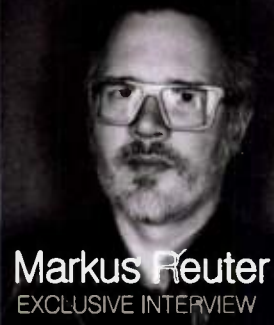


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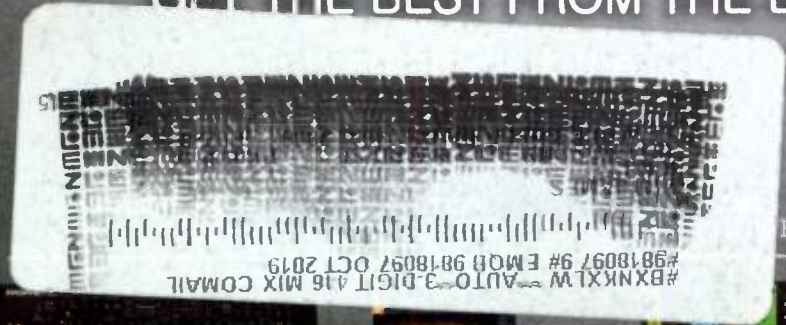
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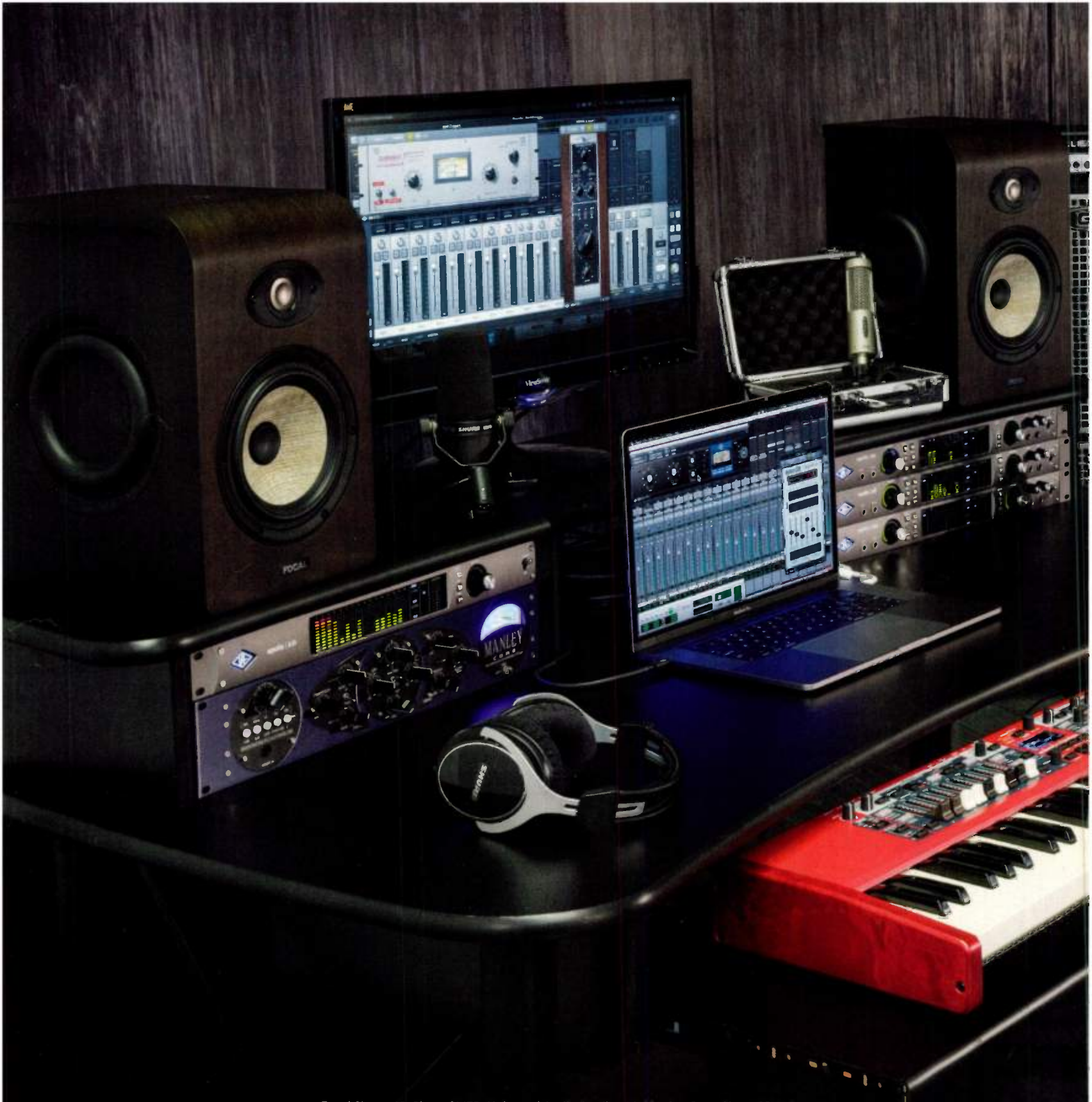
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Keyboard
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32

EASY GUIDE

Discover String
Articulations

34

SOUND DESIGN

Additive Sweeps
& Harmonic
Structures

36

HOW-TO

Player's Organ
Techniques



18

2018 ROCK STAR GIFT GUIDE

What do you buy for the electronic musician with everything?... We ask 17 of the world's hottest new music artists for their pick of the best gear in the world. Get ready for a serious case of gear envy! The action starts on page 18...

MARKUS REUTER

"When I first met Robert [Fripp] I had no idea how much of a guru he was, so I always had a very straightforward relationship with him..."

We catch up with the ambient electronic and experimental avant-garde guitarist to talk gear and the next generation of King Crimson...

24

MAKING MUSIC WITH iOS

In the span of a decade, the audio and music possibilities for Apple's iOS have evolved from a handy musical notepad to a fully functional production platform that's every bit as legitimate as a desktop environment. We pull together the latest and greatest apps and show you what can be done with a little finger power...

56

10

COMMUNITY



12

NEW GEAR

Products
from Native
Instruments,
Universal
Audio, iZotope
and more

66

**FIVE
QUESTIONS**

Debbie
Cavalier,
the CEO for
Berklee Online

37

TECHNIQUES

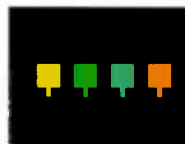
Setting up your MIDI
knobs & faders



60

TECHNIQUES

How to create your
own Supersaws



62

SOFTWARE

LFO and Tremolo
Plugins



38
SEQUENTIAL
Prophet X



40
IZOTOPE
Nectar Elements



42
MOOG
Grandmother



46
UVI
String Machines 2



50
IK MULTIMEDIA
iLoud Synth Editor



52
STEINBERG
UR-RT4



54
ZYNAPTIQ
Intensity



55
AUDIFIED
MixChecker Pro

HOW TO

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Guest Editor

James Russell

Group Editor-In-Chief, Music

Daniel Griffiths

Production Editor

Alice Pattillo alice.pattillo@futurenet.com

Art Editor

Steve Dawson steve.dawson@futurenet.com

Editor *keyboardsmag.com*

Jon Regen kbwebeditor@gmail.com

Moderator *The Keyboard Corner*

David Bryce

Editors at Large:

Geary Yelton, Mike Levine, Francis Preve
Contributors: David Battino, Dave Clews, Michael Cooper,
Marty Cutler, Sarah Jones, Jerry Kovarsky, Steve La Cerra, Ronan
Macdonald, Jon Musgrave, Jon Regen, Michael Ross, James
Russell, Barbara Schultz

FUTURE MUSIC GROUP BUSINESS

Chief Revenue Officer

Luke Edson luke.edson@futurenet.com

Advertising Director

Jonathan Brudner jonathan.brudner@futurenet.com

Advertising Director

Mari Deetz mari.deetz@futurenet.com

Advertising Director

Jason Perl jason.perl@futurenet.com

Advertising Director

Scott Sciacca scott.sciacca@futurenet.com

MANAGEMENT

Managing Director

Julian March

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Commercial Finance Director

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Editor's Note

'Tis the Season

It's that time of year again, and the same old problem rears its head. You see, there's always been a difficulty with gift giving: unless you can tell someone what you truly want, and they can tell you what they truly need, there's no trade parity. You end up with socks, they end up with yet another cuckoo clock, when you might as well have just bought yourselves what you both really desired all along. This year, it's time to drop a few hints, and we've got just the way.

This issue's *2018 Rock Star Gift Guide* is packed full of inspiring ideas

for you or the electronic musician in your life. From pages 18 to 22, we've hit up a huge variety of artists for their suggestions of the little things that have been a big help to them in the studio, and their bigger gear dreams for this year.

And if none of those satisfy you or your giftee, there's always the option of buying vouchers for the App Store! iOS music making has improved in leaps and bounds over the last decade, but if you've never dived into the vast pool of cheap and free apps, I can see why. This is a system that requires a

leap of faith to get connected, but we've got you covered again there, with a no-nonsense guide to hooking iOS into your current production environment.

Finally this month, we pay a sad tribute to the passing of Frank Serafine, whose pioneering work in sound design and composition for film have captured the essence of what we strive for as electronic musicians. Frank's work on *Star Trek* and *Tron* helped define the sound of the future, and it falls to us to keep building his work.



JAMES RUSSELL
GUEST EDITOR

ADVENTURES IN DIY

BY DAVID BATTINO

Attack of the Monster Slug Synth

If you're into high-energy synth DIY, you'll love Sam Battle's YouTube channel, Look Mum No Computer (tinyurl.com/LookMumYT). In one memorable episode, Sam downs 16 cans of Red Bull and then dangles them in front of 16 solenoids to create an electroacoustic drum machine. In another, he builds an organ out of Furby toys — one furry, animatronic monster per note. I usually watch DIY videos at 1.5X speed, but Sam's hypercaffeinated productions are so rich I happily rewind to drink in the details.

I rediscovered Look Mum while searching for oscillator circuits to build with 555 timer chips. One of the top hits was Sam's video "The Simplest DIY Audio Oscillator? Not a 555 Chip: Reverse Avalanche" (see Figure 1). Whereas the typical 555 oscillator outputs a harsh square wave, Sam's circuit makes a warm sawtooth. And it needs only six components: one transistor, one capacitor, two resistors, an LED, and a potentiometer (see Figure 2).

What's interesting about this circuit is that the transistor is hooked up "backwards." Normally transistors flow current in the direction of the arrow ("E" stands for emitter). Here the emitter is facing the voltage source instead. When you apply current, the capacitor charges at a rate controlled by the 10k potentiometer. When the charge reaches the transistor's breakdown voltage (around 8–9V with this transistor), it sends the transistor into avalanche mode: The transistor's resistance falls and current flows through it in reverse. As the capacitor discharges, the transistor's resistance rises again. The change in voltage produces a sawtooth wave, and the charging time affects the frequency.

Another unusual feature of this circuit is that you have to snip off the transistor's base (the middle leg) to make it oscillate. Normally the base (B) functions as a remote control, so perhaps the untrimmed leg functions as an antenna, picking up stray voltage that interferes with the avalanching. Sam says the LED also facilitates oscillation by adding a load to the transistor. But it looks cool too, pulsing with the frequency of the wave. The 1k resistor protects the LED from burning out. The 100k resistor works as a passive mixer, letting



Fig. 1. Sam Battle, aka Look Mum No Computer, waves five sawtooth oscillators he built in minutes (<https://youtu.be/zCTLeNxge54>). See a low-voltage version at <https://youtu.be/VZ180Epr770>.

you connect multiple oscillators together. Another option is to replace the LED with a speaker, as Sam did in his Red Bull can theremin project.

The sound really comes alive when you start layering oscillators. I embedded two in a Japanese slug monster toy, routing one to the left side of a stereo minijack and the other to the right (see Figure 3). The LEDs light up the corresponding eye stalks. There was room for a battery, but I chose a guitar pedal power jack for convenience. (Sound stops when the battery dips much below 9V.) The unbuffered output was very faint; plugging it into a stereo reverb pedal boosted it nicely. This circuit is so simple and cheap, the variations are endless. Be sure to watch Sam's followup video where he fires up 100 oscillators at once.

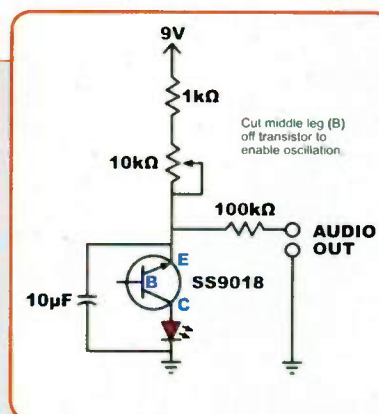


Fig. 2. The 10k pot controls pitch on this simple sawtooth oscillator. With a few more components, you can add control voltage and filtering. Sam's site has details.



Fig. 3. I drilled out the eye stalks in this giant slug monster and inserted LEDs that pulse in sync with the two oscillators inside. The left knob is wired backwards so turning it toward the head raises the pitch.

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Artists can now upload their music direct to Spotify for free

How can I get my music on Spotify? It's a question we often get asked, with the standard answer being that you need to go through some kind of third-party subscription service such as TuneCore or LANDR. That could be about to change, though, with Spotify now making it possible to upload music directly via its Spotify for Artists programme. As things stand, this feature is only being offered in beta and by invitation to a few hundred US-based independent artists. However, the plan is to open it up to more people in the future. Using the dedicated tool, artists can preview how their releases will look on Spotify and make metadata edits after they've gone live, while royalty payments will be made automatically each month. Uploading is free, and there are no fees or commissions to pay.



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NI update Massive, Traktor, Kontakt, Maschine Mikro and more...

Plus, all new entry-level keyboard controllers

Over the past decade or so, Native Instruments have fallen into a bit of a routine when it comes to updating the various strands of their product line. Typically, each year would bring a major update to either the Maschine ecosystem, Complete software range or Traktor DJ line, alternating which stream took its turn to receive an overhaul. This year, however, the Berlin brand are breaking that habit with a single massive unveiling that brings news of major additions across their entire range. Dubbed 'For The Music In You', NI's latest announcement brings us updated software, fresh DJ and production hardware, and even a whole new range of entry-level controllers.

1 MASSIVE NEWS FOR COMPLETE

Potentially the most noteworthy announcements – at least for longtime NI fans – come from the Complete software range. Here, as part of the forthcoming version 12 bundle, NI have unveiled long-awaited updates to both Massive and Kontakt. The former comes in the form of Massive X, a whole new plugin synth that has been created by the team behind the original more than 10 years ago. As with Massive v1, Massive X combines wavetable oscillators with

subtractive synth elements and powerful modulation for complex sonic results. There's not much more in the way of public information about the synth at the time of writing. The UI is still mostly under wraps, although we have seen it and can confirm it has a more modular design than its predecessor, allowing synth elements to be changed and rearranged a little like Reaktor Blocks, albeit stopping slightly short of fully modular routing.

Kontakt 6, meanwhile, builds on the design of the longstanding sampler with some subtle

refinements without breaking the existing workflow. From a user perspective, the most interesting aspect of version 6 is the new dual-layer design which will be used for all new official Kontakt instruments. This gives users two main timbral elements to each sound, with simple controls for blending and modulating the balance of these. The new design is shown off by a trio of new sample instruments, Analog Dreams, Ethereal Earth and Hybrid Keys (pictured above). Version 6 also brings three new reverbs, including a module based on NI's

3



4



excellent Replika plugin. There's also an intriguing new wavetable engine.

For instrument builders, meanwhile, NI have also announced a new standalone app called Creator Tools, which is designed to ease creation of Kontakt instruments via its included Debugger and Instrument Editor elements. The other interesting development on the Komplete front is the news that a variety of Expansion packs will now be included. These sample and preset bundles – previously known as Maschine Expansions but recently expanded – bring an assortment of genre-themed sounds to the included synths and instruments. As usual, Komplete will arrive in different sized bundles, available 1 October. Massive X, however, won't arrive until February, when it will be made available for free to Komplete 12 owners or at a discounted crossgrade price for owners of version 1.

2 MIKRO MOVES

We were thoroughly impressed with the Mk3 update to NI's core Maschine controller when it arrived last year, and now NI are bringing some of that magic to its smaller sibling, Maschine Mikro. This new version of Mikro gets an updated look, matching the sleek matt black Mk3. The diminutive controller gains some of its counterparts' coolest features too. Most notable

is the touchstrip which, again, can be used to control performance effects, record automation and trigger sounds. An overhauled layout and screen aim to streamline the workflow too, for fast and fluid beatmaking. Probably the most appealing thing however, is its price – at \$249, it offers a very affordable entry into the Maschine realm, and comes with a solid crop of samples, instruments and effects.

3 TRAKTOR REMIXED

On the DJ side, NI's mixing application Traktor Pro gets updated to version 3, bringing new versions of the S2 and S4 controllers. The software itself is more of a refinement than a significant overhaul. It now has a flatter and more modern interface design that feels a little cleaner than previous versions. Under the hood it benefits from Elastique 3 timestretching, and NI promises improved sound and stability.

The controllers, meanwhile, have both been redesigned to suit the new look of the software. Both controllers gain updated pads along with a new Mixer FX section for quickly manipulating the software. The S2 has enlarged jog wheels which NI claim offer improved sensitivity. Of most interest, though, are the new 'Haptic Drive' jog wheels added to the S4 (pictured). These are high-torque motorised platters which offer a high level of tactile responsiveness for

beat matching, adjusting beat grids and scrolling through tracks. It's difficult to explain exactly what these are like in use, but suffice to say we've had our hands on them and the technology seems really impressive.

Traktor Pro 3 is set to drop mid-October, with the S2 and S4 following in the weeks after. The S2 is due to be priced \$299, while the S4 will be priced at \$899.

4 KEY TO SUCCESS

Finally, NI's array of controller keyboards are getting significantly expanded. The existing S-Series gets a new addition, the S88, which takes all of last year's version 2 updates – including quality screens and touch-sensitive controllers – and places them in a full-sized 88-keyboard with fully weighted, hammer-action Fatar keyboard.

NI will also release a whole new entry-level range of keyboards – the A Series. Coming in 25, 49 and 61-key varieties, these new controllers have semi-weighted keybeds and simplified NKS-friendly controls similar to those on the Maschine Mikro. These start at \$149 for the A25, up to \$199 for the A49 and \$249 for the A61. All three come with the Maschine Essentials software bundle, including the likes of Monark and Reaktor Prism. The A-Series arrives 23 October. ■

5



6



7



5

UNIVERSAL AUDIO APOLLO X

Until now, UA's Apollo series of DSP-packing audio interfaces topped out at four processing cores. The Apollo X line breaks that barrier, with a 50% increase thanks to new Hexa processing – in other words, six cores. These 19" rackable beauties hook up via Thunderbolt 3 and now feature improved conversion (UA call it "Elite-Class"), Surround Sound monitoring, and switchable +24dBu operation (for increased headroom). The models are: Apollo x6 (16 inputs x 22 outputs, two Unison mic preamps, \$1999), Apollo x8 (18 x 24, four Unison pres, \$2499), Apollo x8p (18x22, eight Unison pres, \$2999), Apollo x16 (18x20, 16-channel analogue I/O, \$3499).

uaudio.com

6

IZOTOPE RX 7

The wondrous audio repair suite iZotope RX is something of a legend in audio circles, and RX 7 certainly looks like it could continue that trend. Repair Assistant is an "industry-first intelligent repair tool" that sniffs out noise, clicks, clipping, etc, then proffers solutions in three levels of processing intensity.

Next, Music Rebalance promises the Holy Grail of audio processing: separation of fully mixed stereo audio. You can adjust/enhance vocals, bass, percussion and "other instruments", "making it possible to adjust a mix without multitracks", or even remove/isolate vocals.

For spoken dialogue, Dialogue Contour reshapes intonation to "rescue or improve" a performance – for example, turn a rising inflection into a downwards one. Dialogue De-reverb, meanwhile attenuates reverb on vocals. Other key features include multichannel support, all the way up to Dolby Atmos 7.1.2, and Pro Tools AudioSuite compatibility. The full-fat RX 7 Advanced is \$1199. Standard is \$399.

izotope.com

7

TONE2 GLADIATOR 3

The original Gladiator came out fighting back in 2008, with its novel HCM synthesis technology responsible for its sonics behind the scenes. Then, what do you know, Version 2 rattled ears worldwide all over again the year after that.

Now, over a decade since that first debut, Tone2 unleash Gladiator 3. Headlining the gargantuan feature list is a whole new interface with four sizes, and a "comfortable" new patch browser with preset ranking. Sonically, there's a new "high-end" quality mode, 18 extra unison modes "with a diverse selection of chords", six more LFO shapes, new loop modes, more phase modifiers, and loads more. It should be out by November, priced \$169.

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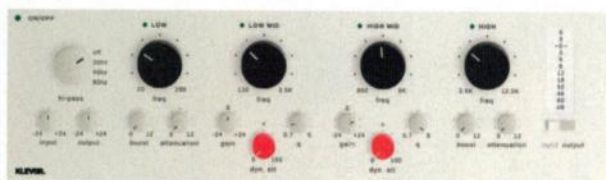
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8

MASTERING THE MIX ANIMATE

This four-stage effect promises to help imbue your mixes with “the perfect flavour of punch and movement”. Expand offers “pristinely clean” upwards expansion, increasing the volume of signals exceeding the threshold, for greater dynamic range. Punch bolsters transients and Ignite delivers harmonic distortion. And Grow increases stereo width via a “psychoacoustic precedence effect”. Each of the four processes can target a specific frequency range, with stereo or mid/side operation and threshold-based dynamic operation. It's £59.

masteringthemix.com

9

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plugin-alliance.com

10

KLEVGRAND GOTOEQ

The Pultec EQP-1A is one of the most sought-after classic EQ units out there, as proven by the number of software emulations available today. Klevgrand's take on the concept goes a lot further, though. GotoEQ brings you the famous Pultec 'low-end trick', sure, but it also offers a 'high-end trick', with a similar formulation of intentionally mismatched high-shelf filters. That's not all, as GotoEQ adds an extra mid band to the original's one, with both of Klevgrand's offering dynamic attenuation, making this not only a Pultec emulation but a *dynamic* Pultec emulation. All this will cost you \$59.99 as a VST/AU/AAX plugin, or \$19.99 for the iPad version, so you can mix like your heroes but with even more power!

klevgrand.se

11

MERCURIALL SS-11X

Amp sim aces Mercuriall already brought us spot-on British (Marshall), German (Engl), and US (Mesa/Boogie) tones. Their latest release, though, offers a sound straight outta their Russian homeland: SS-11X is an official emulation of AMT Electronics' SS-11B tube preamp. Using new Neural Hybrid Engine tech, they say it's “virtually impossible to distinguish the sound difference between hardware or software”. It's got Clean/Overdrive/Lead channels, a Treble Shift switch for brightness, and three-band tone controls. Extra plugin-only goodies include a noise gate, overdrive pedal selection and more. It's \$39.99, out soon.

mercuriall.com

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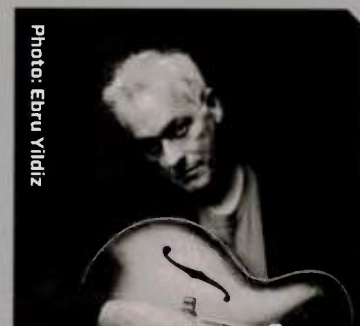


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MARC RIBOT

One of the world's most accomplished and acclaimed guitarists, the great Marc Ribot has released more than two dozen solo albums during his 40-year career. He has also appeared on seminal albums by artists such as Tom Waits, Elvis Costello, the Black Keys, and more. Ribot's latest album is *Songs of Resistance 1942 – 2018*, a collection of songs with political and personal meaning to the artist. Guests on *Resistance* include Waits, Steve Earle, and Meshell Ndegeocello among others.

Ribot first offers a budget gift “for that special aspiring funk guitarist: the JAM Wahcko+ wah pedal. It’s strange to describe a wah-wah pedal as ‘outstanding’, but this is.

“For those with more money to lavish on the ultimate groovy gift,” Ribot continues, hunt for an “original vinyl copy of Rammellzee and K-Rob’s *Beat Bop* with cover by Jean-Michel Basquiat. I’d show you mine, but it’ll cost ya!”



YOU BETTER SHOP AROUND

The *Electronic Musician* Rock Star Gift Guide is all you need to please the musicians, producers, and DJs in your life

Electronic Musician magazine is pleased to bring you a host of creative gift ideas for the musical friends in your social circles. This year’s “rock stars” actually represent a range of musical styles, from RYAN Playground’s electronic R&B to Delicate Steve’s take on world music, to punk rock from Good Charlotte, and many others.

As in past Gift Guides, we asked our shoppers to suggest two gifts: one that’s affordable on a working musician’s budget, and one that each player would buy with a bottomless bank account. Their creative suggestions include a soldering gun, meditation CDs, stage keyboards, e-drums, earbuds, and loads more instruments and audio tools.

We kick off this year’s guide with a guitar master, and a reminder that the latest releases by these talented artists also make great gifts!

Photo: Xavier Cyr



RYAN PLAYGROUND

French-Canadian producer, singer, and songwriter RYAN Playground released her first EP showcasing her electronic R&B music in 2016, and celebrated the release of her debut album, *16/17*, this past September. Her music has received praise from Vogue, FADER, Stereogum, and more.

RYAN's affordable gift choice is a pair of Perfect-Fit CMP Model Custom Musician Ear Plugs. "I have some custom ear plugs to protect my ears from high volume, and I'm telling all of my music friends to do this because I think it's very important," she says. "Visit a local audiologist, and they will take a mold so that you can protect your hearing."

For her high-end idea, "I recommend that people go in for a luxury instrument if they're passionate about it," RYAN says. "I saw this guitar in a shop: the Fender American Standard Offset Telecaster guitar. I fell in love with this guitar. It was expensive, but I have never regretted buying it. There's something very special about how the treble sounds. I've been into punk music all my childhood, and there's something in the sound of the pickups that is very particular to the kind of things I listen to."



Photo: Shervin Lainez



RACHEL ECKROTH

Keyboardist Rachel Eckroth's projects have included the jazz trio Antelog, backup vocals and keys for KT Tunstall, and playing in the house band for NBC-TV's *The Meredith Vieira Show*. Eckroth also served as music director for the Women's March in Washington, DC in 2017. Her latest solo release, *When It Falls*, is out now. When

we spoke, she was gearing up for a tour with Rufus Wainwright.

"My budget pick would be the Avalanche Run pedal by EarthQuaker Devices," Eckroth says. "This is a super fun reverb and delay pedal that includes tap tempo and other features like Reverse and Tails mode, which lets the sound naturally fade after the effect is switched off. I love it because it can be used with any electric instrument; pedals are not just for guitarists anymore."

"My 'sky's the limit' gift would have to be the Moog System 35. This giant five-oscillator modular synth has an optional keyboard attachment — the 960 Sequencer Complement B. I always find myself daydreaming about having an entire modular synth wall in my house. Moog are only making 35 of these total, so you should get yours today!"



Photo: Reynald Philipp



ZIMMER

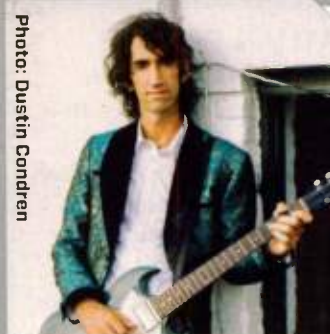
Parisian DJ and producer Zimmer is best known as a remixer for artists such as Wunder Wunder, Brooke Fraser, Gallant and others. He is currently on a headlining tour of the US, supporting his EP *Ceremony*. Zimmer's affordable selection is the u-he Diva. "This has been my go-to synth for the past five years," Zimmer says. "With just this and a DAW, you can make beautiful music."

It emulates all the classics — Juno, Moog, Prophet — and you can switch the components. Fifty percent of the sounds in my music come from this.

"If money was not an issue, I'd dream of having a pair of Barefoot MicroMain 27 monitors. To me, they are the holy grail of studio speakers. There's no better feeling than hearing music with perfect speakers in a perfectly treated room."



Photo: Dustin Condren



DELICATE STEVE

Delicate Steve is the project name of musician/songwriter Steve Marion, whose first album of experimental world sounds commanded the admiration of other artists as well as fans when it was released on David Byrne's Luaka Bop label in 2011. Since then, Marion has performed on albums by Yeasayer, People Get Ready, and Paul Simon, to name a few. This holiday

season sees the release of Delicate Steve's *The Christmas Album*.

"I was trying to think of a gift that would interest guitarists of all styles, skill level, age, gender, race, religion, and I could think of only one gift: Master Chunyi Lin's *Butterfly Guided Meditation*," Steve says. "By using this guided audio meditation, you will be able to remove any negative energy and/or blockages in your body, sending the energy back into the universe and helping to make you a better guitarist and a better human being."

Marion's fantasy gift is the Carter Custom Instruments' Little Gent. "I was lucky enough to be gifted this guitar by master builder Jeremy Carter in 2012. I used it that night when Delicate Steve performed at Terminal 5 in New York. It went on to replace the Fender Mexican Strat — that was given to me as a Christmas present in 1999 by my parents — as my main live guitar."





KRISTIAN BUSH

A singer, songwriter, musician, and producer, Kristian Bush is best known as half of the Grammy-winning country duo Sugarland. Bush has also released a solo album, *Southern Gravity* (2015) and has produced other acts, including Lindsay Ell, Matt Nathanson, and Little Big Town.

Bush's budget pick is the Figure app from Propellerhead. "I use this daily to write songs," he says. "The interface is so intuitive that I can get into a song quickly and use my creative time on melodies and lyrics rather than fighting to make a track."

"If money were to be no object, I would give someone the Elektron Digitakt digital drum sampler. I use this to build entire landscapes of rhythm that sound unique. I can sample sounds around myself and then tune them, destroy them, filter them, even play melodies with them. I play it like an instrument even though it is a drum machine. I also love the way that the buttons feel under my fingers; the weight it has is perfect."



ALICE OFFLEY

Keyboardist Alice Offley is currently writing and recording a keyboard-based pop album after a stint playing keys and bass on tour with Tom Bailey of the Thompson Twins. When we spoke, Offley was also getting ready to go back on the road with Bailey and Culture Club.

"I took the iRig Keys 37 Pro on tour so I could practice and write in my downtime, and this would be a nice affordable gift," Offley says. "It's compatible with iOS, so it's therefore very easy to whip out and power via my iPhone. It can fit into a carry-on bag, has velocity-sensitive keys, and is the widest octave range available on a mobile keyboard of its size, so you can actually play with both hands. It also has the option for a sustain pedal, so it allows some nice expressive playing."

Offley dreams big for her pie-in-the-sky idea: "I would build an extension to my house to have my own studio," she says. "At the moment I set up and record wherever I am — kitchen, bedroom, hotel room — and it is great to be portable, but it would be such a luxury to be permanently set up in my own musical space, to write and record in an optimum environment."



Photo: Mason Fairley

JONATHAN PEARCE

Jonathan Pearce is a member of the smart pop/rock group The Beths. He is also a key fixture in the musical landscape in his hometown of Auckland, New Zealand, where his studio is a haven for other musicians. Pearce recently produced EPs for Fazerdaze and Tiny Ruins, and his next production credit will be on the second album by

acclaimed songwriter Anthonie Tonnon.

Pearce says that an inexpensive pair of studio slippers is on his Christmas list — "the soft towel ones you get at good hotels. I just think it would be lovely for the musicians to come into the studio, kick their boots off into a closet, and pull on nice warm slippers! I might also need to get some covered-toe drummer's slippers," he says.

At the other end of the budget, Pearce hopes Santa brings him an API rack of Rupert Neve Designs 542 Tape Emulators and DIYRE Colour Palettes.

"The more I learn as a producer and mixer, the less compression I'm using," Pearce says. "Music with 'internal' dynamics — air between notes in a phrase, emphasis on a groove or lyric — that's the good stuff! But sometimes a more dynamic mix can be fragile to my ears and it's hard to make a lead part feel close or put the limelight on it without squishing it. So, I'm turning more to distortion and saturation. I seem to use Fabfilter's Saturn on almost every track of a mix, and I've daydreamed about how inspiring the sounds would be if I could do some of that processing live in the room."



Photo: Tim Sekiguchi

TY BAILIE

Keyboardist Ty Bailie is an LA-based sideman who is always in demand for his versatility on B3, piano, and a host of electronic instruments. A member of pop star Katy Perry's touring band, Bailie sent us through his shopping list between gigs around Australia.

"For my budget pick, I have to go with a Nord Stage 3 Compact," says Bailie. "It's not exactly friendly to every budget, but for the flexibility, playability, and quality of sounds that this hot red machine provides, it's a steal."

"My big-budget dream gift would be a greasy, gutsy, creamy 1959 Hammond B3 and Leslie, just like the ones that were in my van when it was stolen while I was out on tour. In fact, let's throw a cherry 1970-something Chevy van in with that order, so the giftee can take the B3 and Leslie out of the studio and out on the town in style from time to time!"





YONI WOLF

We covered indie and hip-hop artist Yoni Wolf on *emusician.com* this year when he produced and mixed a terrific young Cincinnati band called The Ophelias. However, Wolf is best-known by his project name WHY?, whose latest album, *Moh Lhean*, is out now on Joyful Noise records.

Wolf thinks the perfect gift for the giver with little or no budget is a “Craigslist piano, if there’s space. You can find used uprights online any time for one or two hundred dollars, or free. If I’m writing a pop song, a melodic song, I’ll always put together the chords on the piano, because it’s the perfect instrument for writing and arranging. The real gift would be moving it, actually! So, if you’re a big strong person, that’s the greatest gift you could give a musician.

“On an unlimited budget, I’d want some big, expensive compressor. I feel like with vintage units that only have one or two knobs, they instantly sound good and carve out their own space; it’s very difficult to get that with plugins. I’m not a purist. I use computers all the time. But if I had my preference, I would have some of those boxes and I’d work on tape with a big Neve board.”



JOE REINHART

Hop Along guitarist Joe Reinhart produced and engineered the band’s debut album *Bark Your Head Off, Dog*, which was released earlier this year on Saddle Creek Records. Hop Along finished a headlining tour with a performance at Pitchfork OctFest in September before joining The Decemberists’ European tour.

Reinhart recommends buying each musician on your list a pair of Vater earplugs. “They come with a carrying case that fits effortlessly snug in the weed pocket of most jeans,” Reinhart points out. “Miraculously, I’ve had mine for seven years.”

On the spendy side, Reinhart wouldn’t mind a Neve BCM10/2 mixing console. “It has a vintage look and sound that meets modern workflow demands,” he says. “Nobody would be bummed to have this as the centerpiece of their studio or bedroom. Mom, if you’re reading this, I was a good boy this year. Mostly.”



CLYDE LAWRENCE

Clyde Lawrence is one half of the brother-sister duo Lawrence. The pair wrote the songs on their debut release in their family home — hence the album title *Living Room*. Clyde has also had a career as a successful composer whose music has been used in commercial films such as *Miss Congeniality* (2000), *Music and*

Lyrics (2007), *The Rewrite* (2014), and *Landline* (2017).

“One item that every artist or producer should have is a Universal Audio interface,” Clyde says of his more affordable gift. “Most of our music is recorded into a UAD Apollo. It sounds great and it allows you to tie into Universal Audio’s amazing network of plugins. It’s super-easy to use, and it can fit in a backpack. They just came out with a new version called Arrow, which is USB-powered so you can use it on-the-go without a power source.

“If budget and space aren’t a concern, I’d love to get a Roland V-Drums electronic drum kit,” Clyde continues. “*Living Room* combines live and digital elements, and being able to use a kit like this, rather than a standard sampling pad or a laptop, to record a performance of drum samples using human feel, would be awesome.”



JACK SPLASH

Producer, songwriter, and musician Jack Splash has provided writing and production for scores of top-selling artists, including Alicia Keys, Kendrick Lamar, John Legend, Jennifer Hudson, and many more. Recently, Jack produced the new album by St. Paul and the Broken Bones, *Young Sick Camellia*, which combines classic soul

with inventive synth sounds and effects.

For the budget-minded shopper, Jack recommends the Roland TR-8S drum machine. “I have an original 808, but I love this newly updated Roland drum machine because it gives you the classic sounds and vibe of the original TR-808 and 909. It also gives you the ability to import and customize your own drum sounds like you would do with a classic MPC. In essence, you get the unique workflow of a classic step sequencer drum machine but with the ability to import any wild sounds you want.”

His dream gift is a Barefoot Masterstack 12. “I’ve had my eyes — and ears — on these for quite some time. Their sound is impeccable. You can make amazing music on crappy monitors, but then, it’s also very nice to make magic on some breathtaking beauties like these!”



Photo: Ville Akeeli Juurikkala



BILLY MARTIN

Guitarist and keyboardist Billy Martin is a founding member of the award-winning rock band Good Charlotte. The band's seventh studio album, *Generation Rx*, was released in September.

For the shopper with a day job, Martin recommends the Native Instruments Kontrol S25 keyboard.

"I think NI is at the top of the game for electronic music production," Martin says. "This keyboard integrates so nicely with your DAW and plugins. At the size and the price, it's perfect for studio sessions, live shows, or recording songs on the road."

Martin's high-end pick is a perennial favorite, the Neumann U87 microphone. "We used this mic to track acoustic guitars on our new album," he says. "I remember sitting in the booth with headphones on. Right from the first strum it sounded amazing! It's a really nice microphone where the sound is worth the price."



Photo: Travis Keller



JOE CARDAMONE

Joe Cardamone is a former member of rock band The Icarus Line. After that band broke up in 2015, Cardamone built a recording studio in Burbank where he cut records with Ariel Pink, The Cult and others. His latest project, *The Holy War*, released a mixtape and a companion film in August.

"One piece that goes everywhere with me is the Apogee Groove," Cardamone says of his affordable gift. "It's a mini USB DAC that dwarfs the fidelity of what comes straight out of the laptop jack. Since I have tracks on playback for my set, I use the Groove to make sure the low end is imaged properly in all kinds of situations. Low end is one of the first things to get muddy when playback is done direct through the laptop, and this little guy handles that situation with class."

"For bigger spenders, the Akai MPC Live has become an indispensable tool in music creation for me. It comes bundled with MPC software, which can be used with or without hardware. Live is well-built and can do just about anything a sampler should, and it runs standalone on batteries. You could produce music in any possible situation with just a pair of headphones."



Photo: Tall James Photography



DAVID FOUNTAIN

David Fountain joined rock band Murder by Death about five years ago. The group released their sixth album, *The Other Shore*, in June on Bloodshot Records and then embarked on a fall tour along with labelmate William Elliott Whitmore.

Fountain suggests that any recordist or musician could make good use of a

Weller WLC100 Soldering Station. "It's not the most glamorous purchase, but it's an endlessly useful tool," he says. "Make your own patch cables! Build your own effects pedals! Do your own repairs! With some experience, you can even build high-quality pres or a guitar amp for a fraction of the cost."

Fountain's top-dollar gift suggestion is the Eventide Space. "Reverb is a complex part of any effects chain," he observes. "It allows you to define the 'where' of your sound, which can be hugely important, obviously."

"The Eventide Space is a studio-quality reverb unit that can also fit nicely on a pedalboard, and its 'Black Hole' algorithm is what really sets it apart from its competitors."



Photo: Frank Ockenfels



BILLY RAFFOUL

Singer/songwriter Billy Raffoul began teaching himself how to play guitar after receiving one as a gift on his tenth birthday. Over a lifetime of music making, he's developed a singular voice as a writer and performer. Raffoul's debut EP, *1975*, has earned him critical praise as well as slots at major festivals and summer

tour dates opening for NEEDTOBREATHE.

For the budget-conscious, Raffoul says, "My band and I swear by the Telefunken M80. I've been using it on the road as my vocal microphone for over a year. It can really take a beating, and when listening back to the recording of our set from the night before, we are always pleasantly surprised by the sound of this dynamic mic. It is a workhorse that won't break the bank."

"If money isn't an issue, the Klon Centaur guitar overdrive pedal has lived up to its reputation for me. I first came across one while recording in the studio a few years back. When taking the recordings on the road, I knew I needed to get the real thing. An overdrive like no other I've come across."





THE SHAPE OF THINGS TO DRUM

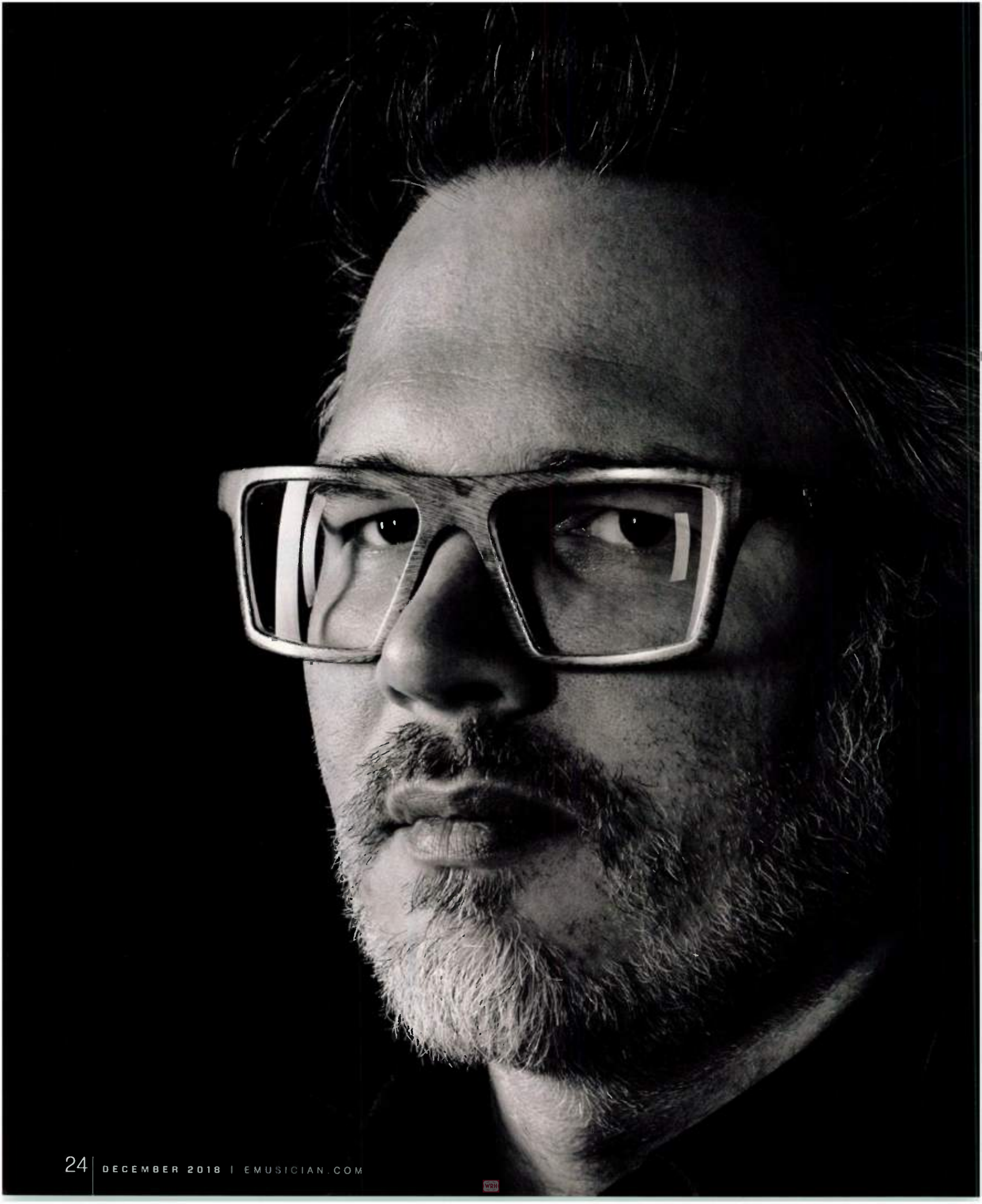
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“All my life revolves
around making music”

Markus Reuter: Progressive Renaissance Man

Catching up with the next generation
in King Crimson’s family tree

BY GEARY YELTON

German guitarist Markus Reuter is a busy guy. At the age of 46, he’s enjoyed a career most musicians would envy. Since studying with King Crimson founder Robert Fripp as a teenager, music in all its guises — whether playing, composing, producing, distributing, or teaching — has consumed his every waking moment. What’s more, his diverse musical interests cast a wide net, encompassing genres ranging from ambient electronic and experimental avant-garde to progressive rock and contemporary chamber music.

Markus began his musical training at the age of three, studying piano and, later, guitar and mandolin. He began composing by the time he was 12 and went on to privately study music theory and composition. His primary instrument now is the 8-string Touch Guitar, a direct descendent of the Chapman Stick that’s played by tapping on the strings. It’s an instrument he designed and patented about ten years ago and actively teaches others to play.

Since the beginning of 2017, Markus has contributed to some 20-odd records, including four solo albums, an album with Crimson

drummer Pat Mastelotto, two with synthesist Ian Boddy, and three with synthesist Robert Rich. He’s also a member of prog-rock trio Stick Men, alongside Mastelotto and need-to-know bassist Tony Levin. As I write this, the trio is touring South and Central America with Crimson alumnus and violinist David Cross. In addition, Markus is a regular member of the Crimson ProjeKCt, a King Crimson spinoff playing mostly Crimson material, as well as improvisational electronic loop duo centrozoon. The industrious musician is credited on well over 100 records, spanning the past two decades, and when he’s not

composing and creating his own music, he spends his spare time (if you can call it that!) running record company, Iapetus Media.

You've released so much music in the past year or so. How do you manage to be so productive?

I'm a professional musician who works on music all the time. All my life revolves around making music. With current music technology [enabling musicians to] capture performances so easily, it's quite possible to create a lot of material. Obviously, the quality of the material needs to be all right, but I'm lucky that I can play with wonderful musicians who play wonderfully. There's not much editing involved, so we put out a lot of live recordings.

There's this project, FACE with Pat Mastelotto, that had been in the works for ten years [when we released an album last year], so that was something that took a long time. Last year, 2017, was special in the sense that a lot of stuff came together. A lot of projects were completed in late 2016 and then released in 2017. I'm not always that productive, but it's just like when you're working in a field and you have acquired the skills to be able to produce quality stuff, then you get lots of product.

You studied with Robert Fripp at Guitar Craft in the 90s. What can you tell us about that experience?

It was just the right thing for me. It was a perfect match. When I first met Robert, I had no idea how much of a guru he was for other people, so I always had a very straightforward relationship with him. Maybe it's because I never really put him on a pedestal or anything. He was just my teacher, he passed on a lot to me, and I'm very, very grateful for that. First of all, I've learned a lot about the kind of music he was making and is still making and his process. But the main influence was actually the approach to practicing a musical instrument. That particular approach is probably too much to go into

decided I wanted to pick up something that other people were not doing and then applied very strict principles to my practice. This might sound funny to some, but the principles go beyond music.

The way that I approached the Stick, and now the Touch Guitar, is more as a stage where my fingers are dancers, so to say, that want to be in a position or are capable of going to any note on that stage at any time. So it was never about replicating any particular sound or any particular style of music, but just the freedom to move within the space of music. I think that's very much what defines my overall approach and my career, that I can work in almost any context. Whether I want to do that, that's another question, but I'm interested in gathering information about all sorts of music, all sorts of production techniques. In a way, I was inspired a lot by Mike Oldfield as an instrumentalist and a producer, like a self-made one-man band — musician and producer. I really enjoyed that. But Robert Fripp gave me the tools to actually get there.

How did the Crimson ProjeKt come about?

As far as I can remember, Adrian Belew had asked Robert Fripp to tour on the thirtieth anniversary of [King Crimson's] *Discipline* album. Robert was retired at that point and didn't want to do it. Then Adrian and Tony had the idea to put their respective trios, Stick Men and Adrian Belew Power Trio, together to go on a tour. We did that. A third of the set was Adrian, a third of the set was Stick Men, and another third was Crimson material. That tour was called Two of a Perfect Trio. After that, when there were requests for that band to continue, Tony was talking with Robert to find a name, and it was Robert Fripp who actually suggested the name Crimson ProjeKt. We had an offer to open for Dream Theater. That was the summer of 2012, and that's really when the Crimson ProjeKt became the Crimson ProjeKt.

"The way that I approached the Stick and now the Touch Guitar is more as a stage where my fingers are dancers..."

now, and it has really defined how I work generally. It's been a great foundation for my career.

How did he influence your playing style and your career?

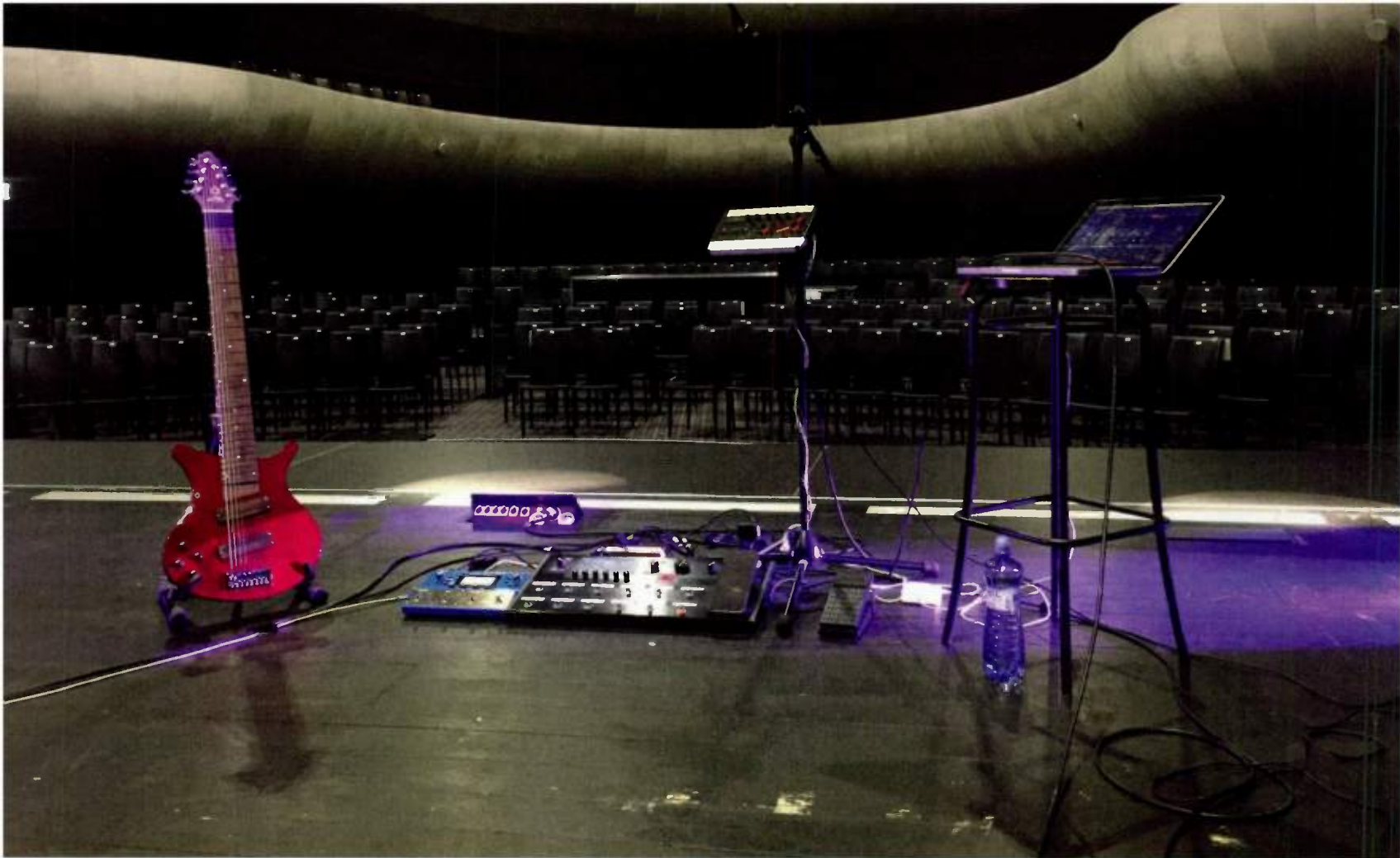
When I had my first one-on-one lesson with Robert Fripp, I asked him about the Chapman Stick. I was interested in it because I had seen Tony Levin play it. Robert Fripp said to me that it's a very interesting instrument and he would even like to play it. He said if he were starting over, he would try to play the Stick. I was maybe 18 or 19 years old at that point. I

How did Stick Men get started?

Stick Men was originally an album project by Tony that Pat contributed drums to, so it basically started from that album. Another guy called Michael Bernier was in the band for, I think, one-and-a-half years or two before I joined. So I can't really tell you much about the real beginnings. But when Michael left the band, I got recommended to Tony by the California Guitar Trio and by Pat, obviously, because I had worked with Pat before. We got together, I think it was September 2010, and we had a really great time at Pat's place in Austin, Texas. On



Reuter with his distinctive Touch Guitar - a direct descendent of the famous Chapman Stick



that very first day we met, we wrote some of the biggest hits, let's say, that we still play. So we had a great chemistry. It was just a really, really wonderful opportunity for me, and I still enjoy very much playing with those guys.

What can you tell us about your stage rig?

My stage rig, traditionally, has always changed because I was always looking for the perfect solution. Once I started touring with Stick Men, I realized that I have to boil it down to the essentials, especially as there's no way I could take an amp on the road with that kind of project. So that's why, in the end now, my current rig is the Line 6 Helix in combination with the Boss SY-300 guitar synth. Those are the main tools I'm using to create the sounds. I have to say, it's almost perfect as a setup for any guitarist, really. It's a perfect combination of things to get all the sounds you need.

In addition to that, I do use a laptop for looping, for live looping. But I usually do ambient looping there. I don't build my own backing tracks or something like that. It's almost like I see the guitar as the input device for my pedalboard, and the laptop and I can be like my own one-man orchestra. That's what I was always kind of looking for. The equipment that I carry around on this tour, it's maybe like 20 kilos. It's just wonderful how technology nowadays enables me to make first-class

recordings on any stage or bedroom in the world.

Is the gear you use in the studio different from what you use onstage?

Yes, very much so. In the studio, I don't use any digital. I mean, obviously I use digital effects sometimes, but I'm not using the Helix in the studio, for example. For me, the Helix is the best solution to bring all the sounds that I come up with for production, and then I re-create that in the Helix. But when I'm working in the studio, I like to work just with pedals, with small, simple pedals. I have a big collection of them, and I like to always combine them and recombine them in new ways to get new sounds.

Do you ever use plugins for effects processing, or are you strictly a stompbox kind of guy?

In the studio when I produce, it's always a combination of both. But whenever I need, let's say, a special sound or even if I'm trying to solve a sonic problem, I usually like to go and re-amp something, rather than try to fix it with plugins. Even though, nowadays, it's not a big difference anymore, it's just more of a psychological thing for me. When I'm re-amping something, I always have my hands on the knobs, and I can tweak stuff in real time. That, I think, is very important. As we know, it's possible to do the same thing with any plugin, but somehow

having a physical object in your hands is just so much more intuitive.

Are there a lot of plugins that you use consistently?

Oh, yeah, there are quite a few that I use consistently. The funny thing is that I hardly ever mix myself, because I still believe in dividing up the process, like composition, arrangement, recording, mixing, mastering. And I like working in teams. The software that I use every day is iZotope RX and Ableton Live. RX has become like my main audio player. I use it to fix and restore audio that I work with almost every day.

How do you use Ableton Live?

Ableton Live is my creative tool to compose. I have my live looping setup in Ableton Live. It's a very interesting setup that I'm using, which is basically a feedback matrix that's built around a couple loopers, and it's an evolving system. You play one sound into it, and at first it seems like the sound is repeating, but it's always changing. With each repeat, it's changed by the process, and that has become such an important part of everything I do in any context. Like, when I'm playing with Stick Men and there's a soundscape-y pad in the background, that's always coming from my looping setup in real time. That backdrop, that sound in the

Character

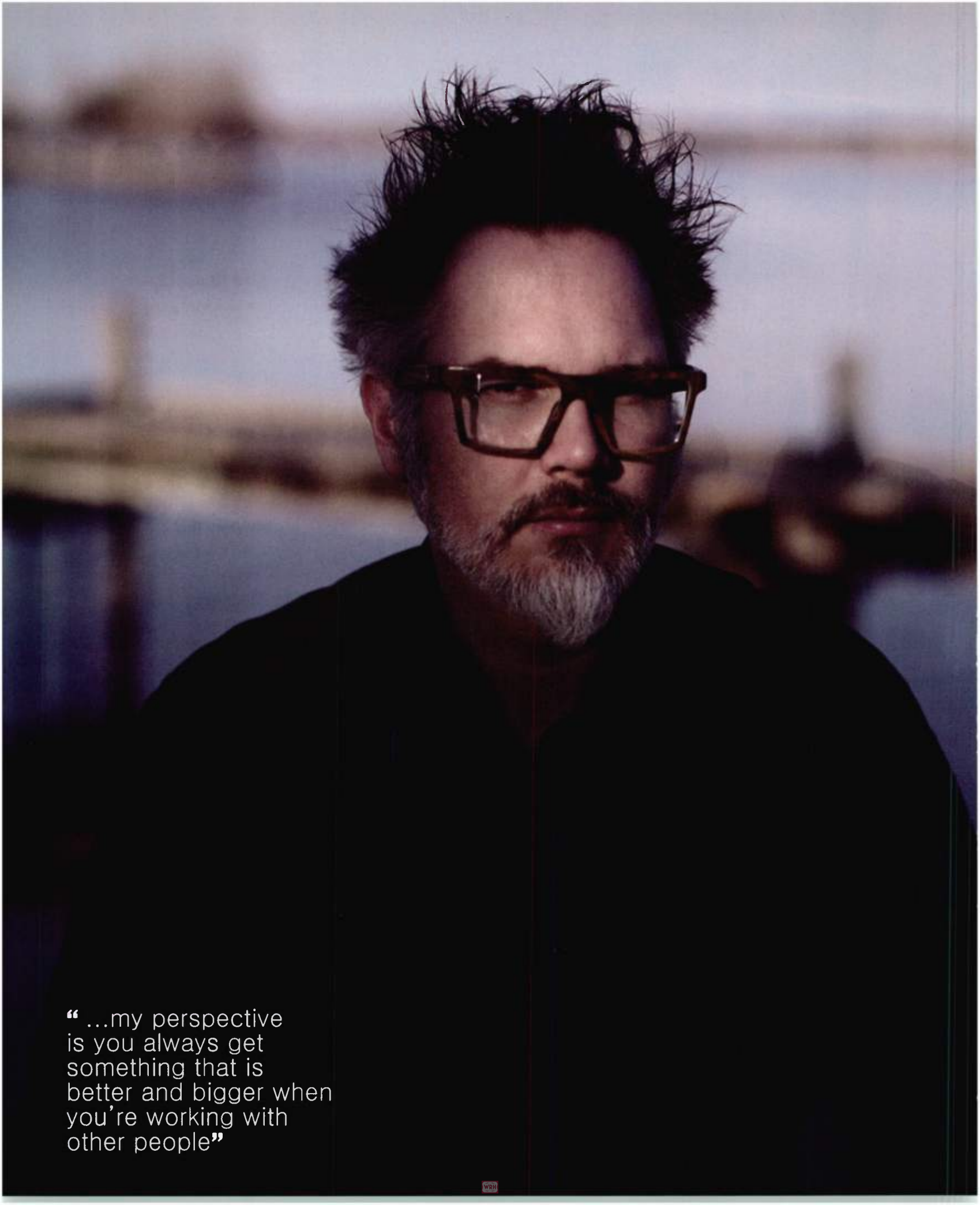
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“...my perspective
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other people”

back, is never static. It's always changing. In my solo performances or my recent performances with Robert Rich, I do that all the time. And situations when I play with other people, I even take their audio signals and mangle them with my system.

What do you most enjoy about working with synthesists like Ian Boddy or Robert Rich?

First of all, like I said, I really love working with other people because my perspective is you always get something that is better and bigger when you're working with other people. That opinion has changed slightly recently, but I still believe that it's just wonderful to have different perspectives represented in a piece of art. Ian Boddy was actually the first synthesist I worked with in that regard. That was in 1998. It was just wonderful to see what he could do using my source material, rather than using purely synthetic material. Back then, he was using the Akai samplers, and he was just filtering my guitar loops and cutting them up with his modular synths and stuff.

It's been just a wonderful and exciting journey for me to discover what you can do with — it's difficult to really find a good word for it. I don't just want to say technology because it's not just technology. It's also the approach, like the more traditional approach of actually plucking a string on a guitar. Electronic music can come together as one really exciting thing. A lot of the music that I put out under my own name sounds probably quite synthetic to people. However, it's all created from an organic source, and that's kind of fascinating to me. To bring different worlds together — and opposing worlds together — has always been my interest when it comes to music, musical styles, but also sounds.

What other hardware or software do you use for producing music?

Hardware, I don't really have any particular audio interface I use. I've been using MOTU interfaces for a long time now, and Focusrite interfaces. I mostly use Ableton to record, and like I said, RX has been my most important production tool. It's not that I can always capture perfect audio. I have left that idea behind, because I never had big budgets to even go into a studio. Do you remember [Syntrillium Software] Cool Edit?

Oh, yes.

Cool Edit and Cool Edit Pro were actually the first software I really got into in the mid-90s, and that was really my introduction to FFT files and de-noising and all that kind of stuff. It's always been just a fascinating idea to me that you can capture something that is on some level imperfect, but you can kind of polish it in a way that it works in a professional context. But at the same time, it retains

the original idea and intention perfectly. I still work quite a bit with those ideas. So whenever I'm producing, for example, I don't have people do dozens of overdubs, like maybe three or four, because I believe that performance gets psychologically compressed when you do too much of the same thing. I'd rather have the drummer make a few mistakes and then I fix the mistakes later, than to lose the spirit of the performance. Does that make any sense?

Absolutely. That makes perfect sense.

That's why RX has really become such an important

tool, because it allows me to have true recordings that I can polish to sound good.

Has your career so far turned out the way you thought it would?

Yeah. I have to say that I've always had this vision to get to a certain point at the age of 42, and yes, that worked out perfectly. I remember I did reach all the goals I had. That was like four years ago, and I had a little bit of a burnout crisis, and I'm now kind of getting back and finding new things. But yes, I think it's gone much better than I could have ever wished for and hoped for. ■



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String articulations

Using virtual strings to their fullest usually requires a little more knowledge about how your instrument works and the right techniques to get things moving

BY DAVE CLEWS

If you're new to string or brass arranging, the term 'articulation' may be unfamiliar. It describes the use of a different technique to play the instrument, achieving a particular sound or effect in the process.

With a violin, for example, there are many ways to play it — you can pick the strings with your fingers, play smoothly with the bow, bounce the back of the bow off the strings, and so on. Each of these techniques or articulations has a name, and can be indicated with symbols on a musical score to give the orchestra an idea of how to play the part.

When composing realistic orchestral

sounds in software, most samplers or ROMplers allow you to switch between different playing styles on the fly via MIDI, to quickly change the way the instrument is virtually 'played'.

If you're thinking of using one of the many commercially-available orchestral string libraries to create convincing-sounding string arrangements, it helps enormously if you're

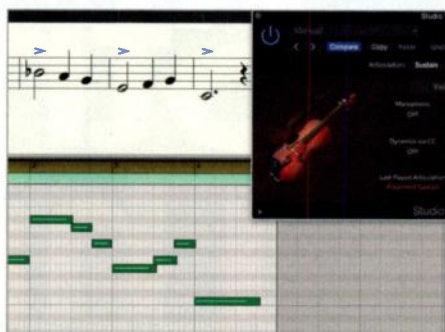
aware of what all the different articulations actually mean. Both brass and string instruments have their own articulation sets, but in this how-to tutorial, I'll focus solely on string articulations.

So, using the new Studio Strings instrument in Logic Pro X 10.4 and the ace Spitfire Audio Albion ONE string library, let's delve into the mysterious world of string articulations.

Step by step Exploring string articulations



1 When programming with a string library, you'll be able to choose your articulations, each reflecting a style or technique. The most commonly-used will probably be simple sustained notes, played smoothly with long, slow strokes of the bow as shown here. This might be called legato (smooth), sustain or arco, which simply means 'with the bow'.



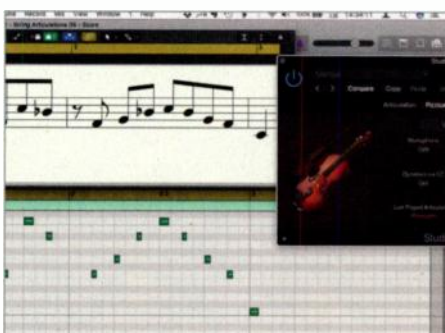
2 Accented notes are played louder than surrounding notes, and are marked on the staff by an open horizontal triangle pointing right. This is sometimes called accented sustain — not to be confused with marcato, where accented notes are played louder than they would be with a regular accent. The symbol for marcato is an open triangle pointing up.



3 Staccato notes are played shortened, with a sharp attack, resulting in a bouncy, spiky sound. The symbol for staccato is a dot placed above or below the head of the note on the staff. When programming strings, this articulation is good for both rapid runs of notes where the attack of each note needs to be well-defined, or for spaced-out, stabby string parts.



4 Spiccato (also known as staccatissimo) is an even shorter, spikier version of staccato, where the notes are even more clipped and shortened in length, and are played by bouncing the bow quickly and lightly off the strings. On the staff, spiccato parts replace the staccato dot with a small, filled-in, downward-pointing triangle above or below the head of the note.



5 When you pluck with your fingers, it's known as pizzicato — one of the most familiar string articulations. Pizzicato is notated on a score simply by adding the abbreviation pizz above the notes. When programming with this articulation selected, MIDI note length is usually irrelevant, as you're simply triggering a short pluck sample with each note.



6 Col legno is an instruction to play the part with the wooden, back part of the bow, resulting in a bouncy, much more percussive part than you'd get with a regular bowing style. Here we see it selected in Albion ONE. It's effective in movie scores, as it's quite an unusual sound — ideal for conveying mystery and tension with insistent rhythms.

PRO TIPS

ARTICULATION REVELATION

Certain apps or libraries let you attach different articulations to different notes within the same part. Logic Pro 10.4's Studio Strings, for example, lets you assign articulations on a per-note basis. With this setup, you can drop a bar of pizzicato into an otherwise sustained legato part, or select one note to be played as a tremolo. This makes programming easier and keeps your project tidy, as you needn't load a separate instrument instance per articulation.

GLISSANDO

Glissando is a smooth transition of pitch from one note to another. As a string library articulation, it's open to interpretation depending on the library — the glissando in Logic Pro, for example, slides down a whole tone before sustaining on the note you're playing. So, if you play a C note, the resulting sound will start on a D note, then slide down to the adjacent C note and sustain there.

RECOMMENDED LISTENING



REGINA SPEKTOR "FIDELITY"

Eighth-note pizzicato string chords that are used to full effect throughout.

▶ bit.ly/RegFidel



BIFFY CLYRO "THAT GOLDEN RULE"

Epic staccato strings round off this noisy rock anthem spectacularly.

▶ bit.ly/BiffyGolden



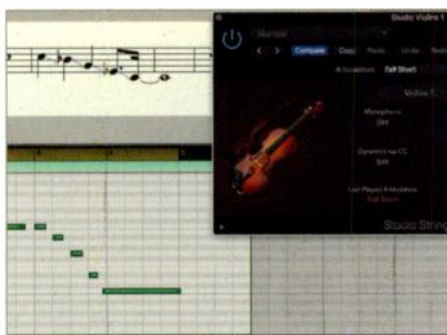
7 Con sordino literally means "played with a mute," a sound achieved on a violin with a small rubber disc with holes for A and D strings to pass through. This clips on the bridge, reducing vibration and producing a softer, more muted sound. Albion ONE's version of this articulation equates more or less to a quieter version of the sustain or legato articulation.



8 With stringed instruments, tremolo is a short, rapid change of direction in bowing, giving a stream of very short bowed notes. The shuddery effect this produces is especially good for building tension in movie scores, among other things. The notation used for tremolo is a series of short, angled straight lines stacked onto the stem of the affected note, as shown.



9 Trills are created when you switch quickly between adjacent notes on the fingerboard. When notes you're flicking between are an interval of a semitone apart in pitch, you get a semitone trill; with two semitones, you get a whole-tone trill. You don't have to program alternating notes individually, as many libraries include ready-sampled trills.



10 A fall is what happens when you slide your hand along the string towards the headstock, resulting in a downward slide or "falloff" in pitch — great for disco string riffs! Since the samples aren't dependent on the song tempo, articulation menus in sample libraries often offer a choice between short falls and long falls, so you can pick the one that best fits your project.



11 Fortepiano (indicated by the letters *fp* above the staff) indicates that a note or passage should be played loudly, then softly. Logic's interpretation equates to a sort of swell, where the initial attack of the note is loud, followed by an immediate drop in volume and a subsequent rise back up again. You have slow and fast fortepiano to pick from here.



12 This showcases the articulations I've described, using a combo of Albion ONE and Logic's own Studio Strings. Over a strings-only intro, I've started with col legnos, then a bar of tremolo to introduce a spiccato section. Then it's sustains, a semitone trill, some pizzicatos and a fortepiano swell, before the main spiccato riff comes in over the full track.

Additive Sweeps

Using harmonic motion to animate pads and leads

BY FRANCIS PREVE

Ableton's Operator is incredibly powerful when it comes to FM and basic additive/subtractive techniques, but like several other additive softsynths, there's no way to animate the harmonics for morphing effects. Fortunately, there's a workaround that lets users create their own smoothly morphing harmonic structures. It just requires a few extra steps, but the result is shimmering, animated textures that are well-suited for unique pads and leads.

STEP 1

Begin by creating a MIDI track with Operator (or another additive synth) as its instrument. Start with the factory default patch and experiment with various mouse, finger, or trackpad gestures to hear the results of different sweep techniques.

[Figure 1a or 1b]



Fig. 1a



Fig. 1b

STEP 2

Most basic samplers, including Ableton Simpler, use middle C as the root key for key assignments. For newcomers, the 'root key' is the note at which the sample plays back at its original pitch. So, in order to create a sweep that will import directly into Simpler, create a sequence clip that contains a sustained middle C. Eight measures at 100bpm should be adequate for everything except extended legato pads—and of course, looping the sample is also an option. This sequence will sustain the note while you use your cursor to manipulate the harmonics. [Figure 2]

STEP 3

With the sequence in place and a bit of rehearsal for your sweep, route the output of the Operator track directly to the input of an audio track in Ableton [Figure 3]. This will let you quickly record multiple takes of your sweeps until you capture one that inspires you. Labeling your tracks in all caps with obvious titles like "Source" and "Record" will speed things up by making their names easy to find as you use the menu pull-downs for routing. From there, record a few sweeps.

STEP 4

Once you've animated your harmonics and recorded the result, create an additional track containing Simpler (or an equivalent sampler in your DAW of choice) and drag the recorded audio clip directly into its

sample area [Figure 4]. Now your recorded harmonic motion will be played as a sample. Note that Simpler also lets you warp this swept motion, so any rhythmic or cyclical changes can be retained across the keyboard. Each Warp mode has its own strengths (Beats is excellent for simple rhythmic material) so experiment with the various options until you find a mode that suits your audio.

From there on out, you can go ahead and use Simpler's synthesis tools—like filtering, envelopes, and LFO—in order to further sculpt the sound before adding effects. If you're creating a pad texture, you could consider applying chorus and reverb to the sound, and then grouping the final configuration into an Instrument Rack before saving it to your user library for future use. ■



Fig. 3



Fig. 4

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PLAYING TECHNIQUES

Organ Playing Styles

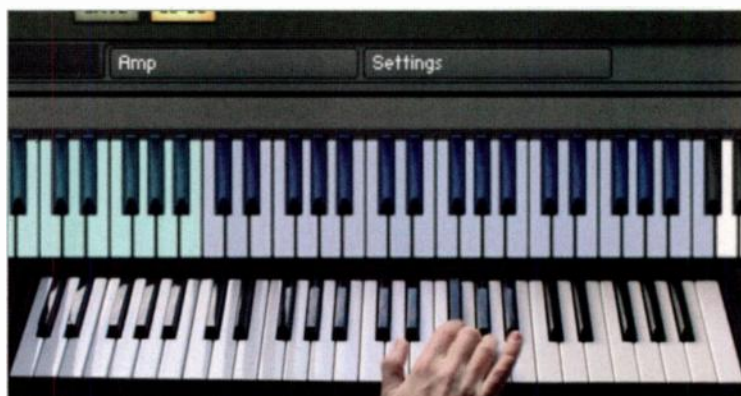
The techniques used by the musicians of yesteryear, all directly from your DAW

Thanks to the genius of software developers, who've managed the mind-boggling task of replicating almost every vintage keyboard ever made, in plugin form that can be loaded into a DAW and conjured up with the click of a mouse, today's computer muso has never had it so good when it comes to getting their hands on pretty much any exotic or esoteric keyboard from days of yore. Manufacturers such as Native Instruments, Arturia and Modartt have come up with brilliant products like *Komplete*, *Analog Lab* and *Pianoteq* to name but a few, meaning that the entire gamut of sought-after keyboard sounds from Wurlitzers and Rhodes to Mellotrons and Minimoogs are accessible at a fraction of the cost of the real thing. If you want the real shimmering tones of a Hammond B3 organ through a Leslie rotary speaker, or a Stevie Wonder clav sound, you got it! However, for a really authentic sound, it pays to know a little bit about how each would actually be played, as they each demand their own different piano/keyboard technique.

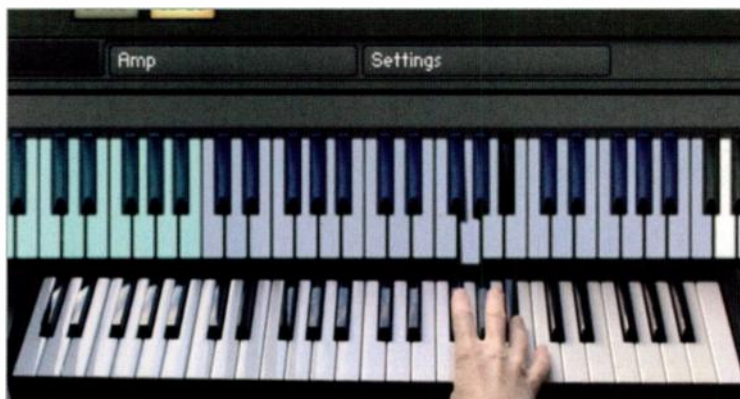
Step by step Playing techniques for virtual organ instruments



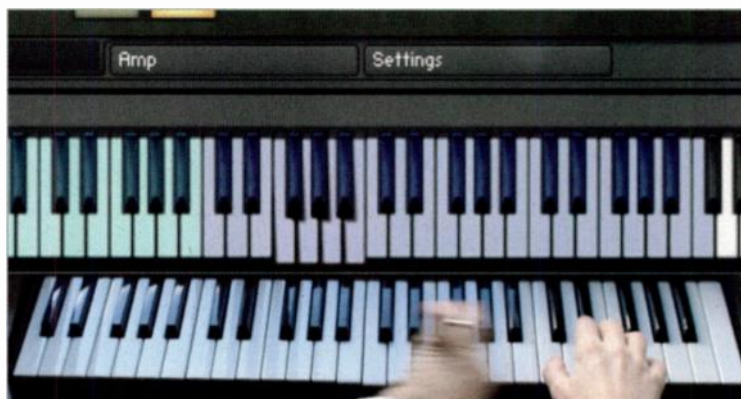
1 Organ keys are like on/off switches — the only way to make them sustain is to hold them down. The sustain pedal is instead often used to switch the speed of the Leslie speaker effect. Above is an NI Vintage Organs B3 Kontakt Player preset. To play it, try just playing sustained chords on your virtual manual [aka your keyboard] while switching speaker speeds with the pedal.



2 Organs have no pitchbend feature, so to emulate guitar strings being bent, organ players started including grace notes, rolls and slurs into their playing. To play a grace note, quickly flick the note one semitone to the left of your target note, using the finger to the left of the one you're about to use to play the main note.



3 This approach blends well with staccato, funky, rhythmic chops, particularly when using the sharpened fourth degree of the minor blues scale as the grace note, sliding from there onto the fifth. Combine this with a held-down flattened seventh, and you have the beginnings of a classic organ riff.



4 Another classic organ technique is the glissando, achieved by running your hand up and down the keys. You can use the side of your fingers or the back of your hand for this, but the trick is to merge it smoothly into whatever follows. Here, we're sliding up the keyboard with the left hand, hitting a pre-shaped C minor chord (C, Eb, G) with the right.

Controller Corner: Setting up your MIDI knobs and faders

Get to grips with your virtual synthesizer's toggles and dials

When synthesizers first appeared, the thing that players loved most — apart from their sound, obviously — was their adjustability. Those rows of knobs and buttons on the front panel just itched to be messed with during a performance. The modern computer-based equivalents of analog synths are much less tactile by comparison. Moving virtual knobs on screen with a mouse just isn't the same — not to mention tricky to accomplish in the middle of a solo.

Luckily, controller keyboard manufacturers have caught on, and many models now sport an array of user-assignable hardware controls that can convert your software's flat, virtual control panel into a tweakable, hands-on experience.

The controls on your keyboard will most likely fall into three main types: rotary

encoders, faders and switches. If you need to adjust within a set range of values, a fader is a good bet. However, if the current parameter setting differs from the fader's physical position, there may be a big jump in values when you move it. Conversely, if you need to adjust settings without a big jump, a rotary

encoder will do the trick. Meanwhile, switches are more suited to on/off controls like mute.

Here's how to set up the knobs and faders on your controller so that you can use them with ease, not just to perform and change sounds in real time, but to record those changes into your DAW for posterity.

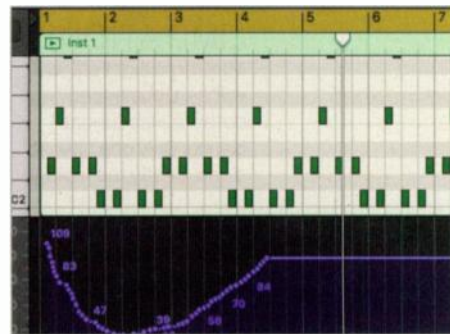
Step by step Assigning MIDI knobs to software parameters



1 Let's look at how to assign a hardware control on your controller keyboard to a particular software synth parameter. We're going to assign a softsynth's filter cutoff to a rotary encoder on our Akai MPK249. To begin, load an instance of your preferred softsynth into your DAW. Here's u-he's Bazille.

2 Click the cog icon in the upper right corner to enter the MIDI CC Learn mode, in which we can match the MIDI controller messages transmitted by hardware controls to any parameter that's illuminated green. We want to assign filter cutoff, so click the filter cutoff knob in your softsynth's central filter panel.

3 Next, move the desired control on your device to set up the link. Doing this lets the synth know to map the controller message transmitted by the knob you just moved to the parameter you selected. If you play the sound and wiggle the control, you'll see the filter opening and closing accordingly.



4 As another example, here's how to do the same thing in Native Instruments Massive. It's a similar approach, but this time each control has its own separate 'learn' mode, as opposed to a global mode for the entire synth. In this case, simply right-click on the control you want to assign and select MIDI Learn from its pop-up menu.

5 Again, wiggle the control you want to use on your device for that parameter. Here, we're assigning one of the macros in the 1991 preset to a rotary encoder on the Akai MPK249. If your controller has enough encoders, try assigning all eight macros to a separate control and see what kind of fun you can have, tweaking them as you play.

6 Once assigned, you can record the changes into your DAW as automation, meaning that they'll be played back in all their glory. This is such an easy way to get movement into your tracks that once you've worked out how to assign your favourite controls in your favourite synths, you'll never want to go back to static sounds again!

The Prophet X combines lots of multisampled content, DSP-generated waveforms, and an analog low-pass filter with a slick user interface



SEQUENTIAL

Prophet X

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LATEST
FLAGSHIP IS HIS
MOST POWERFUL
SYNTH YET

BY GEARY YELTON

STRENGTHS

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LIMITATIONS

Maximum eight stereo voices. Unbalanced outputs. Headphone issues. Only one filter slope. Costly technology.

\$3,999.

www.sequential.com

Combining algorithmic oscillators with sample playback, the Prophet X is only the second new synthesizer since 1987 to bear the Sequential moniker. It contains a 256GB solid-state drive (SSD) with 150GB of 16-bit, 48 kHz factory samples onboard, but it is neither a sampler nor a traditional ROMpler.

Soundware developer 8DIO supplied all the sampled content, which runs the gamut from acoustic and electronic instruments to unique sound effects and atmospheres. Everything else about the Prophet X makes it a subtractive synthesizer, from the analog-style waveforms generated by its digital signal processors to its true analog low-pass filter designed by E-mu founder Dave Rossum of Rossum Electro-Music.

The Prophet X is bi-timbral, allowing you to play two sounds simultaneously, either stacking them or splitting the keyboard to play the A and B layers independently. Maximum polyphony is 16 voices, but when you're playing stereo samples, polyphony is limited to eight voices.

FUNCTIONAL AND INTUITIVE

The all-black Prophet X takes its design cues from previous keyboards from Dave Smith Instruments — Sequential's name from 2002 until recently — with simple lines, lots of knobs, buttons that illuminate orange-red when engaged, and three bright white-on-black OLED displays. The 61-note keyboard responds to velocity and channel aftertouch, and a pair of latching touch sliders accompanies the pitch and modulation wheels for real-time expressivity.

On the back panel are two unbalanced 1/4-inch main outputs that double as outputs for the A layer, as well as separate outputs for the B layer. Alongside a USB connector and MIDI In, Out, and Thru on DIN jacks are 1/4-inch jacks for a sustain

footswitch, a volume pedal, an assignable expression pedal, and a pedal to start and stop the sequencer or arpeggiator. You can also route an audio signal to the sequencer jack to control tempo. A type-A USB connector lets you connect a flash drive for importing samples.

The Prophet X is ready to play about 25 seconds after you switch on the power. Functions you'll use most often are all on the front panel, and you access deeper functions in the main display. Turning any knob or pressing any button changes what appears in the display, which is flanked by four soft knobs and four soft buttons that control the parameters and values displayed.

Select presets by scrolling through banks and programs with their respective knobs. Internal locations provide 12 banks, each containing 128 programs. Four banks are user programs, four are factory programs, and four are reserved for future, third-party content. As shipped, rewritable user banks duplicate the factory banks, giving you a total of 512 factory programs. Factory banks can't be rewritten, and you can't currently save to third-party banks.

The Prophet X has four sound sources, a single low-pass filter, four envelope generators, and four LFOs. Two of the sources play stereo samples, and the two others generate basic synthesizer waveforms — sine, sawtooth, pulse, and supersaw. Unlike on most DSI synths, oscillator waveforms are not continuously variable, which means you can't transition smoothly from one to the next.

However, you can modulate them using the Shape knob, which itself can be modulated. You control each source's level in the 4-input Mixer section.

The Prophet X's fat low-pass filter has a fixed 24dB-per-octave slope and overdrive. It operates in stereo when the synth is in 8-voice mode, and Stereo Split lets you raise the cutoff in one channel while lowering it in the other. Samples can bypass the filter entirely, if desired. You'll also find a resonant digital high-pass filter in the Effects section.

The front panel provides knobs to control ADSR parameters, with additional envelope parameters in the main display menus. These include an initial delay and repeat, making the envelopes more versatile than they appear.

The Effects section's 1.25-inch-square OLED displays parameters for two simultaneous stereo effects processors. Types include delays, distortion, modulation effects (chorus, flanger, etc.), and a nice assortment of reverbs. Knobs control the effects type, wet/dry mix, and three pre-assigned parameters for each effect.

SAMPLES ONBOARD

The internal SSD gives the Prophet X much more capacity than any hardware synth or sampler I know, enabling it to compete head-to-head with computer-based sample players. Although Sequential promises it will import user samples after an update in December, for now, it imports only samples from libraries you purchase, including specially formatted 8DIO libraries. The SSD reserves 50GB for importing samples.

In the front panel's Sample Playback section, the Type knob selects the instrument family (Strings, Ethnic, or Perc Tonal, for example), and the Instrument knob scrolls through multisamples within the selected type, whose names are shown in the section's dedicated OLED.

With so much disk space, the Prophet X delivers a huge selection of pristine sampled content. You get basses, brass, choir, drums, guitars, pianos, strings, winds, and so on, as well as Ambience and Cinematic types that assign a different texture to each note. Another instrument type, Effects, assigns mostly orchestral effects or unusual phrases played on one or more acoustic instruments to each note.

You can play samples backward, move their start and end points, or enable a sustain loop and then change the loop's size and center point, which you can modulate with the mod matrix. Although actual

waveforms are not shown in the main display, your edits appear in a simplified graphical form. Samples have only one loop, and you can adjust the crossfade time. You can also keep loops in tune with samples or in sync with global tempo by changing the loop mode. When you make an edit and then change instruments, the synth retains those edits from one instrument to the next.

Many traditional instruments have samples so long that they decay naturally, often negating the need for sustain loops, resulting in particularly detailed and realistic pianos and guitars, for example. Other standout types include Choir and Solo Vox, many furnishing vocalized words or phrases you can selectively truncate using the sample Start and End knobs.

The Sample Stretch feature is especially useful with Ambience, Cinematic, and Effects types, because it allows you to select a single sample from a multisample and then map it across the entire keyboard. You'll also need Sample Stretch to take advantage of the 97 single-cycle VS waves, which were inherited from the Prophet VS (introduced in 1986) and mapped to 97 different notes. Sample Stretch opens up a fascinating world of almost limitless creative possibilities.

Additional features include the sequencer and arpeggiator — with functionality borrowed from other recent synths designed by Dave Smith and company — and Play List, which lets you arrange as many as 160 programs into sets for quick recall. Two other features I'm more than happy to see are support for alternate turnings and the ability to adjust glide independently for the two DSP-generated oscillators.

KUDOS AND CONCERNS

The modulation matrix is as logical and straightforward as any I've seen. The Modulation section displays 16 routing assignments, where you can easily select and change sources, destinations, and positive or negative modulation depth, making it simple to assign and reassign modulators and instantly view their status. Velocity, the mod wheel, and other real-time controllers give you an additional 11 fixed routings. Selecting any LFO displays all its relevant parameters, including an LFO Destination tab to view and change one of its modulation targets.

One extraordinary modulation capability is that you can use samples as modulators. Routing a

sampled instrument to modulate an oscillator's frequency or shape, for example, lets you achieve sounds impossible to produce any other way, because the oscillator responds to the sample's frequency and contour. You can even modulate one sampled instrument with another. I found this especially worthwhile when using percussion samples as sources.

The Prophet X's limited polyphony makes it easy to run out of voices in stereo. When playing stereo samples on a split keyboard, each half of the split has only four voices. If one layer is a piano, for example, voice-stealing could quickly become an issue. I wish you could specify how many voices are assigned to each layer, meaning you could play a monophonic bass part with your left hand and have enough voices left for a 7-voice melodic part.

Because the audio output has such a strong signal, the acceptable range of loudness the Volume knob affords with headphones is much too narrow. Near the bottom of the knob's travel, the level quickly goes from too soft to too loud when you barely turn it. When I turned Volume up to normal levels for the main output, I had to disconnect the headphones to keep them from blasting.

THE NEXT BIG THING

The Prophet X doesn't deliver groundbreaking new synthesis techniques, just a tried-and-true combination of digital sampling and subtractive synthesis. Fortunately, the content and the electronics are superb. Almost without exception, the factory programs are lovely, unique, evocative, and/or versatile. With such outstanding sound design, plenty of memory, and so many carefully crafted, full-fidelity samples with room for more — unprecedented in a hardware instrument — variety and audio quality make this synth suitable for almost any application.

Although the Prophet X is undoubtedly an object of desire, its high price puts it out of reach for most musicians. Nonetheless, that price is justified by its remarkable capabilities. If your primary keyboard is a ROMpler (whose sound sources are samples stored in ROM), don't expect the Prophet X to completely replace it, because you may need more polyphony, and factory presets aren't organized like they are in ROMplers. For sound designers, serious synthesists, and working keyboardists looking for something different, though, the Prophet X is one you shouldn't ignore. ■



Nectar Elements uses artificial intelligence to come up with settings based on the sound of your vocal track



IZOTOPE

Nectar Elements

A VOCAL PROCESSING PLUGIN POWERED BY AI

BY MIKE LEVINE

Mike Levine is a composer, producer, and multi-instrumentalist from the New York area, and is the Technical Editor—Studio for Mix

STRENGTHS

Quickly creates custom effects-chain settings for vocal tracks with professional-sounding results. Good-sounding effects. Clarity effect (subtractive EQ) particularly impressive

LIMITATIONS

Only one adjustable parameter per effect

\$129
iZotope.com

Processing a vocal track in your mix typically requires an EQ, compressor, reverb, and frequently a de-esser and pitch corrector as well. All of those are included in Nectar Elements, a multieffects vocal processing plugin from iZotope. It represents the third generation of the Nectar line.

Nectar Elements (Mac/Win) is a simplified plugin, with minimal parameter control. But what it has that no other Nectar plugin to date has offered is the Vocal Assistant feature. This feature uses AI to analyze the audio and then suggest appropriate settings for all the effects. The software was trained on a “variety of vocal samples to identify common vocal characteristics.”

This is not the first AI “assistant” for iZotope. The developer first included such a feature in the Neutron 2 channel strip plugin and then in its Ozone 8 mastering software.

THAT IS THE QUESTION

Opening Nectar Elements on a track, the first screen asks you: “What are you going for?” You then get three Vibe choices: Vintage, Modern and Dialogue; plus three Intensity choices: Light, Moderate and Aggressive.

Then, hit Go, and it’ll ask you to play the track so it can analyze it. You’ll then see the Vocal Assistant’s progress as it examines your track, creates settings and applies them. The tasks it completes include:

- Analyzing vocal signal for optimal settings
- Applying settings based on vocal content
- Detecting vocal register for pitch correction
- Learning subtractive EQ parameters for clarity
- Detecting vocal sibilance to set de-esser
- Applying dynamics for a controlled output level
- Adding subtle reverb to add a sense of space

Once it finishes, you’ll reach Nectar’s main GUI. There you’ll find one slider each for Pitch (pitch

correction amount and speed), Clarity (subtractive EQ), De-ess, Dynamics (compression threshold), Tone (‘character’ EQ), and Space (reverb). A spectrum analyzer at the top provides frequency-based metering.

Not happy with the results? Make adjustments with the sliders or go back to the beginning.

RESULTS ORIENTED

Nectar Elements’ intelligent processing generally provided professional sounding results. The Dynamics, De-ess and Clarity settings were all usually quite usable.

I did find myself wanting to change the EQ a lot, and often the single Tone slider was too general to achieve the changes I wanted. The reverb sounds good, but one knob doesn’t offer enough parameter control to make all the adjustments needed.

ELEMENTARY

If you’re looking for pro-sounding vocal processing, and don’t have the desire, skill or time to use dedicated processors and create your own settings, you’ll like Nectar Elements. Its processing sounds good, and it contains all the—pardon the pun—“elements” you need for treating vocals.

But tweekers may want to wait for what I assume will be Nectar 3, a full version using the same Vocal Assistant technology—but with full parameter control for making adjustments to the results. Based on iZotope’s release history, it should be out soon (perhaps by the time you read this review). ■

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Grand-mother

IT'S RETRO, IT'S CHIC, BUT ITS NO OLD-TIMER

BY SCOT SOLIDA

STRENGTHS

Combines the simplicity of a monosynth with complexity of a semimodular. Thoughtful patch points and plenty of interconnectivity. That classic Moog modular sound!

LIMITATIONS

Has some hidden, not immediately clear functions. Pretty flimsy power connector.

\$999

www.moogmusic.com

M O O G It probably doesn't need to be said that Moog are a company that know a thing or two about modular synths. Their latest is the Grandmother – a semi-modular equipped with 32-note, velocity-sensitive Fatar keyboard, sequencer, arp and spring reverb. This venerable old dame is bedecked in the finest retro chic. The panel is divided into multi-coloured 'modules' that include Sequencer (yellow), Modulation (black), Oscillators (pale blue), Mixer and Utilities (both black), Filter (green), VCA (black) and Spring Reverb (red). Each offers the controls that you would be expecting, along with a combined total of 35 1/8-inch (3.5mm) jacks that can be used for re-routing the internally-wired signal path.

The color scheme has been the source of some division in synthesis circles, yet to these eyes it offers both a hint of the machine's retro sound as well as a means by which each section may be quickly identified – good for those just learning the ropes.

Around the back, you can find a 1/4-inch (unbalanced) output jack, a 1/4-inch Instrument input for routing external signals through the filter and reverb, along with a 1/8-inch jack for reverb output and another with the appropriate level for sending audio signals out to any Eurorack modules you might have.

There's an additional quartet of 1/8-inch jacks dedicated to the Grandmother's built-in sequencer/arpeggiator, including clock in and out, reset input, and on/off input. Further connectivity comes in the form of DIN-style MIDI In, Out, and Thru, as well as USB MIDI.

There's a tiny Fine Tune knob with a center detente for adjusting the master tune of Oscillator 1, a power switch and a jack for the external power supply's barrel plug. This last is one of the few bits that betrays the Grandmother's price point. The cord from the power supply to the barrel plug is slight, and the plug itself doesn't slide all the way into the jack – a bit of the silver shaft remains

exposed. It didn't cause any issues though, and has yet to come loose.

That quibble aside, I was pleasantly surprised by the instrument's heft and build. At just under 16lbs, it is surprisingly weighty, and the whole thing feels solid. The knobs and pots are of respectable quality, and if the toggle switches are a bit dainty, it's nice that they've been capped.

CLASSIC DESIGN

Once Grandmother's oscillators warm up, you'll be met with the familiar Moog sound and – depending on the levels in the Mixer module – a little more besides. Why is that? Because while the oscillators are based on the same tried-and-true circuits used in the Minimoog, the mixer, VCA, filter, envelope generator, and spring reverb have been designed around circuits used in the classic Moog modules of the 1960s.

The Oscillator module is divided between the two main oscillators. Each oscillator can pump out triangle, sawtooth, square, and pulse waves, though any pulse width adjustment must come from a modulation source. Osc 1 offers you a selectable range between 32' and 8', while Osc 2 provides ranges between 16' and 2'. Oscillator 2 also has a



knob for independently adjusting its Frequency. Oscillator sync is provided, too. Oscillator patch points include Wave Out, Pitch In, PWM In (Osc 1), and Linear FM In (Osc 2).

By default, the oscillators (and noise) are routed into the Mixer. This is based on Moog's CP3 module, a circuit that provides a lovely asymmetrical clipping when driven hard. In fact, this mixer is often credited with providing much of the famous 'Moog sound'. The mixer's patch points include Osc 1 In, Osc 2 In, Noise In, and Output.

It wouldn't be a Moog without the classic 24dB transistor-ladder filter, which here offers controls for Cutoff, Resonance, and (bi-polar) Envelope Amount, along with a three-position switch for setting up two different key-tracking amounts. Jacks are provided for Input, Output, Envelope Amount In, and Cutoff In. You needn't be told that the filter sounds brilliant — you've heard it before. It is, of course, capable of self-oscillation, and can be played in tune from the keyboard.

The lone Envelope generator is a typical four-stage affair, with knobs for Attack, Decay, and Release, and a vertical slider for Sustain. Jacks include Trigger In and both positive and negative outputs.

There's an LFO, hardwired to the mod wheel with Sine, Saw, Ramp, and Square waves. You get a knob that controls the rate, and three more determine the amount of modulation sent to oscillator pitch, filter cutoff, or the pulse width of both oscillators. Modulation patch points include Rate In, Sync In, Wave Out, and Sample & Hold Out. This last one really is a nice touch, as it can be used alongside the selected LFO waveform.

SPRING CHICKENS

The LFO can be pushed into the audio range and can be played from the keyboard, sequencer/arpeggiator, or over MIDI or via CV inputs. This

allows for some huge three-oscillator sounds. The Grandmother's VCA offers jacks for VCA In, VCA Amount In, and Reverb In. A three-position switch allows the VCA to be controlled by the envelope generator or set to drone indefinitely. The third option is Keyboard Release mode. This acts as something of a limited envelope generator, with an instantaneous attack, full sustain and a release time determined by the release time of the main ADSR. This doesn't quite make up for the lack of a second envelope generator, but it helps.

The spring reverb module has caused something of a stir. Once a common feature on synths (VCS3, ARP 2600), spring reverbs fell out of fashion when



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ARP & SEQUENCER

The Grandmother's Arp/Seq controls occupy the vertical sliver of yellow along the left-hand side. Here, you can switch between the arpeggiator and a 256-note sequencer. A three-position switch is used to toggle between the arpeggiator and the sequencer record modes.

The arpeggiator is standard stuff — switch it on, hold down a fistful of notes, and the Grandmother will dutifully play them back in the order in which they were played. You can also choose forward/backward or random play. You can elect to play only the notes played, or repeat an octave higher or one octave higher and then two octaves higher.

The sequencer mode allows for more complex passages to be whipped up. Here, up to three sequences may be stored in memory (which, by the way, is retained between power cycles). It's strictly a step sequencer — no real time recording — with notes entered from the keyboard itself. Rests, ties, and accents are entered using the three buttons above the pitch and mode wheels. Recorded sequences can be latched and transposed on the fly by pressing any key.

The toggle switch used for selecting the arpeggiator's octave is also used to select which of the three stored sequences is played.

more convincing digital options came along. Yet there is a certain retro charm in the old spring jobs. The Grandmother's spring reverb is small but effective, adding little noise and loads of atmosphere.

The Utilities module consists of useful things that are not internally patched. A four-point Mult can merge any four signals. There's also a bipolar attenuator with a single input and output. These might seem a bit ho-hum, but even the simplest function adds power and flexibility in a semimodular environment.

Less utilitarian is the simple (non-resonant) high-pass filter. You get an input and output, but no dedicated patch points for modulation. Nevertheless, it sounds good and can be combined with the LPF for band-pass filtering. Layered patches may be created by routing one oscillator through each filter.

AGE-OLD RECIPE

Alongside pitch and mod wheels, three colorful backlit buttons crown the left-hand control section. These perform multiple duties, shifting octaves as well as acting as sequencer controls. They're also used when recording sequences. Additionally, they perform quite a lot of less-than-obvious tasks like adjusting MIDI behavior.

A Glide knob to their left provides the obligatory Emersonian pitch sweep. A legato mode is possible, accessed by pressing the Hold button and turning the knob.

It's worth saying that we did experience some

tuning and calibration issues with our Grandmother upon first booting it up, which couldn't be corrected using the Fine Tune knob. Fortunately, after a few quick emails to Moog these were rectified via a 'note calibration' procedure — which isn't covered in the manual — and a SYSEX upload to rectify some internal data. We've not experienced any issues since.

Despite a diminutive stature, this Grandmother is capable of a vast range of sounds even before patching a cable. Reminiscent of early 80s monosynths like the Roland SH-101 and Moog Source, the default signal path provides enough flexibility to whip up thick, thumping basses, snappy kicks, sweeping leads and interesting sound effects. Moog's legendary sonic character is such that the raw waveforms sound good even with very little modulation or manipulation, and this is the case here, too.

Once the patch cables come out, many of the instrument's limitations fall away. Burbling effects, ever-changing drones, and percolating ambiances are easily achieved. The instrument's many sync options allow for syncopated passages using both sequencer and LFO in lock step. The spring reverb is icing on a very tasty cake.

It's worth noting too that the comprehensive I/O effectively extends the instrument's feature set, by allowing use with external modular or semi-modular gear. Looping in an additional envelope generator is simplicity itself. Its sequencer and arpeggiator will happily play with other MIDI and

THE ALTERNATIVES



MOOG MOTHER-32 \$679

Moog's other semi-modular has more of a modern character and lacks the playability of the Grandmother. It's compact and more affordable though
moogmusic.com



KORG MS-20 MINI \$459

The MS-20 reissue is a few years old now, but remains a bargain source of retro semi-modular synth tones
korg.com



ARTURIA MINIBRUTE 2 \$649

Arturia's semi-modular doesn't have the retro Moog heritage or spring reverb, but it's arguably better equipped overall
arturia.com

CV-based sequencers, and can even be locked to an audio click.

NOT AN ALL-IN-ONE

The Grandmother ticks a lot of boxes. It's an ideal instrument on which to learn the basics of synthesis and beyond, and an excellent gateway into the world of modular and semi-modular synthesizers. For those who just want to play, the high-quality keyboard and chunky panel controls make it an enticing gigger companion.

The Grandmother isn't for everyone. There are no presets or polyphony, it offers a meagre sequencer memory, and a limited physical key range. It's not designed to be the ultimate all-in-one solution — the limitations are intentional and can be viewed as an asset.

Is it worth the asking price? Absolutely, if for no other reason than providing users with a taste of those old Moog modular circuits without having to take out a second mortgage. ■

A black Bose S1 Pro Multi-Position PA System speaker is positioned on a brick sidewalk. A person's leg in dark pants and white sneakers is visible next to it, and a guitar is hanging from their hand. The background shows a city street with buildings and trees.

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WRH

The user interface is consistent throughout the 60 some-odd instruments of String Machines 2, making programming any of the virtual keyboards easy and inviting

UVI



String Machines 2

ANALOG KEYBOARDS GET A MODERN MAKEOVER

BY MARTY CUTLER

Marty Cutler is the author of *The New Electronic Guitarist* from Hal Leonard. He is currently working on a new book on improvising bluegrass banjo. Go figure.

STRENGTHS
More than 60 ensemble instruments at your fingertips. Easy user interface. Synthesis features coupled with step-sequenced modulation offers creative leeway.

LIMITATIONS
Could use another independent step animator and LFO.

\$99 (Download)
\$599 for Vintage Vault 2
www.uvi.net

Given the sophisticated state of digital sampling and synthesis overall, it's worthwhile to consider the way electronic musicians created orchestral sounds before we could capture and manipulate the nuances of actual strings, brass and woodwinds. String Machines (also referred to as string ensembles) proliferated in the 70s as a unique solution for bands wanting to orchestrate or pad their music with strings and orchestral ensembles in situations where such sweetening was unaffordable or logistically difficult. Tone generation for early string machines was more closely related to the electronic organ than the synthesizer, and you don't have to listen too closely to the initialized templates to hear the resemblance. As a result—to the modern ear—string machines can often sound primitive and unrefined; not that there's anything wrong with that. In fact, their sounds bear a unique sonic signature that stand apart from their more realistic relations. UVI aims to let you be the judge, with its release of String Machines 2, a sound library for their Falcon synthesizer and the free UVI Workstation. String Machines is available à la carte, or as part of their expansive Vintage Vault 2 collection.

Expanding from the original collection of 11, UVI restored and sampled 51 additional instruments, comprising string machines and a few synthesizers that were particularly adept at creating string-ensemble sounds, such as Oberheim's Matrix 12. In all, the collection entails 355 presets, ranging from recreations of the original instrument sounds to fanciful modern patches infused with motion and animated with layering, step sequencing, and gating effects.

INNER MACHINATIONS

Clearly, it would have been a fool's mission to replicate the control panel of sixty some-odd string machines. Instead, UVI deploys a simple subtractive-synth engine to shape the sounds,

so the result is that—despite a surprisingly diverse gathering of presets—the interface is consistent throughout, so it's easy to use any of the patches that inspire you as a jumping-off point for your own creations.

Topmost in the UI are five buttons and a main-volume knob. The buttons shuttle you to controls on the Main, Edit, Mod, FX, and Arp pages. There's plenty of basic editing for each of the two oscillators on the Main page, including volume, pan, sample selection by way of a pull-down menu from the sample title, or via the increment and decrement switches, and a button to engage or defeat either oscillator. Below that, you can select either or both oscillators simultaneously for editing, and balance the pair.



The Mod page takes a dramatic left turn from the typical string machine controls with its configurable Step Modulator and syncable LFO

UVI deploys a simple subtractive-synth engine to shape the sounds, so despite a surprisingly diverse gathering of presets, the interface is consistent throughout

Each oscillator has independent ADSR envelope generators for amplitude and separate filters, with a choice of low-, band-, and high-pass—or no filter at all. Both amp and filter envelopes offer velocity control, and the amp envelope features an extra button to control the attack rate in addition to loudness. The Edit page sets up basic performance parameters such as Poly or Mono modes, transposition, stereo modes, mod wheel control over vibrato, tremolo, and

filter cutoff. Here again, you can program oscillators individually or as a pair.

You'll find the most significant deviation from the string-machine norm in the instrument's Mod page (see above), with a Step Modulator offering up to 16 steps, speeds ranging from whole notes to 1/4-note values, with triplet and dotted values as well; delay, rise time, and smoothing controls. In other words, you have an additional free-form LFO you can apply to volume and filter. Of course,

you also have a standard sine, square, and sample-and-hold LFO you can sync to MIDI clock for control of volume, filter, and pitch. Inveterate tweeker that I am, I wish that there was more than a single Step Modulator and LFO for independently programmable oscillators. The FX section dresses up sounds with a basic array of effects culled from UVI's Sparkverb, Thorus, and Phasor, and adds EQ, Drive, Delay, and Ensemble, with a modicum of controls. You also get simple (up, down, or up/down), but independent Arpeggiators which you can link together.

STRING BASIS

The topmost folder of presets in the browser, *01 Timeline*, proffers a historical sequence of

string machines, starting with the Eminent K150 from 1970, and culminating in the mysteriously-named German Box, which is presumably the Waldorf Streichfett, a digital emulation of analog string machines which made its debut in 2014. The Timeline folder naturally focuses on strings and string-ensemble sounds, although many of these instruments (such as the Korg EPS-1) were capable of producing other sounds, such as electric piano and brass emulations. Most of the non-string instruments are represented in other banks in the library, and you can access their

samples at any time directly through the Oscillator window.

The Templates folder holds 18 useful starting points for pads, pianos, organs, stereo and mono patches, bass, gated sounds, and lots more. The next couple of folders, *Animated Arp* and *Animated Step*, pull out the all the stops with gated sequences, polyrhythmic arpeggiators, filter sweeps and lots more. At the same time, the sounds retain some of the raw character of the source instruments.

The majority of banks dedicate themselves to instrument categories: bells, brass, keys,



voices, leads, polysynths, and the like. In some cases, the resemblance is merely passing; *Old School Funky*, in the brass section sounds more like a repurposed clavinet—but it is funky, and many of its sounds will find use well beyond their category.

LOGICAL STRING

I always appreciate when authentic-sounding instruments are stretched well beyond their intended purposes. UVI has done a terrific job of capturing the essence of these vintage string machines in addition to a deep well of modern, animated synthesis. Along the way, they have supplied an ample tool chest of synthesizer features, laying them out in an easy-to-understand environment. As always, if you own UVI Falcon, your programming options multiply greatly, but the Free UVI Workstation is a more than ample springboard for playing and creating your own sounds. Check it out! ■

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With IK Multimedia's new UNO Synth Editor, you can now tweak a full range of synthesis parameters, including modulation of oscillator waveform and full ADSR functionality

IK MULTIMEDIA



UNO Synth Editor

POWER MEETS PORTABILITY

BY FRANCIS PREVE

Francis Preve is a journalist, sound designer, and college professor. Find out more at francispreve.com

STRENGTHS

Full access to deeper parameters like ADSRs, filter keyboard tracking, and oscillator waveform modulation. Detailed tailoring of performance control, including velocity and mod wheel. Patches can be named and saved to hardware and/or computing platform.

LIMITATIONS

Using the iOS app requires Apple's Lightning-to-USB camera adapter or suitable hardware MIDI interface. Dark interface could be improved with a tad more contrast or a "light" mode.

Free
ikmultimedia.com

IK Multimedia's new UNO Synth is an impressive achievement for a portable monosynth, packing the traditional analog architecture of two oscillators, noise generator, multimode filter, dual ADSR envelopes, and an LFO into the form factor of a hardcover book. In addition to these synthesis amenities, it has an integrated sequencer/arpeggiator, basic delay, and a few innovative performance controls that let you add bends or introduce modulation on the fly via a simple membrane touch keyboard.

The front panel's interface includes a dedicated cutoff knob and four multi-use knobs for adjusting other essential synthesis functions, but there's a much wider range of parameters accessible via MIDI, which may not be obvious to new or casual users. Fortunately, IK Multimedia's new software editor offers control of these deeper tools and is available as a Mac or Windows standalone app, iOS app, or VST plug-in. Best of all, it's a free download for registered users.

If you're an UNO Synth owner, the app is a must-have as it reveals just how powerful this compact instrument really is. For example, each oscillator displays its continuously variable waveform, which smoothly transitions from triangle to sawtooth to square to pulse in a manner similar to the latest Moog and Dave Smith Instruments synths and can also be switched to PWM mode. What's more, there are independent LFO and (filter) envelope modulation depths for modulating the shape of

each oscillator, which greatly enhances the animation options for leads and basses.

The mixer section now includes dedicated on/off switches for each source, in addition to the original UNO Synth's level controls, making it easy to isolate the individual tone generators as you work.

In my original review for the hardware, I commented on the hardware's omission of filter keyboard tracking — essential for tuned resonant noise effects. While it was always available via MIDI, in the editor it's easy to set up much more precisely.

As for the envelopes, the onboard knobs only offer access to attack/decay for the filter and attack/release for the amplifier, which is fine for most live applications and quick edits. With the apps, it's possible to view and adjust *all* ADSR elements at glance. It's also nice to see which LFO waveform is selected and toggle the tempo sync switch.

The UNO Synth's unique performance

As for the envelopes, the onboard knobs only offer access to attack/decay for the filter and attack/release for the amplifier, fine for most live applications and quick edits.



switches are now easily configurable, so you can fine-tune the depth of the pitch dive and scoop options, as well as set the modulation amounts for the LFO applied to pitch, cutoff, and amp (called vibrato, wah, and tremolo respectively on the hardware). Additionally, you can tailor velocity sensitivity and mod wheel depth for these parameters, which wasn't relevant to the membrane interface but is extremely handy when controlling the unit via its VST within your DAW.

All three software tools let you load and save presets directly from the app or VST, so these customizations don't get lost. Additionally, you

can name your presets and store them on your computing platform or directly into one of the unit's 100 memory locations, without names.

While I was certainly impressed with the functionality of the hardware as a standalone product, in conjunction with the software, the

UNO Synth really comes into its own as a much more powerful instrument than the front panel implies. For prospective buyers, this revelation may tip the scales in determining their purchase. For existing users, it's a wonderful bonus for this excellent portable monosynth. ■



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STEINBERG UR-RT4

STEINBERG'S NEWEST INTERFACES HOUSE NEVE COMPONENTS

BY JON MUSGRAVE

STRENGTHS

Quality. Yamaha Class A D-PRE preamps. Individual switchable Rupert Neve Designs transformer stage on four inputs. Onboard DSP with record and monitoring option. Excellent integration with Cubase.

LIMITATIONS

Quite pricey. Onboard DSP limits the number of real-time plugins.

\$762

www.steinberg.net

As much as I like trying out new audio interfaces, in many respects the market has plateaued, making certain review outcomes, at times... predictable. So, when I saw that Steinberg had teamed with Rupert Neve Designs on their new UR interfaces, I was intrigued.

The UR-RT2 and UR-RT4 couple Yamaha's long established D-PRE mic pres with a switchable RND transformer stage. Nice idea, not least because the four transformers are individually switchable so you can select them as required. Beyond this, the UR-RT4, on paper at least, looks very similar to their well established UR44 interface, albeit with some new styling.

What you get is a 24-bit 192kHz, six-input, four-output USB 2.0 interface with MIDI in and out. The unit is not bus-powered (an external PSU is included); it is, on the other hand, iOS compliant.

The four front panel mic inputs are on combination XLR/TRS connectors, accommodating two Hi-Z inputs and two line inputs. Two further TRS line inputs round the back bring the input total to six. Here you'll also find the two main outputs, four assignable outputs and 48V phantom power switches. On the front you get two separate headphone outputs, but input metering is pretty basic with simple input overload LEDs.

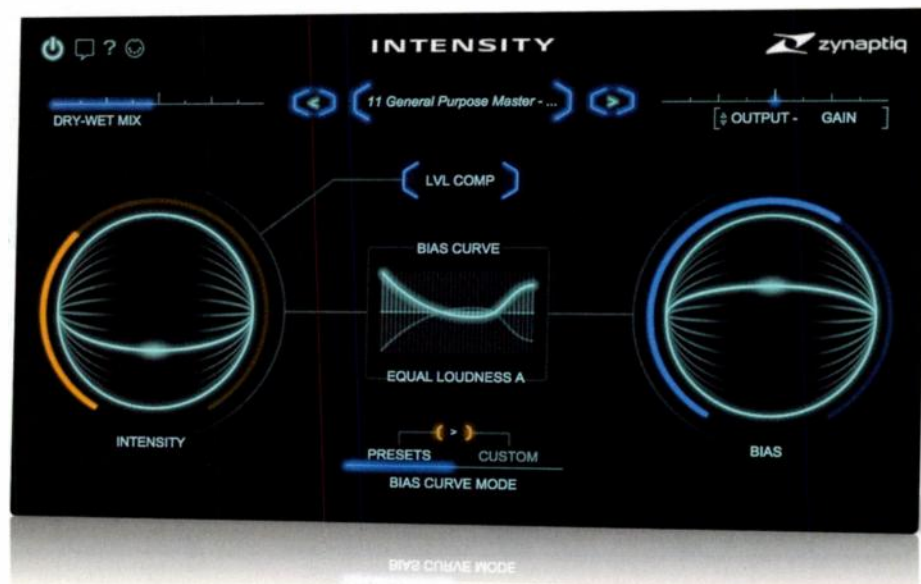
The UR-RT4 handles zero latency monitoring via a software app (dspMixFx), and this also incorporates a suite of plugins. The first two can be applied to the input signal prior to recording or simply used as monitor effects. One nice feature here is the Channel Strip, which includes a single knob 'sweet spot'

feature for quick adjustment of EQ and compression. Much like the UR44, there are DSP limits — one amp plus two mono channel strips or four mono channel strips. Even so, it's a great feature and more impressive when used inside Cubase, as all this functionality falls under their True Integrated Monitoring banner and is accessible via the hardware rack in Cubase MixConsole.

And so to the transformers. These sit separately from the DSP aspect of the interface, and there's no indicator in the software to say they're active. In signal flow terms they are just before the AD converter, good news as all input types can be processed. The transformer adds a moderate amount of harmonic richness, and on the frequency analyzer this is primarily 2nd, 3rd and some 4th harmonics, with the harmonics tailing off sharply after that. The overall level of said harmonics also tails off as frequency increases. This is great for adding weight to vocals but for me it's the Hi-Z input that benefits most, as you can easily achieve that classic punchy transformer DI effect for picked electric and bass guitar.

The UR-RT4 is a great variant of the established UR44 interface, and the transformers are a great addition. Nevertheless, at almost twice the price of the UR44, bear in mind that those transformers are going to cost you some serious cash. ■

A 'magic wand' plugin for mixing and mastering with a core algorithm built on - wait for it - facial recognition technology. Yes, really...



ZYNAPTIQ

Intensity

MIXING MAGIC THAT'S NOTHING SHORT OF SORCERY

BY RONAN MACDONALD

STRENGTHS

It just... works! Easy to use once understood. Customizable Bias curves. Sounds great on pretty much anything.

LIMITATIONS

Can do slightly odd things with reverb tails at times.

\$349

www.zynaptiq.com

The latest entrant into German developer Zynaptiq's range of innovative, ambitious plugins, Intensity is a sort of cross between a dynamics processor and a dynamic EQ that promises, quite simply, to improve the sound of anything you send its way...

Zynaptiq describe Intensity as like an artificially intelligent "infinite-band compressor that threshold-less-ly operates relative to the input signal", before going on to say that it's "absolutely not a compressor." Apparently, the engine is based on the techniques used in facial recognition algorithms, although at no point is it made clear what that equates to in practical terms. Ultimately, this is one of those out-there effects that kind of defies description and just has to be used and heard to be appreciated. Zynaptiq suggest that it's a plugin you'll want to use on everything you do, from individual instrument channels to buses and full mixes, as it simply makes stuff sound better. Well, they would, wouldn't they?

POWER BALLS

The plugin (VST/AU/AAX) is largely operated using one main control: the Intensity "ball" (don't worry, it's just a slider, really). This deploys the aforementioned algorithm to 'intelligently' increase the levels of those parts of the signal that it deems to be "details" and defining characteristics. Think the body of a kick drum, the sheen of cymbals, the sparkle of a vocal, the meat of a bass guitar, etc. The process can be applied evenly across the whole signal, or - as is more likely in almost all scenarios - "sculpted" using the Bias control. As raising the Intensity invariably boosts the overall level, a Level Compensation function is on hand for automatically matching the output gain to the input level.

The remaining two controls, Dry-Wet Mix and

Output, are rather more conventional. Output adjusts the final, dry/wet-mixed output level by up to 12dB up or down, and can optionally pass the signal through a soft-knee limiter that doesn't have to be pushed far at all before heavy saturation starts to kick in. The Mix control proves to be almost as important as Intensity and Bias, as this is the kind of processor you'll often want to run in parallel rather than 100% full-on. Like other Zynaptiq plugins, it's incredibly easy to go too far with Intensity, and lowering the Mix blend can go a long way towards bringing it back into line.

INTENSE FLAVOURS

Intensity is yet another remarkable addition to Zynaptiq's exceptional roster of futuristic devices - a unique and high-tech production and engineering tool that gets as close to feeling like magic as software ever does. As previously mentioned, it really does need to be handled with care, and it can do slightly odd things with reverb tails at times. But get it right through considered tweaking of the Bias and Mix parameters, and the results can be absolutely stunning, improving whatever's sent through it in terms of clarity, separation, "air," presence and vibe - whether that's the elemental components of a drum track, the nuances of a guitar line or vocal, or the sonic aggregate of the master bus. Sliding up and down the functional scale between effortless "quick fixer" and serious finalizing tool, this is a plugin that every producer needs to try. ■



AUDIFIED

Mix-Checker Pro

A RANGE OF PLAYBACK SYSTEMS RIGHT IN YOUR DAW

STRENGTHS

Simulations work well enough. Lots of editable models. Mono switching and Auto mode. Handy iOS/Android control app

LIMITATIONS

Inevitably influenced by your actual playback system. Interface has a few annoyances

\$199

www.audified.com

A more advanced version of their MixChecker plugin effect, Audified's MixChecker Pro (VST/AU/AAX) simulates a variety of playback speaker systems for auditioning purposes, from studio monitors, hi-fis and headphones, to car stereos, phones, tablets and TVs. It improves on its sibling with many more convolution-based speaker sims, non-linear (as well as linear) modelling, much higher-quality algorithms, and a degree of customisation.

YOU'RE ON SPEAKER

Each of MixChecker's 12 main buttons houses a speaker model – click a button to audition your mix through it. There are 62 models in all (the original MixChecker has just 12), across 12 categories (Studio Monitor, LiveSound/PA, inEar, onEar, Radio, etc), so Audified have clearly gone out of their way to cover as many bases as possible this time round.

While MixChecker allows no modification of... well, anything, MixChecker Pro lets you freely assign models to the 12 buttons and rename them, move buttons around, and tweak each model in terms of Stereo Base (all the way down to mono), device-modelled Distortion level and Volume offset. The whole 'Button Set' can be saved as a preset (five are included), so you could have one preset for all your target hi-fi systems, say, another for a range of phones and tablets, another for headphones, another for in-car audio, etc. The generic, uneditable device icons are irritating, though (why can't we import JPEGs?), as is having the name of each device only show up as a tooltip when moused over, rather than simply printed in abbreviated form under the icon. Load up your preset bank of PA systems, for example, and you're looking at a series of identical, unlabelled buttons.

Various global functions add environmental noise, distortion and more, and the free MixChecker RC iOS/Android remote control app works well,

duplicating most of the UI on a wirelessly connected phone or tablet.

PHYSICS STILL APPLY

The Compensation feature from MixChecker, which counters the amount by which listening through headphones or small speakers affects the simulation, has been dropped – apparently because there are too many variables between systems to cater to. A calibration system is apparently in the works, but what it ultimately means for now is that MixChecker Pro requires high-quality monitors to work effectively. And even with that requirement met, of course, the frequency response of your particular speakers will inevitably exert an influence on the sound, so those virtual Yamaha NS-10's can't ever sound exactly like the real thing.

The question, therefore, is: does it matter that MixChecker Pro can't 100% nail the sounds of the setups it simulates, thanks to those unmanageable variances? We'd say it doesn't, no, as with even a half-decent playback system, you certainly get a reliable-enough impression of how a track will come across on a wide range of speakers to inform those crucial broad-strokes mixing decisions. As long as it's employed in that spirit and you know how to address the sonic issues it's designed to raise, this clever, easy-to-use plugin really can help you improve the universality of your mixes. ■



BY FRANCIS PREVE

Francis Preve is a journalist, sound designer, and college professor. Find out more at francispreve.com

iOS Masterclass

Professional production from the comfort of your iDevice

In the span of a decade, the audio and music possibilities for Apple's iOS have evolved from a handy musical notepad to a fully functional production platform that's every bit as legitimate as a desktop environment. Thanks to ongoing advancements in interoperability and innovative standards like Ableton Link and Audiobus, multiple apps can now work in concert to create professional productions. What's more, Apple have steadily added features to their mobile operating system that optimize it for sophisticated creative tasks when recording and mixing all genres of music.

Since many of these improvements have been incremental—and new users arrive on the platform daily—it can be tough to keep track with all of the amenities in iOS. Add in several hundred genuinely affordable music production apps and it's even trickier to know where to begin.

For example, in iOS 11, Apple quietly introduced MIDI enhancements to the AUv3 plugin standard that now allow apps to do tricks like arpeggiation and sequencing, in addition to simply processing audio. While a handful of ambitious developers implemented it, it's still quite nascent, as even the current version of GarageBand doesn't make full use of the innovation. That's how deep some of these changes can go.

So here we've compiled the most powerful aspects of iOS (and some notable app-based tricks) into a single reference, so you can quickly discover the production possibilities within your device.

SETUP ESSENTIALS

First things first, while the iPad is still largely a tool for mobile production and composition, its value increases exponentially when you thoughtfully integrate it into your desktop/studio workflow. With these simple configuration steps, you can use your device for a remarkable number of tasks ranging from doubling as an external hardware synth in conjunction with your primary DAW to an offline processing tool with a huge—and inexpensive—collection of effects that aren't available on any other platform. Making the most of these options requires three simple steps that can be accomplished in an hour or so.

1. The simplest way to get audio from an iOS device into your computer is obviously via the headphone jack (or Lightning headphone adapter), but for Mac users who want to stay in the digital realm, there's an additional tool in their arsenal:

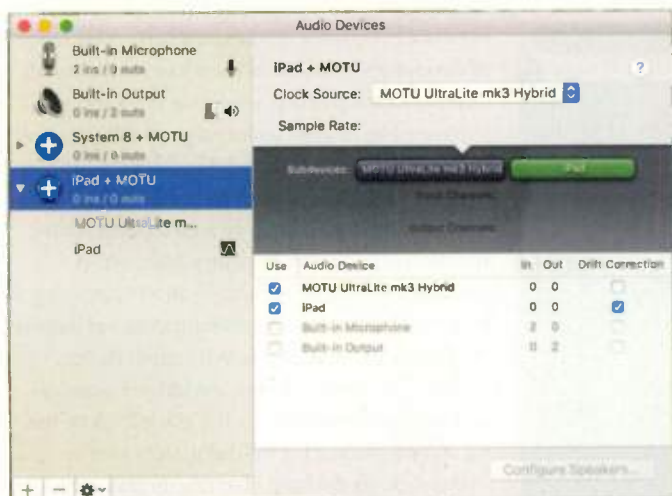


Fig. 1

Aggregate Devices. With iOS integration introduced in macOS 10.11.1, this feature lets your Mac receive audio directly from the iPad via its Lightning cable, while simultaneously combining your existing studio interface into the framework. Configuration is handled in the Audio MIDI Setup panel, where you select “Show iOS Device Browser”. From there you’ll see any connected devices, which can be enabled as audio sources (Figure 1). At that point, the Aggregate Device will show up as a routing option in your DAW’s interface preferences panel.



Fig. 3



Fig. 2

2. While there are several excellent paid apps for transmitting MIDI to your iPad, Matthias Frick’s excellent freeware MIDImitttr is a time-tested tool that lets you send MIDI directly from your DAW to your iOS device via either Bluetooth or the USB ports. The app’s interface for each platform is strictly text (Figure 2), so setup is essentially a series of checkboxes and only takes a few minutes to implement. Incidentally, when both your iPad and controller are in close proximity to each other, Bluetooth MIDI is surprisingly robust, so you can skip additional cabling entirely in most cases.

3. Since the introduction of the Files app in iOS 11, combining iCloud, Dropbox, and Google drive

is utterly painless and lets you quickly move stems, project files, and renders between your desktop and iPad with a minimum of fuss. By creating accounts on the three services, you’ll have over 20 GB of storage without signing up for a payment plan, unless you’re already using them for photos and videos. That should be more than enough for all but the most extreme production tasks, while also ensuring that your work files are backed up to the cloud until you finish your project.

THAT SYNCING FEELING

Veteran iOS producers may recall Korg’s WIST synchronization protocol during the early years of iOS, which offered start/stop and tempo sync



Fig. 4

TIPS

1. Almost every sample-based iPad drum machine lets you import your own WAV files into its kits. You can make light work of kit creation by building specific kits in a DAW like Ableton Live, then collecting all and saving the project, which will put your selected hits into the project's Samples folder. From there you can drag the whole folder out, label it accordingly, and upload it to one of your cloud-based file systems.

2. AudioKit Synth One (Figure 5) is making waves as the first open source analog-style synth that's constantly improving and evolving, so that it truly can be said to get better with time. In just a few months since its introduction, they've already added improved anti-aliasing and Ableton Link compatibility. It also provides mind-bogglingly comprehensive microtonal scaling functionality for academics and experimental artists. Get it.

3. While Traktor and Djay deservedly get most of the attention for iOS DJs, the Pacemaker DJ app incorporates some very clever AI and Spotify functionality. It will even pick tracks from a preconfigured playlist and intelligently mix them, with basic controls available on your watch (Figure 6) —

leaving you with both hands free to throw cakes.

4. As an alternative to headphones—or the iPad's microscopic speakers—shop around for a decent Bluetooth speaker with a physical input jack. Prices vary, but by connecting with a cable, you mitigate the latency issues that currently plague wireless audio formats.

5. Touchscreens are awesome for some tasks, but nothing beats knobs, pads, and keys for real productivity on an iDevice, considering that most synth apps include the ability to assign CC numbers to their parameters. There's a huge array of controllers to choose from, but Korg's NanoKey Studio is the only one that has all of the above features as well as an arpeggiator, chord tools, and an assignable X/Y pad. At the higher end, Roli's Seaboard Block fully supports their MPE protocol and fits in a backpack.



Fig. 5



Fig. 6

between compatible apps from a fairly wide range of developers. While WIST works over Bluetooth, Ableton's Link protocol works via WiFi and is supported by an even wider range of software that now includes both Mac and Windows applications. In fact, using Link, you can theoretically synchronize Korg Gadget on an iPad with Native Instruments' Traktor Pro 2 on a Mac, while simultaneously syncing Reason on a PC, creating a three-way tempo-locked configuration—as long as all devices are on the same WiFi network. In practice, the whole process is relatively seamless and unless the network itself is glacially slow, the rig will stay locked for the duration of your session.

Once you get the hang of setting up Link networks, it's possible to accomplish one of the coolest magic tricks in the iOS lexicon: Syncing voltage-based analog gear. The secret ingredient is a free app from Korg called SyncControl (Figure 3), which was originally developed as a way to sync Korg's iOS apps with their Monotribe synth/drum machine using WIST. The caveat is that SyncControl works by outputting its voltage clock through the headphone jack, so modern iPhones are now excluded, but the current entry-level iPad still provides one.

When Link was introduced a few years back, Korg promptly added compatibility to the SyncControl app. This means you can sync Korg Volcas—or even a vintage SH-101—with Ableton Live or Traktor Pro on a laptop, by simply plugging the iPad's headphone jack into the voltage sync input on your hardware. And if you have an old iPhone gathering dust (I use my iPhone 4S for this task), you can breathe new life into it as a wireless sync device. That said, it's really essential that you turn your phone's notifications off beforehand, because a phone call or message will instantly interrupt this synchronization.

AUV3 TAKES A STEP TOWARD MODULAR

While compatible DAW and sequencing apps are the obvious choice for integrating the rapidly growing range of AUV3 plugins, there are several “hub” apps that serve nicely as a nerve center for combining apps in a manner that approximates the possibilities of an intermediate modular rig. Comparing a tablet to a Eurorack may seem like a stretch to some, but there are two products that are fully compatible with the AUV3 standard, including its new MIDI functionality: Kymatica AUM and apeSoft's apeMatrix.

AUM offers the most familiar interface for producers (Figure 4), with a workflow that bears a resemblance to Apple's MainStage app. That is, it relies on a mixing console paradigm with individual channels for each music app, whether it's a synth, drum machine, or even sequencing tools like Intua Beatmaker 3 or Korg Gadget. AUM is compatible with the three main iOS audio

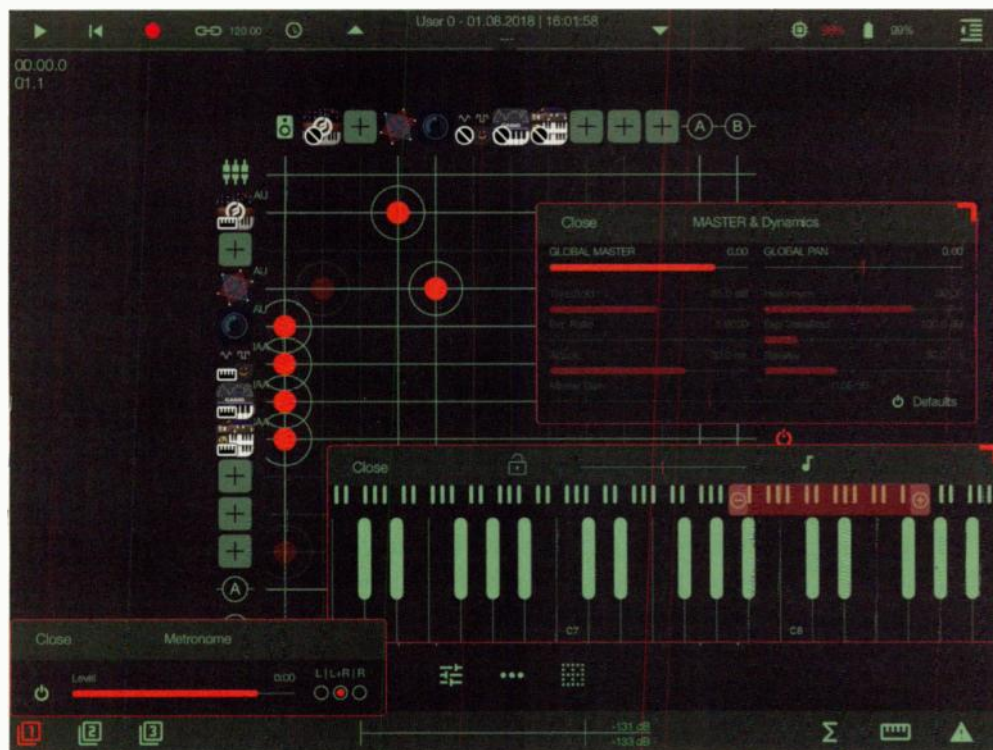


Fig. 7

routing standards: AUv3, Inter-App Audio (IAA) and Audiobus, so nearly every music tool is covered. From there, you can insert processing apps or create bus sends for global use within a session. Your only practical limit is the CPU/RAM of your iPad, so with a maxed out iPad Pro, you can assemble extremely sophisticated routings that combine disparate processing and generative apps, which can then be saved for future use.

The “modular” analogy comes into play when you start adding AUv3 MIDI tools like Ruismaker’s Rozeta suite of MIDI plugins, several of which can be routed as sources for MIDI CC data. For example, you can route Rozeta’s triple LFO plugin to modulate multiple synth parameters on BeepStreet Zeeon, processing the results with several insert effects—while layering Moog’s Model 15 virtual modular on another channel.

Taking the modular comparison a bit further, apeSoft apeMatrix (Figure 7) presents its interface as a set of up to three 10x10 routing grids that can be connected into a cohesive whole. The routing system strongly evokes the EMS VCS3, both visually and functionally. With it, you can route, split, and combine audio and/or MIDI to nearly any destination imaginable—as long as the apps themselves support your objectives. What’s more, apeMatrix has its own integrated modulation sources, including LFOs and access to your iDevice’s accelerometer. These can be assigned to synth and effect parameters within your matrices, much like patching two modules together. The only caveat in both apps is that AUv3 and IAA are separate systems and don’t play well together. But

as more apps upgrade to AUv3, the process will eventually be seamless.

CROSS-PLATFORM PORTABILITY

Many apps include the ability to export their audio to two-track formats like WAV and sometimes MP3. In the case of DAWs like GarageBand, FL Studio Mobile, and Steinberg Cubasis, you can easily transfer projects between your iPad and desktop environments. However, there are a few noteworthy products that let you export your projects for continued work outside of the original app or its Mac/Win counterpart.

For example, Korg Gadget lets you export projects in numerous distinct ways. If you don’t mind working with audio loops instead of MIDI data, you can export from Gadget to Ableton Live, with Gadget’s sequences converted to audio clips and seamlessly integrated into an Ableton Live project file. Even if you’re not using Live, you can still export this file, then dig the loops out of the Project’s sample folder and drop them into your DAW of choice.

If you have the Mac desktop version of Gadget, you can export files to that platform, but since Gadget for Mac also comes with VST and AU versions of all of its mini-synths, you also have the option to export it to Live with the MIDI and plugin information intact (Figure 8). This lets you open the original Gadget file in Live and continue work without missing a beat. Even if you don’t have Gadget for Mac, you can export the Ableton Project as MIDI-only; and if you just want to export the raw sequence data as standard MIDI files, that’s yet another option.



Fig. 8

Users of Kymatica AUM should also be aware that it offers the ability to record its channels as individual stems, which can then be imported into any DAW as audio tracks. While apeMatrix doesn’t include that functionality at the time of this writing, it seems likely that it will follow suit in this area. Working with stems can be a tad laborious, but it’s still quite impressive when you factor in the price differential between iOS apps and their equivalent desktop versions. So if you have an exotic processor like Klevgrand’s DAW Cassette and want to apply that to an existing audio track, you can move it to the cloud, process it on your iPad, then upload the results and bring it back to your desktop.

SAMPLING AND RECORDING

When it comes to field recording and sampling, iOS is poised to dominate that market—especially with a growing number of audio interfaces that are optimized for the platform. Roland’s Go:Mixer is a solid entry-level interface for getting started, while the Go:Mixer Pro adds an XLR input and phantom power for condenser mics.

If you’ve been looking for Mercedes-class performance, on the other hand, CEntrance’s new MixerFace R4 features dual XLR/Neutrik connectors with studio-grade mic pres with phantom power and independent lo-cut filters, all powered by an integrated LiPo battery, letting you bring professional gear on the road. It’s also well worth noting that Roland’s R-07 hi-res portable recorder includes free remote apps for both iOS and the Apple Watch, so you can set the device near your subject then access transport functions via Bluetooth. ■

Supersaws Everywhere

How to use Ableton Live's Instrument Racks to recreate this popular sound

FRANCIS PREVE

Despite the JP-8000 from which it came being released more than 20 years ago, the supersaw waveform is now a true staple in every synthesist's arsenal. Electronic music historians may know that it first came to prominence in the late 90s trance scene, but it became truly indispensable during the EDM era and can now be found at the core of countless pop and future bass tracks. As a college professor, I'm always amazed that this is the first sound my students want to learn in their introduction to synthesizer programming.

While many softsynths—and even a few hardware models—now include this waveform option, it's possible to reproduce the sound using any softsynth in conjunction with Ableton Live's Instrument Rack. For this tutorial, we'll use Operator, as it's very lightweight in terms of CPU utilization, but if

you want to apply the technique to a two-oscillator synth, just double the total number of layers and follow the same steps.

STEP 1

Select the carrier-only algorithm [Figure 1] as this provides parallel oscillators feeding the

filter, behaving like a four-oscillator analog signal path.

STEP 2

In Osc A, select the Sawtooth D option [Figure 2], as this is the brightest version of the waveform. Set your amp envelope here too,

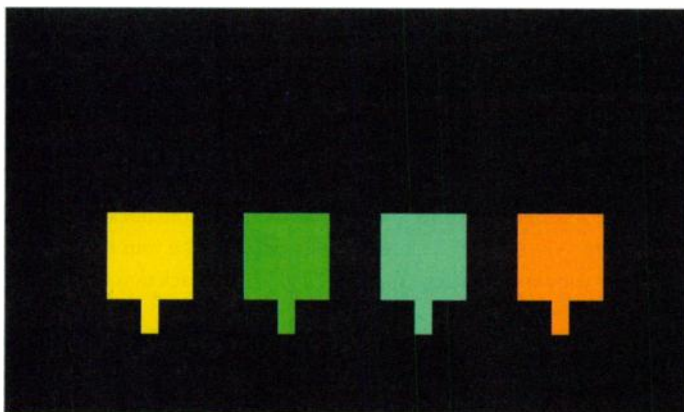


Fig. 1 All Carriers

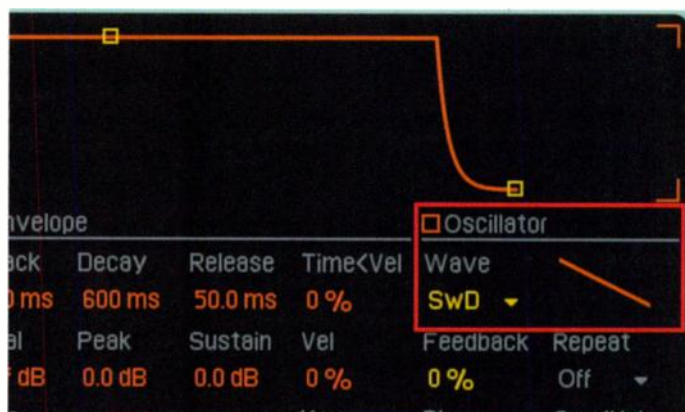


Fig. 2 Selecting a Sawtooth

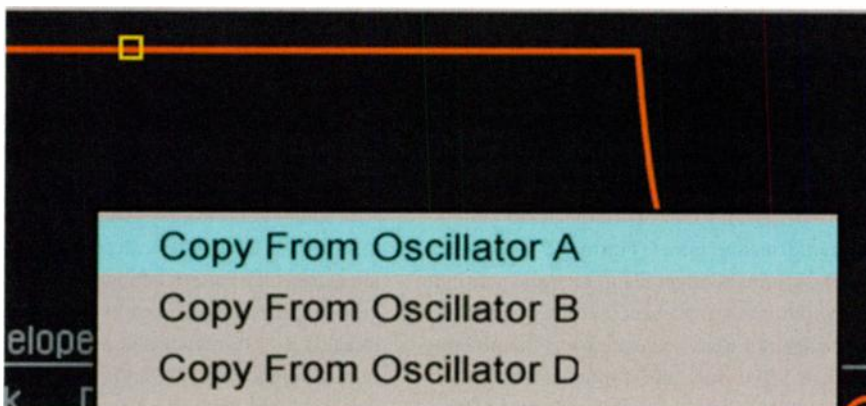


Fig. 3 Copy from Osc A

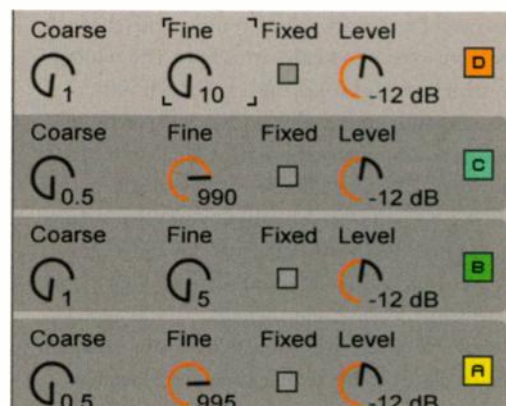


Fig. 4 Four Osc tunings

As a college professor, I'm always amazed that this is the first sound my students want to learn

since you'll be copying this oscillator in the next step along.

STEP 3

The fastest way for you to get this sawtooth-plus-envelope formatting onto the other three oscillators is to right-click in the envelope area and select Copy From Oscillator A for each of the others [Figure 3].

STEP 4

Once you've copied these settings to all four oscillators, it's time to start detuning. Due to Operator's tuning method, the fine-tune control is

divided into 1000 positive-only increments, so to tune two oscillators by the same amount in opposite directions, tune one of them to an octave lower, then raise its value accordingly. **Figure 4** shows how to do this for all four oscillators.

STEP 5

Since the classic supersaw effect relies on more than four oscillators, you'll need at least two layered Operators (or four two-oscillator softsynths). First, make any filter and/or LFO adjustments to your sound as needed, and then name its chain "Supersaw 1". Next, right-click on the title bar and select "Group" [Figure 5].

STEP 6

Once you've created the Instrument Rack, it's easy to create additional copies of your Supersaw 1 chain. Click on the chain title and select Duplicate [Figure 6]. Once you've got the second copy, retune its oscillators even further, then blend the two Operators to finesse the overall detuning. It helps to number each chain also, to keep track of these layers.

Once you've completed these steps, your end result should look like **Figure 7**, with eight detuned sawtooths replicating the now standard supersaw effect. If you want to go even bigger, just repeat Step 6 until you reach your goal. ■

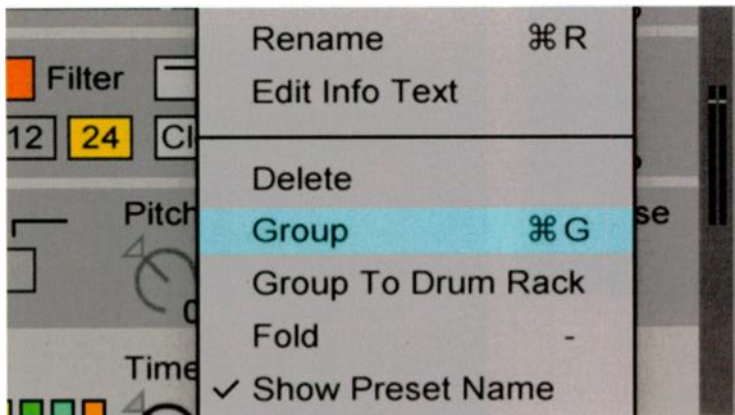


Fig. 5 Group to Rack

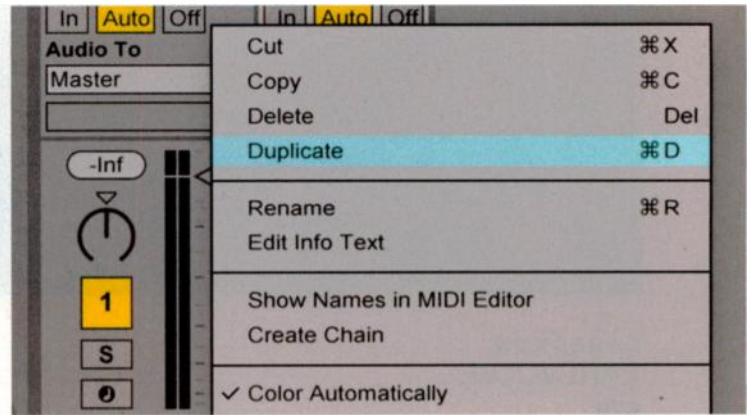


Fig. 6 Duplicate Operator



Fig. 7 Full Rack

LFO, tremolo and modulator plugins

Wobble, waggle and wiggle your way to victory with six of the most mindblowing modulators available on the virtual market today!

BY JAMES RUSSELL



EARECKON
EAREVOLVE
€79

This plugin is, at its core, based on the classic Leslie rotating speaker effect, but the Lille-based developer has created it with far more layers of complexity than your classic Lezzer effect. There's a dedicated Chorus module, two independent left and right delay times, horn and drum split, speed, acceleration, deceleration, and start and stop with choice of 'Park Angle', which basically determines what angle the horn or drum will end up when they stop spinning. You can determine the movement path for the entire speaker inside a virtual room, clockwise or counterclockwise, with Room Size and speaker Diameter, and to cap it all off, emulation of two virtual microphones and their positioning in the virtual room. Too much, you say? Well, if you're just using it to give a synth part a little more depth, then maybe so – but if you're using EAREvolve on a significant element of a track (guitar or piano, maybe), it's a must-have.

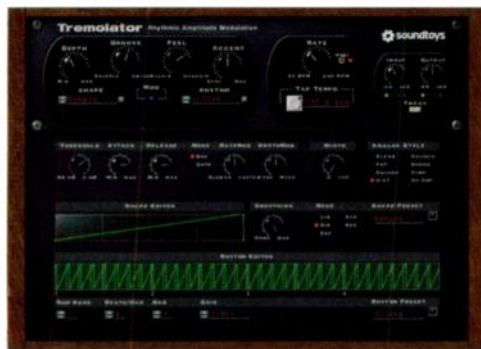
eareckon.com



PSP AUDIOWARE
PSP L'OTARY2
\$99

Judging by l' name, you can guess that this is another Leslie-style rotary speaker emulation. Visuals are scant, with the 'horn' and 'drum' moving behind virtual slits, but it's the sound that counts, with that classic Leslie tremolo (and chorale) sound emulated to a T. There's plenty of customisation onboard too, with controls over the virtual mics.

pspaudioware.com

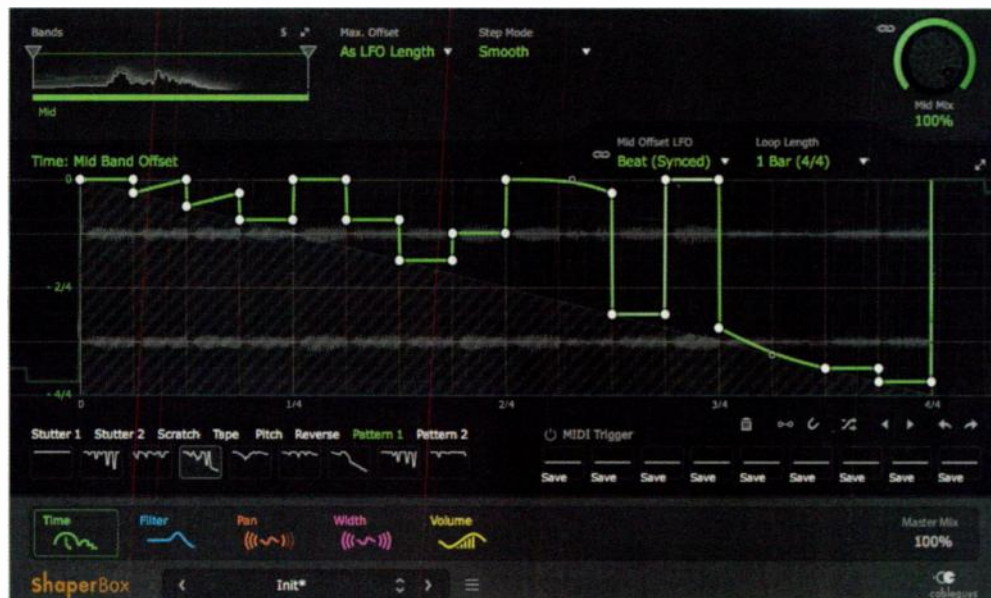


SOUNDTOYS TREMOLATOR

£129

Choose from 19 classic tremolo shapes (Danelectro, Wurlitzer, Fender...) or more fanciful patterns (City, Boosom, SlipperySine...) to get your Shape, then dial in Depth, Groove and Feel (shuffle and phase, basically) to customise it. You can set the Rhythm in beats, adjust the Rate and Tap Tempo, although some preset shapes are too complicated to fully adjust the Rhythm control. With a twitch of the Tweak button, things get nerdy, with a custom LFO waveshape editor, Threshold before modulation, Attack and Release, and amplification style. The only drawback? The interface is a bit crowded for today's standards.

soundtoys.com



CABLEGUYS SHAPERBOX

£99

If Cableguys' FilterShaper, TimeShaper, PanShaper, VolumeShaper and WidthShaper weren't good enough tools in their own right, ShaperBox brings them all together into one plugin. For each effect, choose a timebase and draw a pattern (or select a pre-made one) to have that Shaper's property (ie, Width, Panning, Filter cutoff...) respond to what you've drawn. Results range from subtle undulation through rhythmic transformation to all-out glitching madness, and with nine onboard MIDI triggers to recall patterns you saved earlier, it's ever so easy to impress. ShaperBox – and the rest of the 'Shaper gang – make for creative results in no time.

cableguys.com



MELDAPRODUCTION MRHYTHMIZER

£49

Melda's plugin interfaces are legendary throughout the world for being a bit tough, but MRhythmizer's actually makes a lot of sense. A 2-dimensional plane arranges time and the amount of effect applied, said effects being Time, Volume and Filter. Not only is the X/Y co-ordinate graph an intuitive way to get your head around how you're affecting the signal, there are also plenty of preset shapes and transfer curves to get you going. Glitching, gating, scratching and subtle warbling are all possible. Oh, and the price is most certainly right as well.

meldaproduction.com



AUDIORITY TUBE MODULATOR

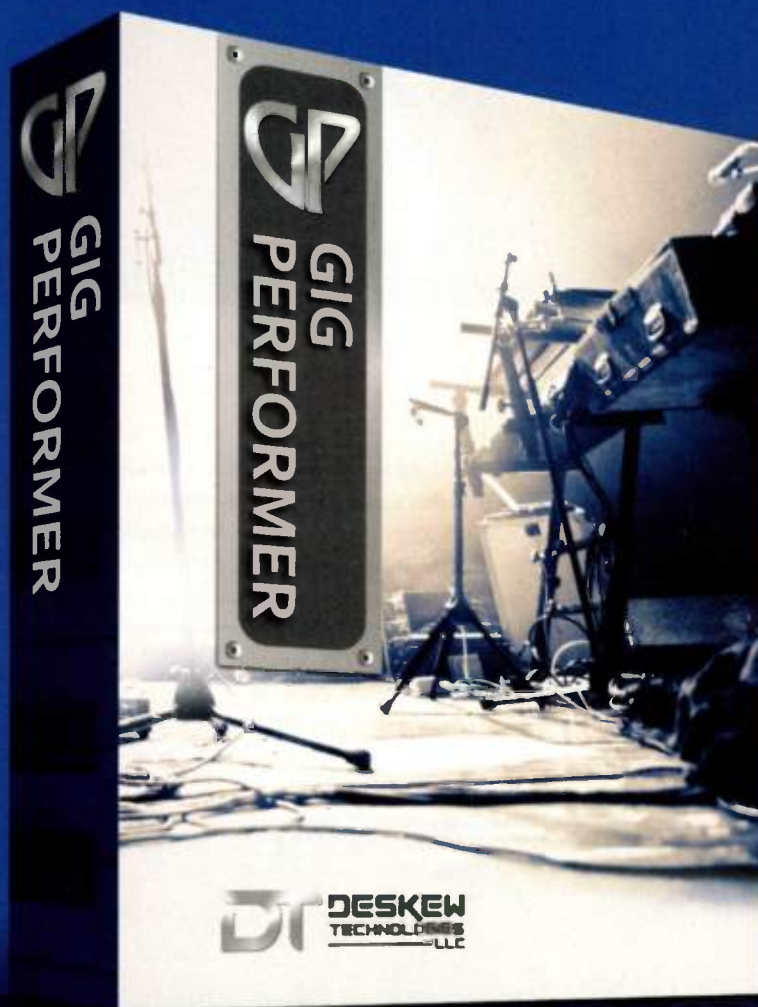
£35

This plugin models seven types of trem: chorus and vibrato effects on one side, and panning: Leslie and Wow/Flutter on the other. Each side has Rate and Amount controls, plus 11 LFO shapes each to modulate them with. The movement of each is mapped to either X or Y in the beautiful onboard oscilloscope. Tube Modulator very faithfully models some of rock's most classic tremos 'n' vibes, bringing a curated set of warm, complex tones that add the perfect moody ambience to solo parts. All of this comes at a distinctly reasonable outlay. Shine on you crazy well-priced bi-directional VST plugin modulation effect!

audiority.com

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Debbie Cavalier

The CEO for Berklee Online, the robust e-learning branch of Berklee College of Music, shares news and plans from the world of online music and audio education

BY BARBARA SCHULTZ

Seventeen years ago, Debbie Cavalier — a musician, educator, and former music publishing executive — helped found the online school within the famed Berklee College of Music. Today, she serves as the CEO of Berklee Online, which has become the largest online music school in the U.S. and recently added a Master's Degree program. *Electronic Musician* asked Cavalier to let us in on programming developments at Berklee, and generally in the world of online learning for music and audio students.

What's new in online music education that prospective students should know about?

There are so many more options for people interested in studying music online now. Berklee Online offers everything from free courses to full online degree programs. We have hundreds of free music lessons on our YouTube channel, and free Berklee MOOCs (Massive Open Online Courses) available through Coursera and edX.

Berklee Online also offers instructor-led courses, certificate programs, undergraduate degrees, and graduate degrees in areas including music production, music business, songwriting, music theory, arranging, composition, guitar, keyboard, voice, drums, bass and orchestration.

In the non-credit space, companies like Melodics have developed a subscription-based gamified approach to teaching and learning music — think Duolingo for music — and there are many companies offering subscriptions to instructional videos and online music lessons.

What's involved in Berklee Online's new Master's program?

The Master of Music in Music Production degree provides rigorous training in advanced recording, mixing, and mastering, in addition to focused work on critical areas such as vocal production, audio for visual media, and business sustainability for independent producers. The Master of Arts in Music Business program prepares students to be leaders in the growth and success of the evolving music business with courses in management, marketing, licensing, distribution, touring, and more. Next year, we

will add an online Master's degree in Film Scoring as well.

Are there ways for students to combine traditional classroom education with online courses, to get some benefits of both?

We just happen to be working on that right now. Berklee's current strategic plan is focused on flexible educational "Pathways" for students across all Berklee enterprises: Berklee Boston, Berklee Online, The Boston Conservatory at Berklee, Berklee Valencia Spain, BerkleeNYC, and more. The Pathways strategy will provide flexible and affordable options for students.

Berklee Online's tuition is 64 percent less than the Boston campus program; so, there would be significant savings for students who opt to study online for just one year of their degree.

For alumni who left Berklee before graduating, Berklee Online provides a Pathway to degree completion. This year, 13 Berklee alumni completed their degree with Berklee Online.

How have you seen online education change in the past several years in the way it's conducted and the ways it's perceived?

People laughed at us when we shared our vision for creating an online music college. Online learning was a radical idea in 2001! Acceptance of the online learning modality in general has come a long way.

A recent survey by Aslanian Market Research shows 85 percent of students who have attended both face-to-face and online courses said that online learning is as good or better than attending courses on campus.

From a technology perspective, there is so much more we can do now to support our distance-learning students. Responsive design helps students engage with their online coursework using their smartphone or tablet. Adaptive Learning serves up content unique to a student's individual needs. Augmented and Virtual Reality provide immersive experiences for deeper learning opportunities. Machine learning can help free instructors up for more meaningful engagement with students. And, simple tools like audio and video give tutors the ability to provide students with in-depth recorded critiques on assignments.

From an innovative curriculum perspective, Berklee Online strives to be nimble, market-driven, and responsive to students' needs. For example, producing ambisonic audio to support virtual environments is an emerging field and the skills needed are increasingly in demand. Berklee Online is beginning to develop curriculum around this subject. The first examples of ambisonic sound tutorials are on the Berklee Online YouTube channel.

What types of students are the best candidates for online education?

For the most part, Berklee Online serves adult learners who are pursuing their music education while trying to juggle both family and career obligations. A successful online student is someone who is both self-motivated and self-disciplined. Berklee Online students are professionals; they have busy lives yet are finding ways to pursue their dreams in music through online learning. ■

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