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MONITORS

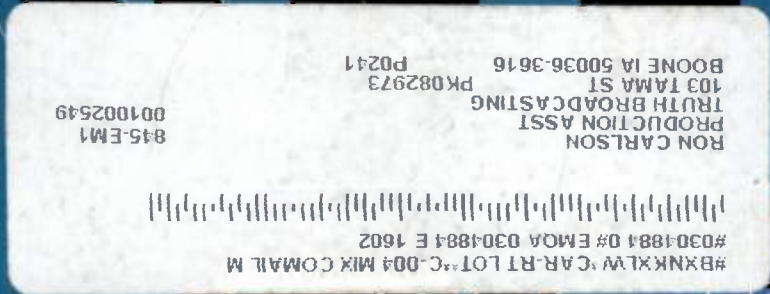
Top Engineers Talk Go-To Gear
Guide To Choosing The Right Speakers

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WITH
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GATES



MOD
SQUAD

Epoch
Modular
TwinPeak



09.2016
\$5.99 CAN \$6.99
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A MUSIC PLAYER PUBLICATION

DAVE SMITH INSTRUMENTS
OB-6

GIZMOTRON 2.0

LEGENDARY AUDIO
I.C.E.

IZOTOPE
VOCALSYNTH

Reviews

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09.16

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YOU AND YOUR MONITORS

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METRONOMY

Joseph Mount talks about embracing a hybrid analog/digital approach in the studio to create his newest album, *Summer OB*.

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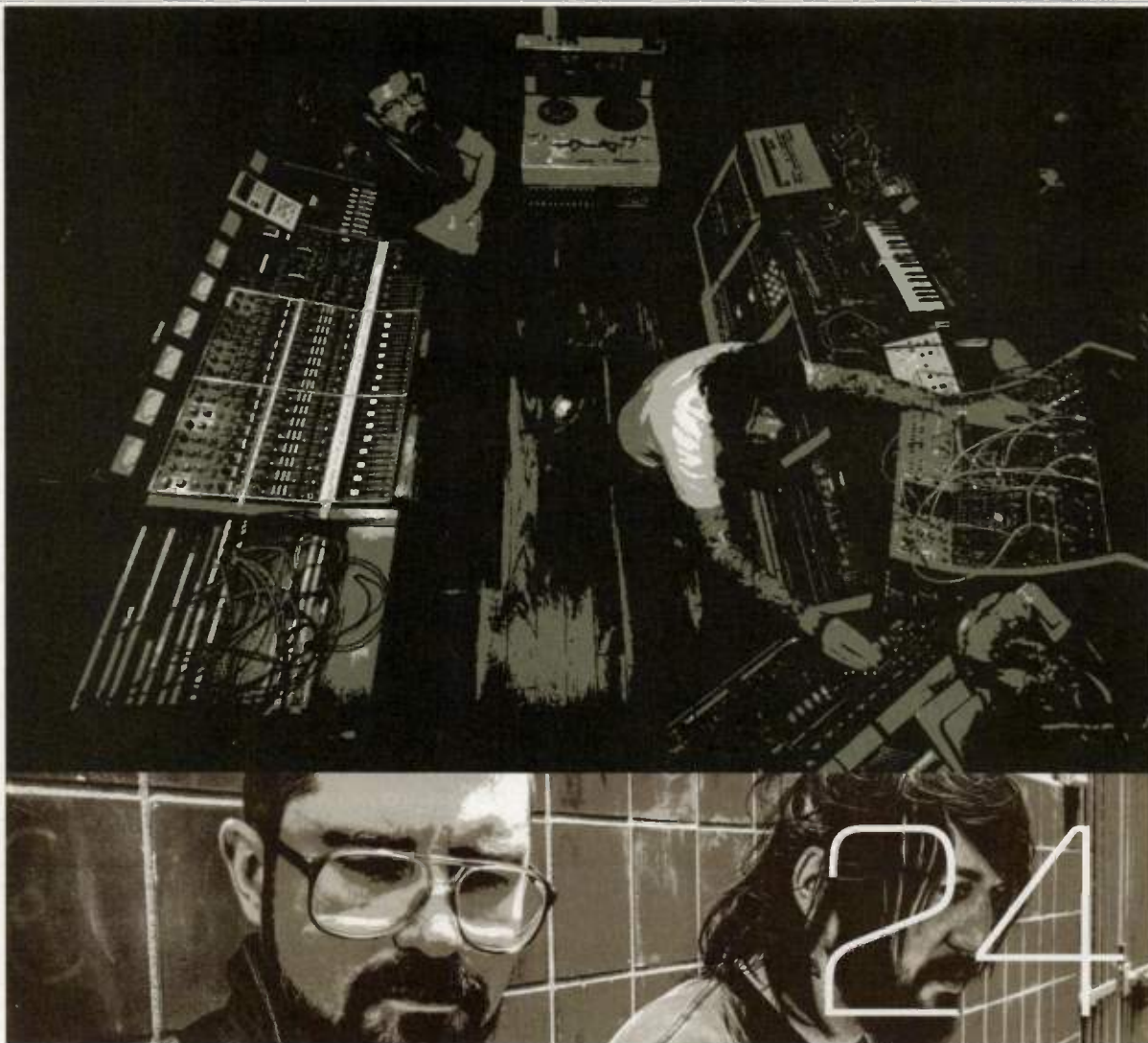
New releases from Avalanches, Teenage Fanclub, Chris Collingwood, and more!



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Berklee Open Music Initiative's Panos Panay



MSTRKRFT

For *Operator*, their third release, Jesse F. Keeler and Alex Puodziukas manipulated old-school beat machines and DIY-worthy modular synths into extreme punk-electronic dancefloor fillers. We go inside the studio sessions.

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~ Butch Walker

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~ Jason Hook

- Five Finger Death Punch.

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



"We've got a mixture of bass traps, diffusion and clouds and the result was phenomenal. It ended up costing less than 25% of the custom solution and it turned out very cool."

~ Keb' Mo' - Roots music legend



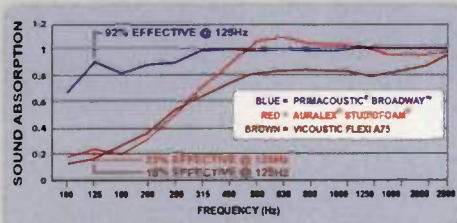
"Not only does my room sound amazing, it's also really beautiful!!!"

~ John Rzezniak

Performer/artist/producer - Goo Goo Dolls.

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

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insight

Gaining Perspective

IF SOMETHING seems to be lacking in your mixes, you might be tempted to second-guess your signal chain or even your production skills. But if things are consistently sounding off, maybe your monitors are the culprit.

It's a given that your speakers affect every decision you make in the studio, so they must be accurate in order for you to make the right mix decisions. But our relationship with our monitors is more complex than that.

In this month's cover story (starting on page 16), we survey engineers from all walks of the industry, from recording to post-production to live sound, to find out what they're listening on, and why.

Our "Speaker Selection" Master Class (see page 54) breaks down key specs and design considerations, and helps you choose the ideal pair.

But just having the right tool doesn't mean your problems are solved. You'll need to position your

monitors correctly in your space to minimize acoustic anomalies, and learn how to add processing curves to compensate for room issues. And it's equally important to monitor correctly, at levels that won't contribute to acoustic anomalies or cause ear fatigue.

These are all pieces of a tricky puzzle. But if you start with the right gear and then get the other variables locked in, you'll be a lot closer to making the mixes you want to make.



SARAH JONES
EDITOR

sjones@musicplayer.com

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WEB HIGHLIGHTS
**This month on
emusician.com**

Video Interview:
Kongos Talk Tech

Plus...

Speaker Science: More on Monitor Design

The DIY Advisor: How to Sell Out (Your Shows)

...and
lots
more!



gadget geek

Turn Any Object Into a MIDI Controller With Mogeess



Every drummer started out as a child playing on pots, pans, furniture, pets, etc. Kids today will have it better than before, because all of those objects will be able to function as actual MIDI-triggering instruments with Mogeess, a MIDI trigger based on an adhesive sensor and contact microphone designed specifically for use with iOS devices. Attach the Mogeess sensor to any object and either the iOS app or an audio interface for use with the Mac AU plug-in, and the sensor translates vibrations from the object into a variety of string, synthesizer and drum machine sounds. \$140, mvproaudio.com. —MARKKUS ROVITO



Sweetwater GearFest 2016

Full Report from Fort Wayne

BY GEARY YELTON

ELECTRONIC MUSICIAN readers are familiar with Sweetwater Sound, the world's busiest online retailer for musicians and the largest music store in the United States. Every year, Sweetwater hosts GearFest, a celebration of its customers, the gear they use, and the music they make. Now in its 15th year, GearFest is often compared to the NAMM Show, with at least one critical difference: NAMM is open only to musical instrument industry insiders, but GearFest is open to the general public, free of charge. Everyone has a chance to meet with manufacturer representatives and get their hands on all the gear you'd hope to find in a well-stocked music store, often at unbeatable prices.

This year's GearFest took place on Friday and Saturday, June 17–18. Located on 100 acres, Sweetwater's campus is the perfect location to host more than 12,000 musicians in search of education and entertainment, the latest products, and the greatest bargains. Everyone who attended enjoyed two full days of musical performances, artist appearances, product demonstrations, master classes, and panel discussions. Everyone also had a shot at more than \$88,000 in product giveaways, with winners announced every hour.

Under clear Indiana skies, nearly 500 companies set up booths in 18 enormous tents stretched across the Sweetwater campus and cooled by industrial-sized portable air conditioners. Tents were divided by product type—

electronic production, electric and acoustic guitars, pro audio, and so on. Larger companies such as Roland, Yamaha, Gibson, and inMusic each had its own tent, and a few brought buses or trailers housing portable showrooms or mobile recording studios. Software developers like Propellerhead and Avid, synth makers like Arturia and Pittsburgh Modular, and computer peripheral manufacturers like iConnectivity and



Roger Linn shows off some of his handiwork.

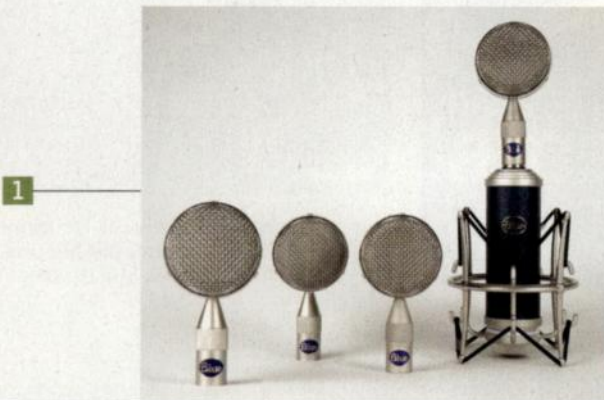


Hit record producer "Fabulous" Fab Dupont explains his production process in a GearFest clinic.

Glyph were there, too. In every booth, you could talk with reps, get your questions answered, and take advantage of deep discounts that expired when the festival ended on Saturday evening.

Every year, Sweetwater's growth is evident by the expansion of its facilities, and this year's addition was a beautiful new outdoor pavilion, a music venue accommodating up to 2,000 people. The big event on Friday night was the pavilion's inaugural concert, featuring a lineup that included Sweetwater personnel and guests such as Jordan Rudess, Chad Wackerman, Larry Dunn, and Andy Timmons. Another new feature at this year's GearFest was free overnight camping in 150 campsites.

Most observers attribute Sweetwater's phenomenal success to founder, president, and CEO Chuck Surack. Every Fort Wayne resident I encountered spoke of Surack in glowing terms. His contributions to the local economy, his philanthropy and generous support for his community, the trust he's earned from his customers, and the values he instills in his employees have all made a profound impression on that city. Those values were obvious during my time at GearFest, where hundreds of Sweetwater employees were hard at work making the event exciting and enjoyable for all who attended. GearFest is Surack's thank-you gift to his customers and suppliers, and along with everyone else who was there, I definitely look forward to returning next year.



1
**BLUE MICROPHONES
BOTTLE MIC LOCKER**
Tube mic with replaceable
capsules
\$5,999

HIGHLIGHTS Bottle mic with discrete Class A circuit powered by an EF86 pentode vacuum tube in triode mode • includes four hot-swappable, large-diaphragm Bottle Cap cardioid capsules—B0, B6, B7, B8 • hand-wound transformer • no pad or filter switches • Power Stream power supply offers variable voltage • SKB hard-shell case included

TARGET MARKET Professional recording engineers

ANALYSIS The four capsules give you a variety of modern and vintage sounds for tracking voices, piano, percussion, and other instruments.

bluemic.com

2
**SONIC NUANCE
ELECTRONICS
TDI MK2**
Direct box/instrument tuner
\$350

HIGHLIGHTS A Jensen JT-DBE transformer-based DI with a 48V phantom-powered chromatic instrument tuner (± 1 cent accuracy) • tuner works when ground is lifted • mute with footswitch • 100% analog signal path • XLR and 1/4" outputs mute during tuning • bright LED display • assembled by hand in the U.S.A.

TARGET MARKET Recording and live sound engineers, guitarists, and bassists

ANALYSIS An instrument tuner and DI combo that lets you mute the signal going to the mixer pop-free, while providing an LED to show mute status.

sonicnuance.com

3
**BOSS
RC-202 LOOP
STATION**
Tabletop looper with effects
\$299 street

HIGHLIGHTS Create and modify two stereo loops at a time • phantom-powered XLR mic input • runs four input effects at a time, including ring mod, pitch shift, and lo-fi • use four track effects simultaneously—filter, slicer, beat, and delay • 17 rhythmic backing tracks • 64 phrase memories • footswitch and expression pedal inputs • MIDI I/O • works as audio/MIDI interface via USB port

TARGET MARKET Musicians, beatboxers, producers

ANALYSIS Similarly powerful features as the RC-505, but scaled down and with a smaller footprint.

bossus.com

4
**MODARTT
VINTAGE TINES MK II
FOR PIANOTEQ**
Physically modeled virtual
instrument
\$59

HIGHLIGHTS A Fender Rhodes-based virtual instrument that takes into account the improvements made to the Mk I • parameters include tine noise and blooming • amp, chorus, and tremolo • part of the Electric Pianos instrument bundle with Vintage Tines Mk I and Vintage Reeds W1 • free trial version available for download

TARGET MARKET Musicians and composers

ANALYSIS Physical modeling provides the characteristic response of the original instrument while letting you customize the tone to a very high degree.

pianoteq.com

All prices are MSRP except as noted



5



5

PRESONUS STUDIOLIVE AR USB

Mixer/audio interface/stereo recorder

\$299-\$599

HIGHLIGHTS Mixers available with 8, 14, and 18 channels • onboard USB 2.0 interface (Mac/Win) • 24-bit, 96kHz resolution • Class A mic preamps • Super Channel • stereo effects with footswitchable bypass • instrument inputs • onboard stereo SD recording and playback • wireless mobile connectivity via Bluetooth 4.1 • bundled with Studio One 3 Artist and Capture software

TARGET MARKET Bands, personal studios, houses of worship

ANALYSIS Designed to be easy to use, whether in the studio or at a gig.

presonus.com

6

AURALEX ACOUSTICS GRAB N' GO STUDIOFOAM

Acoustical treatment

Prices vary

HIGHLIGHTS Conveniently packaged to provide an affordable way to treat rooms and studios with acoustical products • polybagged packages available with LENRD Bass Traps, Studiofoam Wedges, Pyramids, SonoTech, 2'x2'x2" Studiofoam, and Class A fire-rated 2'x2'x1.5" Studiofoam Pro

TARGET MARKET Musicians, educational institutions, houses of worship

ANALYSIS Created to be a low-cost way to augment existing room treatments, as well as for situations where the budget for acoustical treatment is small.

auralex.com

7

WARM AUDIO WA-2A

Tube-opto compressor

\$899

HIGHLIGHTS Vintage-style analog opto-compressor with fully discrete signal path • uses four Tung Sol/Electro-Harmonix tubes—two 12AX7, one 12BH7, one 6AQ5 • XLR and 1/4" TRS inputs and outputs • Kenetek opto attenuator • CineMag USA transformers on the audio inputs and outputs • variable pre-emphasis • stereo link capability with second unit • 15Hz to 20kHz frequency response • rackmountable

TARGET MARKET Recording and mixing engineers

ANALYSIS An affordable way to add a tube-based, opto leveling amplifier to home and pro studios.

warmaudio.com

8

WAVES NX

Room simulation plug-in

\$99

HIGHLIGHTS When inserted on the master bus, Nx is designed to provide a realistic room simulation of stereo and surround (5.0 and 5.1) speaker setups as you listen on headphones • customize the plug-in for your own head measurements • real-time head tracking can be done from your computer's camera or using the Waves Nx Head Tracker (available separately)

TARGET MARKET Recording and mixing engineers

ANALYSIS A very promising—and affordable—technology that we look forward to hearing in person.

waves.com



Cleverly disguised as a 4-pole variable-curve filter behind a 12HP panel, the TwinPeak offers a resonant bandpass response that is utterly unique.

EPOCH MODULAR

TwinPeak

An expressive bandpass filter with percussive leanings

BY GINO ROBAIR

From The Hague, Rob Hordijk has been creating musically sophisticated electronic instruments for years, such as the Blippoo Box and the Benjolin. Some of his designs have been licensed for mainstream distribution: For example, Epoch Modular (epochmodular.net) offers a Eurorack version of the Benjolin (read our review at emusician.com/benjolin).

Epoch's latest release is the Hordijk-designed TwinPeak (\$335), an ingenious filter design with a variable response/curve. Taking its name from the Blippoo Box's TwinPeak Resonator, the Epoch design is a realization of the *inverse-parallel* principle, where two lowpass filters of equal gain but opposing phase are combined to create a bandpass response with peaks at the corners of the pass band, as the filter with the lower cutoff frequency is subtracted from the one with the higher cutoff. The result is a variable width bandpass filter where the cutoff frequencies of the two filters can be crossed and, regardless of which is tuned higher or lower, the resonator output will be a bandpass response. Furthermore, you can set the passband to "near zero" bandwidth with both filters tuned in unison, regardless of cutoff frequency. The Epoch TwinPeak has a 4-pole architecture and 12dB slope, as well as a wavefolding circuit that lets you morph the filter response from lowpass to variable-width bandpass.

The module has two audio inputs and a level-input/fade control. When the knob is at 12 o'clock, you hear both signals equally. When the Curve control is fully counterclockwise you get a basic, resonant lowpass response, which you can modify using the 1V/octave input, Peak A knob, CV Mod A input, and the Peak A Mod attenuverter. Add resonance with the Res/Ping control and CV Res input.

Turn Curve counterclockwise to hear a dual-filter response; each can be individually tuned and modulated using its associated CV inputs and knobs. The Dual Mod CV input affects both cutoff frequencies simultaneously and has a greater range than the A and B modulation inputs.

Like many filters, the TwinPeak provides percussive timbres when pulses and gates are patched into the audio inputs. Epoch's design yields a longer sustain than other filters when pinged, and its built-in "all harmonic distortion" gives you a wider range of sonorities than expected—from metallic to woody. Audio-rate modulation takes the timbres even further.

Turn Res/Ping clockwise to lengthen the tone and use the Peak A and B controls to set the peak frequencies. With Res/Ping fully clockwise and one or both tones tuned low, your note will sustain for several seconds. Back off Res/Ping to about 2 o'clock to shorten the sustain and create bell- and marimba-like sounds.

You can dynamically alter the length of the tone by patching a voltage into CV Res, then use the A, B, and D CV inputs to change the pitches in real time. I sent a triangle wave into Input 1 and a pulse into Input 2—each separately sequenced—then patched a voltage into CV Res to create a vibraphone-like sound that randomly alternated between sustained and muted.

The TwinPeak excels as a sweet-sounding resonant filter, and it can be made aggressive or provide vocal-style formant filtering. And if you're a fan of lowpass gates, you'll find that the TwinPeak has a similar feel when fed pulses, but offers a wider range of timbres than any other thanks to its variety of modulation inputs. ■

BULIT8
BULIT6
BULIT5

RM-07
RM-05

HRM-7

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BULIT Series Active Reference Studio Monitor

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Now Hear This!

Audio pros reveal the studio monitors they use and why they chose them

BY MIKE LEVINE

Whether you're mixing, mastering, tracking, or editing audio, using monitors that are appropriate for your task is one of the keys to getting good results. Monitors play a central role in how we perceive the audio that we're working on, and if that perception is less than accurate, the results will likely be, too.

Considering the dizzying amount of models on the market, it's not easy to choose the monitors that are right for your situation. Do you want passive or active models? What size driver is appropriate for you? Do you want 2-way or 3-way units? Do you prefer conventional tweeters or ribbon tweeters? Do you need built-in EQ for room tuning? Do you like ported or non-port cabinets? How much can you spend?

To help you find perspective, we talked to audio professionals in a number of different sectors of the business to find out what monitors they use, and why they chose them.



STAN LEWIS

Music production/TV and film scoring

YAMAHA HS7 (\$299.99 EACH)

2-WAY ACTIVE WITH 6.5" WOOFER, 1" DOME TWEETER, SWITCHABLE FILTERS

When he's touring with Kendrick Lamar or artists like Seal, Mary J Blige, or Darius Rucker, keyboardist Stan Lewis produces rap, jazz, classical, gospel, you name it, from his home studio—and writes music for film and TV. "I've worked on a lot of projects out of my studio using the fantastic Yamaha HS7s as my go-to monitor for movie scores, [music for] show dates for Patti Labelle, and any projects that come my way," he says. "I'm currently finishing up my own personal project, and projects for my artist Wendy Cox, Lakiesha Solomon, and a collaboration with Martin Johnson for an upcoming album."

The HS7 monitors feature a 6.5" cone woofer and 1" dome tweeter. "The speakers I was using before were really bass-heavy," he says, "so I wouldn't get a true sound." Not so with the HS7s. "They give you enough in the bottom end, but it's not overbearing. It doesn't get in the way. And if you pump them up, they crank up a little bit." He also finds the high end they produce to be both accurate and non-fatiguing: "It's a pretty flat response. It's a natural sound that comes out of the high end, and it's not piercing. They've been really a pleasure to listen to. In terms of getting tired of the sound, I haven't found that at all. I find myself working longer studio hours." [Laughs]

Since switching to the HS7s Lewis finds his mixes translate better to other systems, too. "All the way around, it's like a true natural sound, and I'm really excited to be using these speakers. I actually want to get a pair of the HS5s as well, but the HS7s are truly a blessing."





KEVIN MADIGAN

FOH Mixing

NEUMANN KH 120
A G (\$749.95 EACH)
2-WAY ACTIVE

WITH 5.25" WOOFER, 1" TWEETER,
SWITCHABLE FILTERS

It might sound odd that an FOH engineer would use studio monitors, but Madigan, whose chief gig is engineering for Crosby, Stills, and Nash, uses his Neumann KH 120 A Gs for several different tasks. "I've been using them as almost a headphone replacement," he says. "They live on stands on either side of the console [at the venue], so if I have to do any work when I arrive in the morning, or recordings that need to be mixed, that's what I've been using."

Madigan says that every CSN show is recorded to multitrack. "Sometimes we'll have to do stuff for TV, or one of the guys will want a mix of a show or a particular song. And that will be just as easy as me coming in, getting set up, and getting to work with the KH 120s. Because they're such a wide-range speaker, surprisingly for the size, you can mix fairly accurately on them."

The Neumanns are so versatile that on live shows, Madigan sometimes uses them as his own personal monitors, if his mix position doesn't allow him to hear well enough at FOH. "When we're in some of the larger theaters, and I'm way deep under a balcony, and I'm right at the back wall, I'm probably in the worst place in the house for sound. Often, I'll delay the KH 120s to our P.A., and they're running during the show. So the monitors are just used to augment what's going on, so that I make sure that what I'm hearing is what the majority of the audience is hearing. I don't have to get out from behind the console and walk 20 feet farther forward and say, 'Ah, that's what's actually going on.' I'll already have done that several times during the day."

Madigan uses larger KH 310s with the KH 810 Active Studio Subwoofer extensively in the studio and during pretour rehearsals, to help him create FOH-mix settings for the various songs. "I like these in the studio and have used them for rehearsal purposes. They've translated really well, from [the studio] to getting out on the road and firing it up into a big P.A."



LIJ SHAW

Mix Referencing

KRK ROCKIT 10-3 G3
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3-WAY ACTIVE MID-
FIELD MONITORS WITH

10" WOOFERS, 4" MIDRANGE SPEAKERS,
AND 1" SOFT DOME TWEETERS,
SWITCHABLE FILTERS

If you look behind the main stage at the Bonnaroo music festival, you'll see a strange-looking structure that appears to be a giant bale of hay with a door on it. It's called Hay Bale Studio, and it's actually a double-wide trailer with bales of hay piled around and on top of it to provide sound proofing. Inside is a complete recording setup, where more than 30 Bonaroo bands go each year to record live tracks that are almost immediately broadcast on radio. The engineer who runs the studio and does the recording and mixing is Lij Shaw, who spends the rest of the year working at his own space, The Toy Box Studio, in nearby Nashville, as well as hosting the *Recording Studio Rockstars* podcast.

"We'll bring in at least 30 bands, and we have a band every hour," says Shaw of the Hay Bale Studio. "A band comes in at the top of the hour. They walk in the door. We meet and greet there. They come on in, we find out as quick as we can what their lineup will be. And everybody is just in one shared space, and then we have a separate control room. And I will mix. And I do it in a pair of headphones. I'll just do a 2-mix while they're performing, and then just get a killer mix, and then we capture that. Our guy Joe Hutchinson runs a mastering station behind me, and he masters the songs and then they're posted to the radio servers within an hour. Our recordings are broadcast within an hour in 40 different radio markets."

So where do the KRK Rockit 10-3 G3s come in? "What I needed the monitors for was to be able to get a full-range playback and be able to crank up the mix and get a real feel for what it would sound like if I was just turning it up as loud as I wanted," he explains. "I set them up in the big room and then afterward go out and just crank up the mixes and see how they sound. They're awesome for tell-

ing me when we're getting the low end right in the mix and when the energy really sounds great.

Shaw also brought two pairs of smaller monitors with him: the KRK Rockit 5 and Rockit 6. "What I really appreciate about speakers like those is that they give me the ability to reference a mix much closer to what a real consumer experience would be."



PIPER PAYNE

Mastering and Engineering

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3-WAY PASSIVE, 11"
WOOFER, 6.5" MIDRANGE
DRIVER, BERYLLIUM
INVERTED DOME
TWEETER, SWITCHABLE
FILTERS



As an engineer at Coast Mastering in Berkeley, Calif., Piper Payne requires a monitor system with the most accurate reproduction possible. With the budget to get virtually any monitor she wanted, Payne chose the passive 3-way Focal Scala Utopias. "First of all, I love the beryllium tweeters," she says. "Second of all, they were the appropriate size for the room. Third of all, I could put them on a pair of stands that would put them at the right height for me. So I didn't have to shrink them down, or sit myself up higher, for a larger set of speakers."

In a passive system of this quality, the power amp choice is almost as important as the monitors themselves. Payne chose VTL MB-450 monoblock tube amplifiers. "I absolutely love the amplifiers that I have, and they worked out perfectly with this pair of speakers. The monoblock tubes and the beryllium tweeter are a perfect pairing for long listening. They're really light on the distortion and it's all out of the audible range, so you can listen for a really long time without feeling fatigued."

Some might wonder about using a tube amp when absolute clarity is the goal. "A lot of people

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think of tubes as these warm, squishy kind of things, but these are actually reference tube amplifiers. But what you think about tubes, really the only thing that carries over is the word 'power,'" she says. "Everything else about a pair of tube amplifiers that are really well-designed, that are driving a pair of very clean, open speakers like the Focals, is all about clearing out any possible distortion—basically, not letting the speaker have to work hard at all."

Between her acoustically treated room, the Focals, the VTLs, and a set of interconnect cables that cost about \$10,000 (not unusual in the mastering world), Payne is able to hear with the precision necessary to do her job. So good is her system that she's able to hear the flaws clearly on the mixes she receives, and thinks many of them come from sub-standard monitoring in the mix environment. "If the mixer is sitting too far from a near-field speaker, it ends up feeling too bright and too sibilant. I have a lot of problems with sibilance when the mix people don't have their system set up quite right."

"I think in general, a lot of mix engineers have their monitors toed in too much. You end up messing up your bass delivery. Or the mixer is not sitting right in the center of the speakers. They might have them set up correctly, but they actually have their face six inches from the computer screen, which, again, will collapse it and make your vocal more sibilant."



DOUG MOUNTAIN
*Film and TV
dialog editing,
music mixing*



JBL 3-SERIES: LSR305 (\$149 EACH) AND LSR308 (\$249 EACH)
2-WAY, ACTIVE WITH 5" WOOFERS (305) AND 8" WOOFERS (308), 1" TWEETERS, SWITCHABLE FILTERS

Doug Mountain has worked in movie and TV sound for many years, primarily as a dialog editor.

His credit list includes movies like *Sideways*, *Super 8*, *Paranormal Activity 2* and TV shows like *Breaking Bad* and *Community*. He's also been very involved with sound for the Grammy Awards. "I've been a consulting engineer for the National Academy of Recording Arts and Sciences for 20-plus years," he says. "I was one of the team that designed how sound is done for the Grammys."

"The main point of dialog editing is to smooth it all out, so it sounds like one piece of continuous conversation," Mountain explains. This is challenging because he is presented with audio from multiple cameras and captured with a variety of mics. "When you get it as

a dialog editor, it's going to be really choppy. And the task of the dialog editing is to clean it up. Your job is to go through and cut the appropriate mic for each given scene and then create fill, and fill in between as much as you can, so it sounds like one complete conversation. You have to do a fair amount of critical listening, especially if you're working with difficult tracks where there might

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~ Al Parsons

the Beatles, Pink Floyd, Alan Parsons Project



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with glorious results."

~ Brad Madix

FOH: Rush, Shakira, Marilyn Manson, Def Leppard



"The JDX gives me all the character and distortion without the worries of

bleed and feedback."

~ Jim Warren

FOH: Radiohead, Arcade Fire, Nine Inch Nails, Peter Gabriel

jensen
transformers
INSIDE

be background noise that you have to deal with, or figure out how you're going to work around."

What does Mountain need most from his monitors? "Clarity. Clarity is the most important. Clarity and the ability to listen at relatively loud volumes for long periods of time. And not only clarity in the high end, but clarity in the low end."

Mountain works both at his home studio and in a larger studio facility, and both places are equipped with JBL monitors. "I've tried a variety of different speakers," he says, "and the new JBLs, the 3 Series—the LSR305s and LSR308s—are a huge improvement for me as far as critical listening. Currently, I have both types: 308s and 305s."

"What's unique about this is whatever I do at home translates up to the bigger systems at the studio quite well," he says. "So I know, when I'm listening to something close up on a small pair of JBLs, it's going to be pretty accurate when I hear it reproduced in a bigger room. I was pretty surprised that there's been this quality of improvement in small self-powered speakers over the past few years, especially at this price point."

Mountain previously used a different brand of monitors, but changed over to JBL after the company revamped its speaker line a few years ago. "The first speaker that came out in this complete redesign was the M2. They redesigned the high-end drivers, and they went to sort of a different concept for the

driver itself. And then they redesigned the horn, so you get a bigger spread of your listening field. Then they took that same technology on the M2 and they scaled it down. Because the M2 costs about \$40,000. It's ridiculous. But they actually took that and scaled it down for regular people to afford the same improvements in their entire line of speakers."

**ANDY
FREEMAN**

Mixing and Editing

ULTIMATE EARS UE RM
CUSTOM-FIT, 3-WAY IN-EAR
REFERENCE MONITORS (\$999)

According to producer Andy Freeman, whose credits include Eisley, Manchester Orchestra, Jet Trash, Branches, and Bonnie Bishop, he's "always doing crazy things, traveling way too much." As a result, he's in places other than his home studio on a regular basis. "I find myself having to work on mixes in odd spaces a lot of times," he says. "Sometimes on planes, sometimes in a studio that I don't know that well." To allow him to monitor on the go, he made a practical decision to invest in a pair of Ultimate Ears UE RM in-ear monitors, which are designed for studio work and were developed in cooperation with Capitol Studios. "I carry my in-ears so I can get some assurances aurally, and know what I'm up against."

Not only are the UE RMs designed for flat response, with mixing in mind, Freeman has become extremely accustomed to them. "One of the benefits of having in-ear monitors is that they're also headphones. That's obvious on the face of it."



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But you can plug them into your phone and listen to records. Probably at this point, especially when I lived in San Francisco and didn't have a car and was walking everywhere, I probably listened to more records on those than anything. So those became my drop-dead reference for things."

Because they're custom fit, they provide a great deal of isolation, which is essential when mixing on airplanes. "I've mixed plenty of things on planes. You always want to check it on speakers if you can. But certainly, it's a way to do editing, or tuning, or anything like that on a plane. I can get a mix to 80 percent, maybe 90 percent, and then you put the finishing touches on when you're in your studio."

STEWART ADAM

Audio restoration and mastering

**EVE AUDIO SC208 (\$999 EACH)
2-WAY ACTIVE WITH 8-INCH
WOOFERS AND AMT RS2 RIBBON
TWEETER, BUILT-IN DSP AND
FILTERS**

Audio-restoration is the bread and butter of Plymouth, Mass.-based Stewart Adam's workload. "Most of my stuff is archival work for colleges and universities that have large collections of oral histories or research projects," he says. "Sometimes I'll have 1,000 cassette interviews."

When he's not cleaning up old recordings, he does mastering. "Mostly indie stuff, nobody famous. It's a tough market to crack into, because there are so many people doing it. I think I have a pretty good ear; I think I get pretty good results."

The bi-amplified Eve Audio SC208 monitors, which feature 8-inch drivers and ribbon tweeters, provide Adam with what he needs both for restoration and mastering: Clarity across the sonic spectrum and plenty of low-end response. "I need a fairly full-range monitor. I'm dealing with records—78 records have a lot of low-frequency information like rumble that you have to be careful of. If I used like 4-inch drivers, I wouldn't hear that information and would sort of be guessing."

It's not only the low end of the SC208s that Adam appreciates; it's the reproduction from the ribbon tweeters. "I find they have very smooth high end on them."

Adam's studio is well-designed from an acoustic standpoint, which helps make his results even more accurate. "The imaging is superb on these speakers in my studio."

He's confident enough of the accuracy of his setup that he eschews headphones completely. "I've never used headphones," he says, referring to current audio work. "I did production sound on TV commercials for 30 years, and that's the only time I ever wore headphones."

He also pays careful attention to the level at which he monitors at, making sure to stay at non-damaging SPL. "I try to keep my listening level between 80 and 84 dB. It's moderately loud, but it's not painful. I still have pretty good hearing."

UNPLUG


There you go: Seven audio pros with diverse monitoring needs and very different monitor choices. One takeaway is that not all studio monitors are used strictly in the studio. Another is that depending on what you're doing, you

can get professional results without spending a fortune. We hope insights from this group of engineers and recording musicians has provided you with additional perspective that will help you then next time you're in the market for monitors. ■



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A high-angle photograph of a man with dark hair and glasses, wearing a black t-shirt, leaning over a large, complex modular synthesizer. The synthesizer is a rack of various modules with numerous knobs, sliders, and patch points. In the background, a DJ turntable setup is visible on a wooden floor. The overall lighting is dim, with a greenish tint at the top of the frame.

MSTRKRFT

Jesse F. Keeler and Alex “AI-P” Puodziukas rely on modular synths, live tracking, and analog mixing to push dance music beyond its comfort zone on *Operator*, their third album.

BY KEN MICALLEF



IN THEIR search for a sound that would capture hearts and minds, wallets, and headphones, MSTRKRFT's Jesse F. Keeler and Alex Puodziukas (aka "Al-P") have made one of the most extreme dance-floor fillers ever. From first track to last, MSTRKRFT's third release, *Operator* (Last Gang), finds the Toronto-based duo pushing old-school beat machines and DIY-worthy modular synths into truly unruly sonic ecstasy. *Operator* posits this mustachioed duo performing in '90s-era warehouses in Chicago and Detroit, their DJ works glogged up with chewing gum, distortion, and spit.

"The song that my wife dislikes the most is 'Playing With Itself,'" Keeler laughs. "The constantly changing chords make her dizzy. We admit it—an element of everything we've done is designed to upset people. We would be getting ready to DJ before 50,000 people and the last thing we'd say to each other would be 'Okay, let's go f*cking punish them!' We'd have the attitude of a punkier-sounding metal band the whole time. Now it's out in the open!"

Recorded live in rented spaces with a minimal gear palette, self-produced, self-mixed, and mastered by Tom Coyne at Sterling Sound, *Operator* is a triumph of punk-rock performance, electronic music aesthetic, and experimental tools.

"Everything but the vocals were performed live," Al-P says. "Our modular synths, drum machines, and such went into the Venice Midas 160 mixer, then the outs from every channel into Pro Tools. We'd just hit Record and start being creative. If we found something cool, we'd encourage each other, keep going with that idea, and fully explore it. We amassed an obscene amount of music. We'd listen back over the recordings and edit down to create the final record."



"I learned that technique reading a Basement Jaxx feature in *Electronic Musician*," Keeler adds. (Read the article at emusician.com/basementjaxx.) "They were discussing their song 'Red Alert'; how they kept recording and edited afterward to choose what to use. They even made the singers do multiple takes. They'd take moments from when the voice was more burnt-out, for example, then just pick through and create the final version from chunks of that longer recording. That always stuck with me. That's how we worked on *Operator* as well."

Operator is a work of exceptional lunacy. From the dive-bomb guitars and larynx-shredding vocal of "Go on Without Me" and the dub-maniacal beat and assaultive mouth spew of "Priceless," to the surreal, *E.T.* like textures of "Morning of the Hunt" and the nausea-inducing terrain of "Playing With Itself," *Operator* pushes dance music beyond its comfort zone.

"Our equipment is minimal," Al-P says. "That was a conscious decision that came from being able to record in a live setting. When touring we'd always perform as DJs. People would ask us to play live but there was no way we could do that without completely compromising the production. But this album was created from a fixed palette of equipment so we can perform the songs live."

Operator's only overdubs are Mellotron on "Run-away," squealing synth on "Playing With Itself," and in "Partyline," a bass groove produced by a Korg MS-20.

The duo's gear-stack includes a Lexicon 480L; Roland TR-707, 808, and 909; Roland SH-101; and Korg MS-20. Genelec and Yamaha NS10s provide

monitoring, along with an "old Yorkville P.A. system"; each side has an 18-inch sub, two 15s, and a horn." MSTRKRFT's cost-effective (average price: \$299) Eurorack modular synths include Keeler's Intellijel Rubicon, Corgasmatron, and Quadra; Mutable Instruments Braids and Elements; Synthwerks Lamp 2; Make Noise DPO, Echophon, and MATHS; and Acidlab Autobot. Al-P's modular array is no less extensive: Blue Lantern Modules Blue ZTVCO and Diode Operator Station VCF, ALM/Busy Circuits Beast's Chalkboard, Make Noise DPO, Analogue Solutions SH-NZ, Doepfer A-190-3, and WMD Devices Aperture. These modular toy-tools play by their own rules—the perfect choice for sonic sorcerers MSTRKRFT. The modular first-fruits can be heard on Keeler's wife's favorite, "Playing With Itself."

"That song was titled literally," Keeler explains. "My modular synth was up, we hit Record, then Al and I went out to have a beer and a cigarette. When we got back the patch had evolved in our absence. That weird mutating chord that keeps moving around, the modular decided that—not me. That was a Modcan Triple Osc. It just kept evolving and never seemed to come back to the original pattern. It kept mutating."

When asked if they work in the box, Al-P says, "to the extent that we're recording multitracks out of our Midas Venice 160 mixer, which allows us to monitor all the different synchronized drum machines and synthesizers. We record all of those as direct outs and use the multitrack recording computer as a tape machine. We adjust levels and let it run. As far as in-the-box mixing and processing, we'll do surgical equaliza-

tion, or filtering, like setting high-pass filters at 24 Hz to get rid of unnecessary low end. We mix all analog.

"We mixed *Operator* in Toronto at Union Sound Company," Al-P adds. "They have a beautiful 1972 Neve 8014 console that sounds great. Most of our songs are 9, 10, 11 tracks, plus effects. The Neve is a 16-channel console with four buses that allowed us to route exactly way we wanted."

"It's a pleasure to mix on analog equipment instead of using the mouse and looking at a screen," Keeler notes. "We use our ears. While mixing one song we turned the screen off entirely, we were just listening. Immediately it sounded better. We were able to get a superior mix."

MSTRKRFT are fans of the popular Universal Audio line of plug-ins for mixing duties.

"UAD plugs are all over the place on the record," Keeler says. "Those are the equivalent of five Teletronix LA2As running. Who owns as many compressors as we might've had going at once using the UADs?"

"A lot of UAD EMT 140 [Classic Plate Reverbator] is on the record," Al-P adds. "That's a great plug-in of a classic piece that UAD really nailed, as well as the UAD AKG BX 20 Spring Reverb. We actually own two of those original units. I'd been avoiding the plug-in version 'cause I didn't believe it could sound as good as the hardware but it sounds great. And it doesn't have any of the noise our real ones have. We also use UAD Manley Massive Passive EQ. If we had five of those hardware pieces running—imagine the cost!"

Keeler explains how the Massive Passive was

A man with a long beard and glasses, wearing a black cap, is shown in a dimly lit studio. He is playing a Seaboard RISE MIDI controller, which is a sleek, black, touch-sensitive device. His hands are positioned on the controller, and he appears to be focused on his performance. In the background, a large speaker is visible, and the overall atmosphere is professional and artistic.

Touch the future of the keyboard

Adriano Clemente is always looking for the music-making tools of the future. The sound designer and DJ has discovered the Seaboard RISE, a new type of MIDI controller. Its soft, touch-responsive surface lets him shape sounds more expressively than any standard keyboard. Whether he's performing onstage or designing in the studio, the Seaboard RISE is changing the way he makes music. Pressing a fingertip into the surface, he says, is "like seeing a composition unfold in slow motion." Learn more about the Seaboard RISE and its Five Dimensions of Touch on roli.com/rise.

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used: “We used its high-pass filter set at 22 Hz to clean up any errant low end we didn’t want in the mix,” he says. “Some of the modular synths are capable of very low frequencies. We don’t want that energy to take up space on our mix bus so we always cap it using the UAD Manley Massive Passive EQ. We also used the Lexicon 480L [“Digital Effects System”] reverb on everything. Partially because we own it and also we love how it sounds. Al is very deft at getting great patches out of it.”

Al-P reveals his affection for the Lexicon 480L’s tiny remote, Lark, which resembles a 1980s push-button calculator. “I love the Lark, the Lexicon’s alpha/numeric remote control,” Al-P says. “It’s a small little thing with six sliders that allow you to access six parameters simultaneously. So you can be in mix position dialing in reverbs, as well as changing lowpass, cut-off, and decay of the whole program, all at once. It’s a great tool for doing performances on reverb programs. You can page through groups of six. So, for example, you can simultaneously adjust the decay of the reverb and the lowpass filter. It’s even better than an in-a-box reverb. And we like the sound of the Lexicon; a ton of hit records have used that reverb. You hear that the moment you put it up. It sounds like a classic piece.”

One of the greatest digital reverbs ever since its introduction in 1986, the 480L does more than reverb. Its functions include sampling, a “Shape and Spread” option that enables Waves-like hall modeling, even 3D-like reverb using “Panorama” mode.

“We also used the 480 for pitching shifting,” Keeler says. “Like the last song on the record, ‘Go on Without Me.’ The guitar is being pitched around with the Lexicon. After we mixed the song, we used it again on the master to pull it all together and make it feel less like things in a box and more like things in a room.”

Operator is about extremes, from the 909 warfare of “Wrong Glass Sir” and the Japanese sci-fi horror sounds of “Little Red Hen,” to the siren peals of “Death in the Gulf Stream” and somnambulant space walking in “World Peace.” Which production was the most extreme?

“There’s a lot of Dave Smith Tempest on ‘Death in the Gulf Stream,’” Keeler confides. “It’s doing a lot of the weird percussion, and the way the sequences jump around the start point keeps changing. We made a conscious decision with that track to leave in the errors. You really hear us finding the things that we want.”

“The whole record is a masterpiece of editing!” Al-P jokes. “We begin with a lot of material when looking for the bits and pieces we use to assemble a song. On that song we were trying to square up the events. But after the mix it sounded wrong. So we went back to a rawer version of the edit where things were changing every five or thirteen bars. It felt way more alive.”

The first *Operator* single “Runaway” is particu-

larly jam-packed with sonic juice. Opening with humongous, dinosaur-sounding synths, the vocals of Big Black Delta’s Jonathan Bates enter, adding a calming element.

“The main synth there is the Make Noise DPO with two different CV pitch signals being sent to the two different oscillators,” Keeler explains. “It’s just a saw out on one and a square on the other. That’s running into the Blue Lantern Asteroid Operator VCF. That oscillator has a sub-octave that I ran with a sinewave out also from the DPO. That was sequenced with the Intellijel Metropolis synth.”

“The Make Noise DPO oscillator is a staple in our rigs,” Al-P adds. “Aside from the oscillators themselves sounding really great, all the cross-modulation access points between the two oscillators are very extensive. The relationship between the two oscillators is great as well. That’s our go-to oscillator when we want to start with a note before we add all the modulation.”

“There’s a lot of Dave Smith Tempest on ‘Death in the Gulf Stream.’ It’s doing a lot of the weird percussion.”

—JESSE F. KEELER

“Runaway” features numerous breakdown sections, Bates’ layered vocals picking up the ball and moving the track forward.

“Initially ‘Runaway’ was 20 minutes long,” Keeler says. “After we recorded everything, we edited it to reflect those breakdowns. At that point it was just moving the audio around like Lego blocks in Pro Tools.”

The track also features a rubbery synth so gluey-sounding it sticks to the ears like candy sludge. “That’s a Bubblesound Instruments oscillator with an envelope generator going into it,” Al-P says. “We liked the way it was wobbling around so it stuck. We referred to that as the guitar, when discussing it.”

And the swooping, growling synth that enters the mix before the first breakdown? “It’s the Blue Lantern Asteroid Operator VCF,” Keeler explains. “It’s like six different filters in one module, depending

on how you set it. Some of the extreme low end that made the speakers flap around was lost from the final master, but you’re hearing the performance, the same oscillator. That arrangement is crazy.”

The textures in “Runaway” morph from ’80s guitar *rawk* to Vangelis-like synths. A Roland TR-909 ride cymbal lightens the track, but MSTRKRFT couldn’t leave it alone. The cymbal tone seems to pitch upward as the track progresses. “That’s a TR-909 ride cymbal being tuned up,” Keeler explains. “You’ve only got level and tune controls on the TR-909 ride. Another sound that is really important in that song is a single note on the Roland SH-101 being played at the same moment as the snare. But it’s with varying degrees of noise, and in terms of whether it’s noise or the sound of the oscillator, the snare heard in that song is actually the synth, not a snare.”

“The beat and the hi-hat pattern in ‘Runaway’ are the TR-707,” Al-P adds. “The 707’s hi-hat has several different levels of shuffle, similar to the 909, but not as many. So when you go from shuffle level number one to shuffle level number two you can hear some shuffle happening, but level three is unusable. [Laughing] The 707 hi-hat there is between shuffle levels two and three. We put the bottom and top halves of it together to make the recurrence seem normal, otherwise it would have been too much shuffle.”

Visiting WMD Devices in Denver while this interview transpired, Keeler and Al-P were excited to collaborate with the manufacturer for a signature piece of MSTRKRFT kit. What might it be called, MSTRKRFT BLSTR BTR? What’s with the name anyway?

“Originally we had no intention of being a group,” Keeler states. “We just wanted to build a studio, and we called it MSTRKRFT. Then we began doing remixes, next thing we’re being offered record deals. So we kept the name but left that studio.”

After 2006’s *The Looks* and 2009’s *Fist of God*, MSTRKRFT delivers their boisterous noise to the masses on *Operator*. Where can they go from here? “We’re fans of some pretty weird music,” Al-P says. “If there is a single reference point for us, it’s the band Crom-Tech. We love them. In our single days we played their song, ‘Girls Go Home.’ Drop some Crom-Tech and the girls would leave the party! Some of our weird tastes are reflected in *Operator*. But we’re happy if you only like one song.”

Love ’em or hate ’em, there’s no denying MSTRKRFT’s amazing skill set, and more importantly, their talent for injecting cold electronics and old hardware with the sticky sounds of real life.

“The thing that is the least exciting or even worse,” says Keeler, “is when someone reviews our record and they have a tepid response. I would rather *Operator* be vehemently hated or loved than casually enjoyed. We’d rather elicit traumatic emotions. Maybe you hate certain songs now, but when you revisit the album later it may be the soundtrack you need.” ■

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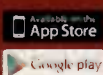
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Metronomy

BY TONY WARE

Joseph Mount abandoned restraint and embraced a hybrid analog/digital approach in the studio for his new album, *Summer 08*

To hear Joseph Mount tell it, embracing questionable techniques and lateral thinking has been key to his past decade recording as Metronomy, and to his new album, *Summer 08*.

"Deciding not to do things is as important as deciding to do things," says the UK-based musician/producer. "It sounds a bit like one of Brian Eno's *Oblique Strategies*, but I think my strength to this point has been knowing I need-



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ed to learn a lot. So for the last album I decided to record to 8-track tape to experience what was good about it compared to my earlier experiences, embracing the sound of the room and knowing what was done in the studio would translate well live. While for this new album I wrote it and recorded without a concern over being overtly digital or the

thought of playing it live crossing my mind, and it was a liberating thing.”

The narrative for
Metronomy’s 2014

LP, *Love Letters*, was clear-cut: Record an all-analog album, a set of Motown-influenced psych-rock soul confessions that would be performed as a quintet. To accomplish that, Mount and company’s sessions were committed to a 1-inch Studer A80 recorder in East London.

For his self-recorded/produced follow-up, however, Mount saw no reason to keep the Mac towers, or anything else for that matter, out of the equation. His experiments in the recent past had helped him appreciate what’s good about the now.

“I wanted the perspective, because I think a lot of producers are born into this world where you can get a copy of Logic for not much money and it fills the void of all these tools and instruments that you’ll never see as physical things,” says Mount. “But after you’ve made a record with such a restrictive amount of tracks you can use you realize how lucky you are to have infinite tracks. And after the last record I realized the practical implications of MIDI and how it’s f*cking brilliant. For this album

I wanted things to be more crisp, obviously recorded today.”

Mount’s path to this point is littered with both surmounted and self-imposed limitations, as well as now-quaint technologies. He started in music as a drummer, first exploring samplers and digital editing while a DJ in 2002. His earliest indietronica recordings, arranged in Apple Logic and Macromedia SoundEdit and collected in 2005 as *Pip Paine (Pay the £5,000 You Owe)*, were recorded directly into a Power Macintosh G3’s mini-jack, establishing his love of dry DIed signatures. By 2008’s *Nights Out* he upgraded to a laptop equipped with an Edirol FireWire soundcard, “which I

thought was an impressive secret weapon,” he says. “The way I was working was quite messy but quite good, in a way. I’d do lots of little things, make samples and bits of songs and revisit them months later to find what I thought was still cool.”

Since his third album, 2011’s *The English Riviera*, Mount has utilized professional facilities, working with engineer/coproducer Ash Workman to merge live tracking and sample manipulation. Now, following *Love Letters*’ pointedly purist aesthetic, *Summer 08* returns to the “rummaging” mentality of earlier nu-disco records, as Mount “did a lot more working in the box on my own before taking it to the studio and adding real stuff, [whereas] before I would have just left it a messy recording.”

The title of *Summer 08* isn’t to be taken literally, however. While some songs on the album began as sketches stretching back to *Nights Out*, Mount’s intention was to recapture an attitude, rather than a vintage atmosphere. One track, “16 Beat,” is a robofunk workout, while “Old Skool” boasts a scratch break from Mount’s early inspiration, Mix Master Mike. “Hang Me out to Dry” features dilating synths underneath a relaxed vocal from Robyn. The concept of *Summer 08* is sounds that are adventurous, inspired by Herbie Hancock, Stevie Wonder, Devo, hip-hop production, New Order; the unhinged, studio-centric albums of The Beatles, Zombies, Wings and Talking Heads; as well as Mount’s own earlier years—while the sonic feel is 10 hook-rich tracks of modern dance-rock grooves.

“In 2008 I had a little room in East London above a Greek restaurant, and I was doing a lot of remixing at the time and trying to be incredibly prolific and proactive and just trying to make sure I was doing better than everyone else, which didn’t necessarily happen, but the mindset was of a young, competitive musician in London,” he says. “And I was looking forward to everything I hoped would be around the corner. I wanted this record to reflect a similar embrace of first instincts and accidental features.”

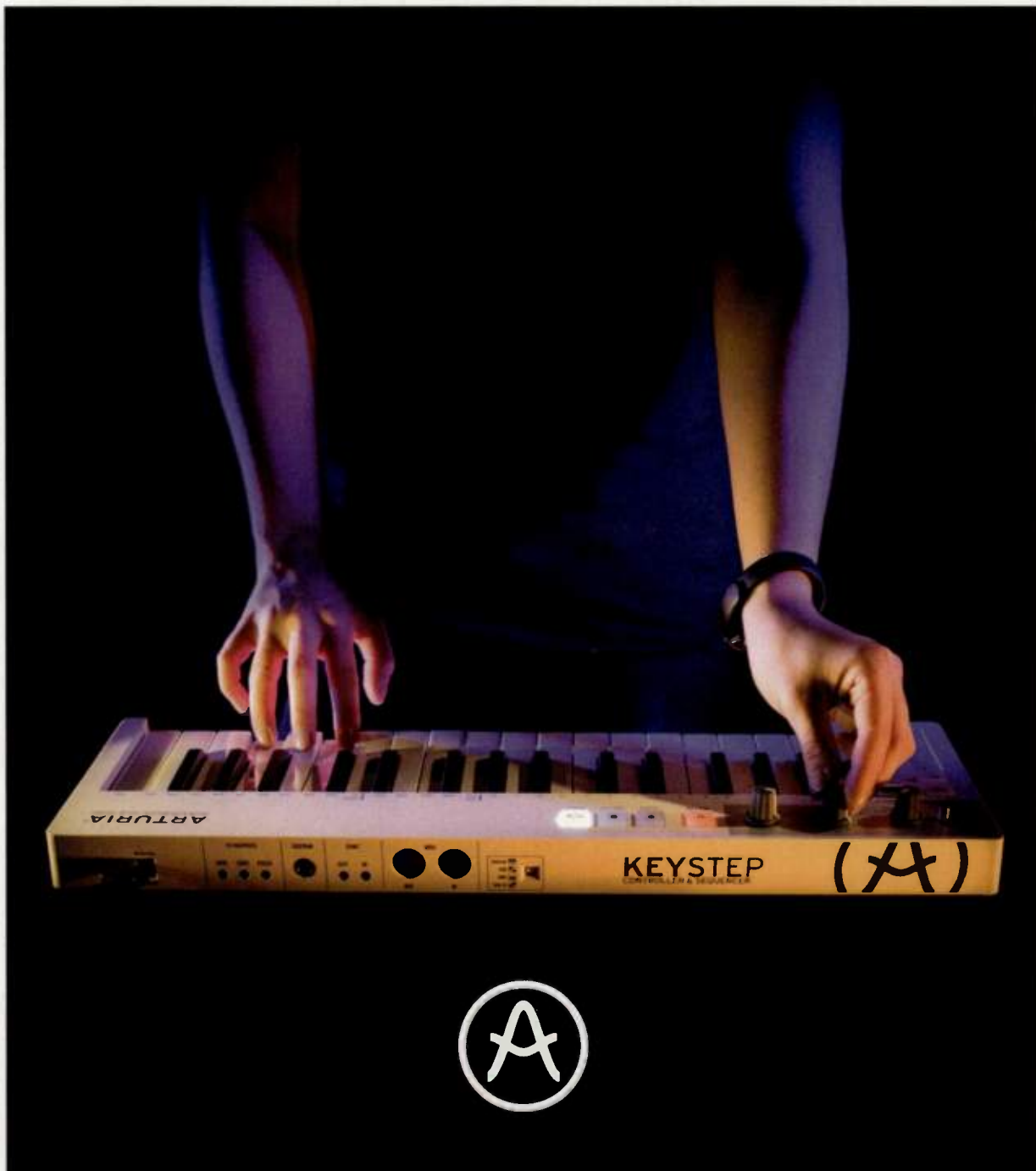
While sessions for *Summer 08* would stretch over a year and across multiple studios around Noyant-la-Gravoyère, London, Stockport, and Ramsgate, demoing began in an appropriately throwback manner, with Mount locked in a small room.

“When I moved into my current apartment with my girlfriend we had a spare room that was going to be my studio and I had all these drum machines, like this old Ace Tone Rhythm Ace that is quite inspiring; then we had a baby, so all my stuff’s in storage,” says Mount. “The demos I do don’t have anything physical being recorded because I’m now surrounded by two children and the kids will just ruin it. I run Logic and an Apogee Duet, sketching on the matrix editor with one of the more retro-sounding drum machines if I’m doing something from scratch; that’s my playground. Or I’ll find



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something I recorded years ago with a good beat.

"I've always started songs with a rhythm section; that's a drummer thing. If you work alone when you're writing you can only do one thing at a time and you often have to work with loops, so I work from the drums up. The rhythm section of the song for me is where the balls are in a song. Lyrics are the last thing I think about, and everything else is just feel before that. What I like about starting with older drum machine sounds is what they give you is incredibly bare. They don't sound like massive club snares, so you can take them in any direction. Or we'll record a drum kit so that it sounds as normal as possible, because you know later you're going to put it through tons of shit. It's about layers, taking a simple snare you previously recorded and making it into what you wanted. I kind of hate working just in the box at home, monitoring with headphones, but the one positive thing is that it really builds up my excitement when I finally get into a proper studio."

For *Summer 08* that first proper studio was Black Box, a residential facility located in the countryside of northwest France. Mount and Workman decamped to the converted barn based on its reputation for being quite vibey, thanks in part to its 24-channel, eight-bus Flickinger N24 console from 1969. While the final product is very much a Pro Tools album featuring lots of editing and mod-

ulation, *Summer 08* began using Mount's demos as a framework onto which parts could be added, replaced, etc. And that process began with several days of drum tracking by both Mount and Victor le Masne of French indie-pop duo Housse de Racket.

"The desk at Black Box is incredible; they have an amazing sounding room and this amazing microphone collection, and everything is ridiculously well-maintained," says Workman. "I love tickling tracks with compression through all stages from the beginning so that parts hold their place and you can get them where you want them throughout the process, and they have more than enough good compressors. Overcompressing at the end is how you lose all the weight, the depth."

Drum microphones for the sessions include an AKG D12 (with Drefahl capsule), Yamaha SKRM-100 SubKick, beyerdynamic M201 on top of the snare with an AKG 451 beneath, Neumann U67s overhead, and an RCA 44bx ribbon as a smash effect quite close between the kick and snare; plus Schoeps M221s for the room. The kick and snare went through a dbx 160x compressor; overheads went through a Chandler TGI limiter; while room microphones were routed through a Quad Eight Auto Mix 3-B. Different spaces in the stone-walled room were used, with microphones at varying distances, as ambient space effects. To reinforce cohesion Workman put everything through the board mic pre's.

Following drums, bass plays a major part in the tonality of Metronomy. "I started playing drums in a band, and I played with a fabulous bass player," says Mount. "Gabriel [Stebbing], who played in Metronomy at the beginning, was totally obsessed with Paul McCartney, and he would play very melodic basslines, so I picked up on that from him. So I'll just start whacking chorus on these melodic lines, because an era where I find a lot of emotion is all the '80s fretless stuff, which sounds like it's crying or something. As for percussive bass reinforcement, we'd just work to keep it clean and punchy."

To capture the bass Workman turned to a split setup, recording both DI and with a Neumann U47 Fet through LA-2 tube compressor clones. Both Mount and Workman mention that integral to Metronomy bass is the Eventide H300 Ultra Harmonizer setting called "Deep Chorus," which Mount stumbled across after he noticed just how standard that box was in all the studios he explored. Guitars, meanwhile, were DIed and played through an AM-PEG Gemini combo, miked with both a Royer 121 ribbon and a beyer M201 so Workman could balance between options on the desk. "We loved the distortion of the desk," says Workman. "I don't know if it's germanium or not, but you could hit it really hard and get this very satisfying tone."

Mount still struggles with live rooms. "Once you've recorded long enough with guitars DIed,



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“Overcompressing at the end is how you lose all the weight, the depth”

—NEAL POGUE

completely clean, it's hard to get your head around the sound of an amplifier. Because even if you put some reverb on it you still can't get rid of the sound of the amp and the noise in the room, and I hate it sometimes that you can't take it away. There's something about having a somewhat brittle guitar sound—something you can add stuff to and not have to worry about taking things away.”

Vocals were all on a Shure SM-7 in the control room and were probably the only tracks that didn't go through the desk. Workman used a Neve channel amplifier with EQ into a UREI 1176 black-face. And all synths, played by both Mount and Oscar Cash, were DI'd through the desk, as well as various compressors. “It was a running joke that whenever the owner would come in we would just be DI'ing something, just sitting in this huge room together with a MIDI rig despite there being this huge library of gear,” laughs Workman.

Moving from the technical facets to the more creative side of recording, Mount and Workman stayed open to shifting arrangements and frequencies. Reaching into the Black Box arsenal of effects, the two recorded with processing running, which played a part on what followed. For example, using a Lexicon PCM 41 delay to put a really loud slap on the drum kit of opening cut “Back Together” would affect how all other parts—from synth builds to jagged verses to a rototom solo—

were prepared for a track with a Disco Not Disco/99 Records/Lower East Side-in-the-'80s strut.

“It's a good example, that song,” says Mount, “because most of the tracks on the record were made in a similar way, taking bits of in-the-box stuff and mixing them with new recordings or replacing everything with new equipment found in studios and trying to finish the song. Some of the songs, like ‘Miami Nights’ and ‘Hang Me out to Dry,’ I've tried a version with every album, waiting to find an arrangement that sequences naturally. And all of the versions are completely different with different lyrics, but it's an idea I held on to because I like it. So finally I can put it to rest.”

On the track “Mick Slow,” what began as a simple orphan sample became a song of Bowie-like voices and smeared analog parts. The portamento of a Roland Alpha Juno synthesizer—the album's primary keyboard, alongside an Alesis Andromeda A6—glides until a falsetto chorus unfurls over twinkling sweeps. Initial vocal reverbs were from an EMT 140 stereo plate with tube electronics.

For all these printed treatments, care was taken to leave room for the mix engineers. Workman did rough mixes, working briefly in the box with EQ and compression, but mostly sitting at his SSL with the monitor off, using his preferred Yamaha NS10s running off a Bryston amp, as well as Barefoot MicroMain27s for monitoring bass response, before turning the sessions over to Bob Clearmountain, Neal Pogue, and Erol Alkan.

“I left plenty of parts dry and cracky so the different engineers could take it into their rooms and do their things,” says Mount. “When we got back ‘Mick Slow,’ one of three tracks Neal did, wasn't drastically different, but I could tell from all these tiny delays on the snares, from these reverbs and spot effects on the vocals, that he got really into it, and it was nice hearing that someone sat with it

and enjoyed doing that.”

Operating on the opposite end of the spectrum from the *Summer 08* studio sessions, Pogue mixed completely in the box. “I've got a Mac tower with Avid HD I/O and more than enough plug-ins to paint the picture,” says Pogue from Los Angeles, where he recently relocated after several years in Atlanta. Known for his work mixing for OutKast and TLC, among many others, Pogue started his engineering career behind SSL boards in the early 1990s, and went to Pro Tools in 2003 with OutKast's *Speakerboxxx/The Love Below* album.

“I've got all the Universal Audio and Waves options; there's no outboard, but I come from the SSL world, so the first things I go for are something like the G-Channel plug-ins on snares because I'm so used to the color,” he explains. “I used Neve 1073 and API 550B processing on the kick when I needed that warmth, to get a different curve in the midrange, but I've always loved the attack of SSL.” Monitoring on Hafler TransNova and Yamaha NS10 monitors, Pogue used Waves L2 and iZotope Ozone 7 Vintage EQ/Imager on the master bus.

Pogue, like Mount, considers perspective to be as important as any specific module or technique. “I'm always looking for an old-school-meets-new-school feel, working with things I came up using or heard in the music I listened to as a kid,” he says. “New producers like to filter a lot, but I'll incorporate a flanger, which used to be on all the Zeppelin records I heard. You can hear a DeEsser going into a MetaFlanger into a Soundtoys Filter-Freak on the background vocals of ‘Mick Slow.’ And I'll use Valhalla Vintage Verb for additional EMT-type plate effect.

“I approach every mix differently, but a lot of what I reach for is influenced by all the outboard gear I used since starting in studios in the late '80s. Not many new engineers would reach for the Roland Dimension D [stereo chorus/spatializer], because it's not what they're familiar with, but I put an instance of that on Joe's lead vocals to give them more spread. Using my experience I'll also know when I want a Roland RE-201 Space Echo on vocals or a Pultec on drums, which I used on ‘Old Skool,’ because I used the real thing back in the day. At the same time, I might reach for a Soundtoys Decapitator for a driving, saturated sound or Avid's D-Verb, which some people think is generic but it's all about how to use it right. You don't need to use everything, but you should know everything about what you use.”

From the use of the Alpha Juno to the faith placed in hybrid tracking/mixing, *Summer 08* shows Mount's embrace of the analog/digital cusp and a renewed level of comfort for entertaining impulses and reclaiming “mistakes.” It's a witty, elastic album reflecting Metronomy's most potent, unrestrained tendencies. ■

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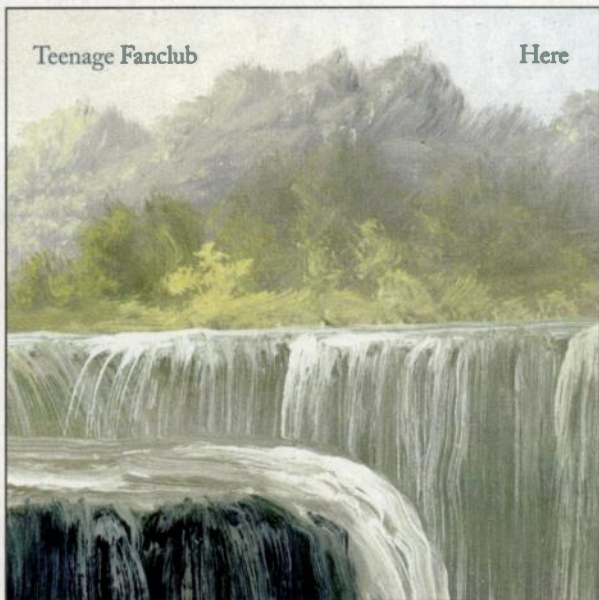
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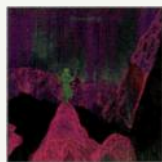
The splangly, jangly guitars, the close-knit harmonies jelling atop songs of love and expectation—Teenage Fanclub is back! On *Here*, their first release in six years, the clever Scottish quintet still expresses songwriting majesty and vocal beauty. Guitars swoon over buoyant beats in grooving Byrdsian opener “Thin Air,” shimmering “The First Sight,” and Nick Drake-worthy “Steady State.” Founding members Norman Blake, Raymond McGinley, and Gerard Love have lost none of their ability to suspend time and evoke wondrous moments past, and those yet to come.

KEN MICALLEF


LEYLA MCCALLA
A DAY FOR THE HUNTER, A DAY FOR THE PREY

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HARMONIA MUNDI
Former Carolina Chocolate Drops cellist Leyla McCalla self-produced her latest album, an inspired collection of poignant, lush traditional and original folksongs influenced by the sounds of Haiti and New Orleans. McCalla is supported by a marvelous ensemble of other string players, as well as guest appearances by vocalist (and fellow Chocolate Drop) Rhiannon Giddens, extraordinary guitarist Marc Ribot, and more. McCalla's sweet voice and gentle style add up to music of immense, delicate beauty.

BARBARA SCHULTZ


DINOSAUR JR.
GIVE A GLIMPSE OF WHAT YER NOT

JAGJAGUWAR
Now boasting four albums as a post-reunion trio, the original lineup Dinosaur Jr. has squealed more records into existence than in the band's initial '80s run. And all without a drop-off in quality. If anything, there is heightened cohesion to be found between the fuzztain sweeps of J Mascis' guitar, the husky chords and frenetic glissando of Lou Barlow's bass, and resolute thawk of Murph's drums. Nobody dials in sludgy power-pop's peak response better.

TONY WARE


THE AVALANCHES
WILDFLOWER

ASTRALWERKS
The follow-up to *Since I Left You* stays true to that album's crackly, lo-fi, cut-and-paste ethos. Who would think to put a calliope sample of *The Sound of Music*'s “My Favorite Things” under the rhymes of MF Doom and Danny Brown? Emcees are a new addition for *Wildflower*, whose snippet-like songs sound like they are either being played backward or stuck between radio frequencies. Pillaging of everything from the Bee Gees to the Beach Boys is as shocking as it is admirable.

LILY MOAYERI


CHRIS COLLINGWOOD
LOOK PARK

YEP ROC
After demoing songs with acoustic guitar, MIDI, and percussion, *Look Park* is as gorgeous and melancholy as you'd expect from the brilliant Fountains of Wayne songwriter and vocalist. Blissed-out Mellotron infuses texture-filled compositions with dark beauty, as in the Bacharach-bent “Breezy,” head-in-the-clouds “Stars of New York,” autumnal “Minor Is The Lonely Key,” and the McCartney-in-1970 sound-alike “Crash That Piano.” Produced by Mitchell Froom and accompanied by bassist Davey Faragher and drummer Michael Urbano, *Look Park* is pure, understated splendor.

KEN MICALLEF


HANS ELK
DANCE MUSIC SYMPHONY

X5 MUSIC GROUP
Eighteen tracks arranged in three suites, this “DJ mix for orchestras” shows Scandinavian conductor Hans Ek refracting EDM through a 20th-century classical lens. Taking works by Swedish House Mafia, The Knife, Faithless, Aphex Twin, deadmau5, Avicii and Daft Punk, among others, the Royal Stockholm Philharmonic plays with articulation and accents, breaking rhythmic energy into cells, rebuilding motifs, navigating diatonic progressions and showcasing dance music's staccato, pizzicato, portamento tendencies. It's a pagan ritual, undulating and impressionistic.

TONY WARE


AL SCORCH
CIRCLE ROUND THE SIGNS

BLOODSHOT
High-test cowpunk from Chicago: When listeners hear feet stomping, a banjo jangle, and the rising bluegrass singing, they may think, “Avetts,” but this music is tougher than most popular alt-folk groups. Scorch is a sensational songwriter, too, bringing raw simplicity to work songs, ballads, and stories of addiction: “That tiny little bottle feels big, empty, and hollow; when I get to the bottom I am incomplete” (“Want One”). Here's hoping awesome songs like this are not autobiographical, and there's lots more to come from Scorch.

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DAVE SMITH INSTRUMENTS

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RETURN OF THE SON OF THE OBERHEIM SEM

BY GEARY YELTON

Geary Yelton has reviewed synthesizers for *Electronic Musician* since 1985. He lives in Asheville, North Carolina.

STRENGTHS

Authentic, classic sound. Intuitive architecture. Impressive programming versatility. Stable oscillator tuning. Syncs to audio click track. High-quality effects.

LIMITATIONS

Can't display program names. Mod wheel controls LFO depth only. Not multitimbral. Four-octave keyboard.

\$2,999 street
davesmithinstruments.
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At last January's NAMM show, a major buzz surrounded the OB-6, the product of collaboration between pioneering synth designers Tom Oberheim and Dave Smith. Tom and Dave, friendly rivals in the 1970s at the dawn of polyphonic synthesis, had recently worked on a joint project to produce an instrument combining their considerable talents. Faced with long lines at the NAMM booth where the two men appeared together, I had only a few minutes to don headphones and check out the OB-6, but my first impression was that they had gotten it right. It definitely felt and sounded like an Oberheim, and I've owned six different models.

The OB-6 is a 6-voice subtractive synthesizer with a 49-note keyboard that senses velocity and aftertouch. Each voice has two audio oscillators, a sub-oscillator, a variable-state filter, a white noise generator, two ADSR envelope generators, and an LFO. The entire audio signal path is completely analog. It also has two multi-effects processors, an arpeggiator, and a polyphonic step sequencer. Along with storage for a thousand programs, the OB-6 has a manual mode that lets you switch off preset memory and rely entirely on the front-panel controls to sculpt your sound in real time, just like in the old days.

LOOKING GOOD

The OB-6 looks very much like other Dave Smith Instruments products, with real wood side panels

and a black-coated steel exterior. At first glance, it would be easy to mistake it for another recent DSI synth, the Sequential Prophet-6, and the similarities don't end there. One visual cue sets it apart, however: Blue horizontal pinstripes recall the classic Oberheim OB-8 and OB-Xa. Like the Prophet-6, the OB-6's only dedicated left-hand controllers are wheels for pitch bend and modulation (LFO depth only), and the front panel contains lots of knobs and buttons organized into functional sections. The

largest of five alphanumeric LED readouts displays the current program number in three digits. The OB-6 has no LCD, which means no menus to dive into and no program names displayed.

A class-compliant USB Type-B connector and MIDI In, Out, and Thru on 5-pin DIN connectors handle MIDI data flowing to and from the OB-6. Also on the back are three 1/4-inch audio outputs for unbalanced left and right signals and



Fig. 2. To help make your playing more nuanced and expressive, two footswitch and two expression pedal jacks are on the OB-6's back panel.



stereo headphones, as well as four control jacks: one for a sustain footswitch, one for a footswitch to start and stop sequencer playback, another for an expression pedal controlling volume, and a fourth for an expression pedal controlling filter frequency. Although they're all logical choices, I wish I could assign at least one expression pedal to control a user-defined parameter.

A BOX OF BLOCKS

The oscillators, filter, and amplifier for each voice are voltage controlled, just as they were in classic Oberheims such as the TVS-1 and Matrix-12. Each voice has four sound sources labeled VCO 1, VCO 2, Noise, and Sub Octave, which generates a square wave 12 semitones below VCO 1's pitch. You control their levels with four knobs in the Mixer section. Once you've run the calibration procedure a few times, the oscillators stay in tune as long as the ambient temperature doesn't change drastically—quite impressive for any analog synth.

Because the sawtooth and pulse waves generated by VCO 1 are continuously variable, you can smoothly transition from one extreme to the other for a variety of spectral combinations. VCO 1's Frequency knob changes pitch in half steps, with

no fine-tuning capability. The Pulse Width knob changes a pulse wave's duty cycle from zero at one extreme, through square, to a very narrow pulse at the other, but has no effect on a sawtooth. The Sync button turns on hard sync, forcing VCO 1 to synchronize its phase to VCO 2.

VCO 2 is continuously variable from triangle to sawtooth to variable-width pulse wave. You can vary its fine-tuning relative to VCO 1 using a Detune knob, which transposes pitch as much as a semitone up or down. A Low Freq button enables low-frequency mode, allowing you to use VCO 2 as an LFO when needed, and a Keyboard button lets you disable keyboard tracking—often desirable when using VCO 2 as a modulation source.

Below the Oscillators section, another Detune knob lets you add a touch of pitch randomness, so that each note you play is more or less out of tune with other notes, even subsequent notes. Detuning is especially effective when you enable unison mode, which makes the OB-6 function as a monophonic synth with as many as 12 oscillators. With unison enabled, the Detune knob detunes the oscillators relative to one another by fixed amounts and spreads them across the stereo field. One of unison's coolest features is chord memory. If you play a chord, hold

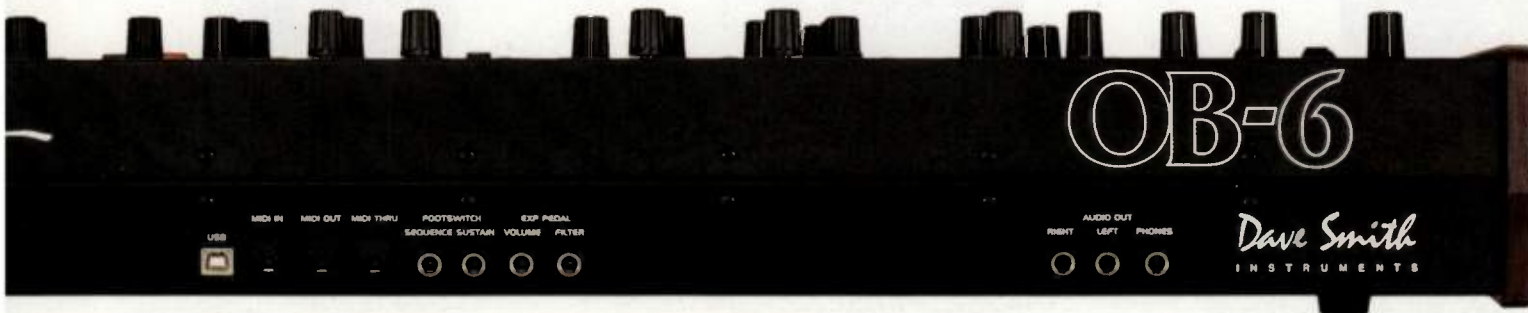
it, and then press the Unison button, playing subsequent notes will transpose that chord. If you do that and then save the program, the OB-6 will store the chord as part of the program.

The voltage-controlled filter is based on the 2-pole, 12dB-per-octave filter found in the classic Oberheim SEM. It bears most of the responsibility for the distinctive Oberheim sound. Its design is unique in that it can sweep continuously from lowpass to notch to highpass response. (Also known as bandstop or band-reject, notch filtering attenuates audio within a specified frequency band.) Pressing a button turns it into a band-pass filter. The resonance setting affects all filter modes, but unlike most lowpass filters, the OB-6's VCF does not self-oscillate at high resonance settings. A Track button toggles between off, half, and full settings and determines how filter frequency responds to keyboard pitch.

The VCF and VCA each have a dedicated ADSR envelope generator, and each envelope lets you choose whether velocity affects its modulation depth. The Amount knob for the filter envelope is bipolar, so that negative settings invert its effect. If velocity is enabled and the setting is negative, a lowpass filter will close during the attack stage and open during release. The VCA's envelope, of course, is not bipolar, and its Amount knob determines its depth.

Two onboard digital effects processors offer a 48kHz sampling rate and a limited variety of common effects: reverb, delay, flange, chorus, phase shift, and ring modulation. The two latter effects include digital emulations of two classic Maestro stompboxes, the PS-1 phase shifter and RM-1 ring modulator, designed by Tom Oberheim in the early 1970s. Earlier Oberheims lacked any effects processing, so the OB-6's multi-effects are a welcome addition.

You can access more advanced features by pressing the Globals button. For example, you can choose from 16 tunings that include quarter-tone, 19-tone equal temperament, and Wendy Carlos's harmonic 12-tone scale. You can also choose to transmit either MIDI CCs or NRPNs when you turn the front-panel knobs, which can be set to relative, passthru, or jump mode.





The Oberheim SEM

The OB-6's basic architecture was introduced in 1974 with the launch of the Oberheim Synthesizer Expander Module, or SEM. Originally designed to provide a companion voice for pairing a sequencer with a monosynth like the Minimoog or ARP 2600, the SEM became the core of each voice in Oberheim's earliest polysynths—the now-collectable Two-Voice, Four-Voice, and Eight-Voice. Although Tom Oberheim has resurrected new and improved versions of the SEM and Two-Voice, his current models more closely resemble the originals than the OB-6, which has expanded timbre-building capabilities.

MODULATION STATION

The OB-6's modulation routing isn't as flexible as on many synths, but its X-Mod (cross-modulation) capabilities contribute a lot to its distinctive sound. Instead of a mod matrix for connecting tons of sources and destinations, you get just four modulation sources in addition to the hardwired connections between the filter envelope and VCF and the loudness envelope and VCA.

The LFO generates five waveshapes (two of them bipolar) that you can route to any combination of seven destinations, including pulse width for either or both VCOs. By selecting filter mode as the destination, your signal can rhythmically cycle between lowpass, notch, and highpass modes. Frequency is continuously variable well up into the audio range (500Hz maximum) without needing to switch it out of low-frequency mode. Selecting a random waveshape and turning the frequency up full generates white noise as a mod source. The LFO can run freely or sync to the OB-6's internal clock.

X-Mod routes the filter envelope and VCO 2 frequency to any combination of six destinations, all of them VCO 1 and VCF parameters. X-Mod can modulate oscillator frequency, waveshape, and pulse width as well as the filter's cutoff and mode, but it can also continuously modulate the filter from normal to bandpass filter mode—something

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you can't do manually, because you enable band-pass mode by pressing a button. X-Mod is also the only way to route an envelope to any destination other than the filter and loudness.

X-Mod is especially useful with VCO 2 switched to low-frequency mode so that it serves as a second LFO. Unlike modulation from the dedicated LFO, in which all six voices share a single control signal and are therefore synchronized, low-frequency modulation from VCO 2 sends an independent signal for each voice, resulting in complex per-note modulation and more animated sounds.

Like most synths with aftertouch, the OB-6 supports channel aftertouch only, so that pressing any key causes modulation of every note. Unlike most synths, the OB-6 has a dedicated knob for controlling the depth of aftertouch modulation for each program. Below the knob are six buttons to select the aftertouch destination. In addition to more usual destinations such as LFO amount (for vibrato) and VCF frequency, you can apply pressure to modulate filter mode, loudness, or even the frequency of either VCO. What's more, aftertouch is bipolar, so modulation can be positive or negative.

The OB-6's internal clock controls the sequencer or arpeggiator tempo, and optionally, LFO or delay rates. The front panel's Clock section lets you choose one of ten values, from half to 32nd

note, including triplets, and furnishes a button for tap tempo. Connecting an audio signal to the Sequence Footswitch jack lets the clock sync to an external click track—very handy when you need that kind of functionality.

The onboard sequencer records individual notes or chords up to six notes, and you can easily enter rests and ties at any point. The keyboard can accompany the sequencer as it plays, too. Sequences may be any length, up to a generous 64 steps. Most factory programs include a short, simple sequence, which provides a good way to audition sounds, and you can store your own with any user program. The arpeggiator is similarly straightforward, with five common patterns you can extend up to a three-octave range. The Hold button in the Modulation section latches arpeggios or sustains notes and chords.

OB OR NOT OB?

The OB-6 is an unlikely combination of half Oberheim and half Dave Smith synthesizer, with all the timbre-building functionality of old-school SEM-based instruments and quite a few programming conveniences found in recent-model Dave Smith Instruments releases like the Pro 2. Based on the Prophet's Poly Mod, X-Mod is a particularly outstanding contribution. Although the OB-6 is marketed as an update of Oberheim's SEM-based

synths, it goes way beyond.

How does it sound? In a word, glorious. It captures the character of many Oberheim synths that came before it, and with 500 new factory programs, it delivers many more variations on that character than any synth ever has. To my ears, the finest Oberheims exhibit all the lushness, punchiness, and timbral versatility you'd want in an electronic instrument, and the OB-6 definitely sounds like one of the finest. The factory programs well demonstrate the serious sound design chops of their creators. As with most analog synths, realistic acoustic instrument emulations are in short supply, but if you want searing leads, solid synth basses, and floating, ethereal pads, you've come to the right place.

I found almost nothing to criticize about the OB-6. The only features I would change—a wider keyboard and multitimbral operation—would drive up the cost, and analog polysynths are costly enough already. If the four-octave keyboard isn't to your liking, check out the OB-6 Desktop module, which will save you a few hundred bucks.

Back in the day, most synthesists declared a preference for the Sequential, Korg, Roland, Yamaha, Moog, or Oberheim sound. I was always an Oberheim guy, and the OB-6 punches all the right buttons in my brain. Give it a chance, and you may discover you're an Oberheim guy or gal, too. ■

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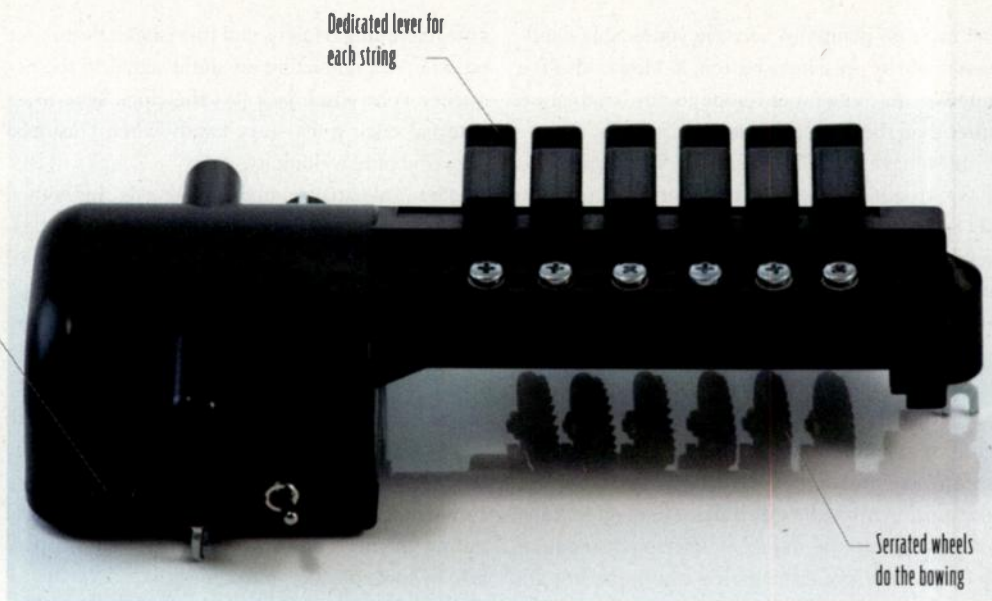
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Barry Cleveland is a San Francisco-based journalist, guitarist, composer, recording artist, and audio engineer. Visit barrycleveland.com.

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LIMITATIONS

Bulky. Requires a power cable. Noisy.

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I was working at a music store in San Francisco in early 1980, when one day Kevin Godley and/or Lol Crème strolled in bearing a bass with a Gizmotron mounted on it. Someone demonstrated the device by masterfully playing a bit of Bach, and all present were greatly impressed. When one of the salesmen tried his hand, however, the results were considerably less musical sounding. We were informed that there was also a guitar version, which intrigued me, but that was the last I ever saw or heard of either 'Tron (other than on recordings by 10cc, Led Zeppelin, and in particular Godley and Crème's truly astonishing 1979 triple album *Consequences*, which showcased what the Gizmotron could do when played by its creators).

Despite the ingenuity of the concept, and the assurance that it would "revolutionize the world of guitar playing," the Gizmotron was poorly engineered and constructed, didn't sell, and was ultimately forgotten—until now.

The Gizmotron 2.0 was introduced on February 3, 2016. The brainchild of Aaron Kipness, and more than a decade in the making, it was reverse-engineered from the remains of a handful of old Gizmotrons acquired by Kipness. Guided by the original patent drawings, he and his engineering team identified the many mechanical and electronic shortcomings of the original, devised new technologies along the way, and utilized modern materials and manufacturing techniques in the production of Gizmotron 2.0.

For the uninitiated, a Gizmotron is an electro-mechanical "bowing" device. Unlike a Sustainer, Sustainiac, Moog Guitar, or even an Ebow, the Gizmotron doesn't work its magic with magnetic

or electrical energy—at least not directly. Instead, it uses an electric motor to turn six small wheels, which are manually lowered into position with levers or "keys," making physical contact with the individual strings. There's a Speed control, to adjust the motor's spin rate and intensity, but otherwise the Gizmotron's expressiveness is all down to personal touch. Press lightly, creating little friction, and the bowing is relatively subtle; dig in, and the increased friction intensifies the effect, much like applying

pressure when using an actual bow.

The Gizmotron's motor is powered via USB, which means that a power cable is required in addition to the audio cable. That cable may be plugged into any sufficiently robust device with a USB port, or an AC outlet using the included International AC Adapter.

I intended to mount the Gizmotron on my 3-pickup Les Paul Custom, but quickly discovered that it would occupy the exact spot where I place my picking hand, and because it extends two inches above the surface of the guitar, with the keys protruding from the front, it would be quite easy to press those keys inadvertently when reaching into the playing area that was accessible. I was also dissuaded by the fact that the unit stuck up far enough to prevent the guitar's case from closing fully.

Fortunately, I was able to borrow a nice Hamer XT Series solidbody on which California Guitars' chief tech Grant Baldwin had installed a Gizmo-

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The Gizmotron 2.0 positioned on a Gibson Les Paul Custom

tron previously. Baldwin had this to say about his experience mounting the devices on several different guitars: "Although the Gizmotron is relatively easy to install, patience is required when adjusting it to function optimally. For example, the six serrated rubber wheels that vibrate each string have to make just enough contact to 'bow' them without also muting them upon releasing the key."

"I also found that, depending somewhat on the proximity of the rear pickup to the guitar bridge, the overall results were better with humbucking-equipped guitars. For example, the single-coil on a Danelectro U2 picked up some unpleasant electrical hum, whereas the Hamer's humbucker did not."

As for playability, the Gizmotron definitely takes some getting used to, from becoming comfortable with the location and response of the keys, to dealing with the appreciable mechanical noise. The wheels chatter when they come in contact with the strings, and the motor whirs continuously, becoming more noticeable as you increase the speed. Close proximity to a computer monitor also resulted in pronounced electrical noise.

High-tech aesthetics and superb workmanship notwithstanding, the Gizmotron is a Rube Goldberg-esque contraption—though that's also a huge part of its charm and appeal. Sure, it's quirky and awkward in use, but it is a unique device and in the right hands is capable of producing an abundance of compelling sounds—from choppy staccatos to languid legatos to marcato buzzing and beyond.

Personally, I gravitated to the low-to-mid motor speed settings, which facilitated more nuanced playing dynamics than the zippiest velocities. The biggest concern was to avoid pressing the keys too hard, which can damage the mechanisms, or at least throw them out of alignment. The keys can be realigned fairly easily, however, using only your eyeballs and the small Phillips screwdriver included in the mounting and maintenance kit.

Not surprisingly, I got some of the grooviest sounds pairing the Gizmotron with effects. Compressors smoothed out the dynamic fluctuations, delays and reverbs added depth and dimensionality, and EQs helped craft more realistic string and woodwind sounds, as did filters with envelope generators.

The Gizmotron isn't for everyone, but adventurous guitarists seeking new sonic opportunities—especially those who are also film composers or sound designers—should definitely take one for a spin (so to speak). And if you do get one, I recommend installing it on a dedicated "Gizmotron guitar" and keeping the instrument safe in your studio or home. You, and the Gizmotron, will be happier that way. ■

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Fig. 1. I.C.E. addresses distortion occurring within an adjustable frequency band. The gold bar to the left of the meters shows the amount of processing applied in the band.

LEGENDARY AUDIO

I.C.E. PLUG-IN TAKES AIM AT DISTORTION

BY MICHAEL COOPER

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

STRENGTHS

Great for smoothing a brittle-sounding mix.

LIMITATIONS

Ineffective at removing distortion. Can't hear processing in Monitor mode or solo signal being removed. No I/O-gain controls, clipping indicators, Undo, Redo, or preset copy and paste. Buggy. Poorly written manual. Currently only available for Mac OS X.

\$289

sonicstudio.com
(distributor)

I.C.E.—shorthand for In Case of Emergency—was designed to dynamically reduce or eliminate undesirable distortion in a single, adjustable frequency band for audio. Alternatively, the plug-in—jointly developed by Legendary Audio and Sonic Studio—can boost the volume of a frequency band.

Available in AU, AAX, and VST formats for Mac OS X, I.C.E. uses iLok or file-based authorization. A Windows-compatible VST release is planned for the future. I tested I.C.E. Version 1.0.041 in Digital Performer 9.01 (DP), using an 8-core Mac Pro running OS X 10.9.5.

ICEFIELDS

In I.C.E.'s GUI, you drag graphical handles to respectively adjust the target (fundamental) frequency and high and low cut-offs for the band you want to treat; these settings define I.C.E.'s *target frequency band* (see Fig. 1). Alternatively, you can type or mouse-drag in three text-entry fields for the target and cut-off frequencies to adjust them. When you drag the target frequency using either method, the cut-offs also move. While this maintains constant offsets, careless use can also cause you to lose your current cut-off settings—and I.C.E. provides no Undo or Redo. It's important to realize that the target frequency is merely a handle for sweeping the target frequency band; no more processing is applied at the target frequency than elsewhere in the band (a crucial point not mentioned in the operation manual).

Toggle the Slope button to alternately choose a gentle or steep slope for the target frequency

band's cut-offs. Then mouse-drag or enter a value directly in the GUI's Inject field to—citing the manual—apply “an amount of *counter frequency*” (a term and process not explained) to the target frequency band and ostensibly reduce distortion. You can also drag a round button in the GUI's display up or down to adjust how much processing (the Inject value) you want to apply.

As I.C.E. doesn't find distortion for you, you must use your ears to determine where in the spectrum those artifacts lay. The operation manual recommends you sweep the audio spectrum using a narrow band and gentle slope to find the frequencies where distortion occurs; I found that using a steep slope was far more precise. Activating the Monitor button solos the targeted band to aid your hunt for distortion. Unfortunately, you can't hear I.C.E.'s processing in Monitor mode, either alone or mixed with dry signal. Although I.C.E. can only treat one frequency band at a time, you can open multiple instances of the plug-in to treat multiple bands; that's useful when one band is more distorted than another and needs deeper processing.

Click on I.C.E.'s Boost button to enter ICE Plus mode. In this mode, instead of reducing distortion in the target frequency band, the amplitude of the band is boosted (up to 4 dB) as you progressively apply a negative Inject value. (Inject values range from 0 to -144 and are not specified in units such as dB.) Rather than use EQ to boost, I.C.E. makes a copy of the target frequency band and adds it to the original full-spectrum audio. In theory at

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Fig. 2. I.C.E. is used to boost energy in a mix's top octave.

parent processing but yielded very negligible (if any) reduction in distortion (even at the maximal Inject setting) and a slight increase in I.C.E.'s output level; because I.C.E. provides no input- or output-level controls, this sometimes necessitated upstream gain adjustments to avoid clipping the plug-in's output. Gentle slopes ostensibly yielded much more effective reduction in distortion and preserved unity gain, but it dulled the sound. Legendary Audio suggested I use corrective EQ boost post-I.C.E. to restore presence, but doing so also fully restored the distortion. This led me to conclude that I.C.E. merely masked the distortion, much like equalizer cut would. I got far superior—and transparent—results using iZotope RX5 Advanced (a much more expensive product).

I.C.E. did a great job mellowing an icy, brittle mix during a mastering session. Using the plug-in's steep filter slopes and a moderate Inject setting, the mix's edgy upper midrange and lower highs were smoothed nicely. The tradeoff was the mix had slightly less air, depth and detail. Using a second instance of I.C.E. to boost the top octave a little—using ICE Plus mode—opened the mix back up (see Figure 2). The combined effect sounded excellent. If your current arsenal of plug-ins can't produce the same effect, I.C.E. might be worth your dollars just for this one application. ■

least, this should allow bolstering weak frequency bands without incurring phase shift.

High-resolution, peak-hold meters for left and right channels show peak, RMS, and VU output levels but lack clipping indicators. (Peak-hold function didn't work in v1.0.041.) You can name and save four custom presets of control settings for instant recall inside the GUI; copy and paste functions aren't provided, so you'll need to build each preset from scratch. I could also use Digital Performer's preset system to save I.C.E. presets, but doing so prevented instant recall of presets stored

in I.C.E.'s four slots (forcing me to load them via the Finder directory). And recalling a preset via Digital Performer populated I.C.E.'s current preset slot with the wrong preset name. In fact, I.C.E. has quite a few bugs. The poorly written and deficient operation manual can only be viewed on the Internet (at help.sonicstudio.com/ice); Legendary Audio plans to rewrite it.

ACID TEST

I first used I.C.E. to treat clipping distortion in a dialog track. Steep slopes yielded the most trans-

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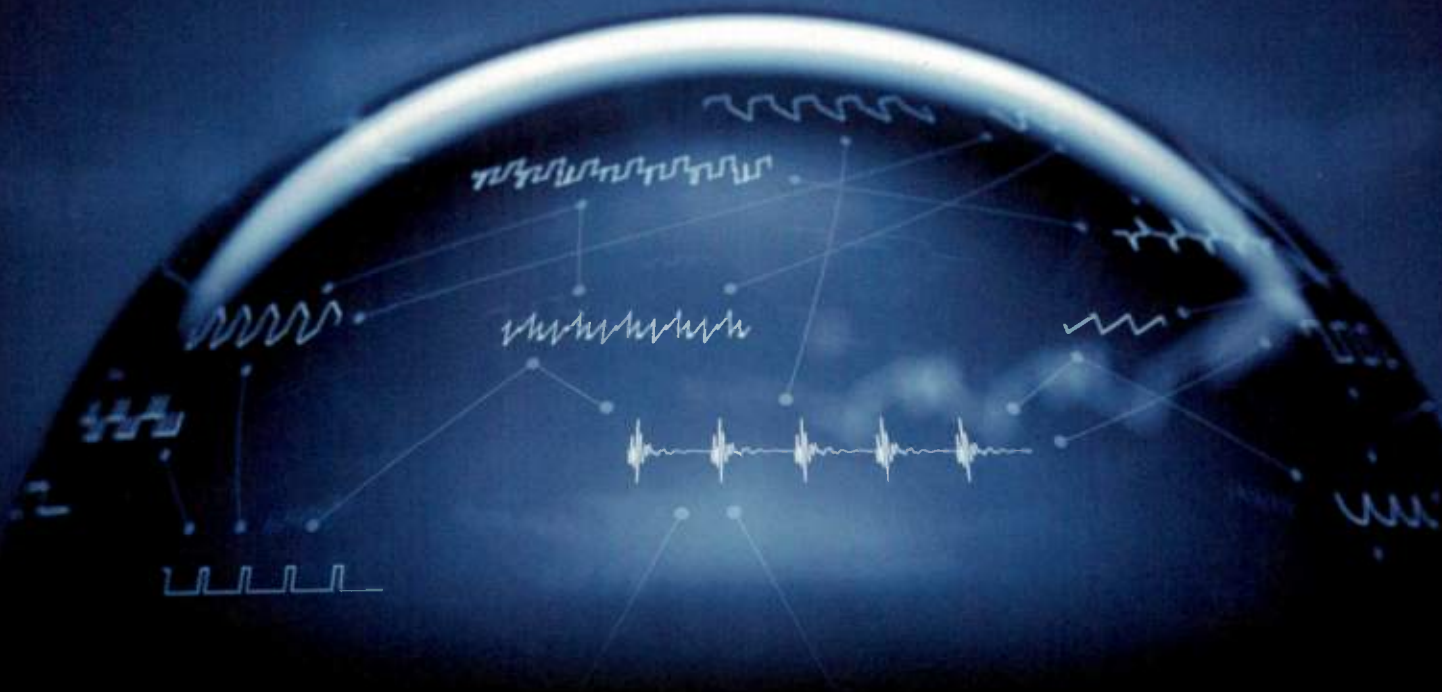
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FFT-like effects display

iZotope VocalSynth combines four popular vocal-processing tools in one simple interface.



Compuvox sounds like a noise-based vocoder

Transform is a convolution-based speaker emulation

IZOTOPE

VocalSynth

A PLUG-IN SUITE OF EFFECTS FOR MODERN PRODUCTIONS

BY FRANCIS PREVE

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

STRENGTHS

Four unique and popular vocal effects. Streamlined and immediately accessible parameters. Five additional effects. MIDI and sidechain tools for real-time playability. Impressive presets.

LIMITATIONS

x/y interface only allows for one parameter per axis. Vocoder parameters are a bit limited in scope. No standalone version.

\$199
izotope.com

I Zotope's slogan for its VocalSynth plug-in is "Think Outside The Vox." But while it is easy to see through such marketing hype, this is an instance of the manufacturer absolutely nailing it. The premise of the plug-in is straightforward: Collect the most popular vocal processing tools for modern electronic music into a single software program that allows you to combine them quickly and seamlessly in innovative ways.

Of course, you may already have a few or all of these types of tools at your disposal, thanks to the now-standard inclusion of vocoders and pitch correction in most modern DAWs. However, by putting them all in one plug-in, VocalSynth provides a streamlined workflow that won't get in the way of creativity.

FOUR (AND MORE) IN ONE

VocalSynth's interface is wonderfully direct, with four discrete vocal-specific effects—Polyvox, Vocoder, Compuvox, and Talkbox—accessible simultaneously, as well as five additional effects that further distort and mangle audio in creative ways. The software also includes an adjustable pitch-correction processor on the input, along with an x/y controller that gives you real-time access to two simultaneous parameters for creating flashy performance tricks. Finally, there's an FFT-like effects display that is reminiscent of Native Instruments' Razor.

VocalSynth's pitch-correction tools are direct and to the point, offering parameters for key and major/minor/chromatic scale, as well as the ability to create custom scales using a simple one-octave keyboard icon. There are also controls for adjusting the strength and speed of pitch correction.

While the absence of additional scales and

modes may be a disappointment for some, VocalSynth is positioned squarely at the pop, dance, and hip-hop markets, so these limitations may indeed speed up production decisions. And those with more exotic scale requirements can always use the custom keyboard.

Now let's look at each of the effects categories individually to see what they offer.

>POLYVOX

If you're a fan of Imogen Heap's legendary track "Hide and Seek," Polyvox will have you smiling. While many have mistaken the original effect for a vocoder, it is actually much closer to DigiTech's vintage Vocalist effect (or TC Helicon's Voice Pro, as a more modern example). Essentially, it's a polyphonic pitch shifter with controls for Formant, Character, and Humanize.

Formant allows you to shift the vocal tone down toward Darth Vader or upward toward the Chipmunks; by leaving the value centered, you get a more natural sound. Character modifies the formant shifting to reflect the original performance's behavior. Humanize adds a bit of randomized "chaos" to the final output—a small amount imparts a more natural effect while higher settings increase dissonance in the layered harmonies.

As for setting up the chord voicings, VocalSynth offers two methods: You can use MIDI control or set up three discrete intervals via the center panel of the interface. For example, if your goal is to create traditional seventh-chord harmonies, just set these controls to third, fifth, and seventh and let the software do the work. For more specific pro-

gressions, switch to MIDI control and play your chords and melodies.

> VOCODER

Compared to the vocoders that ship with most of the current DAWs, VocalSynth's customization options are decidedly minimal—four parameters and options for ten different preset oscillator types for the integrated synthesizer (carrier). These oscillators are modeled after famous vocoder-based tracks. With names like “Planet Galaxy” and “Classic Bahns” it's pretty easy to figure out the inspiration for each type, which helps if you already know what sound you're targeting.

The four parameters are Mode, Shift, Contour, and Scale. The Mode selector switches between Smooth, Vintage, and Hard behaviors, each of which offers flavors that seem to correlate with the number of vocoder bands and their sensitivity (though this is an educated guess, because the manual doesn't include any information about it). For most applications, the Vintage mode is what you're looking for, though the modern sound of the Hard mode may be better suited to current styles of EDM. I was a tiny bit surprised that there wasn't a fourth mode dedicated to extremely narrow vocoder bands, as that approach results in the ethereal and metallic textures popularized by Sasha's productions and still sounds quite futuristic by today's standards.

Of the other three parameters, Shift is used to adjust the vocoder's apparent formant characteristics, while Contour and Scale modify the emphasis of various bands and the response time of the vocoder. Ultimately, this particular vocoder is laser-focused on whipping up familiar sounds with a minimum of fiddling, and for producers who are intimidated by the intricacies of full-featured vocoding tools, this alone could be a huge bonus.

> COMPUVOX

Ostensibly a simulation of Linear Predictive En-

coding—the technology behind the speech synthesis in toys such as the Speak & Spell and '70s-era talking calculators—Compuvox ultimately sounds like a noise-based vocoder with integrated bit-crushing, which frankly isn't a bad way to simulate these vocal effects. That said, there is clearly a bit more going on under the hood. While the parameters alone aren't quite enough to turn your voice into the friendly authoritarian that seemed to inhabit those early devices, your own intonation and ability to ham it up should make up the difference.

Once you've got the right delivery tracked, Compuvox's parameters are great for precisely sculpting the sound into a credible facsimile of the LPC approach. Like the vocoder, it offers ten oscillator types, each based on a different digital waveform, with an emphasis on noise carriers, though there are a few pitched options. From there, the results are further customized via four knobs. Bits, aptly, adds bit-crushing to the process. Bytes imparts a really cool sample-and-hold granular process to the effect that absolutely nails Kraftwerk's “Computer World” vocal stylizations and gives Compuvox its own unique flavor. (Forward-thinking producers are going to love that parameter.) The Bats knob adds a gravelly texture that the manual strongly implies is based on Batman's voice, but ultimately is simply another useful way to customize the sound. Lastly, the Spell switch offers three EQ-like curves to the digital/noise element of the sound.

> TALKBOX

A real talkbox consists of a speaker connected to a tube that's placed in the performer's mouth, which is then used as an artificial voice box, where the oral cavity serves as a complex resonator and the tongue provides articulation for consonant and vowel sounds. Despite its apparent simplicity, the nuances of the talkbox effect are incredibly difficult to reproduce convincingly by any other means.

That said, iZotope has done a great job of replicating the essential character by what appears to

be a fusion of the Polyvox technology and its Vocoder algorithms. Here, the customization parameters include the now-familiar oscillator type and formant controls, along with knobs for overdrive, speaker emulation, and a Bright selector offering different frequency responses.

MORE AND MORE EFFECTS

While the vocal effects described above operate in parallel and include individual level controls in a central mixer, five additional effects at the end of the chain do a great job of both consolidating the sound and ratcheting up its electronic aspects.

These effects include Distort (a waveshaper/overdrive), Filter (great for French House flourishes), Transform (a convolution-based speaker emulation), Delay, and a new effect called Shred that fuses bits of iZotope's Stutter Edit technology with granular-synthesis effects. I particularly dug the way Shred enhanced the output of the Compuvox effect, as it further “computerizes” its character.

Moreover, VocalSynth offers both polyphonic MIDI control of its synth elements and sidechain options for swapping out its carriers with your own audio, which is a fantastic way to combine its vocal effects with other recorded tracks in your compositions. While each DAW's approach to routing MIDI and audio to plug-ins is unique, I had no trouble routing either type of data within Ableton Live.

TELL IT LIKE IT IS

VocalSynth's blend of classic vocal processing tools with intuitive and simplified parameters puts its focus squarely on getting great results with a minimum of fuss. What's more, the additional effects, comprehensive DAW integration, and impressive collection of presets make it useful for far more than just pop vocal stylings.

VocalSynth's unique sound has inspiration baked right in, and for some producers of electronic music, that's worth any price. ■

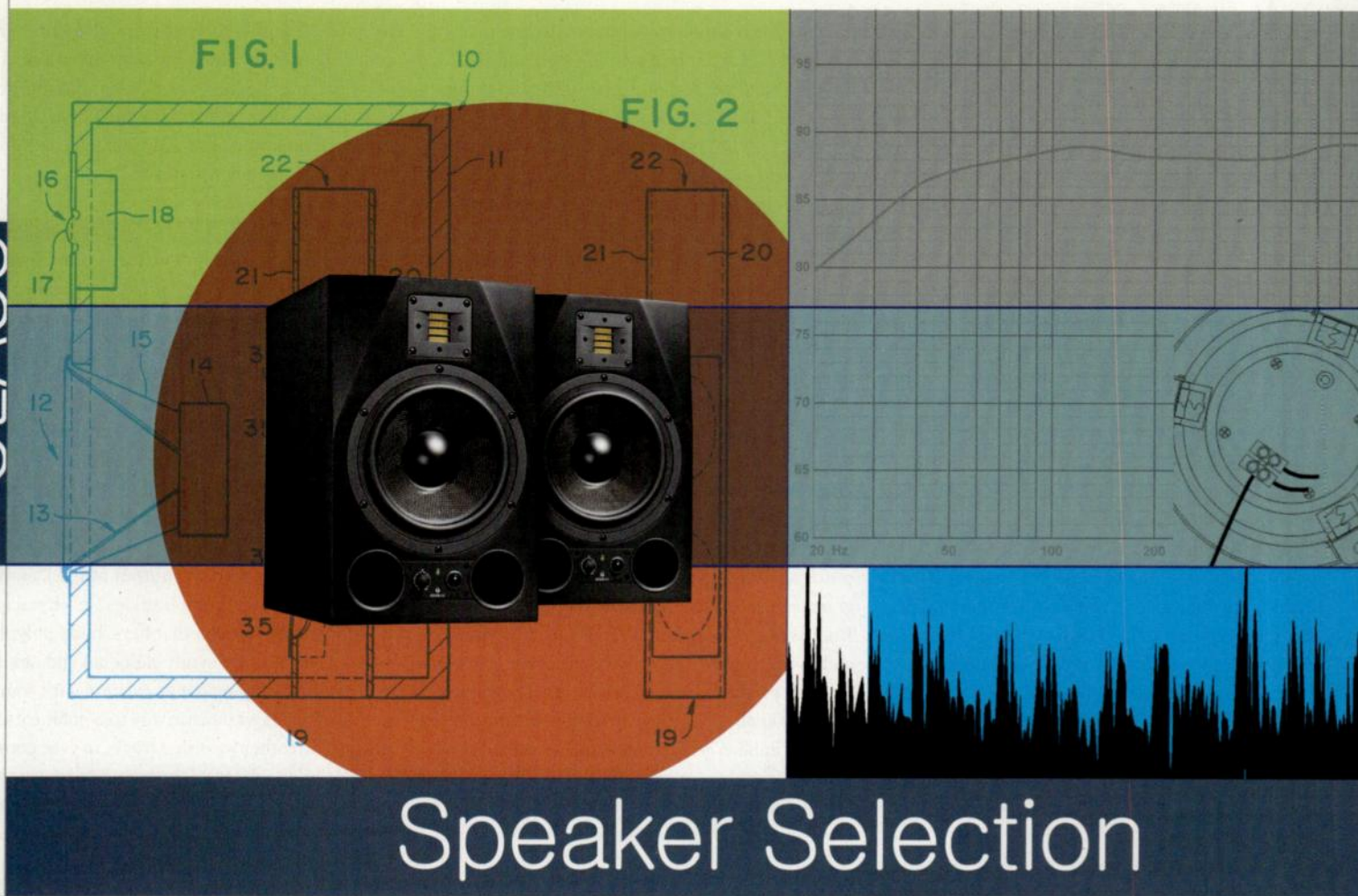
VocalSynth Effects

While the main focus of VocalSynth is its array of vocoder-oriented tools, its effects section is remarkably useful for processing instrumentation and audio of all shapes and sizes. The signal chain is preconfigured in a serial manner—distortion followed by filter, speaker emulation, a stuttering/granular tool, and a delay—so other than turning effects on or off, you can't rearrange their positions, but iZotope clearly designed this chain for maximum flexibility.

The distortion, filter, and speaker emulations all offer several different algorithms, so they can go from subtle warming effects to full-on signal mangling. In a way, it's like having a lite version of iZotope's indispensable Trash 2 plug-in baked right into VocalSynth, which is impressive indeed. These three effects alone are great for everything from distorted guitars to industrial drum loops. The stutter/granular tool, called “Shred,” is useful for both static flanges and exotic chopped effects. And the delay at the end of the chain, while basic, is still handy because its settings can be saved as part of any given preset.

The end result is that VocalSynth also gives you a solid set of traditional processing tools with the “iZotope sound” for manipulating non-vocal material, adding a lot of value to the package. In fact, it's not a huge stretch to say that VocalSynth is actually two products that cover different territories and can be used either individually or together for some truly unusual tonal sculpting.



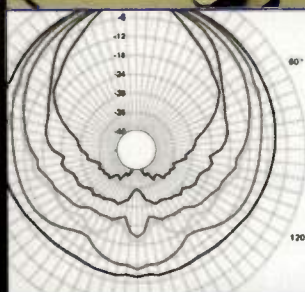


Your monitors affect everything in your studio. Learn how to pick out the perfect pair.

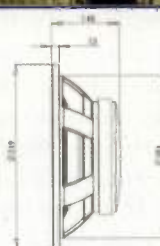
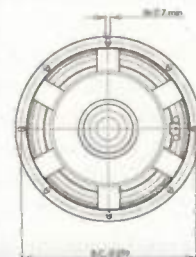
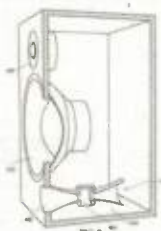
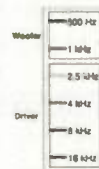
STEVE LA CERRA

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

Buying a new set of studio monitors is a little bit like getting married. You're with them every day, you have to listen to them constantly, and you share a small space together. If they don't tell the truth, you'll find out sooner or later. Your speaker choice is not quite as permanent as your choice of a life partner, but it does make sense to choose wisely, because your monitors affect every audio decision you make, every day.



6FHXS1



GO BIG OR KEEP IT SMALL?

We'd all love to have the biggest, most expensive monitors money can buy, but just because you can afford large speakers, doesn't mean you should buy them. You have two important considerations regarding speaker size: First, most home studios revolve around a small room such as a spare bedroom or den. Speakers with 6- or 8-inch woofers will easily fill such rooms with plenty of sound. Coupled with the fact that you'll likely be listening in the "near field" (close up), there's less need for a large box. Big speakers playing in a small room more easily excite standing waves, which is something we want to avoid. Many manufacturers offer companion subwoofers for their small monitors that can be added later if you feel the need.

The second big issue you'll have in a home studio is isolation. Most small speakers can reach levels that are loud enough to annoy your neighbors, so spending five grand on a three-way monitor with a 15-inch woofer may not be such a great idea. If you're lucky enough to have a large and/or well-isolated room that will not spill sound through the walls into your neighbor's bedroom, then you can think bigger and louder.

Appropriate speaker size also relates to the type of music you create. If you are doing a lot of hip-hop you may need a larger speaker to pump out bass and kick drum notes, but remember—your neighbors may be able to hear them, too.

Consider your monitor's potential location: If

you are forced to place your speakers within a foot to 18 inches from the front wall, a cabinet with a port on the rear panel may be a bad choice. That port can blow low-frequency energy at the wall, which can reflect it back to you out of phase. Do some research to determine the suggested place-

Monitor Stands

Unless you are living at the top of the studio food chain and your speakers will be soffit-mounted, you'll need speaker stands. Fixed-height stands tend to be more stable than adjustable stands, so get an idea of stand height before you buy them. Have a seat in your favorite work chair, get comfortable behind your desk, and have someone measure the distance between your ear and the floor. That's not the height of the speaker stand you'll need. Ideally the tweeter lives at ear height, so that you're working in the sweet spot. Take into consideration support platforms that might be placed under the speakers such as Auralex MoPADs or Primacoustic Recoil Stabilizer. Your ears don't need to be precisely the same height as the tweeters but you want to be within their dispersion pattern.

Stands with hollow posts that can be filled tend to be more stable and less resonant. Typical filler materials include gravel or pebbles, sand (too messy for my taste), lead shot, and kitty litter. Make sure that the ends of the support post(s) are gasketed so that the filling doesn't leak out. If you're really hurting for cash you can make stands using PVC pipe from a plumbing supply by cutting the pipe to the desired length and capping each end with a piece of plywood. Don't forget to fill the tube before you seal it.

ment for a rear-ported monitor. All things being equal (and they never are), ported cabinets tend to be more efficient and produce more low end than sealed boxes. However there's a valid argument for sealed boxes producing tighter, more accurate response. I'd consider neither design inherently superior; it's more about the execution.

PASSIVE VS. ACTIVE

Active speakers contain power amplifiers and crossovers matched to the drivers, meaning that the entire package behaves more like a coherent system. You won't need to worry about choosing an amplifier, though some people like the ability to mix and match amps with speakers. Active monitors are often "bi-amped" using dedicated amplifiers for the LF and HF drivers, which is generally a more efficient approach to amplification. Most active speakers include some sort of overload protection so you run less risk of damaging the speakers. However, if you already own a high-quality power amp, then passive speakers might be the way to go. You'll find that a lot of speakers are available only in powered versions, in which case you may not have a choice.

A bit of low cut can help if a speaker must be placed close to a wall or corner, while a high-frequency boost comes in handy when walls are covered with a lot of porous, absorbent materials.

THE NUMBERS

Some speaker specs are more meaningful than others. Frequency response is meaningful only if there's a variance associated with it, such as, "30 Hz to 20 kHz \pm 3 dB." Absence of a tolerance spec tells you that a speaker is capable of reaching certain frequency extremes, but doesn't tell you how loud or low in level those extremes may be in relation to the overall response. That said, the response chart of a speaker really doesn't tell you how it sounds.

The *sensitivity* of a passive monitor provides an idea of how much power you need. For example, a sensitivity spec of "88 dB SPL @ 1W/1m" means "this speaker will produce a sound level of 88 dB

with one watt of power, measured one meter away." For each additional 3 dB, double the power requirement (e.g. for this particular speaker, 91 dB will require 2 watts, 94 dB will require 4 watts). If you prefer to listen at low levels, you won't need a lot of power, but I don't feel there's such a thing as too much power. Look for an amp that provides 50 to 100 watts per channel; better to have the headroom.

Powered monitors usually state the maximum SPL. Look for long-term SPLs of at least 100 dB, preferably 105 dB—not because you plan to listen at 100 dB all day (please don't, you'll damage your hearing!) but because you need to know you or your clients can crank it up once in a while.

BELLS AND WHISTLES

Active monitors in particular often include a variety of "trim" controls that run the gamut from a simple +4/-10 input sensitivity switch to a plethora of DSP-frequency contour controls. You will not find an input level switch on a passive speaker (but you may find a trim control for the tweeter). A switch or variable input control is very useful for matching the output of your mixer or interface to the speakers. Active monitor input connectors are typically XLR, RCA, and TRS/TS 1/4-inch. RCA is the least desirable of the bunch because it's not a reliable connector, especially if the cables frequently get disconnected. XLR and TRS are robust connectors that can carry a balanced signal that's less susceptible to interference from cell phones. Passive monitors usually employ some sort of binding post connection to the speaker wire (see sidebar on page 58).

Other controls may be provided for trimming the low, high, or mid frequencies. Look for controls that go up and down (i.e. -3/0/+3 dB). These will be more useful in a wider variety of circumstances, than controls that allow only cut. A bit of low cut can help if a speaker must be placed close to a wall or corner, while a HF boost comes in handy when walls are covered with a lot of porous absorbent materials. Keep in mind that these are *trim* controls intended for subtle contouring, and not for completely changing the character of the monitor.

Don't underestimate the usefulness of a power indicator on the front panel. It's really annoying to have to get up and look 'round the back just to see if the power is on. Some monitors have Auto-Off or Standby features for energy-saving purposes.

LISTEN CAREFULLY

Listen to as many speakers as possible at various price points even if you can't afford them. Auditioning premium speakers gives you a benchmark against which to judge less-expensive monitors. I'll never forget the impression of hearing great monitors for the first time; they were priced way out of my league, but what an ear-opener! I played familiar recordings and heard things I never knew existed. If possible, audition the

monitors in your listening room.

Listen to a variety of material but make sure it's full-bandwidth and not a compressed data format. MP3, AAC, and other "lossless compression" schemes need not apply. You should be playing WAV files, or plug in a CD player. The audition should include material you've worked on as well as commercial releases. Beware of commercial projects that have had the life compressed out of them in the name of loudness. Such recordings often have unacceptable levels of distortion and you won't know whether distortion is coming from the recording or the speakers. A recording of your own voice can be incredibly revealing because it's a familiar sound. Listen to recordings of real acoustic instruments (not samples) such as piano, acoustic guitar, and drums. A dance tune with synth bass can give you an indication of how the monitors handle the low end.

Things to listen for: Smooth response. Do any areas of the frequency range stick out or sound recessed? Is the kick drum full or does it sound



Room Correction

Some active monitors incorporate on-board analysis and DSP that automatically tailor their response to your room—the basic idea is to place a microphone at the listening spot and switch the speakers into a "calibration" or "analysis" mode. The speakers will play a test signal such as a noise burst, a sweep tone, or simply pink noise. The microphone (which is designed for the purpose and has a response known to the manufacturer) receives the signal and sends it to a processor inside the speakers. The processor analyzes the signal for frequency (and sometimes phase) response, then creates a compensation curve that is applied to the monitors to flatten the response. The results of such DSP are usually favorable, helping improve the monitors' accuracy in *your* room. If you like this idea, there are monitor controllers and software that accomplish the same thing.



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thin? Does the low end distort when you turn up the volume? Are the cymbals smooth or bright and “sizzly?” Do the speakers track dynamics, getting louder and softer along with the program material? Do they provide a sense of impact on louder passages? If listening to a pair of monitors makes you fatigued after 20 or 30 minutes, how will you feel after listening to them over an eight-hour day? Can you hear subtle details such as reverb and echo tails, the thump of the sustain pedal on a piano, or the squeak of a kick drum or hi-hat pedal? If there’s a hum, a buzz, a click, or pop while I’m recording, I need to know. I can handle the truth. Create some rough mixes on the speakers and listen to them on other systems to get an idea of how

accurate a picture they paint while you’re working.

What happens when you vary the volume? Do you lose low end when you turn it down? Do parts of the frequency spectrum become emphasized or hidden? A good monitor will sound consistent regardless of volume level. Do the monitors “throw” a decent stereo image? When you add reverb to a sound does the sense of depth increase? These are the things to notice, and the more you listen, the more educated your ear will become.

Many of our studio toys are great fun, but good monitors will *change your life*. You’ll be able to work longer, smarter and more efficiently, often with better results. ■

Cable Considerations

If you decide to go for passive speakers, you’ll need cables to connect them to a power amp. Most passive speakers use binding posts that accept bare wire, spades, or banana connectors. Banana connectors are a poor interface for speaker connections. I promise you that they will lose their resiliency and will ultimately not hold a connection unless they employ some sort of locking mechanism. A spade lug is a more reliable connector. Stay away from spring-loaded speaker clips. They will also eventually lose their ability to hold the wire.

You don’t have to drop \$700 on speaker cables, but you shouldn’t cheap out either. I won’t open the can of snake oil that is “speaker cable at 50 bucks a foot,” but let’s not use 24-gauge zip cord either. Go for a minimum cable size of 16 gauge; 14-gauge would be even better. Canare makes excellent speaker cable (4S6 Star Quad) that sells for around 35 cents a foot. If you’re spending a grand on speakers and another seven bills on a power amp, you can afford to buy 20 feet of decent cable and some gold connectors for the ends.



Banana connectors

Canare 4S6 Star Quad

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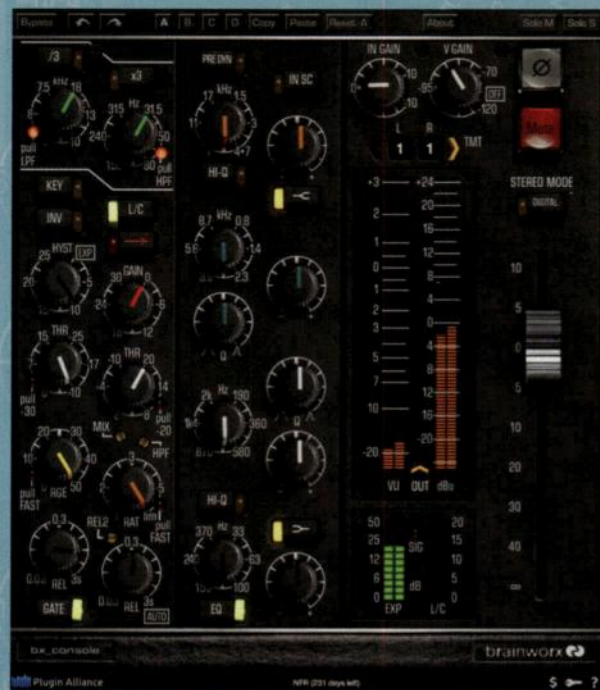


Fig. 1. The Brainworx bx_console's gate features a Hysteresis control (on the left side of the GUI, it's the fourth knob from the bottom) that makes it open at a different threshold from where it closes.

Fail-Safe Gates

Kill the chatter using these reliable plug-ins

BY MICHAEL COOPER

Despite having a threshold control, the average noise gate often doesn't know when to stay closed. As a sustained electric guitar chord fades out and the signal fluctuates slightly in volume around the threshold level, most gates will chatter, opening and closing rapidly and repeatedly. Constant amp hiss is distracting enough, but hiss that stutters like a typewriter is far worse!

Gating out mic bleed on tom tom tracks offers a similar challenge: As the volume of a struck tom decays to just below threshold level, minor fluctuations in mic bleed can push the signal temporarily back over the top. Chatterbox city!

Fortunately, the very best gates offer a solution—either a hysteresis control or two thresholds—that all but guarantee perfect gating action. Two recently introduced plug-ins deliver the goods. Not just superior gates, they each provide other powerful processing, too.

BRAINWORX BX_CONSOLE

Brainworx's bx_console (reviewed in *Electronic Musician's* April 2016 issue) models a rare 72-channel Neve VXS analog mixer. Each iteration of the plug-in emulates one (mono configuration) or two (stereo) channel strips. Each channel strip includes highpass and lowpass filters, 4-band EQ, a limiter/compressor, and the focus of this article: an advanced gate/expander.

bx_console's gate offers both Threshold and Hysteresis controls (see Figure 1). The Threshold control sets the level at which the gate will close. The Hysteresis control sets a separate threshold for opening the gate by applying a positive offset (up to 25 dB) relative to the closing threshold's value. Put another way, raising the Hysteresis control makes the gate open at a higher threshold than it closes.

When setting up bx_console's gate on a stereo track, first set the plug-in's Stereo mode to Digital so that both channels load the same channel strip; otherwise, the gates for the two channels may not close at the same time and threshold level. Set the Threshold control higher than an acceptable noise level but low enough that it won't prematurely cut off the desired signal's decay. Raise the Hysteresis control (rotating the knob clockwise) until the quietest attack of desired signal—from a plucked guitar string or a tom strike, for instance—barely gets



Fig. 2. You can prevent the gate in Waves' eMo D5 plug-in from chattering by setting an offset for the closing threshold with respect to the opening threshold. The Close control (in the upper-left section of the GUI) adjusts the offset in decibels.

muted, and then back off the control slightly; around 10 dB of hysteresis usually does the trick on electric guitar tracks. With both controls set up properly, the gate will smoothly close at the threshold setting to attenuate noise, and it won't reopen until the input signal exceeds the higher gate-open value determined by the Hysteresis control. No chatter!

Additional features manage the noisiest of tracks. bx_console's **EQ** can be placed in the

gate's internal sidechain to filter the signal the detector hears (for example, to make the gate ignore loud hiss or rumble). Alternatively, the gate's action can be triggered by another track routed to its external sidechain input. Release and Range controls respectively adjust how fast the gate closes and its maximum attenuation.

WAVES EMO D5 DYNAMICS

The Waves eMo D5 Dynamics plug-in wraps

five dynamics processors—a gate/expander, leveler, de-esser, compressor, and limiter—into one GUI. The plug-in's Parallel Detection technology makes each processor respond not only to the dry signal but also to its companion processors' signals, helping to avoid excessive compression.

eMo D5's excellent gate provides separate Open Threshold and Close (threshold) controls (see Figure 2). The Close control provides a consistent negative offset (up to -48 dB) to the Open Threshold control as you adjust the latter. Set the Open Threshold control as high as you can without muting your desired signal. Then lower the Close control until background noise is attenuated. A Close setting of about -10 dB should gate most electric guitar tracks without chattering.

Attack, Hold, and Release controls govern how quickly eMo D5's gate opens and closes. The Floor control adjusts the maximum attenuation allowed. Highpass and lowpass filters condition the signal for both the internal and external sidechains.

Once you've used a gate with separate opening and closing thresholds, you'll never want to go back to fiddling with basic gates. It's an open-and-shut case. ■



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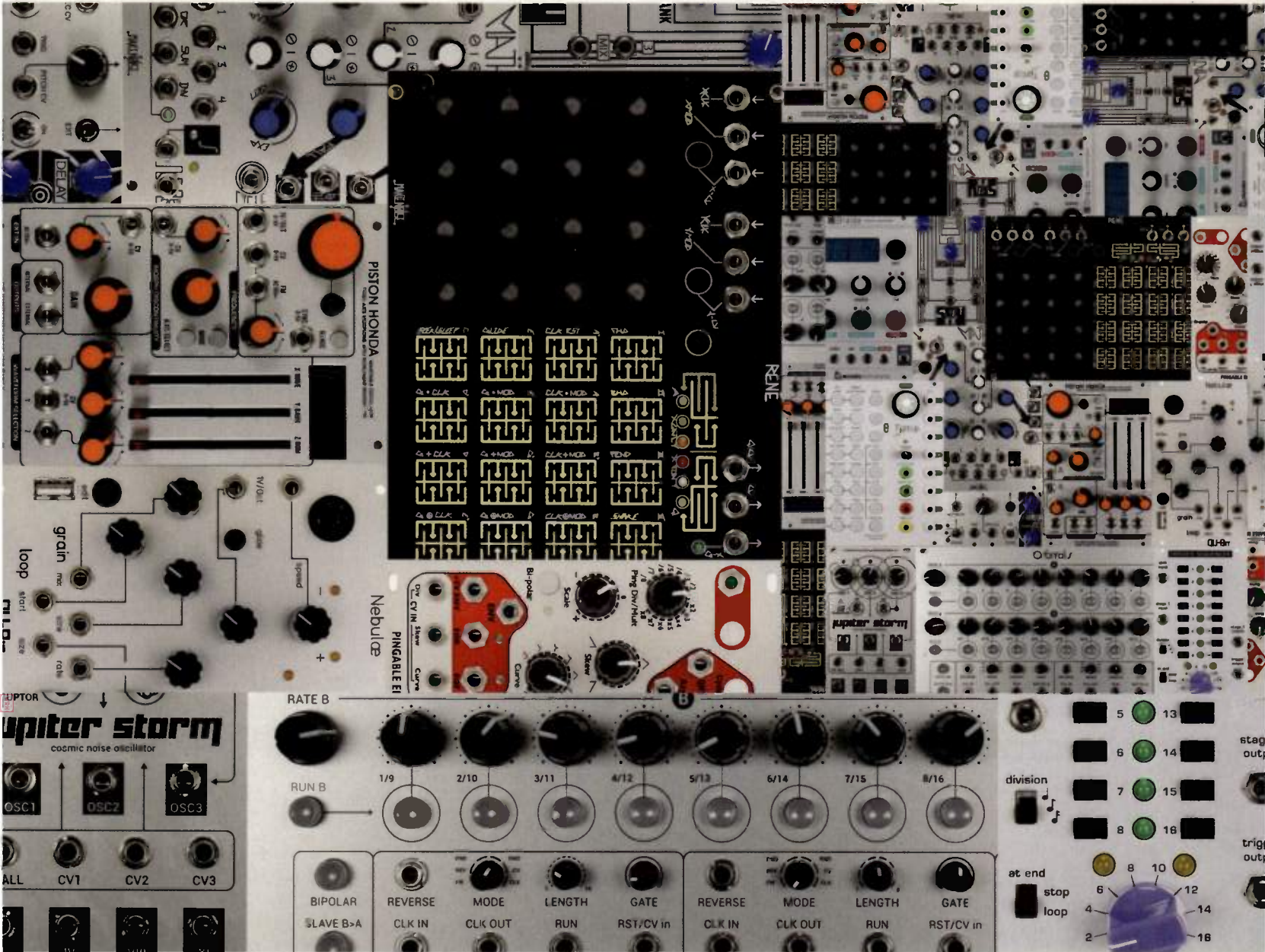
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Panos Panay

The cofounder of Berklee's ambitious Open Music Initiative wants to modernize music rights tracking systems, and says the time is now



BY SARAH JONES

In June, Berklee's Institute for Creative Entrepreneurship (BerkleeICE) launched the Open Music Initiative (OMI), an ambitious, industrywide effort to solve issues of tracking and compensating rights holders and creators of music distributed through digital platforms, through a set of open standards that will allow industry databases to exchange and verify information.

OMI already has the support of 50 industry heavyweights: Major labels Universal Music Group, Sony Music Entertainment, Warner Music Group, and BMG are onboard, as are Spotify, YouTube, Pandora, SoundCloud, Netflix, SiriusXM, and trade groups such as the Music Managers Forum and Future of Music Coalition.

Panos Panay, founding managing director of BerkleeICE and cofounder of OMI, talked about the problems plaguing digital rights management, and how this bold initiative will lead toward fairer compensation for music makers.

Where have you seen the weakest links in the industry infrastructure, as far as tracking and distributing royalties?

Right now there is no global, industrywide interoperability among existing platforms, databases, and systems for detection, collection, and distribution of royalty payments, which not only creates vast inefficiencies and friction but also millions of dollars that are not channeled to rightful owners and creators of music. In addition, the absence of a uniform protocol for rights-holder and creation identification is thwarting innovation, which in turn is holding back growth and innovation capital in the music business.

As an academic institution leading this initiative, how are you building consensus among the various stakeholders?

It's simple: We are a neutral institution that educates musicians. Our job is to give our students the proper tools, mindsets, and networks needed to create successful careers. The aim of the initiative is very simple: Help drive compensation, in a new world order, for the people that matter the most in our business: musicians, artists, creators of music.

It's been a big year for music industry advocacy in Washington, with Fair Play Fair Pay and its AMP Act provision on the table. How does OMI fit in with these efforts?

It's good to see a rising tide and awareness about issues that have challenged our business as we've experienced the shift from analog to digital. OMI is not a lobbying group, however, and as a nonprofit institution we do not have any lobbying activities. We do hope that our approach can help inform policy makers with respect to efforts that help advance compensation issues for music creators. Innovation happens when industry, academia, and policy makers join forces to make a change. You saw that with the internet.

Can you talk about OMI's provisions for engineers and producers, and will you offer best practices comparable to, say, the Recording Academy's metadata recommendations?

We are talking with the Academy and want to work very closely together on this matter. This is an effort meant to be inclusive and to build on existing efforts, not compete or replace any. We feel that engineers and producers play a critical role in capturing invaluable information related to our effort with OMI.

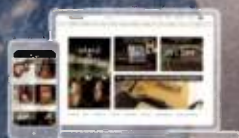
You already have the support of the major labels and streaming services. How will you serve indie labels and artists?

Like small businesses and entrepreneurs in the US economy, independent labels and artists are the heartbeat of the industry. It's where you see the most cutting-edge music being created, it's where you get a glimpse of all the future of our business that's being created as we speak. We are working hard to bring the independent sector in, and—having spent 13 years of my life with the company that I founded, Sonicbids, helping independent music get heard around the world—this is a big priority for us. Not to mention that an overwhelming number of our graduates from Berklee go into careers in the independent sector. ■



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