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OB-6

Tricks

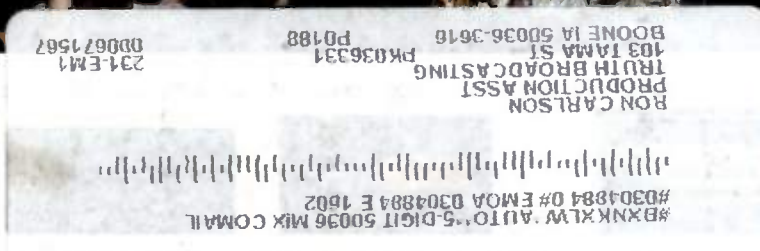
## THE ANNUAL ROCK STAR HOLIDAY GIFT GUIDE

STUDIO GEAR GIFT IDEAS FROM

Panic! At the Disco Peter Bjorn and John Beats Antique Placebo  
Butch Vig Magik\*Magik Borgeous Waxahatchee STS9  
French Horn Rebellion Tim Palmer Mako And more!



Stranger Things  
Music for TV's Hot  
Sci-Fi Series



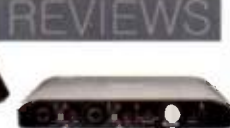
Eris E66

Komplete 11

V Collection 5



MACKIE  
ProDX8



TASCAM  
iXR



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RM-05

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## THE ELECTRONIC MUSICIAN ROCK STAR HOLIDAY GIFT GUIDE

Once again, we talk to dozens of artists, producers, DJs, and engineers to find out their favorite gift ideas for the studio gear lovers on their holiday lists, from practical suggestions to extravagant splurges.

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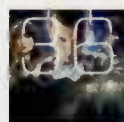
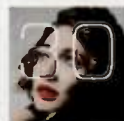
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~ Jason Hook

- Five Finger Death Punch.

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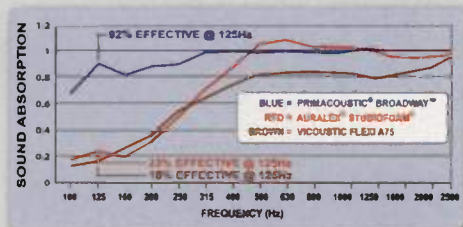
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insight

## Because Your Gift Is on My List

IT'S THE season of sharing! And there's nothing we love more than sharing information about production gear that will help you make better music. But once a year, we like to give some other people—and by that, we mean top artists, DJs, producers, and engineers—a chance to do the advising, in our annual Rock Star Holiday Gift Guide. This year, we hit up Peter Bjorn and John, Placebo, Butch Vig, French Horn Rebellion, Waxa-

hatchee, Beats Antique, and dozens of others for ideas, and got an eclectic mix of suggestions ranging from the practical to the whimsical: from workhorse preamps to toy horns; from classic studio mics to rare vintage instruments.

Of course, the great thing about shopping for audio gear is, it just gets more powerful and less expensive all the time, so for the most part, the tools your favorite artists use are within

reach. So whether you have ten spare dollars or ten thousand, there's something for you in this guide.

We know money can't buy happiness, but there's a good chance that a new mic, plug-in, or synth will put a smile on the face of your favorite musician or engineer.

Looking for even more gift ideas? Visit [emusician.com](http://emusician.com) to access classic Rock Star Holiday Gift Guides from issues past. Happy Holidays!



**SARAH JONES**  
EDITOR

[sjones@musicplayer.com](mailto:sjones@musicplayer.com)

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## gadget geek



## Repeater Electronics The Horndog V.2

Repeater Electronics (\$150; [hellospiral.tumblr.com](http://hellospiral.tumblr.com)) describes the Horndog Synth as a "chaotic pathable synthesizer"—translated, that means it supplies a web of primitive oscillators/signal processors that you can "circuit bend" via patch cables or anything conductive (including your skin). The Horndog can also be used to process external signals. Users will need to provide their own 9-12V center (tip) negative DC adapter and banana patch cords.





1

### MOTU ULTRALITE-MK4

Hi-speed USB 2.0 audio interface  
**\$595**

**HIGHLIGHTS** 18-in/22-out in a half-rack chassis • supports sample rates to 192 kHz • pair of front-panel XLR/TRS combo jacks • 6 TRS analog inputs • 8 DC-coupled TRS analog outputs • stereo main outs • digital connections include ADAT, TOSLink, and S/PDIF • MIDI I/O • new mixer and double the amount of processing over mk3 model • wireless control option • bundled with collection of audio analysis software tools

**TARGET MARKET** Personal studios, mobile recording

**ANALYSIS** A significant upgrade offering internal matrix mixing and support for portable devices.

[motu.com](http://motu.com)

2

### WAVES ABBEY ROAD VINYL

Audio processing plug-in  
**\$240; \$99 intro price; \$79 for Abbey Road Bundle owners**

**HIGHLIGHTS** Models the mastering and vinyl-cutting devices used at Abbey Road Studios • slow-to-stop effect • choose between two types of turntables and three playback cartridges • variable tone-arm positioning • select the sound of an acetate master or factory-pressed record • place a modeled TG12410 mastering console into the signal path • add artifacts such as wow and flutter, surface noise, crackle, and phase distortion

**TARGET MARKET** Recording engineers, musicians, producers

**ANALYSIS** A remarkably detailed way to introduce vinyl-related coloration into your productions.

[waves.com](http://waves.com)

3

### MXL DX-2

Dual-Capsule Variable Dynamic Mic  
**\$149 Street**

**HIGHLIGHTS** Dynamic mic with two capsules—one with a hypercardioid pattern, the other with a cardioid pattern • variable onboard control for selecting a blend between the two dynamic elements • front-address with a flat face suitable for placing in front of an amplifier • 50Hz to 14kHz frequency response • all-metal body with Mogami wiring inside • includes mic-stand adapter and carrying case

**TARGET MARKET** Home studios, live-sound engineers

**ANALYSIS** A unique design that allows for variation in tone as well as directivity.

[mxlmics.com](http://mxlmics.com)

4

### NATIVE INSTRUMENTS MACHINE JAM

Music production system  
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**HIGHLIGHTS** 8x8 color pad-matrix running with Maschine 2.5 software • 8 dual-touch Smart Strips • Notes mode • 8 new Perform FX units • sophisticated pattern creating and multitrack step sequencing • Lock function for storing parameter snapshots • bundled with Komplete 11 Select

**TARGET MARKET** DJs, producers, musicians

**ANALYSIS** The streamlined interface is designed for intuitive composing and performance, whether Maschine Jam is used on its own or paired with other Maschine devices or a Komplete Kontrol S Series keyboard controller.

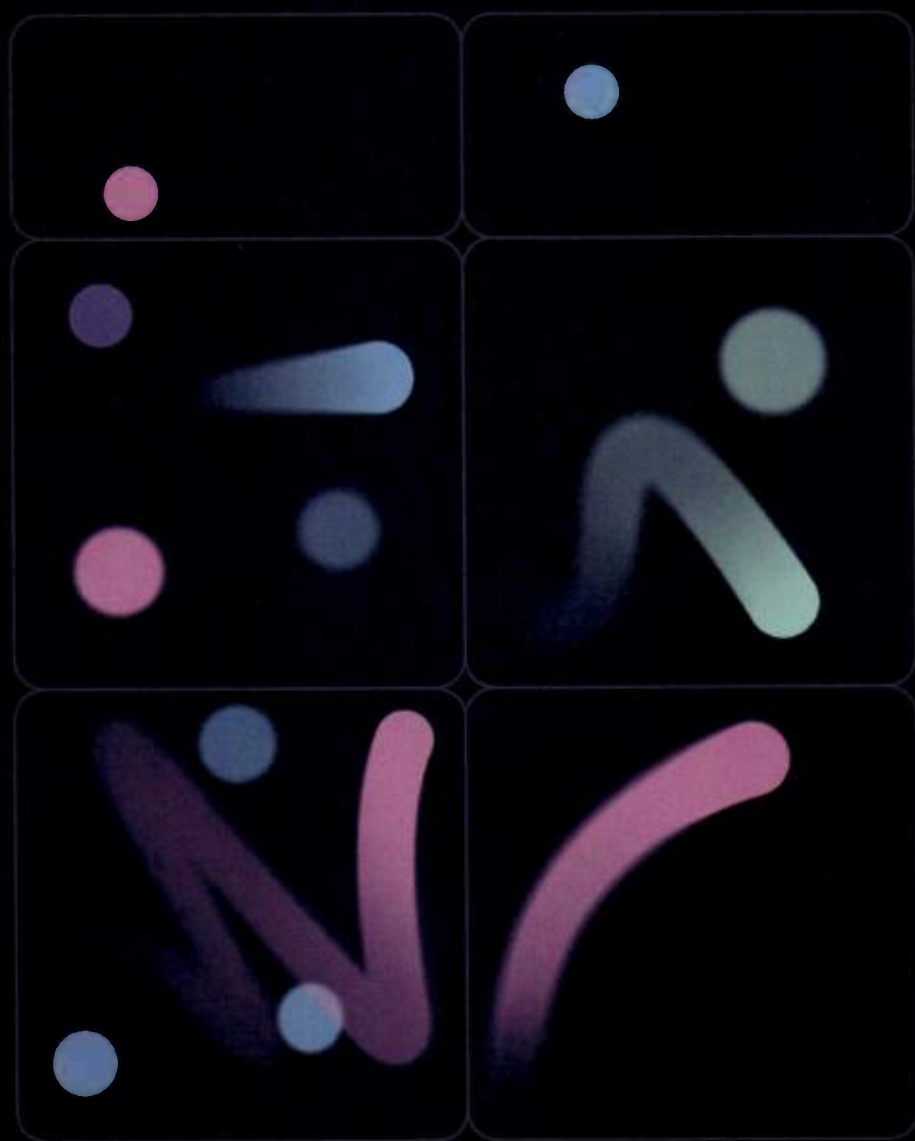
[native-instrument.com](http://native-instrument.com)





**BLOCKS**





SHAPE MUSIC





# DON BUCHLA, 1937–2016

Personal tributes from four friends

BY GINO ROBAIR

On September 14, we lost one of the major pioneers of electronic music: Don Buchla. We asked four of his friends—Suzanne Ciani, Alessandro Cortini, Morton Subotnick, and Bob Ostertag—to share their personal thoughts about him.

“Don had the kindness to go from us slowly so that we could gradually absorb the shock of losing him. He was a mentor, an inspiration, a friend,

a tennis buddy. He gave me my electronic wings. It was not always an easy relationship, but I held him in such high esteem that his aura, in my eyes, was blinding. Almost 50 years under his electronic spell and still going. The day he passed, I was performing on the 200e in Brooklyn, NY, having taken up the torch once again, after 30 years, of making live music with his instrument.

“My favorite thing about Don was his quiet strength and humor—his uniqueness, his refusal to wear matching socks. He had wonderful women in his life to whom I give credit for humanizing him

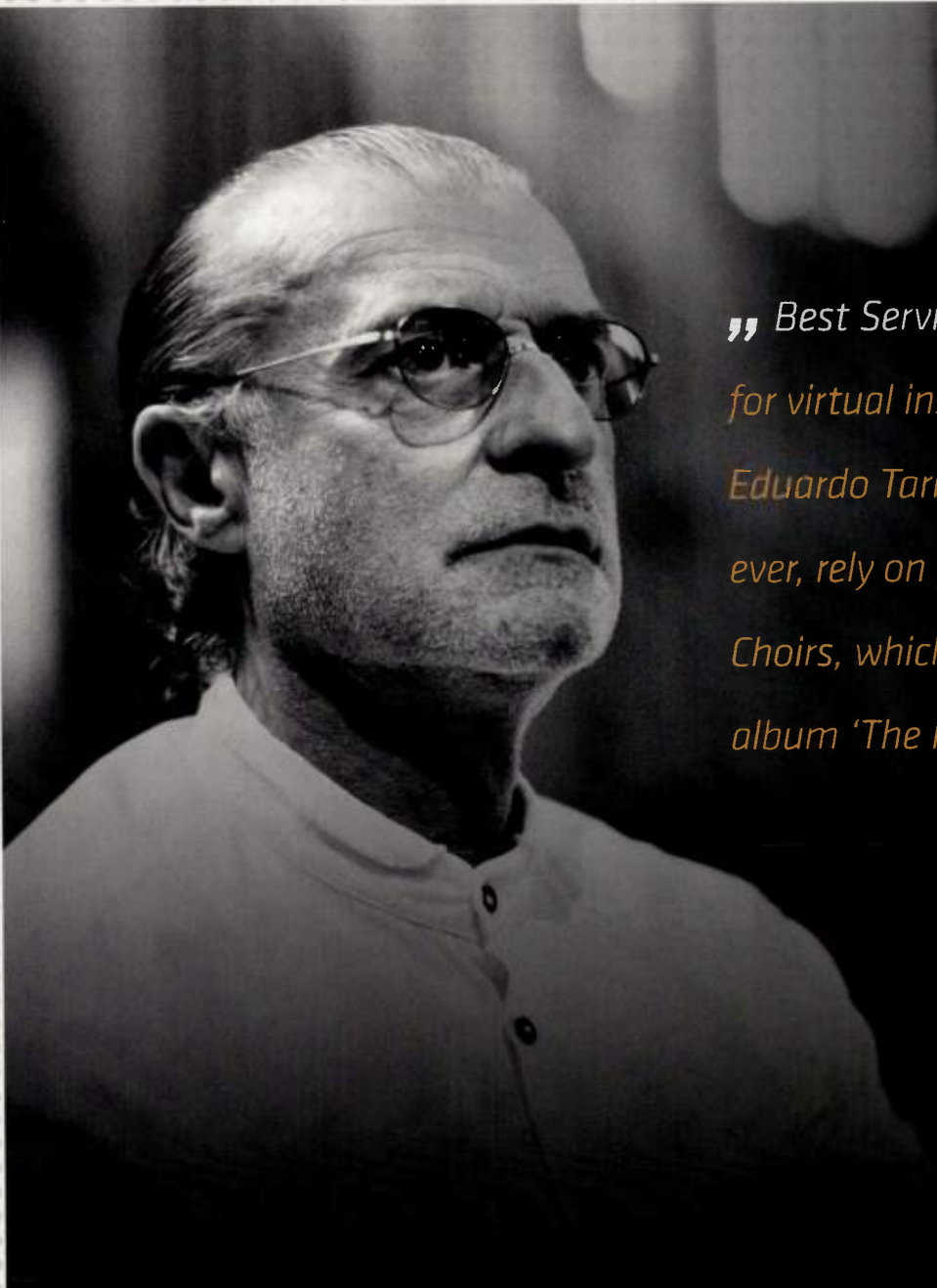
over the years, because when I first met him in 1969, he was rather grumpy...

“He fired me after my first day of work...for a cold soldering joint. I refused to leave. I think he understood stubbornness.

“I loved the way he did it all, from the road-case designs to the module graphics to the poetry of the module names; he was a total designer, because that's what it took and he never ever stopped manifesting his vision. He had a healthy disrespect for popularity.

“I loved that he designed from the outside in...and let musicians like myself have input even though I





*„ Best Service is my number one source for virtual instruments. With Cantus by Eduardo Tarilonte I could, for the first time ever, rely on high-quality virtual Gregorian Choirs, which I also used on my brand-new album 'The Fall Of A Rebel Angel'. “*

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SOUNDS GOOD.





L-R: Tom Oberheim, Dave Smith, Roger Linn, Pino Robair, and Don Buchla



Buchla and Suzanne Ciani

By 1963, instead of continuing our Frankensteinian kludgy approach to hunting and gathering in electronic graveyards, we decided to put an ad in the *San Francisco Chronicle* to find someone who might be interested in building our device. Our idea for it was a kind of Rube Goldberg light synth. The first person to answer the ad seemed to have some sort of eye dysfunction; his eyes were focusing on two different and constantly changing places at the same time; unaware that the '60s drug scene had begun, we gave him a shot at it, but it was a disaster!

"A short time later, another engineer appeared. (Only two answered our ad!) He appeared to see and hear in appropriate ways so we presented our idea. After listening quietly, he thought for a moment and said, 'Yeah, I can do it!' The next day he arrived with a machine; a paper disc attached to a little rotary motor mounted on a board and a couple of batteries, a flashlight, a small loudspeaker and a some circuitry. He turned it on, and it made (nasty) sound! Amazed

can barely wire a lamp. The corner of the electronic universe that he occupied was special...and to me it was all about live performance...about respecting the human body that played the instrument, giving visual feedback as to what going on in the moment with lots of color-coded LEDs, making the instrument portable enough to travel. He molded space with a quad interface and a voltage-controlled reverb...

"I love the depth and complexity and playfulness of his designs for the 200. The Multiple Arbitrary Function Generator was my favorite: a 3-dimensional sequencer that became the control center for my performing, along with the Source of Uncertainty, a philosophical and very useful module.

"I loved the way he wrote the manuals, when eventually there were manuals. His use of language was perfectly precise and compact. He was an engineer.

"I remember sitting up in the speaker stands Don set up at Altamont, where the Hells Angels were hired as security...and how intensely fast I escaped after seeing the violence from that bird's eye view.

"I remember the truck-stop Mexican bar in Oakland in the late '60s where he would get huevos rancheros and a Dos Equis beer; and then go back to work in the mammoth warehouse with gazillions of modules, gongs from Borneo, and his eclectic assortment of friends who assembled the circuit boards.

"I got a shock one day touching a power supply in the wrong place and he said that was a good lesson to me about electricity. And now I have the shock of his passing...I miss him so, so much."

—SUZANNE CIANI

"Don had the ability to show you what it meant to conduct a fearless life, without ever making you feel small or wrong for not doing the same. He just was much more free than anybody else I met in my life; the instruments he built, the way he spoke, how he went on with his daily life. He was a friend and a mentor to me, and I equally learnt from him in person and from his creations, which embodied the ma-

jority of his modus operandi, traits, and quirks. In a way, I still chat with him every morning when I turn on the 200, and one module doesn't quite do what you thought you wanted from it, but somehow you're still in front of it, listening, hoping this sonic idiosyncrasy stays long enough for you to develop a creative conversation with it that will stay with you forever. That was/is/will forever be Don Buchla to me."  
—ALESSANDRO CORTINI

"Starting in 1962, Ramon Sender and I tried to create a composer's toolbox for creating music with electronics. A bit like Dr. Frankenstein, we were putting all kinds of discarded equipment together that would allow for the composer to be a 'studio artist.'



Buchla modular 100 Series synthesizer





Don Buchla with (L-R) Alessandro Cortini, Morton Subotnick, and Bob Ostertag.



and thrilled, we declared, "It works!" and he dryly responded, 'Yeah, but *this* isn't the way to do it.' The arrival of Don Buchla!

"Don and I worked regularly for almost a year: I would describe the functionality I thought was necessary to do something musically and Don would look up, as if at the ceiling or somewhere within himself, return his gaze to me and say, 'I made a module that does that.' Was he saying he made it some time ago and had just remembered it, or, had he designed it at that moment? I never knew. And when I would ask him, he would always just smile—that coy half smile of his. But, somehow, within a few days he would bring me a drawing of the new module.

"With every meeting a new module would arrive, and eventually he designed an entire analog

music-making machine. It was all on paper. We would need \$500 dollars for him to build it. With the help of the Rockefeller Foundation, we finally were able to pay for the parts. Don never built a prototype; he just arrived one day in 1964 with the entire machine—the now-historic Buchla 100 was born."  
—MORTON SUBOTNICK

"I first encountered a Buchla synthesizer at the Oberlin Conservatory in the 1970s. In a way, I could say that encounter reset the course of my entire musical life. The Oberlin studio also had an [EMS] Putney synth and a very large modular Moog. None of us students cared about the Moog. It sat untouched. The Buchla was where it was at.

"Over the years, the pop-quiz version of the differ-

ence between a Moog and a Buchla got reduced to the idea of a keyboard: The Moog had one, the Buchla did not. But there was so much more to it than that. Moog essentially built an electronic pipe organ, with knobs instead of stops. Don built a cybernetic instrument, in which the human musician was invited to intervene in automated processes in a very open-ended and creative way.

"It sounds like hyperbole to say that Don's instrument marked something fundamentally new in the history of music, but it is close to true. (To tell the whole story, we would have to include Bebe and Luis Barron, and Raymond Scott.)

"Karlheinz Stockhausen, in his characteristically pompous way, used to talk of his dream of a music of 'total serialism,' in which the same serial processes

## The New Breed



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would be applied to pitch, time, dynamics, and timbre. Don Buchla built a device that made the realization of exactly this idea fun and intuitive.

"Don's instruments were not cheap, but far out of reach for an undergrad. So I built a Serge synthesizer, a build-it-yourself synth designed by Serge Tcherepnin to be the 'poor person's Buchla.' I dropped out of Oberlin and took my new Serge on tour with Anthony Braxton, and then settled in New York City playing my Serge in the downtown music scene of the 1970s.

"Fast forward a decade-and-a-half and I arrived at my new home in San Francisco around the time Don released his Lightning wands, a sort of Wii controller for music, years before Nintendo came up with it. I went to buy one, and meet my hero and inspiration.

"The man I found was like no one I had ever met. He hardly spoke. You could ask him the most convoluted questions and get one-word answers. Gruff, I think, is the correct word. I came away from the encounter thinking this was a guy who could make you feel intellectually inferior simply by stating the time of day. Thus began a close friendship of many years with one of the most unusual people I have ever known.

"Once you got to know him, you learned that, what initially came across as Don's gruff exterior, was simply the exterior reflection of the way his mind worked. A big part of Don's genius was his

unique economy of thought. It didn't matter if you were talking about circuit design, history, music, personal relationships, or anything else. His thought process was free of clutter.

"Once you got that, Don became the most delightful friend anyone could have. He was interested in everything, and always with a unique spin. You could have the most wide-ranging conversations with him. I remember wonderful dinners with Don, his wife Anne-Marie Bonnel, and friends. Don would say one word to everyone else's two hundred, yet be a full participant in the conversation.

"I think of Don as being exceptionally funny. I am not sure many others share that assessment. How can you be funny when you speak so little? Well, when you really thought about his one-word answers, and worked your way backwards through Don's thought process, it would dawn on you how acutely aware he was of the humor in the situation—any situation. Don's humor wasn't all laid out for you, or served up like desert. He never told a joke. He didn't really care if you even got it. But it was there for you if you wanted it. And when your reply indicated that you had found the same humor he had found, his eyes would twinkle and he would crack a wry smile.

"His humor was like the ideas in his instrument. Take, for example, the 'manual' for the Buchla 200e—an extremely sophisticated and complex sys-

tem. The complete manual, including complete descriptions of every possible module you could order, plus caveats about 'not taking it into your hot tub,' totals 65 pages. (By comparison, the manual for Apple Logic Pro weighs in at 1,342 pages.) He does, however, tell you how to turn the synthesizer on, adding that, 'A bunch of LEDs should light up, indicating success in this portion of the endeavor.' Beyond that, there is absolutely no instruction as to how you might use the instrument. That was for you to figure out. Don's point wasn't to make it hard, but rather not to preclude any possibilities.

"Some of my students struggle with that. 'In order to figure this out you would need a degree in electrical engineering,' one complained to me. 'Not true,' I replied. The truth is quite the opposite. All you need to learn to use a Buchla is curiosity and a lot of time with no distractions. Not really the norm in the age of applications with built-in mouse-over help bots.

"Who else in the world had a high-level security clearance from NASA while giving away 10,000 hits of LSD at the Trips Festival of which he as a co-organizer? He was a close friend yet I am sure there are layers and layers, stories and stories of which I am unaware. I just learned today of his work as a teenage smoke-jumper. There are many obituaries out there now to Google, but I am absolutely certain none really has a complete picture."

—BOB OSTERTAG ■

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# The Electronic Musician Annual Rock Star Holiday Gift Guide

Artists, DJs, producers, and engineers offer suggestions for all of the deserving people on your studio list

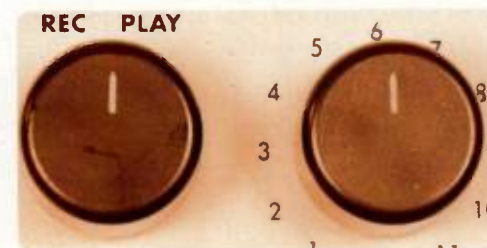
BY BARBARA SCHULTZ AND SARAH JONES







Whoever said it's better to give than to receive clearly didn't suffer from Gear Acquisition Syndrome. If you're making your holiday wish list (or shopping for a musician or engineer in your life), check out these great gift ideas from some of our favorite studio superstars. Whether you're splurging or scrimping, there's something for everyone. Happy hunting!







## PANIC! AT THE DISCO

Theatrical punk-poppers Panic! At the Disco count five smash albums, armloads of VMAs and Alternative Press Music Awards, and one Grammy on their rock resume. They released their latest full-length, *Death of a Bachelor*, in January.

Frontman Brendon Urie offered up his favorite gifts for studio splurgers and scrimpers. “[Native Instruments] The Maschine Studio is so much fun to build beats with,” he says. “You can either sample and edit in Maschine, which is very user-friendly, or you can use it with whatever interface/program you’re currently using. It changes the process up for me when I’m tired of working with the same routine.

“Electro-Harmonix Nano Looper 360 is basically the means for someone to be a one-person band. It’s under \$100 and it’s very easy to use—great for creating ideas and getting immediate playback. Definitely easy to spend more than \$100 worth of time with this one.”



## PLACEBO

Alt-rock stalwarts Placebo celebrated 20 years together this year with a 36-song retrospective, *A Place for Us to Dream*, and a new EP, *Life’s What You Make It*, both released in October.

Stefan Olsdal gave suggestions for both spenders and splurgers, starting with the high end: “As a guitar player, I’m always after a new sound; it’s elusive and I still don’t know if it exists! But I will never stop trying. My latest addition is the Disaster Transformer guitar pedal by a company called Earthquaker. It is a modulating delay that spins sounds out in a way that is just on the right side of nausea.”

Olsdal’s budget pick is the “Sony Walkman Stereo Cassette-Corder from 1990. I used to tape all of my answering machine messages on this machine. Messages from family, bandmates, some drunk some excited, and some sad. A few of the messages recorded on this Walkman ended up on a Placebo B-Side called ‘Evalia’ (some of the people featured still don’t know they are on there). I use it now as an extra mic when recording piano or acoustic guitar, as it gives a grainy, lo-fi sound.”



## FRENCH HORN REBELLION

Robert Perlick-Molinari and his brother David perform and record as electro-funk act French Horn Rebellion. Robert is also a remixer and former member of the Chicago Civic Orchestra. David is a producer who has worked with MGMT and owns a Brooklyn studio: YouTooCanWoo. The duo’s latest album is *Classically Trained* (Ensemble Records).

Robert likes the notion of giving a holiday toy. “If you’re a brass player, you can play anything. Get an ornamental French horn at a Christmas shop—that’s S-H-O-P-P-E. Ornamental horns are a little more shrill because they’re higher pitched, and they’re a little abrasive—not round and beautiful like a real French horn—but that’s a nice ten-dollar piece of noise that you can record and then sample.”

On the high end, the guys are looking to go digital: “I would love a full UAD suite, for a maximum number of plug-ins. It’s like having another whole studio full of gear, but in a tiny box!”



## MICHAEL MAYER

German DJ and Kompakt co-founder Michael Mayer’s credits include four albums, 23 remixes, and 170 remixes. His latest full-length, *&*, was released last month on !K7.

Mayer’s dream gift is a rare classic: “If I were the king, dance music without claps would be forbidden. Claps bring joy to the world. It’s the most basic element in music since we were cavemen. I love the idea of having a machine that does nothing but claps, and nobody does it better than the Simmons ClapTrap from 1982. It was used in many of my favorite ’80s songs, like “Bette Davis Eyes” or Gary Numan’s “Cars”. I want one so badly but they’re really hard to get.

“On a smaller scale, I’d wish someone would rewire my whole studio and clean up every strip of my 24-channel Studer console from 1989. The old lady could really use a makeover.”



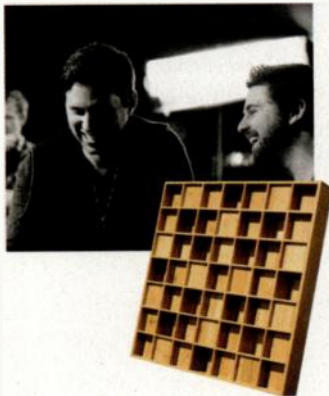


## DERRICK HODGE, BASSIST

Blue Note artist Derrick Hodge played bass on both of the Robert Glasper Experiment's Grammy-winning albums. He has also worked with Common, Q-Tip, Timbaland, and more. Hodge's latest solo release is *The Second*.

"An affordable gift I'd love to give would be the Apollo Twin Duo," Hodge says. "It would be great for any studio musician who bounces between the studio and tour life but needs to be able to record album-quality music on the go"

And what if the sky's the limit? "I'd say, 'Drop me off at the ATC speaker company, and let me walk out of there with my favorite studio monitors. Their monitors generate a good sound that [doesn't] over-color the sonic qualities of the elements to the point where it sounds whack on other speakers or in a car. [Listening on ATCs has] become a very important factor in producing, mixing, and critiquing my own work."



## MAKO

LA DJ duo Alex Seaver and Logan Light, better known as MAKO, rose to fame in the EDM world with their smash hit "Scream" in 2013, and have collaborated with the likes of Avicii, Sander van Doorn, and R3hab. Their debut album is set for release later this year.

Seaver takes a holistic approach to his top gift suggestion: "Great monitors and sound treatment; terrific mic and preamp. These are essentials that you live with every single day; they are well worth splurging on."

For a cost-effective option, Seaver suggests "Finding an all-around soft synth/analog synth and learning it inside and out. You can get crazy mileage out of an individual piece that you know like the back of your hand. This also applies to learning all of the native tools at your disposal from your host sequencer. You would be surprised how fantastic some of those devices can be, even though they are often less than glamorous."



## BEATS ANTIQUE

Bay Area world music/electronica experimentalists Beats Antique are celebrating the release of *Shadowbox*, their 10th album, and the opening of their new storefront in Berkeley, Calif. We chased them down on tour to pick their brains for gift ideas.

"Ableton Live—where you can loop anything from you laughing at your friend to a sweet bass line. And then create a track out of it to play for all your friends!" If the sky's the limit, the band would go for a complete rig: "four Universal Audio Apollo 8Ps with all the plug-ins to track, record, mix, and master everything you would need. Add to that a TAMA Starclassic Bubinga drum kit, Ableton Push 2, Native Instruments Komplete 11 Ultimate and Komplete Kontrol Keyboard, and pair of Focal SM9 studio monitors!"



## STS9

Since forming in Atlanta nearly 20 years ago, genre-melding road warriors STS9 (Sound Tribe Sector 9) have released 14 albums and headlined festivals around the world, from Bonnaroo to Wakarusa and Electric Forest. *The Universe Inside*, STS9's first album in nearly seven years, was released in September.

If money's no object, keyboardist David Phipps suggests "a Super37 Eurorack keyboard from SuperSynthesis, the original euro keyboard hand-built in Austin Texas, loaded with 104hp of Eurorack modules." His "budget" option? "Moog Mother32 semi modular synth."



## BUTCH VIG

This summer, Garbage released *Strange Little Birds*, a triumphant return to their '90s roots. (Learn about the recording sessions in our feature in our July issue.) We asked drummer/producer/gear aficionado Butch Vig for his favorite studio gift ideas—and he got straight to the point (and threw in a gear snapshot). "High end: Mellotron Mk VII Hardwood; \$14,500." And on the low end, he suggests the "Skychord Electronics Glamour Box; it's all over *Strange Little Birds*."





## JAKE LUPPEN, HIPPO CAMPUS

Singer/guitarist Luppen of alt-pop group Hippo Campus is currently on a club tour, promoting the band's latest release, *South*.

"As a guitar player, I've always been interested in pedals," says Luppen. "And one that really had a large impact on the Hippo tone was the Boss RV-5. It's not their most recent model, but it's just great; it has six or seven types of reverb, and specifically, the modulation reverb setting has been a great tool for me."

Luppen recently acquired a synth that he thinks makes a dream gift: "I bought a Teenage Engineering OP-1. That has been an absolute lifesaver, especially on the road. It's a portable synth with a 4-track recorder. It also has drum kit synths and a vocal sampler. It was used a lot in the making of our new album."



## NINA DIAZ

The former frontwoman for indie punk band Girl in a Coma now records as a solo artist and co-produced her terrific recent album, *The Beat Is Dead*.

"What I love the most when I'm doing things by myself at home is Garageband," Diaz says. "It's something I would get for anybody who is just beginning to record because it's affordable, and it's the easiest way to get your ideas down and map everything out. That's where everything begins for me."

"On the pricey end, something I bought for myself recently was an M-Audio [M-Track Eight] 8-track [interface]. I had the 4-track [recorder], but then I upgraded my computer to El Capitan and the 4-track wasn't compatible. But I found out the 8-track was pretty perfect for what I want to do in my home studio. It pushes what I can do as far as recording basics and live demos."



## BORGEOUS

Las Vegas-based DJ/producer John Borger, aka Borgeous, has been a rising star in the EDM world since his hit single "Tsunami" took festivals by storm in 2013. This year he's teamed up with Armada to launch Genosus Records, and collaborated with the likes of Sean Paul.

Borger's spendy gift idea: "I would go with the Ableton Live 9.5 suite, Apogee Duet, Mackie Big Knob, Adam Audio S3X-H Powered Studio Monitor, Adam Audio 1,000-watt Active Subwoofer 15, M-Audio Axiom AIR 49 MIDI controller, and 2.9GHz processor 512GB storage 13" MacBook Pro."

For those on a budget, he suggests a frugal version of that rig. "When I first started working on music when I was around 21, I was using Reason and Fruity Loops, which are still around and aren't that much money to get started. The most cost-effective speakers I think to get are the KRK Rokit 5 G3 or KRK Rokit 8 G3. The most expensive thing you're going to [need] to get started is your computer and the Apogee Duet. You can get a pretty decent keyboard for cheap; I would say go with M-Audio Keystation 49."



## ALLISON CRUTCHFIELD, WAXAHATCHEE

In addition to playing with her twin sister, Katie, as part of indie band Waxahatchee, Allison Crutchfield makes lovely solo recordings. Her recent release, *Tourist in This Town*, sets her sweet voice and vintage harmonies amid '80s synths and jangling guitars.

"I'd love to receive the Korg volca sample digital sample sequencer," says Crutchfield. "I'm a huge fan of the Korg volca series; I used the volca beats on my first EP, and I think it's a great introduction into electronic instrumentation that's also super affordable! I'm really wanting to get more into incorporating samples in my live set, and I think using this could be a cool way."

Crutchfield's money-is-no-object choice would be the Siel OR400 synth. "They're not usually super expensive as far as vintage analogs synths go, but they're kind of hard to find, probably because Siel [later purchased by ARP] wasn't around for that long. The strings sounds in particular are just so beautiful, and this is one of my favorite synths I've ever used."

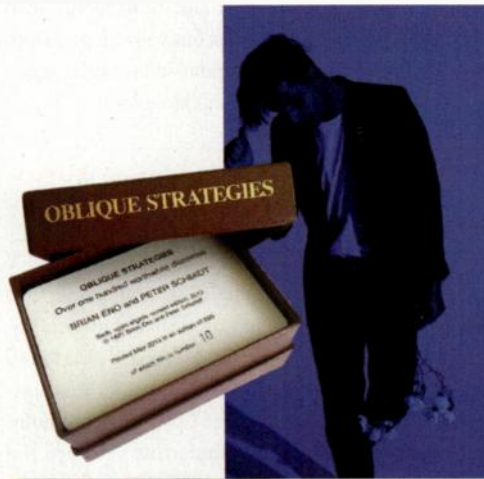


## MAGIK\***MAGIK**

Six years ago, Bay Area musician Minna Choi founded the Magik\*Magik orchestra, which has performed with more than 100 artists including Death Cab for Cutie, Weezer, Third Eye Blind, and John Vanderslice. This fall, she released her self-titled debut, on Chris Walla's label, Trans-Records.

Choi's dream gift is the Imperial Boesendorfer 290 grand piano. "It's got 97 keys, eight octaves, and is simply a colossal instrument. I've only ever played it one time but being able to feel those extra keys down at the bottom there even just for five minutes did something weird to your brain. It forces you to readjust what you've always considered the edge of the sonic spectrum and suddenly you think, what else is out there musically that I haven't considered before?"

This year, Choi has homemade presents for the engineers in her life: "I recently printed a bunch of yellow t-shirts as a gag gift for the engineers at Tiny Telephone. For years I've been saying I wanted to print a t-shirt that said "Real men ask for eighth-note click" and wear it to studio sessions, but I never got around to it. I finally ordered them the other day and I'm going to be gifting them to the guys at the studio. One less hour comping drum tracks is a gift worth giving to any engineer."

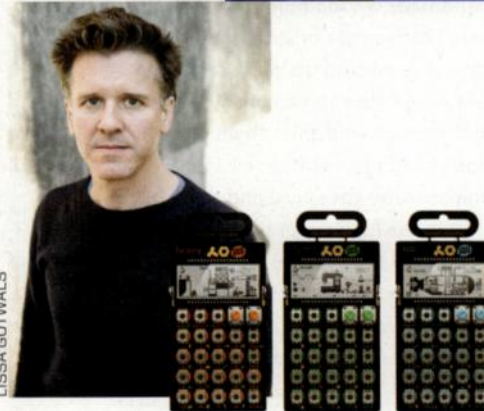


## THE CHAIN GANG OF 1974

Musician and DJ Kamtin Mohager, aka The Chain Gang of 1974, recently released the dreamy, '80s-influenced single "I Still Wonder," his first material since 2014. Hear it live on one of his west coast tour dates, scheduled through the end of the year.

Mohager's dream gift idea is perfect for any creative person in your life: "For the everyday musician, our lives are pretty up and go. Getting a moment to breathe is something we cherish. Simple but effective products have always been what I look for: The perfect 'sky's the limit' gift idea is *Oblique Strategies* by Brian Eno and Peter Schmidt. This group of printed cards containing short solutions to problems is a perfect and fun way to help an artist when they encounter writer's block."

He also shares a practical gift idea: "For anyone running a simple studio space out of their home like I do, the Apogee Duet is the perfect interface. For the quality recordings you get with this, at the end of the day, the price is totally worth it."



## MAC MCCAUGHAN MUSICIAN, MERGE RECORDS FOUNDER

Superchunk and Portastatic member Mac McCaughan has just released his first album as a solo artist. *Non-Believers* is out now on Merge Records, the label he co-founded in 1989.

"Teenage Engineering makes incredible-looking and fun-to-use electronic music-makers in a variety of price ranges, and their Pocket Operators are cheap and fun and sound super fat, considering it's basically the size of a credit card with buttons and an LED screen. I used the PO-12 in the recent music-for-dance collaboration POMS that we debuted at Moogfest.

"Speaking of Moog," McCaughan continues, "The Moog that I have that love the most is the Minimoo Model D. I've used one on almost all the Portastatic records, several Superchunk records, and my solo album *Non-Believers*. Mine is from the '70s but for the first time since 1981, Moog has started making these again."



## TIM PALMER, PRODUCER/ENGINEER/MIXER

Grammy-nominated British production and engineering luminary Tim Palmer has worked on albums for Robert Plant, David Bowie, Tears for Fears, U2, Pearl Jam, and more. Palmer owns and operates a studio in Austin, Texas; recent clients include Jason Mraz, Blue October, and Kandace Springs.

Palmer says, "For an affordable audio gift, how about the greatest, most versatile microphones ever—the Shure SM57 and SM58. Not only have I found these microphones invaluable on snare drums and guitar amps, but I also used them to record things like David Bowie's vocals on his *Tin Machine* albums. A handheld microphone gives vocalists the freedom to move, and it can really improve their performance.

"For a more lavish gift I suggest the George Massenburg GML 8200 Dual EQ. When I built my first studio in L.A., it was on the top of my wish list and it has been inserted over the bus of every mix I have done since about 1998. This EQ is just so musical and precise whilst remaining transparent."



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## MODERN INVENTORS

Josh Benus and Matt Kass play a folk- and prog-leaning style of rock in their project Modern Inventors. They recently relocated from Philadelphia to Nashville, where they engineer, produce, and play on their own recordings.

"For someone trying to start a studio on a budget, start with an interface," says Kass. "One of my favorites is the UA Apollo Twin Duo; it's a 2-channel interface with lots of flexibility."

"If the sky's the limit, I would get a Rupert Neve Designs 5088 console, with the Shelford 5052 modules. I recently built a studio for a friend and we put a Shelford 5088 in as the centerpiece. What a beautiful-sounding board that is: meticulously hand-built, intuitive, and musical. It's more transparent than the old Neve 80 Series boards, but you can push it to red. Flatline the VU meters and it still sounds great—headroom for days, and it's built like a tank!"

## JAMIE MEFFORD, LIVE AND STUDIO ENGINEER

Mefford is a producer, engineer, and studio/live sound mixer who toured most of this year with Nathaniel Rateliff and the Nightsweats. He also found time to produce, record, and mix Gregory Alan Isakov's latest record featuring the Colorado Symphony.

"My favorite small-gift finds this year are the handmade wooden sample recorders and percussion boxes made by Brandnewnoise. I bought the thumb piano and the percussion one. For the next few weeks they were a big hit on the bus; the band and crew would pick them up and make weird noises and play with them. They record loops and you can alter the speed and pitch."

"On the high end, I would say the FLEA 47 microphone. It's as close as I've come to the sound of the vintage Neumann and Telefunken U47's. It's gigantic-sounding, dark but present and oh so smooth. It makes records sound like records."



TODD BERKOWITZ



ANIMAPLUS (KIM) AND ANDREW KESIN (BILL)



## BILL NACE, BODY/HEAD

Noisy rockers Kim Gordon and Bill Nace have been collaborating as the experimental guitar duo Body/Head since 2011. Their fourth album together, *No Waves* is out this month on Matador.

Nace is a man of simple studio needs; his "high-end" gift idea is "a Radio Shack vintage CTR-65 Portable Cassette Tape Recorder—but if the sky's the limit, let's say two of 'em." His even more cost-effective option? "Gaffer tape."







## PETER BJORN AND JOHN

Swedish indie pop stars Peter Bjorn and John—Peter Morén, Björn Yttling, and John Eriksson—rose to fame in 2006 with the catchy, whistle-y single “Young Folks,” and have since collaborated with Drake, GZA, and 88 Keys. *Breakin’ Point*, their sixth album and first in five years, was released earlier this year. Eriksson, who is currently working on projects with his side project, dance act Hortlax Cobra, shared his favorite gifts for gear nerds (and even shared a picture).

“I don’t like expensive stuff,” he insists. “The most expensive machine I have ever bought is the OP-1 from my brother David (Teenage Engineering cofounder David Eriksson). But one of the best pieces of gear to have in your studio is a real and crappy tape echo. I took it from my father who used to run his ‘shadows/twang guitar’ through it. A proper tape echo makes music sound magic and I try not to change the cassettes that often—I love the dirt and the unexpected twists that come from old and semi-broken sh\*t.”

If you have a few more bills in your pocket, Eriksson suggests the Yamaha REX 50. (Models start around \$250 on eBay). “It’s an awesome and ugly digital effect box,” he says. “I have recorded vocals, Casio synths, strings, piano, wood blocks, well...almost anything through this weird bastard. Apparently, My Bloody Valentine used it to get that distorted, spooky guitar sound, which makes it even cooler to give this thing to someone.” ■



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A photograph of Regina Spektor sitting on a black upright piano. She is wearing a red off-the-shoulder top and a black lace collar. Her hair is styled in dark, curly waves. She is looking over her shoulder towards the camera. The background is a light, textured surface with numerous small red stars scattered across it. A red banner with a decorative border is positioned across the middle of the image, containing the artist's name. Below the banner, there is a quote and a byline. To the right of the quote, there is a small illustration of a hand holding a string.

# REGINA SPEKTOR

Artist makes the most of every minute on her new album *Remember Us to Life*

BY BARBARA SCHULTZ

The title came first: Regina Spektor—the remarkable, classically trained, sweet-voiced, clever, quirky pianist/singer/composer—says that she usually has an album title long before she has enough songs to fill it. The name of her new record *Remember Us to Life* came to her in a most spiritual moment.

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A view into The Village: Samur Khouja's setup for tracking vocals, drums, and piano for *Remember Us to Life*.

"At least three years ago I was at Yom Kippur in my parents' synagogue in the Bronx," she recalls. "We came from the Soviet Union, and it was a really big deal to my parents that we could have religious freedom and practice Judaism for the first time in their lives really. So we've always gone to the synagogue near our house, and at Yom Kippur you [fast from sunset to sundown] and you keep reading the same text many times throughout the day.

"Because of this repetition, it almost becomes meditative. You read the same thing in different states of mind and emotion, so it gets to you in this little droplet-that-wears-away-at-the-stone kind of way, and toward the end of the fast, you're reading this line: 'Remember us to life,' and it really made sense to me how much hope and desire for good was in that. It stayed with me, and I thought, whatever I do next, I maybe want to name it that."

By the time she was nailing down material for the album, Spektor's physical condition was such that, she would not have been one of those fasting. "Most of these [songs] were written either while I was pregnant or right after having my son," she recalls. "One thing I found interesting was, I really wrote a lot after I had the baby. I had been thinking, I'm not going to have any time. But somehow the time that

I had—I knew how to use it better. Obviously, I felt very inspired by this new person and the feeling of it all, but also I was able to use all that time that would have slipped through the cracks: Okay, he's sleeping. Let me try and write a little bit here and there."

Fortunately, working in fits and starts isn't counter-intuitive to Spektor's songwriting habits. She describes her process as involving lots of piano time, recorded fragments, and "15 million" partially filled notebooks.

"I'm very inconsistent, and writing can end up being very stretched out," she says. "It can feel like I'm every once in a while putting a penny in the piggy bank, and then eventually I'm like, 'Oh, I wrote a bunch of songs!'"

These days, Spektor does most of her songwriting in a small personal studio that she shares with her husband, musician/filmmaker Jack Dishel. Her main studio gear includes a Yamaha P250 keyboard—which was her touring piano before her career grew to box-up-the-Steinway-grand level—and a small digital voice recorder.

"We have a proper studio, but when I write, it's so fast and it's so fluid that a lot of the time, that little recorder or a phone is so much easier. I just hum into things a lot," Spektor says. "I really like a quiet

room and a closed door and a feeling of aloneness. I've always wondered about that incredible scene in the Bob Dylan documentary *Don't Look Back*, where he's just playing and writing in a crowded room at a party. I was just thinking, that's my nightmare, but how amazing it is to be in your own world like that but surrounded by people."

Therein lies the challenge of studio recording: for a musician to find a way into her own world, though she is surrounded by people. "Ninety-nine percent of that has to do with how I'm feeling internally," Spektor says. "But also Leo Abrahams, who produced this record was really knowledgeable and understanding about that and very instinctive and kind."

"There are certain days where I just knew I didn't want to sing, or I couldn't sing, or something just felt off. Then, we would just work on something else sonically—work on drums, work on sounds or layering. He wouldn't ever push me."

"When you're on tour, you have to get there no matter what, because the show is there, and people are waiting, and there's this heightened sense of responsibility," Spektor continues. "But there's a different kind of pressure in the studio, because when you play a show, you also know that you're not making the source material. You're not getting the ver-



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sion of 'The Light.' You're just singing 'The Light.'

"The Light" is one of the most intimate songs on *Remember Us to Life*. While many of the album tracks are sonically complex to an almost Beatlesque degree, with Spektor's voice on top of percussive beats, keyboard parts, and swelling strings, "The Light" scales back the setting, and focuses intently on Spektor's emotional piano and vocals.

"That's what every song started with: Regina playing and singing the song," says the album's recording engineer Samur Khouja (the record was mixed by Dan Grech-Marguerat).

In advance of Spektor's sessions at The Village Studios, her team brought in several Steinway grand and upright pianos. Khouja measured each instrument carefully ahead of time, and outfitted them with custom baffles. "This was mainly to deal with bleed and in case we wanted to process the piano and vocal separately," he says. "Some baffles were boxes and others were just panels that fit into the holes where we had the lid open. Then we filled the holes with packing blankets.

"We always had the option of scaling back, and using lighter-duty and heavier-duty [isolation]. Less isolation would let the piano breathe more. For some songs a really tight sound was great, on others a more open sound was appropriate."

Spektor also used one of the studio's pianos: the Steinway grand known the Oscar Peterson piano. "I used that on 'Tornadoland' a bunch," the artist says. "It's very, very bright, actually—almost too bright for anything I would do as just a piano. A lot of the pianos that I like are more moody maybe, and have harder action so I can play into them. But as a layer, the Oscar Peterson piano was incredible."

Khouja miked up each piano with a matched stereo pair of Royer SF24s, placed at the extreme high and low end. "The Royers are very rich sounding and add a nice sense of depth to each. I also used a couple of oddball mics, like vintage Electro-Voice 635s and 666s, and a lot of contact mics, too. I think we would have about 12 mics on the piano, but we wouldn't use those for each song. As soon as we had a take, we'd figure out which ones we wanted."

Khouja also switched vocal-miking schemes on different songs, alternating between a Neumann U47 that Spektor liked, as well as a Telefunken 251, and as they approached the end of the sessions, a Sony C800. "Some have a lot of dynamics. Some have more top end," Khouja observes. "The Telefunken cut thru on some of the more dense tracks without being too bright.

"Everything we recorded went through the Neve mic pre's [in Studio D's 88R console]. The vocal chain was always one of those mics through the Neve, into a UREI LA2A, into an RCA BA6A. But I wasn't using the BA6A for compression; it was just for character," he explains.

Another ingredient that allowed the team to



create the complex sounds of this album was the studio environment itself. The Village offers a great variety of spaces, some featuring variable acoustics.

"Once the initial piano and vocal were done, we discussed the world the song should live in, the sound, and the vibe," Khouja says. "We spent a lot of time creating sounds from the ground up, whether it was guitar or different sources. We did a lot of sampling where we went upstairs to a piano and spent half a day banging on it with different things, using different mics, just to get crazy, percussive piano samples that we ended up peppering throughout the album.

"We also tried the drums [played by Joey Waronker and Stella Mozgawa] in different positions and in Studio D, there's quite a big live room with a platform, and there's a mechanical roof arch where you can move the ceiling panels to change the sound to live or dead."

Khouja says that he usually believes in sticking to the tried and tested when it comes to drum miking: "You have a sound you're comfortable with and you know what the [mic's] sound is, so you can immediately distinguish the timbre of the actual instrument, instead of getting to know a new mic," he explains.

His drum mics included an AKG D12 inside the kick and a U47 FET outside, AKG D109 near the beater, Beyer M69 and M88 mics on snare top and bottom, AKG D190s on tom toms, and Coles 4038s as overheads.

Abrahams played most of the guitars on this album, mainly using what Khouja calls some "very strange metallic guitars that he got from a luthier in L.A." Abrahams brought a store of pedals and effects from home as well. He played through Khouja's amps—a vintage Vox AC30 and Fender Twin—which were situated in the live room, and miked up with Electro-Voice 635s and Royer 121s, while Abrahams sat in the control room with Khouja.

"Leo is such a pleasure to work with," Khouja says. "He's so creative. He does a lot of production while things are happening like that, on-the-fly. He's great with guitar effects and just creating the mood for the song. He's excellent at arranging and scoring, and he did all of the string arrangements."

In addition to the string quartet that cut some orchestral parts in The Village, Abrahams and Spektor were also able to travel to the Czech Republic to record the City of Prague Philharmonic Orchestra, a momentous experience that Spektor says was a "dream come true." But just as essential to the sound of *Remember Us to Life* were the smaller moments: the carefully layered bits of piano percussion, Spektor's trademark vocal pops and breaths, and quirky synth parts that lighten the mood of these inventive, deeply resonant songs.

"We did a lot of arranging on my travel keyboard. It's a Yamaha P90 in a case, which we used just as a controller so I could play comfortably, because a lot of [electronic] keyboards are weighted super light," Spektor says. "I prefer Yamaha keyboards because they have the weight that is closer to feeling pianish. So we didn't use it for sounds—we just used it as a module—but we did use a lot of synthesizers. For example, the high twinkling that I love so much on 'Black and White,' is a malfunctioning Jupiter 8. We had to edit it a little bit because it was just doing a funny malfunction thing, but it was amazing."

Different parts of *Remember Us to Life* were recorded in different rooms at The Village. "The environment was really important," says Spektor. It's the most incredible studio—it's so vibey there. You don't need to create any vibe; you're just in Magi-cland, and you don't even know how you stepped into there. It started out as being a Masonic temple, and it still has this atmosphere of mystery and you think about all these great musicians who have played there for decades.

"And everybody who works there is really nice. I went there every day, and it was so fun to just have a routine. I would walk through the door each day, and people would say, 'Hello,' and I was like, cool. I can pretend to be a person who goes to the office every day for a few months. Except my office is the greatest studio with the funnest gear and pianos from Steinway Hall." ■

Barbara Schultz is the managing editor of *EM* and *Keyboard* magazines, and a contributing editor to *Mix*.



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SURVIVE (L-R): Michael Stein, Mark Donica, Kyle Dixon, and Adam Jones

# STRANGER THINGS HAVE HAPPENED

How two synthesists from Austin ended up scoring one of TV's hottest shows

By Mike Levine

In what could only be described as a composing musician's dream scenario, synthesists Michael Stein and Kyle Dixon went from playing in a local experimental synth band in Austin, Texas, to scoring what would become one of the most notable new TV shows of 2016: *Stranger Things*. Even sweeter, the notoriety the composers have gotten from their work on the show has heightened the anticipation for *RR7349*, the new album by their band, *SURVIVE*, which just dropped at the end of September.

That Stein and Dixon got the *Stranger Things* gig, and thrived at scoring a TV show when they had virtually no experience doing so, is pretty re-

markable. But it shows that with hard work, talent, and a little luck, great things do sometimes happen for musicians.

## ONLINE AND ONSCREEN

The guys in *SURVIVE*—which also includes synthesists Adam Jones and Mark Donica—were all from Dallas originally, and all moved to Austin after college. Stein and Dixon have known each other since they were 14. “We kind of grew up listening to the same music,” Dixon says, “sharing stuff like a lot of 2000s electronic stuff, late-'90s records, Re-Flex, Warp, things like that.”

“Basically, the band formed after Kyle and I

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started talking again after college," Stein recalls. "When he was in college, we'd always listen to music together, but I'd been getting into synths and modular stuff quite a bit by that time. Like building a 5U modular."

Prior to *Stranger Things*, SURVIVE was well known on the Austin synth scene, but wasn't a household word elsewhere. In 2012, one music website referred to them as "The most spectacular synth band you've never heard."

Stein, Dixon, Jones, and Donica were all plugging away, composing and releasing music and playing shows, and working day jobs to make ends meet. One of their tunes had been licensed for a 2014 film called *The Guest*, when the director had discovered it on iTunes. Although that was a nice credit, it didn't materially alter their situation.

But July 4th of 2015, everything changed for Stein and Dixon. Out of the blue, they received an email from Matt and Ross Duffer (aka "The Duffer Brothers") who were directing a new Netflix sci-fi/horror series. Would they like an opportunity to compete for the scoring gig?

"Immediately, we were like, 'Christmas in July!'" says Stein.

"We saw the words Netflix and Winona Ryder and we were like, 'Yeah, I think so,'" Dixon recalls with a laugh. "We spent the evening rounding up Dropbox links to unreleased stuff, and sent over like 50 tracks on the Fourth of July to the Duffers."

Although they never found out for certain, Stein and Dixon suspect that it was their song in *The Guest* that attracted the attention of the Duffers. "They said they think they heard us on Spotify," recalls Stein, "but it was probably word of mouth from *The Guest*. That was the most exposure. I'm sure they saw that movie and maybe got the soundtrack, and maybe word of mouth. Nobody really knows."

#### GETTING THERE

But while this unexpected opportunity was incredibly exciting, they had to hold back on their celebrating, because there were other composers in the running for the composing gig. "It was this weird month-and-a-half period of being really excited, but trying not to get too excited because we'd be let down, if we didn't get it," recalls Dixon. "But then we did, and it was awesome. I was like, 'F\*ck it, I'm quitting my job and I'm going to do this. I'm going to try it. I have enough savings to get me through this project, until it starts paying, and this is always what I've wanted to do.'"

When Stein and Dixon got involved in the project, no episodes had yet been shot. "We got a couple of scripts—they'd only written three-and-a-half episodes when they first brought us in, so we read scripts," says Stein. "We read character descriptions. They gave us ideas about climactic

moments that would happen. We kind of brainstormed and just started writing concepts."

"At some point in the season," Dixon says, "somebody's going to get sad, or they're going to get scared, or they're going to be running away from something, or they're going to be happy, whatever. So we would just write some general



"At some point in the season, somebody's going to get sad, or they're going to get scared, or they're going to be running away from something, or they're going to be happy, whatever. So we would just write some general stuff for those kinds of moods."

—KYLE DIXON

stuff for those kinds of moods, and/or some characters. Like try to come up with themes for the characters. So there was that, combined with some preexisting recordings from our library. The Duffer Brothers had quite a bit of our music to start with, going into shooting."

#### WORKFLOWS

Both Dixon and Stein have their own studios, and work together by sending files back and forth. Working in a collaborative composing situation is a real plus, according to Stein. "In the early stage, we could send each other a video with a score: 'Okay, what do you think of that?'"

Once the tracks are laid down, Stein handles the mixing. "Kyle trusts me," he says, "I'm a lot pickier about mixes and stuff. If it's good with me, it's probably good."

Both composers use Akai MPCs to sequence. The MPCs drive their collections of analog synths, which then get recorded into Logic. "We both tend to sketch on the MPC," says Stein, "because it interconnects with our hardware easier."

When asked whether they find themselves limited by the MPC's sequencing capabilities, when compared to those of a DAW, they both said no. "I don't really see that as an issue," Dixon says. "I like committing," Stein says. "It's rewarding, too. It kind of forces you to make decisions."

#### HITTING IT OFF

Of the two composers, only Stein had done any scoring before *Stranger Things*, and it wasn't much. "I did score a one-off shot in school," he says, "to a movie that was not good. And I was like, 'That's not fun.'"

They had to adapt quickly to working with picture, under constant deadline pressure. "There was definitely a lot of, 'We need to it build up here and we need it to calm down here,'" Dixon says. "There were a lot of marks to hit. Even if they were using something from the library, like something that's was already done, a lot of times we'd have to do things to hit those marks. Even if was as simple as filtering something down, or putting delay on it or whatever."

As is typical in a film scoring situation, the picture was constantly changing. Even after they'd already written music for a particular scene, they often had to revise it to fit the changed video. "Lots of revisions and cuts and things that you wouldn't typically find musical," is how Stein describes what they had to deal with. "You find ways to make it work," he says, "Do little tricks, figure it out."

What kind of tricks? "There's this faux drop in the opening scene," Stein explains. "So you break the beat and you don't know where the downbeat is anymore, and you can extend things, or come in on an upbeat or in the middle of a bar. There are ways you can kind of trick it. You don't really notice. You can do little things like that. And since it wasn't really heavily beat-driven, it was nice. A lot of scores, you'll hear really polyrhythmic patterns and things, too, in the percussion section. Or like strange timings on top of each other. When you do it that loose, or don't have a driving beat, you can kind of get away from some of the predictable down beats."

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## SYNTH HEAVEN

The electronic textures that Stein and Dixon created for the *Stranger Things* score required many different synths.

"I used the [Dave Smith Instruments] Prophet 6 a lot," Dixon says, "Michael ended up getting one, too, I don't know if it was halfway through or when it was. But after he saw mine and played with it, he said, 'Shit, I need to get one of those.' [Laughs] We used a lot of [Dave Smith Instruments] Prophet 6, but we also used a lot of ARP. Michael got an ARP 2600 that did a lot of cue stuff. I got an ARP Avatar, an Odyssey, and a Solus. We did use a decent amount of modular synths, like Eurorack stuff or

5Us on it as well. That was helpful for a lot of the weirder parts, towards the end [of the season]."

Stein says *Stranger Things* required quite a bit of sound design. "For a lot of the sound design, I go straight to the ARP," he says, "so I can do something really complex and modular sounding, really quick. And I'll make a patch note on how to recall it. I use the Prophet VS for pads and a lot of vocally weird tones and pretty stuff. It's got really smooth filters; it just sounds very melodic. Another go-to: the Prophet 5 and Prophet 6. If I listed all the synths that we used on the main theme, you'd be like 'What?' There's anything from Jupiter-8 and Mellotron, and just crazy sh\*t on there."

One of the more memorable scenes in *Stranger Things* is one in which Winona Ryder's character has setup a huge array of Christmas lights in her house hoping that her missing son will be able to communicate from wherever he disappeared to, by blinking them. "There was music there. It was kind of angelic, mysterious, melodic," Stein recalls. "I think it's mostly Prophet 6 and plug-ins. We embrace a lot of modern stuff, as well."

"When we do use soft synths," says Dixon, "it's to get sounds that we can't get from the analog stuff. So we're never going to make something with the soft synth that's supposed to sound like an old Moog bass or whatever."

There was one soft synth that both Stein and Dixon brought up immediately: "PPG came out with this crazy synth called Phonem," Dixon says. "It's a completely different type of synthesis. It's based off what are called 'phonemes,' which are like syllables—like an 'ah' or an 'ooh.' Just different sounds that a mouth can make. And you can basically tie that in and you can make sounds with it. It's really weird."

Stein says they often use plug-in processors, for example the plug-ins in the Sound Toys collection, to change the character of sounds. "They have the Crystallizer plug-in that's really effective to get the crystal echoes," Stein says.

## SURVIVING AND THRIVING

The high profile achieved by Stein and Dixon from scoring season one of *Stranger Things*, has helped bring a lot more focus to SURVIVE's music, and its new album. In the band, there are four members all contributing material and ideas, so the dynamic and music is somewhat different, although the emphasis on analog synthesis is just as strong.

Stein says the SURVIVE music is, "a lot more direct, with things being driven by drums, and kind of more standard arrangements," compared to the score for *Stranger Things*.

"It's generally darker," adds Dixon, when asked about SURVIVE's new album. "A lot of the kids-related things in *Stranger Things*, we wouldn't have done something that happy in SURVIVE. But I think it's similar enough that people that like the *Stranger Things* score will also like the album."

As for the future, it doesn't sound as if Stein and Dixon plan to rest on their laurels. They're talking to the Duffers about season two. "We're also hoping to do a feature," says Stein, "and get into that world. Get the band doing projects. Really engulf ourselves in TV, film, and another album." ■



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

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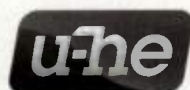
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## MOBY AND THE VOID PACIFIC CHOIR *THESE SYSTEMS ARE FALLING*

MUTE

Moby's musical output is unpredictable. His latest album, *These Systems Are Failing* with the Void Pacific Choir, is a dance punk pop political manifesto. Though this album is closest to his two-decades-old, sadly received *Animal Rights* album, the threat of similarly disastrous results is far less. Moby sounds happy as he shouts existential, doom-filled, conscious lyrics through these bite-sized, license-unfriendly songs. While *Systems* is inherently discordant, there is a funky slap to the desperate "Don't Leave Me," a tribal groove shot through the trance-y riffs of "Erupt and Matter," and a glimmer of melody on the angst-driven "A Simple Love."

LILY MOAYERI



### PRETENDERS *ALONE*

BMG

If we never told you that Dan Auerbach produced the new Pretenders album, you'd guess it. You'd notice the Black Keys-type room-y, crunchy, Velvets-ish rock 'n' roll, distortion, and signature organ sound. One of the guitar riffs from "Lonely Boy" even makes it into the track "Gotta Wait." But the sonics take on a new, sultry beauty and unmatched cool when paired with Chrissie Hynde's voice. It all makes for a different-sounding Pretenders record, but unmistakably, another truly great Pretenders record.

BARBARA SCHULTZ



### THE NOTWIST *SUPER-HEROES, GHOSTVIL-LAINS + STUFF*

SUB POP

Featuring a title pulled from lyrics in the 2014 single "Kong," this is the first live album from wistful German indietronic group The Notwist. And it's appropriately epic, spectral, and full of propulsive, poppy, anxious stuff. A soundboard ensemble with occasional crowd bleed, the 16-song, 99-minute, four-album-spanning set (recorded in Leipzig in 2015) indulges and extrapolates the band's motorik, jangly, resonant, clanging tendencies—sonically chiming, muted, and glitchy as befits the song.

TONY WARE



### ROBERT RICH *WHAT WE LEFT BEHIND*

SOUNDSCAPE PRODUCTION

As unpredictable as he is prolific, multi-instrumentalist/composer Robert Rich defies expectations on a stunning new release that combines field recordings, acoustic instruments (PVC flutes, percussion), lap steel guitar, and electronics. The result is a luscious, organic mix where textures and melodies float naturally in and out of the foreground, often to the accompaniment of irregular rhythms that decorate time as raindrops do, suggesting patterns that are always slightly out of reach.

GINO ROBAIR



### MELISSA ETHERIDGE *MEMPHIS ROCK AND SOUL*

STAX

Etheridge's tribute to legendary recordings by Otis Redding, the Staple Singers, Albert King, and more was recorded in Royal Studios in Memphis by Lawrence "Boo" Mitchell, and maybe that's part of the real, intense vibrancy and vitality of these covers. Songs get the full-on Stax treatment, with great gospel-style backing singers, funky guitar riffs, and punchy horns. Another key to this album's success: Etheridge never overemotes in an effort to make these songs her own. She does her thing, and that's just great.

BARBARA SCHULTZ



### ALCEST *KODAMA*

PROPHECY PRODUCTIONS

The fifth album from French blackgaze pioneers Alcest, these six meditations on transience and spirituality manifest roots and reach. Foraging in the growth ringed by Burzum, Ulver, The Cure, Slowdive, and Explosions in the Sky, metal veterans Neige and Winterhalter cultivate ripping guitars, drenching percussion, wordless vocal flurries, and echoing howls. Recorded in a large house to capture natural reverb, these flourishing tendrils balance reverence and ferocity, and elevate Alcest's dimensionality into sublime, vitalizing canopies.

TONY WARE



### SLEIGH BELLS *JESSICA RABBIT*

TORN CLEAN

Sleigh Bells' Derek Miller and Alexis Krauss join with producer Mike Elizondo to create nail-baiting pop that cycles through more production styles than a plug-in directory. Krauss' girlish vocals soar over Miller and Elizondo's trick bag which includes half-time-to-double-time beat manipulations, and head-battering doses of metal, punk, hip-hop, dubstep, acoustic folk, hardcore, drill 'n' bass, gooey pop and faceless EDM. Filters are as prominent as musical directions; Auratone midrange fuzz sections placed next to naturalistic finger-picking homebrew.

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For 20 years, Berlin-based Native Instruments has been a pioneer and a leader in developing software instruments and soundware for musicians. The company first bundled eight products in a \$1,499 suite called Komplete in 2003, and it has updated its flagship collection almost every year since. Now in its eleventh incarnation, Komplete is bigger and better than ever, with all the software you'll need to assemble a well-appointed electronic music production studio, in a DAW. All the instruments run standalone on the Mac or in Windows and as AAX, AU, or VST plug-ins. Most content requires either Reaktor or Kontakt (or their respective players) to host them.

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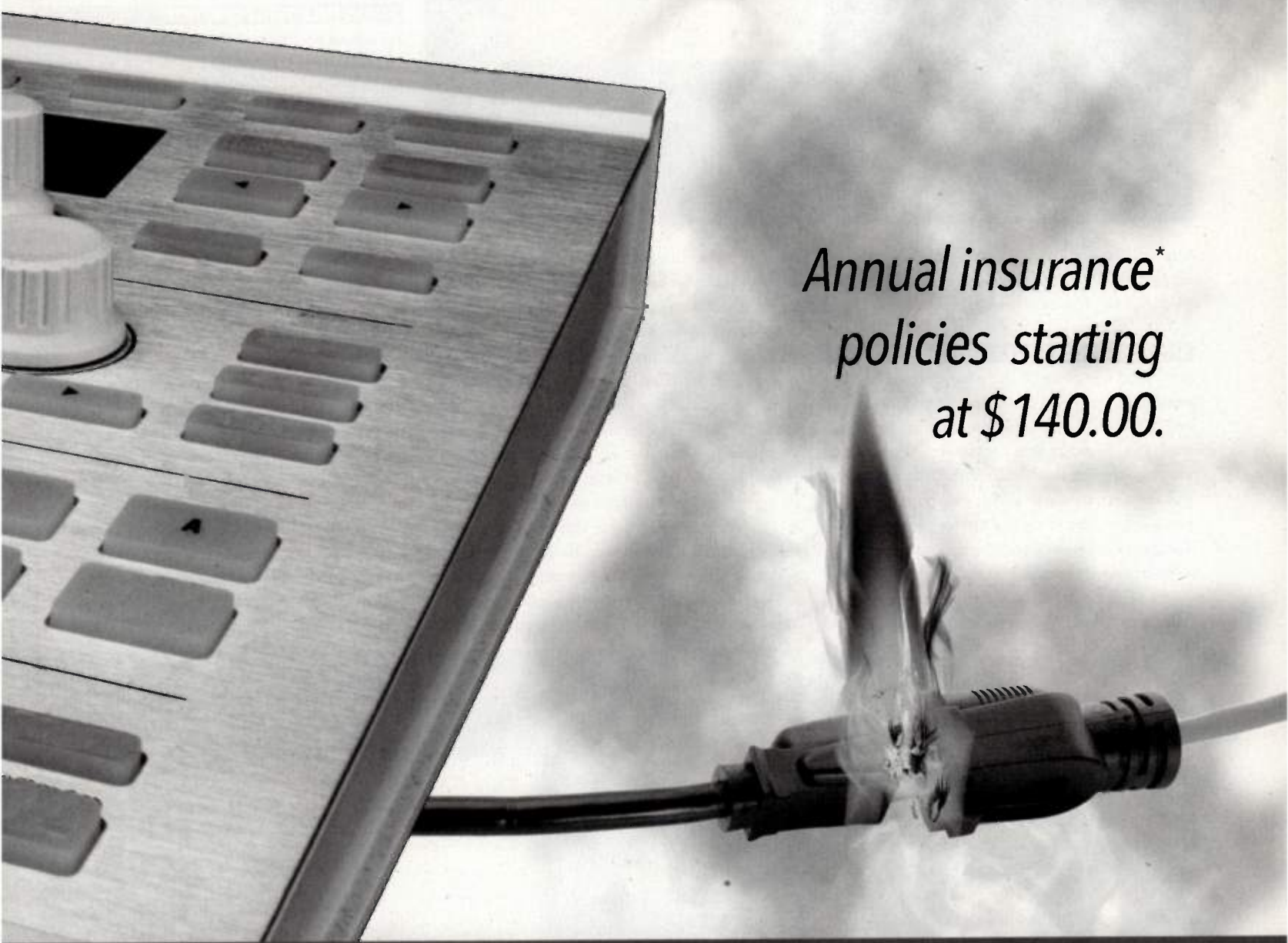
Komplete has grown into a family of three distinct bundles to accommodate different budgets and needs. The standard edition, called simply Komplete 11, features all of NI's most desirable products, ranging from the industry-standard sampler Kontakt to the effects and amp-modeling powerhouse Guitar Rig Pro. Comprising 45 products and more than 155 GB of content, Komplete 11 delivers the latest versions of instruments and effects from Komplete 10 and adds the delay plug-in Replika, the all-new instrument Form, and other instruments that were previously available only as separate purchases, including Reaktor 6 and Una Corda.

Komplete 11 Select (\$199) is a budget-minded, entry-level bundle featuring 25 GB of content and 11 instruments, including the popular softsynth Massive, some excellent Reaktor instruments and ensembles, and a few Kontakt libraries, along with two effects processors, Solid Bus Compressor and Replika. Although Select lacks full-fledged versions of Kontakt and Reaktor, it supplies Kontakt 5 Player and Reaktor 6 Player. Designed to get you hooked on software instruments, Komplete 11 Select supplies useful products like Vintage Organ and The General acoustic piano. You'll receive Komplete 11 Select for free if you purchase a Komplete Kontrol S-Series keyboard or any Maschine hardware.

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funk and fusion master on various keyboards and mapped to MIDI), Scarbee Funk Guitarist, and four more Scarbee basses, among others.

### THE COMPLETE PACKAGE

You could buy most of the products in Complete separately, but you'd easily end up paying considerably more if you wanted more than a few. Consider this: Kontakt and Reaktor together cost \$1 less than the standard edition of Complete 11, and that savings extends to all three editions. Each edition also includes Complete Kontrol, an application that links all of your Native Kontrol Standard (NKS) software together under one roof.

All of the editions are downloadable, though infinite patience may be required to download the 500GB-plus Ultimate edition. You can also order Complete 11 Select on a USB flash drive and the larger editions on a hard drive. In addition, Native Instruments offers upgrades from legacy versions as far back as Complete 2 for the same price as upgrading from Complete 10.

For this review, I upgraded from Complete 10 to Complete 11 Ultimate. Because I already had Complete 10 and had kept up with regular updates, I needed to download only certain portions, but it still took about 24 hours to get everything I needed using the application Native Access, which replaces Service Center.

### CHAIN REACTION

Reaktor is many things. Just as many sample-based instruments require Kontakt or Kontakt Player to run, Reaktor-based synths and effects require Reaktor or Reaktor Player to run, making it the gateway to some of the most spectacular software Native Instruments offers. In Complete 11 Ultimate, it is the framework for more than 80 included instruments and effects like Scanner XT, Razor, and Monark (a rather convincing Minimog clone). It is a software toolkit that facilitates designing and assembling your

own virtual instruments, effects, and ensembles. It is also a platform for using more than 3,000 free instruments and effects, created by other Reaktor users, that you can download.

Reaktor Blocks may be Reaktor 6's coolest innovation. It supplies dozens of modules you can assemble into custom instruments, as well as a useful collection of prebuilt instruments. Individual modules run the gamut from basic components like the ADSR, VCA, and LFO in Bento Box to more complex Boutique and Digilog modules. Blocks even supplies four West Coast modules that emulate Buchla-style synthesis techniques. It also splits the various components that make up some of its complete synths into individual modules. You can build modular instruments using

Fig. 2. Just as Form can convert pitched sounds to unpitched sounds, Flesh can impart pitch to drum loops and other unpitched sounds to generate melodies and harmonies automatically.

Monark's oscillator, filter, or envelope generator, for example, or Rounds' LFO, delay, or reverb.

### FORM FOLLOWS FUNCTION

For sound designers, Form is Complete's most fascinating new addition (see Figure 1). It's a Reaktor-based granular synth that generates radically original sounds using audio samples as source material. Just import a single sample of your own or from the included library, and Form analyzes the sample's audio content and resynthesizes it. It breaks sampled sounds into individual grains and provides a host of techniques to quickly transform them beyond recognition by manipulating playback speed, pitch, and harmonic character.

When you import a sample, Form displays the entire waveform and its pitch curve on the Sample page, where you define which portion you want to play by clicking and dragging on the start and end points. Things get really interesting when you apply any number of motion curves, which determine the rate and direction that the index scans through the resynthesized sample. You can select from a library of curves or create your own.

Access the audio engine on the Sound page, where you control formants and pitch, sophisticated wave-shaping effects, a multimode filter, and modulation sources that include two LFOs and two ADSR generators. A simple audio oscillator lets you thicken the

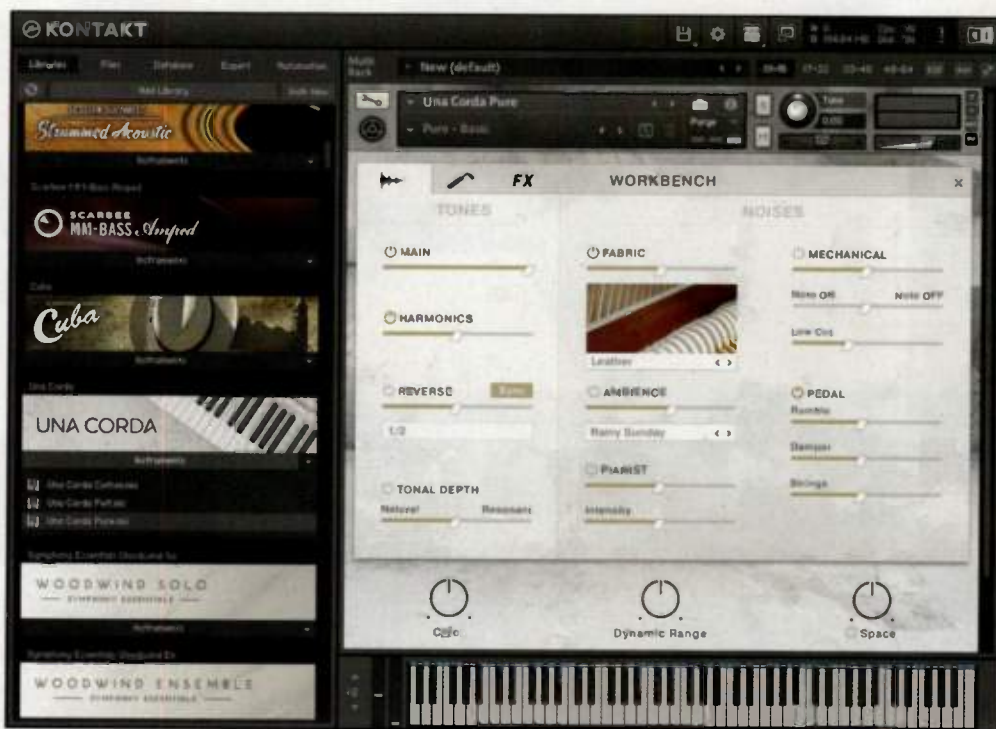


Fig. 3. Una Corda's Workbench page lets you control prepared piano parameters, such as fabric type, mechanical and pedal noise, reverse playback, and harmonic intensity.



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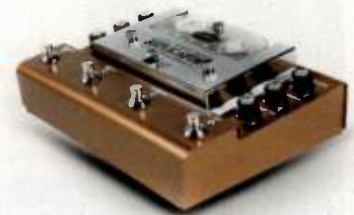
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## TIPS & TECHNIQUES

*From the Pros*

### 1 It's a balancing act

On your initial pass of a mix, try limiting all your decisions to level and panning. You'll find that your mix will come together much faster if you balance all the sounds before you reach for any plug-in or outboard gear. Also, where you put a sound in your stereo field will generally influence how you want to EQ or compress it—so definitely make that panning decision beforehand.

### 2 Try bussing - it'll get you around

Send related groups of audio to auxiliary tracks (commonly called busses, in this case). For instance, make busses for your drums, musical information, vocals, and effects. That way you can make subtle macro tweaks across a range of instruments, thereby getting the most out of EQ, dynamic, or harmonic distortion decisions. If it's good enough for top mixers like Michael Brauer and Dave Pensado mix, then it's worth a try.

### 3 Working in a new space?

Listen to some of your favorite tracks in the room before you start working, to know how frequencies translate in that space, so you can adjust your workflow when you start tracking. This will help you create tracks and mixes that translate well when delivering to your client.

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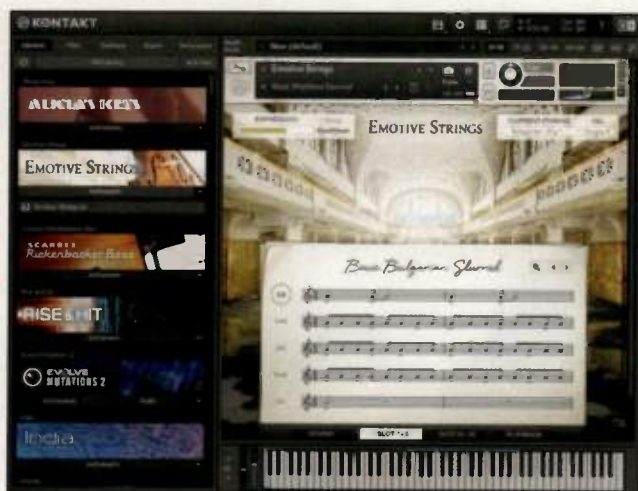
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**Fig. 4. Emotive Strings' GUI displays standard notation showing which of the 175 phrases are assigned to keyswitches.**

sound or apply FM modulation. Transpose or flatten pitch (removing pitch data to make sounds monotonous), deform and distort waveforms, and apply other processes to create something new and different. The Effects page offers even more opportunities to twist, mangle, and sweeten sounds through frequency shaping and more traditional effects.

#### PRESS THE FLESH

Flesh, from the same developer who created The Finger and The Mouth, takes a very different approach to manipulating samples (see Figure 2). Flesh is an interactive looping instrument that loads in Reak-

tor 6. Designed for performance and creative exploration, it can import any audio loop and generate harmonies and sequences based on its content, even if the original material has no discernable pitch. When you import a drum loop, for instance, Flesh analyzes the audio, detects any transients, divides it into slices, and extracts transient curves from the slices by identifying low-, mid-, and

high-frequency content.

Flesh has three main pages: Sound, Samples, and Harmony, each with 12 slots for storing snapshots. During performances, you'll likely spend most of your time on the Sound page, where five colorful circles control the levels of four sound generators and effects, and four macro knobs control spectrum, character, length, and modulation.

The sound generators are a sample player, monosynth, polysynth, and sub synth. Each has its own page for setting up synthesis parameters and 16 presets that store parameter combinations. The monosynth uses transient curves to generate melodies, the polysynth

to generate chord patterns, and the sub synth to generate bass lines. Record chord sequences up to eight measures long on the Harmony page. By fiddling with an assortment of parameters spread across several pages, you can create snapshots of all your settings, trigger them with MIDI Notes, and change modulation values on the fly using your mod wheel.

#### POINT OF KONTAKT

Kontakt is the most popular sampler that's ever existed, and it's probably responsible for the death of sampler hardware. It's remarkably versatile and extensible, in part because its scripting capabilities enable soundware developers to create instruments with unique capabilities and distinctive GUIs. In fact, most of the improvements to the latest version are for the benefit of developers. Kontakt also supplies everything you need if you'd like to create software instruments from your own samples. It's virtually universal, too, because most recent third-party sampler libraries are Kontakt-compatible.

Kontakt itself comes with a respectable soundware bundle, the 25GB Kontakt Factory Library, encompassing many instrument types and musical styles. Complete adds a variety of other libraries ranging from some exceptional acoustic pianos to ethnic instruments in the Discovery Series. When you download Complete, most of what you'll be downloading is Kontakt content.

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INSIDE



## STRING THEORY

The first time I heard Una Corda, I was immediately intrigued with the diversity of unusual sounds it achieves with such simple source material. Although Una Corda is a sampled piano, it has a very distinctive sound. Most pianos have three strings for the upper and upper-midrange keys, two for the lower midrange keys, and one for the lowest keys. The custom-built upright instrument sampled for Una Corda has a single string for each of its 88 keys, as well as an open cabinet and a thin, ribless soundboard, resulting in an unusually pure and resonant tone.

During sampling, the piano was played softly and microphones were positioned close to the strings, capturing more ambient noises than usual. To dampen the tone and soften the attack of some samples, felt and cotton fabric were placed between the hammers and strings (see Figure 3). Una Corda's instrument presets—Pure, Cotton, and Felt—supply 100 variations with descriptive names such as Sombre Horizon, Kind of Scary, Panning Sphere, and Harmonics on Dope. Many of them sound like nothing you'd expect from a piano (or any other instrument) and benefit from imaginative manipulation.

## ORCHESTRAL MANEUVERS

More than anything else, perhaps, orchestral sounds make Komplete Ultimate stand out from

the standard edition. In addition to Kontakt Factory Library, Komplete 11 comes with Session Horns and Session Strings. Komplete 11 Ultimate upgrades those to Session Horns and Strings Pro and adds Action Strikes, Action Strings, Emotive Strings, and five Symphony Essential libraries—all available as separate purchases, though their total cost is more than the Ultimate bundle.

I found Emotive Strings especially useful. The library supplies 175 phrases, mostly looped legato articulations, arpeggios, and ostinato patterns. Once you've assigned as many as ten phrases to keyswitches, just select them with your left hand as you play notes with your right, and the phrases play in sync with your host DAW (see Figure 4). Hold down a chord, for example, and Emotive Strings will play it rhythmically. Because the phrases are recorded performances of real string players, Emotive Strings can add substantial realism to your string arrangements.

The five Symphony Essentials are from one of my favorite soundware developers, Soundiron. The Essentials collection is an entry-level version of the Symphony Series, which offers more versatility and much more content at greater expense. In addition to ensemble strings, the five Kontakt libraries furnish solo and ensemble woodwinds and brass.

None of the instruments in Essentials has velocity layers, and most don't respond to velocity at

all. You can control dynamic levels with the mod wheel, though, and you have impressively flexible articulation, with tremolos, trills, harmonics, staccato notes, and similar variations enabled by key-switching. Controls for dynamics and a handful of other parameters are also available.

## KOMPLETLY ORIGINAL

It's been almost two years since Komplete's previous incarnation, but it's been well worth the wait. Some things haven't changed much, with only incremental updates to Kontakt, Guitar Rig Pro, Absynth, FM8, and a few other mainstays of Native Instruments' product line. But the updates to Reaktor, the inclusion of Form, Una Corda, Session Guitarist—Strummed Acoustic, and Discovery Series: India, as well as Kinetic Metal and other content not previously included in the standard edition, make updating to Komplete 11 a no-brainer. I did, however, encounter a few rare glitches, like when Reaktor quit unexpectedly.

If you go all the way and spring for Kontakt 11 Ultimate, though, you'll get much more creative potential for your money, whether you're upgrading from the standard edition or from Kontakt 10 Ultimate. If you've never owned Komplete, though, no matter whether you're a serious electronic musician or just a weekend dabbler, I couldn't recommend Komplete 11 more enthusiastically. ■

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Although Mackie's MixerConnect app gives you complete control over all ProDX8 functions, you can create complete mixes using only the front-panel knob and buttons.



MACKIE

# ProDX8

## SURPRISING VERSATILITY IN A SMALL DIGITAL MIXER

BY GEARY YELTON

### STRENGTHS

Balanced I/O. Six combo inputs. Three separate mixes. Three mix presets. Onboard effects, EQ, and compression. Good sound quality. Affordable.

### LIMITATIONS

No individual channel panning. No phantom power. Limited effects parameters. Placing larger iPad Pro on top makes it unstable.

\$300 street  
mackie.com

Weighing exactly one kilogram, the ProDX8 audio mixer looks like an odd-shaped portable radio with one knob, eleven buttons, and a 15-segment LED meter. Its modest appearance, however, belies its impressive functionality. Using only the easily scratched and smudged front panel, you can create and control three independent 8-channel mixes with reverb and delay. Mackie also offers the free MixerConnect app to control additional functions from your Android or iOS device, which you can prop on top if it isn't too heavy.

The ProDX8's back panel has six XLR/TRS combo inputs and a 3.5mm stereo line input mounted below two TRS main outputs, two TRS aux outputs, and a 3.5mm stereo headphone jack. One mix is routed to the main outputs, and you can switch between two other mixes routed to the aux outputs. Combo inputs accommodate microphones, guitars, or line-level sources without input gain adjustments.

The rotary encoder controls all levels, depending on which button you press. Separate buttons select the six mono input channels, main output pair, or headphone output. A seventh channel button selects either the 3.5mm stereo input or streaming Bluetooth audio. An additional button selects whether the knob controls effects depth or one of the aux mixes, and another switches between two reverbs and two delays.

### AN APP FOR THAT

You can make level adjustments using the hardware alone. The ProDX8 remembers whatever settings are current when you switch it off, but you'll need the app to store and recall any of three mix presets or to enable EQ, compression, and additional effects.

MixerConnect communicates wirelessly with the

ProDX8 over Bluetooth. After the initial pairing with my iPhone and iPad, reconnecting was usually immediate, though I occasionally had to cycle the ProDX8's power to re-establish the connection.

Onscreen buttons maneuver through numerous views. All views let you access the main fader and alternate between the main mix and two aux mixes. Mixer view displays faders for every input and an effects channel, with

adjacent meters to indicate level in dB. Channel view displays level faders for effects, compression, a low-cut filter, and 3-band EQ for the selected input. The only way to pan signals left and right is to link any two adjoining channels as a stereo channel. Main view accesses a 7-band graphic EQ for the outputs, whereas System view lets you store three presets, adjust headphone gain, and open support documents on the Web.

All channels share the onboard effects processor, which offers eight reverbs, three delays, slapback, doubler, chorus, reverb with delay, and reverb with chorus. Delay times are fixed at 300, 380, and 480ms.

### PIECES OF EIGHT

Mackie designed the ProDX8 for small ensembles, solo performers, and commercial installations, but it also serves as a versatile submixer when main mixer channels are scarce; for example, mixing down drum mics or keyboards.

The sound quality is accurate and clean, thanks to its 24-bit, 96kHz resolution. The effects sound quite good, too, but the ability to specify only the effects type and level restricts their flexibility. All in all, though, the ProDX8 is handy to have around. ■



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**Fig 1.** It is a snap to assign MIDI-control parameters to Arturia's B-3V. Red-lit controls indicate that they are assigned, whereas purple indicates that they are unassigned.

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# V Collection 5

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BY MARTY CUTLER

Marty Cutler eagerly awaits the physically modeled Gibson Mastertone five-string banjo.

### STRENGTHS

A massive collection of great-sounding, faithfully reproduced vintage keyboards. New instruments include a modeled acoustic piano and the Synclavier. Analog Lab 2 makes combinations, splits, and layers easy. Resizable GUI is easy on the eye. Reasonable upgrade price.

### LIMITATIONS

No subtractive synthesis parameters on Stage 73 V or Piano V.

\$499  
arturia.com

**N**ow up to Version 5, Arturia's V Collection adds five new synthesizers and a revamp of Analog Lab to host and combine the virtual instruments. And by including Analog Lab 2, V Collection 5 (VC5) makes 17 instruments available in standalone, VST, and AU formats.

The suite's overall improvements include a rebuilt audio engine and resizable graphical user interfaces. Browsers for all of the instruments are streamlined and easily customized. Analog Lab 2 is a nice rebuild that facilitates multiple instruments at once and lets you find just the right patch from any or all of the available instruments.

If you are upgrading from V Collection 4, be sure to download the VC5 Preset Updater, a small app that quickly converts any patches you have in earlier Arturia instruments to compatibility with V Collection 5.

### B-3 V

There are plenty of software B-3 clones, but B-3 V swiftly leapt to the top of my list thanks to Arturia's penchant for baking new capabilities into faithful reproductions of vintage instruments. For instance, the enhanced GUI and color coding of MIDI-assignable parameters is a snap (see Figure 1). It took about 30 seconds to map the faders of my Keith McMillen K-Mix to selected drawbars.

B-3 V's angled, top-down view displays basic controls: vibrato and chorus switches; a selector for various vibrato modes; preamp booster; main volume; percussion switches, including a selector for 2nd or 3rd harmonic; rotor speed, brake; and more. The virtual rotary-speaker cabinet offers controls for an open or closed cabinet, acceleration for the horn and drum, and speed settings, among other things. It also includes a selection of impulse

responses captured from classic reverbs. At the foot of the unit is a complement of five stompbox models—analogue-style delay, chorus, flanger, overdrive, and phaser—which you can place in

any order you like.

Arturia does a great job of keeping most of its innovations out of sight but easily within reach. For example, the pair of inverted triangles on the upper-right of the header open the Voice Modulator section, which is loaded with step sequencers, multi-stage envelope generators, and LFOs to modulate the drawbar settings. The envelope generators are a treat. Click on a section of the horizontal line to create a stage, and a handle will appear between the envelope points; dragging it in will create a curve for smooth and gradual transitions.

The step sequencer also modulates the drawbar settings, and a couple of nice Terry Riley send-up patches demonstrate clever use of a pair of step sequencers—one controlling the lower manual and the other modulating the upper manual. As with the LFOs, the envelopes and step sequencers can apply a modulator to either or both manuals. You can also, for example, apply an envelope to one manual and a step sequencer to the other.

More conventional programming parameters are also available, such as tonewheel and drawbar leakage, key-click volume, and the balance between manuals. Furthermore, you can assign independent transpositions and MIDI channels to the manuals: This is handy if you'd like to use independent MIDI controllers, such as a floor pedal, keyboard, or guitar.

I really like the versatility and authentic sound of B-3 V. Overall, it is mellower than other soft-



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ware emulations, yet there's plenty of opportunity to rough the sound up to taste. And the Sonic Modulators knock B-3 V way out of the park.

### FARFISA V

The Farfisa combo organ, much like its relative, the Vox Continental, was the mainstay of pop music in the '60s and early '70s. Combo organs were easy to break down and transport, unlike the bulkier Hammond organs. The Farfisa's low octave on the keyboard could be switched to its own bass sound, distinctive from the keys above it. More significantly, the keyboard had a knee lever, which controlled a filter on the instrument, enabling you to make sounds brighter or darker on-the-fly.

In terms of emulating the classic Farfisa sound, few do it better than Farfisa V. In fact, its feature set sends it well beyond the utilitarian tasks of emulation, thanks to Arturia's penchant for building useful new features on top of a faithful reproduction of the original instrument. For example, when you open the instrument's Advanced section, you'll find 48 faders that define harmonics for a User wave (see Figure 2). This works especially well when used with the more synthetic sounding patches. You can choose from several waveforms for the bass keys, one of which is the User wave. Moreover, the ability to edit attacks and releases goes a long way toward creative sound design, as demonstrated by an assortment of tasty pads in the preset section.

Just above the User wave faders is a Drop-down menu of 20 vintage-reverb impulse responses and a switch to assign one of three MIDI control sources to the knee lever: Aftertouch, Pitch Bend, or your choice of Control Change assignments. Farfisa V carries the same selection of stomp boxes as B-3V, but you can play the instrument direct or through a virtual combo amp, then select whether the amp is miked on- or off-axis.

Even if you are not in need of Farfisa sounds, you owe yourself a spin around the block with Farfisa V. The added sound-design features are capable of creating some wonderful timbres that are

well-suited for modern pop, ambient, and dance tracks. If you're looking for the real deal in a virtual combo organ, start here.

### STAGE-73 V

There is no keyboard instrument as ubiquitous as the Rhodes, whose sound graces practically every genre of music today. Enter Arturia's Stage-73 V, which provides a spot-on Rhodes sound coupled with elegant customization tools.

Here, you get two basic Rhodes types: The Stage model offers a Fender-like virtual amp, while the Suitcase model relies on the built-in amp section. Like Farfisa V, you can mic the Stage-73 V's amp on- or off-axis with a modeled Shure SM57. The instrument models subdivide into eight Spectrum profiles, covering various tonal varieties and wear-and-tear conditions with three "noisy" variations. You get four slots for the stomp boxes, and you can change the volume pedal to an auto or standard wah-wah. If I had any single gripe about the Stage-73 V, it is the absence of reverb.

The hidden programming options here are not nearly as bold as what is found in the two organs. The Stage-73 V's sounds are pervasively percussive and there are no envelope generators or step modulators. That absence is more than compensated for by the focus on customized piano tools, including pickup alignment and distance, tone bar resonance, and more (See Figure 3). Hammer softness and noise controls let you add just the right amount of knock.

When you open the programming panel, a velocity curve display pops up under the keyboard: You can start with any of the presets or design one from scratch as you play; a beam for each note illustrates the force of the keystroke, so you can adjust around your own playing nuances. Additionally, you can invert the velocity response, which could come in handy when layering this instrument with other sounds. All told, these tools help you quickly find the Rhodes sound you have in mind. For example, it was pretty easy to get a

nice Joe Zawinul piano bed together in short order. The more I play the Stage-73V, the closer it gets to becoming my go-to virtual Rhodes.

### PIANO V

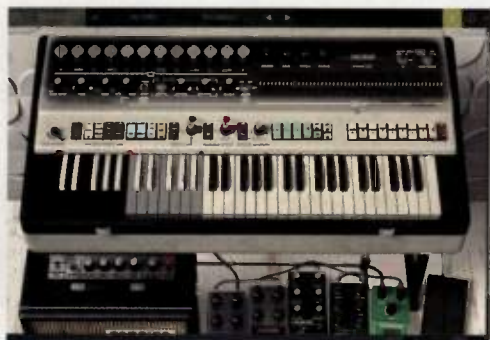
The addition of a physically modeled acoustic piano to VC5 is an unexpected surprise. Piano V offers nine acoustic piano templates, primarily traditional grands and uprights as well as more fanciful items such as a glass and a metal grand piano. As physical models of acoustic instruments, there are no stomp boxes, envelope generators, or LFOs provided; these instruments derive their timbral variety by adjusting properties that would be modified in a real-world setting, along with a few additional parameters such as reverb, unison detune, and the level of noise.

All of the sound-shaping tools are below the instrument's GUI, divided into Action and Mix categories; clicking on either brings up the relevant parameters, subdivided into Tuning, Settings, Mic Setup, Room Setup, and Master. The Global Tension knob adjusts tuning from A=400 Hz to 480 Hz, and a double-click on the knob returns it to 440 Hz (See Figure 4).

Although there are no modulation-type effects available, the Unison Detune parameter goes a long way toward thickening the sound with a natural chorusing effect. Hammer Position affects the overall brilliance of the patch, relative to its contact along the length of the string, and Hardness alters the attack of the virtual hammers. You can also change the overall dynamic range of the patch; between that and the programmable Velocity curve, it's easy to fine-tune the piano's response.

You can adjust many of the piano's typical artifacts—pedal, key-release, and hammer noises, as well as the piano's lid level. You also get an adjustable amount of piano resonance: While it is very convincing, to my ear a few patches exhibit an exaggerated amount. However, you can easily dial it back to taste.

Mix settings include two groups of mic-configuration presets—four for grand piano models and three for uprights. Other than selecting presets



**Fig. 2.** Arturia adds a user-definable waveform to Farfisa V's bag of tricks. Faders in the upper right-hand corner define the amplitude of individual harmonics.



**Fig. 3.** Stage-73 V focuses on adjusting real-world, mechanical parameters rather than synthesis capabilities.



**Fig. 4.** Piano V's editable parameters divide into Action (for mechanical artifacts) and Mix, which includes mic and ambient conditions such as a convolution reverb with tasty reverb impulse responses.

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and altering the mix, the mic positions are fixed. There are 14 impulse responses for Piano V's tasty convolution reverb, with controls for duration, room size, decay, and wet/dry balance.

Whether in an ensemble or exposed recordings, Piano V sounds great. One aspect of a physically modeled piano vs. a sampled one is that velocity responses seem to feel more natural and don't have the stepped feeling you might experience with sampled velocity-crossfaded instruments. And while Piano V may not offer the depth of sound-design parameters as other modeled pianos, there is certainly enough flexibility to customize your sounds without getting too lost in the weeds. At Version One, Piano V hits all the marks, and I can hardly wait for Version Two.

## SYNCLAVIER V

Arguably the most striking addition to the V Collection menu, the markedly digital Synclavier V represents a departure from Arturia's otherwise all-analog instrument roster (see Figure 5). New England Digital's Synclavier offered a combination of synthesis techniques—additive, digital FM, and a type of wavetable synthesis the designers called Timbre Frame. In a nutshell, you could define a waveform through additive synthesis, use an FM carrier-and-modulator scheme to reshape the waveforms, and animate the sounds by sweeping through up to 50 Timbre Frames. Sampling and resynthesis were later added to the Synclavier's feature set and will hopefully be added to the Synclavier V's feature set. But as it is, there is already plenty to digest.

The Synclavier V is complex and it will take little work to get deep into the programming interface. I was initially thrown by the concept of a partial as it's used for the Synclavier (from here on, capitalized to distinguish it from a single frequency). If you think of a partial in additive synthesis terms,

you're on the wrong trail. It's a gross oversimplification, but it might help to think of a Partial as an oscillator with its own signal flow, and Synclavier V as a 12-oscillator synthesizer (as compared with the original Synclavier, which offered four Partials).

Synclavier V has three areas of operation, with most of the basic tweaking done on the main keyboard. It's easy to transpose, tune, and adjust simple elements, such as the overall attack and timbral development. However, Synclavier V has no filters, relying instead on morphing between Frames, and you can offset the transition time of the Frames to tweak the changes over time. Basic keyboard performance parameters include several types of Poly or Mono performance, Portamento, and more. You also get a simple arpeggiator that offers a few neat tricks: With sync on, the rate multiplies or divides the BPM; with sync off, adjustments come in increments of ten from 0 to 50 Hz.

If you're looking to dig even deeper, the Graphic Screen mode is the heart of Synclavier's sound, and the sound-design tools afforded are profound.

Opening the Extended Panel gives you access to individual Partials. The Partial Select section lets you select, solo, or mute any Partial or group of Partials; shift-clicking lets you select groups of Partials to ap-

ply edits. Anyone who has ever tweaked operator parameters on the original Yamaha DX7 will appreciate the convenience of such a layout. In this case, you can adjust each Partial's carrier-to modulator ratios and frequencies, alter the frame speed, apply coarse or fine chorusing to individual Partials, and so on.

If you're looking to dig even deeper, the Graphic Screen mode is the heart of Synclavier's sound, and the sound-design tools afforded are profound. Some of the modulation features, such as the envelopes, are accessible from the main panel; the sound-design payoff, however, is in the Time Slices section (see Figure 6). Clicking in the Time Slices Tab at any point creates a Time Slice Frame for any selected Partial. Every Partial offers as many as 24 harmonics for the carrier and 24 for the modulator. Through a basic additive technique, you are, in essence, creating a waveform. Now imagine a timeline with which you can populate up to 50 Time Slices, each with different carrier and modulator settings, and Synclavier V's potential for animated, complex sound starts to emerge. As you can see, Synclavier V will keep you engrossed for a long time.

## COLLECT THEM ALL

With the addition of Analog Lab 2, V Collection 5 allows you to build monstrous splits and layers, drawing from any of the instruments in the collection. And at a street price below \$500 for 17 top-notch virtual instruments, Arturia is providing an irresistible bargain. The five new virtual instruments, alone, would be a good deal at that price, which is all the more reason for owners of Version 4 to fork over \$199 for the upgrade to Version 5.

If you use virtual instruments in your music production, you have every good reason to seriously consider V Collection 5. ■



Fig. 5. The lower panel offers global controls for Synclavier V. With the Extended Panel exposed, you can edit individual or groups of partials.



Fig. 6. Synclavier V's Screen window emulates Synclavier's Green Screen. You can deploy up to 50 time-slice frames, consisting of individual timbres shaped by a combination of Additive and FM synthesis, for each of the 12 Partials. The small circles at the top represent the sliced frames as they are positioned in the timeline.

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BY FRANCIS PREVE

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TASCAM'S NEWEST portable USB interface, the iXR (\$159 street), covers a lot of ground within a small footprint. It supports Mac and Windows, as well as iOS 8 and higher, and is about the same size as other portable USB interfaces. But with its metal housing, this definitely feels like a product you can toss into your gig bag without worrying about its safety.

The iXR sports dual inputs and a headphone jack on its front panel, with trim knobs next to each input. The combo connectors accept 1/4" and XLR input—whether it's mic, line, or instrument level—and +48V phantom power goes to both inputs when switched on. The back panel includes two USB ports (one for your iOS device via Lightning), standard MIDI I/O, and a pair of balanced 1/4" TRS jacks.

Setting up the iXR is straightforward: Simply install the drivers for your operating system and you're in business. The iXR supports 16- and 24-bit wordlengths with sample rates up to 96 kHz—a broader resolution than many iOS-centric interfaces, which typically top out at 44.1 kHz. When used with an iOS device, the iXR

requires an external source of power via the second USB port, and Tascam recommends using an official Apple USB power adapter.

I tested the iXR on both my MacBook Pro and an iPad Air and the unit performed admirably in both the audio and MIDI departments. At extremely low buffer settings, the iXR felt snappy with no audio break-up. However, I wasn't that jazzed about having to connect the unit to an Apple AC adapter, so I used my iPad/iPhone backup battery (Anker: less than \$20 on Amazon) as an alternate power source: This made the iXR fully portable and it worked flawlessly with a Korg NanoKey Studio Bluetooth MIDI keyboard.

Tascam bundles the iXR with Cubasis LE for iPad and Cubase LE for Mac and Windows. While most computer users will probably already have a DAW, the addition of Cubasis for iOS users means the iXR provides a complete solution out of the box, regardless of platform. ■



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

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The rear panel includes switches for tuning the monitor's frequency response to your own studio environment.

The PreSonus Eris E66 is the larger of two models in the company's MTM Series of active studio monitors. MTM refers to the configuration of drivers on the front panel where two mid-frequency woofers (the "M"s in the series name) symmetrically flank a tweeter (the "T"). This is also known as the "D'Appolito arrangement," named for its creator, Joseph D'Appolito.

Properly implemented, MTM improves coherence between the individual drivers, smooths out the off-axis response, and provides detailed stereo imaging. The Eris E66 driver complement consists of a pair of 6.5-inch drivers with Kevlar cones and a 1.25-inch silk-dome tweeter protected by a robust metal screen. Onboard amplifiers deliver 80 watts to the mid-woofers and 65 watts to the tweeter, enabling the Eris E66 to achieve maximum SPLs of 106 dB. That should be more than enough for anyone with common sense.

One of the Eris E66's attractions is that it works

equally well whether placed horizontally or vertically. When they are placed vertically, PreSonus suggests that the tweeters be located on the outside, forming a mirror-image pair with a small footprint (which is how I used them). The illuminated PreSonus logo serves as a power-on indicator and may be easily rotated so that it can be read correctly regardless of placement.

The rear panel of the Eris E66 provides unbalanced RCA and balanced TRS and XLR jacks, with a trim pot to accommodate a variety of input levels. (For the review, it was set to unity.) The remaining rear-panel controls tailor the Eris E66's response within the listening environment. The High Frequency trim provides 6 dB of boost or cut using a 10kHz shelf, and the Mid control offers 6 dB of boost or cut with a peaking curve centered at 1 kHz. The Low Cutoff switch has positions for Flat plus 80 Hz and 100 Hz, both of



which engage a filter with a slope of -12 dB per octave. The Acoustic Space switch compensates for the bass boost that occurs when a monitor is placed near a wall or corner by reducing the level of frequencies below 800 Hz by 2 or 4 dB. It is defeated when set to 0 dB. Also on the rear panel are an IEC power receptacle, the power switch, and a voltage selector.

During the course of my experience with the Eris E66, all of the rear-panel switches and trim controls remained at 0, as I did not feel the need to use them. (More on that in a moment.) The speakers were arranged vertically, with tweeters on the outside per PreSonus' recommendation, and set atop my monitor stands in the usual position approximately 14 inches from the front wall. Each monitor was pointed slightly in toward the listening position, which is also normal in my control room.

My first impressions listening to the Eris E66s were that they provided clarity in the midrange, good imaging, and a tight bottom end. But the results of my first mixes made on these monitors were puzzling. When heard on other systems, the mixes produced too much low end, as if someone had tilted the bass response up a few dB. The *quality* of the bass was excellent but it was just too loud. I felt that the other aspects of the mixes were accurate—no surprises in balance between instruments, judgment of timbre (the aforementioned excepted), or ambience.

Back at the studio I listened to the same mixes again and the bottom end sounded fine. I checked the contour controls to make sure they were flat (they were). I mixed several more songs and experienced similar results. Mind you, it was pleasant, but I did not feel it was consistent with my experience in this control room over the past 20-plus years.

If the Eris E66 had a low *boost* control, I would have bumped the bottom up 3 dB. That would enable me to hear more bass in the control room and mix accordingly. But the E66 does not have any provision to boost the low end, only to cut it. This slight skew in the low frequency response may be acceptable to many people. I considered the idea of moving the monitors closer to the front wall, which would undoubtedly increase the low end, but I don't think we should have to rearrange our control rooms to accommodate new monitors.

In spite of the growing pains I experienced, ultimately adjusting to the Eris E66s was easy: My mixes traveled well, as long as I acknowledged that I should hear a bit less bottom in the control room. It was easy to get the mix right from the mids up, and the Eris E66s otherwise prompted me toward good decisions. I have no logical explanation for the bass response of these monitors other than the possibility that, for some reason, the Eris E66 did not play well with my control room.

Overall, the Eris E66 has many strengths, but I would recommend an audition in your own control room before making a purchase. ■

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# Dave Smith

Unleash the programming potential of this powerful analog polysynth

## BY FRANCIS PREVE

Producer Francis Prève has been designing synthesizer presets professionally since 2000. You can check out his soundware company at [symplesound.com](http://symplesound.com)

**I**t's no exaggeration to say that Dave Smith Instruments' new OB-6—a true collaboration with Tom Oberheim—has quickly become one of the most talked-about analog polysynths of the 21st century. By combining elements of Smith's own Prophet 6 with the filter topology of the Oberheim SEM, the OB-6 is capable of textures that are unlike any other analog poly to date.



# Instruments OB-6 Tricks

For this Master Class, I won't be rehashing the generalities of analog synthesis. Instead, the focus is on programming tricks and techniques that highlight the possibilities lurking within the OB-6. It's also worth noting that several of the tricks in this Master Class also apply to the Prophet 6,

The cornerstone of the OB-6 sound is its spot-on re-creation of the original Oberheim SEM state-variable filter, which lets sound designers smoothly morph the filter slope from lowpass to notch to highpass.



Fig. 1. The SEM state-variable filter

thanks to its similar architecture, so proud owners of that synth may find a few tidbits they can use as well.

## SEM FILTERS

The cornerstone of the OB-6 sound is its spot-on re-creation of the original Oberheim SEM state-variable filter, which lets sound designers smoothly morph the filter slope from lowpass to notch to highpass (see Figure 1). Alternately, the filter can be switched to bandpass mode for a different range of textures. What's more, the filter includes its own dedicated velocity-sensitive envelope that

can also be inverted.

**Notch layering.** One of the simplest tricks for getting pseudo-layered effects is to create a soft sawtooth pad while in lowpass mode. Once the basic pad is in place, slowly shift the filter mode toward Notch until you hear a touch of "fizz." From there, adjust the resonance and cutoff slightly to get the pad to sit properly. If you go too far into notch, you may lose too many lows, but ultimately it's a matter of preference. The end result should sound like a layered patch with a warm pad topped with a bit of stringy high frequencies. Best of all, with a little fine-tuning of the cutoff and fil-





Fig. 2. Inverting filter envelopes

ter state, airy choirs are breeze.

**Analog Phaser.** While the OB-6 has its own Oberheim-inspired phaser effects built into the digital effects section, analog purists will be pleased to discover that if you set the filter mode to notch-only (12 o'clock) and the cutoff frequency to 50%, you can use a sine wave LFO to sweep the filter frequency slowly, resulting in a 100% analog phaser effect that's quite compelling on its own.

**Rhythmic Resonance.** Modulating a resonant filter with a random (sample-and-hold) LFO is an effective method for recapturing that '80s synth-pop vibe, but with the OB-6, you can do it with a lot more control. Start by creating a basic one or two oscillator patch with both the filter and amp

envelopes set to zero attack, decay, and release with maximum sustain. Next, set the filter mode to lowpass only, with cutoff set to zero and resonance at maximum. Finally, set the filter envelope modulation amount to 50% (around 3

o'clock) and turn the velocity sensitivity on for the filter envelope and off for the volume envelope. Now, the harder you hit a key, the higher the cutoff frequency. Thus, you can now control the "random" patterns in your DAW by simply changing the velocities for each note event. Better still, the results are polyphonic.

**Inverted Envelopes.** Another classic—but often overlooked—trick for working with filter envelopes is inverting them (See Fig. 2). Even seasoned pros skip this feature because it doesn't behave in an intuitive manner, so here's an easy way to get the hang of applying them.

1. Since the envelope is inverted, the cutoff frequency is lowered by the envelope, instead of its normal positive movement, so it's best to start with a cutoff frequency around 50% when you start working with the envelope.



Fig. 3. X-MOD section

2. Set the envelope amount to -50% (around 9 o'clock) when you're adding the inverted modulation. Also, start with the sustain value at zero, so

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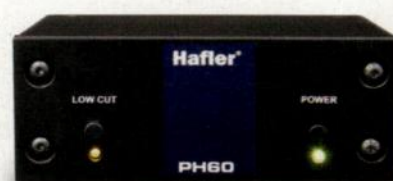


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Fig. 4. Using VCO2 as a second LFO

when the filter reaches the sustain, the cutoff will return to its front panel default value. (Leave the release at zero too, as it will make things less confusing as you experiment.)

3. And now the secret: With the filter envelope set up in this manner, there will always be an instant attack, followed by a decay (the attack time). When that decay reaches zero (the amount subtracted by the negative envelope amount), the decay section will kick in, serving as a second attack segment that “rises” to the sustain value. Boom! You’ve got a new envelope shape to play with.

#### THE WONDERS OF X-MOD

In many ways, the OB-6's X-Mod section is a variation on the classic Prophet Poly-Mod section, with its integration of both the filter envelope and oscillator 2 as modulation sources that can be applied to a wide array of synth parameters (see Figure 3). Naturally, filter cutoff and the pitch and/or pulse width of VCO 1 are destinations,

but because of the synth's Oberheim heritage, there are several unique additions like sweeping the filter mode—as well as the ability to sweep the waveshape of VCO 1, like the Prophet 6.

**Second LFO.** This may be obvious to seasoned programmers, but for those who are new to the X-Mod (and Poly-Mod) approach, it's worth mentioning that you can use VCO 2 as a second LFO by simply hitting the Low Freq switch and turning keyboard tracking off (see Figure 4). Modular fans use this technique all the time, but having it on a dedicated hardware synth opens a lot of new doors for modulation options. The se-



Fig. 5. Using the LFO to modulate noise

cret is to stick to small modulation amounts from VCO 2 as you begin your experiments and stick to pitch and/or filter frequency as your destinations. Once you get the hang of it, turn keyboard tracking back on and you'll have an LFO that increases in speed as you play higher on the keyboard.

**X-Mod Bells.** If you're into metallic, clangor-

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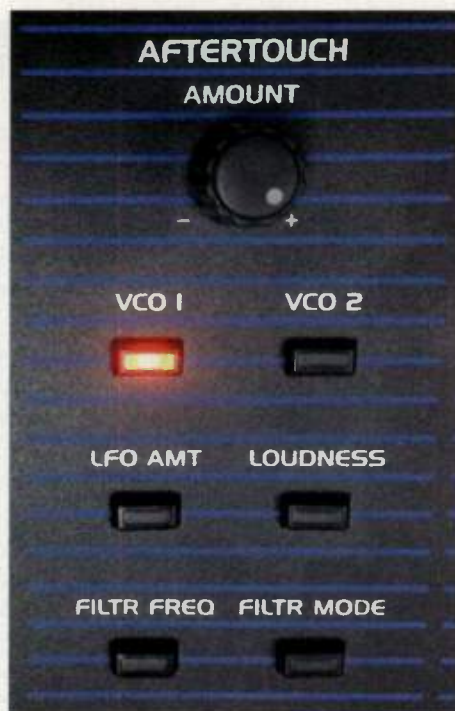


Fig. 6. Aftertouch-controlled hard sync

ous tones, using the X-Mod section to apply audio rate modulation from VCO 2 to the pitch of VCO 1 is a fantastic resource for bells and chimes. Just leave VCO 2's Low Freq mode in the off position with keyboard tracking active. Set the shape to a triangle wave, then tinker with the overall modulation amount in the X-Mod section, while simultaneously adjusting VCO 2's pitch. To be clear, there is no one "right" sound here, so it's a matter of experimenting with those two parameters (keeping the modulation depth at relatively minimal levels) until you find a set of overtones that track the keyboard in a musical manner. At this point, the sound may be extremely harsh, so for the finishing touch, use a lowpass filter set to around 40% to 50% with maximum resonance and keyboard tracking on.

**Talk box effects.** Routing the VCO 2 modulation to the pitch of VCO 1 and Filter Freq simultaneously is a cool way to get analog "talk box" effects. Start by setting the frequency of VCO 1 to C1 and the frequency of VCO 2 to C4, leaving Low Freq mode off and keyboard tracking on—and setting VCO 2's shape to a 50/50 square wave. In the mixer section, use only the output of VCO 1. Next, in the X-Mod section, set the VCO 2 modulation amount to around 2 o'clock. Finally, set the filter mode to lowpass with resonance at maximum and grab the cutoff frequency knob. While playing notes, shift the filter frequency knob in the 0% to 50% range. If you've set it all up correctly, you'll be greeted with a Daft Punk-ish talk

box effect with the vowel type controlled by the filter cutoff. Once you get a feel for it, try adding a bit of filter envelope to automate the "talking."

#### OTHER TRICKS

While the SEM filter and X-Mod sections are arguably the highlights of the OB-6 architecture, there are quite a few other tricks that it can do, thanks to its hands-on aftertouch section and unique combination of detuning and chord memory features.

**Noise modulation.** While the LFO's waveform selector doesn't explicitly include a noise option, if you turn the LFO frequency to maximum while the random waveform is selected, the result will be exactly that: White noise (see Figure 5). And if you haven't already experimented with noise as a modulation source, you're in for a treat.

1. Tune both VCOs to the same pitch, with no detuning, then apply a small amounts of noise modulation to the pitch of either VCO (individually, not both) and the result will be very similar to the classic supersaw effect that's all the rage in EDM these days.

2. Routing noise modulation to the filter cutoff will add a distortion-like grunge to almost any patch.

3. Applying noise modulation to pulse-width in extreme amounts will convert that oscillator's overall tone into noise, with a tiny bit of the original pitch mixed in, which is extremely useful for exotic drum and percussion effects.

**Aftertouch controlled hard sync.** While most classic hard sync patches rely on an envelope to sweep the pitch of the synced oscillator (VCO 1 on the OB-6), if you use aftertouch to modulate the sweep, you can create extremely dynamic leads that shift and morph as you apply pressure to the keys (see Figure 6). For extra credit, add a longish delay to the result for ultra-progressive results.

**Stacked Leads and Risers.** Both the Prophet 6 and OB-6 allow for old-school chord memory tricks by simply hitting the Unison button while holding a chord. This is great for techno-style parallel chord riffs, but if you stick to octaves and fifths, you can use it to create really thick, stacked leads. As an example, hold down C in three octaves, then hit the unison button. From there, increase the detune amount until it starts to go too far out of tune, then back off it a bit. The results will be massive. What's more, if you turn on portamento and set its knob to 80% or higher, the result will be quite reminiscent of the THX sweep—perfect for massive EDM risers—especially with a bit of delay and reverb as frosting. ■





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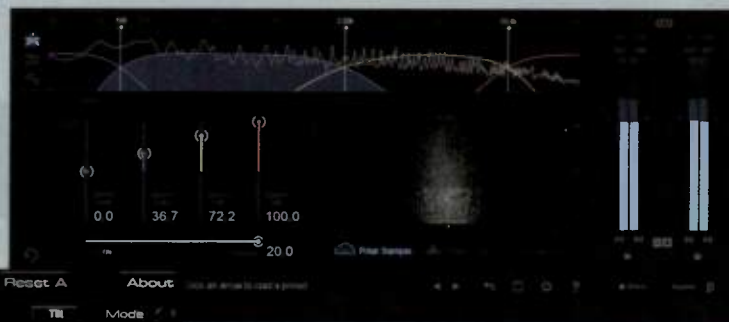
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**Fig. 1.** Brainworx bx\_stereomaker includes controls for centering bass frequencies, reducing highs in and panning the differential signal, panning the mono source, and adjusting the tone and width of its stereo effect.



**Fig. 2.** The Stereoize slider in iZotope Ozone 7's Imager module and plug-in works in conjunction with multiband width controls to produce a natural stereo effect from mono input signal. The width controls' crossover frequencies can be adjusted by dragging vertical bars situated in the top section of the GUI.

# Wide Mono

Tools and techniques used to upmix single-channel tracks to stereo

**BY MICHAEL COOPER**

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

**W**e've all been here before: We record a scratch guitar track in pre-production with a single mic, only to realize at mixdown that it's an irreplaceable keeper take. Problem is, it sounds too narrow to be a featured track. You wish you'd recorded it in stereo. How can you make it sound wider?

Many plug-ins provide mono-to-stereo processing, but they still sound just that: processed. That's often inappropriate for acoustic instruments such as guitar, banjo, mandolin, and harp, or even for electric guitar for some genres of music. How can you make a mono track sound like it was recorded in stereo without adding audible echoes, reverb, or modulation such as chorusing, flanging, or doubling?

Three plug-ins give you the mojo you need. Brainworx bx\_stereomaker, iZotope Ozone 7 Imager, and PSP PseudoStereo can upmix mono tracks to convincing, natural-sounding stereo free of polluting effects. Let's give 'em a spin!

## BRAINWORX BX STEREOMAKER

The owner's manual for bx\_stereomaker describes its mono-compatible upmix processing as "slicing the source signal's spectral energy." A Tone control selects "the slicing frequency interval in 11 steps in order to adapt to different sound sources."

Cryptic, but the results sound great!

As you adjust bx\_stereomaker's Tone control (see Fig. 1), you'll hear subtle changes in the stereo image and timbre (for example, acoustic guitar might sound very slightly softer or harder); adjust the control by ear to find the best setting for sitting the track in your mix. You can click the L<>R button to swap left and right channels in the stereo image. If bass frequencies sound too spread out and unfocused, raise the Mono-Freq control to center them. Turning up the Hi-Damp knob progressively rolls off the upmixing effect above 5 kHz; that could theoretically be useful to prevent the stereo expansion from sounding tinny (I've never found that to be an issue), but it also reduces its perceived width.

You can make bx\_stereomaker's effect sound even wider by cranking the Stereo-Exp (expansion) control, but keep an eye on the included correlation meter as you do so to ensure you're not creating an out-of-phase effect; the meter





**Fig. 3.** PSP PseudoStereo's controls adjust the perceived width and relative amount (vs. mono input) of its stereo effect. The yellow square seen here at the top of the GUI expands horizontally and moves to the right or left as the plug-in's output becomes more correlated (right) or decorrelated (left).

should display positive values at virtually all times. If the image doesn't sound like it's quite right, use the Tilt/Pan knob to correct it: In Pan mode the knob pans the mono source's center image to the left or right, while in Tilt mode it pans only the differential, or spatially enhanced, part of the signal. As long as the Tilt/Pan knob is set to its default noon position, mixing the plug-in's output down to mono will fully restore the original mono signal. An included Balance meter guides your hand by showing the perceived

position of the plug-in's output signal in the stereo field.

#### IZOTOPE OZONE 7 IMAGER

While not a dedicated upmixer, the Imager module and component plug-in in iZotope Ozone 7 each provides an inconspicuous on/off button and slider that do just that: Activating the Stereoize function upmixes mono input to natural-sounding, mono-compatible stereo (see Fig. 2). Moving the Stereoize slider to the right or left subtly changes the character of the resulting stereo image.

Imager lets you adjust the width of the stereo image independently for four frequency bands with adjustable crossovers. Three different vectorscopes—Polar Sample, Polar Level, and Lis-sajous—display the stereo output signal's correlation in turn.

#### PSPAUDIOWARE PSP PSEUDOSTEREO

PSP PseudoStereo uses a comb filter, delay, and polarity inversion to separate mono input signal into left- and right-channel components. The Freq (Base Frequency) slider sets a frequency at multiples of which the comb filter will resonate (see Fig. 3). You'll typically want to set the Freq slider close to its center position; moving it to the right of center widens the stereo image

further but can introduce very short (roughly 50ms) echoes at extreme-right settings. Moving the Freq slider to the left narrows the output's stereo image.

To preserve mono compatibility fully, set the Emph (Treble Emphasis) slider fully to the right; if you hear unnatural artifacts when processing a bass-heavy track, move this slider to the left to wean bass frequencies from the comb filter and reduce artifacts. The Depth (Effect Depth) slider adjusts the amount of wet signal at the plug-in's output; set it close to its mid-point position to achieve a good blend of mono input and stereo output.

As you drag the Depth and Emph sliders, try to make your adjustments restrict the included correlation meter's horizontal yellow bar to a narrow width and positioned slightly to the right of its center position. That will typically produce the best stereo effect. Also experiment with toggling the Phase button on and off, as that can make fairly dramatic changes to the processed track's tone.

PSP PseudoStereo is only available as part of the PSP StereoPack bundle, but don't let that deter you from buying: The bundle—which includes three other plug-ins that process and analyze stereo signals—costs a mere \$49, a terrific value for tight budgets. ■

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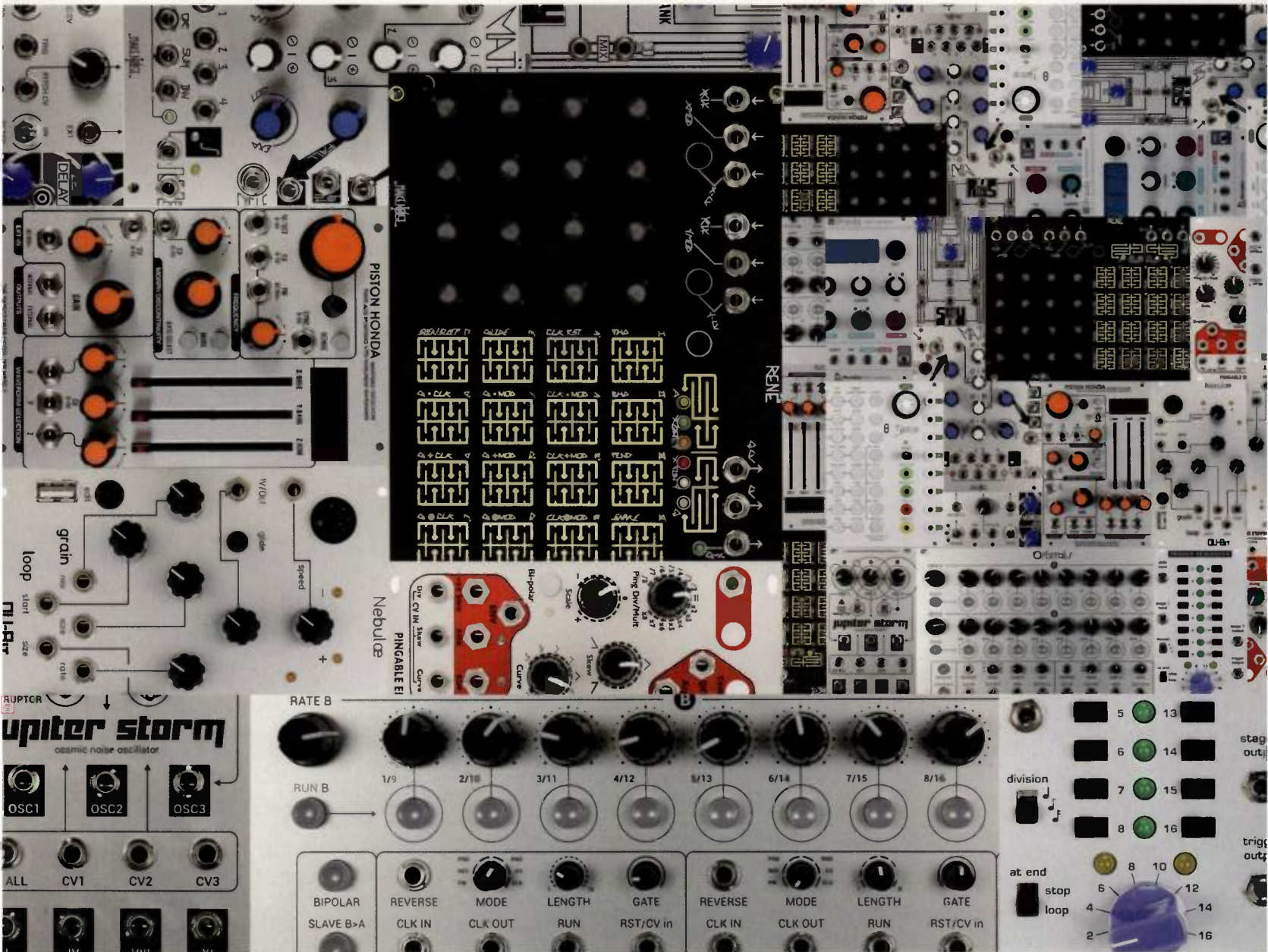
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# Thomas Dolby

The artist, tech innovator, and inventor gets personal in his new memoir



Dolby in his early touring days

BY SARAH JONES

**O**ctober, 1977: Teenage musician Thomas Dolby, living in a dirty, rat-infested London apartment, and aimless after getting fired from his job at the local produce market, happens on a broken synthesizer sticking out of a dumpster behind the EMS synth shop. He climbed into the dumpster, and the rest is history.

Dolby's new memoir, *The Speed of Sound: Breaking the Barriers Between Music and Technology* (Flatiron Books), traces his meteoric path in the '80s to new wave pop star with his smash hits "Blinded Me with Science" and "Hyperactive," through his years in Silicon Valley at the forefront of digital music technology, to his return to his first love, songwriting.

Most recently, Dolby was named Homewood Professor of the Arts at Johns Hopkins, where, in addition to teaching sound for picture, he's helping create a center that will serve as an incubator for technology in the arts.

You've worked at the intersection of the music business and the tech industry for

a long time. How do you think the dialog between music creators and the tech sector—YouTube, streaming services, etc.—needs to improve, to preserve the livelihood of music makers?

Often when there's a breakthrough technology, artists are asked to "pony up" and forego payment, giving the technology time to get established. For example, when cable TV started, actors were not paid royalties. When CDs first came in, musicians were underpaid or not paid at all by record companies.

This is reasonable up to a point; but once a technology has matured to the point where investment costs have gone away and there are large profits to be made, the industry and the artists should *immediately* commence a dialog about meaningful and fair compensation—otherwise it's just theft, plain and simple.

I am indeed at the intersection, but here I have to put my artist hat on! Services like Spotify and YouTube, where music is currently given away wholesale in order to generate revenue for tech companies, are just plain ripping off the artists.

In the book, you talk about returning to

music after a long time away, and facing a new industry landscape. How has that informed your most recent work?

I set about writing songs for a new album, and halfway through, it hit me that nobody is *buying* albums any more—they're too busy on social networks, playing games and uploading selfies. An album is a 20<sup>th</sup>-century concept—produced, manufactured, and distributed to millions in a one-way relationship; but today it has to be more inclusive. So *The Floating City* [2011's *A Map of the Floating City*, Dolby's first album since 1992] was a multiuser online game, an adventure, with elements of fan fiction, in which you earned the ability to download free music via collaboration and your own creativity.

I love how you say that ultimately, you have the soul of an artist and a tinkerer. How do you see that manifesting in your next act?

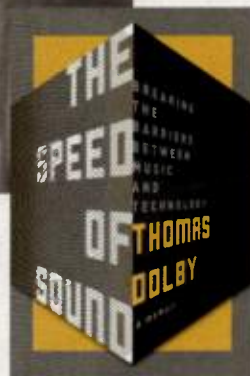
That's really hard to say, but right now I am trying to teach a class of students how to think like I did back when there were no obvious paths or solutions! For this generation, solutions are typically a few keystrokes away, and I need them to think for themselves, even though by the time they leave the tools and tech will be very different.

In the final chapter, you mention that now you feel like you have something to pass on to young people, as far as having a creative mindset to tackle any problem. How is this manifesting, for example, in your work at Johns Hopkins?

Refer to my last answer!

So whatever happened to that old synth that you fished out of the trash on that fateful day in 1977?

Ha, ha! It was a Transcendent 2000. It was stolen from my cage at John Henry's rehearsal room in North London, along with a Jupiter 4, a MicroMoog, a set of Simmons pads, and a Solina String Synth, around 1987. ■





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