aka James Ryan Ho) is an L.A.-based producer who works with artists like Frank Ocean, Sam Smith, and Zayn Malik. When he's not producing in high-end facilities like Larrabee Studios in L.A. and Germano Studios in New York, he brings a well-equipped traveling rig to the home studios of artists he's recording. It includes some very nice mics including a Wunder Audio CM7 (a remake of a Neumann U47 tube condenser), a Neumann M 149, and a pair of Coles 4038 ribbon mics, for which he finds multiple applications.

One such application is using the 4038s in a spaced-pair stereo configuration as room mics on a vocalist. The feed from the 4038s is used in the mix in conjunction with the main vocal mic—often the CM7. He started using this technique when recording a vocal trio called Third Story.

"I would cut them live, which is kind of old school," he says, "now that everybody layers everything."

He's found that the room mics give him more sonic options. "It's a darker sound, so it doesn't really tend to get in the way. But it's kind of nice. Maybe during a chorus section, when you're trying to have a little elevation. You can manipulate so much stuff with plug-ins and stuff now, but for me, it's still a fun challenge to find ways to *not* use the plug-ins."

He liked the sound of the 4038 room mics so much that now he's using the technique when recording single vocalists, such as Sam Smith. But Malay finds many other uses for his 4038s. "I'll use them on piano because they have such a warm, dark tone. In the digital world, a lot of engineers and producers are chasing how to make stuff as warm as possible, so it's fun to have dirtier sources, kind of more distorted, grimy-sounding things. I've used the Coles in a few instances on a lead vocal. Not on purpose, but it was there, and somebody sang a demo take, and they [subsequently] couldn't beat the vibe of the take, so they just kept it. But I love the way the 4038s sound, and they always seem to be the go-to in any scenario."

When asked what was the most unusual miking technique he ever used, Malay relayed a story that should be filed under the heading, "Don't Do This at Home." He was working with Zayn, who had previously been in the boy band One Direction, but was now doing a solo album. Malay was looking to demonstrate to Zayn how the studio can be a creative place, a place to experiment. "Where he came from, he'd walk into the studio and they'd hand him songs already written, and he had no way to really be creative."

So what happened? "It started like a joke, al-

Placid Copperphone

Josephson C700 **Brauner VM1KHE** **Coles 4038**

Wunder CM7

Neumann M149

most like a dare. I put a condom over the CM7 and put it in water and recorded the sound of swirling it around in water. It was kind of like an ambient thing. I ended up taking that sound and copying it and pitching it and panning it," he said. "It kind of like blew his mind. It blew my mind, too. I've never done anything like that. I was thinking, 'I hope this condom doesn't leak.'"

ADAM MUÑOZ

A staff engineer at San Francisco's legendary Fantasy Studios for the past eight years, Adam Muñoz has had a lot of miking experience. "We do it all here, with the three rooms going," he says. "Every day it's a different session. The three of us here can

MONICA JANE FRISELL

handle everything from string quartets to big bands. I just had a 30-piece big band in Studio D the other week. We do game audio, voiceover stuff—pretty much everything that can come in the door, we do."

Muñoz likes to use more than one mic on a source. "For example, I'm doing a trumpet overdub tonight and I'm putting up a ribbon and a condenser. A lot of times I'll either choose one, or I'll blend the two. So I am multi-miking things a lot, with a bright mic and dark mic, whether that's a ribbon or an 87 [Neumann U87] or a condenser with a 57 [Shure SM57]. I find that I do that a lot. With guitar amps, I'm almost always using a 57 or a Shure SM7 with a Royer 121 or a U87 or something dark—just both capsules side by side, and blending between the two."

He told us a story of how he accidentally discovered a way to use an AKG-414 as a "character" drum mic. "I was tracking at the old Bearsville Studios in New York, and I just had a 414 [AKG C414 EB] in onmi as a talkback mic, and I can't remember why I wanted to print it, but I think I had to print it in order to be able to hear something. When we got to mixing, it became the drum sound for that record. The presence that the mic had, and what it did for the drum track for that record was like, 'Oh wow!' And to this day, I still do that."

These days he uses a C414 B-ULS. "That's my go-to talk back mic, and I usually print it, because every once and a while it's like, 'Wow, that really helps the drum track.' And it really has a presence to it, because they're really bright."

And placement? "When I'm just using it as a talkback, then obviously, I'm putting it closer to whomever I need to hear. But when I know I'm going to cheat and use it as a room mic; then I do try put it closer to the kit. It's just about 10 feet away or so—directly in front, just in omni. And a lot of times with that, I'll either really compress it, or even, and again this is just for drums, put a little crunch in it."

VANESSA PARR

Vanessa Parr has established herself as an engineer in the competitive L.A. music scene, working for 11 years as a staff engineer at The Village Recorder, as a freelance engineer, and now as a staff engineer at UCLA's brand-new studio facility. Describing her work as being generally "pop-rock oriented," she's engineered for such production heavyweights as T Bone Burnett and Larry Klein, working on projects for Lucinda Williams, John Mayer, and Elton John, among many others.

"I generally always go to any studio with a couple of AEA R84 ribbon mics," she says. "In the world of microphones they're not too expensive. The passive ones are under $1,000. They're so multifunctional. I use them on pianos a lot. I use them on acoustic guitars."

Why a ribbon, rather than a condenser on an acoustic guitar? "The world that I kind of trained up in was very roots-based, so we didn't use a lot of condensers, we used a lot of ribbons and dynamics."

She feels the R84's tone is more pleasing on an acoustic. "I really hate when I hear a guitar track and all I hear is that clanky attack. What's nice about the ribbon is that you get a lot more of that twangy, mid-range fullness. So if I use the R84 on acoustic, I usually put it through a Distressor, or something like that."

She says she generally starts with the R84 about 6 inches back from the 12th fret of the acoustic. "A lot of times what I'll do is, I'll get a decent level on it and then I'll put the guitar player's headphones on and have him play, while I move the mic around until I find the place where I like it best. I'll angle the mic more toward the neck it it's too boomy, or I'll angle it away from the body of the guitar a little bit

AKG C414

Shure SM57

Neumann U87

Shure SM7

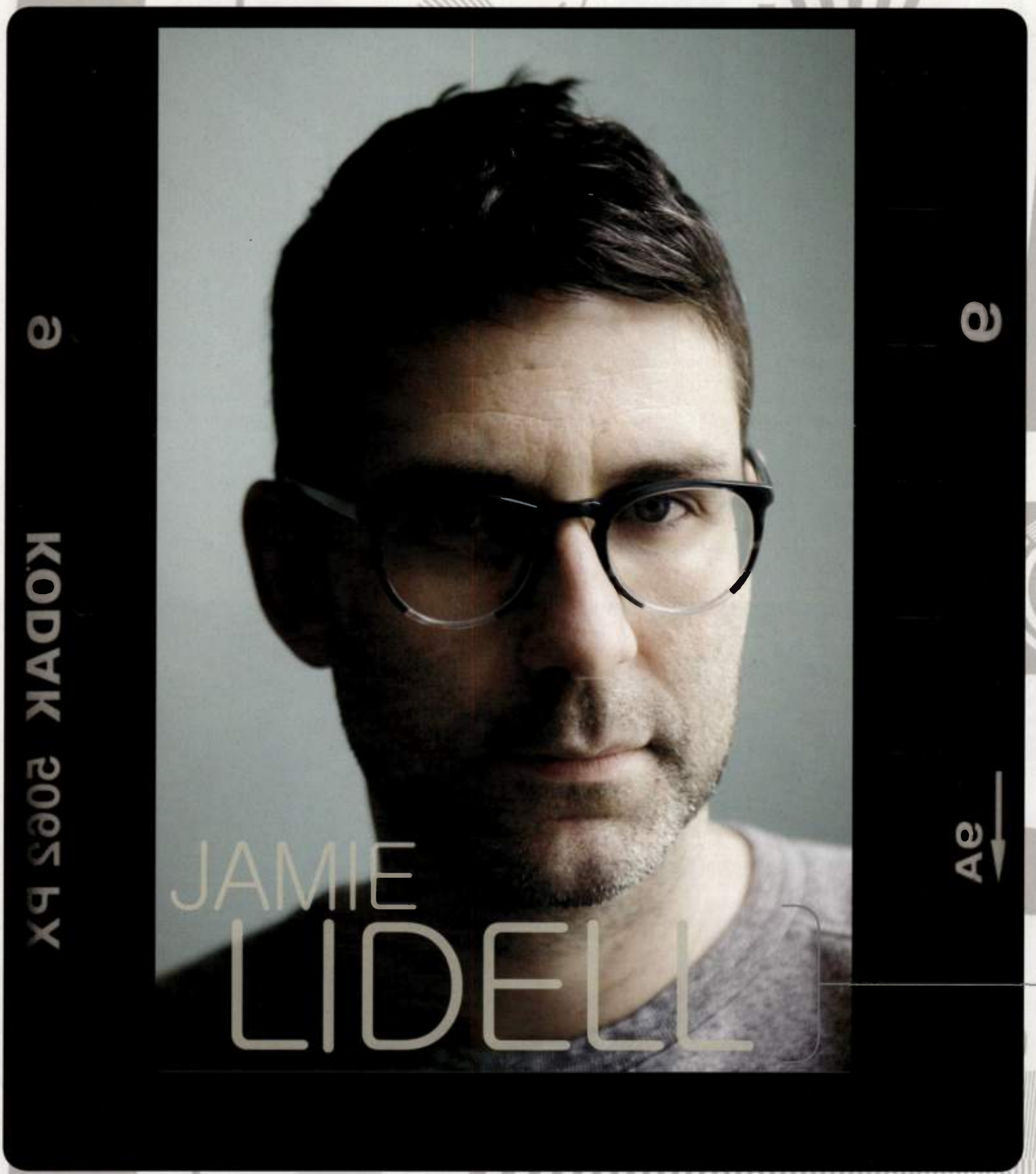
AEA R84

more, or sometimes just pull it back a little."

She likes her R84s on piano, too. "On super bright pianos, they're great," she says and then offers this tip: "There's a nifty little device floating around now, the Cloud Lifter by a company called Cloud Microphones. It's an impedance matcher, and you can throw it on the back end of a ribbon mic—ribbon mics traditionally have a pretty high impedance, sometimes you have to really crank the gain up, especially with old ribbons. And it really helps with that. It takes phantom power, so it will turn any ribbon microphone into a mic that requires phantom, but for $150 you get a lot more clean gain."

Another go-to mic for Parr is the Shure SM7. "For $350, or whatever it costs, it's such a great multifunctional mic. A lot of times I'll use one in conjunction with whatever fancy tube mic we're using on the singer, especially if it's a loud singer. Because a lot of times, if a singer is really loud, you lose all the body of the vocal when you're mixing. And it gets really aggressive. So having an SM7 with that is a nice complement." ■

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


JAMIE
LIDELL

Soul singer uses new technology, new approach, new label in Nashville, on *Building a Beginning*

BY TONY WARE

Jamie Lidell cemented a style of hiccuping, honeyed cybersoul in 2005 with his sophomore album *Multiply*. Using a combination of custom DSP patches and outboard gear he'd been amassing since the late '90s, the Brighton, England, expatriate brought together elements of tech-house, IDM, neo-soul, and electro while adrift in Berlin, Germany. Now, 10 years and multiple cities later, Lidell continues to refine his funk-soul sensibilities, often playing it by ear.

"Everyone in interviews is intent on me revealing a strong strategy, a game plan for creating a record," says Lidell, speaking by phone from Amsterdam. "But I tend to feel my way through and when I feel there is a collection emerging I contemplate an album."

Lidell's latest assembly of songs is *Building a Beginning*, released on his own Jajulin Records. Coming nearly four years after 2013's *Jamie Lidell*, this sixth LP is the first album that Lidell has not released on Warp Records, which was his label for 15 years. "It's no disrespect to Warp; it's not that I didn't get along with people there," he says. "It's just me feeling that to be excited about the process again I needed that new blood, you know."

For a period, Lidell's attention had been focused more on collaborations and co-writing, garnering him a Grammy nomination for his production/songwriting on Lianne La Havas's "Green & Gold" and a Juno nomination for his work on A-Trak's "We All Fall Down." However, Lidell also wrote dozens of songs for his own projects during this prolific period, 14 of which comprise *Building a Beginning*.

Inspired by personal relationships building up to the birth of his first child, Julian, *Building a Beginning* is an organically evolved album that eventually gelled through judicious post-production creativity. Philosophically, *Building a Beginning* celebrates the powerful, transformative instrument that is the human voice and the joyful exuberance derived from bringing together great players. Lyrics, cowritten by Lidell's wife, Lindsey Rome, bring achingly honest emotions to the earthy arrangements.

Whereas Jamie Lidell was a more machine-shaded robofunk album—the work of one man and enough gear to fill a recently acquired 3,000-square foot house in Nashville, Tenn., where Lidell and family still live—*Building a Beginning* is saturated with the heritage of soul music; the sounds are informed in some ways by Stevie Wonder and David Bowie's output of the early to mid '70s, and by the blown out, yet dynamically rich and intact aesthetic of Alabama Shakes' *Sound & Color*.

Lidell began building the new album with clarity of purpose. "I've debated over the years whether you really need to be able

to play a great song on a guitar, feel the essence coming through regardless of arrangement, and I flip-flopped on that argument," he says. "But for this one I felt the answer is, 'Yes,' and that makes it more of a 'Nashville record' perhaps. I think all of these songs sound pretty great on keyboard or guitar played pretty simply.

"For a song like 'Julian,' I sketched that entire track out vocally, singing the drums and the bass and all the parts as placeholders, and it was an easy one to rework in the studio, as I wasn't committed to any parts. Other tracks, like 'Building a Beginning,' I started with a purely MIDI backing track, using sample drums that sounded really good, a guide acoustic guitar, and a lead vocal I tracked; I liked the super simple feel."

Reaching into his growing mic cabinet, Lidell most often set up a 1961 Neumann U47 for his sketches, as well as final vocals, running it through a vintage Universal Audio 2100 channel strip to capture treble extension and resonance in the upper mids, and give the take a "gluey" consistency.

At one point Lidell had installed a 56-channel SSL 4000 E/G console in his house, but the realization that he was using it less for dynamics and automation and more as a summing box—with a hefty electricity bill and maintenance costs in the bargain— prompted him to sell it. He says the sale of the board might have cost his productions a bit of positive-frequency "funk," but there are workflow benefits to his current setup: His control room is now centered around a Crane Song Avocet for monitoring and summing, along with a Speck LiLo mixer and Rupert Neve Satellite [5059] summing mixer. Tracking often runs through a variety of outboard EQ and EFX, into Lynx Aurora converters and UAD Apollo interface as the front end for a MacBook Pro running Pro Tools 12 HD.

"When living in New York I longed to have the space to make noise, so living in Nashville has given my wife and son and myself a sanctuary to create art," says Lidell. "I had room to experiment with a console, to set up a really nice dry room downstairs. What I've learned is a lot of the Nashville I have come to appreciate lives behind closed doors in relative secrecy. There is a house studio vibe here for the oddballs like myself, and I've ultimately contributed another, though a more electronic one."

Compared to the more retrofuturistic *Jamie Lidell, Building a Beginning* has fewer '80s-vintage rhythm machines and synths. There is a little Oberheim OB-Xa, and a splash of Yamaha DX, used for sound effects, but a vast majority of the monophonic synthesized tones originate from the SoundMangler, a custom machine built by Sam Suwier in Belgium.

"It's like the circuitry of the [Korg] MS-20 and MS-50, miniaturized into a personalized modular. I set up a convoluted system where I hooked it up to the Oberheim SEM and the SoundMangler's sine oscillator. So, for 'I Live to Make You Smile' and 'Building a Beginning' I wanted a super flutey sound, so I devised this crazy way of playing where the SoundMangler would go into the SEM's audio input and I'd use the MIDI to CV converter on the SEM, so I could play my keyboard that goes into the SEM to trigger the SoundMangler, making the audio come out the SoundMangler through the SEM. So, I could play in real time both the filters on the SEM and original synth to create a crazy array of tones."

One tonal inspiration for these acoustic emulations was definitely Stevie Wonder's TONTO ("The Original New Timbral Orchestra") synthesizer from his classic album run that includes *Talking Book*, *Innervisions* and *Songs in the Key of Life*. In addition, Lidell played some Clavinet on the album, processing it through a Roland RE-201 Space Echo analog delay to create the dreamier tones on "Julian." And the use of vintage Mu-Tron effects pedals was yet another nod to the way Stevie Wonder coaxed the warmest, most human qualities from electronically sourced sounds.

"It constantly amazes me how potent something like a Space Echo can be when you exploit it, multitrack it," says Lidell. "You can't underestimate these boxes; they can vastly alter something. There is something to be said for boxes that have stood the test of time and are a little bit crappy,

cranky, not accurate in the best ways."

Beyond employing some classically analog paths to harmonic richness in the studio, another dimension of *Building a Beginning* that makes it more of a 'Nashville record' is the presence of numerous session players, who infuse the tracks with energy and sonic cohesiveness.

Some parts on the album were tracked in Lidell's studio, using his U47s, as well as Neumann KM56 multipattern condensers and RCA 44 ribbons, among other microphones, while musical and acoustical character came from outside his home facility. Featured musicians include bassist Pino Palladino (D'Angelo, Elton John, Peter Gabriel); multi-instrumentalist and Wilco member Pat Sansone; as well as backing vocalists Kudisan Kai, Traci Brown Bailey, and Tiffany Smith (Chaka Khan).

For a song such as "Building a Beginning," Lidell sent his demo to his longtime L.A.-based collaborator Mocky, who arranged to have additional parts including keyboard, Chamberlin, electric bass, Wurlitzer, and flute added before he sent it back for Lidell to chop up and "Melodyne."

On "How Did I Live Before Your Love" and "Precious Years," Lidell worked with producer Justin Stanley, who set up sessions in L.A. for back-up vocals and strings, as well as other practical aspects, though Lidell admits did things like varispeed entire sessions from 140 to 160 bpm, altering them wildly. Lidell then looked for ways to combat what he called the "Frankensteinian nature of the process."

"A major part of the album was filled in at Sound Emporium when I tracked songs with DaRu Jones [drummer for Jack White] and this amazing engineer called Eddie Spear, who was an assistant for Vance Powell for a long time," says Lidell. "We actually bypassed all of Sound Emporium's gear and Eddie brought in a small Auditronics side car with Spectra Sonics 610 Complimiters. It was a very simple console with very basic audio path that gave a super open, full tone with great transient clarity. The sound is very punchy and direct. Great for drums.

"I felt having an aspect to the rhythm section tracked in the same environment helped give cohesion. With parts of my sketches being quite bitty and sessions spanning almost four years of work, it was good to give it an almost fake live sound by throwing amazing drums on the tracks."

In addition to the drums, a regime of re-amping helped Lidell and mix engineer Jake Aron to achieve a similarly wide RMS to Shawn Everett's work on Alabama Shakes' sophomore album. "That album has such a rich sound that evoked the distant past, but with modern twists," says Aron. "It sounds classic but not old, and it's so loud but so dynamic and clean that when noise comes out, it shines as an amazing artistic choice.

"Every once in awhile when we were mixing we would check 'Building a Beginning' against a FabFilter Pro-L limiter to make sure we could get the RMS where we wanted it so it would 'compete' with something like Sound & Color, then we'd pull it off."

The thickening agent found to be most effective by the tag team of Lidell and Aron was unlocked through washing parts in a signal chain pumped from the controls down into Lidell's concrete basement, through a Silvertone 1483 amplifier, and into a Josephson e22s cardioid condenser microphone.

"We'd send signals down through a Calrec PQ 1061 preamplifier and equalizer into the Silvertone and Josephson, then typically into a Quad Eight MM310 or a Chandler Limited TG channel strip," says Lidell. "And we'd boost crazy, nasty frequencies, like 900 Hz into the Silvertone to create versions of the guitars and drums that were blown up.

"We were committing in Pro Tools to all these endless treatments through the amp, and also printing to my Nagra [1/4-inch mono] tape machine rather than doing everything in the box. The tape we used on the Nagra was super-old '60s Scotch that was crazy looking and black and it had a certain sound to it, and we hammered that reel again and again and again because it kept giving us this dimension.

"We'd sometimes put a mic, sometimes a Braunner VM1, down the hall leading to the dry room to get stereo ambiance and diffuse reverb," Lidell contin-

ues. "Got a lot of use out of the Retro Instruments Sta-Level [tube compressor], to get some creative blurs, and more than usual out of the UA 1176AE [limiting amplifier]. We used the [Publison] Infernal Machine—Cathedral B, a crazy old '80s reverb algorithm—as well as the Bricasti Design Model 7 [stereo reverb], either softly or violently. We tried to do a craft process on the mix that involved a lot of analog components and room captures. Though we did use digital gear, of course."

Reflecting on the re-amping chain, Aron agrees that the Nagra offered lush 70mm level bandwidth, and running things to tape before blending them back in let them "tweak bias and levels to get cool muffled things or really bright results you can scoop," he says. He highlights the importance of having the Calrec inline so that if there was a honk they liked or didn't they had inductor EQ to boost or trim.

"I became quite an [iZotope] RX master," adds Lidell when asked about compensating for undesired signal noise. "I love the creative aspects of being able to reduce old gear buzz, but also correct vocals naturally or push artifacts, when appropriate."

Aron also emphasizes the importance of using the Radial Engineering EXTC 500 series interface for getting line-level signals where they needed to be to feed the studio tools. On the digital side, Aron reached for the GoodHertz Vulf Compressor for its vibe and parallel capabilities, and the FabFilter plug-ins for transparent boosts and EQ. He also liked to use UAD Harrison 32C/SE channel EQ, Vertigo VSM-3 harmonic saturator, and the Valhalla suite, especially UberMod multilay delay (when not doing modulation and coloration on analog inserts). During mixdown (which didn't require much of the outboard summing equipment), Aron and Lidell would often sit together at an Avid Artist Mix and some Auratone Soundcubes and do rides.

"I like to start, if I'm in the box, by just doing volume blending, taking faders and mixing into an aux with something tapey like a Studer [A800 multichannel tape machine] plug-in or something offering mild compression or saturation, but that you could bypass without things being totally different. Just to get the feel right, play with some interesting by-products. In the case of this record, because it was tracked so well, that was literally all I needed along with a little bit of Thermionic Culture Vulture [valve distortion/enhancer] or SoundToys Decapitator [analog saturation plug-in] and Maag EQ4 for sub and top. So we'd do a stereo mix of what was already there and I just wanted to enhance what was making Jamie really excited.

"We started with the song—the arrangements and re-amping and everything we did to make the pieces push but stay tight—as the glue and only applied straight limits as they were needed. Often the sounds dictated themselves and the players were so idiosyncratic that we went with highlighting that."

Aron says the mix sessions were spread out across late February and March, but open-ended and stress-free. "Jamie will be happy with a mix and still want to dial a few things in and out to get it exactly where he might want through weird instances of compression or EQ or three Decapitators into each other. He'll just wonder what will happen if, say, he used the inverse image in RX to bring out this weird resonance in a vocal.

"He's great, because if you want to try something that seems totally insane, that is what will get him most excited. Anytime I would say I need to ride a vocal for 20 minutes he'd tell me to shut up, but if I said I wanted to re-amp a ballad and throw in through two flangers and reverse it and bit-crush it, he'd say take your time. It was experimenting the whole time."

"Who is to say that I won't eventually come out with a strict Matthew Herbert-style manifesto of a record full of virtual strategies now that I have my own label," says Lidell. "I am pretty free to put stuff out there, maybe not even albums, just real-time music—but I think that formulating songs until they feel they belong together will always be the way for me." ■

Rachael Yamagata

On *Tightrope Walker*, her fourth album, the singer-songwriter took control of the recording process, and proved she's not afraid to take risks in the studio.

BY KEN MICALLEF

"I have a house on 12 acres in Woodstock so I can make a lot of noise," Rachael Yamagata says from her log cabin crib deep in the upstate New York wilderness. "I had this vision of creating a studio in my house. So [engineer] Pete Hanlon and I spread all our equipment over the house from the music room to bathroom to kitchen to living room, even in the backyard. We had microphones hanging from the upstairs railing."

Yamagata's fourth album in 12 years, *Tightrope Walker* is the sound of rupture, beauty, and happy accidents. Like Screaming Jay Hawkins meeting Patsy Cline in a studio built by Sam Phillips and David Gold with Daniel Lanois producing, *Tightrope Walker* is all soul-fever dreams and bittersweet echoes, Yamagata's breathy, sensuous vocals leading rumbling drums and swampy guitars, ghostly keyboards, and sorcerer's tones. From the spooky title track to the three-drummer groove of "EZ Target," to the buzzing anthem "Over," to the languid midnight vision "Break Apart" and R&B infused Stax Records soul driver "Let Me Be Your Girl," Yamagata reinvents herself as soothsayer, dream-speaker, wanderer, and wilderness mystic.

Co-producing with long-time friend/sounding board John Alagia (Dave Matthews, John Mayer, David Gray), Yamagata turned her hermit woodland home into Moonlight Studios, surrounding herself with a cast that included guitarist Kevin Salem (Yo La Tengo, Dumptruck), bassist Owen Biddle (Mr. Barrington, The Roots), pianist Zach Djanikian (Amos Lee, Amy Helm), and drummers Ben Perowsky, Matt Chamberlain, Aaron Comess, Randy Cook, Victor Indrizzo, and Russell Simins. Violinist/cellist Oli Kraus (Sia) and guitarist Michael Chaves (John Mayer, Adam Cohen) also joined. Shawn Everett (Alabama Shakes) mixed.

Yamagata focused on 15 songs—editing, reworking, mangling. She learned Pro Tools and edited the three-drummer beast of "EZ Target" and the windswept "Over." She cut live vocals in her living room. She spent a day at Waterfront Studios experimenting with a 1973 Helios console to tape. Joined by Pete Hanlon, Yamagata worked at Applehead Recording in nearby Saugerties, New York. She flew in tracks from Village Recorder with Alagia at the controls. Embracing the unknown, she created the most atmospheric and revealing album of her career.

Tightrope Walker sounds out saxophones, mandolins, feedback, French spoken word, metallic ironing boards and ladder drums, massive angel harmonies and subtle/extreme loops. "As far as song direction," Yamagata explains, "I like to really follow the lyrics and the energy of the song image and see where it takes me. I looked for anything that conveyed the energy and intention of the song. One day I wanted something angular and edgy and metallic, and that became Ben Perowsky drumming on an ironing board, ladders, and metal chairs in 'Tightrope Walker' and 'EZ Target.' There was a great thunderstorm one day; the rain was hitting a stool outside, so I used my iPhone to record the rain and looped it for 'Rainsong.' I created drum loops purely by instinct. I kept tweaking until I found what I wanted.

"I wondered, 'how do I mesh my songs with sounds I haven't used before, but still mix organically?" she adds. "I didn't want to make a full-on electronic record but I did want to use elements new to my sound palette."

Most artists want a simpatico producer, someone to guide them into the frustrating, freeing world of creativity. Not Yamagata. John Alagia produced her first album, *Happenstance*, and they've been arguing ever since.

"Rachael and I always disagree over tempos," Alagia says while working at the Village Recorder. "I always want to bring them up considerably and she wants to pull them back; she wants the overall tone to be darker. That's who she is. But sometimes you have to be mindful to not play a song too slowly. Then I overcompensate and almost make it uncomfortable for her, so we meet halfway. We've always been that way. Tightening up arrangements is always important to me. Rachael and I work well together, though we drive each other crazy."

In 2014, Alagia caught Yamagata performing her then-new material at L.A.'s Troubadour. He immediately loved the songs. "Rachael had good arrangements," Alagia recalls, "but I thought the rhythm section could have more versatility. I also wanted to employ programming, which we did much to Rachael's chagrin. Rachael knows how she wants things to sound. I wanted to make [the album] somewhat competitive sonically. Shawn Everett's mixing brought it up a whole 'nother level."

Tracking the bulk of the album at her Moonlight Studios, Yamagata and Hanlon worked Pro Tools in-the-box, recording vocals, keyboards, guitar, bass, and drums in the living room with amplifiers isolated in various rooms. Experimentation was the rule, from effecting Yamagata's stash of old Casio keyboards and Kevin Salem's woozy guitar tones to multitracking Oli Kraus to create a string section in "I'm Going Back," to stacking drummer-atop-drummer for "EZ Target."

"If we wanted to have a barbeque at some point, we just did it," Yamagata says. "It was all so organic, I loved it. I don't have the budget for all the time I would want in a pro studio. This record was recorded mostly in the summer of 2014, then we toured. So this was recorded in various stages. I liked having the luxury of time and no ticking clock. That was very liberating."

Yamagata also took greater control of the recording process. Her newfound power is present in every track of *Tightrope Walker*. "This is the first record where I was in control of editing the songs," she recalls. "And the record was a lot less formal in terms of choosing sounds or even who played what instruments. Everyone switched. We did arrangements on-the-fly, and there are many instances of instinctual or spontaneous arranging and playing. That's what gives it this sense of newness because nothing was premeditated. We might have a texture in mind but we didn't limit ourselves, it was very communal. The whole experience was liberating because we didn't have to answer to anyone else in the creative process."

Hanlon salvaged 12 API 550B EQs and as many API 212L mic preamplifiers from an old desk; Yamagata's vocal chain included a UAD 6176. Prior to recording, Alagia and Hanlon performed shootouts with Vintech and Avedis Audio MA5 microphone preamplifiers, finally choosing the UAD. "It brought depth to her voice," Hanlon explains. "It captured the subtleties of her vocal in a pretty special way."

Yamagata's vocal chain went from a UAD 6176 to a Universal Audio 1176LN "Classic Limiting Amplifier" to an Empirical Labs' Distressor, "one compressor grabbing the peaks and some mild compression after that," explains Hanlon.

Three or four microphones were enlisted for vocal tracking, Yamagata and Hanlon settled on the Pearlman TM-1, a modern, budget-oriented microphone by old-school Neumann/Telefunken standards.

"Rachael loves the airiness the Pearlman captured in her vocal," Hanlon says. "It's like a U67 but it uses the AC701 tube. It's almost like a 67/U47 hybrid. Rachael has such an amazing voice, we tracked some live with the full band; there we used an SM7 in front of her and she still sounds amazing. She never settles and will sing a part a million times."

"The Pearlman is warm, but very clear," Yamagata

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concurs. "It revealed the breathiness of my voice but it wasn't too high-frequency-focused in that range. It felt like the best version of my voice. I love the U47, too. It's a very particular mic. We tried out some U47s this time but I liked the Pearlman better. It was wonderful for this record, but depending on which U47, those are also great, but too pricey for me."

As for the vocal-tracking process, "I have to love the sound I'm hearing in the headphones," Yamagata explains. "Vocals are all about feeling comfortable and loving the sound I'm hearing and being inspired by my own voice. It's definitely about the setting. Because it was my house there was no pressure to stop because of the budget. It was very organic in that way. I love doing that."

Yamagata has no standard practice to achieve her magical vocal sound. Though she prefers live takes, she enjoys comping, and with her fresh editing fingers, she's a confirmed risk-taker.

"My preference is always a live take but I comped a ton this time," she explains, "especially the background vocals, which are all me. My first record *Happenstance* was all to tape. On my second album *Elephants* [*...Teeth Sinking into Heart*], the song 'Duets' was recorded to tape. To this day I still think tape has a warmth, it's so powerful. So my artistic sense wants analog tape every time, but my other fascination is with comping. Sometimes I will do a particular thing with my voice that I love. Comping allows me to get in all those nooks and crannies. The trick is to make sure the vocals are still natural sounding and have an arc to them, not just be tricks of my voice. The emotion has to come through."

Alagia describes Yamagata's fascination with Pro Tools editing as "like a kid in a candy store."

"I do enjoy editing, such as the end of 'Over,' where I have a zillion background vocals," Yamagata confides. "I wanted to create a song-in-the-round effect. If you listen to the outtro where the vocals come in, for some lines the last word of a phrase fits the beginning word of the next phrase. That whole process was a big puzzle. I did a few versions to figure out how to highlight the right word at the right time, and not overwhelm the listener. That mix looked like a building block puzzle. I experimented a lot with muting particular phrases or edges of words."

Alagia used a handful of programming tools including NI Battery, Omnisphere, and Kontakt, while Hanlon listed several go-to pieces that effected the entire session. Everett reportedly leaned on Altiverb and cassette deck-as-distortion/reamping machine for *Tightrope Walker*'s spacious soundstage and eerie tones 'n' textures.

"For drums, it's all API mic pre's and the 550B EQs," Hanlon says. "A little compression on the snare. We EQed in lightly. The goal for me is to work, so I never use plug-ins. I take pride in my craft. If you move the mic it does some things that EQ can do but without having to rely on that EQ. But we did use SoundToys Echoboy all over, really. The sound of the drums is really the space; it's a big, open living room with high ceilings."

Hanlon recorded the entire band in the living room, with the piano moving around the house, amps isolated in closets or small rooms, minimal drum baffling, tons of leakage in the tracks, "not a sterile environment," he says. "But that leads to unique-sounding things."

In addition to upright piano, keyboards included Nord Lead, Moog Lil' Phatty, Mellotron, Casio SK1 and SA76, and Roland RS202, "a string emulator that sounds nothing like strings," laughs Hanlon. All synthesizers went direct.

Kevin Salem played his Fender Jazzmaster and 1960s Fender Telecaster guitars through Hanlon's 1962 Vox AC 30, and the guitarist's Fender Bassman and Fender Pro Junior amplifiers, recorded via Sennheiser 409 or Royer ribbon microphones "draped in front of the cabinet" to the API 550B straight to Pro Tools.

> "Comping allows me to get in all those nooks and crannies. The trick is to make sure the vocals are still natural sounding and have an arc to them, not just be tricks of my voice. The emotion has to come through."
>
> —RACHAEL YAMAGATA

For piano, "We changed microphone setting and placement often," Hanlon recalls. "One microphone was the Neumann SM2 stereo mic; we just opened the lid, and put it in where you normally would, then moved it around using our ears. We also used a pair of Neumann KM56s on one song."

Recording drums was a logistical nightmare. While the setups of the various Left Coast drummers and studios involved varied, Hanlon details the Woodstock approach. Bass drum involved a Sennheiser 602 into the API pre and API EQ. For snare drum, a Shure SM57 also went into the API pre and EQ, into the Empirical Labs Distressor. Gefell UM70s covered toms, and as overheads, a pair of Neumann KM56s or a mono Coles 4038 were used. Shure SM2 functioned as room microphone, placed ten feet away and eight feet high, with a plate reverb used on snare drum.

"We kept tracking drummers because we couldn't get the feel right for 'EZ Target,'" Yamagata explains. "Initially I comped the three drummers together. I loved elements of what each one was playing. John Alagia made it all work; all the drummers are being used in different parts of the song, even two drummers at once in some sections. There's also percussion in different places. We had cowbells and chains hitting a board which we ran through a bunch of reverb to get some of that metallic jangliness. It's really a hodgepodge."

Alagia on Rachel's editing approach: "We had all these drummers on 'EZ Target' and she started muting and editing the drums. It was awesome, bold and completely nuts, but I was into it. There's no such thing as a bad idea. When you make music you have to be wide open and never jump to exclusion, even if something is bat-shit crazy."

For home studio aficionados, *Tightrope Walker* proves what can be achieved at the edge of sanity, with bicoastal connections and simple determination.

"I like home studios; they're more unique," Alagia says. "It's important to put an artist in an environment where they're comfortable and inspired. Rachael loves being in those environments. I bought a bunch of my APIs and Vintech preamps and compressors and old Dynaudio monitors to Moonlight that Pete loves. We were very careful in how we tracked, which was enabled by Pete who knows very much what he is doing."

Perhaps more than anyone, the engineer must make it all sound easy, and not merely expect it to be "fixed in the mix." "Recording in a home environment is about dealing with limitations," Hanlon says. "We were recording at night in the summer with no air conditioning, windows open. If you listen closely you can hear crickets and frogs in the background. But you can't be afraid of the limitations like poor isolation, but embrace them. Sometimes we had to unplug the refrigerator for a take. It was too noisy. But all this weirdness can add a sense of charm."

Yamagata's new release is a career triumph. She did it her way, bringing to life the sound and songs that once only lived inside her head. But she's not content—there's more experimentation to come.

"I'm fascinated by this electronic world," Yamagata says. "I love in particular how my voice can have weight yet still be floaty sounding. I'm dying to do tracks where that is matched with a more electronic palette or synth sound as a full picture.

"I spoke with a psychic once; I love them," she adds. "She knew nothing about me. But she said, 'I'm picking a 1960s vibe from you. Have you ever watched the movie *Woodstock*? I'm seeing almost a Civil War, Mississippi atmosphere in your music. I'm hearing banjos and mandolins.' 'That's crazy,' I thought, so I went with it. There's something great about not having a plan 'cause then you're really free to follow your whim. If something tastes good—go with it." ■

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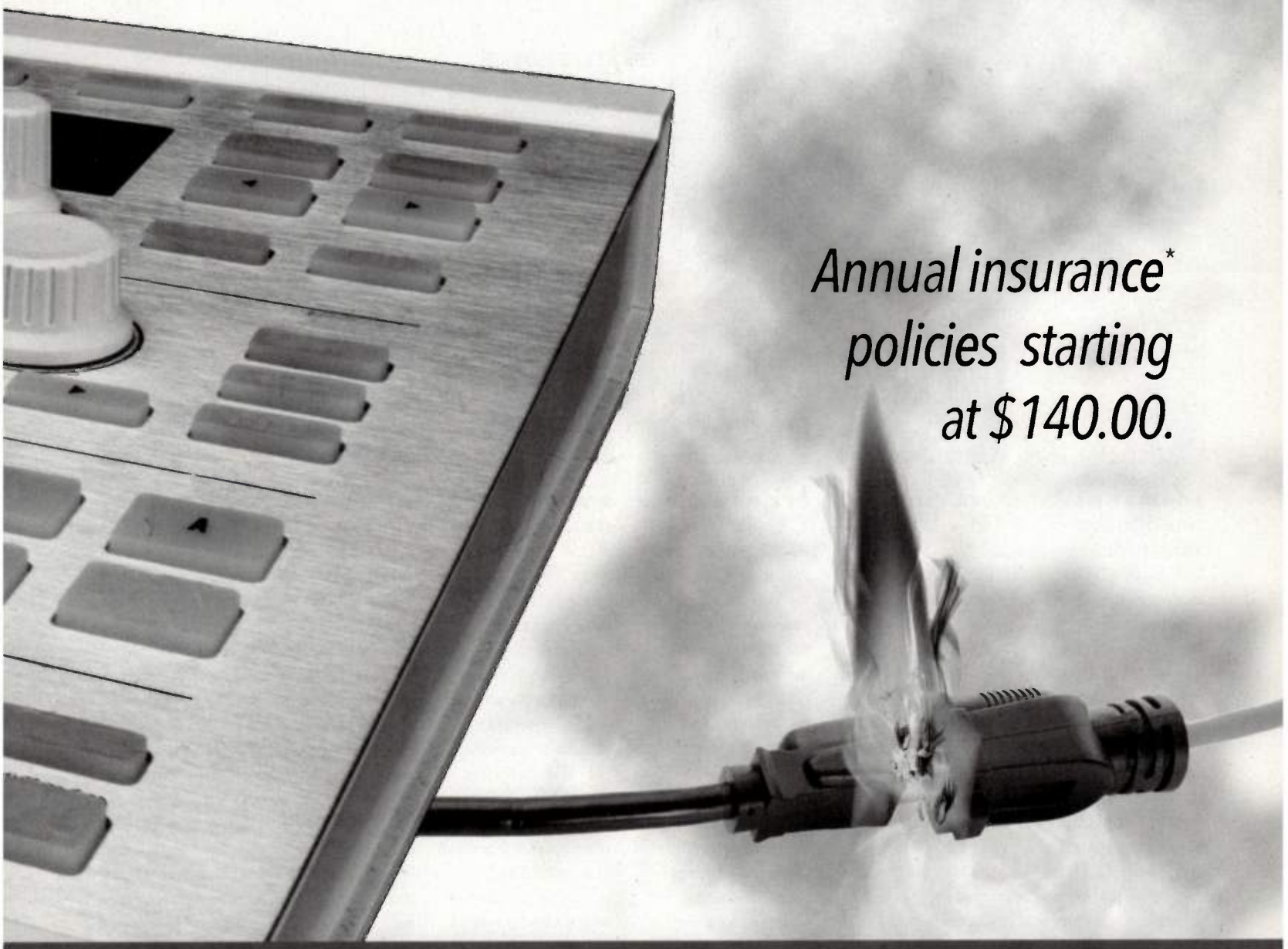

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CAROLINA EYCK WITH AMERICAN CONTEMPORARY MUSIC ENSEMBLE (ACME)

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BUTTERSCOTCH

Theremin charmer Carolina Eyck composes for her native instrument and string quartet; the resulting music sounds like an unruly schoolgirl toying with a band of steely-eyed schoolmarms. Moody and reeling, the strings rage a la Steve Reich, providing a thematic bed over which Eyck revs her spooky Harley engines ("Metsa Happa"), calls out like a lost whale (Oakunar Lynntuja), and whistles like humming sonar ("Dappa Solarjos"). More than anything, Eyck modernizes the Theremin, merging it within classical tradition like child's play.

KEN MICALLEF

AGAINST ME!

SHAPE SHIFT WITH ME

TOTAL TREBLE

One year after a live album, Against Me! roll the collective momentum into this 12-track follow-up to 2014's achingly personal *Transgender Dysphoria Blues*. Recorded by Marc Jacob Hudson, the band's longtime front-of-house engineer, *Shape Shift* is immediate without being sonically raw. Staunch drums, husky bass, and densely coiled power chords brace gnashing sociopolitical commentary and rousing shanties, but the dominant crux is, love and heartbreak can be rowdy, bruising, dizzying, brutal, and imperative.

TONY WARE

THEA FARHADIAN

TECTONIC SHIFTS

CREATIVE SOURCES

Real-time computer processing and improvisation are a tricky combination, but violinist Thea Farhadian handles both with exceptional skill and musicality. Serving up a suite of works that combine improv with compositional structures, Farhadian uses Max/MSP to extend her instrument's timbral and rhythmic palette. The results are an exciting mix of traditional bowed-string tones, extended techniques, layered clusters, glitchy chaos, and even the occasional folk-like fragment. Simultaneously challenging and beautiful, this record reveals more with repeated listenings.

GINO ROBAIR

DEX ROMWEBER

CARRBORO

BLOODSHOT

Dex Romweber fights the good musical fight year after year, making the coolest, toughest, most dark and trashy rock 'n' roll records around. On *Carrboro*, Romweber is at the crossroads of '50s rock and soul and Cramps-esque surf-punk. On a few songs, he fronts masters of distortion the New Romans; but many tracks are all Romweber—every hard-rocking instrument, every monster vocal part. One of the purest pleasures is a cover of *Crazy Heart* soundtrack song "I Don't Know." Fans of early rock 'n' roll and garage punk: *Carrboro* will make your month.

BARBARA SCHULTZ

BIRDSONG AT MORNING

A SLIGHT DEPARTURE

BLUE GENTIAN

Sweeping strings, gorgeous sonics, and soulful singing—Birdsong at Morning is the greatest act you've never heard of. Folkie/conjurer Alan Williams is this trio's driving force, his yearning vocals leading arrangements that recall Alan Parsons and Dan Fogelberg, recorded within a lush soundfield. "The Great Escape" recalls a muscular outtake from Prefab Sprout, "Midnight Vespers" a Yes-like choir madrigal, and "Pages," a hearth-ready acoustic finger-picker swooning with intimacy and grace.

KEN MICALLEF

THE ORB

COW / CHILL OUT, WORLD!

KOMPAKT

The Orb's Alex Paterson has a long history with psychedelic collage LPs, reaching back to his late-'80s contributions to the KLF's *Chill Out*. However, early ambient house's spartan, utopian comedown flow was best described as pastoral, whereas The Orb's latest field recordings, found sounds, and prepared sonics are even more spatial and sprawling. Paterson, with Orb partner Thomas Fehlmann, captures celestial apogees as easily as lazy rivers: diffuse and spectral but inevitably exhibiting blissful, heliotropic tendencies.

TONY WARE

MARGARET GLASPY

EMOTIONS AND MATH

ATO

Alt-rock singer/songwriter Margaret Glaspy's unusual phrasing has that same Brokaw-esque slurred "R" that Americana phenom Parker Millsap uses; natural or not, it's quite arresting. Glaspy also grabs listeners with an almost harsh, sometimes trashy bass-heavy sound—very cool in contrast to her pretty voice. There's intense beauty in these super-smart love (and hate) songs; Glaspy's developed an original garage-meets-avant-garde sound that seems artful but hits listeners where they live.

BARBARA SCHULTZ

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Fig. 1. Just about every other kind of analog synth has been modeled in software, but virtual modular synths are a rare species. Despite perfectly straight patch cords, Softube's Modular comes surprisingly close to the real thing.

SOFTUBE

Modular

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BY GEARY YELTON

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It's no secret that Eurorack synthesizers are very hot right now. Dozens of companies are springing up to make modules conforming to the Eurorack standard. Eurorack modules are generally smaller than modular synth components designed for other formats such as "5U" (Moog Unit and MOTM). They also tend to be (slightly) less expensive and more cutting edge.

Softube Modular—from a company known for making accurate emulations of rackmount studio processors and guitar amps—looks, functions, and sounds almost exactly like a massive Eurorack system. Softube began developing Modular in-house, collaborating with Eurorack originator Doepfer to reproduce that company's existing modules in software.

Modular comes standard with 30 virtual modules, and you can simultaneously use as many of each as you need. Six are replicas of real modules from Doepfer, and three optional modules are replicas of real modules from Intellijel. Because Modular is expandable and Softube plans to release more modules (some of them free), you'll be able to add new capabilities as they become available. For this review, I used all the included modules and all the Modular add-ons currently available: three Intellijel modules and Softube's virtual modular drum machine, Heartbeat.

Because Modular encompasses so many modules and functions, the user manual has a lot of ground to cover. Clicking on Modular's Open Manual button opens a PDF that covers dozens of Softube products. The sections pertaining to Modular could be more detailed, though, and you should download PDF manuals for the original modules whenever possible.

RACK 'EM HIGH

Modular's greatest advantage over hardware is that you can save, recall, and edit entire configurations of modules, connections, and settings. It comes with almost 200 factory patches encompassing many different combinations. Although the process of rearranging modules is unnecessarily awkward, Softube says it is working on improvements.

Opening Modular displays an onscreen Eurorack case containing four empty bays, one atop the other. Between the top two bays are two main outputs with a volume knob and level meters; three buttons for adding, deleting, moving, and editing modules; four pairs of assignable aux outputs; and four buttons for sending control voltages from the aux outputs to real Eurorack hardware via any audio interface that can handle DC output.

To create a patch, select whatever modules you want to use and connect them via virtual patch cords. With modular hardware, you never have enough patch cords, but software patch cords are unlimited. Connecting modules couldn't be more intuitive. Simply click on an output and drag-and-drop on an input. A thick colored line will appear, disappear when you move the cursor away from it, and reappear whenever the cursor is over any jack. You can connect an output to any number of inputs, but an input will accept a connection to only one output. To break a connection, click on the destination and drag away from it. Just remember there's no undo function.

In addition to the Modular instrument plug-in, you also get Modular FX, an audio processor plug-in that appears identical except for two input jacks.

Fig. 2. Modular comes standard with 6 Doepfer modules, 4 DAW and MIDI interfacing modules, an effects module, 3 mixers, 4 sequencers, 12 utility modules, and 20 performance modules. Intellijel and Heartbeat modules are optional.

It lets you use modules to process external audio, recorded tracks, or other instrument plug-ins. Although the manual doesn't explain how to use Modular FX, it didn't take long to figure out. I wished I could resize the rack, though, because I seldom used more than two or three modules for audio processing. Some of the 34 factory patches for Modular FX used more than a dozen modules, though.

A FISTFUL OF PATCH CORDS

The Doepfer A-110 oscillator, A-108 filter, A-132-3 dual VCA, A-140 ADSR envelope generator, A-147 LFO, and A-118 noise generator are the heart of the system. These are virtual-analog models of Eurorack hardware modules you can find on Doepfer's website. You could easily construct a complete modular synth using only these six modules. All are typical subtractive building blocks faithful to their hardware counterparts with very few surprises. For example, the A-108 VCF models a self-oscillating lowpass transistor ladder filter with separate outputs for four cutoff slopes and a bandpass output.

Most modules don't emulate specific hardware, though. They encompass DAW and MIDI interfacing, sequencing, and various utility functions. The only effects module is a simple, single-tap delay line with a maximum one-second delay time. You also get three mixers: a four-input mixer for audio signals, a linear mixer for control voltages, and a polarizing mixer for adding and subtracting signals—for example, combining VCF outputs to achieve custom filter characteristics.

Sequencer 8, Sequencer 16, and the unusual 5-step Penta Sequencer have CV and gate outputs and knobs to set step values. Beat Sequencer offers a grid of buttons for programming as you would a Roland-style drum machine, with four channels, 16 steps, a swing parameter, and four trigger outputs for driving percussive sounds. For sequences longer than 16 steps, you can link sequencers.

Twenty modules are called performance modules, which furnish customizable knobs, sliders, and switches for easily tweaking parameters in real time. You can insert as many as you need in the same section of the rack for easier access than controls spread out over Modular's GUI. I wish it were possible to assign controls to MIDI CCs so that I could control them with MIDI hardware, but at least Modular responds to DAW automation. I also wish I could create custom macros by assigning a single performance control to affect multiple parameters.

FOR A FEW MODULES MORE

Intellijel's Korgasmatron II ($49) is a dual filter that takes its inspiration from Korg's MS-20 filter. Parameters for channels A and B are identical, and each has six modes: 6 and 12dB/octave lowpass, 6 and 12dB/octave highpass, 6dB/octave bandpass, and 6dB/octave band-reject (notch). Korgasmatron has a nice gritty sound and variable distortion when needed, and it can function as a dual sine-wave generator when self-oscillating. You can also crossfade between the A and B channels using the Xfade parameter.

Rubicon II ($49) is a through-zero, triangle-core oscillator designed for FM synthesis. It generates three types of pulse wave and three variations on a sine wave. Its through-zero FM, symmetry offset, and waveform-flipping parameters give it uncommon frequency-shifting and waveshaping capabilities. μFold II ($29) is also a waveshaping module with through-zero symmetry, but it needs a signal from another module to fold in two, four, or eight stages. μFold allowed me to make some very interesting sounds, especially when processing external audio.

Heartbeat ($169) is a separate product from Softube. Conceptually, it's a comprehensive virtual analog drum machine plug-in. In addition to its own mixer, effects, and pattern generator, Heartbeat has independent sections for each of seven instrument types—two for kick, two for snare, and one each for hi-hat, percussion, and cymbal—each with ample controls for tailoring sound parameters. If you own Heartbeat, Modular can use these sections as sound source modules that have the CV, trigger, and audio jacks you need to connect them. Play them using either the Drum MIDI to Trigger module for real-time performance or the Beat Sequencer module for constructing drum patterns. Like drum modules in the Eurorack world, Heartbeat modules greatly extend Modular's percussive capabilities.

THE GOOD, THE BAD, AND THE VIRTUAL

Although I didn't have a Eurorack system stuffed with identical modules to compare, Modular has an aural quality I associate with modular synths. It certainly sounds as convincingly analog as most softsynths I use. I wouldn't hesitate to use it almost anywhere in place of a real Eurorack synth. Modular is a terrific educational tool for learning the ins and outs of modular synthesis, too. If you are considering a plunge into modular synthesis, you'd be smart to spend some time with Modular before you spend big bucks on a Eurorack system.

If Modular users were to buy corresponding hardware modules from Doepfer and Intellijel, they could design patches on their computers and then re-create the same patches in hardware. Conversely, they could also duplicate what they created using hardware in Modular and then save the patch, giving them an accurately detailed record of the modules, connections, and settings they used.

Owning and using Modular has obvious advantages. The whole shebang costs less than most individual Eurorack modules. A comparably appointed Eurorack system would cost well over ten times as much. Though you could buy all three Intellijel modules in software for $127, you'd pay $949 for their hardware counterparts. Unlike hardware, Modular will never need repair or warm-up time. However, because it is a rather recent release, it could use a bit more fine-tuning, and most of the factory patches are uninspiring. And depending on how many modules you'd use simultaneously, CPU load could be an issue.

The biggest problem with traditional modular synthesis is that it's ephemeral by nature. Hardware patches are all but impossible to precisely duplicate. Once you put so much effort into creating a complex patch, you're stuck with it until you're willing to lose it. With Modular, you need never lose hours of work again. You can even share patches with other users.

Hardware is not without advantages, though. Eurorack owners have a much broader selection of modules available. You can resell your Eurorack modules anytime you want, and they won't become obsolete if a manufacturer goes out of business and it's time to update your computer.

Nonetheless, Softube Modular makes me feel like I acquired a mammoth modular system and I've been exploring its vast capabilities. Using it is so much fun that it's easy to lose track of time. It can be challenging, like any modular synth, but the reward is learning to make sounds you couldn't otherwise make without spending much, much more on the real thing. If you want to give Modular a try, demos are unrestricted for 20 days. I'd say that's time enough to fall in love. ■

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Fig. 1. Each performance control in BioTek's Wild user interface can affect any number of parameters simultaneously.

TRACKTION

BioTek 1.5

AN INNOVATIVE SOFT SYNTH TAKES A FRESH APPROACH

BY GEARY YELTON

Thankfully, synth designers never stop devising new ways for musicians to explore sound. By combining FM and virtual analog synthesis, samples taken from field recordings, cutting-edge sound design, and a hands-on approach to software-based music production, the good folks at Tracktion—the company that makes the DAW of the same name—offer a unique user experience and the tools you need to create truly original soundscapes.

Former senior editor Geary Yelton has been reviewing synthesizers for *Electronic Musician* for more than 30 years. He lives in Asheville, North Carolina.

STRENGTHS

Innovative ways of interacting with sound. Easy to use. Simple controls often yield complex timbral modifications. Some terrific factory patches. Deep programming capabilities. Imports user samples and MIDI files. Extensive modulation routing. Price.

LIMITATIONS

Available only as a plug-in. No MIDI Learn function.

$150
tracktion.com

I began using BioTek when version 1.0 shipped this past February. Based on Tracktion's new sampling and synthesis platform, Acktion, its hallmarks are modular controls that are unique to each patch, and an unusually high degree of user interactivity during performance. At the time, I was frustrated that I couldn't get my hands on the inner workings of BioTek's oscillators, filters, effects, and so on, making it difficult or impossible to build sounds from the ground up. All that has changed with the latest version. Although Tracktion calls version 1.5 the Sound Designer Edition, it is now the only one available. It expands tremendously on the original single-page user interface, giving users complete access to every parameter.

BioTek's feature list is impressive. It runs as a plug-in, in Linux as well as Windows and Mac platforms. Instrument presets can have an apparently unlimited number of layers; most factory patches have from one to four. Each layer has four oscillators that handle analog modeling, 4-operator FM, and sample playback, as well as 4-band, fully parametric EQ and two state-variable filters with a dozen modes and six types of overdrive. Four envelope generators let you define as many as 32 stages with sustain- and release-stage looping. Four effects slots in series supply nine effects types, and each of the eight LFOs is really eight synchronized LFOs that you can switch between, manually.

TIME TO GET WILD

BioTek opens in what Tracktion calls its Wild user interface. Although you can simply load instruments and play them straight away, you'd miss out on what makes BioTek unique if you don't fiddle with the onscreen controls as you play. As you do, you'll hear sometimes subtle and sometimes radical timbral shifts, because most Wild controls affect often-complex macros rather than single parameters.

The first thing you'll notice about the Wild interface is a striking, animated white-on-black image dominating its control panel (see Figure 1). This is the XY control ring, which graphically represents the world the current sound occupies, whether it's filled with skyscrapers, aircraft, and circuit boards, or trees, birds, and flowering plants. A small orange circle appears within the square. Moving its position changes the XY ring's appearance, but more important, it modifies the timbre. Clicking-and-dragging between the box's four corners morphs between parameter sets that define four distinct sounds.

On the Wild interface's left side is a browser for selecting patches and for searching their descriptive keywords. Surrounding the XY control ring are panels containing a handful of knobs and sliders for oscillators, filters, envelopes, LFOs, and effects, as well as master volume and effects mix, two so-called Flow LFOs, and another panel whose name depends

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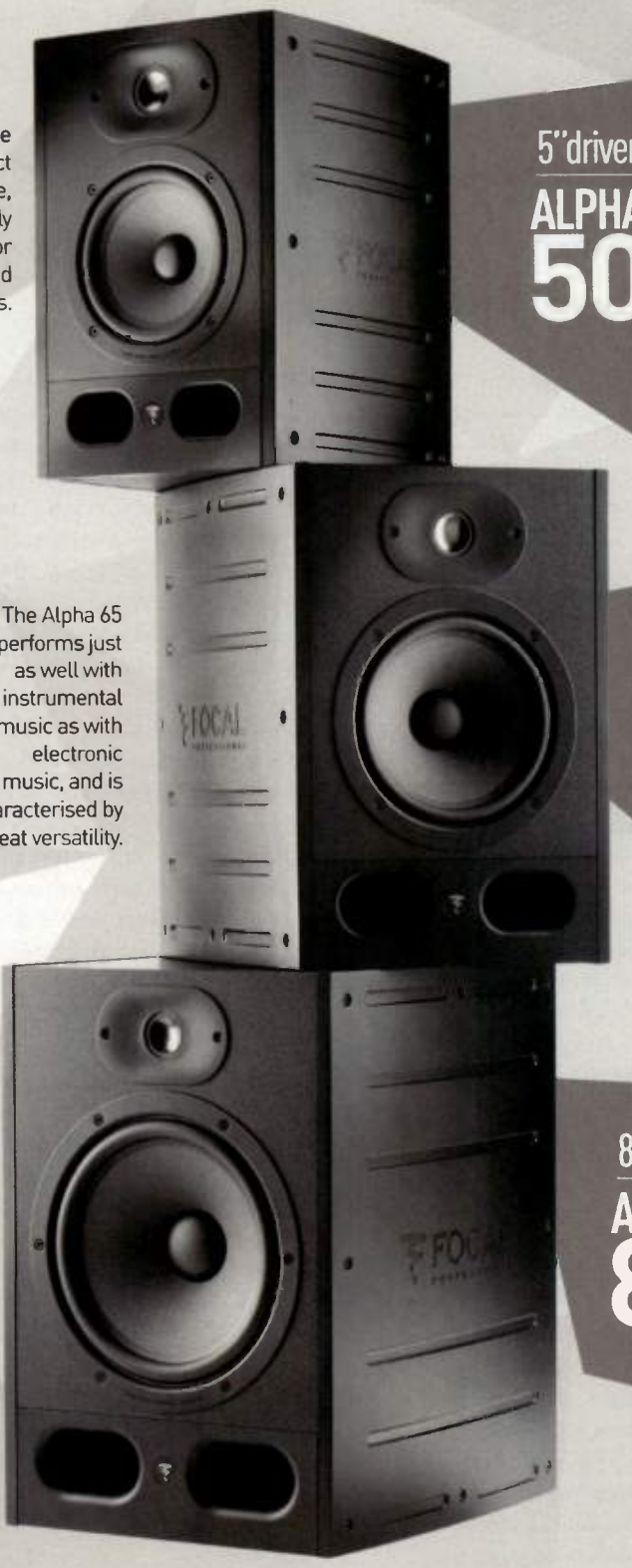

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Fig. 2. The new Edit user interface gives you detailed control of every parameter, making BioTek 1.5 infinitely more flexible than the previous version.

on the patch. On most patches, it's labeled Mana, a word used by Pacific Islanders that one dictionary defines as "the power of the elemental forces of nature embodied in an object or person." On other patches, the same panel may be labeled Uncertainty, Warp, Defects, or Overtone.

The Mana panel contains two sliders controlling macros with names such as Glitches and Spasms, Scramble and Ionize, Spirits and Screams, Drum Smear and Bass Blaster, FM Pitch and FM Amount, and so on. One of my favorite Mana macros is Scribbles, which controls an LFO modulating a resonant filter with delay.

ORGANICALLY GROWN

Clicking on BioTek's Edit button opens its Edit user interface, accessing numerous panels that display dozens upon dozens of user parameters (see Figure 2). The Edit interface is amazingly well-designed, with every parameter so clearly presented that it simultaneously speeds workflow and invites exploration and experimentation. The Sound Layer panel is on the upper left whenever the Edit interface is active. There you can adjust levels and panning for all layers and select any one layer for more detailed editing.

Near the top is a row of buttons that opens most Edit pages. The Instrument page lets you name patches, tag them with keywords, and so on. The Sound page offers similar options for the selected layer and lets you set up keyboard mapping, velocity ranges, unison voices, and more. Enable individual oscillators and specify their parameters on the Oscillator page, where importing user samples is as simple as clicking two buttons and browsing any connected drives. On the Arp page, you can choose from a selection of arpeggiator patterns, import standard MIDI files as patterns, and make various adjustments. You can access additional parameters on the Filter/Amp, Effects, and Modulation pages.

Just above the onscreen keyboard is a section in which LFOs, envelopes, and other modulation sources appear. A row of buttons reveals controls for these sources as well as buttons to assign sources to destinations. Although you can manually control only two Flow LFOs at a time in the Wild interface, the Edit interface lets you define eight of them and assign them as mod sources.

Each of the eight Flow LFOs is a collection of as many as eight individual LFOs arranged from left to right. For each, you can specify parameters such as waveform, start phase, and speed (in Hertz, bars, or note values). Once you've set up a Flow LFO, dragging a slider horizontally in the Wild interface determines which of the eight LFOs is modulating the target parameter, giving you plenty of interactive, real-time control over LFO behavior.

BioTek's modulation capabilities are nothing short of phenomenal. Assign any modulator to virtually any oscillator, filter, or effects parameter by pressing the modulator's Assign button, which transforms every parameter knob to a knob that controls modulation depth for the same parameter. Quickly assign a slow LFO sweep to simultaneously control pulse width, chorus depth, and unison spread, for example, or assign aftertouch to increase the filter's resonance while lowering its cutoff frequency. The user interface for assigning modulation routing may be the easiest to grasp and use that I've seen.

I especially enjoyed exploring BioTek's FM synthesis capabilities. With only four operators (the oscillators) and ten FM algorithms, I expected FM timbre-building to be somewhat limited. However, because the oscillators generate such an assortment of waveforms and you can modulate any oscillator parameter with any source, the range of FM sounds is extended considerably. You can even use samples as either carriers or modulators.

IT'S ONLY NATURAL

BioTek is especially well-suited to soundtrack work, with textural atmospheres and rhythmic grooves aplenty. Most of the factory patches are unconventional and imaginative. Many are quite lovely, others are startling, and some are simply useful. Most incorporate samples recorded from manmade environments, like factories and cities, or natural environments, like birds, insects, and weather, along with a generous helping of drum and percussion loops. The samples are usually layered with purely electronic pads, basses, leads, and synthesized effects. Using the XY control ring, you can shift the balance of elements to morph manually from a mellow pad to a melodic arpeggio to a drum loop to a chorus of singing birds, for example.

If any soft synth ever cried out for a hardware controller, it's this one. Governing the XY ring with a mouse or track pad is intuitive enough, but I want real knobs and sliders for the other controls. Unfortunately, BioTek doesn't support any kind of MIDI Learn function. The only MIDI CCs you can map are sustain, sostenuto, mod wheel, breath controller, velocity, release velocity, channel pressure, and polyphonic aftertouch—not at all helpful for mapping knobs and sliders, but at least it supports DAW automation. Most DAWs offer MIDI Learn functionality of their own, but it's usually much simpler if the plug-in supports it directly.

Even if you know little about traditional synthesizer parameters, BioTek's Wild interface lets you investigate new worlds of sound in a very hands-on way. You can get dazzling results by simply manipulating the onscreen controls and using your ears. If you want to dive deeper, though, you could spend days investigating the Edit interface's vast programming capabilities. If you're curious, you should download the free trial. BioTek's interactive nature, variety of sound sources, and offbeat parameter names stimulate creativity by encouraging exploration. ■

A Team Effort

The team behind BioTek certainly has credentials. The head of software development is Wolfram Franke, the man responsible for Waldorf products such as Largo, Attack, and PPG Wave 3.V, as well as software for the Access Virus TI. The lead sound designer is Taiho Yamada, formerly product manager for Alesis and Avid, whose talents were integral to the sound of the A6 Andromeda, Ion, and M-Audio Venom. The woman responsible for BioTek's look and feel is Seattle graphic designer Kristina Childs, whose other clients include Ampeg, Mackie, and Intel. Field recordist Mike Wall, who supplied many of the factory samples, has spent 20 years capturing natural, industrial, and other environmental sounds from all over the American West, including Hawaii.

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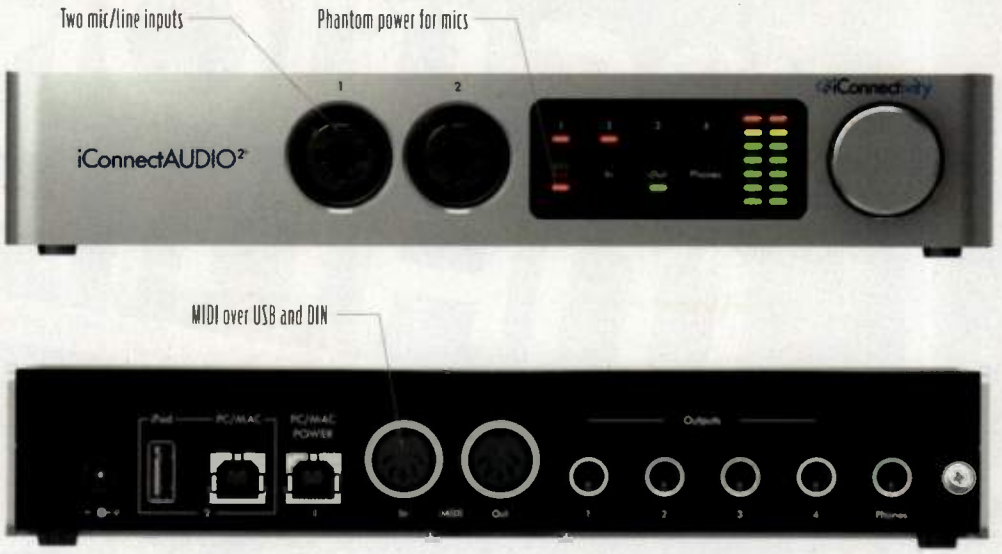

The iConnectAudio2+ is a full-fledged audio interface, with two pairs of balanced inputs you can address independently, with a third separate mix for headphones.

ICONNECTIVITY

iConnect Audio2+

INTEGRATE YOUR IOS DEVICE WITH YOUR MAIN COMPUTER

BY GEARY YELTON

STRENGTHS

Connects two computers or a computer and iOS device into an integrated system. Versatile audio and MIDI signal routing. Outputs carry three separate stereo mixes.

LIMITATIONS

Software's GUI could be more attractive.

$199 street
iconnectivity.com

If you work or even dabble in audio production—whether it's crafting beats for your own amusement or making hit records—you need to get MIDI and high-quality audio data into and out of your computer. What if you want to throw an iPad or iPhone into the mix? Can you get audio and MIDI data in your computer to talk to your iOS device? Where can you find an interface suitable for your needs and aspirations?

The iConnectAudio2+ is the interface I use with my portable MacBook Pro-based rig. On-stage and in other people's studios, I use it with soft synths, effects plug-ins, sample libraries running in Kontakt, and whatever DAW I prefer at the moment. It's compact, it's dependable, and it has exactly enough I/O to get the job done.

The iConnectAudio2+ supports sampling rates as high as 96 kHz, which is ample for any project I may be working on. It gets its power from USB, so I'm not concerned with misplacing yet another wall wart. I can route, filter, and remap MIDI data and make changes to the internal audio mixer and patchbay in the utilitarian iConfig app running on my computer or iPad. I can also adjust levels and other parameters using the front panel's touch display and rotary control knob, and the iConnectAudio2+ stores setups in internal memory.

ROUTE IT FOR ME

One type-A and two type-B USB jacks on the back panel accommodate either two computers or a computer and an iOS device. Each connection carries eight audio channels to and from its connected device.

Unlike iConnectMIDI interfaces, the iConnect Audio2+ is a full-fledged audio interface. In addition to moving audio between connected devices via Audio passThru, it has two pairs of balanced inputs you can address independently, with a third separate mix for headphones. Normally, I use the four outputs as separate stereo sends to a mixing console—one pair from the Mac and the other from the iPad. Sometimes I route audio from two different soft synths to their own stereo outputs.

When I'm playing a hardware synth, Haken Continuum, bass, or guitar, I plug it into one or both of the front-panel audio inputs. Because they're combo TRS/XLR jacks, they'll also accommodate a pair of microphones, and they supply phantom power individually.

Although the iConnectAudio2+ has only MIDI In and Out on 5-pin connectors, it supports up to 80 MIDI channels. In addition to 16 channels on the DIN jacks, the USB connections provide two virtual 16-channel ports for each of the two connected devices.

PROBLEM SOLVED

All iConnectivity interfaces are problem solvers, and the iConnectAudio2+ is no different. Need an interface that works with your computer and iPad simultaneously? Want to route audio and MIDI between them with extremely low latency? Want to use iOS apps in your computer's DAW as if they were external synths? I'm only aware of one company that makes it all possible, and the iConnect Audio2+ is the least expensive device that does it all. Without hesitation, I recommend it highly. ■

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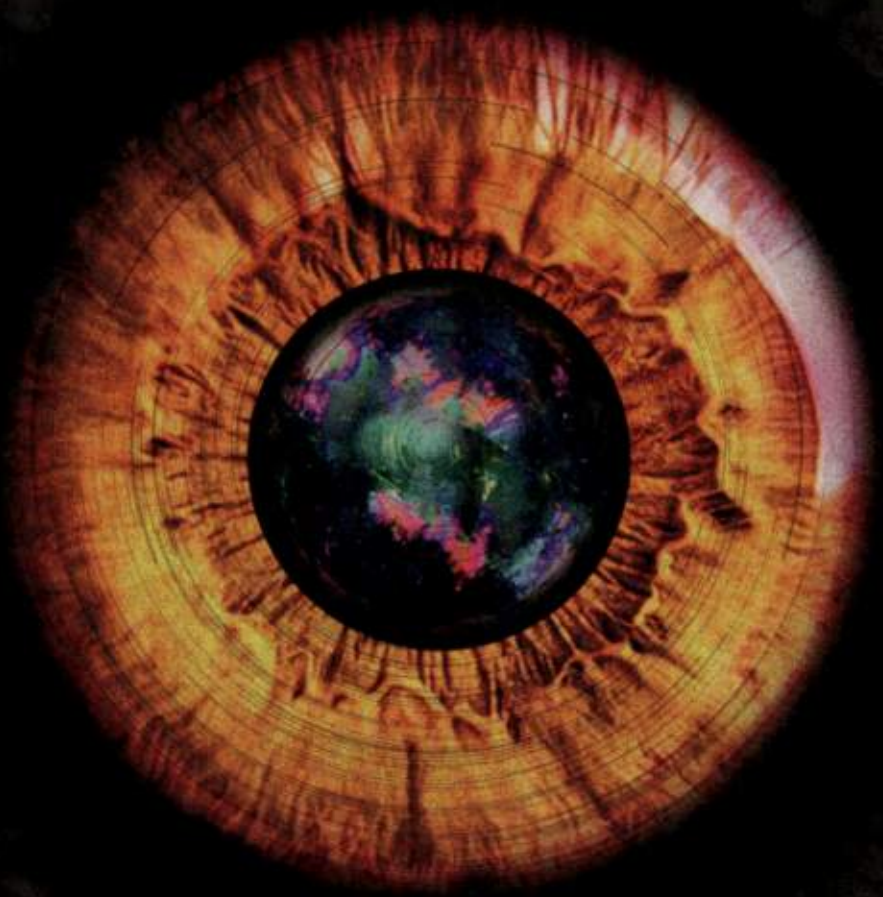

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Fig. 1. Audionamix ADX VVC 3.0's simple interface makes it easy to adjust levels and panning of vocals and monophonic instruments in a baked-in stereo or mono mix. Use the Separation Mode button on the left side of the GUI to select vocal or instrument processing.

AUDIONAMIX

ADX VVC 3.0

MUST-HAVE PLUG-IN FOR MASTERING, REMASTERING, AND RESTORATION WORK

BY MICHAEL COOPER

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

STENGTHS

Sounds remarkably transparent. Can preserve the wet/dry mix of adjusted elements. Automatable. Easy to use. Negligible CPU loading. Inexpensive.

LIMITATIONS

Processing has trouble discerning between lead vocals and center-panned electric guitar. Volume slider lacks numeric readout during adjustment. Real-time processing is volatile. Cloud-based processing not available during Internet outages. A bit buggy.

$199 purchase;
$7.99/week rental
audionamix.com

Audionamix's ADX Vocal Volume Control plug-in (VVC) addresses a common, critical, and chronically unmet need of producers and mastering engineers: adjusting the lead vocal's volume in a baked-in stereo or mono mix of a multitrack production without affecting other elements in the mix.

Sure, you can boost the lead vocal in a stereo mix using mid-side processing to raise the volume of the mid channel—but not without also boosting the kick, snare, bass guitar, and any other center-panned elements. (And mid-side processing is worthless on mono mixes and stems.) VVC promises more discrete—arguably magical—processing. If it works, I thought to myself, this would be the Holy Grail and the answer to my prayers. I was dying to give it a spin.

Version 3.0 of the cross-platform plug-in is available in AAX Native (64- and 32-bit), AU, and VST formats. I reviewed the AU plug-in in Digital Performer 9.02 (DP), using an 8-core Mac Pro running OS X 10.11.5.

HOW IT WORKS

VVC uses multiple algorithms to separate lead vocals—or any monophonic melodic instrument—from a track, whether the original file was stereo or mono. After the separation is complete, you can change the vocal or instrument's volume and pan position ostensibly without affecting other elements in the mix.

After instantiating VVC on a track insert, you make a selection of the audio you wish to be separated. (In DP 9.02, selecting the audio is unnecessary.) Then you either perform an offline bounce or play through the selection so the plug-in can acquire the audio. Pressing the Separate button sends the data to Audionamix's ADX servers, where it is processed. Access to the ADX cloud is granted by an API (application programming interface) key you receive after purchasing the software (iLok is not used).

The plug-in's Separation Mode determines what material gets separated from your audio selection (see Fig. 1). In Vocal mode, the proprietary processing includes Audionamix's Automatic Voice Activity Detection (AVAD) algorithm. AVAD detects where singing occurs in the selected material and extracts melodic content only in those sections, leaving the original mix unaffected elsewhere. In Melody mode, melodic content is extracted throughout the entire audio selection; this mode is not only useful for extracting monophonic guitars and the like, but also as fallback processing should AVAD fail to extract some vocal phrases. In either mode, activating the High Quality button will yield better-sounding results (at the expense of a longer wait for processing to complete).

When separating vocals, enter the highest and lowest notes that were sung in the GUI's two Pitch Range boxes to help VVC target the vocal more precisely. If you want to separate reverb in your original file along with the vocal, turn on VVC's Reverb option before engaging separation processing. Doing so will maintain the wet/dry balance of the original vocal as you make subsequent changes to its gain and pan position. Activating the plug-in's Consonants option helps VVC to extract the high-frequency, noisy components

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of a vocal produced by enunciated consonants; if you hear drum hits or other non-vocal transients being separated with the vocal, turn this option off and engage the processing again.

After the vocal has been separated, you can use VVC's controls to boost or attenuate it up to 12 dB and pan it up to 60 percent of the way toward a hard-panned left or right position in the stereo field. Volume and panning adjustments, as well as the plug-in's bypass, can be automated; for example, you might want to automate the volume to correct an overly dynamic vocal.

A TRIAL SEPARATION

My acid test of VVC 3.0 was to boost lead vocals on a 2-track, single-song master recorded in 1981, featuring the as yet undiscovered Ashley Cleveland singing. Ashley's stunning vocal had been mixed too low in the stereo mix, the only surviving recording of the sessions. I was fervently hoping VVC could boost Ashley's riveting performance.

Even in High Quality mode, VVC 3.0 demanded virtually no local CPU resources in DP—no doubt due to all separation processing being carried out in the cloud. The disadvantage of cloud-based processing is that, if your Internet service goes down during a session, you're SOL.

Vocal separation, for the two minutes of the track that contained vocals, took around ten minutes to complete in High Quality mode. Afterwards, I boosted the lead vocal 6.5 dB in VVC's GUI. Unfortunately, doing so also boosted center-panned lead guitar fills and its effects. However, the electric bass, drums, and Mellotron—all of which were present in the center channel—were not boosted. The Mellotron, playing a string pad, had been masking Ashley's lead vocal a bit on the original stereo mix, so being able to boost her vocal above the level of the pad was a major coup (not to mention astonishing). And activating VVC's Reverb button before separation preserved the wet/dry balance of analog plate (hardware) reverb on Ashley's boosted vocal.

The only artifact I heard on the boosted vocal and guitar was an occasional, fleeting boost in the upper-bass band, which would be easily addressed later using third-party multiband compression. Most important, I heard no phasiness—the boosted vocal sounded completely coherent and intact. I was blown away.

After separation, some vocal lines remained quieter than others. Automating VVC's volume slider to correct this, the lack of a numeric readout while adjusting the slider made precise real-time adjustments difficult. (A readout appeared while hovering my mouse over the stationary slider but not while adjusting it.) Also, automating the volume slider sometimes arbitrarily activated the plug-in's bypass; oddly, I could fix that issue simply by rewinding DP and playing through the affected section again. Most important, I could make transparent real-time adjustments in the lead vocal's level over a 3dB range (boosting between 6.5 and 9.5 dB); it was like using a time machine to go back to the original tracking session and ride the singer's fader. Amazing!

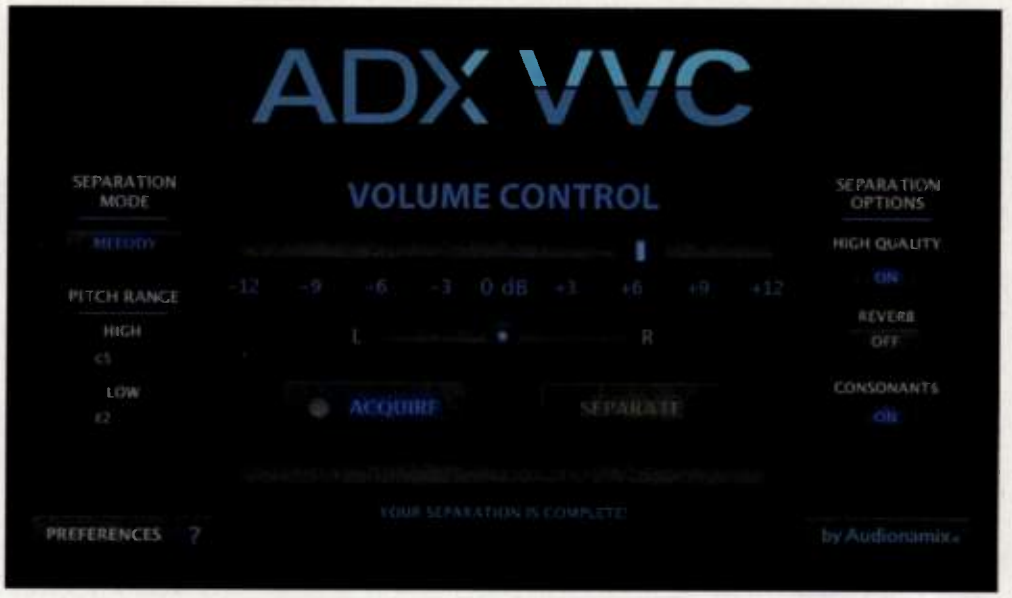


Fig. 2. Another view of Audionamix's interface, this time with new pitch range selected, the Reverb Separation Options buttons de-activated, and the Separation mode set to Melody.

TAKING THE LEAD

After getting Ashley's lead vocals dialed in, I turned my attention to the lead guitar, which was mixed too low in places. To preserve VVC's vocal processing, I made a copy of the original track and instantiated VVC on it in Melody mode to process the guitar. As the guitar sounded a bit too wet with effects in the sections I wanted to boost, I deactivated VVC's Reverb button; that allowed me to boost only the guitar's dry signal, making the guitar sound clearer. I could also pan the guitar in the stereo field using VVC's pan control. I was happy to note that volume automation I recorded on the track survived implementing the separation process a second time using different plug-in settings.

Once I had the lead guitar's levels automated, I comped the two copies of the track—containing respective VVC-processed vocal and VVC-processed guitar—in sections to produce a single track with automated vocals and guitar. The end result was a huge—and miraculous—improvement over the original mix.

Make sure you bounce your tracks after applying VVC processing; in DP 9.02 running El Capitan, pre-existing real-time VVC processing on a track did not endure after a reboot, and tweaking the plug-in's volume and panning controls had no effect until I reran the separation process. VVC 3.0 is a bit buggy, but that shouldn't stop you from buying or renting this groundbreaking (and inexpensive) plug-in. If you've got old masters gathering dust because they were poorly mixed and not up to today's commercial standards, ADX VVC 3.0 just might be the miracle cure you need. Every engineer who does mastering, remastering, or restoration work should own this pioneering plug-in. (As we were going to print, Audionamix told us about their speech-enhanced plug-in, ADX SVC, scheduled for release later this year. It is being designed to provide independent volume level control over both speech and background elements within a mono or stereo mix.) ■

If you've got old masters gathering dust because they were poorly mixed and not up to today's commercial standards, ADX VVC 3.0 just might be the miracle cure you need.

MASTER CLASS

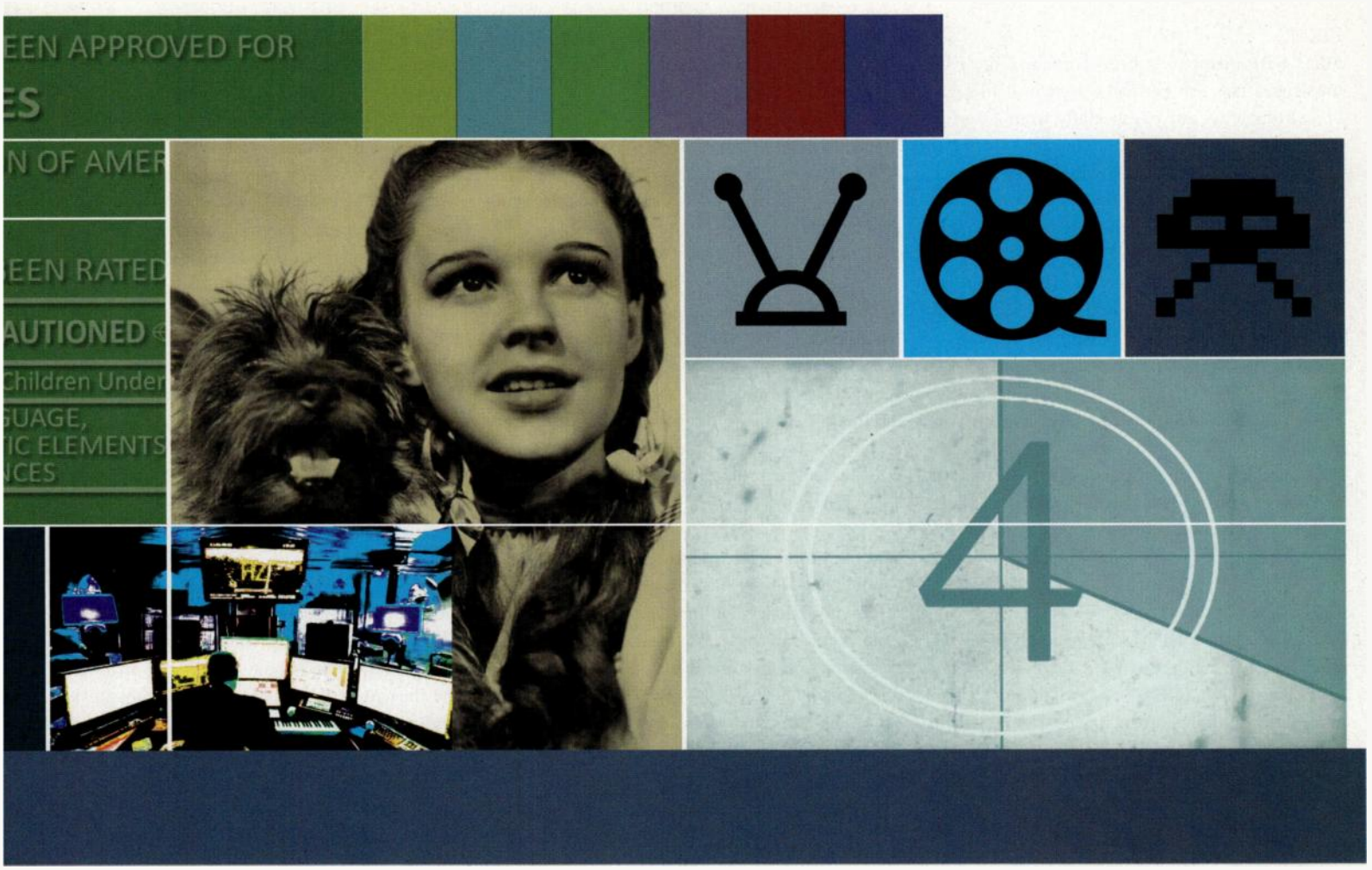
Get Placed, Get Paid

Secrets behind getting your music licensed for film, TV, trailers, and commercials

BY RANDY CHERTKOW AND JASON FEEHAN

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

The song "Over the Rainbow" from the film *The Wizard of Oz* has generated over one billion dollars in royalties. Granted, this is one of the most popular films of all time, but its success demonstrates the income potential found in song licensing. And musicians have more opportunities than ever to earn new revenue streams: In a world of declining music sales, musicians are licensing their songs for films, TV shows, movie trailers, and commercials, and earning performance and synchronization royalty income in the process.



Getting your song placed starts with understanding the people who choose music for these productions: music supervisors. Their job is to find the perfect song for the story being told. It's a job requiring equal amounts of artistry, love of music, technical skills, and knowledge of the legal world. We'll explore the role of music supervisors and share ways to increase your chances of getting your music placed.

A music supervisor's job requires equal amounts of artistry, love of music, technical skills, and knowledge of the legal world.

THE MUSIC SUPERVISOR'S WORLD

Music supervisors live and breathe music. They use it to elicit a particular emotion, create a mood, or build pacing within a scene. They deal with demanding clients, directors, editors, musicians, and publishers who give them vague descriptions like, "I want something that's blue." And they do this within tight schedules, often within a weekend, a day, or even a few hours. Once they find an ideal track, they need to negotiate a licensing deal quickly.

But anyone on the production team can veto their choice including the director, editor, producers, or even the actors. In the case of advertising, clients always have the final say. So music supervisors need to have multiple music options ready to go.

THE TYPES OF MUSIC SUPERVISORS AND LICENSING OPPORTUNITIES

Music supervisors typically specialize in one of four areas: movie trailers, film, television, and commercials. Each one has unique needs to be met if you want to improve the chance of licensing and placing your music.

MOVIE TRAILERS

In the past, movie trailers were only seen before movies or in television commercials. But today, trailers are available on demand. As Danny Exum, a movie-trailer music supervisor and partner at the High Bias music supervision collective says, "Trailers are big business, getting as much as one hundred million views online, and there are never enough fresh songs out there to use." You don't have to get your song placed in the film in order to be in the trailer.

What Movie Trailer Music Supervisors Need From You: Trailers are designed to generate emotions in a short amount of time. To accomplish this, music supervisors need snippets of music to create impactful moments. As Exum explains, "Trailers follow a three-act structure: an opening, a middle, and then a big payoff at the end. Each act needs different music." Here, supervisors want your stems, as well as the final track, so they can bend the music around the needs of the trailer.

FILMS

Films have historically been popular targets for musicians, because getting placed in a film can be extremely lucrative, especially from a performance royalty perspective. Films take longer to make than other media, allowing music supervisors more time to find and clear rights.

Today more independent films are being made; Major film studios have music budgets and established processes for licensing music, but independent films may lack both of these. Instead, they may offer a step-deal, paying out license fees based on the box office receipts.

What Film Music Supervisors Need From You: Studios typically commission a film's score, but they may license songs for scenes. Instrumental versions of your songs are just as useful as versions with vocals, since directors and music supervisors sometimes need "background" music.

TELEVISION

There's more television content being produced now than ever before, with high production values. Like trailers, television requires quick turnaround times; shows can be turned around within a week. This not only keeps television music supervisors busy, it also opens up a lot of opportunities for musicians. TV music supervisors live in a fast-paced world and musicians who work with them need to be responsive.

What Television Music Supervisors Need From You: Similar to movies, some studios commission scores, but there are plenty of scenes where songs set the right mood. Although having your stems available is a good idea, music supervisors are more likely to just use the finished tracks.

COMMERCIALS AND ADVERTISING

Historically, many musicians felt uncomfortable licensing their music for advertising, but today, commercials are usually seen as great opportunities for exposure as well as income. In fact, brands such as Red Bull and Nike have become well-known for promoting and breaking up-and-coming artists.

What Commercial Music Supervisors Need From You: Advertising music supervisors who work with independent musicians usually do so to target demographics such as age. They hope to associate their product with the same vibe that energizes the artist's audience. Being new on the scene can be helpful since the buzz you're already trying to generate for your music is exactly what they're looking for to promote their brand to fresh audiences.

Commercials, like trailers, have precise timing requirements. For this reason, many music supervisors turn to trusted music production houses to compose custom music. If they do use an existing song, they'll want both the instrumental version as well as the stems. This allows them to maneuver around the lyrics since a lyric sung at the wrong time might conflict with a voice-over (VO). Or they may want to cut out certain instruments and bring the lyrics down during the VO and then up again at the end.

VIDEO GAMES

Video game designers need music as much as the rest of the forms of media covered here, although they are far less likely to have a music supervisor working for them. Songs are used in cut scenes, credits, during gameplay, and even for the videos that they use to advertise the game. Plus, they need sounds to use in their games as well—a single modified synth sound might be perfect for their game.

What Video Game Designers Need From You: Video game designers might want to commission a work, or to license existing songs. They tend to be less well-versed about how music law works, and thus you might need to provide them a standard sync license contract for the composition and sound recording. Another factor is that video games need to license the MP3 decoder if they want to use it in their game, and as a result they

tend to use the free and open OGG format. You may wish to provide your song and sound samples in that format instead so that if they like it, they can use it in their game immediately.

PREPARING YOUR MUSIC, UNDERSTANDING COPYRIGHT

Most music supervisors are wary about working with independent artists. They work in high-pressure environments and many have been burned by musicians who wouldn't return emails or phone calls, or didn't have their legal rights in order. Some have war stories of negotiating a deal with an indie only to find the musician never cleared the samples he or she used in a song. Because of this, many supervisors have "no samples" policies or they deal exclusively with large publishers, use pre-cleared music libraries, or license only from agents they trust.

This means you need to have both your music and business in order. Send professionally mastered tracks. There are no demos: Songs prepared for licensing must be ready to go into a feature film or advertisement *tomorrow*. If you write and record commissioned songs, be ready to turn around a new song in a very short amount of time. But most of all, be easy to contact and be ready to respond at any time including turning around licensing contracts on short notice.

Send professionally mastered tracks. There are no demos. Songs prepared for licensing must be ready to go into a feature film or advertisement *tomorrow*.

Licensing is based on copyright law, which states that all music that's part of a video or film work requires a synchronization ("sync") license from the owners. Music supervisors know they need to get a sync license from both the sound recording owner (copyright form SR) and the composer (copyright form PA). Often the music label owns the master and a publisher representing the composer owns the composition, so music supervisors might need to deal with two parties. One advantage indies have is they usually own both, making the negotiations a lot simpler. It also means that a placement can generate up to three distinct revenue streams for an indie musician: a composition sync fee, a sound recording sync, and performance royalties. Plus, a sync license is not compulsory and there's no maximum fee amount set by statute, which means you can deny permis-

sion or set any price you want.

Income from sync licensing comes on the front end in the form of direct license fees, and on the back end from performance royalties. To prep your music for these, make sure you own all of the rights to the composition, sound recording, and all samples in the sound recordings. They should also be registered with the Copyright Office (copyright.gov), which protects the music and gives you extra statutory benefits if you complete this within three months of publication.

To get the back-end income, register your song with a Performance Rights Organization (PRO) before it's broadcasted or played. Also make sure that the film or video production company submits cue sheets for each of their works that use your song. Some musicians opt to license their sync rights for free just to get the back-end royalties, but you should only do so if getting front-end fees is not an option.

To prep your music, create 320kbps MP3s and be sure to fill out all your ID3 metadata fields, including your website and contact info. Preparing your music in this way will make it easy for music supervisors to drop your music in their demo reels, try it out, and find you if they decide to use it. Plus, while in the studio, make instrumental mixes and also keep the stems handy. Not only are stems licensable, sometimes supervisors need to remix your music, take a small piece, or cut out the vocals. As music supervisor Toddrick Spalding of Mob Scene said, "A track might be perfect except for that one harp part. If you have the stems, you can easily take that part out and instantly have the right track."

CONNECTING WITH SUPERVISORS

Music publishing has always been a relationship industry. If you can get to know music supervisors or directors directly, you can start pitching songs to them or become a trusted resource. This is especially true if you are known to be great at a particular genre of music. In fact, this industry is somewhat split up between people who make music, people who have the relationships, and the music supervisors who choose the music.

Music supervisors can be found at music conferences like SXSW, NARIP, and The Association of Music Producers. And video game designers can be found at conferences like the Game Developers Conference and Game Sound Con. If you contact a music supervisor directly, keep in mind that his or her mailbox probably has hundreds of unread emails from musicians. To cut through the crowd, keep your email short, give a brief paragraph of who you are, what you're great at, and a link to your high-quality MP3s.

If you see a TV show and have music that fits its style, check the credits to learn who the music supervisor is and search the internet. Most supervisors are superfans of music and maintain their own MP3 blogs or websites where they share playlists. Contact them. The same technique works for movie trailer production houses. If you have music you think can be used, search the internet for movie trailer studios' websites. They often highlight their latest trailers and list the staff or have a contact page. Then, reach out directly.

Most music supervisors have a short list of trusted partners who supply music, including agents or music libraries. Getting your music into these resources can get you into the ears of music supervisors. Music libraries specialize in pre-cleared music of various genres. They make it easy for supervisors to find new music and eliminate headaches since all the music is ready for licensing. Some of the better known libraries are APM, Extreme Music, Ninja Tracks, Audio Machine, and Confidential Music. In addition, some indie musicians use SynchTank, which digital distributors such as CD Baby include in their list of services to make it easy for musicians to get tracks discovered by music supervisors.

Most music supervisors have a short list of trusted partners who supply music, including agents or music libraries. Getting your music into these resources can get you into the ears of music supervisors.

If you want to get your music into music libraries, do the research to understand the library's criteria for accepting music and the percentage cuts they take. Don't sign any music library deal without having a lawyer review the terms.

Last, because music supervisors are music lovers, increase your chances to get licensed by targeting music blogs they listen to like Aquarium Drunkard or Stereogum; or get into the aggregation feeds such as the MP3 blog consolidator Hypemachine (hypem.com), and the MP3 aggregator Peel (osx.iusethis.com/app/peel). Supervisors also discover music simply by searching iTunes, Apple Music, or Spotify, since it's easy to browse by music genre.

NEGOTIATING AN AGREEMENT

Most music supervisors will supply you with a contract, so it helps to educate yourself on what the terms mean. Note that each term is negotiable. For example, if someone wants worldwide exclusivity then you should charge more for that right, since it prevents you from licensing to others (although you can place a time limit on exclusivity). Other terms that dictate your fee amount include the scope of the territory and the length of use. Also, music supervisors will want to know if a song has other placements (meaning it's licensed for use elsewhere).

The contract should include an obligation for the studio to submit cue sheets to the performance rights organizations. This is how PROs know your music is used in film and TV and is the primary driver for your back-end royalties. Since the PROs pay out for performances when the films or TV shows are screened or broadcasted, this does not affect the studio's income.

Once you get a placement, double-check that you have everything in order: copyright registrations, PRO royalty registrations (as both the publisher and songwriter), and confirm that cue sheets will be submitted. These are all critical actions toward getting the full amount of backend royalties that you're owed. Finally, for every placement that you do get, make sure to thank the music supervisor, and lock in your relationship. That is the most likely way to get your next licensing deal.

Increasing your changes of successful music licensing means getting your music out there so it's discoverable and making sure your contact information is easy to find. Every music supervisor we interviewed had a story where they found the perfect music surfing iTunes or Spotify and simply contacted the artist through a web search. But there were also plenty of stories of musicians who weren't easy to reach and lost out on opportunities.

Once you understand the world of the music supervisor, you'll realize that music licensing is something within the reach of every musician. Perhaps your song will be the next "Over the Rainbow."

Thanks to all of the following who were interviewed for this piece and participated in panels on music licensing: Chris Clark, Rudy Chung, Josh Collum, Danny Exum, Heather Guibert, Holley Maher, Chris Mazur, Theresa Notartomaso, Tim Quirk, Joseph Rudge, Eric Shaw, Toddrick Spalding, Amanda Krieg Thomas. ■

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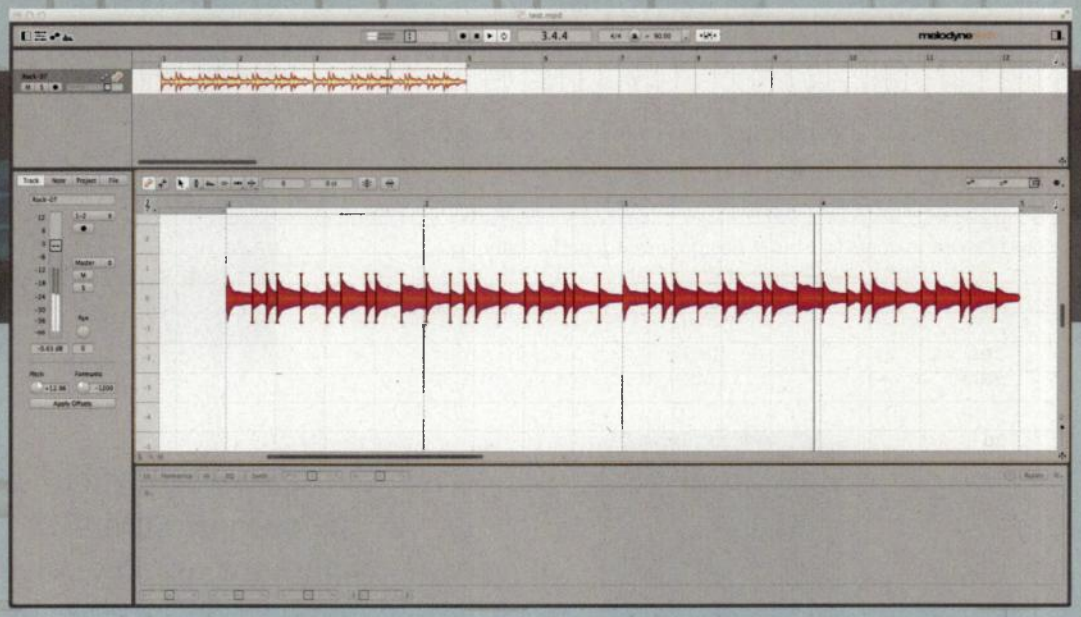

Fig. 1. Melodyne's Formant control can be particularly effective on drums when combined with a major change in pitch.

Pitch-Shift Your Kit

Deconstructing Drum Loops with Melodyne 4 Studio

BY BARRY CLEVELAND

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

Celemony's Melodyne has been raising eyebrows and lowering jaws since its introduction in 2001. Besides offering fresh takes on pitch correction and time stretching, the software introduced an unprecedented approach to the graphic representation of sound. Throughout the intervening years, Melodyne has become increasingly sophisticated and powerful, perhaps most notably with the introduction of Direct Note Access (DNA) in 2009, which made it possible to isolate and manipulate individual notes within polyphonic recordings in much the same way that one edits MIDI information in a standard "piano-roll" MIDI editor.

Melodyne 4 Studio ($849) extends that DNA technology to unlimited tracks, including cross-track note editing; adds a new Sound Editor featuring unprecedented sound-design tools; introduces improved tempo detection and shaping capabilities; implements 64-bit plug-in support (plug-in and standalone versions are both included); and more. You can even record multiple tracks directly into Melodyne 4 Studio, encroaching upon DAW functionality.

Melodyne 4 operates in four modes—Melodic, Polyphonic, Percussive, and Universal—each with its own algorithm and corresponding display and tool set. As you might imagine, the Percussive algorithm is optimal for editing and manipulating drum parts, and one of my favorite things to do with Melodyne is to import a drum loop (especially a cheesy lo-fi loop) and transform it into something completely different and exciting. Here, I'll describe just a few of the many possible approaches to doing that.

FORMANT & PITCH WARPING

One of the easiest ways to manipulate a drum loop in Melodyne is to select the entire loop and alter it using the Formant control, which affects the relationship between the fundamental and the harmonic overtones. In the case of a drum loop, it acts sort of like a nonlinear filter, causing the

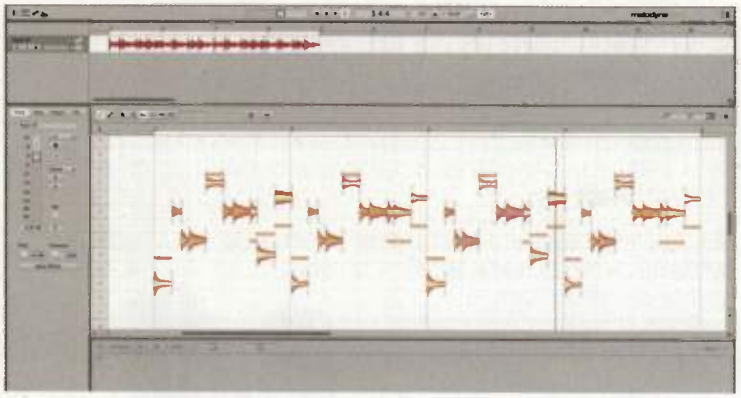

Fig. 2. Processing "blobs" independently lets you create nearly unlimited variations using only the Formant and Pitch controls.

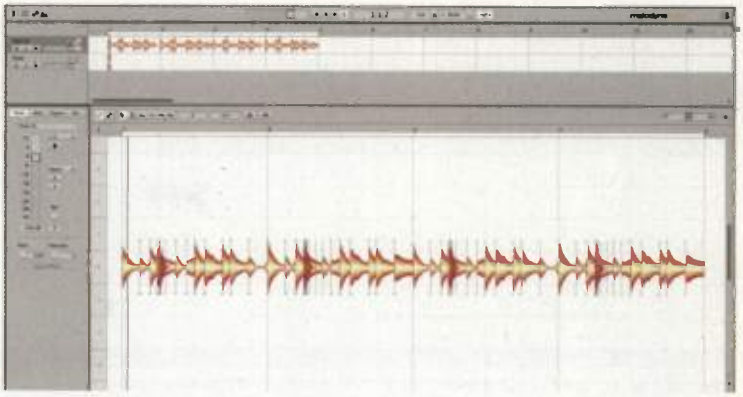

Fig. 3. Layering new "substitute" sounds over original elements.

overall sound to get fatter and thinner in strange and unpredictable ways. And it can be particularly effective when combined with a major change in pitch, as shown in Figure 1. The result is a boxy yet super-snappy kick, with a resonant snare that sounds slightly gated and reversed, and an oddly metallic hi-hat that sounds as if it had been run through an envelope generator.

Digging deeper, however, Melodyne allows you to select a specific sonic event or events—referred to as "blobs"—to be processed, apart from the others. For example, beginning with the already altered loop, you could select the first blob (in this instance the kick on the downbeat), then choose Select Special>Select Same Beat In All Bars in the Edit menu, and all four of the downbeat kicks will be highlighted and linked. The pitch and formant parameters for these can then be changed as a group, independently of the other blobs. Continue the process with the non-downbeat kicks, snare, and hats, and you'll be able to create a nearly unlimited number of variations using only the Formant and Pitch controls, such as the one shown in Figure 2.

SONIC SUBSTITUTIONS

Besides altering the sonic characteristics of individual sounds in a drum loop by manipulating the formant, pitch, and other parameters (there are many more), it is also possible to substitute one sound for another. For example, say you like the sound of the snare, but would prefer a more '80s "gunshot" snare sound on the second beat of each measure. You can select all of those snare hits, delete them, and then drag and drop your preferred single-hit snare sample into those empty slots. (You could even use an actual gunshot sound as the replacement sample.) And, alternatively, instead of deleting the original sounds, you might layer the new ones on top of them, as shown in Figure 3. And, if the replacement samples differ considerably from the originals—or if you just want to get creative—you can modify their duration, loudness, and other characteristics using the Timing, Amplitude, Attack Speed, Time Handle, and other tools.

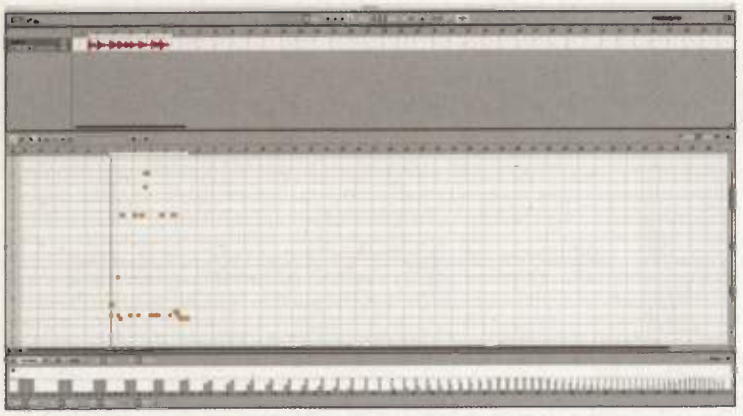

Fig. 4. The drum-loop sound is altered by modifying Harmonics settings in the Sound Editor to create a comb-filtering-like effect.

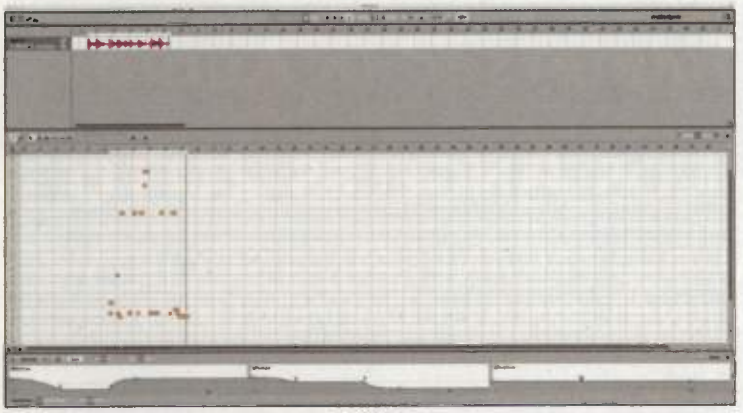

Fig. 5. The loop is further manipulated using the Spectrum, Formant, Amplitude, and Phase controls in the Synth section.

SPECTRAL SHUFFLE

When either the Melodic or Polyphonic algorithms are used to analyze a sound, the new Sound Editor becomes available. (It relies the harmonic spectrum information provided by those algorithms.) Among other things, the Sound Editor makes it possible to shape sound by precisely analyzing and controlling its fundamental components, including harmonics within its overtone spectrum, which may be manipulated either individually or collectively using "macro" controls such as Brilliance, Contour, Odd/Even, and Comb. You can even copy the harmonic spectrum analysis of one instrument and paste it onto another, making, say, a trombone sound more like a trumpet. To take advantage of the Sound Editor, I reanalyzed the drum loop using the Polyphonic algorithm.

In Figure 4, I've used the controls in the Harmonics section of the Sound Editor to radically change the sound of the drum loop by setting Comb to 5.0 and Odd/Even to -12. That emphasizes both the odd and even harmonics that are five harmonics apart: first and second, sixth and seventh, 11th and 12th, etc., creating a complex comb filter-like effect that not only dramatically alters the relationships between the frequencies, but adds a bit of edgy phase shift. Using the Spectrum, Formant, Amplitude, and Phase controls in the Synth section takes things even farther out, as shown in Figure 5. In fact, it is entirely possible to transform the source sound into one that is indistinguishable from a synthesized sound.

Although I've limited the examples to deconstructing drum loops, it should be obvious that these same techniques can also be used to modify any recorded sound. And, once you've arrived at something you like, you can always pitch-correct and time-stretch it should you so desire. ■

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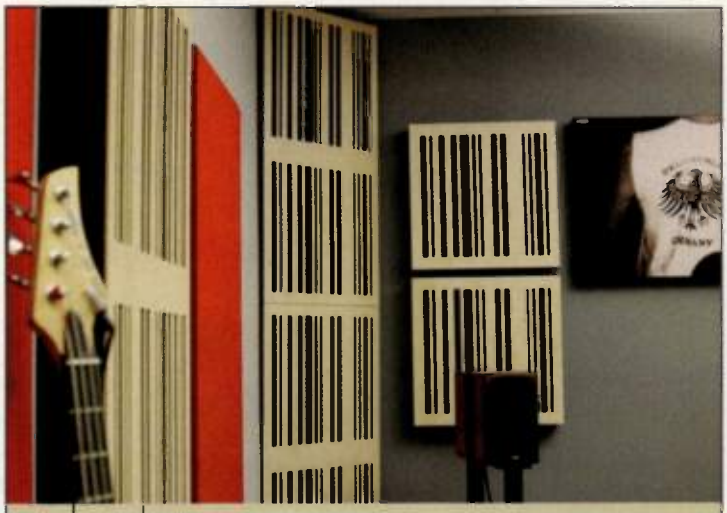
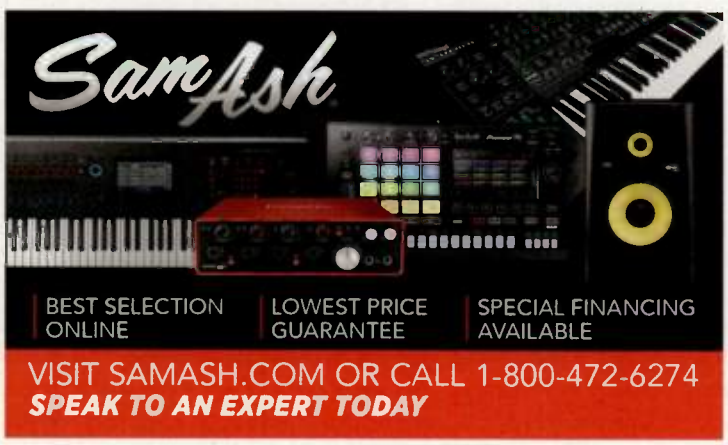
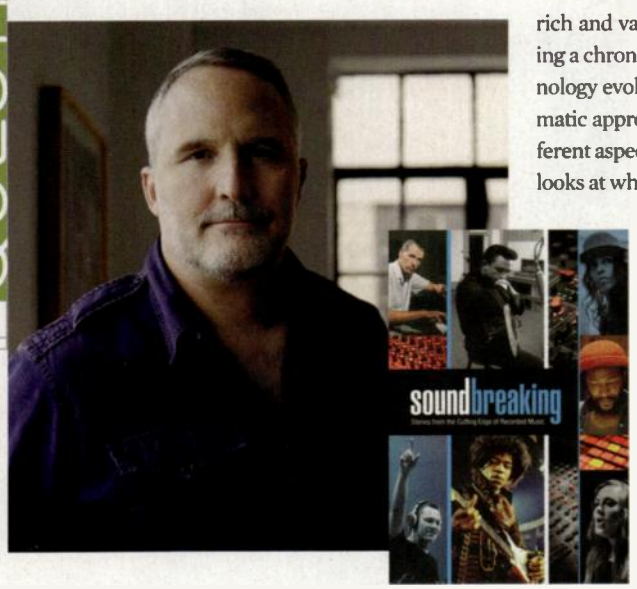




FIVE QUESTIONS

Jeff Dupre

The producer/director of PBS's *Soundbreaking* documentary series talks about telling the story of recording



BY SARAH JONES

PBS's *Soundbreaking* documentary series, premiering this November, offers a rare, personal glimpse "behind the glass" for music fans: Produced in association with the late Sir George Martin, the eight-part series tells the story of recorded music through archival studio footage and interviews with more than 150 artists, producers, and innovators including Glyn Johns, Brian Eno, Rick Rubin, Malcolm Cecil, Tiësto, Tony Visconi, Linda Perry, Hans Zimmer, and Dave Grohl.

I sat down with producer/director Jeff Dupre at the San Francisco Film Festival to learn more about this celebration of the people who shape music.

This documentary is more about the human element—emotion, experimentation, relationships—than an encyclopedic history of recording. How did the series reveal itself?

The subject of music recording is incredibly rich and varied. We were not interested in creating a chronological survey of how recording technology evolved. We decided instead to take a thematic approach, so each episode delves into a different aspect of music recording. The first episode looks at what a record producer does—and we see that at the heart of so many great records are these delicate human relationships, whether between Elvis and Sam Phillips, George Martin and The Beatles, or Rick Rubin and Johnny Cash. In Episode Two, we look at multitrack recording and how the evolution of that technology transformed the sound of popular music. We go on to look at the art of recording the voice, the electrification and amplification of instruments, the evolution of the rhythm track, the art of sampling, the art of the music video, and then at distribution formats and how they impact the art that is created. The thematic structure enabled us to zero in on great stories of how artists use their ingenuity and imagination to create new sounds.

Did George Martin have a fully-formed idea for a narrative going in?

George felt that the story of recorded music had never been properly told and he felt the subject merited a series of this scale to do it justice. If you think about it, no other art form has touched all of our lives in quite the same way. Records are these remarkable, intricately constructed devices that do something extraordinary: In a world where so many forces conspire to make us feel nothing at all, a song enables us to connect with and inhabit our emotions, and therefore to be more fully human.

So rather than begin with Edison and the invention of the phonograph, we decided to look at the moment when recording itself came of age as an art form, in the '60s. producers and engineers were finding out all the marvelous things you could do with magnetic tape and multitrack recording, and in walk The Beatles. Through his work with The Beatles, George created a paradigm for pop music, creating music that was so stunning and new that it came to define the time in which it was released.

Soundbreaking celebrates this paradigm and how it has played itself out over the past 50 years, how the baton was passed on from one generation to the next. We focus on artists who created new sounds that reflected their world and that opened a doorway to the future. Stevie Wonder's departure from the Motown Sound to create a wholly new sound using the Tonto synthesizer; James Brown's decision to make every instrument sound like a drum, which was the genesis of funk. Jimi Hendrix's sonic fantasies, Giorgio Moroder's minimal and hypnotic dance tracks...and so on.

The series features incredible rare and unseen studio footage. How did you source that material?

Led by producer Amy Schewel, our archival research team spent years sourcing the best footage and photographs to tell the story visually. The key factor is having the time to find the best material. Sometimes you have to wait until it comes bubbling to the surface.

You distilled 700 hours of interviews with 230 artists into eight hours. What were the hardest things to let go, and will we be seeing any of those materials in the next iterations of this project?

On the one hand, we feel the series has a huge number of legendary artists. On the other hand, we feel we've just scratched the surface! While each episode in *Soundbreaking* includes contemporary artists, we'd like to include even more of them next time around.

At the festival screening, you said that you hoped this series will give music lovers a new context in which to appreciate a song. What do you hope the studio stories behind the music will add to that experience?

There are times when you find out something new about someone in your life, and it deepens your love and appreciation of that person. That's what we hope *Soundbreaking* will do for our audience. We hope they'll learn something new about a song they love, what makes it tick, how it was created, and they'll come to love and appreciate the song even more. ■

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