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October 2019 / CM273

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91 INSTRUMENTS AND EFFECTS

HEAVEN 17

The legendary synthpop band on hardware versus software

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See page 5 to find out how to download this issue's exclusive content

welcome

From recording chords and riffs to bashing virtual beats, a MIDI keyboard or controller is an essential peripheral for any serious producer. Not only will one help you lay down rhythmic and melodic ideas like, well, an actual musician, but they also provide unique compositional and performance features that allow you to exploit all that sonic power found inside your DAW.

So in this month's hands-on cover feature, starting on p22, we're going to break away from the screen and show you how 2019's new wave of specialist keyboards,

“Unlock new dimensions of expression, control and creativity in the studio”

DAW controllers and all-in-one software/hardware hybrid setups can unlock new dimensions of expression, control and creativity when in the studio.

Speaking of next-gen production

tools, Native Instruments' long-awaited sequel to their iconic virtual instrument, Massive, has arrived... but has it got the X factor? Find out in our in-depth review on p88, and get to grips with its sound-generating features in the first of a multi-part tutorial guide (p56).

And if software recreations of classic hardware synths are more your thing, come and explore Arturia's latest trio of virtual instruments - the Synthi V, CZ V and Mellotron V - on p62.

ENJOY THE ISSUE

Joe Rossitter Editor



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The DnB technician takes you through the creation of *Hackers* in this advanced in-studio video



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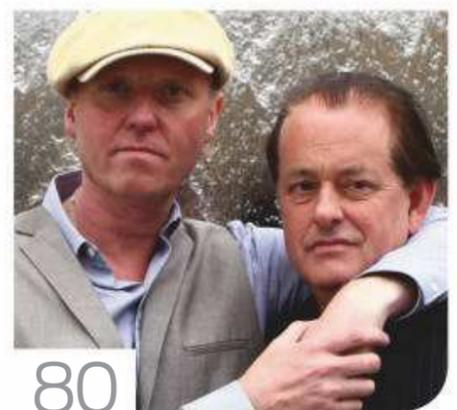


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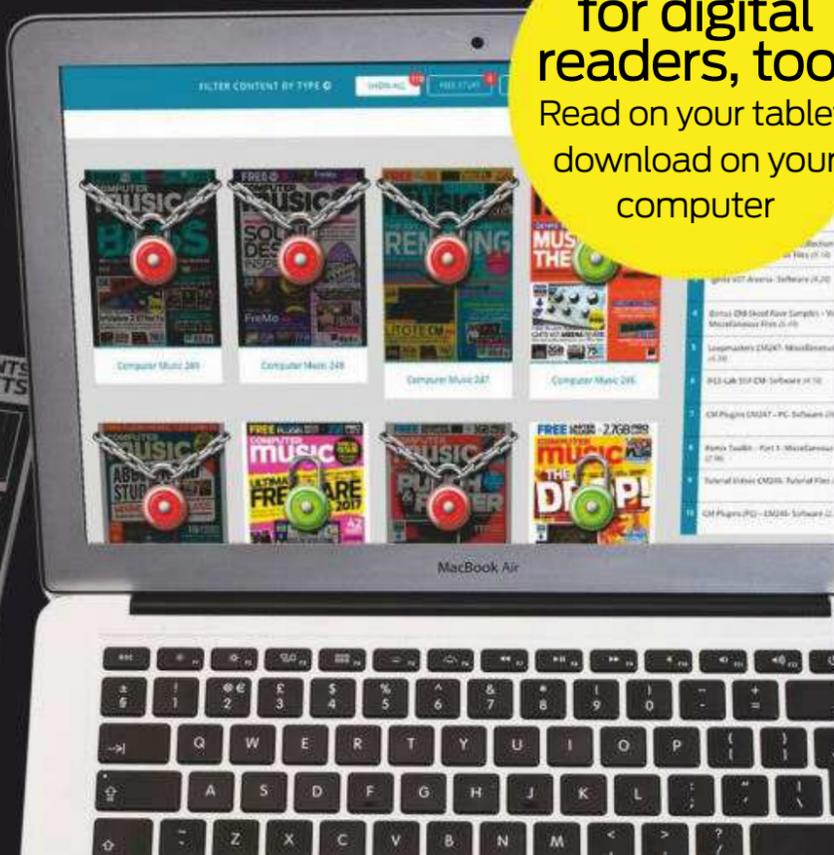
Follow along in your DAW with WAVs, project files, MIDI clips and more



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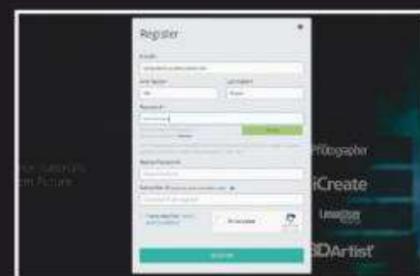


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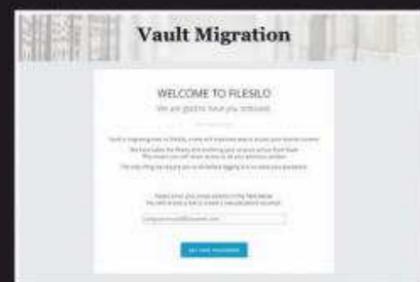
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HANDS-ON MIDI

Watch our step-by-step guides and master today's new breed of keyboards and controllers

 [Read the full article on p22](#)



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cm/video



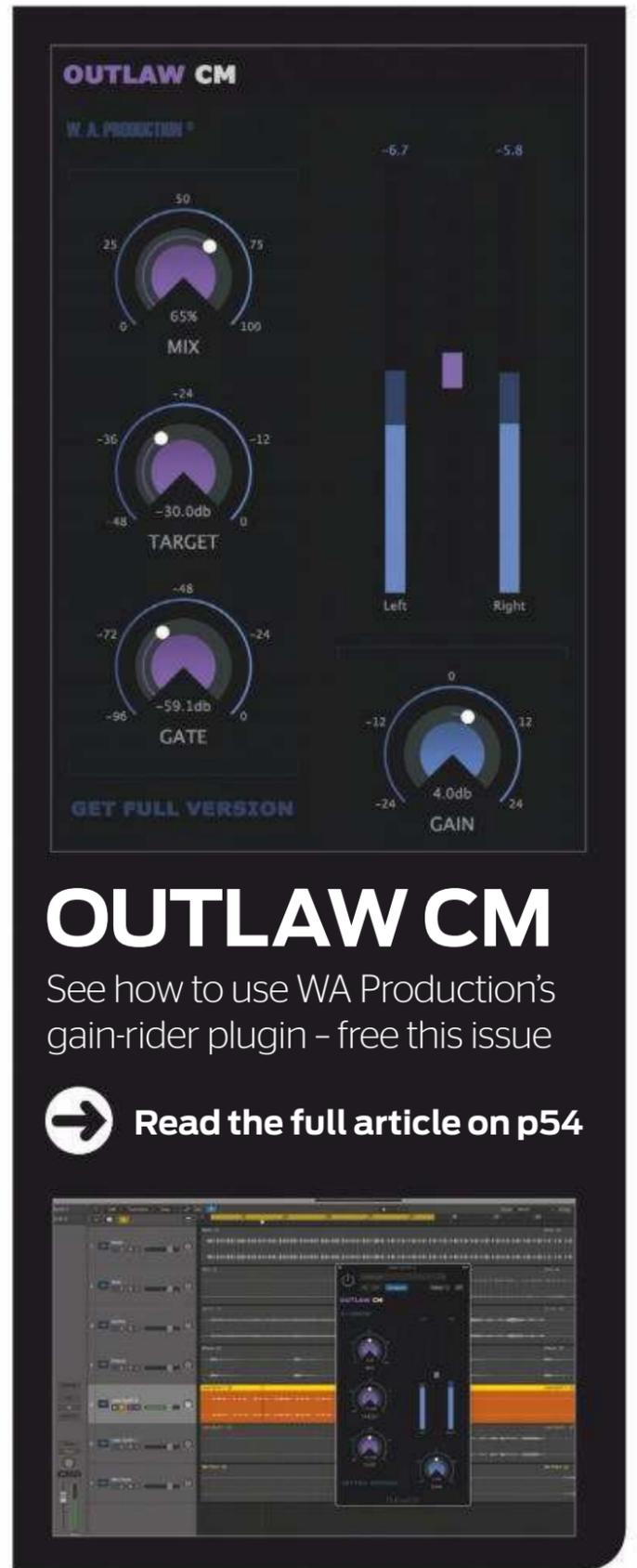
cm Producer Masterclass

METRIK

DnB maven Tom Mundell walks you through the making of *Hackers*

Note: this video is only available using the link on page 45

[Read the full article on p44](#)



OUTLAW CM

W.A. PRODUCTION

MIX: 65%

TARGET: -30.0db

GATE: -59.1db

GAIN: 4.0db

Left: -6.7, Right: -5.8

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OUTLAW CM

See how to use WA Production's gain-rider plugin - free this issue

[Read the full article on p54](#)



	EASY GUIDE REVOICING MAJOR CHORDS	STUDIO STRATEGIES SOUNDS FROM VOCALS	DR BEAT CREATIVE BEAT-SLICING
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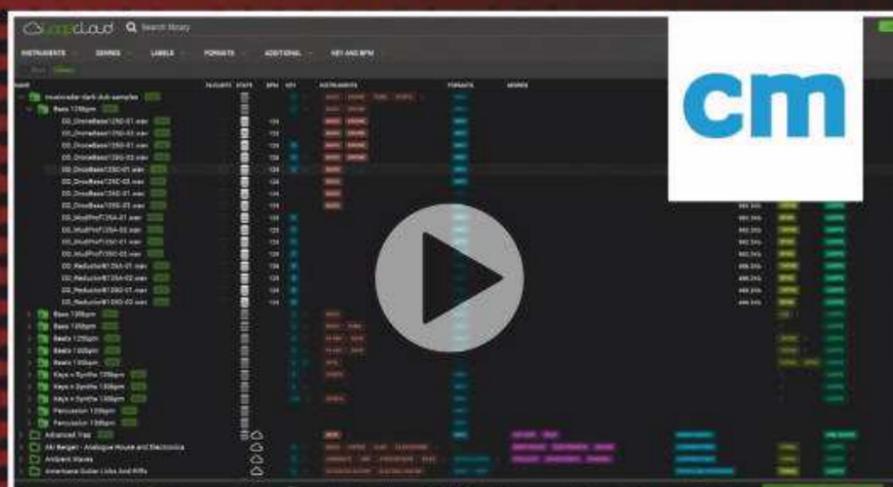
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HIVE 2

Sleek, streamlined, **SUPERCHARGED**



NKS™
NATIVE
KONTROL
STANDARD

Hive 2 is an easy-to-use synthesizer combining u-he's famous sound quality with a low CPU footprint. The extra modulation features guarantee more fun than ever before.

Underneath its new face, **Hive 2** lets you go deeper: Add life with the unique Shape Sequencer and Function Generators, layer traditional analogue waveforms with 2-dimensional wavetables, or control multiple effect parameters at the same time for the full-on, mindbending experience.

With its no-nonsense GUI, flexible signal routing and high quality effects, **Hive 2** gives you the sound you want with a minimum of fuss.

- 2 oscillators with wavetable option, 16x unison, tunable sub-oscillators.
- Drag & drop modulation assignment.
- 12x 2 matrix slots with modifiers for curvature, rectify, quantize, sample/hold, slew rate.
- Arpeggiator, step sequencer with realtime recording.
- Unique 8-step shape sequencer with 4 independent outputs.
- 2 function generators can serve as extra envelopes, gate generators, LFOs, slew limiters.
- 7 re-arrangeable effects: distortion, chorus, delay, phaser, EQ, reverb, compressor.
- 2000+ NKS-ready factory presets by some of our favourite sound designers, many more available online.

Download from



u-he.com

While you're at it, check out the award-winning Zebra2, Diva, Repro, Bazille, ACE, Satin, and Presswerk. Same developer, same website, same fun factor.

cm/news

NEW RELEASES > COMMENT > INDUSTRY HAPPENINGS

Unfiltered Audio Lion

State-of-the-art synthesis meets modular FX processing

> **Unfiltered Audio have consistently garnered high review scores in cm with their gradually expanding range of powerful and innovative plugin effects, the most recent being the fabulous BYOME (9/10, cm264). Their latest release, however, sees the company making the move into the virtual instrument space: Lion is a two-oscillator synth featuring a modular effects row lifted from BYOME, a freeform modulation setup and more, all presented in a single-screen interface.**

As well as the expected subtractive analogue emulation, Lion's two oscillators offer a further 25 modal algorithms, including FM, Additive, Superoscs, Chaos, Noise, Wavefolding and more, for a wide range of raw tones. The algorithms have been designed with modulation in mind, and Unfiltered say that Lion's Drift and Unison features make it "simple to program full and lush sounds with just the oscillators". The oscillator-related luffs don't end there, either, as Lion's mixer gives you eight algorithms for "smashing together [the] two oscillators", including standard crossfading, Ring Modulation, Bidirectional Sample & Hold, Min/Max and the intriguing Wave Terrains and Bitwise.

The BYOME effects row enables free chaining of modules from a roster of over 40, and modulation of their parameters by, among other things, incoming MIDI notes.



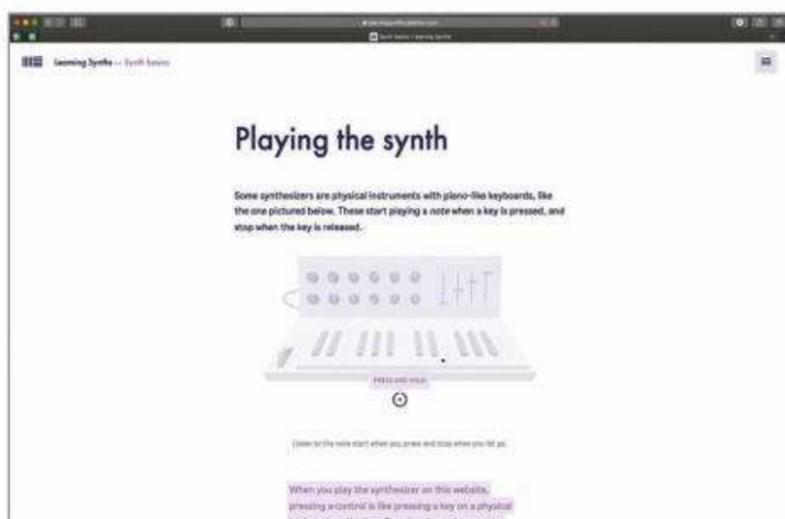
Will Unfiltered Audio's debut synth roar as loudly as their superb effects?

And an improved new version of BYOME's randomisation engine enables minor variations on presets to be generated at a click, while the new tagged browser makes finding the perfect patch easy. MPE support lets owners of compatible MIDI controllers by Roli and others get expressive.

With a release date set for some time in August, Lion may well have escaped into the wild by the time you read this, although the price was yet to be confirmed at the time of writing. We'll be getting our teeth into it in a forthcoming review.

plugin-alliance.com

Hone your skills with Ableton's browser-based primer



Ableton Learning Synths

Ableton's Learning Synths is a browser-based interactive 'course' that walks you through every aspect of analogue subtractive synthesis, from oscs and filters to LFOs and envelopes, finally arriving at the Recipes and Playground pages, where a wide range of synthesised sounds are deconstructed and you can tool around with a full synth. Obvious graphical feedback makes it easy to see what effects your tweaks have, and it's a great resource for newcomers.

learningsynths.ableton.com

App watch



We report on the latest developments in phone and tablet music making



Fabfilter Pro

FabFilter's Pro plugins are among the best in the business, so iPad owners should be cock-a-hoop to learn that they've now made the jump to Apple's tablet as AUv3s. Users of the Auria iPad DAW have been able to access them for a while, but now everyone else can. There are seven plugins in the range, covering EQ, compression, reverb, limiting, de-essing and gating. You can buy them individually (from £28.99 each) but the most cost-effective purchase is the complete bundle, at £129.99. fabfilter.com



Burns Spectrum

Another new bundle comes from Burns Audio, who've created four AUv3 'modules' based on open-source Eurorack gear from Mutable instruments. You get an eight-voice polyphonic oscillator, a modal synthesis device, a string-based resonator and a granular sampler/looper/pitch shifter/reverb. Common controls include an LFO, ADSR envelope, XY touchpad and modulation matrix. They're not much to look at, but the Spectrum plugins have fine pedigree... and are free. burns.ca/spectrum.html



Uptune

Upscale Technology's Uptune makes soundchecking at a gig much quicker. You install it on two iOS or Android devices, which can then be linked, and place one where the audience will be (to act as a mic) and another on the mixing desk. Then, as the band/DJ/artist plays, the desk device 'listens' to the mix via the mic device and provides level-setting feedback. Neat, and you can try it for free. upscale-technology.com



Abbey Road Studio 3 can't promise you a hit, but will help

Waves Abbey Road Studio 3

The latest collaboration between prolific software powerhouse Waves and world famous recording facility Abbey Road Studios is Abbey Road Studio 3, a plugin that, it's claimed, "brings the acoustic environment of the legendary Abbey Road Studio 3 control room to your headphones". Based on Waves' proven Nx technology, Abbey Road Studio 3 lets you choose between nearfield, midfield and farfield speaker setups in stereo mode, and also works in 5.1 and 7.1 surround formats. The

realism can be enhanced further by using the plugin in conjunction with the webcam-driven Nx Head Tracker, which locks the speakers to a fixed position in virtual space, relative to your head position.

Abbey Road Studio 3 is certainly a bold and ambitious proposition, but if anyone can pull it off, it's Waves - and Abbey Road surely wouldn't put their name to something like this if it didn't hit the mark. It's out now, priced \$199, and we'll let you know how it fares in our forthcoming review.

waves.com

AudioThing Valves

Analogue emulation specialists AudioThing have released Valves, a vintage tube plugin that also features filter and guitar amp modelling for further sound shaping beyond the core saturation. The Valve section offers a choice of Triode and Pentode valve types, with adjustable Drive, Bias and Tone, and uses 16x oversampling for maximum analogue authenticity - hopefully not at the cost of too large a CPU hit. The resonant Filter is a classic ladder design with 2- and 4-pole options, and a choice of Low-pass, High-pass, Band-pass and Notch modes. The filter can be placed pre- or post-tube, and bypassed when not needed.

The Cabinet/EQ serves up eight types of amplifier with simple Bass and Treble EQ



controls; and the Master section houses a soft clipper, as well as a Mix control for parallel processing.

Valves costs €59, but is a free upgrade for owners of AudioThing's Valve Filter and Valve Exciter, which the new plugin "combines and replaces".

audiothing.net

Acustica Audio Cola

Based on their Core 13 convolution engine, Acustica's new plugin suite centres on an emulation of a channel strip from "a rare vintage British console from 1972, used to shape the immortal sound of iconic albums by AC/DC, Queen, Clash, Sex Pistols and



many more." Alongside that, you also get the strip's various components - the C-505 compressor/limiter, C-415 3-band valve EQ and C-228 EQ/filter - and the C-1671 graphic EQ as separate plugins.

Equally big news, though, is the use of artificial intelligence in Cola's auto-mixing system. This sets up the controls for you based on the characteristics of the input signal and the particular approach of the specific engineer whose moves were "sampled" to define the algorithm, but is described as "still in its infancy", so we're keeping our expectations of that one in check somewhat.

Cola is out now, priced €159.

acustica-audio.com

Get with the programmers

The creator of super-synth Circle2 and new 808 instrument SubLab makes his thoughts known



Gavin Burke
Future Audio
Workshop

cm Tell us how FAW came to be.

GB "We created FAW about ten years ago to experiment and develop future-facing synths. Then, the trend was to emulate older synths. We felt that this approach was limiting and we were interested in pushing virtual instruments into a new space."

cm Your Circle and Circle² synths are known for their ease of use. How do you approach that?

GB "A lot of effort goes into it. We keep the musician in mind and view things from that perspective from start to finish. If a feature or control feels awkward to use, we'll keep working on it until it feels right."

cm Describe the concept and realisation behind SubLab...

GB "SubLab is designed for 808 style sub-bass that you hear mostly in hip-hop. The music I listen to strongly influences the instruments I want to develop. I grew up listening to hip-hop cassettes, and for the past few years, I was immersed in hip-hop again while living in LA. Driving around, listening to the latest Travis Scott track and feeling the sub-bass from the car speakers definitely pushed us towards developing SubLab."

cm What challenges did you face in developing it?

GB "We've got a lot of experience when it comes to building software, so there weren't any major challenges. The biggest one is happening now - where to take things next! Success brings lots of feature requests. We're sifting through that, figuring out how to keep everyone happy without losing what makes SubLab special."

"We keep the musician in mind and view things from that perspective"

cm How does X-Sub differ from other sub bass generators?

GB "Sub oscillators tend to be a bit overlooked. They are usually secondary to the main oscillators - often just a simple sine waveform that follows the pitch of the main oscillator."

We spent a lot of time looking at what producers were doing, and asked them questions. The answers they gave pointed to the area of bass enhancers and psychoacoustics. X-Sub generates the sub frequencies with control over the harmonics so you can enhance your sub sound quickly without making it muddy."

cm SubLab is a very focused instrument. Was that deliberate?

GB "We wanted a very focused plugin, designed for a single purpose. The feature set for SubLab was informed by YouTube tutorials put out by hip-hop producers; how they were using multiple plugins and complex workflows to achieve a single sound. Of course, producers in other genres find it useful. It's like how the Roland TB-303 was designed for people to play guitar to, but was repurposed for acid-house. We like that idea."

cm What's next for FAW?

GB "Improving SubLab and Circle² is our main focus now. We're working on allowing people to easily export sound packs from SubLab so we can grow the community of sound designers releasing packs. We're not really interested in hardware development; there are already a lot of companies doing this better than we could."

futureaudioworkshop.com

Brainworx bx_console Focusrite

The latest addition to Brainworx's bx_console range of classic mixing desk emulations sees Focusrite's legendary Studio Console (only ten of which were ever made) recreated in plugin form. Using Tolerance Modelling Technology to simulate "channel-to-channel variances in electronic components for the most realistic analog sound", bx_console Focusrite faithfully apes the console's ISA110 EQ and ISA130 Dynamics modules, with 72 subtly differing channels to choose from.



It's available now, priced \$349, although owners of Focusrite's Clarett and Red interfaces can download it for free.

plugin-alliance.com

Nembrini Audio Delay3000

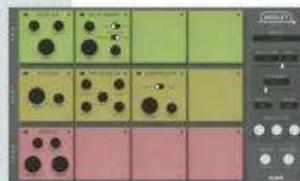
"A chameleon processor that brings the delay FX for your DAW to the next level", Delay3000 Vintage Modern Repeater (to give its full name) is a supercharged plugin emulation of Roland's SDE-3000 rackmount delay from the early 80s. As well as 16 stereo multitap patterns, Delay3000 boasts a low-pass resonant filter, LFO modulation, a ducking function, a tube saturation circuit, and a Smear control for softening the attacks of the repeats. It's available now for Mac and PC, priced \$97.



nembrinaudio.com

Klevgrand Modley

A sort of modular effects plugin with a delay loop in the middle, Modley lets you string together three chains (Pre, Loop and Post) of insert effects drawing on a roster of 16 modules - Distortion, Phaser, Panning, Pitch Shifter, etc.



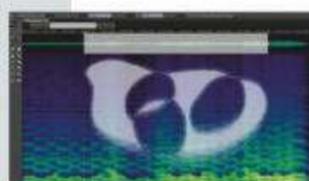
The Loop chain constitutes a delay with Delay Time and Feedback parameters, while Pre and Post provide shaping of the delay input and output. It's a great idea, and we look forward to checking it out in our review.

Modley will cost you \$60 on Mac and PC, and \$16 on iPad, where it functions as an AUv3 plugin.

klevgrand.se

Steinberg SpectraLayers Pro 6

The first new version of the SpectraLayers Pro spectral audio editor to be released by Steinberg since their acquisition of it from



Magix (who bought it from Sony!) adds ARA 2 support for total integration into compatible DAWs (including Cubase and Nuendo, natch), as well as the ability to use other audio editors within

SpectraLayers Pro 6. Other additions will include new selection tools, visible fade masks and more.

SpectraLayers Pro 6 can be yours today, on Mac or PC, in exchange for £342.

URL.steinberg.net

In October 2009, we called time on MIDI keyboards... somewhat erroneously

Looking back, it seems odd that Propellerhead Software created a whole new recording app - Record - rather than just adding that feature to Reason, but they did, and we covered it in detail in October 2009 (cm143).

We also looked at another DAW, Apple's Logic 9, calling it "good value" at £399. The latest version costs half that; in another 10 years they might give it away.

In our *Burning Question* feature, we asked if the MIDI keyboard was outdated,

"The MIDI keyboard continues to sell by the truckload"

speaking to developers of alternative controllers who thought they'd come up with better options. The fact that most of these devices are now consigned to history/lofts yet the MIDI keyboard continues to sell by the truckload probably tells you all you need to know about how that one panned out.

Finally, in our *System Check* computing column, we reported that one scientist was claiming that a detailed, functioning, artificial human brain would be built within the next ten years. We're guessing that Alexa and Siri aren't quite what he had in mind, so maybe a bit more work's required there.



For cm143, John 00 Fleming was on hand to give a non-zero amount of trance-based advice



FL Studio's new preset-centric synth promises "instant epic sounds"

FL Studio 20.5

The latest version of FL Studio adds a whole new synth to Image-Line's massively popular Mac/PC DAW. Called Flex, it's a preset-based instrument that deploys various forms of synthesis and sample playback in a simple, macro-driven interface, for "instant epic sounds that allow you to stay in-the-zone making music". Additional preset packs are available for Flex, too. Version 20.5 also lets you use FL Studio as a VST/AU plugin in another DAW, and brings a raft of fixes/enhancements. It's free for registered users, and €89 for new users.

image-line.com

Ins & outs

ABOUT 'HEIM TOO

Guitar brand Gibson have returned the Oberheim brand and intellectual property to founder Tom Oberheim. The synth legend says, "After over 30 years of being without it, I'm thrilled to again be able to use the Oberheim trademark for my products."

CLOSING THE BOOK

Apple launched tweaked versions of their MacBook Air and 13" MacBook Pro last month, but quietly dropped the MacBook from their product line at the same time. So, if you want a super-light Mac laptop with a 12-inch screen, you'd better hunt one down quickly.

HANS ZOOMER

He may be known for his epic Hollywood scores, but Hans Zimmer's latest project involves working with BMW on the sounds for their new electric cars. We're guessing you won't hear string swells when you put your foot to the floor, though.

LINNODRUM

Roger Linn may be the godfather of the modern drum machine, but it seems he's not so keen on his brainchild's sound. "I rarely listen to anything with drum machines in it," he told *MusicRadar*, confessing to preferring "more softly played music".

GADGET SWITCHES THINGS UP

The Nintendo Switch version of Korg Gadget got a couple of very cool new devices last month: a Sega-themed drum machine and a Taito-branded FM-esque instrument. A match made in retro video game heaven.

EUROPE-SCEPTIC

We like the concept of Remix Hits, a new platform that lets you buy stem files from hit songs so you can remix them, but when Europe's *The Final Countdown* is one of your biggest launch tracks, you know your catalogue might need some looking at...

cm/freeware news

This month, we get our mitts on a fantastic filtering tool, a trio of tone generators and a big update to one of the best freeware offerings going

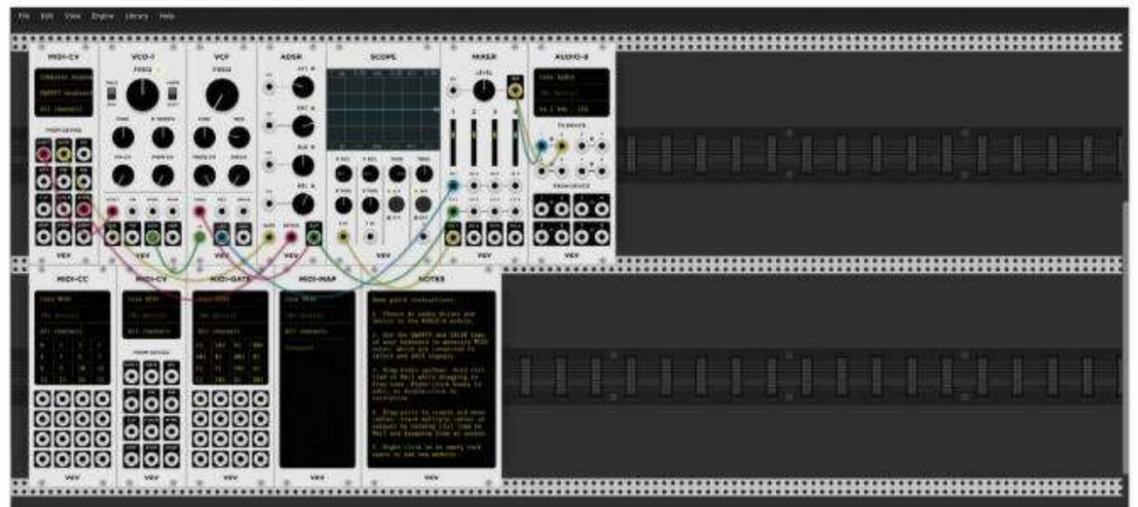
VCV Rack 1.0

One of the best ever free virtual synths finally earns its 1.0 badge, bringing lots of great features with it

> It's hard to overstate just how great a gift VCV Rack is to electronic musicians everywhere. Free and open source, it's available for Mac, Windows and Linux users. Taking the form of a Eurorack-styled modular synthesiser system, VCV Rack offers a wide variety of free and paid-for native and third-party modules from the developer's website, all accessed from within the rack itself.

VCV Rack has been available in beta form for some time, and we've covered it extensively in the pages of this magazine, all the while watching it grow in power and flexibility with each new update.

Nevertheless, we weren't quite prepared for the massive leap forward seen in version 1.0. First and foremost, it's now polyphonic.



VCV Rack puts the power and flexibility of an infinitely expandable Eurorack system onto your computer

That's right, you can now play with up to 16 voices without losing out on even a jot of routing flexibility.

Furthermore, there's now a trio of modules designed to provide some MIDI output functions, giving you control over desktop synths, drum machines and Eurorack interfaces.

On the subject of MIDI, there's also a brand-spanking new MIDI mapping module

that allows you to easily and instantly connect and control parameters with your favourite external MIDI controller.

Further enhancements include a newly-designed module browser, multicore engine, undo/redo history, added sample rates... the list goes on. And on some more.

You're guaranteed to love VCV Rack, so make sure you download v1.0 right now. vcvrack.com

Boz Digital Labs Bark of Dog 2

The second incarnation of the curiously-named Bark of Dog was designed to be the ideal companion during mixdown, with a studio-ready resonant high-pass filter and mid-side support. The new version adds that most venerable tool for tightening up the low end - a Pultec-styled passive boost/attenuate combo. There's also a Combo mode that combines the original resonant filter and the new Pultec, for a one-two-punch for adding... well, punch! bozdigitallabs.com



Laptop Musician Diskpiano, Little Roadey and Padspheres

A nifty trio of plugins from the Laptop Musician Blog. The first, Diskpiano, is built on Yamaha MX100II Disklavier samples with control over reverb, release, and vibrato. Then there's Little Roadey, a Rhodes piano with tremolo and a hint of dirt and Padspheres, with its 25 evocative pad sounds and full ADSR-style envelope in tow. laptopmusician.net.com



Babelson Belle Filter

Simple, to the point and bursting with old-school console mojo, this diminutive doodad is based on the filter module from the legendary HLS (Helios) console, as used on classic LPs by The Rolling Stones, Roxy Music and The Who. While not as elaborate as commercial HLS clones, this one still offers the ability to utterly reshape the sound, imparting some vintage vibe along the way. It's cross-platform, though an iLok account is necessary. babelson.com

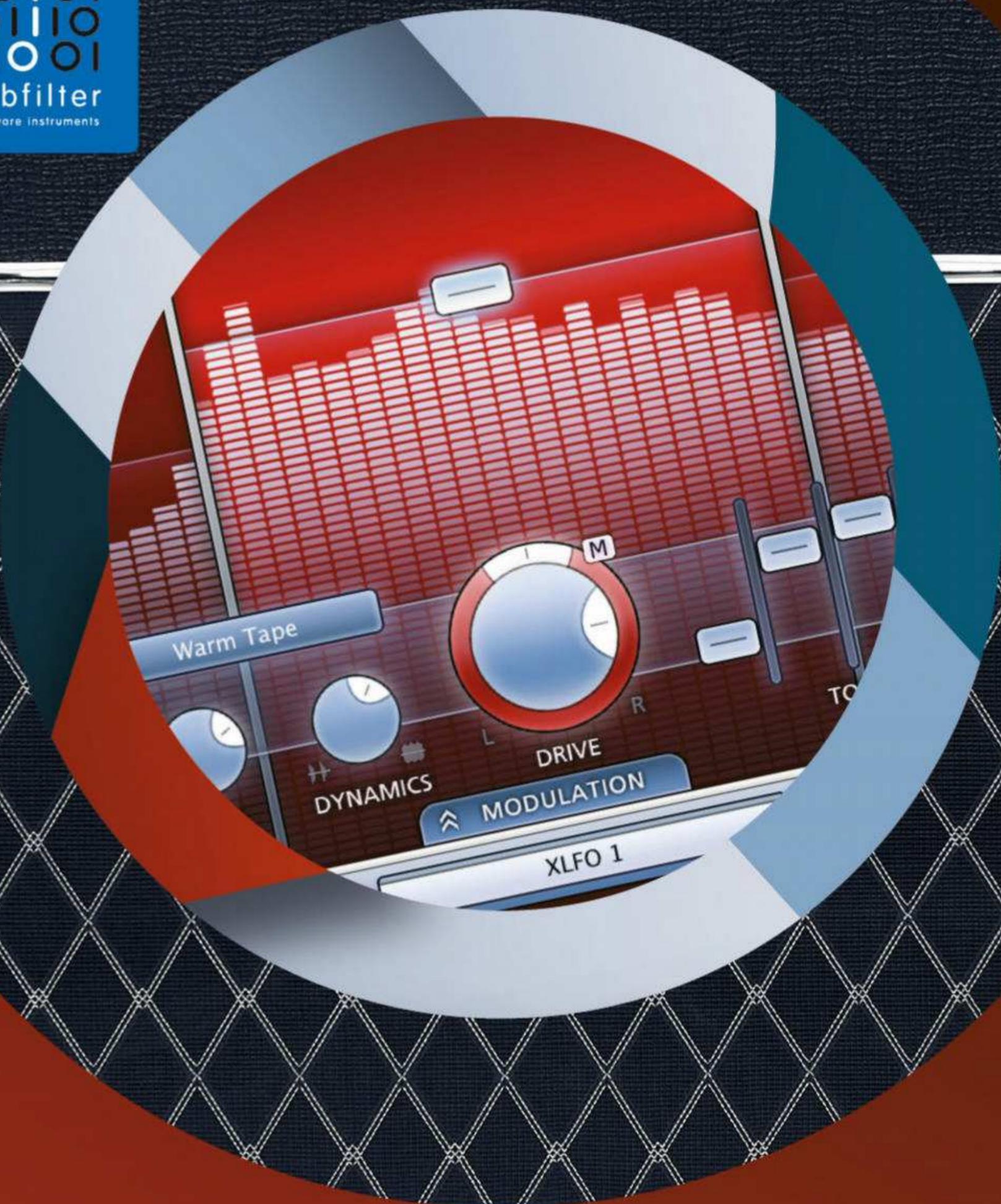




CLASSIC FREE SOFTWARE LINPLUG GAKSTOAR ALPHA

Longtime readers will likely be aware of LinPlug, the now defunct purveyor of some of the finest virtual instruments ever conceived. Old timers may have even used Alpha CM, our own version of the company's popular virtual analogue synthesiser. Lesser known will be the GakStoar Alpha. This primitive-looking VA was the ancestor

of Alpha CM and shared with it a comprehensive collection of analogue waveforms, squelchy dual filters (one for each oscillator) and even an early version of LinPlug's mod matrix. You won't find a copy of this old chestnut unless you happen to have old CM cover discs lying around! [cm bit.ly/lingakalp](http://cm.bit.ly/lingakalp)



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What's on your hard drive?



Photo: Dayna Szyndrowski

Loscil

Canadian ambient producer Scott Morgan likes to get stuck into some serious sound design, and can't live without Max/MSP

MAX/MSP

"My desert island software choice! In fact, there are many Loscil records that wouldn't exist without Max/MSP. There was a time when all my composition and arrangement was done using custom-built Max sequencers. Perhaps growing up playing Lego influenced me, but after being exposed to Max in university, I couldn't stop building things in it. Since Max for Live came out, I don't work with standalone Max as much, but I still turn to it for problem-solving. My most recent patch is a custom Max for Live device to send OSC from Ableton to Resolume for live video fades and triggers. It continues to be a very important part of my working process."

ABLETON LIVE

"Ableton Live is the centre of my studio these days. For composition and live

performance, it has become an essential tool. The Session View enables fluid assembly of musical ideas, and allows for the auditioning of different sounds against each other in an intuitive and immediate way. There is also something about the semi-non-linear paradigm of the Session



The ambient-orientated Scott cites Audio Damage's EOS 2 as his go-to reverb

View that leads to happy accidents... in my opinion, it's one of Ableton Live's most powerful features."

NUENDO

"While I mostly use Ableton as my main DAW, I still return to Nuendo for a lot of core studio tasks. A studio that I worked for used Nuendo as its main DAW for sound design, mixing and voice recording, which meant I became very proficient. It's still an essential tool for editing to picture, sound design, seamless loop creation, mixing and mastering. Yes, it can be a little overwhelming at times, but once you get to know your way around, you'll have a lot of power at your disposal."

AUDIO DAMAGE EOS/EOS 2

"I'm a composer who primarily makes ambient and soundscape music, so having a

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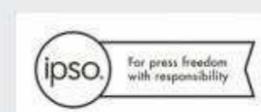
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Scott uses Convolution Reverb Pro more for its ability to add texture than its emulation of realistic spaces

go-to reverb is essential. I've been using EOS and EOS 2 from Audio Damage for many years. I believe it now exists for iOS, too, and even as a modular device. I prefer the sound of the plates over the hall, with a long tail, a little bit of modulation and some of the highs rolled off for a dark, subtle sound. I use it on almost everything. It's light on the CPU and just rich enough to add some depth and texture to sounds. The Infinite button also comes in handy for creating drones."

FABFILTER PRO-Q

"For most daily EQ, I use Ableton Live's EQ Eight, but when ever I need to get a bit more surgical - removing specific frequencies or working on the master bus - I prefer Pro-Q. It's very effective for nuts and bolts-style parametric EQ, but it's also seriously expressive on those filter sweeps or dramatic high/low-passes. I use it extensively when mixing and also when I'm playing live. It helps to tame the sound for bigger rooms and sound systems."

ROBERT HENKE'S GRANULATOR II/MAX FOR LIVE

"I've been using granular synthesis since I studied it in school with [*granular pioneer*] Barry Truax. I was lucky enough to use his PodX system in the early 90s, which blew my mind in terms of real-time granular timestretching. I've never heard anything quite like it since, so I'm always searching for new granular tools. This comes very close to ticking all the boxes for me. As well as being flexible and easy to use inside the Ableton environment, it's also playable... like an instrument. It can be heavy on the CPU when you get several voices on the go, but it's a great sound design tool."

CONVOLUTION REVERB PRO

"I learned about Convolution via Tom Erbe's amazing SoundHack application, which I used extensively during the 90s and early-2000s. Even though it was in non-real time, I absolutely loved the textures and sounds you could get. As a real-time alternative, I tend to use the Convolution Reverb Pro Max for Live device in Ableton. It allows you to easily drop in your own impulses, and has a variety of built-in controls to shape the sound. While convolution is known as a great tool for imitating the reverb of actual spaces, I use it more as a sound design tool to create texture and density. Often, I'll use longer, noisier sounds - even raw pink

noise! - and pass more harmonic sounds through it. This gives you a kind of 'timestretching' or spectral blurring. Great for creating dense, cloudy textures."

NI KONTAKT

"I've always liked working with samplers more than synthesisers - my introduction to electronic music production was via tape and the techniques of musique concrète. Working with samplers felt like the next evolutionary step. Initially, I used hardware samplers, but when samplers moved in the box, Kontakt became the obvious choice. It's got so much to offer... round robin randomisation, sophisticated mapping and internal effects routing. Occasionally, I use sample libraries, but mostly I use it to build my own custom instruments. I've even got a basic piano that uses the samples from Glenn Gould's former Steinway, housed at the National Arts Centre in Ottawa."

ADOBE AUDITION

"It feels strange to say that a graphics company's product has become an essential tool... but it's true! I've always valued a simple, destructive audio editor. I used to use Sound Designer II and, as a result, I've always wanted a basic mono/stereo editor in my toolkit. Over the years, many have come and gone. SoundEdit 16, Peak, Audacity and, most recently, Wave Editor. When Adobe took over Cool Edit Pro and renamed it Audition, I was sceptical, but I've started to use it more and more for quick edits, and even for some spectral-based editing." **cm**



Loscil's new album, *Equivalent*, is out on August 16, via Kranky

cm / roundup

Creative MIDI plugins

Arpeggiate and sequence with these note manipulators



Ableton Probability Pack

Bundled with Live 10 Suite, these five Max for Live step sequencers excel at creative MIDI randomisation
ableton.com



Xfer Records Cthulhu

A wicked MIDI-generating plugin, Cthulhu makes conjuring up instant chords and melodies a snap
xferrecords.com

Sugar Bytes Thesys

Thesys blows away bog-standard arpeggiators, placing live performance at the forefront
sugar-bytes.de



Kirnu Cream

A kick-ass arpeggiator with a mind-boggling array of MIDI-generating and manipulation systems onboard
kirnuarp.com



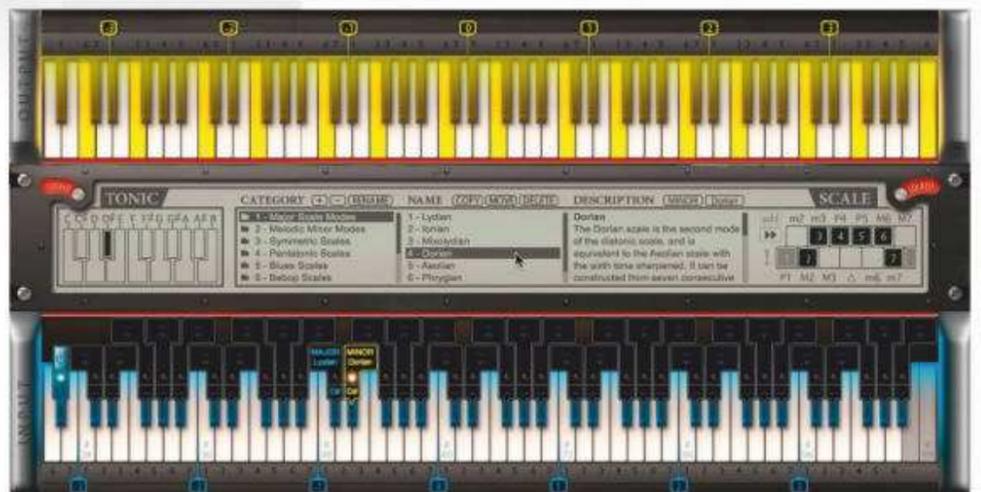
HY-Plugins HY-SeqCollection2

Six sequencer engines, MIDI recording, randomisation and more from the creators of last issue's **cm** Plugin
hy-plugins.com



AutoTonic

Map any scale to your keyboard's white keys, and call up custom keyswitches on the fly using your black keys
autotonic.net



Sonic Faction Tricky Traps

A pack of 16 Max for Live "creative contraptions" featuring five esoteric MIDI effects: 4Play, Radar, Ripple, IsoArp and Ripkord
ableton.com



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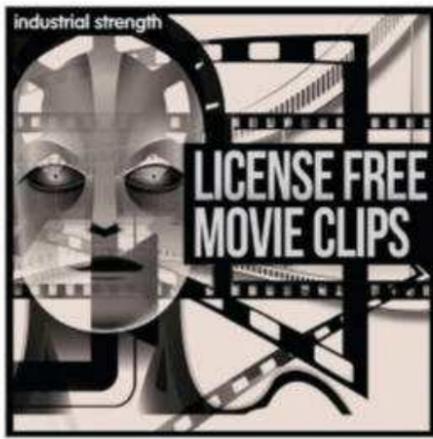


Sample | Edit | Create

"Loopcloud has come of age. It was always great, but now it's essential" Music Tech Magazine

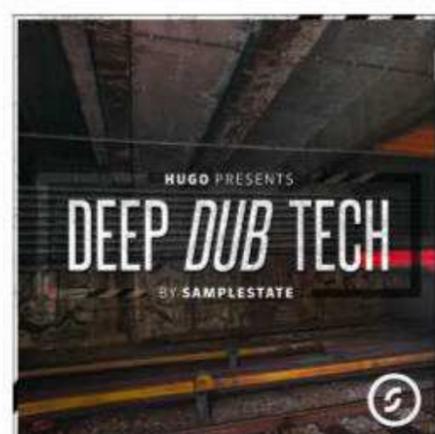
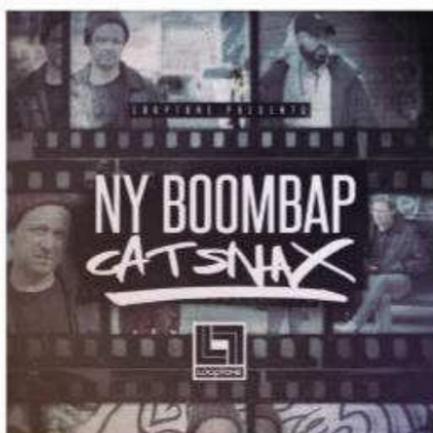
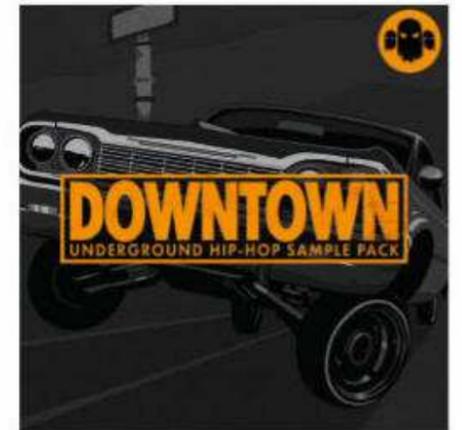
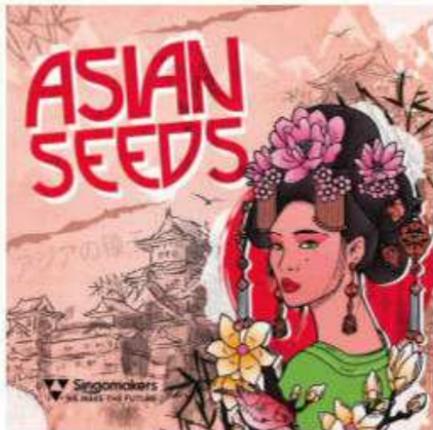
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HANDS-ON MIDI

Explore the ins and outs of today's next-level keyboards and controllers – from theory hacks to track-writing, MPE and more

> **Computer-based music production and the MIDI keyboard are a marriage made in heaven. That familiar layout of black and white keys still tops the charts when it comes to entering musical notes and programming tunes into our digital boxes. This popularity comes as no real surprise, considering that the keyboard adopts a layout that musicians have been familiar with for over 700 years. However, technology has now progressed to the point that several viable alternative methods of entering note and performance data are emerging.**

With this in mind, the time is surely right to explore a few of the alternatives to the good old 'board, and focus on a few of the more specialist features of some controllers that, as well as featuring a conventional piano-style keyboard layout, also possess one or two rather more unconventional tricks that put a different spin on things, and thus unlock new realms of performance and technique for the modern age.

First and foremost, though, what exactly is MIDI? First developed in 1983 as a way for two synths to be able to be played simultaneously from one keyboard,

the Musical Instrument Digital Interface has come a long way since then. MIDI data essentially comprises performance information relating to a note's pitch, duration, timing and velocity, but it also contains so-called 'continuous controller' messages that get sent down the cable whenever you tweak a knob, or flick a pitchbend or modulation wheel during your performance. There are 128 possible values for CC messages, each assignable to a particular performance-related parameter such as filter cutoff, oscillator pitch and so on.

MIDI operates on 16 channels, which means you can operate up to 16 different hardware devices on one MIDI port. With so many people used to operating just in the box, you'd be forgiven for forgetting about MIDI channels and physical 5-pin MIDI cables, as we rarely worry about them when dealing solely with software instruments. With the recent resurgence of hardware synths and sequencers, however, and the emergence of the MPE (MIDI Polyphonic Expression) protocol adding a new dimension of expressive control to MIDI performances, it could be time for a refresher. Let's bust out those controllers and get to it...



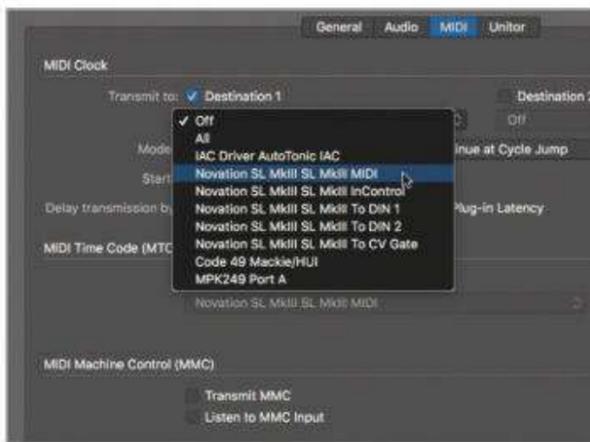
> Step by step 1. Recording in Logic Pro with the Novation SL MkIII's onboard sequencer



1 > The idea behind this tutorial is to set up some sounds in our DAW, then use the Novation SL MkIII's internal sequencer to sketch out a track, which can be quickly dumped into the DAW for finishing. In this Logic Pro project, we've created four tracks containing a drum kit, a bass synth, a pad and a lead sound.

2 > Allocate each track a MIDI channel number - for simplicity, we've matched channel numbers to track numbers. In Logic Pro, this is done by selecting each track and changing the MIDI channel number in the **Track Parameter** box. Allocate channel **1** for the drums, **2** for the bass, **3** for the pad and **4** for the lead sound.

3 > Go to **File » Project Settings » Recording** and enable **Auto Demix By Channel If Multitrack Recording**, then record-enable all the tracks. You can either click their individual record arm buttons one at a time, or **Shift-select** the tracks so that they're all selected and click one of the **R** buttons to arm all the tracks at once.



4 > To sync the SL's sequencer to Logic, press the **Global** button and set **MIDI Clock Rx** to **On**. In Logic, go to **File » Project Settings » Synchronization » MIDI**, check **MIDI Clock Transmit to Destination 1** and choose **Novation SL MkIII MIDI** from the menu. Hit play and the SL's sequencer should run in sync.

5 > Select the first track on the SL and input drums by holding down the required key and hitting one of the sequencer pads, or by tapping the SL's **Record** button and playing live. Select the next track and play a bass part, then do the same for the pad and lead, until you've got something on all four tracks.

6 > Now it's time to dump everything into Logic for processing. Hit the SL's **InControl** button so that its transport section is controlling Logic, then hit the SL's **Record** button. All the parts recorded into the SL will be dumped onto their corresponding Logic tracks. Hit **Stop** on the SL when finished.

> Step by step 2. Setting up Zones on the Novation SL MkIII



1 > The SL MkIII's keyboard can be split into up to eight zones - specific ranges of keys assignable to separate sequencer parts. This means you can trigger, say, drums, bass and a synth part all from different octaves. Zones are enabled by holding down the SL MkIII's **Shift** and **Zones** buttons, then the **Zones** button again to enter Zone View mode.

2 > In Zone View mode, you can set up each zone to your liking. The keyboard's LEDs illuminate to indicate the keys assigned to the currently selected zone. Select the first zone by pressing the soft key under its name. The leftmost rotary knob can be used to turn it on or off, while its neighbour selects the sequencer track assigned to this zone.

3 > The next two knobs to the right set the range of keys covered by the zone by setting the low and high keys accordingly. The remaining knobs are then used to set the zone playing in the correct octave and following the behaviour of the global octave shift and transpose buttons.

> Step by step **3. Using the SL MkIII with a DAW and hardware**

1 > The SL's MIDI ports can control external hardware synths via your DAW. In Logic, for example, there's an External Instrument plugin found in **Instruments » Logic » Utility » External Instrument**. With a Korg Prophecy synth hooked up to inputs 1 and 2 of our audio interface, we select these as the inputs in the plugin window.

2 > Set **Novation SL MkIII To DIN 1** as the MIDI Destination, then connect the SL MkIII's MIDI Out port to your hardware synth's MIDI In port using a standard 5-pin DIN MIDI cable. Set your synth to receive MIDI on just one channel. If you're only using one synth, Channel 1 will be fine.



3 > Press **Shift » Sessions** on the SL to get to the Templates page, and check that the **DIN** setting has been enabled and set to **1**. With this switched on, the MIDI note data transmitted when you play the SL's keyboard will be sent out of the 5-pin DIN port that's connected to the hardware synthesiser.

4 > Now, when you play the SL MkIII's keyboard, you'll be triggering the synth. Record a MIDI part into your DAW. If you want to use the SL's transport controls to do this, hit the **InControl** button, followed by the **Record** button. This will activate your DAW's Record mode.



5 > Hit **Stop** when done recording. You can now use your DAW's MIDI editing tools to quantise and edit your part if desired, just as you would with any softsynth. But there's a snag: when we create a new software instrument track to record in, say, an accompanying kick drum part, we're still triggering the Prophecy along with the kick.

6 > We get around this by opening the Templates page on the SL once more, then turning off the **DIN** setting. This prevents MIDI data being transmitted from the MIDI Out port. It's still going down the USB cable to the DAW, though, so we can trigger the kick drum. Now, when we play the SL, all we're triggering is the kick.

Update your CV

In the days before MIDI, the only way to control one synth from another device – be it another analogue synth or sequencer – was to use a protocol called **CV/Gate**. Instead of the digital data used by MIDI, a sequence's pitch and timing information was communicated via two separate analogue signals. The **CV** (control voltage) signal could be translated into a pitch value and applied to the target synth's oscillators. Note durations were controlled by the gate signal, which basically told the target device when to turn notes on and off. **CV/Gate** was fitted as standard to a large number of pre-MIDI synths, but fell out of favour in the post-MIDI era due to MIDI's superior polyphonic capabilities. However, recent controllers such as the Novation SL MkIII and Arturia's Keylab Mk II have taken the resurgence of **CV** and **Gate** in their stride with the inclusion of **CV/Gate** outputs. This enables not only communication with vintage gear that predates MIDI, but also a whole new wave of modern **CV/Gate**-compatible devices, such as Roland's System 500 Modular Eurorack system and Arturia's MiniBrute 2S, as well as offerings from analogue modular stalwarts such as Doepfer and Buchla.



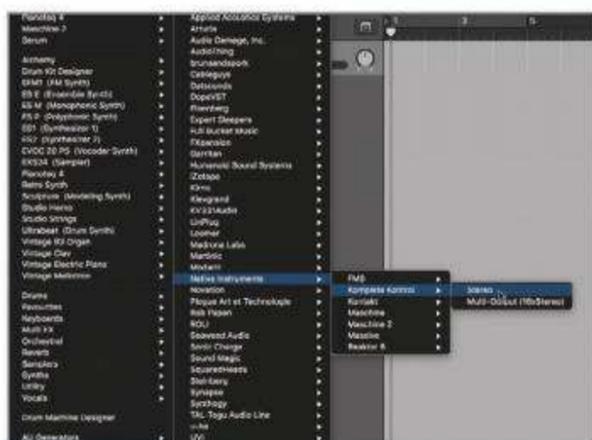
KOMPLETE KONTROL

Native Instruments' keyboards offer deep DAW integration, pre-mapped control over NKS-compatible plugins, neat performance modes and more. It's time to take kontrol...



> Step by step

4. Loading NKS presets on the Komplete Kontrol S61



- 1 > Call up an instance of the Komplete Kontrol plugin on a software instrument track in your DAW of choice - we're using Logic Pro. This is inserted just like any other AU instrument: click the channel's Instrument slot and choose it from the list.



- 2 > NKS (Native Kontrol Standard) is Native Instruments' software instrument preset format. Presets saved in NKS format show up in the Browser view on our S61 keyboard controller. Clicking the **Browser** button just to the right of the screens lets us view all the presets in all the NKS-enabled plugins on our system.



- 3 > Select an instrument with the second knob in from the left, and a list of presets for that instrument will appear on the right screen. Using the large rotary encoder, scroll through until you find a sound you like, then press the encoder to load it. You can narrow down the selection using the **Types** and **Character** controls to the left.

Kontrol yourself

Native Instruments' Komplete Kontrol series of MIDI keyboard controllers seek to bridge the gap between hardware and software by allowing you to control both your DAW and your individual plugins - all from the keyboard - without having to touch your computer keyboard or mouse. While not unique in this approach (both Akai and Novation have similar systems), NI's solution is one of the more well thought-out ones around. Once set up, its two big, high-resolution colour screens and thoughtfully laid-out controls can reduce the amount of time spent at your computer, increasing your focus on the creative hub of your setup: the MIDI keyboard. It achieves this through the use of the Komplete Kontrol software that ships with the keyboard, in both standalone and plugin versions.

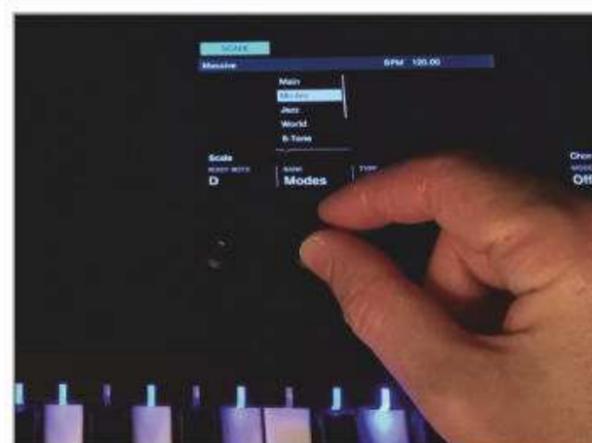
Acting as a kind of host within a host, you load your instrument into the Komplete Kontrol plugin, which then communicates with the controller to enable control of that instrument directly from the keyboard's front panel. It obviously works best with NI's own software instruments, sample libraries and effects, but can be configured to work with third party instruments, too.

> Step by step

5. Komplete Kontrol S61's Scale mode



- 1 > The S61 features a scale mode with LEDs to help you stay in key. To set it up, hold down the **Shift** and **Scale** buttons on the controller to enter Scale Edit mode. The various editable parameters are at the bottom of the left-hand screen, with the four knobs beneath assigned to them. The default scale is C major.



- 2 > The keyboard LEDs show notes in the current scale, with the root note illuminated brightest. Begin by adjusting the root note with the left-hand control and the LEDs shift accordingly. The next control selects the scale bank - scales are grouped into Main, Modes, Jazz, World, 5-Tone, Modern, Major and Minor banks.



- 3 > The next control (**Type**) sets the type of scale within the selected bank. For example, the Minor bank contains Natural, Dorian, Phrygian, Major, Minor and Harmonic Minor versions of the minor scale, along with a few more exotic variants such as the BeBop Minor, Neapolitan Minor and Blues scale. Here we've set up the **D natural minor** scale.



- 4 > There are three different LED modes to choose from: Guide, Mapped and Easy. **Guide** simply illuminates the notes in each scale so you can see where they are on the keyboard - great for practising. **Mapped** maps the notes on the keyboard to the selected scale so you can't play notes outside the scale, while **Easy** maps the scale notes to the white keys only.

> Step by step 6. Making user presets appear in the Complete Kontrol S61's Browser



1 > Scrolling through and selecting presets for NI's own instruments and effects is great, but what about your other plugins? Well, if you're prepared to save your presets into NKS format manually, one at a time, they can be Controlled, too! First, load up an instance of Complete Kontrol – either the standalone or plugin version will do.

2 > In the Complete Kontrol plugin window, click the triangle in the upper left corner. From the **Instruments** list, select the plugin whose presets you want to work with. We've chosen Air Music Technology's Vacuum Pro synth.

3 > Use the plugin instrument's own preset selector to choose the first preset in the list that you want to convert. Of course, you don't have to convert them all – you can just work through the ones that you like!



4 > Once again, click Complete Kontrol's triangle icon, and this time choose **File » Save As**. Type the name of the preset (you can include the name of its host synth, too, if you like) and hit **Save**. This will add the sound to Complete Kontrol's User preset list. Repeat this for as many presets as you want to convert.

5 > Back over on the S61, hit the **Browser** button, followed by the **User** button (the fourth white button from the left, above the left-hand screen). This switches between the NI factory presets and the User presets you've just saved.

6 > You should be able to see your saved presets in a list on the right of the right-hand screen. Scroll through the list and select presets using the large encoder as usual. Click the encoder to load the selected sound.



7 > Repeat the process for more than one synth, and you'll find that even though the presets are saved in one folder in your Complete Kontrol User preset library, the software remembers which synths they came from and will load the right one automatically when you select the preset from the S61's Browser.

8 > To refine the selection process, hit the **Edit** button beneath the preset list in Complete Kontrol's Library pane and add descriptors and tags to your presets, making it easier to drill down through multiple sounds and find the one you're after. Check the boxes and click **Apply**.

POWER TIP

> Ready-rolled

There are several online sources of premade NKS mappings for many popular softsynths, such as Sylenth1, Serum, etc, so before you waded through saving off tons of presets manually, check first to see whether somebody's already done the hard work for you. Windows users can also check out the beta version of an app called PresetMagician (presetmagician.com), which promises rapid bulk conversion of multiple presets at once.

> Step by step 7. Creating a track with NI Complete Kontrol and Ableton Live



1 > Let's use our Complete Kontrol keyboard to build a track in Ableton Live. Set up a Live session with a few empty MIDI tracks (we've created three), then load an instance of the Complete Kontrol plugin onto each one.



2 > Load a drum kit on the first track. You can do this either in Live via the Complete Kontrol plugin window, or from the Complete Kontrol keyboard by hitting the **Browser** button and using the knobs below the screens to navigate to a preset kit you like. The sounds should audition automatically as you scroll through the available presets.



3 > Once you've found a kit you like (**091 Beat Em Down** here), press the large rotary encoder to load the sound. You can then use the keyboard's onboard transport controls to begin recording a drum part, playing the sounds in from the keyboard. Turn on Live's metronome with the **Metro** button, then hit **Record** and bash in your beat using the keys.



4 > Drop out of record mode by pressing the **Record** button again. Your beat will continue looping around. Press the **Quantize** button to tighten it up, and you've got your first loop! Hit the **Stop** button to stop the clip, and the **Metro** button again to turn off the metronome if no longer required.



5 > Overdub extra parts - a percussion line, for example - by pressing **Record** again, playing in the new part and hitting **Quantize** to tighten up your playing. Stop recording by tapping either **Record** or **Stop**. Here, we've added a hi-hat part to the kick and snare that we recorded on the first pass.



6 > Push the encoder to the right to navigate to the next track along in the project. Press the **Browser** key and use the dual screen system to find a bass sound - we've gone for the **Woodstock Massive** preset. Hit **Load**, then play and record your bass part in the same way you recorded the drums.



7 > Once the selected preset has loaded, you can use the eight knobs below the screens to modify the sound - they relate directly to the macros assigned to the parameters of the selected plugin. Here, we're adjusting the filter cutoff frequency using the third control from the left.



8 > Navigate to the third track and load a synth sound. We've chosen Massive's **Blender**. To enter chords, press the **Shift** and **Scale** buttons. Press **Scale** again to enable Scale mode, then set **Root Note** to **C** (we're in C minor), Bank to **Main**, Type to **Minor**, Key Mode to **Easy**, Chord to **Chord Set**, type to **Min 1** and Position to **Root**.



9 > Now, any key on the keyboard will produce a root-position chord that'll work in the key of C minor. Record some chords as before, then press the **Mixer** button and use the knobs to alter the balance between tracks. Here, we've turned the bass down by **-7dB** and the synth down by **-11dB** for a better balance.

Maschine learning

If a piano-style keyboard wouldn't normally be your first choice when it comes to making music, pad-based controllers offer a viable alternative. Usually designed around an MPC-style 4x4 matrix of 16 pads, there are loads of these available from a wide variety of major manufacturers. Not least among them are Native Instruments, whose Maschine range offers a remarkably adept hybrid combination of software and hardware.

The hardware currently comes in three different flavours - the standard Maschine, the all-singing, all-dancing Maschine Studio, and the more compact Maschine Mikro - as well as their own take on an Ableton Push-style controller, Maschine Jam. With the exception of Jam's 64 clip-launch buttons and eight virtual faders (or 'Smart Strips'), each controller features the familiar grid of 16 brightly-coloured illuminated

pads, adding the drum pad functionality lacked by the S-series keyboards.

The software component comes in the shape of the Maschine app, now at version 2 and capable of being used either as a fully-fledged standalone DAW and plugin host all by itself, or in conjunction with an existing DAW in AU or VST plugin format. Maschine's built-in sequencer makes it a sort of 'DAW-within-a-DAW' when used as a plugin, so if you're already at home using one of the traditional DAWs such as Logic, Live, Reason or Cubase as your primary system, you may well wonder exactly how you'd go about implementing something like Maschine into your existing workflow. To try and outline how the two approaches might work together, we hooked up a Maschine Mikro Mk3 to a MacBook Pro running Logic Pro X and tried to get them to play nicely together...



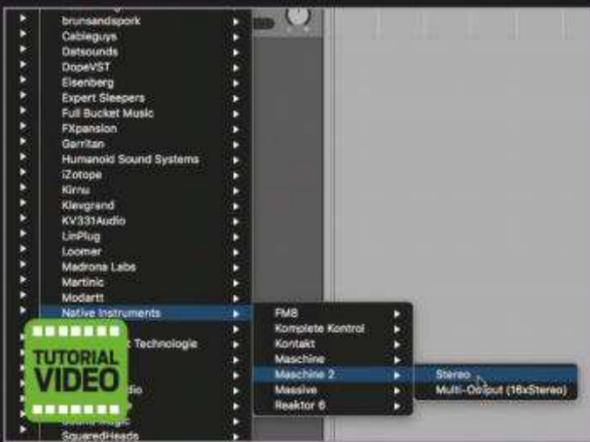
POWER TIP

> One for all

When working with Maschine, there's no need to load up a separate instance for each track. It's just as easy (and less CPU-intensive) to use the groups inside Maschine, and simply mute or delete the parts you don't need once you've exported the audio into your DAW.

> Step by step

8. Getting started with NI's Maschine Mikro Mk3



1 > The first step is to download and install the Maschine 2 software, which is included with any Maschine device. Once installed, launching the standalone version once will allow it to scan all your installed plugins and presets. Once that's done, launch your DAW (Logic in our case) and open an instance of Maschine 2 on a Software Instrument track.



2 > The plugin and the standalone versions of Maschine are identical, and you select presets in the same way in both. To load a drum kit, use the Maschine Mikro Mk3's **Browser** button and rotary encoder to navigate to the required sound. The current selection is shown in the small onboard display.



3 > To start recording a beat, first set the project tempo in Logic's transport bar. Setting the tempo on the Maschine controller won't work because we're using the plugin version, which is synced to Logic's tempo. The hardware tempo control only works when using the standalone version Maschine.



4 > On the Maschine controller, enter **Pad Mode** and hit the **Record** button to record-arm the track. The pattern loop length is determined by Maschine's **Pattern Length** setting - we've set this to **8 bars**. Hit the **R** button on your computer keyboard to start Logic recording, then play the pads to record in a drum pattern.



5 > The note events generated by the pads aren't recorded into the Logic track - they're recorded into the Maschine plugin's internal sequencer. Hit **Stop** in Logic, after which you can use Maschine's onboard **Quantize** feature to tighten things up, delete and move notes around, and maybe add a little bit of **Swing** - we've set this to **28%**.



6 > When you're happy with your recording, you can export it as audio into Logic by clicking the small wave icon at the top right of Maschine's piano roll editor and selecting the **Export** option. Keep the mouse button held down during the export process and you can drag the resulting file onto an audio track in your DAW session.



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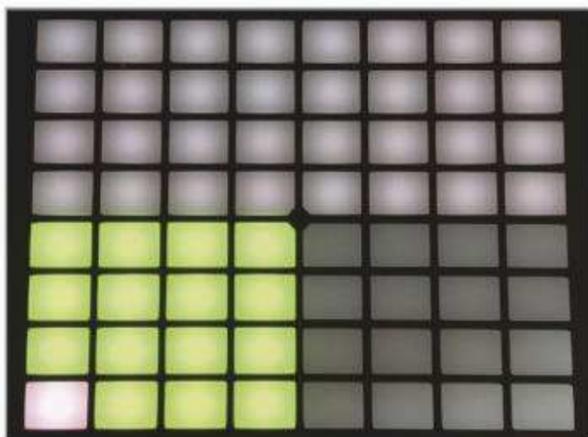
From Ableton's Live-integrated Push 2 to electronic drum pads and kits, tapping out beats and melodies into your DAW has never been easier



> Step by step 9. Hands-on with Ableton Push 2 and Live 10.1



1 > Ableton's proprietary Push 2 controller for Live is a brilliant companion device that can speed up your workflow no end. To make a basic loop, start with a session containing a single MIDI track. Hit the **Browse** button on the Push, then use the leftmost two knobs to select the **Drums** library and scroll through the available kits.



2 > Hit the **Preview** button to hear the kits as you scroll through them, then hit the **Load** button over on the right to load one into the project. The kit sounds are now playable from the grid of 16 pads in the lower left corner of Push's pad matrix. The pads will be illuminated the same colour as the track in your session.



3 > Tap the **Metronome** button at the top left to enable the metronome (you can use the **Tap Tempo** feature to enter a tempo - just tap four times on the button and Live will use your timing to set the tempo). Then simply hit record and play the pads to lay down a beat.



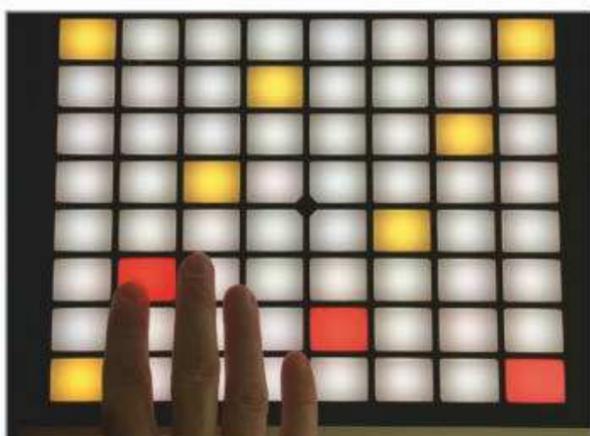
4 > Press the **Quantize** button on the left to tighten up the timing - you can do this while still in record. You can overdub extra kit sounds while in loop record. To delete parts, just hold down the **Delete** key and tap the relevant pad. Press the **Clip** button and use the designated knob to adjust the length of your loop in bars.



5 > To add a bass part, start by pressing the **Add Track** button to the right of the display. Use the knobs above the display to browse to **MIDI Track » Sounds » Bass** and choose a preset. Preview will play the sounds so you can audition them as you scroll through. Hit the **Load** button when you find one you like.



6 > Now each pad triggers a note, with the coloured pads representing the root note of the selected scale. To change the scale - default is **C major** - press the **Scale** button on the right hand side. Use the buttons above the display to select the required root note, then use the knobs to pick a scale type from the list.



7 > We've selected the **D minor** scale here. You can play the notes of the scale starting from a coloured pad horizontally all the way along a row, or you can go across and up in a 3x3 pattern to play the same notes. Hit record again and enter a simple bassline part. Play as much as you need and hit **Play** again to stop.



8 > The four-bar drum loop cycles automatically, and you can set the length of your bass loop by hitting the clip button and setting the relevant length - eight bars in this case. Press **Quantize** again to put your bass loop in time with the drums. Repeat the last few steps again to add as many new tracks as you want.



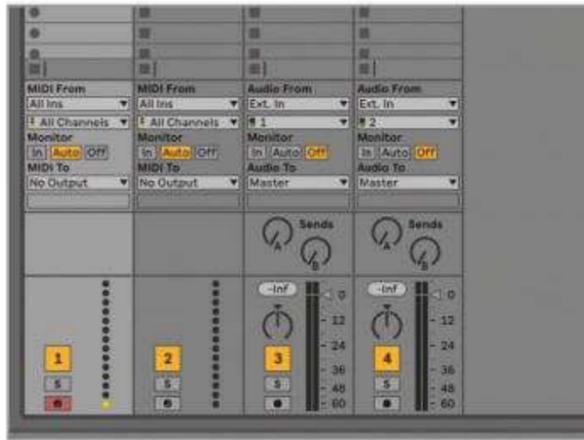
9 > Pressing the **Session** button turns the grid into a representation of Live's Session View, with the pads working as clip launch buttons. This gives you the ability to perform arrangements of your track on the fly, and record those moves into the Arrangement View for further tweaking and editing later on.

Electronic drum kits as MIDI controllers

If you're after a truly realistic representation of a live drummer, programming drums from a MIDI keyboard or on a 4x4 grid of pads will only get you so far. Perhaps because you need to know how to handle a pair of sticks in order for them to be truly effective, full electronic drum kits like Roland's V-Drums or Yamaha's DTX series tend to be somewhat overlooked in their capacity as MIDI controllers, often used mainly with the onboard sounds as practice kits by both learners and pros alike.

In reality, though, if you have the space and know your way around a kit, using electronic drums for MIDI note input can make all the difference when programming a lifelike beat. Most modern kits have a USB MIDI out port, and when teamed up with a decent source of sounds such as FXpansion's BFD series, Toontrack Superior Drummer or the Drum Kit Designer sounds found in Logic Pro X, they make for a formidable combination. Once you've matched up the keymap - the list of which zones on the drum pads transmit the note numbers that correspond to the matching sounds in your chosen drum library - most drum plugins will offer a vast range of customisation when it comes to balancing levels, choosing effects and swapping out individual kit pieces.

> Step by step 10. Roland V-Drums and BFD Eco in Ableton Live



1 > First, plug in and turn on your kit - we're using a Roland TDK-1V. Connect the drum sound module's USB MIDI out port to your computer's USB port using a conventional USB cable. The drum pads on the kit send out MIDI note data when hit, so your DAW's MIDI indicator should light up when you hit them.

2 > For some drum sounds, any drum ROMpler, sound library or sampler bank will do. We've gone for FXpansion's BFD Eco. Load an instance of the instrument plugin on the currently selected MIDI track.



3 > We're only interested in triggering the sounds within the plugin, so the first port of call is the Grooves page, where we set the Grooves mode to Off. This prevents BFD's internal sequencer from playing one of its preset grooves when we start Live running, rendering it solely a source of great drum sounds.

4 > Next, choose a preset kit - we've gone for **Processed Funk 01**. Choose **Options » Key Map** and select either of the Roland kits. This ensures that the right pads are triggering the right sounds and articulations, so your kit sounds as it should. Most drum library plugins offer selectable keymaps - simply pick the one that matches the make of kit you're using.

> Step by step 11. Roland V-Drums and Logic



1 > Roland V-Drums also play nicely with the built-in Drum Kit Designer plugin that ships with Logic Pro X, but for best results, it needs a little setting up. Begin by creating a Software Instrument track and loading an instance of Drum Kit Designer in the Instrument slot of the track's channel inspector.

2 > In the plugin window, select the virtual drum kit you want to play from the preset menu, then click the disclosure triangle at the lower left corner of the screen. This reveals a popup menu for selecting the relevant drum map. A drum map is a list of which sounds in the virtual kit will be triggered by which incoming MIDI notes.

3 > If you play your kit at this point, you may find that the hi-hats don't quite respond as you'd expect. However, selecting the **Roland V-Drums** option from the menu maps the pads of your V-Drums and their associated zones to the correct samples within Drum Kit Designer. This should make the hi-hat play properly.

Drum pads

Many current keyboard controllers include a set of drum pads, harking back to the pioneering Akai MPC60 drum sampler and its iconic 4x4 grid of 16 pads. The current Akai range of controllers includes the MPK series, which, with its array of colourfully-illuminated pads front and (just slightly left of) centre, are a good example. These velocity and pressure-sensitive pads aren't just useful for inputting drum parts – since all they do is transmit MIDI note data just like any other key on your controller, you can program other stuff with them too. These and other pad-equipped controllers may only transmit one MIDI note at a time from the pads, so while they may lack the chord-generating capabilities of the likes of NI's Komplete Kontrol or Novation's SL MkIII, there are ways to work around this. For instance, most DAWs feature a chord generator plugin that transforms incoming MIDI notes into chords. In Akai's case, the VIP software that comes bundled with most

of their controllers can be used to translate MIDI input from both the keyboard and the pads into quantised scales, fixed-interval chords and even pre-determined sets of chord progressions to suit a variety of genres. Even if you know your music theory, these are a great way to come up with progressions that you wouldn't necessarily

have conjured up using more conventional means. Since VIP acts as a central host for all the plugins on your system, and can be used as a plugin itself, this is an effective way to get around the fact that the controller doesn't send chord information from the pads internally. Here's how to get it going...



Akai's MPK249 follows in the footsteps of its legendary MPC60 predecessor with its 4x4 pad grid

> Step by step 12. Setting up Akai MPK249 Drum Pad chord input



- 1 > You need to be running VIP 3 to get access to the Key Control features. Launch your DAW of choice – we're using Logic – and load an instance of VIP onto an empty Software Instrument. Load up a suitable sound from your plugins library.



- 2 > We've gone for a preset from the Lounge Lizard EP-4 from AAS. Click the keyboard icon below the browser pane to open the **Keyboard** panel. In the upper-right corner, you'll see another small keyboard icon. Click this to reveal the Key Control panel, then click **Key Control** just below to enable the feature.



- 3 > Turn on **Pad Mode** by clicking the button. The MPK's 16 pads can be assigned across four switchable banks – A, B, C and D – giving an effective total of 64 pads overall. Pad 1 of Bank A transmits the note **C1** by default, so either enter that value in the **Start note** field, or click-hold and press the relevant pad.



- 4 > The default mode is **Scales** mode, set to the C major scale. If we play all the pads now in ascending order, that's exactly what we get – a C major scale made up of the notes C, D, E, F, G, A, B and so on. You can select a different root note, as well as many different types of scale, via the menus.



- 5 > Switch to **Harmonize** mode, and each pad generates a 'diatonic' chord made up of the notes from the currently selected scale. The intervals are fixed, so that each pad generates the same chord shape, but based on its own root note. You can alter the intervals using the numbered boxes below the **Start note** field.



- 6 > Progression mode is where the fun really starts. Choose a style, followed by a progression – we've gone for **Dance » Dance keys 01** – and re-enter your start note of **C1**. The pads now generate harmonically correct chords voiced according to your selected genre, for instant credible chord sequences.

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HANDS-ON WITH MPE

With MIDI Polyphonic Expression, you can take your synths to new heights of performance creativity. Welcome to the future of MIDI control...

What is MPE?

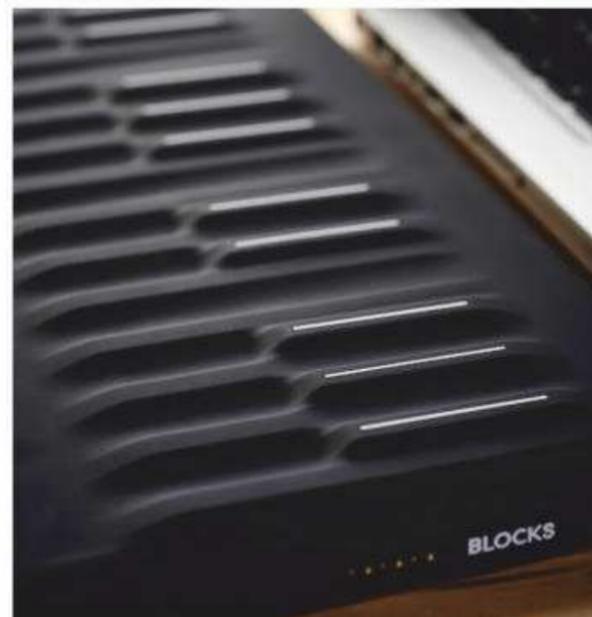
MPE stands for MIDI Polyphonic Expression, and compatible keyboards give each finger individual control over pitch bend, timbre, volume, pressure and more on a per-note basis. In order to do this, each note is sent out on its own MIDI channel, so the synth you're controlling needs to be able to receive MIDI data on more than one MIDI channel at a time - in other words, it needs to be multitimbral. Because of this, not all softsynths are equipped to exploit the full potential of MPE.

Probably the most widely-known proponents of MPE are Roli, with their impressive Seaboard and Blocks series of controllers that redefine the level of expression that computer musicians are able to work into their performances. Their 'five-dimensional' (or 5D) approach combines a total of five different gestures - Strike, Press, Slide, Glide and Lift - into a highly expressive musical performance technique.

Strike equates to what we would normally know as velocity - the sound responds to how hard you strike the key. Press is essentially the same as polyphonic aftertouch, generating data as you press down on the key.

Slide transmits a range of data as you move your finger vertically up and down the key, and Glide does the same thing for left/right movements, most often used for pitch bending. Finally, the Lift gesture generates data according to how forcefully you lift off the key after playing the note.

Roli's controllers all ship with the Equator softsynth, which is designed from the ground up to take advantage of all five of these gestures. However, more and more of today's virtual instruments (two examples being Xfer's Serum and Audio Damage's Quanta) are being optimised in order to react to this extra performance data.



Play across five dimensions with Roli's Seaboard Block

> Step by step 13. MPE explained using the Roli Seaboard Block and Equator



1 > After you've registered your Seaboard at roli.com and downloaded all of the bundled software (the Noise iOS app, Equator synth and Blocks Dashboard app), you can use the Equator synth either as a standalone app or a plugin in your DAW of choice. Here, we've loaded it onto a Software Instrument track in Logic.



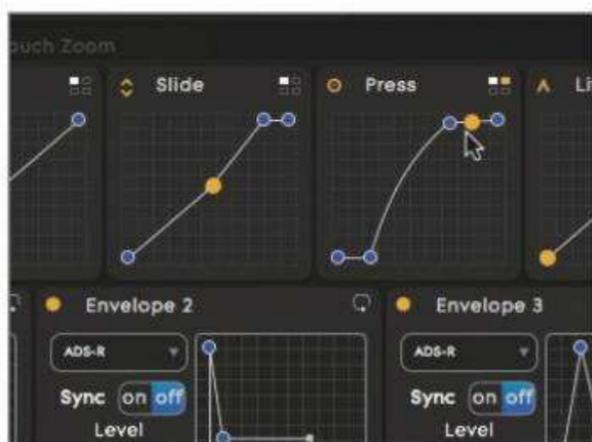
2 > Equator's presets are optimised to respond to MPE's five dimensions of touch - Strike, Glide, Slide, Press and Lift. Equator displays the corresponding activity for all five dimensions on a set of five central graphs in the plugin window. As you play, yellow nodes indicate where on the response curve your playing is triggering each gesture.



3 > Load up a preset - we've gone for **007 Worlds Apart Pluck**, which responds well to all five gestures. Strike is a pretty straightforward equivalent to note velocity - gently caressing a key produces a correspondingly gentle tone, while striking a key hard delivers a louder sound with a totally different timbre.



4 > Glide is the MPE version of pitch bend, and because MPE works on individual notes, you can bend notes using the glide gesture independently of each other, using either the keys or upper and lower pitch strips. The Seaboard's borderless keys also make it possible to add guitar-style vibrato to your playing by wobbling sideways on and off the note.



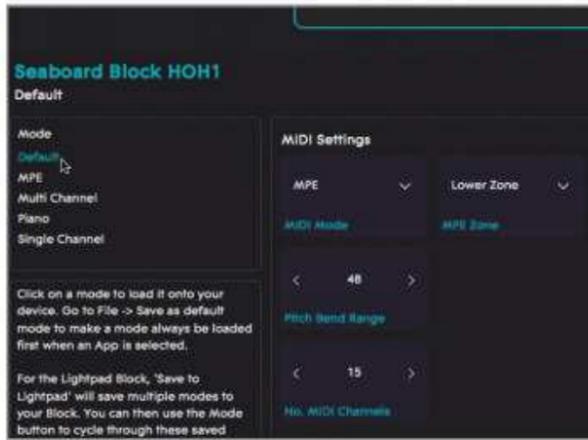
5 > Slide translates to vertical movement up and down each key. With this preset, higher values alter the oscillator mix and open out the filter on Sample 1, making the sound louder, brighter and more intense. Again, each note transmits its own value independently, so you can brighten individual notes within a held chord, for example.



6 > Press is the equivalent of aftertouch, generated by pressing down on the Seaboard's keybed after playing a note. In this case, higher values drastically increase the volume of Oscillator 1. The response curve for this gesture is shaped so that the majority of the effect comes into play with only very high controller values - ie, when you press hard!

> Step by step

14. Using the Seaboard Block and MPE with Logic Pro instruments



1 > MPE's multitimbral architecture doesn't necessarily rule out the use of instruments that weren't created with MPE-compatibility in mind. Some of Logic Pro's built-in instruments, for example, can already respond multitimbrally - ie, on multiple MIDI channels at once. Start by launching the Roli Dashboard app.

2 > To set up the Seaboard to work with Logic, select the Default option in the Mode panel on the left hand side. This ensures that the Seaboard is transmitting in its default MPE mode. Each note you play will now be sent on a separate MIDI channel, enabling independent, per-note control of MPE gestures.

3 > In the MIDI Settings area, check that the **Pitch Bend Range** value is set to **48** to guarantee maximum bendage. This gets the most out of the Glide gesture - at this setting, a full lateral sweep along the length of the Seaboard's upper and lower control areas will generate a pitch bend of 48 semitones, or four octaves.



4 > In Logic Pro, create a new Software Instrument track and load any of the following instruments: EXS24, ES2, Alchemy, EFM1, Sculpture, Retro Synth or Vintage Clav. We've chosen **Alchemy**, because it responds to the Press gesture in the form of Channel Pressure.

5 > Open up Alchemy's preset browser and load up a suitable sound. For this demonstration, we've selected the **Analog Bass Twister** preset. Applying the Press gesture on the Seaboard - ie, pressing down on a key after you've played it - increases the filter cutoff frequency, making the sound brighter.

6 > Click the disclosure triangle at the lower left corner of Alchemy's plugin window. This opens up a panel of options. The one we're interested in is **MIDI Mono Mode**. Click on the popup menu and set it to **On (with Common Base Channel 1)**.

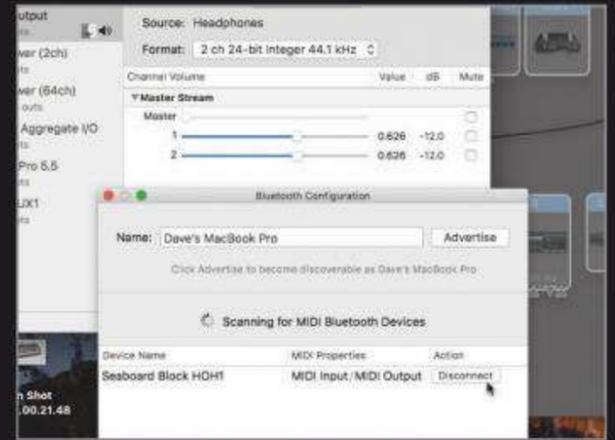
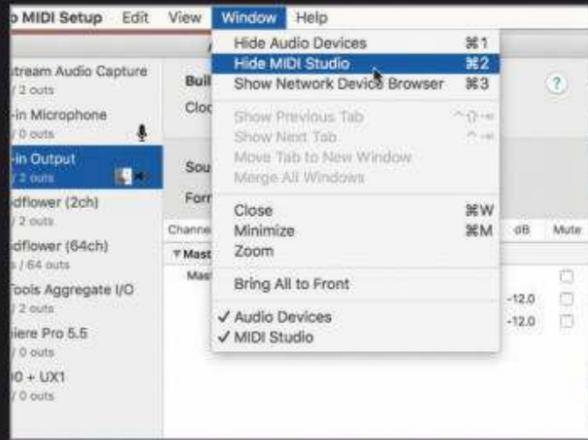


7 > Use the slider to set the **Mono Mode Pitch Range** parameter to **48** to match the setting we applied in Dashboard earlier. Alchemy is now configured for per-note Glide across the width of the Block. Hit the **Record** button and play in a few wobbly, bendy notes.

8 > To edit your performance, double-click the MIDI region to open the piano roll editor, then click button shown above to open the MIDI Draw pane. From the menu on the left you can view editable data curves for **Pitch Bend** (equal to Glide), **Channel Pressure** (Press), **Note Velocity** (Strike), **CC74 Brightness** (Slide) and **Release Velocity** (Lift).

9 > The menu items in the **Used** section are channel-specific controllers that have been used on this particular track. The graphical information is displayed on a per-note basis, so to make any edits, make sure that the note you want to tweak is selected in the piano roll. This ensures that you're editing the performance information for that note's MIDI channel.

> Step by step 15. Connecting the Seaboard Block via Bluetooth



1 > Handily, Roli's Seaboard and Blocks controllers can send MIDI over Bluetooth, though this feature is only available for Mac and iOS. To pair a Block with your computer, first turn it on without connecting it via USB. It will automatically enter Bluetooth pairing mode and the blue light on the front will flash.

2 > Make sure Bluetooth is enabled on your Mac, then go to **Applications » Utilities** and launch the Audio MIDI setup app. Select **Window » Show MIDI Studio** to bring up a virtual overview of all the devices on your MIDI network. Click the Bluetooth icon and your computer will start scanning for nearby devices.

3 > The Seaboard Block should appear as an option after a few moments. When it does, click the **Connect** button to pair it with your Mac. When the text in the button changes from **Connect** to **Disconnect**, the pairing has been successful. This will also be indicated by the blue light on the Seaboard Block's front edge turning solid.

> Step by step 16. Using Xfer Serum with a Roli Seaboard Block



1 > Xfer Records' Serum is the latest synth to jump on the MPE bandwagon. Let's see how to set it up with a Seaboard Block. Once you've connected a Seaboard to your computer, launch your MPE-compatible DAW of choice - Logic will do nicely - and load an instance of Serum onto a MIDI instrument track.

2 > Click Serum's **Menu** button in the upper right corner of the plugin window and select the **MPE Enabled** and **MPE YZ » Macros 1,2** options. This puts the synth into MPE mode and assigns the **Slide (Y-axis)** and **Press (Z-axis)** gestures generated by the Seaboard to control of Serum's **Macros 1 and 2**.

3 > In the same menu, check that the **MPE Bend Range** parameter is set to **48**. X-Axis movement, known as Glide in Roli speak, is mapped to pitch bend by default. A Bend Range value of 48 ensures that the maximum amount of bend is generated by a full sweep along the Seaboard's pitch sensor strips.

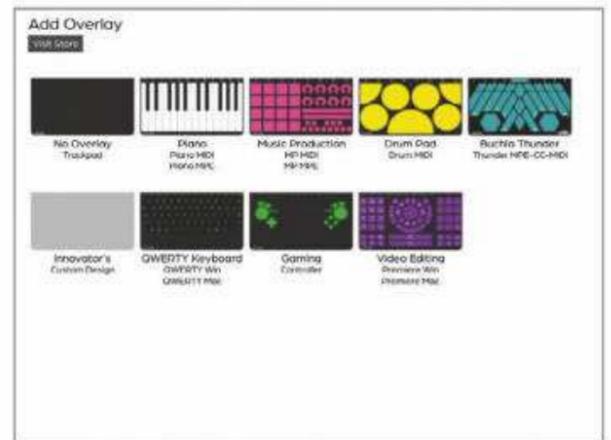


4 > Load up any preset - **Let's Get Nutz (FP)** will do here. Using two fingers, hold down two notes on the Block's control surface, then slide one around while keeping the other in place. Notice how the stationary one holds its pitch steady while the other one bends? That's MPE's polyphonic pitch bend at work!

5 > We can use the Press gesture to add vibrato. Open Serum's **Matrix** editor and click the small triangle over on the right edge, next to the Output tab. Select **Create vibrato** - this assigns an unused LFO (LFO 2 in this case) to modulate the pitch of the oscillators, producing a vibrato effect.

6 > Right now, though, this is assigned to the mod wheel. To make it controllable via the Block's Press gesture, change the mod destination in Serum's **Matrix** to **Aftertouch**. Pulling the curve down to **-50** makes the effect's onset more gradual as you press. You then control vibrato speed by altering LFO 2's rate control.

> Step by step 17. Setting up and using the Sensel Morph



1 > The Sensel Morph is a pressure-sensitive, MPE-compatible control surface that can be used with different overlays such as drum pads, video controllers or music production controls. To get started, the first step is to download and install the companion Sensel app from sensel.com.

2 > Connect the Morph to your computer using the included USB cable, then open the Sensel app. Follow any onscreen instructions to update the firmware of the device if prompted. Add the desired silicone overlay - we're using the Piano overlay in MPE mode with Logic Pro in this tutorial, so we lay it onto the device.

3 > We need to let the Morph know which overlay we're using. To do this, click the **Add Overlay** button in the left-hand panel. A gallery of all currently available overlays will appear in the main window.



4 > Click the **Piano MPE** text beneath the Piano Overlay icon. A graphic of the overlay appears, complete with a layout of what the controls actually do. Click any control or key to reassign or edit it. Finally, click the **Send Map to Morph** button. This tells the device you have the Piano overlay installed.

5 > Launch your DAW - we're using Logic again - and load up an MPE-compatible softsynth. There are plenty of these out there, with more being added by the day. We're using FXpansion's Strobe 2, which ships with Roli Blocks.

6 > In Strobe 2's preset browser, click the **5D** icon. This brings up all of the presets that are optimised to respond to MPE gestures. Pick one - we've gone for **KB Dimension Art Formant Clav 5D**. Play a note and slide up the key, for example, and the sound's timbre changes as a square wave fades in.



7 > Because the Morph's keyboard area is almost totally flat, with no vertical travel, minimal gaps between keys and less than 1mm of distinguishable height between white and black keys, you can use the polyphonic pitch bend to slide unencumbered around the keyboard like no other controller.

8 > Use the buttons along the top row of the piano overlay to shift up and down octaves, select the next or previous preset, turn velocity sensitivity on or off, enable or disable pitch bend, set up chord functions, and even operate your DAW's transport controls. These are configurable within the Sensel app.

9 > The long, narrow bar beneath the piano keys functions as a sustain pedal of sorts. Hold a finger on it as you would your foot on a physical pedal, and the note or notes you're currently playing will sustain. Also, the lowermost region of the high B key on the right of the keyboard is actually a tiny high C key. **cm**

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cm Producer Masterclass

METRIK

Go deep into drum synthesis with
one of the UK's leading DnB producers

Metrik's system

> **Tom Mundell, aka Metrik, has been a name on the UK drum 'n' bass scene for over a decade, with an extensive list of single and EP releases first on Viper Recordings, then - post-2012 - on Hospital (under the auspices of whom he's also put out two albums), as well as remixes of tracks by the likes of Eric Prydz, Swedish House Mafia, Gorgon City and Sub Focus. With a tight, punchy and meticulously produced sound - first showcased in his sensational 2007 debut *Your World* - Tom is known for integrating 80s and 90s-inspired elements alongside cutting-edge beats and basslines in order to create tracks that are simultaneously referential and progressive. As it does with so many electronic producers, though, Tom's musical journey began with the guitar.**

"I was first introduced to the guitar by my mum, when I was about six or seven years old," remembers Tom. "She had this black electric guitar that was like the coolest thing I'd ever seen, and I really took to it. I

"I sold my PlayStation to buy a pair of belt-drive turntables"

remember just messing around in my bedroom for hours on end, with effects pedals and all that kind of stuff. Then later on, I used to go into the music department at school and mess around with pianos and drums, and play with the computers, just figuring out how to use instruments. In my

early teens, I joined a couple of bands - metal bands, basically, with elements of electronic music - where I would play guitar and do a bit of vocals, and produce very rudimentary beats from samples in the background. When I got to about 12 or 13, I was a bit of a nerd, to be honest, and I started up my own online radio station. I sold my PlayStation to buy a pair of belt-drive turntables, which was quite a sacrifice at that age. My mum was quite happy about it, though!"

Tom's online radio station had a chat room, and through this, a listener ended up sending him six data disks full of drum 'n' bass classics. It was a life-changing moment. "It was like the bible of drum 'n' bass. It had everything: Dom and Roland, LTJ Bukem, Bad Company, a Grooverider mix... basically, the A to Z of drum 'n' bass of that era. There was a particular Bad Company track called *Silicon Dawn* that absolutely blew my mind. I knew I had to make this style - I became obsessed with it."

After graduating from the Academy of Contemporary Music in Guildford, then completing a university music course, Tom landed a job with a music distributor in London. "For a couple of years it operated as a vinyl distribution company, mostly, so I was seeing behind the scenes of the logistics and distribution of music, which was really interesting. Then the vinyl market crashed and a lot of the distributors went down, so it morphed into a music management company.

"I was managing Adam Beyer and the Drumcode operation, doing social media, branding, graphic design, web design, all that stuff, just trying to make the artists look good from a visual point of view.

Kit List

HARDWARE

Native Instruments **Komplete Kontrol S49**
Sequential **Prophet-6**

SOFTWARE

Ableton **Live 10**
NI **Komplete**
FabFilter **Pro-Q 3** and **Pro-MB**
Waves **API 550A**
Xfer Records **LFOTool**
XLN Audio **DS-10 Drum Shaper**
Sonic Academy **Kick 2**
iZotope **Ozone** and **VocalSynth**
Soundtoys **Little AlterBoy**
Kazrog **KClip Pro**
Zero-G **Ethera**

"We operated from the Sony offices, with Eric Prydz' team. It was an amazing environment, seeing how everything operated first hand with some of the biggest dance music brands, and figuring out how to apply that to my own career.

"At the same time, I was releasing records on Viper to begin with. My first ever vinyl release was a remix of a classic techno tune - DK8's *Murder Was the Bass* - and that put me on the radar of a few people. Then I slipped into a completely different style and made a few more melodic tunes, and then the track *Your World* was the one that really put me on the map.

"Eventually, I bumped into London Elektriccity at a rave and we just got chatting, and I ended up getting signed to Hospital. I've been with Hospital for five or six years now, putting out music and playing gigs around the world. It's been amazing!"

WATCH THE VIDEO



In this exclusive video, Tom takes you through the process behind *Hackers*, and discusses drum synthesis in general

Watch the video tutorial on your PC or Mac at...

<http://bit.ly/mtrkdnbcm>



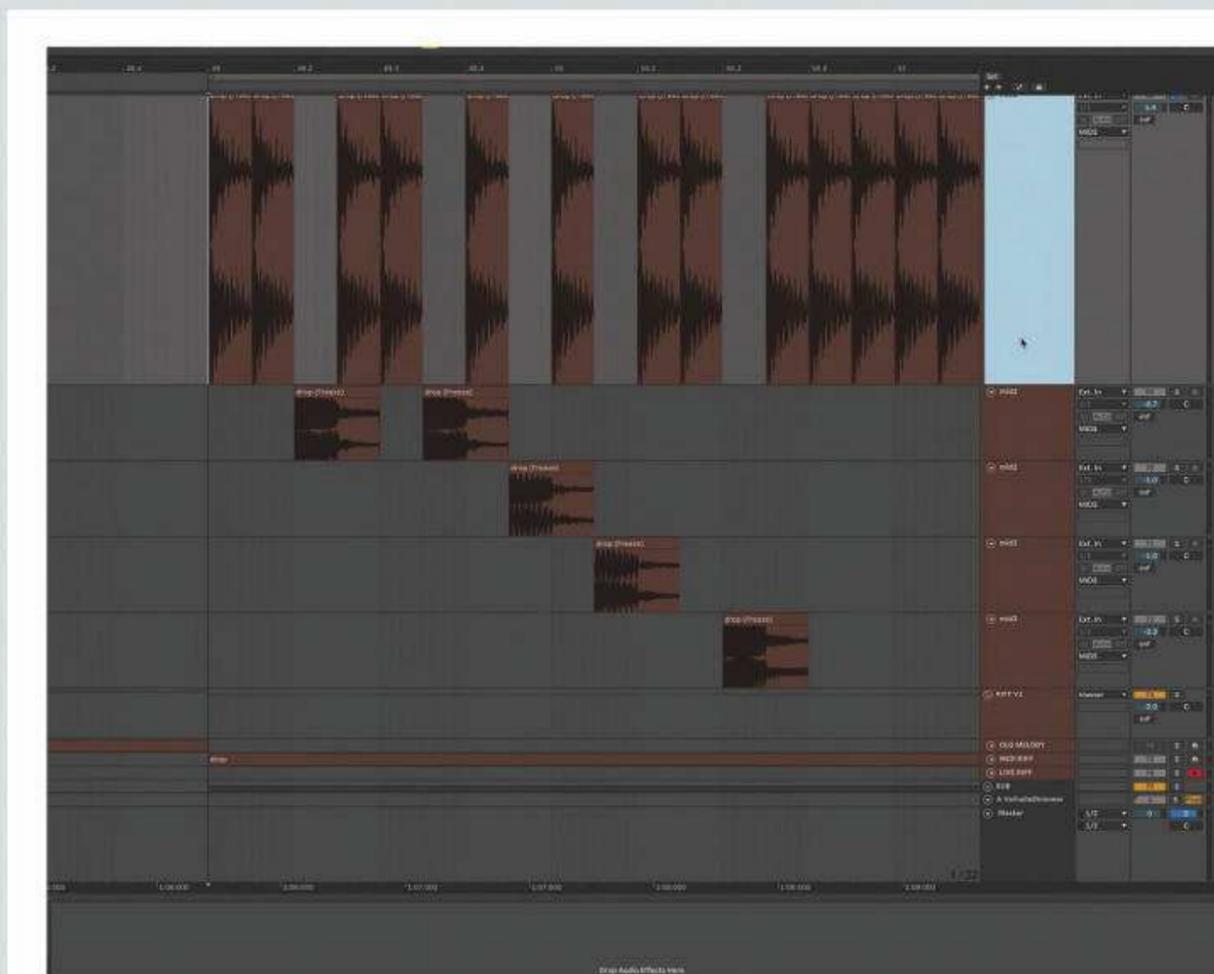


Tom relies on careful layering in Ableton Live's Instrument Racks to give his minimal riffs a full-frequency sound

Creative concept

0.31 The fundamental element of *Hackers* on which the whole track hangs is the main synth riff, as Tom explains. “It started off with a concept, and the concept was to create a track that was incredibly simple, based around one riff and one riff only. Essentially, the riff is the bassline and the main hook, and for that to work, I needed to create a sound big enough to fill up the frequency spectrum. It’s interesting, as there are different articulations of that sound depending on where they were played, or which octave they were played on.”

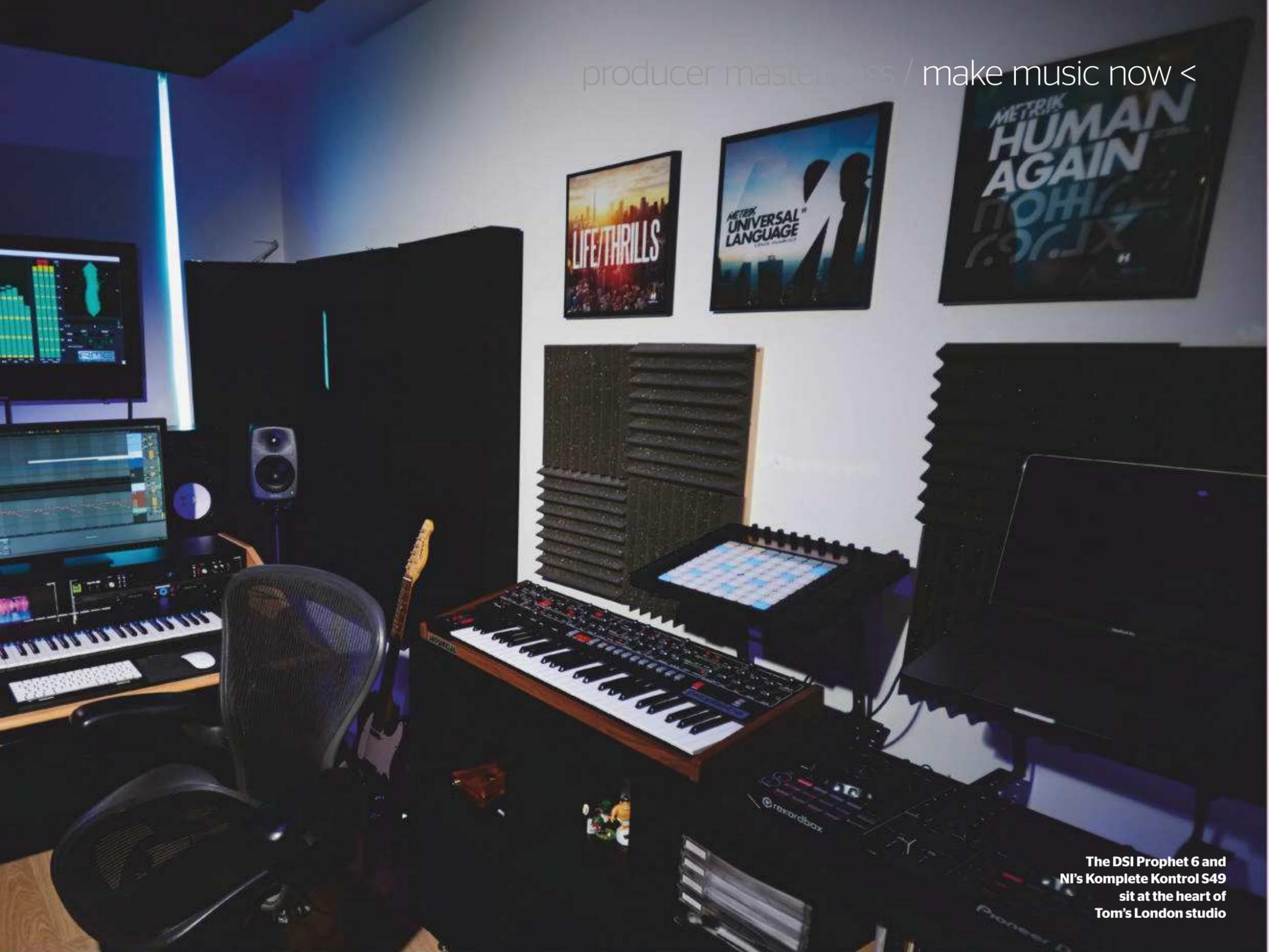
To make this happen, Tom created an Instrument Rack in Ableton Live and assigned different variations on the sound to specific MIDI notes. “In Ableton, when you create an Instrument Rack, you assign ranges of MIDI notes to groups of instruments. So, in lower registers, I’ve got the sub here and then the mid bass patch, which I made in Serum, which is the more staccato sound. That was a sawtooth with 16 voices layered in unison, detuned, with a pretty harsh resonant filter on the attack, controlled by an LFO, so it has that plucked, grungy sound. That’s underpinned by the sub, which is simply a sine wave, again from Serum. To give the bass presence, I often open the wavetable editor, where you can control the fundamental and harmonics of a sound.”



Processing the riff and bouncing it down

05.55 To keep the main riff totally consistent, Tom bounces its various processed and distorted component notes down as audio and lays them out in the arrangement. “I’ll get the sound as overdriven as I need it to be, then bounce it as audio, so I have a lot more control over the tails of the sounds, making sure they don’t bleed into each other.”

“Once I’d bounced out the audio, I auditioned bass notes, checking phase and making sure they all have the strongest amplitude. Once I’d taken the strongest notes, I repeated quite a few of them for an almost synthetic, robotic edge, rather than letting the riff play by itself, where each instance of the note would have a different character, as the oscs start at different points. This way, you can get the optimum levels of amplitude per note. That’s one advantage of bouncing down to audio.”

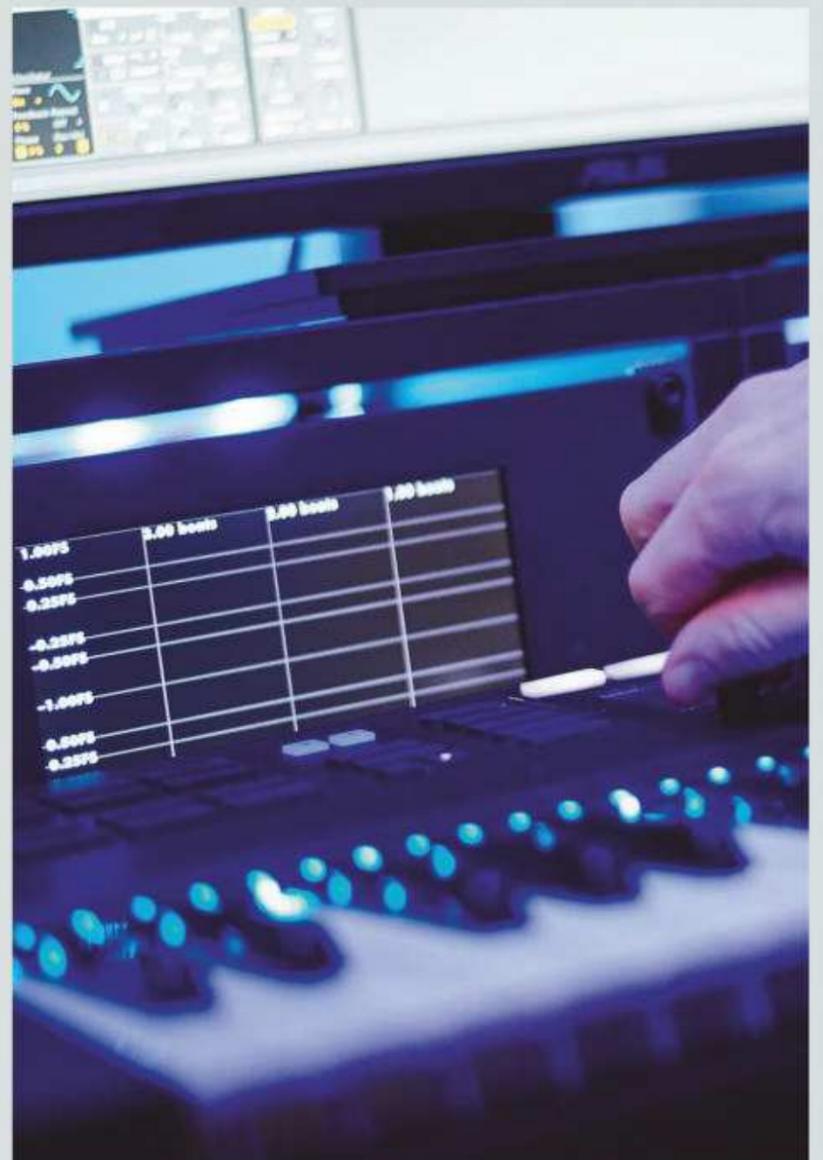


The DSI Prophet 6 and NI's Komplete Kontrol S49 sit at the heart of Tom's London studio

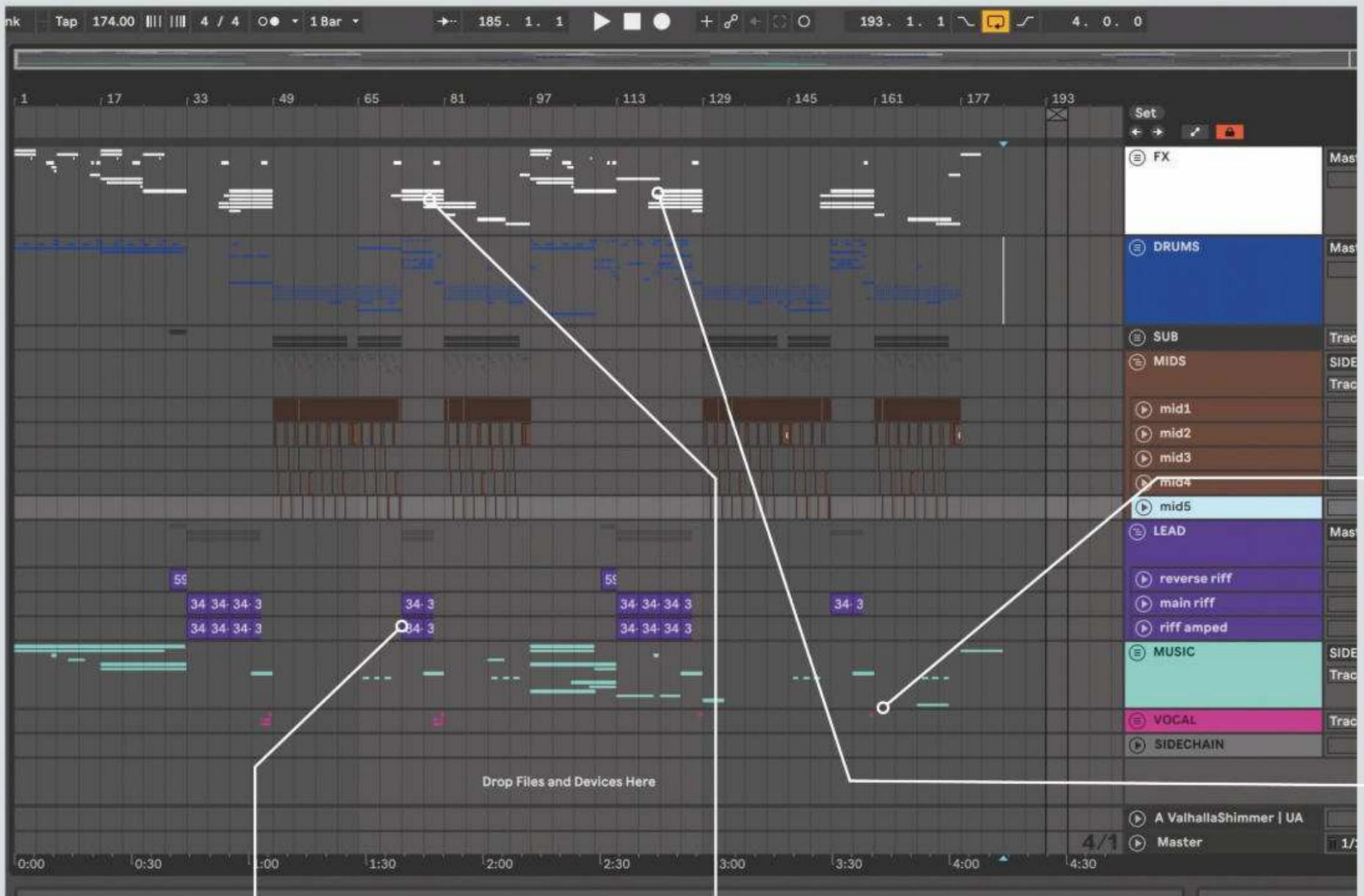
DnB percussion

46.40 Having put together the main drum track, Tom adds further percussion elements, starting with a vibey shaker. “This track is a DnB track arranged like techno,” he says, “in that I’m bringing in other percussive elements as it progresses. Here, I’ve got a simple shaker on the offbeat, which helps the groove along and increases the pace. This is just a stock shaker that I use in quite a lot of tracks. I wanted to make sure that it wasn’t clashing with the kick and snare - anything I add into the drum track, I’m going to want to duck against the kick and snare, and this applies to cymbals, hi-hats or whatever. So here, [Xfer Records] LFOTool is doing the work for me. It’s literally just ducking on that second kick drum.

“The shaker was mono to start, but I wanted to add stereo width to it. I normally shy away from stereo widening plugins, as they can introduce a lot of phase side effects, so they won’t work well in mono. But iZotope have overcome this with their Ozone Imager.”



Metrik's *Hackers* in Ableton Live



Giving the riff a guitar-like sound

52.40 As a guitarist, Tom wanted a guitar-like element in the track, leading to the drop. Having abandoned the idea of using an actual guitar recording, he found another way. "I ended up taking the [synth] riff, bouncing it as audio and essentially running it through a guitar amp. I pitched it up an octave, put it on [Ableton Live's] Complex Pro algorithm, to maintain a lot of the formants of the sound, and ran it through Ableton's Amp. As you can hear, the Amp makes it sound like a guitar. I've had a few people ask if it was a real guitar, but it's the synth being run through the Softube Ableton Amp plugin."



Designing a riser

56.55 "Once we've heard the riff for eight bars and the main hook's been established, I then started to introduce the risers and build-up elements."

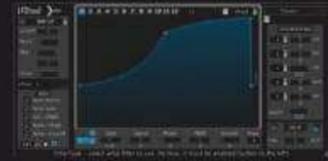
"By making your own risers, you can start the pitch of them in the key of your track, so they sound a bit more cohesive, and really sculpt them to fit the overall energy of what it is you're working on. If I break down the riser here, it's essentially just a sawtooth

that I made in Serum, just one voice. Here we've got the pitch [envelope] - there's a bit of a lift at the start, actually, to give a bit more character, rather than starting the track at the starting pitch.

"I've got a frequency shifter pushing the frequencies up as it rises - just Ableton's stock Frequency Shifter. You can hear that it's giving it an interesting tonality as it moves up - a nice metallic effect."



Metrik's favourite tools



Xfer Records LFOTool cm166 > 9/10 > \$50

"A bread and butter 'go-to' for me. It's pretty much on everything as a mixing tool, and I've been using it a lot for stutter and rhythmic effects as well."

xferrecords.com



Xfer Records Serum cm213 > 10/10 > \$189

"I make a lot of my bass sounds with Serum. It's the control, the sound design capabilities of it - you can go into so much detail that you can actually control the amplitude of the harmonic series of the sound."

xferrecords.com



Kush Audio Clariphonic DSP cm220 > 9/10 > \$199

"I love this thing. You can just keep pushing the tops. You have to be careful to balance the entire frequency spectrum, of course, not just the tops, but this is the one to go for if you want top-end presence."

thehouseofkush.com



Noir Labs Chain Shaper NA > NA > \$30

"I've had a hand in helping to develop this one. It reads the transient of any source and allows you to draw a curve to control your ducking and dynamics. It's an amazing plugin!"

gumroad.com/noirlabs



Native Instruments Complete Kontrol S49 cm250 > 10/10 > £499

"All the synths that I love using, including Serum, are mapped to the macros, so I've got my synth in front of me... and that's where a new idea begins."

native-instruments.com



Spoken word vocal

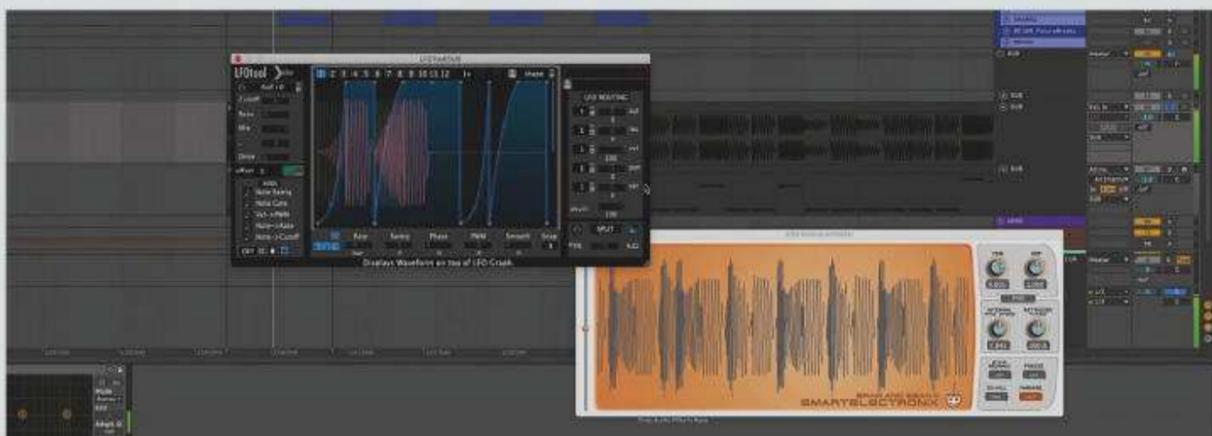
1.04.02 Tom explains the story behind the *Hackers* spoken word vocal that appears before the drop. "I was listening through a lot of [TV show] *Mr Robot*, just trying to find somebody saying 'hackers', and I got the lead character actually saying it as part of a full sentence. I

got it re-recorded so as to not infringe on any copyright. I actually matched the EQ with the original sample - I wanted it to sound as close to it as possible. That's the pre-drop sample: it brings the whole theme of the track together, gives it an identity, and we can hear that before each drop."



Sound effects

1.14.45 "To help the track's theme, I added in quite a lot of sound effects. I suppose the most prominent ones are these 'hacking' sounds, which I found from a [sample] pack. They're just running through the intro to give it that theme. Very subtle texture, ear candy - just to really hit home with the 'hackers' theme. We've got a reversed clap running into some white noise - just all very standard stock sounds. A few little rhythmical white noise chops - kind of like hi-hats. All of these little things help it along and make it sound less rigid."



Mixing sub bass

1.25.38 Tom puts a lot of care and attention into balancing the sub with the kick and snare drums, "because these are the two loudest elements in the mix. That's [the kick], where our fundamental is, and that's taking up a lot of room in the mix - it's hitting about -2dB. Equally, with the snare drum, it's pretty loud. I like to keep those fundamentals as close in volume as possible, so if we have a look at

the kick and snare and the sub together, we'll see that it's causing all kinds of phase issues. It's maxing out the headroom, and we don't want that at all. At the time of writing this track, I was using LFOTool to carve out the room for the fundamentals of the kick and snare in the sub. Now we can get the track nice and loud, because the fundamentals of the kick and snare are mixed nicely."



Metrik's recent work sees Tom's own voice coming to the fore

Measures of success

cm: With a lot of artists releasing their own music these days, what would you say are the benefits to be had from being signed to a label?

TM: "There are a few models out there that can work, but from my experience working with Hospital, it has so many benefits. They've grown to be a company with 25 members of staff, and each one is dedicated to every aspect of an artist's career, and the record label, and the publishing, and the events side of it, too. It's a well-oiled machine, and a very skilful and proactive team looking after your music. It puts me in a position where I can focus on what I do best, and once the music's done, I send it over to them and they can really make things happen with it; they get it to the right places. Before my second album had even come out, it had been licensed to video games and films and all that kind of thing, and that would be a lot to consider if you were doing it yourself, you know? That's not to say it's not achievable, but it certainly helps to have a team like that, who have experience and the nous within the business to get you from A to B."

cm: What can we expect from you in the near future, and how will you be evolving the Metrik sound?

TM: "I'm currently working on my new album, and before I started writing a lot of these tracks, I was thinking for quite some

time about what the sound and identity would be for it. I feel like across my last few albums - and, indeed, my whole catalogue - I've aspired to be quite a diverse artist, who does quite a few different styles. I've always felt that that's a way to keep things exciting. And to be honest, I've got so many influences, it's really hard to rein it all in and pick one - I want my music to be a real platform for my musical tastes and interests. But with this album, I'm trying to hone in on what the Metrik sound is, and to be very disciplined about how I execute it, so it's led to me thinking, 'What do I genuinely love the most, and what can I create that is 100% true to that, but unmistakably me?'

"I arrived at the realisation that I'm pursuing this retro, analogue thing - dark synths of the 80s supported by really big production, big drums, more like a metal or rock ethic when it comes to combining the two... the light and the dark, the ethereal

"With this album, I'm trying to hone in on what the Metrik sound is"

and melodic combined with the heavy and powerful, y'know? I've got a Prophet-6, and I've been writing a lot of sounds with this synth, as well as building a sound palette that's got quite a lot of focus."

cm: You explain in your *Producer Masterclass* video that you originally used your own voice as the basis for one of the vocal parts. Are vocals something you're looking to do more of yourself, rather than always working with other singers, as you have in the past?

TM: "Yes, I've started recording my own vocals for the new album, which has been a real 'eureka' experience. Previously, I've worked with guest vocalists, which has been amazing - I've worked with some incredible talent: Jan Burton, Elisabeth Troy, Ragga Twins, a really diverse pool of extremely talented people. But I thought I'd have a go at doing it myself, and I think it is actually the sound of 'me' - you can't really get any closer to the identity of someone's music than their own voice!

"So my new single, *Gravity*, has me singing throughout. I'd say I've tried to develop a style of vocals in that they're quite layered: there are harmonies that are quite direct. I try not to make them sound too Auto-Tuned or Melodyne-d - I still want it to feel like it's a human singing. That's where I'm heading with my new music, I would say."



MIDI guitar

05.10 Tom is more at home playing guitar than keyboards, so the main synth riff in *Hackers* was in fact composed and recorded using a MIDI guitar. “It looks like a toy on first glance, but it’s actually very powerful, because it

works as a MIDI instrument,” he enthuses. “I created the patch, and then, because guitar is the instrument I’m most comfortable with, I often find it a lot easier to come up with riffs. I literally just jammed away, then recorded the MIDI into Live.”



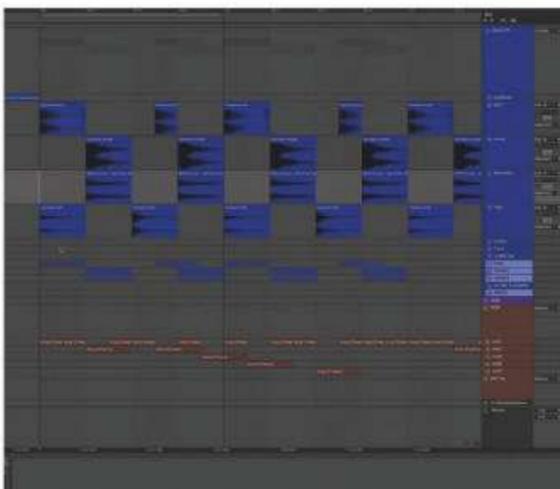
Intro with Zero-G Ethera

1.05.33 The female vocal comes from Zero-G’s Ethera Kontakt instrument. “I wanted an ethereal-sounding vocal, like early Orbital. I recommend Ethera for anyone looking for this style of vocal. I put it through a lot of processing. I wanted this stutter effect, kind of a trance gate effect, so I created an effect chain and separated it. The two trance gates come in at different times, one after each other - that helps it sound less like a sample from a library, and gives it more identity and dynamic interest. That’s also being sent to Valhalla Shimmer - a long, spaced-out reverb.”



Massive synth arp

1.09.05 The acid-style arpeggiated synth line in the intro, generated by NI Massive, continues *Hackers*’ 90s theme. “This is the first hook establishing the theme, harking back to this early ‘cyber trance’ era. I wanted quite a lot of acid, resonant sounds in there, with that *WipeOut*, Chemical Brothers feel. I’ve got a lot of resonance applied to the low-pass filter, and that’s modulated by Massive’s step sequencer, so it’s arriving at different levels of cutoff for every eighth-note and moving as the melody progresses. Then I’ve assigned keytracking to the resonance, as I didn’t want the sound to be as resonant in the lower registers - as it goes into higher registers, I wanted it more resonant.” **cm**

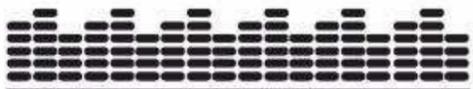


Blistering beats

15.25 Tom spends a lot of time in the video discussing his layer-based approach to synthesising drums, but he also briefly summarises the specifics of the drums in *Hackers*, which are very much in the classic DnB mould. “Again, in line with the concept of the track, I wanted the drums to be as raw and punchy as possible. Very simple: just a kick, snare and hi-hat. I like to have quite a synthetic sound to my drums, but also with a live feel, so they’re not too synthetic; they still feel like they could be coming from a live drum kit. But I like to have as much control over them as possible, in order to create as clean and ‘clubby’ a sound as possible.”

TR-909 percussion

49.50 Tom uses a lot of retro-styled sounds in his tracks, and *Hackers* is no exception. Indeed, the whole project was inspired by an old-school movie. “I was big into sci-fi and early 90s references inspire me, such as the game *WipeOut*, [featuring a seminal soundtrack by] the Chemical Brothers, Prodigy... Also a lot of cyberpunk films: there’s a film that came out in the 90s called *Hackers*, which resonated with me, and I thought that could be a strong concept for a track. So I built a lot of the sounds around this track to fit in with that 90s techy, cyberpunk-ish vibe. An instant go-to would be 909 rides, which I’ve added into the drum track. As you can hear in the build-up, we’ve got these distorted kick drums here - these were lifted straight out of a Vengeance pack. You’ve got your 909 hats, 909 ride and 909 clap - those helped a lot in creating this track’s identity.”



HEAR MORE



▶ Metrik - *Hackers*
bit.ly/met_hckrs

▶ Metrik - *Freefall* (Ft. Reija Lee)
bit.ly/met_frll

www.metrikmusic.com

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Outlaw CM

Streamline your mixing with WA Production's gain-rider plugin, free this issue

> **When working with dynamically inconsistent signals such as vocal or guitar recordings, careful volume automation (also known as 'riding the fader') is the most transparent and precise way to tame peaks and even out levels.**

In order to simplify the time-consuming process of drawing in these volume changes yourself by hand over the course of a track, modern 'gain rider' plugins act as a kind of extra virtual hand on the mixing fader,

listening to the input level and then reacting to it accordingly.

Enter this month's exclusive free plugin, and the latest addition to our ever-growing **cm** Plugins suite of instruments and effects: Outlaw CM. It's been built exclusively for *Computer Music* by specialists WA Production, creators of genre-focused sample packs, DAW templates and plugins - including our own Puncher CM.

Designed for simplicity, this slick gain-riding tool (PC/Mac, VST/VST3/AU/AAX) will smoothen

out the volume of any track it's inserted on. Working to a user-defined RMS Target level, Outlaw CM analyses the input level and turns the output up or down in real time. Further features include an intensity control (Mix), an adjustable Gate to clamp down on quieter signals, and an overall output Gain (+/- 24dB).

In our tutorial, we'll run through a few functional and creative examples to show you what the plugin can do, and we've included Tutorial Files to help you follow along with our walkthrough and video.

If you hanker after more control than Outlaw CM gives you, its big brother, Outlaw, can be purchased for \$39 or rented via their membership scheme. Advanced features include adjustment of smoothness/sharpness, plus high- and low-pass filters for further tailoring the response. Make sure you check it out over at...

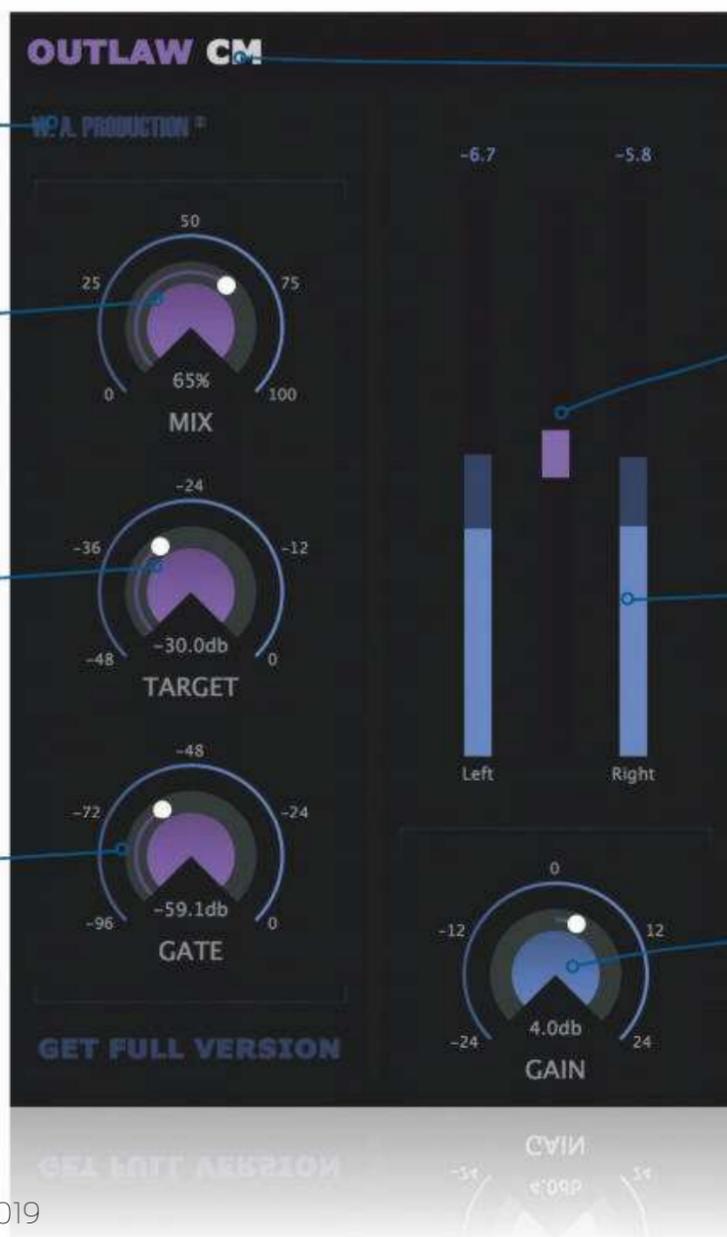
pluginboutique.com

WEBSITE
Click to go to WA Production's website

MIX
Set the intensity of auto gain adjustment from 0% to 100%

TARGET
Set the target RMS level in dB for Outlaw to aim for

GATE
Adjust this threshold so that Outlaw CM doesn't attempt to modify quieter signals



BYPASS
This badge also doubles as a bypass button

GAIN METER
The meter in the centre (purple) shows the real-time positive or negative gain

LEFT / RIGHT LEVEL METERS
The left/right level meters indicate the peak level (dark blue) and RMS level (light blue) of the output signal

GAIN
Set the overall output gain to help when A/Bing processed and unprocessed audio

> Step by step 1. Getting started with Outlaw CM



1 > Outlaw CM comes in VST, VST3, AU, AAX (32- and 64-bit) formats. First, download the zip file from filesilo.co.uk/computermusic, or grab the folder from the print issue's DVD. Open the folder for your operating system (Windows 7 or higher, Mac OSX 10.7 or higher) and run the combined installer, choosing the plugin formats you want to install.

2 > The Outlaw CM folder in Tutorial Files contains stems for a demo track, comprising beats, bass, synths and a couple of lead parts. All of the files have been exported with a one-bar count-in, and so all that you'll need to do is line them up on individual audio tracks in a new DAW session.

3 > First, let's use Outlaw CM to smooth out the levels of the Lead Synth 1 track. This part plays in the second half of the track, and its variable level makes it inaudible at times. Load an instance of the plugin on the Lead Synth 1.wav track.



4 > Set Outlaw CM's **Mix** control to **100%** and **Gate** to **-96dB**. Then, with the track playing, adjust the RMS **Target** level. This may take a bit of trial and error, but the idea is to establish the loudest RMS level you want so that Outlaw CM can adjust the output level towards that target. Here, we've settled on **-20.0dB**.

5 > We can see from the meter (and also hear) that the gain is changing over the decay of the Lead Synth 1 notes. We can reduce this by adjusting the **Gate**: gradually raise its threshold until the note's decays aren't being processed, and we get a more natural sound. A setting of **-7.0dB** seems to work here.

6 > Lead Synth 2.wav - a short percussive sound with a reverb decaying reverb tail - plays in the first half of the track. Here, rather than avoid processing the decay of the sound, we're going to use Outlaw CM to enhance it...



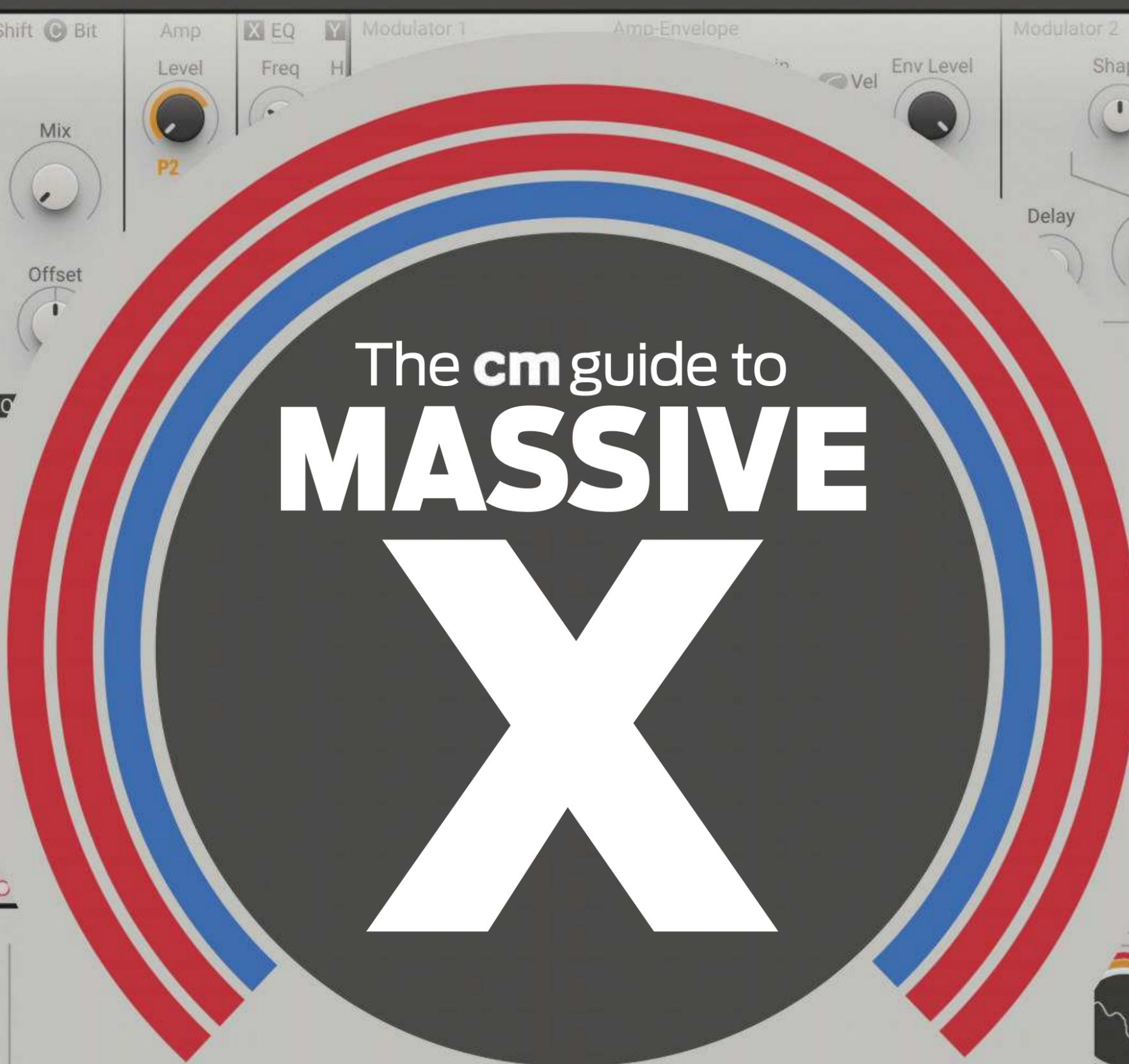
7 > Start by setting the **Gate** to **-96dB**. Once again, with the track playing, adjust the **Target** setting to achieve the desired balanced level - we set it to **-30dB**. Although we like the effect, it's a bit too much. To fine tune this we can reduce the **Mix** value. **65%** seems about right.

8 > For our final example, let's check out the audio track called Rev Piano.wav. This plays at the end of the track, changing gradually from very quiet to very loud. It sounds good in isolation but is too dynamic and is getting lost in the mix. Outlaw CM can tackle this...

9 > Start by setting the **Gate** to the minimum **-96dB**, then adjust the **Target** to get the desired gain change. Here, we set it to **-30dB**. Observe the purple meter to monitor the gain change, and see how Outlaw CM smooths out the signal's level. Job done! **cm**

The image displays a detailed view of the Massive X synthesizer interface, organized into several functional modules:

- Top Row:** Includes **Bipolar PWM** (with a square wave generator and **Filter** knob), **Dual Wavetable** (with two **Filter** and **Ratio** knobs), **SQ-Saw Ratio** (with a sawtooth generator and **Filter** knob), **Noise** (with **White** and **Pink** noise generators), and **Monark** (with **LP4** filter and **Res** knob).
- Second Row:** Features **Modulation Envelope** (with **Shape**, **Sustain**, and **Env Level** knobs), **Exciter Envelope** (with **A**, **Shape**, and **R** knobs), and a **Pitch** section with **0.000** and **-24.000** values.
- Third Row:** Contains **Modulator 3** (with **Ratio**, **Center**, and **Hold** knobs), **Modulator 4** (with **Rate** knob), and **Modulator 5** (with **Rate** knob).
- Bottom Row:** Shows **SQ-Sin-Saw** (with **Bend** and **Ratio** knobs), **Noise** (with **Circui...** and **Hihat** generators), **Groian** (with **LP4** filter and **Res** knob), and an **EQ** section.

The logo for Native Instruments Massive X is centered on the page. It features a large, white, stylized 'X' on a dark grey circular background. This central element is surrounded by two concentric rings of red and blue, which are themselves set within a larger, semi-transparent grey circle that mimics the software's interface. The background of the entire page is a blurred screenshot of the Massive X software interface, showing various knobs, sliders, and waveforms.

The cm guide to MASSIVE X

In part 1 of a deep dive into Native Instruments' new powersynth, we'll explore its oscillators and modes

> **As the weapon of choice for countless dubstep, DnB and bass producers over the last decade, NI's Massive is considered the most iconic software synth of all time, packaging once-complex digital wavetable synthesis in a user-friendly, VA-style interface that set new GUI design standards.**

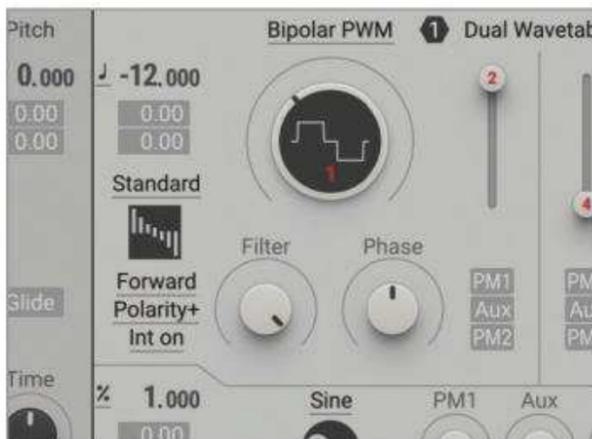
However, after being overtaken in popularity by Xfer Records' Serum, expectations for a 'Massive v2' couldn't have been higher. We got our first glimpse of the interface in September 2018; then, in March came an entire screenshot; and then two sonic demos in a blog post. Now Massive X has firmly arrived, and although its shortcomings have been widely discussed, it's still a worthy entrant into today's roster of 'powersynths'.

So let's delve into the synth's multitude of oscillators by building a handful of presets, ranging from

wavetable-based sounds to FM noises and special FX. We'll show you how these sound sources work, how they can be manipulated, and how you can combine them for creative uses. Next issue, we'll walk you through Massive X's myriad of modulators and effects.

Before you crack on with our exploration of Massive X's various modes of sound generation, we suggest you check out a few more resources. First up, there's our in-depth review - flip to page 88 to get our expert verdict. Then, for a 20-minute overview of the synth's features, point your web browser to bit.ly/massxfirstlook and watch our *First Look* video session. And how does Xfer's black and green behemoth compare to the newly launched Massive X? Head to musicradar.com and watch our *Massive X vs Serum* discussion session to find out...

> Step by step 1. Building a basic square bass



1 > Let's kick off our exploration of Massive X's oscillators by crafting a rave-esque bass sound. Starting with the default **Init - Massive X** patch, call up the **Basics >> Bipolar PWM** wavetable in Osc 1. Massive X's two main sound generators are wavetables - a wavetable oscillator is a collection of many single-cycle waves (referred to as 'frames').

2 > Spin Osc 1's main Wavetable Position knob to morph through the wavetable. This one is a collection of square waves at various pulse widths - scanning through these particular frames gives an effect like pulse width modulation. For a weightier tone, set **Wavetable Position** dial to **10-11 o'clock**, then pitch the osc's Tune down to **-12 semitones**.

3 > To wiggle this faux 'pulse width' hands-free, click and drag LFO 4's target cross, drop it into Osc 1's **Wavetable Position** target slot, then drag up in the slot a little to dial in a small amount of bipolar modulation, shown by the green-coloured 'Saturn' ring around the knob.



4 > Bass sounds are almost always monophonic, and we can set this up in Massive X's Voice section. Pop open the **Voice** tab, then switch **Polyphony** from Poly to **Mono**. By deactivating the bottom-left **Glide >> Legato** button, then activating **Glide** (top left), the pitch of each played note will bend into the next, at a rate determined by the **Glide** knob.

5 > We can beef up our straightforward square bass tone by getting Massive X's Comb filter involved. Select the **Comb** filter type, tune it down to **-12 semitones**, then slightly raise the FB knob to introduce a tiny bit of tonal feedback. After that, raise the **Amp >> FB** knob to **9 o'clock** for even more girth.

6 > Frequency-rich basses often benefit from some stereo widening in the midrange and treble areas, so in the synth's final FX slot (2), we call up the lush-sounding **Reverb** effect. Setting **Size** to fully anticlockwise and **Colour** to fully clockwise creates a tight, bright, widening effect that can be blended in to taste with the **Mix** knob.

> Step by step 2. Talking lead line with Massive X's Gorilla wavetable mode



1 > Massive X's ten Playback Modes tell the audio engine how to read through the wavetable content within a wavetable. The results vary wildly between modes and wavetables, so it's worth exploring their effect over the resulting timbre. In Osc 1, call up the **Additive + FM >> Metallic String A** wavetable.

2 > Click the 'Standard' heading to pop open the drop-down menu and select a new Playback Mode - we choose Massive X's new **Gorilla** mode. With this mode selected, the **Over** knob governs the strength of the effect, while **Bend** controls the formant-style 'bending'.

3 > Set both **Over** and **Bend** to a subtle **8 o'clock**, then use the L6 modulator (the **Random LFO**) to gently modulate Bend. The result is a unique formant 'talking' effect that would be difficult to synthesise any other way. Finish off the patch by loading up the **Stereo Delay** effect in the final Master FX slot.

> Step by step 3. Crafting an FM bassline with Massive X's Phase Modulation oscillators



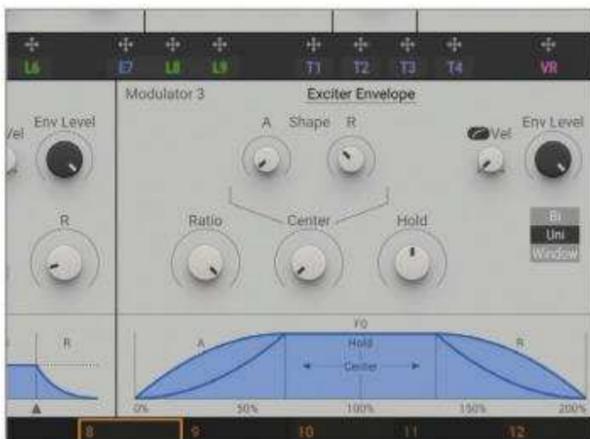
1 > A pair of Phase Modulation oscillators sits under the two main wavetable oscillators. For all intents and purposes, phase modulation synthesis equates to frequency modulation, meaning that Massive X can be used as a powerful FM-style synth if needed. Begin with the default **Init - Massive X** patch.



2 > Play a simple monophonic riff in the G1 region. Only Osc 1 is playing, and by dragging its **wavetable Position** dial fully anticlockwise, we're left with the most basic of sounds: a pure sine wave. This will be our 'carrier' (ie, audible) oscillator.



3 > Massive X's two inaudible Phase Modulation oscs - 'operators' in FM speak - can modulate the frequency of the two audible oscillators. Lighting up Osc 1's **PM1** button engages the first Phase Modulation osc's effect over Osc 1, and raising the **PM1** dial intros the effect. Hear how the sine's timbre gets more complex as the PM osc adds sideband harmonics.



4 > To control the influence of PM1's effect over the course of each new note, hook up a modulator (the **Exciter Envelope** is a good choice) to quickly open and close Osc 1's PM1 amount. A tight introduction over the front end of each note creates an initial percussive strike, giving us a typical FM house or techno bass sound.



5 > Contrastingly, by introducing the modulation envelope's influence over PM1 amount more slowly, the phase modulation becomes less of a sharp 'donk' and more of a 'warp' effect. This is more of a bass sound you'd hear in garage or grime. Take time adjusting envelope settings to fine-tune the timbral change over time.



6 > The PM oscillator's **Ratio** amount sets the mod osc's tuning in relation to the main oscillator. Experiment with different values to hear the impact this makes to the resulting change in timbre - high ratio values create more dissonant 'screech' effects, while a lower ratio of 1/2 gives us a thicker 'wob' timbre.

> Step by step 4. Building a dense, multilayered lead with multiple oscillators



1 > Starting with the default **Init - Massive X** init patch, raise Osc 2's level to maximum, then load it up with the organ-esque **Harmonics >> Loveparade** wavetable and tune it up to **+12** semitones. This gives us a blend of Osc 1's thick sawtooth and a more harmonically interesting tone an octave up.



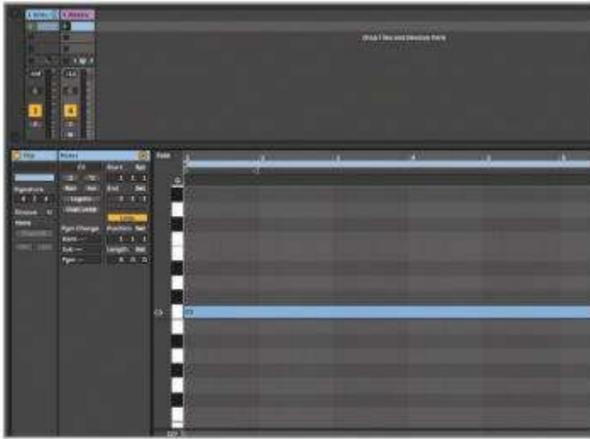
2 > Massive X's Insert FX slots can be loaded with basic oscillator waveforms. In the first Insert FX slot, call up the Osc effect and flip it to the **Pulse** waveform. We can use this to add low-end density by tuning it down to **-12** semitones. Set **Mix** to **12 o'clock** for a nice balance.



3 > In the second Insert FX slot, call up another **Osc** effect. Set it to a **Sawtooth** wave, pull Mix back to **11 o'clock**, then tune its pitch up to **+19** semitones. This blends in another tone tuned an octave and a fifth above the root pitch. For a final dimension of density, mix in the two Noise oscillators for bite.

> Step by step

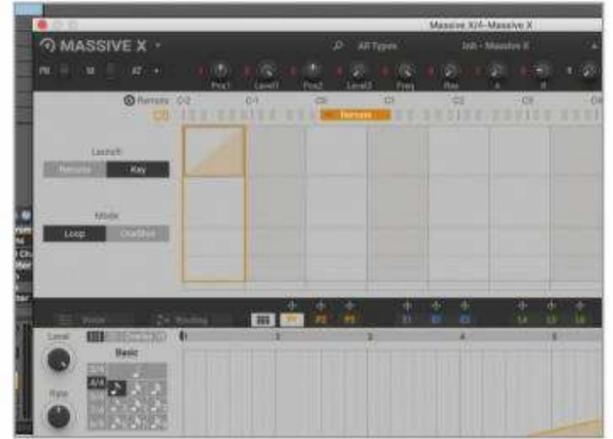
5. Designing a pumping riser using Massive X's dual Noise oscillators



1 > Let's synthesise a distinctive noise 'riser' effect that utilises Massive X's twin noise oscillators. With a new instance of Massive X loaded on a MIDI track in your DAW, create a new eight-bar-long MIDI clip and draw in a **C3** note spanning the entirety of the clip.



2 > Next, starting with the **Init - Massive X** default patch, head to the first Performer (**P1**) modulator, which conveniently runs over eight bars by default. Grab the rightmost yellow node and drag it up to the max top right position of the vertical grid (**24**). We now have a ramping modulation signal that rises over eight bars.



3 > Before we design our FX sound, let's make sure this Performer modulator resets every time a MIDI note is received. Head to the Performer's **Remote** page (the icon displaying nine blocks, found to the left of the P1-P3 tabs), then change the Launch mode from Remote to **Key**.



4 > Close the **Remote** page to open the main editing area again. We don't want to use the main wavetable oscs, so pull Osc 1's **Level** slider down to minimum. The synth's two Noise oscs can be loaded with looping atonal samples ('Noisetables') ranging from static noise through to mechanical, environmental and animalistic timbres. Crank the Noise 1 oscillator's **Level** slider up to maximum.



5 > Both Noise oscillators feature a Pitch control for transposing the currently loaded sample. After setting Noise Osc 1's **Pitch** value to fully anticlockwise, drag the Performer (**P1**)'s cross target to Noise Osc 1's Pitch target slot, then click and drag up in the slot to apply max positive modulation. Our eight-bar ramp-up is now gradually transposing the noise sample.



6 > The default **Static >> White** noise sample is pretty vanilla, so click on the header and browse through the more eccentric noisetables on offer. We settle on **Machines >> Old**. You'll notice that as the pitch of a noisetable is increased, the sample's loop length is gradually shortened, creating a cool 'wind-up' effect.



7 > Before we move on, let's spice up our riser with effects. Switch the **Filter** type to **Blue Monark**, then push up the Amp section's **FB** (Feedback) for more grunt. After that, head to the final Stereo FX slot and call up the **Stereo Delay**, leaving settings at default.



8 > We can introduce the second Noise osc for an ever-increasing sense of brightness over the course of eight bars. Grab the first Performer (**P1**)'s mod cross, drag it over to the Noise Osc 2's **Level** mod slot, then drag it up. With the **Static >> Hiss** noisetable selected, our eight-bar ramp raises this 'fizz' layer's level.



9 > Finally, we can introduce a sense of sidechained-style 'pump' by looping a one-beat section of Performer 2, creating an upwards ramp, then using this to modulate Noise Osc 1's level up and down. From here, try loading different noisetables and experimenting with Massive X's onboard processors to customise your riser. **cm**

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V COLLECTION 7 POWER GUIDE

Arturia's V Collection 7 adds a trio of cloned classics to its arsenal of emulative instruments

> **Arturia are at it again. Those auteurs of emulation have given their voluminous V Collection a once-over and managed to find something missing - well, three somethings, as it happens. And we have to say, we're in complete agreement with their conclusions. This time around, they've pulled three classic keyboards from three distinct eras.**

First off, there's the mighty Mellotron, a proto-sampler that played pseudo-symphonic sounds recorded on racks of magnetic tape.

Next up, there's Casio's budget-minded answer to the DX7: the CZ-101 and its variants. The CZ series skirted Yamaha's patent on FM synthesis by developing their own phase distortion-based system that was just as capable, but a heck of a lot easier to use. Still, it demanded dedication from synthesists accustomed to familiar analogue techniques.

Finally, comes a supreme space-case: the utterly English Synthi AKS, complete with a virtual recreation of its famous pin matrix

routing system, touch keyboard and sequencer. With a loony, looping envelope generator, and the ability to interconnect pretty much every part of the signal path, it still leaves most users scratching their heads. In this case, that's one of its best features!

Each and every one of these instruments has earned a place in music history, and each of them offers its own unique features and sonic character. Spanning the decades, you can use them to add a bit of retro vibe to your tracks, or tap into their unusual architectures to create something utterly new.

Over the next few pages, we're going to take a look at each of these new additions to V Collection, and the instruments after which they've been modelled. We'll give you some history behind the originals, name-check some famous users, and take a quick tour around Arturia's recreations, showing you some of their most useful features and how you might make use of them in your own productions.

Tape echoes

The Mellotron was the sound of progressive rock. Used by The Beatles, Moody Blues, King Crimson, and Genesis, it offered musicians the means by which to imbue a bit of symphonic sophistication to their tracks and performances. Because of the nature of its construction (we'll get to that next), it also provided an unintentional lo-fi warble and loads of gauzy atmosphere. You see, the Mellotron served up multisampled recordings of actual instruments and voices much like a modern ROMpler, but the Mellotron did it way back in 1962.

Of course, being some 15 years before the release of the Fairlight, it should be obvious that the Mellotron offered no ROM, no RAM, and no digits that weren't attached to the performer's hands. Instead, each note of a given sampled instrument was represented by a length of tape that was dragged over a tape head each time the player pressed a key. A complicated system of mechanics would return the tape back into position once the note was released. There was



The Mellotron has added a touch of pseudo-orchestral class to many a hit

no looping and the maximum note length was around eight seconds. Tapes ran the gamut from delicate flutes (*Strawberry Fields Forever*) to bass accordion (*Watcher of the Skies*), to lush choirs and scratchy string ensembles. Since each note consisted of its own sample on its

own length of tape, the sound could be rich, layered and complex.

For a fee, users could arrange for custom tape 'racks' to be made especially for them. Roxy Music owned one such rack, while the BBC ordered one filled with sound effects.

Initially, the Mellotron was produced by a company called Bradmatic/Mellotronics, but as it happened, it was not the first of its kind. That honour goes to American Harry Chamberlin who had beaten the Mellotron to the punch by over a decade. After some to-ing and fro-ing between Chamberlin and Mellotronics over who owned the rights, and some exchange of moneys, both companies agreed to sell their own instruments. Bradmatic/Mellotronics would become Streetly Electronics in 1970, a name very much associated with the Mellotron.

The Mellotron was a wildly unpredictable beast, prone to malfunctions and breakdowns, but sounded like nothing else on Earth. Unless, of course, it's sitting next to a Chamberlin!

> Step by step 1. Emulating proggy mechanical mastery with Arturia's Mellotron V



1 > Though Arturia are known for their synth emulations, their V Collection 7 also includes recreations of a fair few mechanical keyboards, including the mighty Hammond B3 and Rhodes Stage 73. The Mellotron V sits beside them, with its gritty tape-based sample-playback and meticulously modelled mechanical noises. Let's have a play with the default patch.



2 > That's a familiar flute, having been used by The Beatles (on *Strawberry Fields Forever*) and a fair few other artists. As you can hear, there's a bit of grit along with the recorded notes. There are three banks of tapes loaded at any time. You can toggle (or crossfade) between them using the switch to the left of the keyboard. Let's set it to its middle **B** position.



3 > That brings up an even more familiar sound - the famous Mellotron strings, as used by The Moody Blues, King Crimson, and dozens of prog bands in the late 1960s and 1970s. Next, let's try the **C** position. This is a less-overused set of tapes, those comprised of cello notes. Finally, let's try a setting between **B** and **C** for a mix of cellos and strings.



4 > Loads of other tapes are provided, but this being an Arturia product, it goes beyond the mere emulation of a classic and adds some nifty modern features that bring it a little more up-to-date - it even allows you to bring in your own samples, should you care to do so. Let's click the arrows in the upper-right to access some of the added goodies.



5 > Here you can do some basic volume shaping with a traditional ADSR in the upper-left, or use the controls along the top to add such niceties as velocity control over amplitude, use aftertouch to add tape flutter, and mix in various mechanical imperfections. Here, we've extended both **Attack** and **Release**, and dialled up the **Mechanics** noises a bit.



6 > Notice the 'FX' just next to the double arrows that we clicked on in step 4. We can click that to access a virtual pedal board into which we can drop some superb effects processors. There are already a few in this patch. Let's add a Tape Echo into the empty fourth slot and tweak its parameters a little. We'll turn up the **Rotary Speaker's** mix, too.

Flexing phases and distorting digits

At the time, the 80s seemed a transitional period for electronic music. After two decades of nothing but analogue synths, musicians wanted something new, and while pioneering digital instruments were offered by Fairlight, New England Digital, and PPG, their prices were hefty.

The arrival of Yamaha's affordable DX7 in 1983 changed all that. Its patented take on FM (frequency modulation - though it was actually closer to phase modulation) gave it a crisp, punchy, often harsh sound that wasn't obtainable from an analogue instrument. A blockbuster success, it was just about affordable, though at £1549, hardly within reach of the average shmoe. Other companies took notice of the DX7's massive success, and soon the word 'digital' was plastered on nearly every instrument's front panel, regardless of what was inside.

Japanese giant Casio's CZ series of synths, however, were unabashedly digital. The diminutive CZ-101 (1985) would have looked right at home in a modern rig, with its mini-keyboard. At £395, it was aimed at budget-minded musicians, yet it offered some unusually powerful features such as four-channel multitimbral operation. This was a genius stroke on Casio's part, as inexpensive multichannel software sequencers were just beginning to flirt with popularity.

The CZ-101's best feature, however, was its digital sound engine. Eight voices of polyphony were on offer, each consisting of a single 'Line' comprising a DCO (oscillator), a filter-like tone-shaper called DCW, and the DCA (amplifier). The oscs used 'phase distortion', in which the phase angle of a waveform was altered via playback rate. This resulted in sounds like those of the Yamaha synths, though rougher and less refined. Both DCW and DCA were provided with 8-stage rate/level envelopes. Other niceties included ring mod, noise, portamento, and the ability to layer Lines for complex sounds.

Even this incomplete list of features must've terrified Roland and Yamaha. Astonishingly, though, Casio weren't impressed with the CZ-101's 70,000 sales receipts (and 45,000 for the CZ-1000s). Still, they kept at it, releasing the VZ-1 and FX-1 before giving up on pro instruments.

> Step by step

2. Early digital vibes with the CZ V



1 > The original CZ-101 was easier to program than a DX7, but it still was far from intuitive thanks to its then-unusual rate/level envelopes and unfamiliar nomenclature. Thankfully, Arturia's CZ V is far easier to program, while still retaining the sonic charm of the real deal. Fire it up in your DAW and have a look.



2 > The initially loaded patch is a nasal brass sound of the sort heard on 80s hits. The front panel is spartan - even more so than that of the original. Still, we can manage a few tweaks. For example, we can reduce the **Timbre Macro** slider for a more filtered sound. Increasing the **Time** slider actually shortens the envelope times for a snappier sound.



3 > We want to make a sound from scratch, so let's look to the browser up top, where we can click **All Types**, then choose **Default** from the Templates category. Now we've got a simple sine wave - not very interesting at all. You'll also note that the **Macro** sliders we were just using are now unassigned.



4 > As ever, more parameters can be accessed by clicking the double arrows in the upper-right. As discussed earlier, each sound can be made up of one or two 'Lines'. Here, we see that Line 1 is active. Note its **DCW** knob - it's all the way down, hence the sine. If we turn it up, we get a sawtooth wave, as displayed.



5 > Clicking on the displayed waveform allows us to select another. We'll choose **SawPulse**. Much grittier! The AMP envelope is currently on show - adjust that by dragging in the display. We'll nix the sustain and create a short decay with a bit of release tail. Let's crank our **DCW** back down.



6 > Tab to the DCW envelope and draw in a similar envelope shape, but with a shorter decay time. This gives a snappy bass. Use the Line Select in the lower-right to select **1+2**. Let's select **Reso1** for Line 2. Adjust the Amp envelope as before, and then create a similar shape for the DCW to simulate a squelchy filter.

The EMS Synthi

EMS's Synthi have become nothing short of legendary, commanding breathtaking prices on the used market. To a casual observer, this might seem ludicrous, given these instruments' often harsh sound, unpredictable behaviour and notorious tuning instability.

Yet to some aficionados of the experimental and obscure, the Synthi represent the holy grail of sonic exploration - partially because of its harsh sound, unpredictable behaviour, and tuning instability. After all, these are precisely the qualities that draw some musicians to modular synthesis.

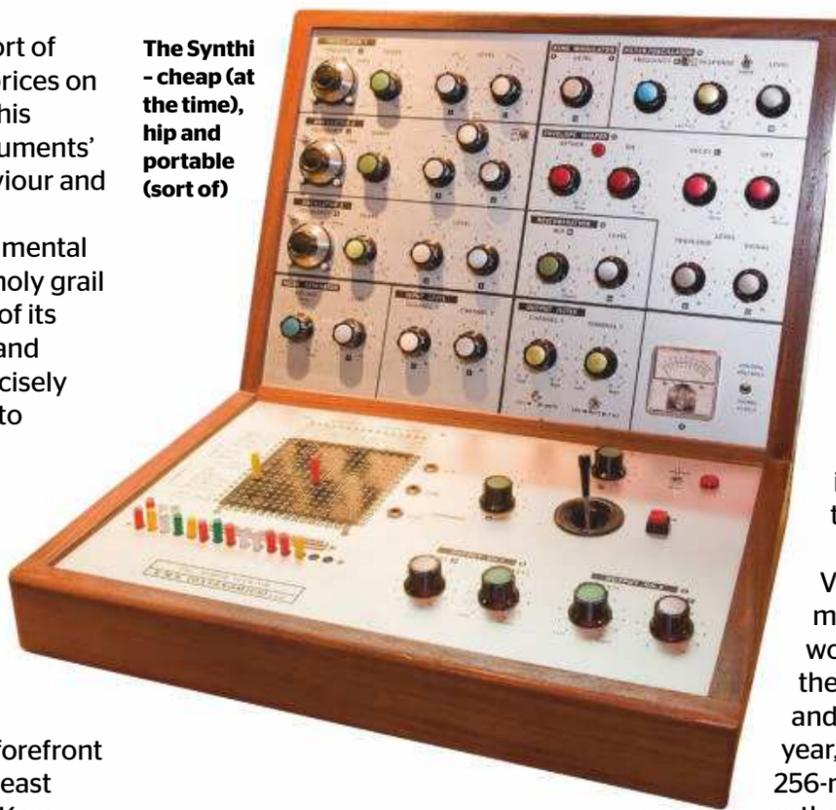
At the time of EMS' formation, synthesisers were primarily an American affair, with Robert Moog's massive modulators being built in New York and Donald Buchla's Electronic Music Boxes being cobbled together in California. With the eventual rise of ARP, Oberheim, and Sequential Circuits, US manufacturers would remain at the forefront of the tiny electronic music market - at least until Japanese companies like Yamaha, Korg, and Roland joined the fray.

Until more recent years, EMS were one of the few British companies to make a splash in the synth market. Sure, others tried, and some would eventually succeed, but in the 70s, EMS was the only name that echoed across this green and pleasant land and, in point of fact, it was remembered primarily for a trio of instruments - well, a pair if you consider that two of them were the same circuits crammed into two different packages. Called 'Synthi's', they were the end result of EMS founder Peter Zinovieff's enduring fascination with cutting edge electronic composition.

Silver machine

It might be a classic now, but EMS designed its first Synthi - the VCS3 - partially for the purpose of pumping some revenue into the company's coffers. Released in 1969 as an affordable and portable all-in-one electronic music studio, it

The Synthi - cheap (at the time), hip and portable (sort of)



was outfitted with all of the basic features that one might expect to find in a well-equipped electronic music lab, offering a trio of oscillators, a diode-ladder filter, a ring modulator, spring reverb and a very unusual transient volume (and voltage) shaper. EMS head honcho Peter Zinovieff was not at all interested in building a traditional instrument and - at least initially - a traditional musical keyboard was noticeable by its absence.

"It didn't stay in tune, but that hardly mattered given the era and intent"

Though there were few contemporary synthesisers with which to compare it, the VCS3 differed from the others in offering a joystick and a 16x16 modulation matrix into which tiny pins were inserted to connect a given audio or voltage source to a desired destination. It was a lot tidier than Moog's patch cable approach, even if its unbuffered design meant that each connection might unintentionally affect other aspects of the instrument's sound.

The VCS3's best feature was probably its price. At £330, it was far more accessible than a Moog or ARP system.

Though it was meant to be portable, the VCS3's angular wooden console design made it a bit awkward to transport. EMS would address this issue in 1971, by shoving the whole shebang into a Spartanite briefcase and re-dubbing it the Synthi A. The following year, they added a membrane keyboard and a 256-note digital sequencer to the lid, and sold it as the Synthi AKS.

Artistic licence

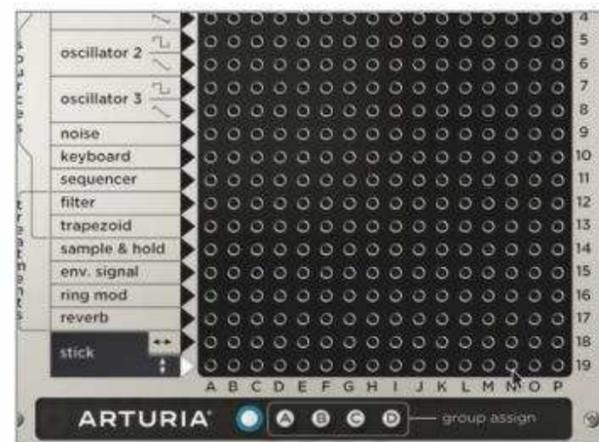
The Synthi sold at a reasonable rate, partially due to their low price and partially due to being seen as 'hip' by the rock 'n' roll cognoscenti, thanks to its use by such trendsetting acts as The Who, Pink Floyd, Tangerine Dream, and Roxy Music.

Some of the Synthi's popularity must be attributed to their ability to produce wild, evocative effects that, it must be said, are a lot easier to work out in an incense and weed-fuelled haze. No, it didn't stay in tune, but that hardly mattered, given the era and intent. These instruments may not have been designed for psychedelia, but they were damn-fine vehicles for the trip.

Yet above all, the Synthi's appeal comes courtesy of its ability to surprise and inspire its user. It truly is a superb example of the sum being far greater than the parts.

> Step by step

3. Authentic Synthi sounds with Synthi V

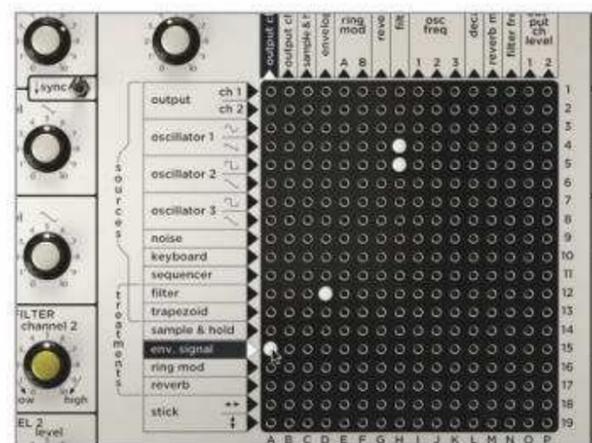
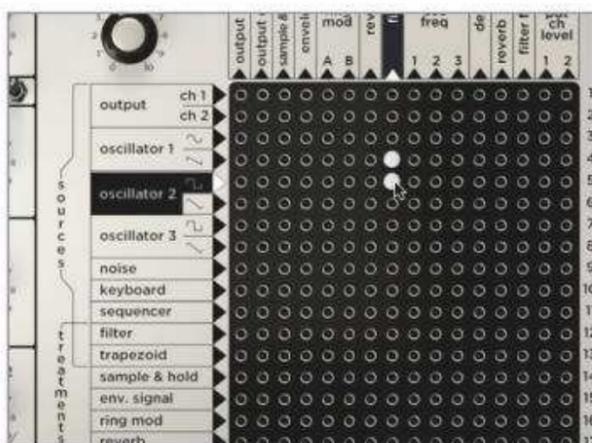
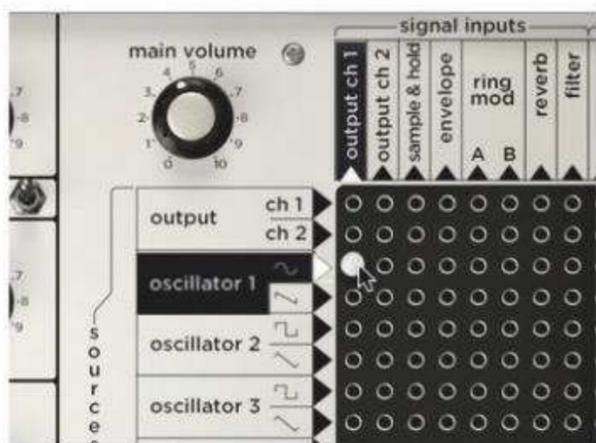


1 > If you were to locate a Synthi AKS or VCS3 today, it might very well have been modified at some point in its lifetime with common mods like oscillator sync or sample-and-hold. Arturia's Synthi V is like getting a fully-serviced, fully-modded Synthi AKS in mint condition. Let's load it up and have a look around.

2 > Right out of the box, it's dialled in to a certain, very familiar Pink Floyd ditty. We'll leave you to enjoy that for a bit, but then we'll dive straight into the deep end, creating our own sound and learning a bit about the Synthi's unusual architecture along the way. Click where the browser says **All Types**, and then select the **Default** patch from the Templates.

3 > That's a pretty static sound, but it'll make a good starting point for a patch, as all basic routing has been done for us. We want to go even further down the hole than that, though, so we're going to click on each pin in the centre pin matrix to disconnect every single connection. Don't worry... we know what we're doing!

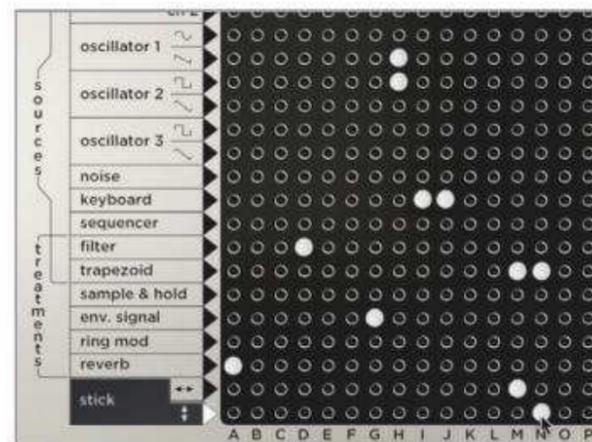
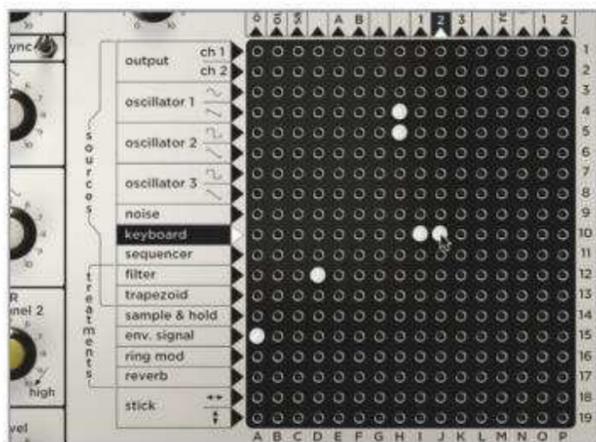
> Step by step 3. Authentic Synthi sounds with Synthi V (cont.)



4 > Let's examine that pin matrix. It might look intimidating, but it's actually very simple - destinations are represented along the top, while sources are delineated along the left. Simply find the destination you want, and follow it down to the desired source, or vice-versa. Find **Output Ch 1**, and connect **Oscillator 1's** sine wave to it by clicking in a pin.

5 > You'll hear a constantly sustaining sine wave. It's pretty boring, so let's click on the pin to disconnect it. Let's now think about the sort of patch we might want to make. A typical synth patch has two oscillators routed through a filter. Easy enough - find **Oscillator 1's** saw and **Oscillator 2's** square wave outputs and then pin them to the **Filter's** signal input.

6 > We'll want to shape the signal, so we'll need to route through the unusual trapezoidal envelope generator. Let's route the **Filter's** output (12th point down the lefthand column) into the **Envelope**. Next, we'll route the **Env Signal** (15th down) into **Output Ch 1**. Play a note to hear our mixed oscillators.



7 > That gets us some way towards understanding the Synthi's routing. But at the moment, every note we play is the same pitch. We need to connect the keyboard to the oscillators. We do this by locating the **Keyboard** output (10th down the lefthand column) and connecting it to **Osc Freq(uecy) 1** and **2**.

8 > Let's go to the Filter Oscillator section, locate the **Frequency** knob and turn it to around **6** for a filtered sound. Let's modulate that. Find **Trapezoid** in the matrix and route it to **Filter Frequency**. We'll go to the **Envelope Shaper** and set the **Trapezoid** knob to **7**. Increase the **Decay** to **7**, too.

9 > Add more interest by disconnecting the **Env Signal** from **Output Ch 1** and routing it through the **Reverb** instead. Now, for a cool trick, let's route the **Trapezoid** to the **Reverb Mix**. We can also go down to the lowest points in the matrix and connect the **Joystick** to both **Reverb Mix** and **Filter Frequency**.

Three classic Synthi cuts



Pink Floyd – On The Run

Probably the most emulated Synthi patch ever: a chugging sequence that propels this eerie instrumental from the band's masterpiece, *The Dark Side of the Moon*. Though all members were credited as playing the VCS3 on the sleeve, David Gilmour said he actually came up with the eight-note motif on the Synthi AKS. Once he'd tapped in the notes, he cranked the tempo to a dizzying clip, over which various effects were layered.



Jean Michel Jarre – Oxygene (Pt 1)

We could have just said *Oxygene* or *Equinoxe* or mentioned any of a number of Jarre's classic cosmic compositions - after all, Synthi have been a mainstay of his career. His first synthesiser was a VCS3, which was used to great effect on his career-making *Oxygene* LP. Eventually, he'd buy six Synthi's of various types for stage and studio.



Roxy Music – The Bob (Medley)

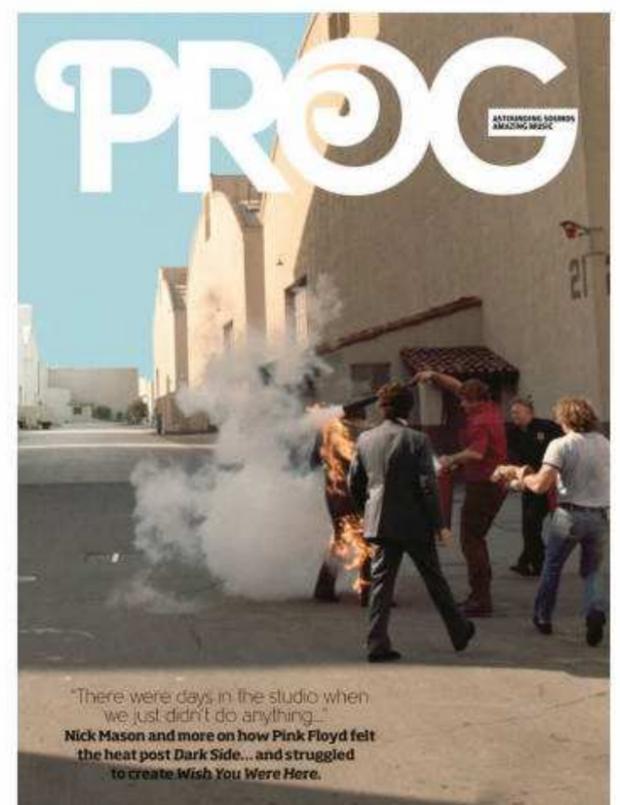
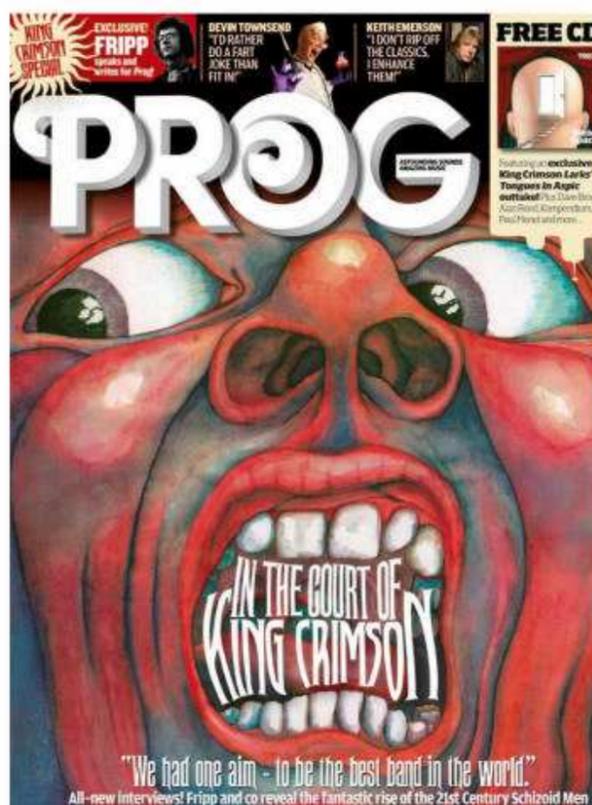
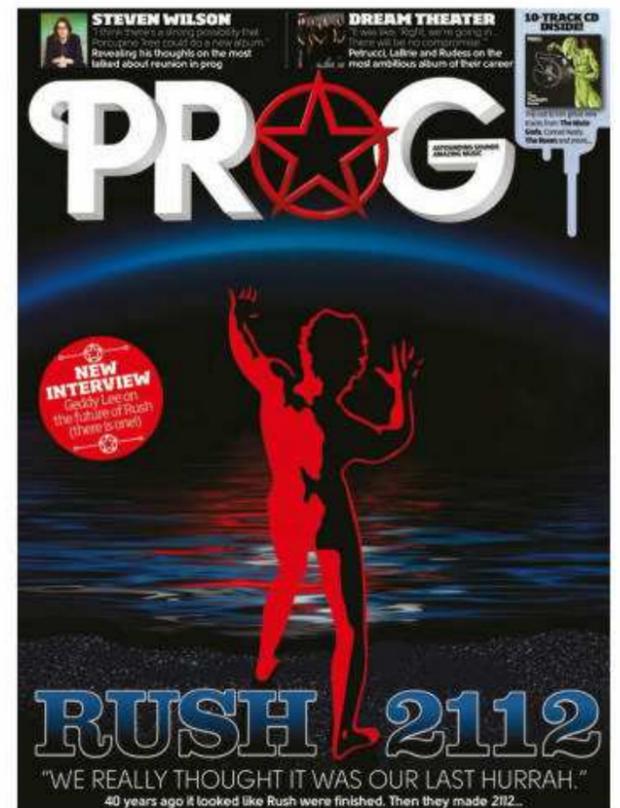
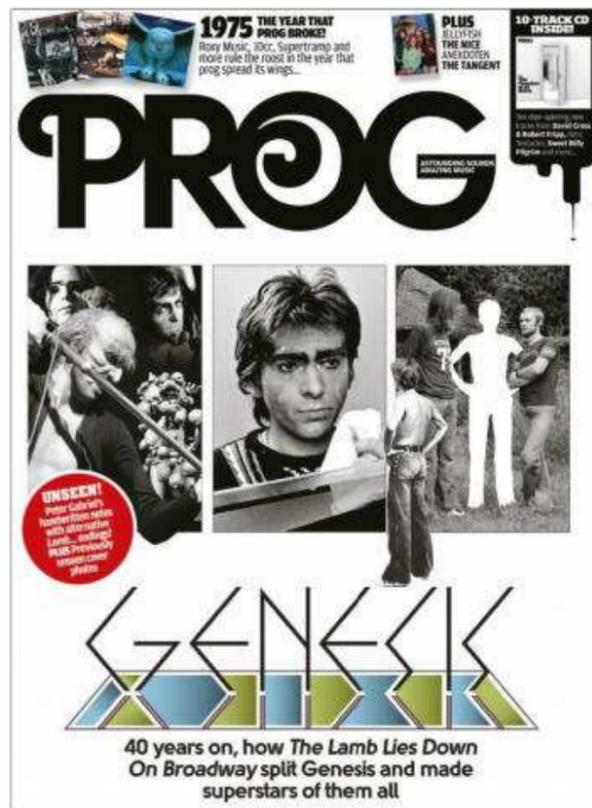
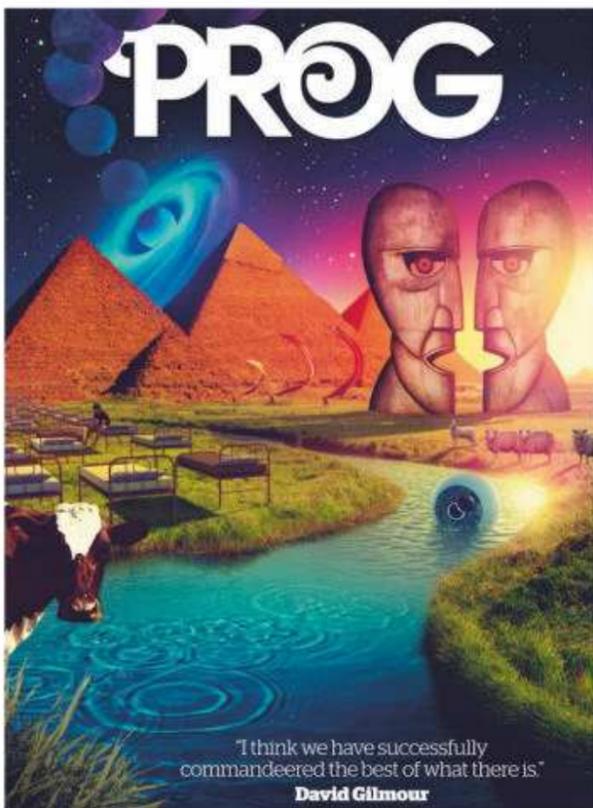
Brian Eno's tenure with Roxy Music was short, but its impact is felt even today. His intuitive knack for creating the perfect mood with the VCS3 is heard all over the band's eponymous album. Take for instance *The Bob (Medley)*, with its evocation of a raging battle. Who'd fail to be impressed by that sinister ostrich-feathered silhouette, frail arms and thin fingers hovering over the VCS3's joystick? cm

For the stories behind the best albums and the bands that produced them...

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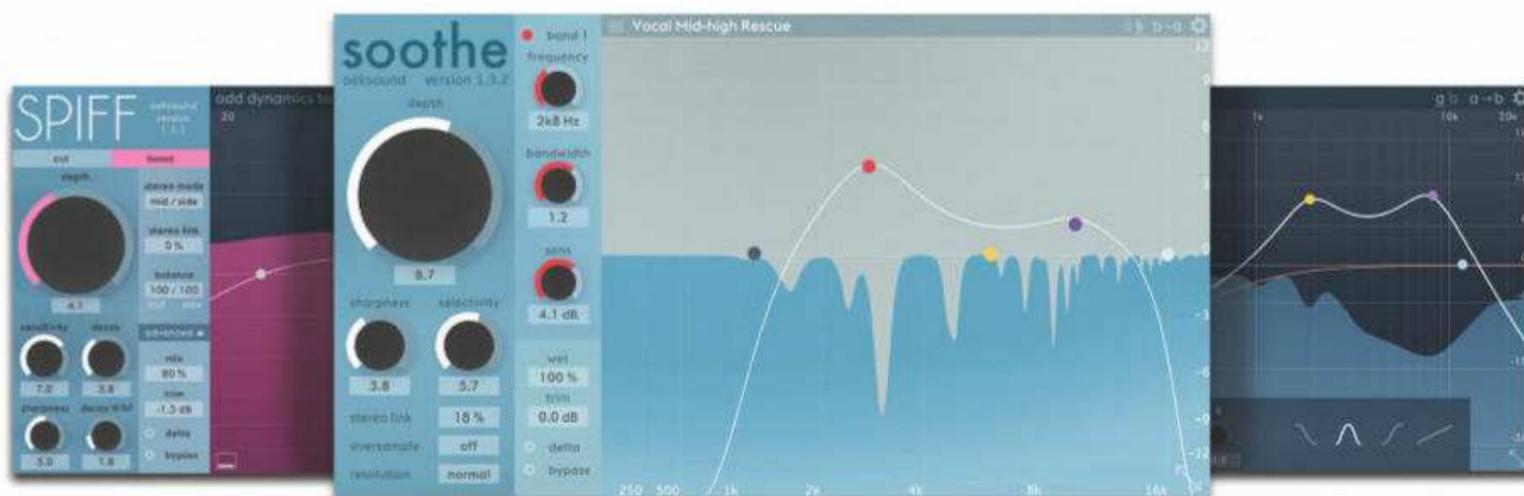


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Our resident drum doctor gets surgical and reaches for his virtual scalpel in this creative session



Revoicing major chords



This month, Dave demonstrates a simple way of giving humdrum major chords a fresh twist using a special ingredient...

> **Major chords - we all love them, and even now they're still the cornerstone of most modern pop records. However, the fact can't be denied that they do have a certain nursery rhyme-ness to them; a kind of childish quality that sometimes proves quite hard to get away from when you're trying to come up with a credible tune.**

So what can we do to make major chords a bit more relevant? One approach is to totally

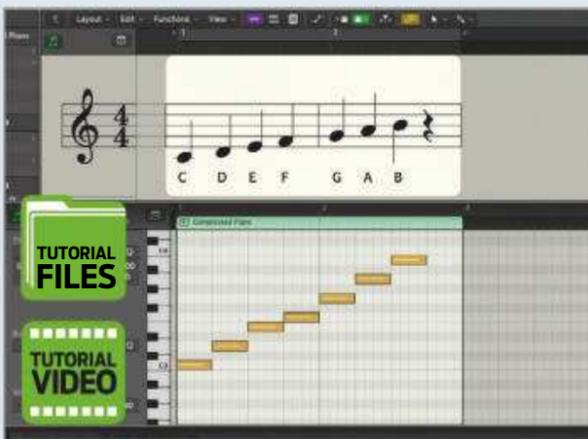
revoice them - take the normal 'root-third-fifth' formula that makes up your common or garden major triad and explode it, rearranging the notes within it into a totally different order, and adding a secret special ingredient. Well, in fact, it's not going to be secret much longer, as I'm about to tell you what it is - it's the 2nd degree of the parent scale.

When you add this to a major triad, it creates a ninth chord, and it's this that we're going to use

to add an additional flavour of sophistication to our revoiced chord. Couple this with shuffling around a note or two so that the upper structure of the chord becomes a series of fourth intervals, and the result is a light, airy and sophisticated sound.

So grab your keyboard and strap in for a step-by-step demonstration of how to revoice your basic major triads into something with a little more.... je ne sais quoi!

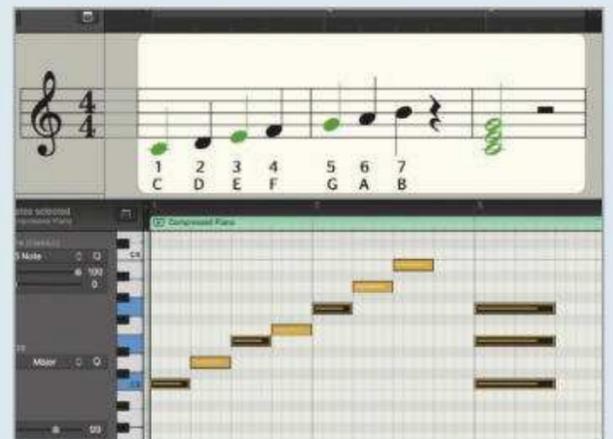
>Step by step Major fourths be with you...



1 > Let's start off by re-examining how a regular major chord is built. To do this, we need to look once again at our old mate, the C major scale - seven notes, played from C to B on the white notes of the piano keyboard - **C, D, E, F, G, A** and **B**.



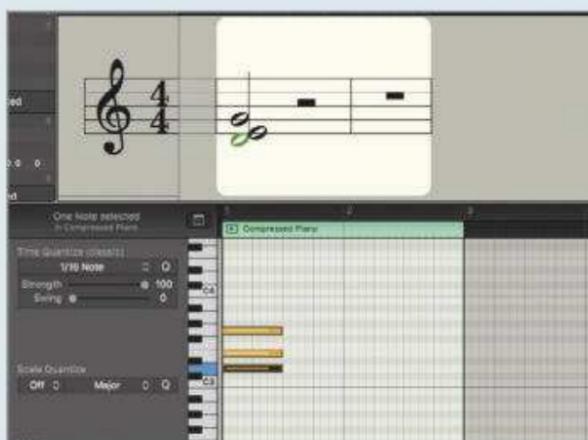
2 > We can give these notes - or 'degrees' of the scale - numbers from 1 to 7. To build a major chord based on the root note of the scale - which in this case is the note **C** - you need to play three of the notes in the scale at the same time. These are the 1st degree, or 'root' note, the 3rd and the 5th. This gives us a formula of 1-3-5 for a major triad.



3 > Apply this formula to the C major scale and you get a C major triad. The 1st degree of the scale is **C**, so that's the root note of our chord. The 3rd is the note **E**, and the 5th is the note **G**. So the resulting C major chord is made up of the notes **C, E** and **G** - a nice, regular, root-position major chord (so called because the root is the lowest note).



4 > The reason the chord is major is due to that 3rd degree. It comes from the major scale, so it gives the chord its major quality. If you leave out the 3rd and just play the 1st and the 5th, you get a two-note chord that could either be major or minor. But what happens if you leave out the root note instead?



5 > Removing the **C** leaves us with the notes **E** and **G**. To revoice our chord in fourths, this is where our secret weapon comes in - the 2nd degree of the scale. If we replace the root with the 2nd - in the case of C major, this would be the note **D** - we get **D, E, G**, a sort of rootless Csus2 chord that feels very open-ended. But we're not finished yet...



6 > ...because, in a surprise move, we're going to bring back the root... but one octave higher than it was before. So we shift the **C** up above the **G**, resulting in a chord at this stage made up of **D, E, G** and **C** - a sort of Cadd9 chord.

RECOMMENDED LISTENING



JOHN LEGEND - ORDINARY PEOPLE

The rootless add9 voicings of B^b, E^b and F major chords found in this 'legendary' tune make a beautiful progression.

bit.ly/jl_op



UNIQUE 2 RHYTHM FEAT. SHEREE HICKS - TEMPERATURE RISING

This deep house cut is a classic example of major chords reworked with ninths, where this technique works brilliantly.

bit.ly/u2r_tr

PRO TIPS

OPEN SEASON

Figuring out these kinds of open chord voicings, where the notes within the chord are sort of exploded out into different octaves, creates a bit of an ergonomic issue where keyboards less than three octaves in range aren't really going to cut the mustard. To practise this idea to the fullest, you'll need at least a 49-note 'board, but a 61- or 88-noter would be even better.

MULTI-PURPOSE

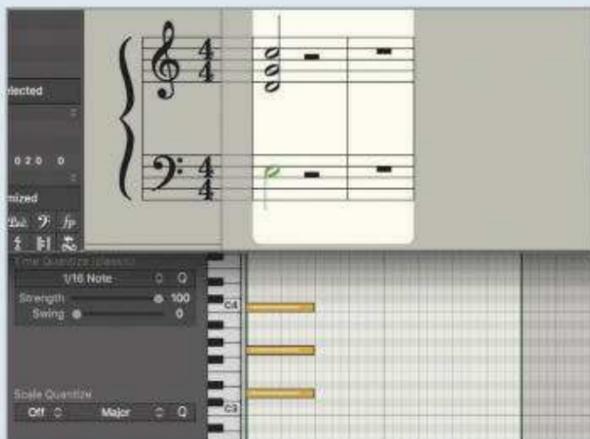
You can use this kind of trick in house, gospel, R&B, DnB - you name it, almost any kind of genre will benefit from substituting this voicing for standard major chords. Revoicing major chords in this fashion doesn't adversely affect their harmonic function - they'll still have their jobs to do within a progression, but they'll just sound a bit cooler doing it.

Dave Clews

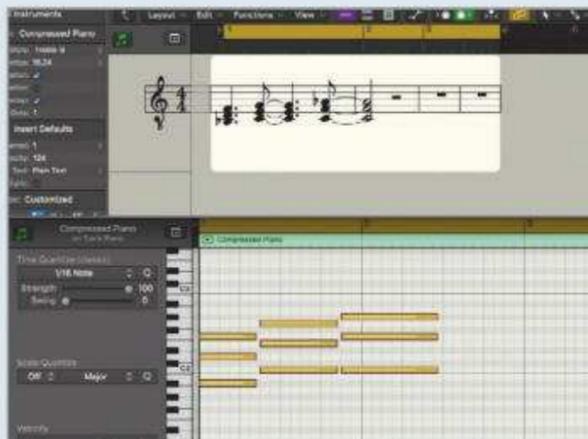


In a studio career spanning more than 25 years, Dave has engineered, programmed and played keyboards on records for a string of artists including George Michael, Kylie Minogue, Tina Turner and Estelle. These

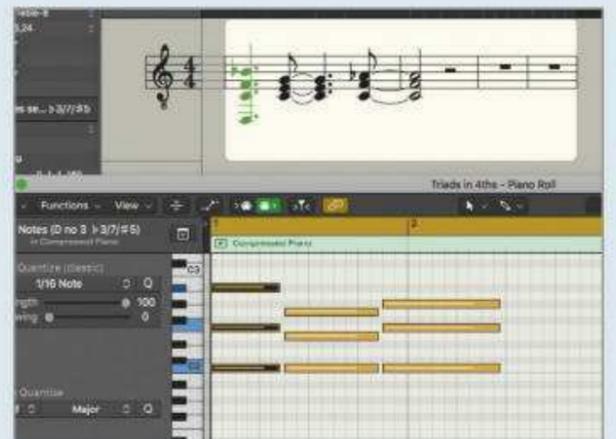
days, he writes articles for cm and other magazines and websites, and is the author of *Avid Pro Tools Basics*. Follow him on Instagram @electricdave67



7 > To finally arrive at our voicing, we do another octave shift, but this time we take the 3rd (E) and move it down an octave. So we now have an E in the bass, with a right-hand triad made up of D, G and C. The notes in the upper part of the chord are separated by fourths, but the E bass note means that the major quality of the sound is retained.



8 > So how can we make use of this voicing? One scenario where it works really well is when mixing up major chords with minor 9ths in soulful, piano-led disco and house tracks. Let's start with a basic progression of two root-position major triads followed by a minor triad: B^b (B^b, D, F) > C (C, E, G) > Fm (F, A^b, C).



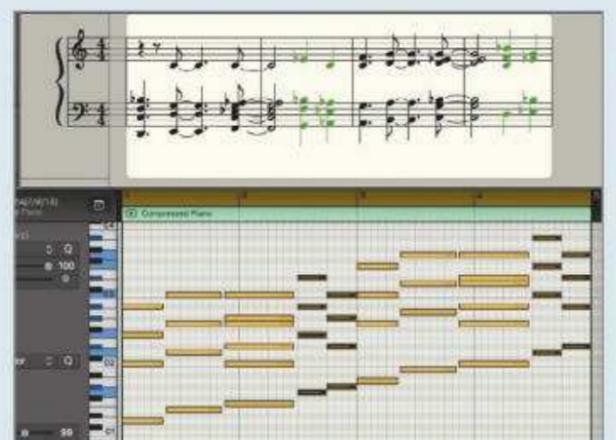
9 > Let's revoice the B^b major chord (B^b, D, F). Start by introducing the 2nd (C), effectively creating a B^b9 chord. Next, shift the root (B^b) up an octave. Finally, drop the 3rd (D) by an octave into the bass register. The resulting chord has the structure we created previously - the upper triad in fourths (C, F, B^b) over the major third (D) in the bass.



10 > Having repeated this process with the C major chord to get D, G, C, E, we can turn the Fm chord into an Fm9 by adding the 7th (E^b) and 9th (G) degrees of the F minor scale. We can then revoice this chord to match the first two by shifting the F root down an octave, together with the 7th and 9th, to get E^b, G, A^b, C / F.



11 > Continuing the progression, we fill the next two bars with the same part played a fifth higher up the keyboard. To achieve this, we can just copy and paste the first three chords and shift them up simultaneously by transposing seven semitones. This gives us the progression B^b > C > Fm > F > G > Cm.



12 > We finish by filling the gaps with some passing chords. Our first pairing is a revoiced E^b major (F, B^b, E^b / G) followed by a standard 2nd inversion A^b major (E^b, A^b, C / A^b). The second pair is a copy of the first transposed up a fifth - a revoiced B^b major (C, F, B^b / D) followed by a 2nd inversion E^b major triad (B^b, E^b, G / E^b). cm



Transforming vocals

ACM expert Shea shouts about his favourite sound design tricks for mutating the human voice into unique melodic instruments

> **Sound designers are always seeking fresh sounds, and love to get excited about new techniques and ways to craft original creations. Though using ready-rolled samples in their entirety is perfectly acceptable, of course, this'll only take your creativity so far...**

So if you're looking to give your sound design muscles a good workout, why not use unrelated source material to form the basis of something

completely new? By recruiting the myriad of audio-processing tools lying within your DAW and plugins folder, almost anything is possible - as you're about to discover!

So for this issue's *Studio Strategies* tutorial and its accompanying video, I'm going to use small parts of an existing vocal acapella sample to create a trio of instruments: a pad, lead and bass. After showing you how to choose and extract suitable sections from the source

sample, I'll walk you through my methods for shaping and processing, using a typical sampler instrument and plugin processors to twist and morph my way to melodic creativity.

As a bonus, I've included my EXS24 instruments in this issue's *Tutorial Files* folder. Alternatively, if you're not a Logic Pro user, feel free to chuck the raw audio into your preferred sampler and treat the sounds with your own choice of effects.

>Step by step Designing unique melodic instruments from an acapella



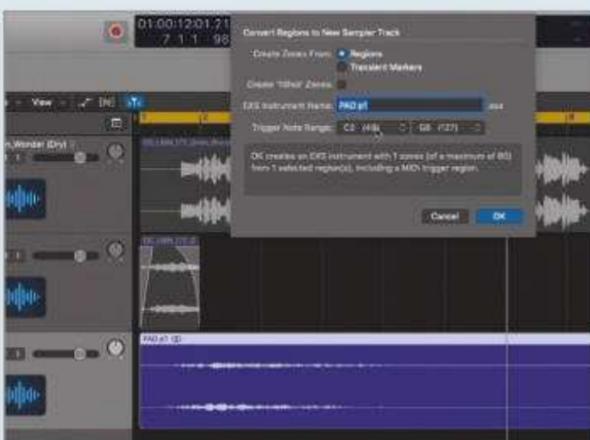
1 > The first step is to pick a sample that varies in tone and timbre throughout. For this tutorial, I've chosen an unprocessed acapella from Loopmasters' Liquid Motions sample pack - a vocal line comprising a mix of both short and sustained words.



2 > First, I duplicate the audio region to another channel, so we always have an untouched version to refer back to. Next, let's load a creative reverb plugin (Eventide's Blackhole) on the audio track, and audition through the vocal, listening out for a section that might work as a sustained pad.



3 > I pick a section that sparks interest, then chop out this chunk and duplicate it down to a new track. Experimenting with timestretching and different reverb treatments introduces artefacts that add texture and flavour.



4 > Bounce the new file with its effects in place. Next, here in Logic Pro, I create a new Sampler Instrument by choosing **Zones From Regions** starting from **C2** - this spreads the sample across all keys, giving me a polyphonic patch. Sampler enveloping and filtering now shapes my new 'synth' patch.



5 > To make a vocal-based 'lead', I find a percussive part of the vocal - a section with minimal sustain and a distinct attack. As before, I duplicate the new audio region and load it into another sampler instrument, choosing **Zones From Regions** starting from **C2**.



6 > With the new EXS24 instrument created, I take advantage of the sampler's filter and envelope to shape a more interesting source sound. By opening and closing an overdriven filter with the filter envelope, I end up with a unique 'stab' lead.

Shea Stedford



Shea is a dance music producer and tutor at ACM, a leading provider of creative industries education

Spotify: bit.ly/iklektix
Discogs: bit.ly/sheadiscogs
Instagram: @sheastedford



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PRO TIPS

BEATBOX IN THE BOX

The types of creative sound design techniques we're looking at here should help you audition audio samples with fresh ears. Using a vocal acapella as an example, try scanning through and identifying syllables that'll work in different contexts - imagine them timestretched, reversed, pitchshifted and processed beyond recognition. With the power of software samplers and processing at your disposal, the sky's the limit!

In the below tutorial, I've created a trio of tonal 'instruments' from the same vocal sample, but don't restrict yourself to melodic - the human voice can be used to design drums and percussion strikes, too. For example, try using sibilant 'esses' as hi-hats, or plosives as raw material for snare design. If the sounds lack the required weight or attack, stack them over more powerful samples or synthetic layers. Once the stacks have been grouped and processed as one, you'll end up with bespoke beats unique to only you!

FIELD TRIP

Although I've twisted up a commercial vocal sample in my tutorial, be sure to experiment with other source sounds, too. Using a field recorder or your smartphone, record the sounds of the outside world - traffic, commuters, nature, etc. Once back in the studio, load up the recordings in your DAW, audition through them with an analytical ear, then chop out the parts you like.

Another creative way to encourage the auditioning of random sections is by loading the entire recording into a sampler. By scanning the sampler's start point through the audio region as you trigger MIDI notes, you'll stumble upon snippets that can instantly inspire something new.

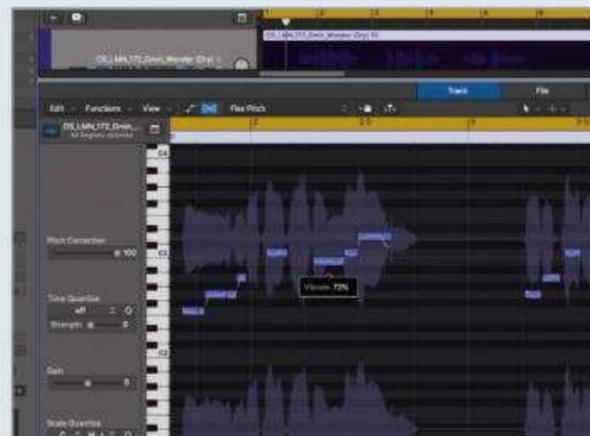
Finally, for even more rhythmic randomness, try modulating the sampler's start point value with a tempo-synced LFO. This'll jump the playback position around in sync with your song, and you can record the output to a new audio track for further choppage.



7 > Some modulation effects will give this lead some movement. Chorus and/or widening effects are great for adding additional space and texture - in this case, Soundtoys' Little MicroShift provides the character I'm looking for.



8 > It's time for some reverb and delay. I call up Eventide's Blackhole reverb again, then Soundtoys' EchoBoy Jr. for delay. If you dial in a particularly interesting chain of processors, be sure to save them as a channel strip or 'rack' in your DAW for future recall.



9 > Next up, I'm going to use a different vocal chunk to design a bass part. Taking the same idea from my pad, I find a sustained note of vocal; and to make its pitch more obvious, I use Logic's Flex Pitch to flatten out the phrase's inherent vibrato.



10 > After customising the vocal note with editing and timestretching, I use Logic's **Zones From Regions** shortcut to create a Sampler Instrument, spreading the sample across all the keys once again. If you're not a Logic user, don't worry - this can be done in all decent soft-samplers.



11 > Now experiment with effects to enhance the source sound's timbre. For movement, I call up a chorus effect. This has 'stereois'd' my bass, so I use a mid/side EQ to eliminate low-end frequencies from the stereo signal.



12 > Spatial effects can give a bass sound some much-needed ambience, but I recommend you keep the low end clean by restricting the signal's frequency content. Here, Soundtoys' Little Plate reverb does the job - I use its **Low Cut** parameter to cut away all frequencies below **1kHz**. **cm**

#60

Creative loop-slicing

Our in-house drum doctor reaches for his virtual scalpel...



Ronan Macdonald



Having previously served as Editor of drummer's bible *Rhythm* as well as *Computer Music*, Ronan is clearly the right man for this

particular gig. He's been playing drums for over 30 years and making music with computers since the 90s.

> **These days, the automatic slicing of loops to a series of sampler cells and mapping of those cells to individual MIDI notes is something most DAWs are capable of doing, and the usefulness of this feature when it comes to rearranging grooves can't be understated. In this month's tutorial, though, I'm going to show you a less flashy, more intuitive and 'tactile' way of cutting up beats to achieve similar - but not necessarily the same - results.**

Quite simply, we're going to be taking a sampled loop, chopping it up manually in the arrange page, then rearranging and processing the slices to turn it into something new.

Why, you might ask, would you bother to do this, when you could just 'Slice to MIDI' in the DAW, as I described above? Because doing it this way lets you see the waveforms, which are more representative than a series of MIDI notes, and just makes you think differently about the shape and sound of the loop.

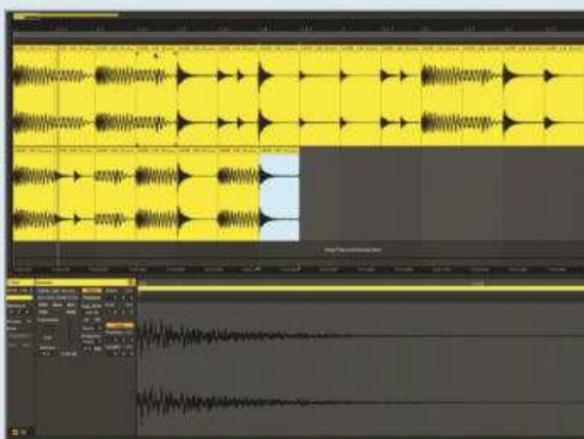
It's also going to be a lot of fun, particularly when you start distributing the slices among multiple tracks, each with a different effects chain loaded up.

I'm using Ableton Live here, but as is often the case, nothing that I'm going to show you in the below is something that can't be done in any digital audio workstation.

>Step by step 'Upcycling' loops in your DAW



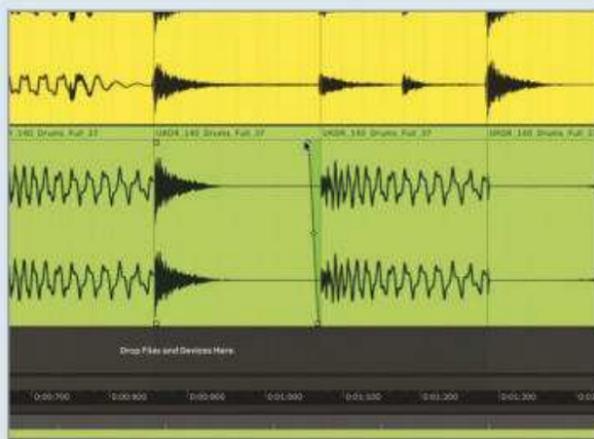
1 > The first thing to do, naturally, is choose a suitable drum loop for butchery. There aren't any rules here, but the more distinct and 'separate' the hits are, the cleaner the sliced, diced end product will sound. Needless to say, those hits should also be interesting and variable throughout the loop.



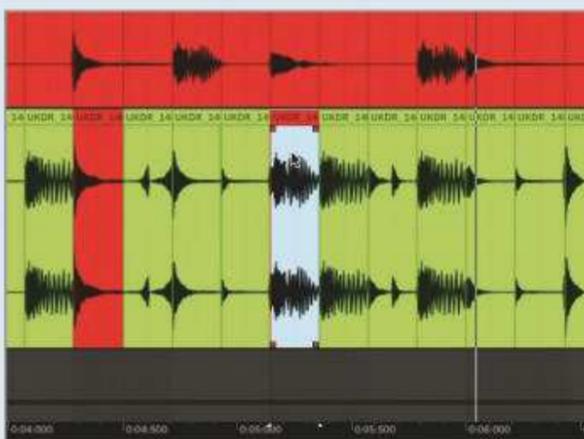
2 > With the loop in place on a track, slice it into eighth- or 16th-notes. Unlike Live, your DAW may have a modifier key that enables you to do this automatically using its cut tool. Now add a second track below and start copying slices down to it to create a whole new groove.



3 > Don't worry about cutting into drum and cymbal sustains or reverb tails - the glitchy and broken segments that result are a large part of what makes this technique so cool. Feel free to shorten or extend slices as required to get your loop sounding how you want it, but aim to fill every space on the track.



4 > With your loop completely rearranged, you can now process individual slices using your DAW's audio editing functions - reverse, pitch shifting and volume adjustment. There will be clicks in the audio as slices start and end points miss the zero crossing line, so use your DAW's fade functions to sort these.



5 > If you feel like mixing things up a bit more, there's nothing stopping you from grabbing another loop, slicing that up and flying some of the hits from it into the first loop. Indeed, why stop at two? Interesting things can happen when different loops are brought together like this, but do exercise taste and restraint.



6 > Finally, create a few more tracks and load them up with various combinations of effects, then drag selected slices down to them to add spot FX to individual sounds within the loop. When you're happy with the results, folder the tracks or render the whole thing as a stereo file for convenience. **cm**



 **phaseplant**

NEW ERA SYNTHESIS



www.kilohearts.com

Layering classic synths

IK's Syntronik Free is a gratis synth workbench packed with iconic sounds and modern features. Let's take a look at its layering and arp functions...

> **Powered by the same engine as IK Multimedia's SampleTank 3 ROMpler, Syntronik (VST/AU/AAX/standalone) is an epic-scale compilation of over 2000 sounds built on samples of 38 classic synths and divided up into 17 instrument categories.**

In our review of the full commercial version (8/10, **cm249**), we praised Syntronik as "a quick, easy and convincingly analogue-sounding synthesiser compendium that delivers a voluminous and versatile library of highly customisable preset sounds."

Last year's release of this analogue-emulating workstation came alongside a cut-down free version. That's not the most unusual thing in the world, of course, but Syntronik Free is still mightily impressive due to the sheer amount of stuff you get access to compared to the full enchiladae.

In Syntronik Free, you still get 17 'instruments' to choose from, some of them being mash-ups of multiple classic synths. You also get access to a front panel for each instrument, and while this control may be

slightly simplified compared to those found on the original hardware synthesisers, there's still a good amount of command to be had over the resulting sounds.

You also get five effects slots, with a roster of 38 effects to choose from, as well as a powerful arpeggiator/sequencer, plus layering and keysplit controls.

In this quick tutorial, it's those sequencing and layering functions that we're going to break open. Here's how to quickly stack and sequence several iconic synths without paying a penny...

>Step by step

Combining multiple classic synths using IK Multimedia Syntronik Free



1 > Let's fire Syntronik Free up. We've supplied some MIDI files in this issue's **Tutorial Files** folder, so that's your first stop. Start with **Basic Chords.mid**, and call up the **Pro-V** instrument in Syntronik, choosing the snappily named **Saw 5th Dist Lead Light** patch.



2 > Head to the Arpeggiator using the steps icon, and press play. Already, we can play with the **Rate**, **Octave** and **Mode** in the upper-right of the instrument. Arptastic! We can create our own custom sequences here, too - that horizontal line under the 1 can be pulled out to the right to activate the other steps.



3 > Let's create sequences. Remove a step by extinguishing a number's light, set it to play the whole chord instead of an arp note with its triple dots, set its velocity with the horizontal bars (though this doesn't work with our particular patch), set a transposition value at the top, and hold one step for longer by dragging its right edge further to the right.



4 > Hit the top-left Keysplits button. We have four keyboards - our Prophet-5 patch is playing in the top one. We can restrict its range so that the Prophet-5 is only controlled by MIDI notes up to E3. Set the second layer (B) to play from **F3 to C7**, as shown. Now replace the MIDI file with **Chords and Melody.mid**, which contains more notes higher up.



5 > Hit **B** at the top-left of the interface and go for **Select Instrument** at the top. Choose another classic synth to play on our second layer - our choice is the **99**, with its **Classic EP 3 Velos** patch. Thanks to our keysplit, the Prophet-5 is playing our bass, and the 99 is playing the melody, all commanded via a single MIDI track.



6 > We can set up a new layer, C, which is set to play every single note across the keyboard, mirroring what both the Prophet and the '99' are playing. We'll create a subtle one - go for the **R-09 Strings** patch, and reduce its volume in the mixer, accessed at the top of the interface. Classic! **cm**



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HEAVEN 17

At the forefront of music technology for 40 years, Heaven 17 love their analogue synths. Martyn Ware tells us more...

> **“Everybody goes on about how brilliant Kraftwerk were. Yes, but they were only brilliant because they were rich!”**

Although Martyn Ware allows himself a mischievous chuckle, he is trying to make a serious point. “If you’ve got a studio that’s wall-to-wall synths and Bob Moog is custom-building stuff for you... yes, you still need a good idea, but the chances of you turning that idea into a great album have been greatly increased.

“When I was a teenager, living in a two-up-two-down in Sheffield, with an outside toilet, my chances of owning a Moog [*the cost of the original Moog Modular system ran into tens of thousands of dollars*] were zero. Less than zero. Wasn’t going to happen.

“But companies like Roland and Korg could see where things were headed. By producing synths like the MiniKorg-700 and Roland SH-1000, they gave electronic music to the masses. For the first time, they were available to Average Joes like me. The Korg-700 changed my life!”

As a founder member of the Human League, Ware - along with vocalist, Phil Oakey, and fellow

techy, Ian Craig Marsh - played a major role in the history of electronic music in the UK. Their debut single, *Being Boiled*, was released in June 1978, almost a year before Gary Numan’s *Are ‘Friends’ Electric?* The band signed to Virgin in 1979, but by the following year, Ware and Craig Marsh had already moved on to Heaven 17, with new vocalist Glenn Gregory.

Although it was that early-80s period that gave Heaven 17 hit singles like *Temptation* and *Let Me Go*, they have been steadily recording and touring for almost 40 years - without Craig Marsh, who left in 2007. And when Ware is not in the studio or on the tour bus, he’s a regular speaker on the music tech circuit, a visiting Professor in Media and Arts Technology at Queen Mary University of London, a Red Bull Music Academy lecturer and co-founder of 3D sound tech company, *Illustrious*.

As a man who describes his fascination with music technology as ‘verging on the pathological’, he admits that he’s looking forward to having a chat with *Computer Music*.

“This should be an interesting couple of hours. Let’s see where we end up!”



cm: What got you interested in synthesisers and electronic music?

MW: “Prog rock, really. Emerson, Lake and Palmer. I had two sisters who were quite a bit older than me, so the house was full of records. At first, I listened to Motown, but by 15, I’d moved on to rock. ELP, Deep Purple, King Crimson.

“I remember going to see Emerson, Lake and Palmer at Sheffield City Hall... Keith Emerson surrounded by his mountain of keyboards. You’ve got to remember that this was not long after Apollo 11. We were living in an age of optimism and futuristic engineering. The synthesiser made a noise that seemed to echo those times. The only problem was that people like me had no access to them.

“Then we had Roxy Music, Bowie, the krautrock bands like Can and Neu!. And Kraftwerk. There was interesting stuff coming out of America... Suicide, the New York Dolls, Iggy Pop. And disco, of course. Giorgio Moroder. That probably sounds like a right old hodgepodge of styles. Yes, it was. But that hodgepodge was the inspiration behind the Human League, Heaven 17 and just about every other musical project I’ve ever been involved in.”

cm: We’re still way ahead of the BBC Micro and ZX Spectrum, here, but you did have some experience of working with computers.

MW: “Yeah, one of the first jobs I got after leaving school was a computer operator. I wasn’t a programmer. My job was to input all the info on punch cards. The first computer I worked on was a 16K machine that was the size of a small shed. I then moved on to an IBM 3600, which used to process the payroll... lots of admin jobs.

“Bizarrely, my mate Ian [*Craig Marsh*] had a similar job and we both did a lot of night shifts. It was great. Once you’d got the program running, there was nothing else to do for the next seven hours. All of that time was spent writing lyrics and coming up with song ideas.

“There was one other important stage in the development of the band: an interview Brian Eno did with the NME. The basic thrust of his argument was that rock ‘n’ roll was dead, and all

“Brian Eno said rock ‘n’ roll was dead, and that all you needed to make music was a synth, a mic and a tape machine... we all believed him”

you needed to make music was a synth, a mic and a tape machine. Me, Ian and Phil all read that interview, and we all believed him.”

cm: He wasn’t far off the mark!

MW: “It wasn’t easy predicting the death of rock music in 1970s Sheffield. Like Birmingham, it’d always been a ‘rock city’. Long hair, leather jackets and all that. We fancied ourselves as musical mavericks. Outsiders. We had no interest in being signed or releasing a record. All we wanted to do was experiment. Messing about in a scruffy old office space that we rented as a rehearsal room.”

cm: But you did release a record. *Being Boiled*. What was it made with... what did the Human League studio consist of?

MW: “My Korg-700, Ian’s System 100, an SM58 mic and a Sony two-track tape machine that, luckily, had bounce facility. No computer, no MIDI, no sync of any kind. The only sequencing we had was the System 100, so all the basic rhythms came from that, and everything else worked around it. Everything was played live and bounced down to make room for the next bit of music.

“We had a lot of grand ideas for that song, but we soon realised that there were built-in limitations because you could only bounce-down four or five times before you began to lose quality. People always talk about the ‘wonderful minimalism’ of *Being Boiled*, but that wasn’t anything that came from us. It was simply because the equipment didn’t allow us to add anything else.

“After we signed to Virgin, we did another version where we added loads and loads of

other synths. That was how we’d always imagined it would sound. Let’s put as much in there as we can. But – and I think this is a really important point – even today, people still come up to me and say that they prefer the original version. That was an early lesson for us.”

cm: Adding loads of extra stuff does not necessarily make a song any better.

MW: “Precisely. It’s something I often talk about when I’m lecturing. The sheer volume of stuff that we can use in the studio. This idea of option paralysis. You have so much choice that you can’t actually make a choice. It’s quite interesting, because most of the students I teach have never known any different. Their entire experience of making music has been with unlimited synths and drum sounds. So... I set them a challenge. Write a piece of music using one synth and one drum module.

“Some get it, some don’t. Some people get worried about their lack of choice. As if that will hinder their imagination. If you analyse how you work in the studio, you usually find it’s the other way around. Count all the synths on your computer. How many of them do you use?

“It’s something we’ve all been guilty of. We did it with Heaven 17 when we first started using samplers... around the time of *The Luxury Gap* album. Days wasted in the futile pursuit of the ‘perfect’ sound. And we were in Air Studios, paying God knows how much. Even if you’re using nothing more than the basic Logic or Cubase package, you’ve got plenty to choose from and you need to develop an inner confidence in your choice of sounds. That’s the kick drum I’m going to use. Job done. Move on.”

cm: At what point did computers find their way into the studio?

MW: “Very early. We were working with the BBC Micro and the Osborne Personal Computer – remember them? But it was the Mac that really made the difference. We had one of the first hundred Macs that came to the UK, using Performer, which was the only platform available for Macs at the time. Bit by bit, we were moving away from the old hardware system... a Roland MC-8. All of the sequencing could be off-loaded to the computer.

“It was a wonderful time to be making electronic music because technology was changing so fast. Every couple of months, there was something new to try. And it felt as if it was the musicians and producers who were actually fuelling these developments. We were putting the cart before the horse. Wouldn’t it be great if we could do such-and-such in the studio. Next thing you know, somebody’s developed a piece of kit or software that allows you to do it.

“This was the first time in musical history that something like that had ever happened. The democratisation... the emancipation of the means of musical production.”



Heaven 17 on stage at the Leamington Spa Assembly Rooms in 2016

Photo: Chris Youd



Martin (right) and Heaven 17 bandmate Glenn Gregory (Left)

cm: Ironically, that trend did get reversed in the early days of DAWs. It all became a bit professional. And very expensive.

MW: “Quite snobbish, as well. Suddenly, you had all these producers saying, ‘Pro Tools sounds so much better than any other platform’. As far as I was concerned, that was a load of bollocks. Technically, I remember being shown the evidence that Pro Tools had the edge, but I never heard the difference.

“It’s the same with UAD today. The numbers tell you that it’s better, but... personally, I think it’s a lot of tosh spouted by people who want to make out they’ve got a superior rig.”

cm: What’s on the Heaven 17 rig?

MW: “It’s a completely maxed-out Mac, with virtually every softsynth you could name. Everything from Arturia and Roland.

“Maybe one day,
we’ll each have
our own sonic,
compositional butler”

Spectrasonics. Libraries from Spitfire Audio. Native Instruments. Kontakt is my sampler and it’s become one of the main tools I use when I’m working on sound installation projects for my company, Illustrious. I can pretty much create any sound I want. Well, 95% of sounds!

“If I’m being totally honest, that’s where my passion lies: sound design. Even though I’m in a band and I compose music, I consider myself more of a sound designer. If you look back at the early Human League albums, I think you can see evidence of that. Running parallel to the idea of writing a pop song, there was the desire to experiment.

“There’s a track on the first Human League album called *The Dignity of Labour*, and that was the first thing that we released after we were signed to Virgin. They thought they were going to get some quirky pop singles, but we were determined to make sure they understood what we were about. The general reaction to that song was, ‘What the f**k is going on here?’ Yes, we could write quirky, catchy pop songs, but we were not a pop group. Even the limited amount of technology that we were working with at the time still allowed us to do so much and I always felt it was my duty to push things as far as possible.

“Sorry, I wandered off, there. Today’s rig... Logic is the main platform. I’ve tried a few other

Kit list

HARDWARE

MOTU 828 Mk3
Genelec 1032 monitors
Roland System 8
Roli Seaboard
Bowers & Wilkins headphones

SOFTWARE

Roland Cloud
Arturia V Collection
Nektar Bolt
Spitfire Audio software



What next for music tech?

“I’ve been mentoring doctorate students on the Media and Arts Technology course at Queen Mary University and there’s a lot of talk about interaction. The convergence of different worlds... sound, light, AR, VR, XR. Again, there’s much to applaud, but I still think we’re some way short of the day when people will sit in a concert hall with a device on their head that allows them to listen to and watch augmented reality. At the moment, people are still hungry for communal experiences. They want to join together... they don’t want to be separated.

“I just got hold of the Roland System-8, which is the latest hybrid of virtual and real synths – the Plug-Out system. It’s triggering a lot of memories. Reminding me of what I loved about analogue synthesisers in the early days.

“Perhaps the most interesting thing on the horizon is the idea of AI/neural network-driven composition. Let’s imagine a tool that sits on your computer, constantly and invisibly analysing and learning your compositional habits. It works out and stores your preferences in the same way that Amazon works out what you might want to buy.

“At first, you might think, ‘Oh, no. The robots are taking over. It’s Skynet in real life’. Not really. It’s just a way of organising your thoughts, then taking them out of your head and putting them into the computer. A program that will suggest a possible bassline when you’ve got writer’s block.

“Maybe one day, we’ll each have our own sonic, compositional butler!”

platforms, but I can’t see or hear any reason to change. Even when it comes to mixing, I use a lot of the onboard Logic tools. Yes, I do dip into Waves and what have you, but that would usually only be the case if I’m looking for extreme effects. Heavy compression or massive signal degradation.”

cm: Any room for the old hardware? System 100, the Fairlight...

MW: “It was Ian who bought the Fairlight. Cost a bomb, looked fantastic, but the 8-bit sound was rubbish. I’ve still got my System 100. It doesn’t get used much, but, when I do use it, the difference in sound quality between that and any digital synth is huge.

“I’m not dissing the digital world, here, by the way. There are many wonderful things that happened after we went digital, but synthesisers have struggled since the release of the Roland D-50. Proper technical people have sat down and explained it all to me and, at its most basic level... there are fewer electrons flowing through the system in a digital synth. Companies have to use all sorts of techniques under the bonnet in order to try and get digital synths to sound analogue. And why do they do that? Because analogue sounds better!

“When I bought the plugin version of the System 100, I was quite dismayed to find that

they’d added loads of bells and whistles. Instead of sticking with the original spring reverb, there are all sorts of other reverbs. Not needed. If I want to add effects, I can do that myself. There’s nothing wrong at all with pushing softsynth technology forward, but what is this obsession with extra features?

“One of the companies that seem to have got the right idea – and I will admit here that I do know one of the people involved – is Nektar. With their synth, BOLT, they’re very much putting their trust in the user. Trusting them to understand the beauty and simplicity of analogue functionality. The original oscillator, filter and VCA architecture.

“I have to use plugins when we’re playing live, because there’s no real way that we could take the System 100 out on tour. Having said that, I did take the Korg out for a couple of dates recently. The first time it had been on stage in 40 years. Me and Glenn have got a nice line in patter, and we set it up for the encore... ‘Martyn’s got his first synth with him. The one he used on *Being Boiled*’.

“Then I play the first three notes. After an entire gig of digital synths, the crowd finally hears something analogue and it seems to work at a very deep psychoacoustic level. There’s a weight and a solidity that shocks the audience and they go mental. Maybe that should be the

selling point. Analogue synths... they’ll send you f**king insane!”

Heaven 17 will play festivals throughout summer and support Squeeze on their UK tour in October



▶ Heaven 17 - *(We Don't Need This) Fascist Groove Thang*
bit.ly/H17_WDNTFGT

▶ Human League - *The Black Hit Of Space*
bit.ly/HL_BHOS

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88_ NATIVE INSTRUMENTS MASSIVE X

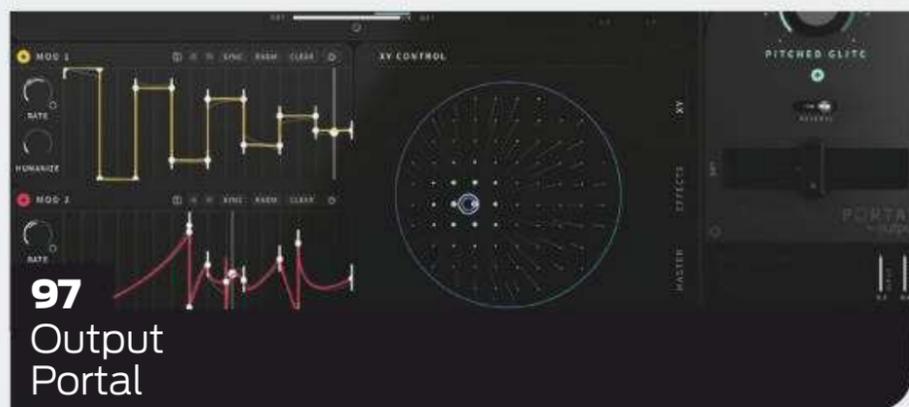
Ten years on from the game-changing Massive, can NI recreate its predecessor's sizable success?



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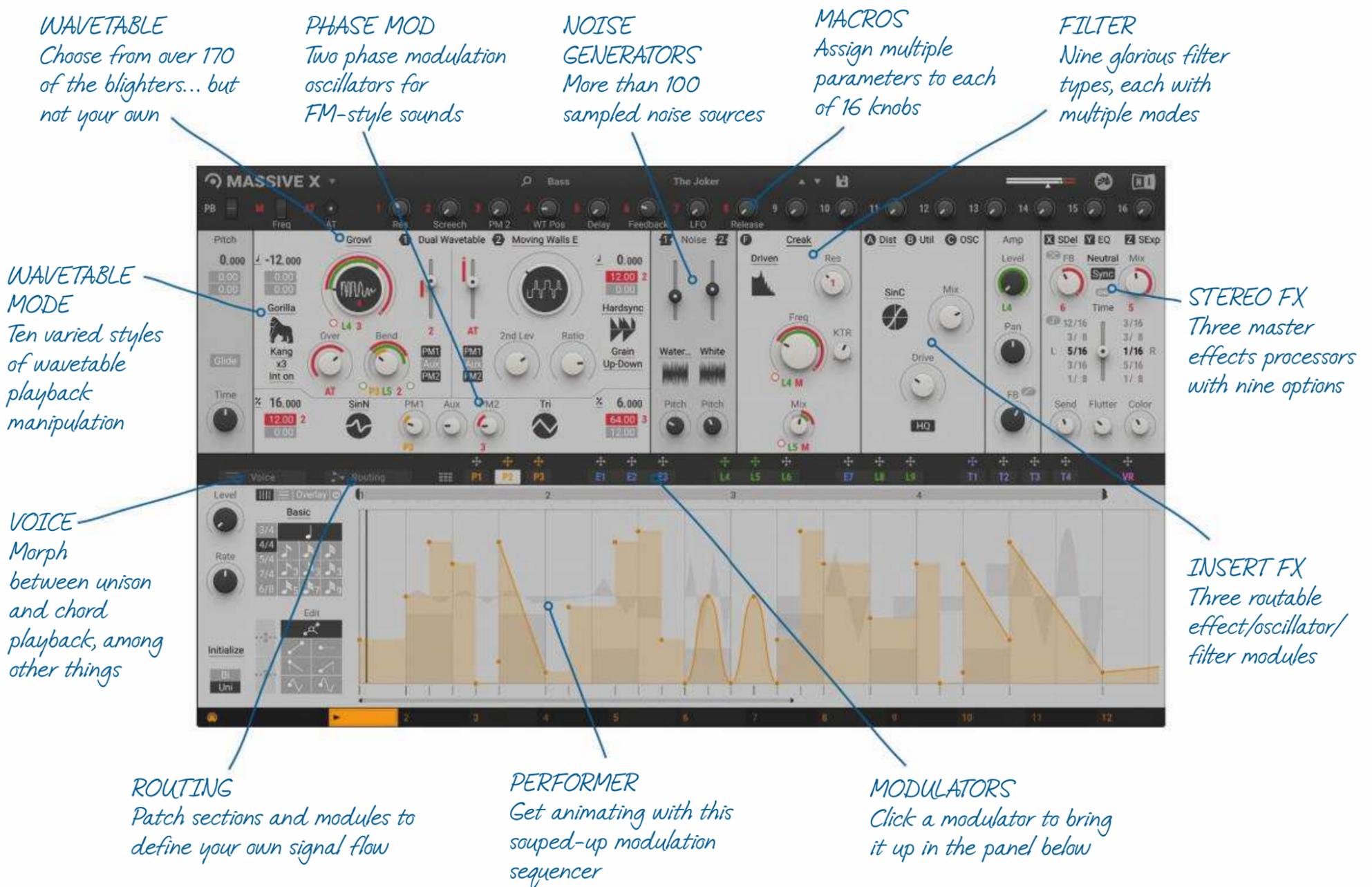
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In the opinion of the Editor, the best product reviewed in the magazine this month



Native Instruments Massive X

£179



Expectations for the long-awaited sequel to NI's genre-spawning synth are impossibly high, but how close does it come to meeting them?

> After what feels like forever, the follow-up to the most influential, ubiquitous softsynth ever made is here. Since Massive launched in 2007, playing a key role in the development of bass music, numerous high-profile rivals have equalled and even bettered it, chief among them Xfer Records' more modernistic Serum. Time for a sequel, then: Massive X – an entirely new synth with its own features and sound, that coexists with the still-available Massive.

All the Massive

Like Massive, Massive X (VST/AU/AAX) is a wavetable synth at heart, but with two oscillators, rather than Massive's three. Those oscillators boast many more wavetables, though – more than 170, including cleaned-up 'remasters' of Massive's best-loved shapes (Crusher, Scrapyard, etc), alongside a ton of new ones – not to mention ten Wavetable Modes (Massive has five), each summarising a different

style of playback with its own contextual controls. ART Mode, for example, emulates a kind of filtering, while Gorilla Mode delivers extreme formant-meets-modulation effects.

The main oscillators alone open up a vast palette of raw tones, but a pair of analogue-style Phase Modulation oscillators are also on hand for applying what essentially amounts to FM. A further three 'analogue' oscillators can also be added as Insert FX (see below), for dialling in subs and other layers. And there are two noise

“The oscillators boast many more wavetables – over 170, including ‘remasters’”

generators, each housing over 100 looping samples, from regular analogue noise to environmental, mechanical and other sounds.

In the Voice page, up to six stacked voices can be smoothly morphed between unison and a huge array of chords – we can imagine this becoming a popular modulation target.

Moving on to the Filter section, and though, surprisingly, we only get one main filter, as opposed to Massive's two, there are nine types to choose from, each offering multiple modes and its own set of controls, and between them a more diverse range of frequency processing options. They all sound superb, from the squelchy Asimov low-pass and luxurious Blue Monark multimode, through the edgy Creak and formant-evoking Groian, to the extraordinarily effective Comb and three versatile SVF setups. As with the oscillators, if you do need more filtering, you can load any of the three Insert FX with a simple dual filter module.

“A fabulous instrument that can do things no other synth can”

Massive’s expansive modulation system was a gamechanger, but Massive X’s smokes it, with up to 17 modulators assignable to pretty much every parameter on the synth via drag and drop. Eight of these can each be set to one of four types: Modulation Envelope is a standard shapeable ADSR; Exciter Envelope is a fast one-shot LFO for adding ‘front’ to sounds; Switcher LFO is a conventional LFO with a modulatable rotary selector sweeping through 16 LFO shapes, including ‘Random’ (reminiscent of but not nearly as flexible as the Wobble knob in Sugar Bytes Cyclop); and Random LFO generates chaotic signals with adjustable jitter and noise input. We love the LFOs’ five user-definable synced note values, with which their timings can be precisely switched/modulated.

The four Tracker mod sources let you freely map Pitch- and/or Velocity (Note On and Off)-based modulation, while the Voice Randomizer outputs a random value with each new note (ideal for a bit of analogue fluctuation), and 16 Macros make grouped performance control and automation as easy as ever. Without doubt, however, the stars of the modulation show are the three completely overhauled Performers. Step/curve sequencers on steroids, these serve up an embarrassment of editing riches for designing extended parameter movements. Sequences can be up to eight bars in length, and up to 12 can be held in each Performer for MIDI triggering. It’s brilliant, although copy/paste and storage of sequence presets wouldn’t go amiss.

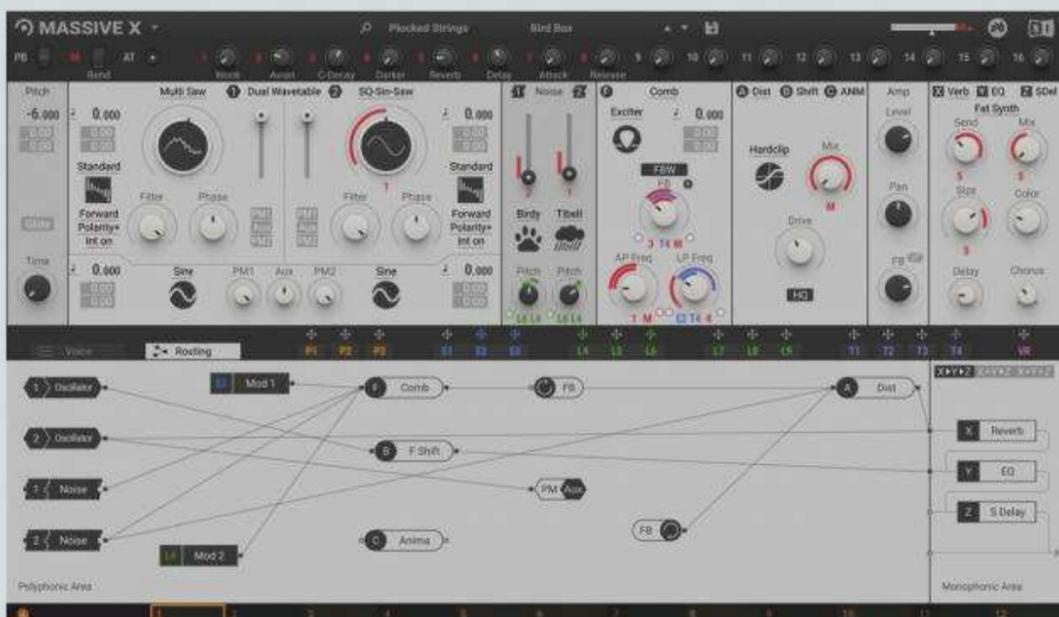
Effects-wise, Massive X grants three Insert FX and three master Stereo FX. The former include the stunning Anima (combining delay, modulation and feedback), as well as various forms of distortion, wave folding, S+H, Track Delay and the aforementioned oscillator and filter functionality among their 11 options. The nine Stereo FX modules take in a well-appointed Reverb, Delay, Quad Chorus, EQ, Phaser, improved Dimension Expander and more.

X marks the spot

For all its innovative features and beautifully-designed components, Massive X is hindered by quite a few issues. First, you can’t import your own wavetables into the oscillators, or samples into the noise generators. Then there’s the paucity of visual feedback: modulation isn’t animated at all, and the envelope graphics don’t even move to reflect knob settings as they do in Massive! And while it’s great that the Insert FX can be used as extra oscillators and filters, with



Three of the modulators in action. Astonishingly, those envelope graphics don’t move at all



The Routing page is much more straightforward than it looks

Routing gallery

A sound design playground, Massive X’s audio signal Routing page takes the system of the same name in the original Massive to a whole new level.

The oscillators, Noise generators, Auxiliary PM input, Filter FM, filter, Insert FX, two freely assignable Mod sources and Feedback in and out points are all represented as modules, and connecting them up is as simple as dragging from outputs (on the right of each module) to inputs (on the left), with no limit as to the number of connections made to/from each. At the right hand end of the signal flow, the master FX adhere to three fixed routings of their own (X>Y>Z; X+Y>Z;

X+Y+Z), and each has its own discrete input for concluding your chains, alongside a direct output that bypasses them entirely.

Despite its ease of use, the Routing page gives a great deal of scope for constructing elaborate pathing schemes, mixing up serial and parallel routing in any way you see fit, and facilitating audio-rate filter modulation. The Feedback modules are a highlight, enabling all sorts of fattening trickery to be pulled off through the assignment of multiple modules to FB In, and FB Out to as many destinations as required to make your floor-shaking point.

only three available, you’ll often have to make tricky choices therein. We’re not sure three master FX is enough, either, being much less than is offered by most competitors. And lastly, there’s no manual, standalone version, or – shamefully – NKS compatibility at launch. Much of this may be addressed via free updates, but we can only review what we’re given, of course.

More positively, Massive X is a fab instrument with real personality, that can do things no other synth can. Like its sibling, it specialises in epic, ear-twisting basses and leads, complex digital pads and textures, and mad sequences, but it sounds even bigger, bolder, wilder and more up-front, and grants access to plenty of genuinely new creative avenues. We just wish it’d been left in the oven a little longer. **cm**

Web native-instruments.com

Alternatively

Xfer Records Serum
cm213 » 10/10 » \$189
More polished and finished, but Massive X has its own advantages

Synapse Audio Dune 3
cm267 » 10/10 » £139
Wavetables are just one of this monster synth’s many talents

Verdict

For Stunning oscillators and filter
Empowering routing system
Performer modulators kick ass
Awesome effects and unison morph
Unique and amazing sounds

Against Not enough effects
Not enough visual feedback
Can’t save Performer presets
No wavetable or sample import
No manual or NKS at time of writing

A hugely characterful, immensely powerful synth with a number of issues, some of which feel like the result of a rushed release

8/10

OSCILLATORS

The virtual analogue oscillators of the original now have an additional wavetable mode

WAVETABLES

Hive 2 can import user wavetables in either WAV or u-he's own .uhm format

FILTER ROUTING

Oscillators can be routed to either or both filters, and filter 1 can be routed to filter 2

TABLES

Wavetable frames can be modulated two dimensionally

MOD MATRIX

Access 12 modulation slots. V2 adds a new sample & hold modifier

FUNCTION GENERATORS

These hardware-inspired modulators can act as envelopes, shapeable LFOs or even clock dividers



SHAPE SEQUENCER

This four-track sequencer may look simple, but it's capable of designing highly complex modulation patterns

AUTO MODE

Hive 2 can automatically modulate wavetable position, without the need to use an LFO or envelope

u-he Hive 2

€149 **PC** **MAC**

It may have started life as a user-friendly virtual analogue synth, but it's grown some distance beyond that with a series of recent updates

> When we reviewed the original Hive (cm221, 10/10) we described it as a potential Sylenth1 killer - a slick, easy-to-use virtual analogue synth that struck a great balance between depth and accessibility. Four years later, much has changed. LennarDigital's softsynth is no longer the 'must-have VST' benchmark it once was and, with the recent addition of a wavetable oscillator, Hive isn't just a virtual analogue synth anymore.

The wavetable oscillators aren't actually a new addition for version 2, however, as they were added to Hive 1.2 at the tail end of 2018. Because of this, the new version feels, in some areas, less significant than the 'point' update that preceded it - which is a little odd. This update does refine the wavetable capabilities, though, as well as adding a handful of new tools and 'quality of life' improvements.

Before we get to all that, though, let's recap a little. Hive is a two-oscillator synth presented in

a symmetrical layout, offering two identical synthesis engines running down the left- and right-hand sides of the interface. Each oscillator is capable of 16-voice unison and paired with its own sub oscillator. Each feeds into a separate multimode filter and comes equipped with ADSR amp and mod envelopes, plus an LFO. Hive isn't constricted to following these two

“With the recent addition of a wavetable oscillator, Hive isn't just a virtual analogue synth any more”

independent signal paths, however, allowing audio to be routed from each oscillator into either or both filters. Filter 1 can also be routed into filter 2 for serial processing.

The hexagonal central panel handles control of a number of global functions, such as the sequencer/arpeggiator and effects chain. In version 2, the functionality of that central space is expanded, with new tabs for controlling wavetable behaviour, an XY performance macro (another feature added with v1.2), plus an all-new oscilloscope. Below that sits a 12-slot modulation matrix, plus keyboard and performance controls.

Hive mentality

Beyond the surface-level features, Hive includes a number of neat sound design tools, such as a link feature for controlling the two sound engines at once. There are also a trio of synth engine modes, labelled Clean, Normal and Dirty,

“Taken as a complete package, Hive 2 is powerful, inspirational and sounds absolutely excellent”

which alter a range of under-the-hood settings, including envelope curves and the filter model, in order to adjust the quality of the sound as described by their naming.

As you'd expect, the wavetable oscillators add considerably to the scope of Hive's sound engine. It was already capable of a wide array of analogue-like synth tones - and the VA oscillators still sound great - but the addition of texturally complex wavetables really brings Hive to life. The pre-stocked library of wavetables is nicely eclectic and covers a lot of bases, from simple waveshapes to complex textures. Hive can load user wavetables, too, either as WAV files or in .uhm format - the latter being u-he's own format, which uses a simple scripting language to set wavetable behaviour.

Wave machine

Wavetable playback can also make use of Hive's Tables function, which u-he describe as turning them 'two-dimensional'. In practice, what this offers is control and modulation of wavetable position across two axes instead of one. As well as moving between frames 'horizontally' from start to finish, the position can also move on the secondary 'vertical' axis, with all the frames in the 'table' divided across several layers. Playing around with this feature is particularly fun coupled with Hive's interpolation modes, which adjust the manner in which the oscillator moves from one frame to the next, ranging from abrupt jumps to spectral crossfading.

The wavetable section also features reverse and cyclic playback functions, as well as a handy Auto mode that can be used to modulate wavetable position automatically without the need to plumb in an LFO or envelope.

Hex appeal

What else is new for version 2? Aside from the additional modulators (see *All mod cons*), the



Dragging a modulator into the Scope view will display it alongside the main output and/or other mod sources



The Shape Sequencer and Function Generators give new and powerful angles on modulation

All mod cons

Hive 2 adds several handy and inspirational new modulation tools to the synth's already well-stocked toolkit. The most interesting of these is the Shape Sequencer. A sort of mini step sequencer, this lets you arrange 'blocks' of modulation in order to create complex patterns. The sequencer comprises eight 'steps', each with its own editor for designing a segment of the overall modulation curve. These blocks can then be engaged/disengaged across a four-track grid, where each track has its own controls for speed, playback direction and modulation routing. It looks simple at first glance, but can quickly become very complex.

Hive 2 also adds a pair of Function

Generators. These are envelope-like modulators inspired by those found in the Eurorack realm and Buchla-inspired 'West Coast' synths. Each has attack and decay stages with controls for the length and shape of each. Various trigger and looping settings, plus multiple outputs, let the Function Generators act like LFOs, gate triggers or even clock dividers.

The XY modulators introduced in v1.2 have been beefed up for v2, too. Their assignment section now lets you take control of four pairs of modulation sources, which can be manipulated in a single XY pad, split across four separate pads or controlled using eight individual knobs, depending on which view is currently selected.

main update for the latest Hive is a new GUI. This modernises the feel of the synth considerably without making any major changes to its structure or layout - ie, returning users won't have any trouble finding their way around. It also adds the previously mentioned and rather beautiful Scope analyser view, which is another very clever touch. As well as displaying the main audio output, this lets you drag up to four modulation sources into the window to see how they alter the shape of the output and affect each other.

Buzzin'

It's a little odd that some of Hive's biggest updates were already added to version 1, but given the very reasonable £20 update price, it would be hard to argue that u-he aren't being generous. Taken as a complete package, Hive 2 is powerful, inspirational and sounds absolutely excellent. It's pleasingly light on the CPU, too, which is a major plus point. While its individual elements don't go as deep as some rival plugins - there are better specialised wavetable and virtual analogue synths out there - Hive maintains its excellent balance of ease-of-use and depth. For our money, this is one of the best all-round synth plugins on the market. **cm**

Web u-he.com

Alternatively

Synapse Audio Dune 3
cm267 » 10/10 » £139

Also combines virtual analogue and wavetable synthesis, and features mind-blowing unison

Sonic Academy ANA 2
cm254 » 9/10 » £140

Adds a Sampler oscillator to the analogue/wavetable mix, with spectacular results

Verdict

For Wavetable engine adds scope
Shape Sequencer and Function
Generators are powerful creative tools
Great balance of depth and ease of use
NKS support and lots of new presets
CPU-friendly

Against Most new stuff added in v1.2

A solid update that makes an already excellent workhorse synth even more powerful and flexible than before

9/10

SYNTH
Add one of four analogue waveforms to the mix

PRESETS
Six 'Bass Packs' are included, with more to buy soon

X-SUB
SubLab's nifty dedicated sub/harmonics generator

SPECTRAL ANALYSER
Each of the three signals is represented in its own colour

SAMPLE MENU
Load up one of 250 kick samples from a number of sources

SAMPLE LOOP
Set the loop points to create a single-cycle oscillation

FILTER
Self-oscillating low-pass, high-pass and band-pass modes



MAXIMISER
Apply an output limiter with a ceiling as low as -20dB

WIDTH
Broadens the stereo image but keeps the centre solid

COMPRESSOR
Featuring sidechain ducking of the Synth by the Sampler

MIXER
Blend the Synth, Sampler and X-Sub layers here

DISTORTION
Filthy, searing analogue-style saturation on tap

Future Audio Workshop SubLab \$70

This bass-blasting virtual instrument fuses sample playback with two styles of synthesis for subs that hit the spot on any system

> We always appreciate a focused plugin, and SubLab (VST/AU/AAX), from the makers of the innovative Circle2 (8/10, [cm220](#)), is about as task-orientated as they come, being dedicated entirely to the creation of sub-bass tones for hip-hop, trap and the like. A hybrid instrument, it enables a simple, analogue-style synth layer and the specialised X-Sub synth (see *X-Sub focus*) to be blended with an edited kick drum (or any other sound if you're feeling adventurous) sample, before filtering and processing are brought into play, for the kind of floor-shaking tones so essential to today's urban genres.

In the 'Lab

With its flat, attractively colour-coded interface (green for the Synth layer, orange for the Sampler and purple for the X-Sub), SubLab is easy to navigate and gives great visual feedback, from the oscillator waveform and envelope graphics to the spectrogram, which

shows the frequency curves of the three layers together. The preset library is divided into six themed 'Bass Packs', of which more are on the way to buy separately. With only 69 presets included, this flagrant sales pitching leaves a slightly bitter taste in the mouth, but SubLab is easy enough to program from scratch anyway, so it's certainly no barrier to entry.

The three layers are edited in the tabbed Sound section, and blended in the Mixer below. At the time of writing, this doesn't feature mute

"Happily, you can import your own WAVs and AIFFs by dragging them into the GUI"

or solo buttons, necessitating a lot of needless fader dragging to hear layers in isolation, but FAW tell us that'll be fixed in the next update.

The one-oscillator Synth layer gives a choice of sine, triangle, saw and square waveforms, with up to three octaves of upward pitch adjustment in semitones, or five octaves downwards. To the detriment of workflow, SubLab's three independent ADSR envelopes are built into the Synth section, despite the fact that two of them actually apply to the Sampler layer as well. The pair in question are Volume and Filter cutoff (see below), while the third, Pitch, does only affect the Synth. The envelope segments range up to 2s of Attack, and 10s of Delay and Release.

The Sampler layer accesses a library of kicks captured from a range of drum machines and synths by Roland, Vermona, JoMoX, Waldorf and others. Having to negotiate the full menu repeatedly to audition them quickly gets

“SubLab delivers rich, weighty, interesting and spectrally ‘present’ sub-basses”

annoying, though - previous/next buttons are definitely called for. It's not totally clear whether the add-on Bass Packs will include new samples as well as presets, but with 250 onboard, it's a decent showing as it stands; and happily, you can import your own WAVs and AIFs, too, by dragging them into the GUI.

Sample playback can track incoming MIDI notes or sit at a specific pitch (the root note of an external sample is automatically detected upon import), and the start and end points for primary playback and an optional loop are adjustable. The range handles snap to zero crossings, with +/- indicators indicating the polarity of the wave at the loop points, and very effective results can be had by setting up looping single-cycle oscillations - although the fixed zoom level of the sample display makes doing so fiddlier than it should be. Also up for manipulation are fade-in and -out times, +/-100oct of detune, up to 300ms of triggering delay, sharp low- and high-cut filters, and a limiter (Impact). As mentioned, the shared Volume and Filter envelopes are only available for editing in the Synth tab, and their presumably space-saving absence from the Sampler section is an annoyance.

Sub culture

SubLab's resonant filter is applied separately to the Synth and Sampler layers via two Amount controls. Offering low-, high- and band-pass modes, it can track MIDI note pitch or not, and is capable of self-oscillation, which proves useful for high-frequency effects.

The Distortion and Compressor sections are also each applied to the Synth and Sampler layers independently. The Distortion features four tweakable analogue-style saturation algorithms, and yet more low- and high-cut filters, while the Compressor's Ratio cranks up to 16:1, Release time ranges from 10-500ms, and Threshold control is made perfectly intuitive by its underlaid waveform. The best bit, though, is the Sidechain function, whereby the Synth layer is ducked by the Sampler layer, allowing the latter to punch through nicely.

Finally, the Width control uses mid-side



The Synth layer outputs basic analogue waveforms with envelope control of Volume, Filter cutoff and Pitch



Keep that sub-bass loud and proud with the cleverly conceived X-Sub

X-Sub focus

With the Synth and Sampler layers presenting plenty of options for tonal and temporal editing, potentially going well above 'bass' territory, SubLab's trademarked X-Sub engine not only ensures that the sub itself stays locked, but also that it translates on laptops, phones and other speakers incapable of handling low-frequency content.

Aiming to be a more accurate and convenient alternative to psychoacoustic bass enhancers, X-Sub synthesises a fundamental sub note (a gently distorted sine wave) that tracks the MIDI note input but stays within the 30-65Hz (C0-B1) range, and a series of harmonics that can define an audible

note from C1-B3 and extend above that at decreasing amplitude. The level of the fundamental is controlled by the Lows slider, while the Harmonics handle sweeps horizontally to balance odd and even harmonics, and vertically to set their volume level. The spectrogram aids in visualising the two signals, but again, mute and/or solo buttons wouldn't go amiss.

X-Sub is always a 'dry' signal, bypassing the filter, envelopes, and Distortion and Compressor modules, so as to maintain sub-bass consistency in the patch, no matter what happens in the other layers. It's key to SubLab's sound and effectiveness.

trickery to widen the image without weakening the mono centre; a soft clipping limiter is on the output; and the Glide section provides adjustment of glide time and progression, and activation of legato mode. It should also be noted, incidentally, that SubLab isn't velocity-sensitive. We're told this is because it's just not something the consulted hip-hop and trap producers were interested in as a feature, but we find it an odd limitation nonetheless.

How low can you go?

SubLab's layering concept is powerful and fun to work with, and delivers incredibly rich, weighty, interesting and spectrally 'present' subs. The X-Sub oscillator lets you play around with the Synth and Sampler layers without compromising that all-important bottom end, while the Distortion and Compression modules bring dirt, energy and attitude in spades. As discussed, there are a few issues, and the always-disappointing lack of a manual (also coming soon, apparently) is only exacerbated by a series of woefully inadequate tooltips; but SubLab's sleek design and floor-shaking signals make it a formidable weapon for any producer working in its target genres. Indeed, it could easily become your go-to for sub-bass. **cm**

Web futureaudioworkshop.com

Alternatively

Ignite VST 808 Studio
cm236 » 7/10 » \$69

Also takes a layering approach to sub synthesis, but more complex

Rob Papen SubBoomBass
cm254 » 9/10 » £80

A far more purist synth, thunderous in its low-frequency appeal

Verdict

For Clever three-layer architecture
X-Sub guarantees low-end integrity
Quality distortion and compression
A genuine one-stop sub shop!

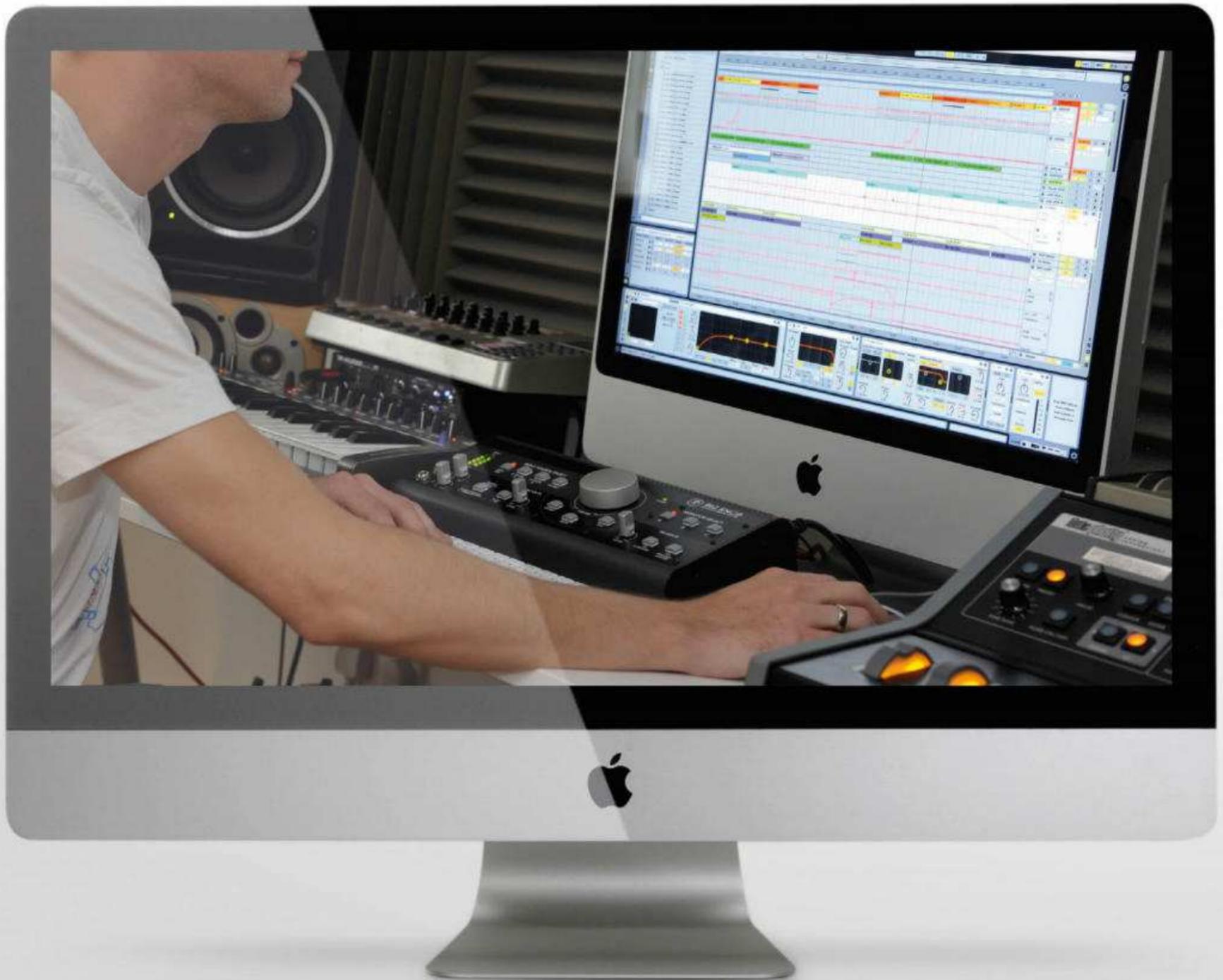
Against No manual and feeble tooltips
Envelopes aren't visible in Sampler
Not velocity-sensitive

With its three tightly coordinated layers, cone-rattling X-Sub synth and tasty effects, SubLab is a must-have for bassheads

8/10

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Output Portal

£126



This stunning plugin combines granular synthesis, conventional audio processing and comprehensive modulation to dazzling effect

> When they're not building groovy studio furniture, fast-rising American wunderkinds Output also develop some very serious plugins. Their latest offering, Portal (VST/AU/AAX), is a granular-based multieffect with a focus on deep grain manipulation and modulation, both automated and manually controlled.

Grain surgery

Like all Output plugins, Portal is blessed with an absolutely stunning GUI - clean, succinct and beautifully animated. The Main page is essentially a performance control interface, in which that sexy XY pad moves the two assignable Macro controllers next to it (which we'll come back to) in tandem; the Reverse switch instantly kicks the output into reverse playback; and faders adjust input, output and global dry/wet mix levels, the last lockable for consistency when auditioning presets (of which there are over 250, incidentally).

At the top of the main (Advanced) page, the Grain Controls section offers extensive tweaking of Portal's granulator engine, which slices the incoming signal into 'grains', and messes with their generation and playback. Up to 16 grains are generated at a time, at a sampling rate adjustable from 1/64t to 1 bar. Grains can be pitched up and down, snapped to a range of scales and chords, shortened or lengthened for choppy or 'smeared' sounds, slowed down in

sync with the host DAW or not, panned, offset, and have an envelope applied for softening. Many of these parameters are randomisable, and the Grain Delay section works like a delay effect, routing the output back to the input for further granularising via the feedback control.

The output of the granulator feeds into the Effects section (see *Fully effective*), then the Master bus, which features a very serviceable compressor, as well as low- and high-pass filters.

Modulation is key to bringing Portal to life, and to that end, two renamable Macro knobs and two looping multistage envelopes/LFOs are onboard. Assignments are made by dragging and dropping to as many parameters as you like (none are off limits), and, as mentioned, the Macros are also slaved to the XY pad. The envelopes can handle any number of clicked-in breakpoints, and curves of variable depth and skew can be applied to each segment. They run at synced rates from 1/64t to 8 bars, or up to 30Hz unsynced, and randomisation is applied with the Humanize knobs. Envelopes can be saved, and a collection of presets is included, albeit loaded via a rather clumsy standard OS dialogue, rather than an integrated menu.

Opening doors

Portal's well-tuned granular synthesis engine, superb effects and glorious modulation system come together to form an incredibly powerful

plugin that's far more than the sum of its parts. And the wet/dry controls in every section play a major part, too, enabling detailed mixing at all points between input and output, and bringing creative relevance to the Reverse function.

While most granular effects are designed with the goal of utterly deconstructing and transforming the input signal, Output's take is more considered and musical in its approach, delivering an almost indescribably broad range of rhythmic, tonal, harmonic, spatial, distorted, pitching and glitching treatments that work brilliantly on any source material, but are particularly well-suited to non-percussive instruments and vocals. Utterly essential. **cm**

Web timespace.com

Alternatively

Audiority Grainspace
cm243 » 8/10 » €35

Much cheaper and less powerful, but a great budget option

Melda Production MGranularMB
NA » NA » €49

Another lower-priced take on granular processing

Verdict

For Stunning granular engine
Wicked effects and Reverse function
Amazingly flexible envelopes
Dry/wet mix at every stage
A feast for the eyes as well as the ears

Against Inadequate documentation
Inelegant envelope preset handling

Sounding every bit as good as it looks and truly endless in its potential, Portal is one of the greatest effects plugins ever made

10/10

Fully effective

Portal's Effects section comprises two processors in series, placed in between the granulator and the Master bus for application to both the original dry signal and the granulated one. Each processor has its own input/output level and dry/wet controls, and draws on a roster of seven modules.

Bit Reducer offers sample rate and bit depth reduction. Chorus can be modulated at up to 500Hz. Distortion features Soft, Hard and Foldback styles. Filter gives 12 and 24dB

High- and Low-pass options, overdrive and envelope following. Phaser runs up to 32 stages and can be switched to Barberpole mode. Reverb includes a Freeze button for capturing the tail. And Delay includes Stereo and Ping Pong modes, and HP/LP filters.

The effects all sound fantastic in their own right, but, of course, they're really meant to be modulated by Portal's envelopes and Macros, whereupon they become exponentially more interesting.



Psychic Modulation VectoMelt

£58



The follow-up to the synthwave-inspired EchoMelt introduces XY control for deeper modulation of even more parameters

> We were utterly enraptured by Psychic Modulation's 'VHS-style' EchoMelt effect in **cm248's** review, scoring it 10/10. VectoMelt is to all intents and purposes 'EchoMelt 3', despite the original still being available to buy for £49.

In a nutshell, VectoMelt is a multieffects plugin (VST/AU) geared up for decidedly retro and organic-sounding pitch modulation, delays and distortion. Its three audio signal processors comprise Chorus, Equalizer and Echo, each with its own dry/wet Mix control. The first is a luscious two-voice chorus with voice separation and widening, while the EQ offers three bands (down from five in EchoMelt for unknown reasons, but now with resonant LP/HP filters) of frequency shaping, plus saturation and overdrive. The Echo module is the star of the show: a feedback delay and pitchshifter with stereo and ping-pong modes, filters and a limiter. It's an incredible source of vibey spatialisation and dub-style delay washes.

Vector inspector

EchoMelt's LFO-driven Melt section has been supplanted by a big XY pad - called the Modulation Vector - which controls a pair of mixable modulation generators called Flow and Flutter, and is itself governed in part by the Flex modulator below - see *Flex appeal*. Identical to EchoMelt's Wow and Flutter modulators, Flow and Flutter are basically mixable 'slow' and 'fast'

LFOs, Flow running at 1-15Hz, and Flutter at 15-30Hz. While EchoMelt only allowed mixing of those two LFO outputs for modulation of Pitch and Amp (volume), however, VectoMelt not only adds Chorus and Echo delay times, and Pan to that list, but also lets you set the modulation depth for each parameter to one value for Flow and another for Flutter. Movement on the X axis of the XY pad mixes between the Flow and Flutter LFOs, transitioning all five modulations between their two rates and depths, while the Y axis scales all ten modulation depths globally, from no modulation at all at the bottom to their full dialled-in amounts at the top.

Each modulation target also has a Depth Offset knob, for differentiating the amount of modulation between the left and right channels. With so much stereo manipulation taking place throughout the plugin, the effect these have can be unpredictable - in a good way.

Melting away

As well as that, VectoMelt introduces a Randomise button to every section, for instant inspiration. The Echo module also has an Input slider, for using it like a send effect within the plugin; Offset knobs for the Left and Right delay times, enabling freeform timing variation in Step mode; and adjustable Glide rate for Rate and Length transitions. And the EQ now works on the Echo input even when set fully dry.

The Modulation Vector and Flex section really do change the game entirely. The addition of Chorus and Echo as LFO targets adds another dimension (or two) in terms of pitch modulation, while being able to 'melt' between two complete LFO assignment states works in a whole new angle of movement and animation that makes EchoMelt seem positively static in comparison. Pitch modulation is handled differently to EchoMelt, too, so there's no messing about with buffer size to maintain quality.

Exceeding the already-brilliant EchoMelt in many ways, VectoMelt is a fantastic production and sound design tool, delivering uniquely lo-fi and amazingly 'analogue' sounding pitch- and delay-modulating effects. **cm**

Web psychicmodulation.com

Alternatively

XLN Audio RC-20 Retro Color
cm239 » 10/10 » €80

Comes at retro-fying sound design from a different direction

u-he Satin
cm198 » 10/10 » €154

Superb tape and tape delay emulation plugin

Verdict

For Sounds even better than EchoMelt
Extensive but focused XY modulation
Flex modulation is brilliant
Echo is a great delay in its own right
Randomisation and section presets

Against Three-band EQ, not five-band

The addition of XY modulation control takes Psychic Modulation's Melt effect to new heights of creativity and quality

10/10

Flex appeal

The Modulation Vector XY pad facilitates mixing between the Flow and Flutter LFOs via manual or automated movement of the vector point; but this can also be modulated around its user-defined position in the Flex section below, which takes the idea behind EchoMelt's Snag panel and runs with it.

First, two LFOs create cyclical movement of the point on the X and Y axes, with a broad selection of waveforms running at synced rates from 16/1 to 1/16T. The second Flex stage

then generates quick deviations (like tape getting briefly snagged up in a tape deck, for example). The Jump knob sets the amount of deviation, while Random varies its timing within a window of up to 5s. The Rise, Dip and Length parameters work like an envelope around that, establishing the speed of movement of the puck away from and back towards its actual position (up to 500ms each), and how long it holds the modulated position in between (up to 250ms).



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AudioThing Springs €69

Web audiothing.net
Format PC/Mac, VST/AU/AAX

The latest virtual effect from Carlo Castellano is a combination spring reverb and Baxandall EQ, originally planned as two separate plugins but aggregated when it became apparent what a good fit each was with the other. Real spring reverbs are often shaped using guitar amp tone stacks, after all.

Springs features an impressive eight different vintage spring reverb emulations, created using a combination of modelling and convolution, and including a six-spring GBS pipe from the 70s, the Roland Space Echo reverb tank, a late-60s Japanese 2-spring, and a modern Eurorack 3-spring. No control is given over the spring model itself in terms of tension, etc, but there are Short and Long Decay options, a knob for introducing background noise (constantly or only when an input is present), and a choice of standard and High Quality modes.

Adjustment of pre-delay (up to 100ms), stereo Width, high-frequency Emphasis and

gentle compression are onboard, and prior to arrival at the spring tank, a sharp dual HP/LP filter and modelled preamp circuit facilitate band-pass filtering and overdrive.

The EQ section expands on the standard Baxandall two-band high/low shelving configuration with the addition of a parametric mid band, and also features optional soft clipping and the ability to process the dry/wet mix or just the wet signal.

Springs sounds amazing - as realistic a set of spring emulations as we've ever heard, and a beautifully 'musical' EQ - and covers a good range of sproingy sonic styles, from the dark and evocative RA-844 to the cheeky HR-12, via every point in between.



A separate edit page is on the way in a forthcoming update, enabling pitching and other adjustment of the impulse responses, as well as adding more spring emulations; however, even in its current form, Springs is well and truly up there with its sublime stablemate, Outer Space (10/10, **cm425**), in terms of sound and authenticity.

9/10

Universal Audio Capitol Chambers £260

Web uaudio.com
Format PC/Mac, VST/AU/AAX

Developed in partnership with Capitol Studios, Capitol Chambers (for UAD-2 and Apollo systems) models four of the eight revered echo chambers situated 30 feet underground below said legendary facility, using UA's proprietary Dynamic Room Modelling tech, which claims to go beyond convolution in its accuracy and flexibility.

As well as the four chambers themselves (numbers 2, 4, 6 and 7), each of which includes a specific amp/speaker combo, you get four stereo-pair microphone options - the originally installed Altec 21D, the currently installed Shure SM80, as well as the RCA 44 and Sony C37A - and the ability to move them towards and away from the speaker for a tighter or more diffuse sound. Up to 250ms of pre-delay is on tap, and the decay of each chamber can be reduced to 1 second. There's also a 6dB high-pass filter, a Baxandall-style EQ (again with an added third mid band), and a Width control for narrowing all the way down to mono.

Capitol Chambers' quartet of real-world reverberant spaces are breathtaking - rich, incredibly well composed, and magical - on vocals and acoustic instrumentation in particular.

9/10



Waves Bass Fingers \$69

Web waves.com
Format PC/Mac, VST/AU/AAX/standalone

We had a feeling this was on the way: a 'fingered' version of Waves' sample-based electric bass emulation, the previous outing for which was the thumb-tastic Bass Slapper (9/10, **cm254**). Powered by the same Waves Sampler Engine and a functionally almost-identical interface, Fingers offers SD and HD sample library options, the first at 2.2GB, the second 15.6GB and at a much higher sample rate, but both comprising over 14,000 samples. The bass itself is a 5-string, and the articulations captured take in regular fingerstyle, hammer on/off, release, decay, slides and more.

The intuitive Keyswitch Editor makes custom mapping of articulation keyswitches easy, while the Position Selector enables movement of the 'left hand' up and down the fretboard for tonal variation, and the MIDI-assignable Dead Notes button mimics left-hand muting. On-bass tone controls, amp simulation, EQ, limiting and a board of seven stompbox-style effects allow for plenty of sound shaping. A highly playable, convincing system that only loses a point because of the fixed-routing effects and unby-pass-able EQ.

9/10



Soundware round-up



Zero-G Beat Master £56

This groove-manipulating Kontakt 5 instrument comprises 14 NKIs, drawing on 4,000 pre-sliced drum and percussion loops, in categories like Techno, Urban, Drum & Bass and more. Loop and slice selection, playback and repitching is controlled by clearly colour-coded keyswitches, and various parameters can be edited on a per-slice basis, including sound selection and timestretch: serious experimental potential. Coming from Zero-G, it's no surprise that the loops are excellent, and despite its semi-intuitive interface, ineffective groove quantise maps, and waveforms that don't update to represent slice changes, Beat Master is a powerful tool at a very fair price.

timespace.com

8/10

UNDRGRND Sounds Breaks Techno £35

Fusing the driving momentum of techno with the sonic, dynamic and temporal styling of breakbeat and its derivatives, this 1GB, 132bpm pack sets out its stall with 20 stemmed beats (145 files), 50 regular tops and 69 heavily processed 'break tops', ranging in feel from electro to junglistic, before moving on to 50 basslines with more spectral diversity than one would usually associate with techno. 224 synth loops yield an expansive mix of arps, pads, chords, textures, riffs and leads, while 89 colourful FX shots and 108 tasty drum hits bring up the rear.

undrgrndsounds.com

9/10



TouchLoops Celestial Ambience £24

Billed as "an atmospheric journey from the abstract to the dancefloor", every one of Celestial Ambience's 199 loops and 151 one-shots crackles with analogue energy, thanks to TouchLoops' usual deft distortion. The drum loops are interestingly organised, with 12 kits each used to create a handful of stemmed and unstemmed beats, while the bass loops are huge and languid. The library's focus is on the Synths, Pads and FX/Atmos folders, however, wherein a procession of well-realised melodic, harmonic and rhythmic ideas offer plenty of inspirational compositional material.

touchloops.com

8/10



Raw Cutz The Premier Beats Super Pack £150

A vast repository of 90bpm boom-bap hip-hop loops and one-shots, comprising 1000 full drum loops, 808 REX file stems of those drum loops, 400 music loops and 4,692 one-shots (chords, basses, drums and FX). The whole library is deconstructed from 200 mini construction kits, each comprising five beat variations and two music loops, with the one-shots extracted therefrom. The quality is great throughout, from the super-phat beats to the vibey basses and jazzy melodies, but the price is arguably high.

loopmasters.com

8/10

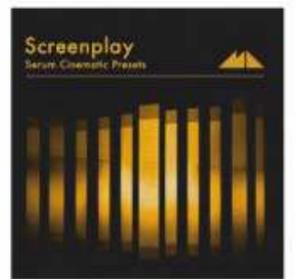


ModeAudio Screenplay £14

50 presets (and MIDI files) for Xfer Records' Serum softsynth, based on 41 custom wavetables and designed with cinematic soundtrack production in mind. The basses, pads and leads are the highlights, but the LFO-controlled kick, snare and hi-hat sequences, although hit and miss in supplied form, make great start-points for rhythmic sound design. With any synth preset pack, it's nice when effort has gone into patch design, and with its fully assigned macros and new wavetables, that's the case here.

modeaudio.com

8/10



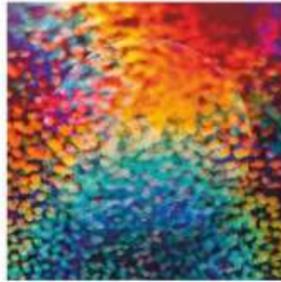
Pixelord

Cyber Electronic Subscription

A dazzlingly eclectic library of beats, basslines, synths and atmospheres for electronic music of all kinds. Pixelord's USP is the liberal use of digital distortion and analogue saturation, a keen ear for unusual textures, and aggressive yet expressive drum programming - the 103 beat loops are wonderfully quirky in their confident riffing on genre tropes. He also cooks up a mean bassline and has an affinity for arpeggiation. The loops are the main event, but a 122-strong bag of equally tasty synth, FX, kick and percussion one-shots sweetens the deal.

noiiz.com

9/10



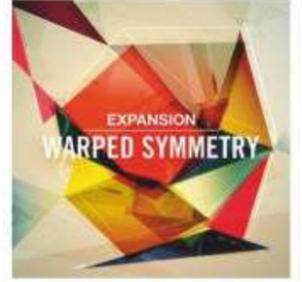
Native Instruments

Warped Symmetry £44

Produced in collaboration with Berlin's Irrupt, this melodic electronica Expansion references 90s IDM and its more recent offspring. As ever, it all starts with the Maschine kits, of which there are 50, composited from over 800 samples and 60 Massive, Monark and Drum Synth presets, and all including multiple MIDI parts. These have then been rendered as construction kit loops for use in any DAW, and mapped into 55 Battery kits. Warped Symmetry walks the line between nostalgia and modern relevance; with musicality high on the agenda.

native-instruments.com

8/10



Dabro Music

Bass House Vol 5 £35

You certainly get your money's worth with Dabro's latest dance music offering, which serves up 2.2GB of loops, shots, Serum presets and MIDI files, and even throws ten (five each) fully realised Ableton Live and Bitwig Studio template projects into the bargain for analysis and creative exploitation. The styling is hard and contemporary, with modulated wavetable basses and punchy drums rolling along underneath seasick leads and messed-up vocals; but there are occasional moments of sensitivity as well, most notably in some of the more stirring pads.

loopmasters.com

8/10



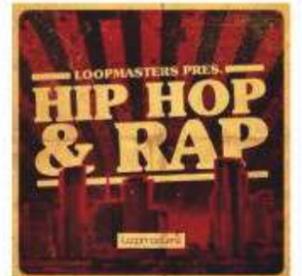
Loopmasters

Hip Hop & Rap £35

1.2GB of samples for slick, modern hip-hop. The main drum loops and variations are pretty samey, but the hat, snare, fill and crash loops add some interest. 45 sub-heavy bass loops get the cones rattling, and 57 synth pads, plucks, arps and strings make for a solid showing of top-line and supporting material. Five full raps (in dry and wet versions), four ad-lib sets and 29 processed vocal loops impress with their delivery and production; while the one-shot impacts and FX are handy, but a paltry five piano loops frustrate in their number.

loopmasters.com

8/10



Sound Dust

Stringpool £40

This 2.5GB Kontakt violin library lets you change the bowing speed of all manner of sustained single-note samples (performed by virtuoso violinist Sophia Bartlette), tempo-synced from x1 to x8, in real time using the mod wheel. The XY pad controls tremolo, convolution reverb, a peaking EQ band, and either a filter, chorus or distortion effect, depending on the loaded NKI (why not all three at once?), and Kontakt 6's Replika Delay brings the echoes. The noises it makes are beautiful, going far beyond conventional violin sounds, and the bowing speed control really adds expressiveness.

timespace.com

9/10



Sample Magic

Electronic Soul 2 £30

Almost three years after the original Electronic Soul scored 8/10 in cm235's review, the sequel takes the same approach to its drum loops, blending acoustic and electronic sources for a cool hybrid sound that merges perfectly with the accompanying laid-back electric basses, smokey guitars and dusty pianos. Add to that lot a handful of tastefully cut-up vocals, 15 jazz-tinged melodic kits, a shedload of laid-back guitar shots and more, and you have one of the most atmospheric and nuanced sample libraries we've heard this year.

samplemagic.com

9/10



Sample Magic

Half Time D&B 2 £15

Clocked at 80bpm, this bargain-priced 'white label' is aimed squarely at slowpoke bass music producers, but can obviously also be double-timed for standard DnB. There's a wonky hip-hop feel to many of the 34 stemmed drum loops (170 files) that works well and sits comfortably alongside the 30 terrifying basses, and the 31 synth loops are tight and catchy. With MIDI files also included for all the bass and synth loops, and 14 melodic mini construction kits also in the bag, Half Time D&B 2 represents incredible value.

samplemagic.com

9/10



Loopmasters

Organic Trap £30

It's not often that we come across an original take on the well-worn trap sound, but Organic Trap sets itself apart with acoustically sourced drum and percussion elements, and a sincere effort to sound more, well, organic than most. In the course of that goal, it can't help but compromise its genre specification from time to time (some of the synths, most obviously, which head off in various stylistic directions), but the beats, basslines and overall tone manage to be genuinely 'different' while still qualifying as trap.

loopmasters.com

8/10





SAMPLES GIVEAWAY

FM TOOLKIT

The sounds of frequency modulation synthesis are synonymous with twinkly glassiness, modern nastiness and overt dissonance – and that’s exactly what you’ll find in this month’s exclusive sample pack! Whether you’re after BPM-categorised loops or key-labelled one-shots, we’ve got everything you need to get the sounds of FM synths without requiring a degree in synth programming. Grab the full pack from the print edition’s cover DVD, or download the zip from FileSilo!

543 EXCLUSIVE SAMPLES

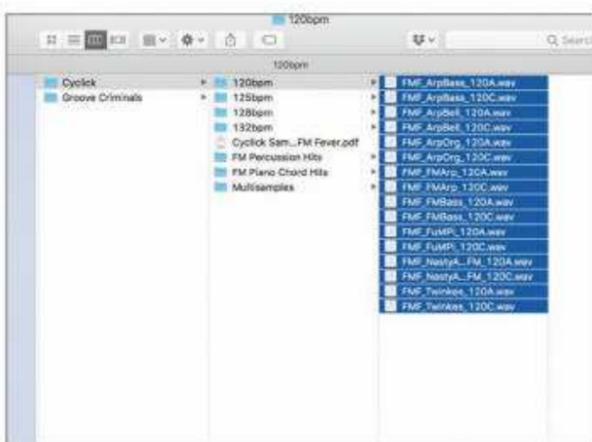
including...

- 56 Volca FM Loops**
- 46 Perc One-Shots**
- 84 Assorted Loops**
- 15 FX**
- 64 BPM-categorised Loops**
- 40 FM Percussion Hits**
- 45 FM Piano Chord Hits**
- 11 Multis**

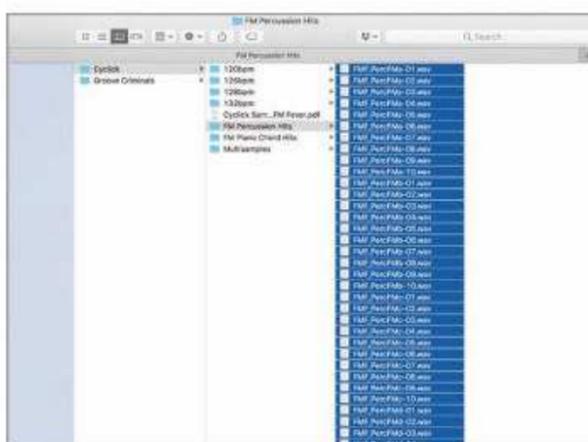


> Step by step

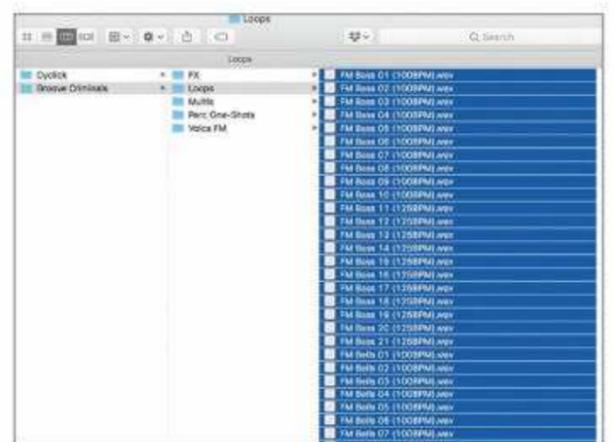
Inside this month's *FM Toolkit* sample pack



1 > Crack open the pack's **Cyclick** folder and delve into the four BPM-labelled folders (**120**, **125**, **128** and **132bpm**), where you'll find twinkly synth loops, organ lines, twangy bass grooves and bell riffs. As ever, the pack is royalty free, so don't feel bad for using a loop in its entirety.



2 > The dissonant nature of FM synthesis makes it ideal for synthesising percussion, and you'll find a bevy of quirky drum hits in the **Cyclick > Percussion Hits** folder. These range from noisy clap 'tails' and springy toms through to short clicks, claps and zaps.

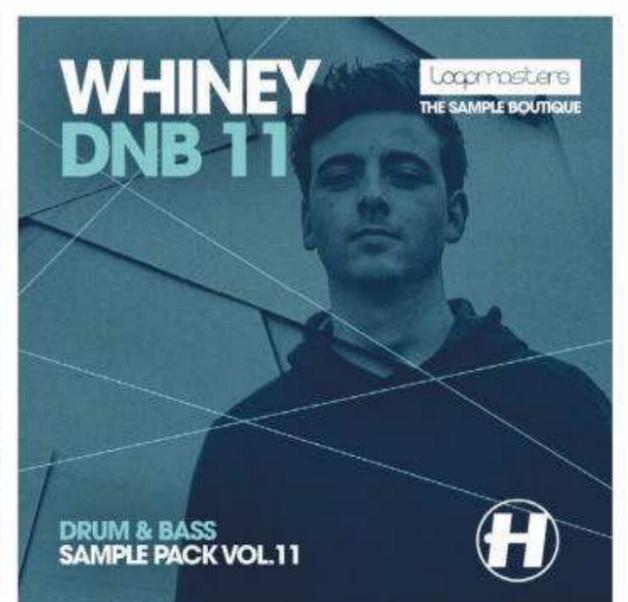
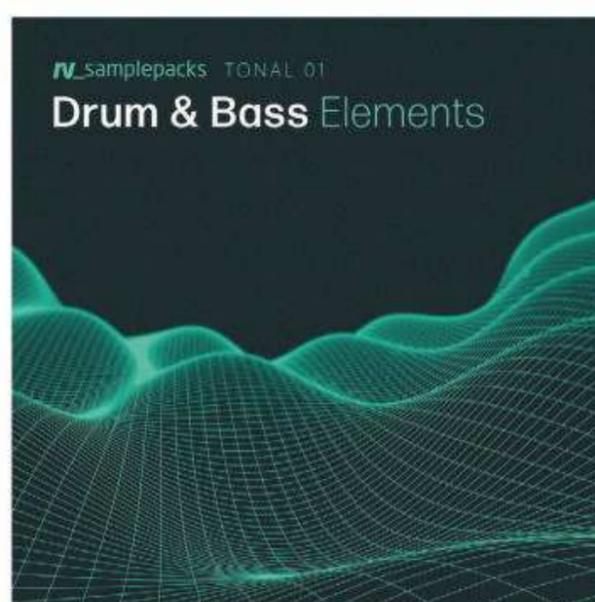
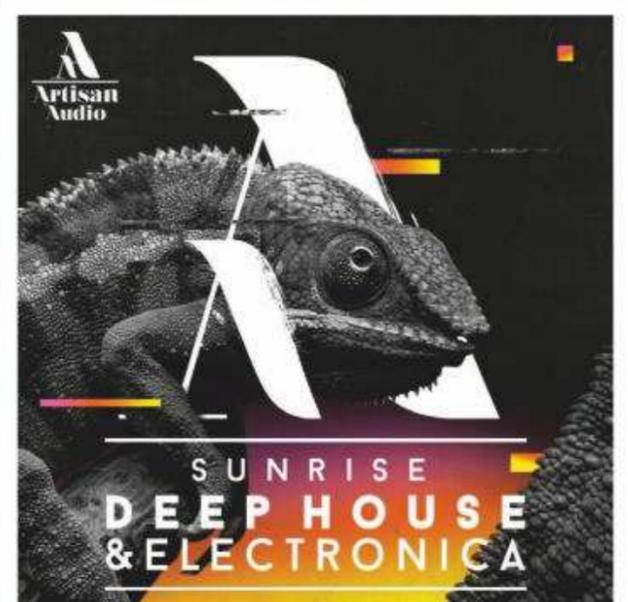
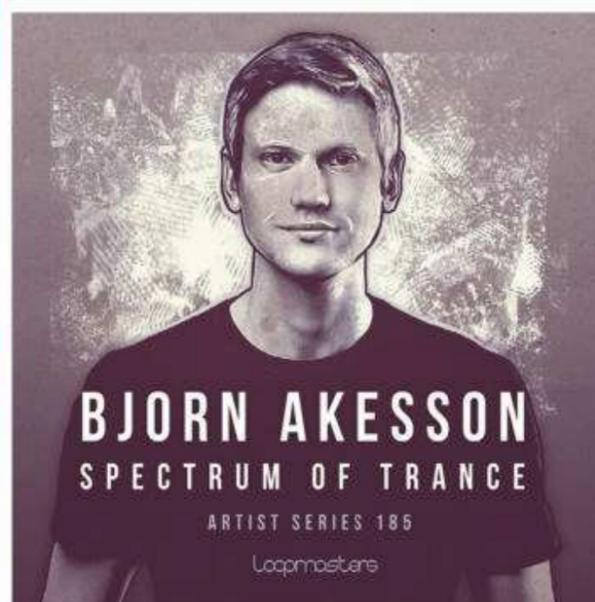
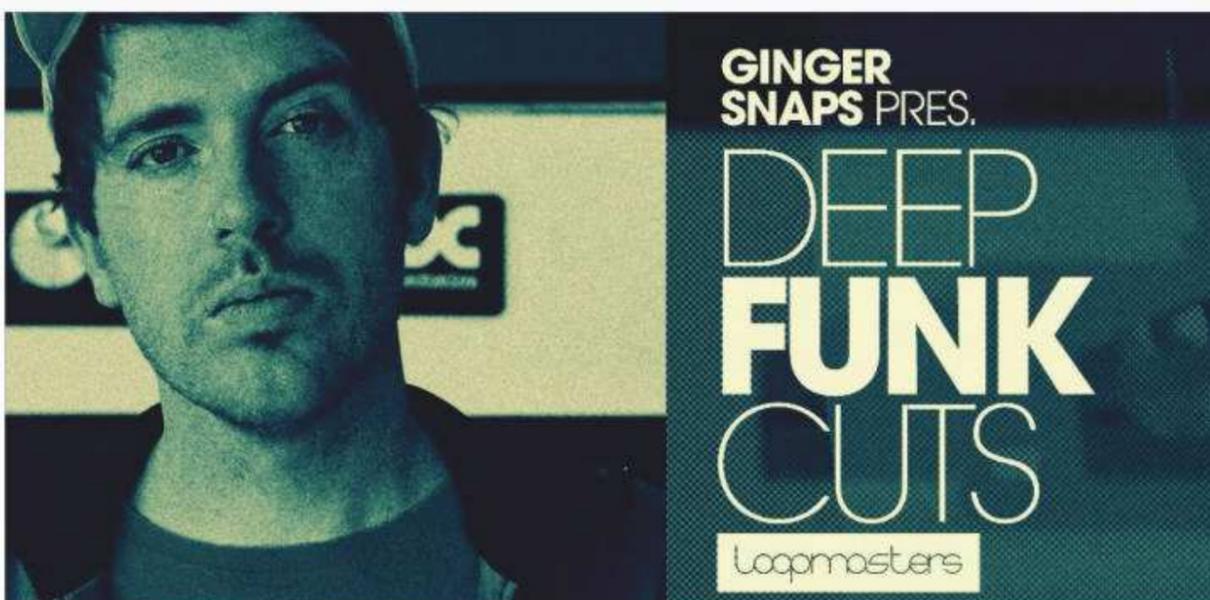


3 > Groove Criminals' **Loops** folder is crammed full of random cyclical melodica – think gnarling basslines, reversing pianos, esoteric bleeps, techno-esque piano chords and more. Plus, both Cyclick and Groove Criminals have provided multisample collections ready to load into your sampler of choice. **cm**

Loopmasters cm273 samples

Get them on the **cm** DVD or download from filesilo.co.uk/computermusic

- 01** Ginger Snaps Deep Funk Cuts
- 02** Robbie Rivera Tribal House V2
- 03** SD Balearic EDM
- 04** Bjorn Akesson Spectrum Of Trance
- 05** AA Sunrise Deep House & Electronica
- 06** Frontline Producer UK Indie Bass
- 07** rv_samplepacks D&B Elements
- 08** LM Whiney DnB 11



TIME TO STEP OFF THAT TREADMILL

With so many demands from work, home and family, there never seem to be enough hours in the day for you. Why not press pause once in a while, curl up with your favourite magazine and put a little oasis of 'you' in your day.



PRESS PAUSE
ENJOY A MAGAZINE MOMENT

To find out more about Press Pause, visit:
pauseyourday.co.uk



cm

PLUGINS



You get more than 90 instruments and effects with every issue of **cm**. Keep on top of this exclusive plugin suite with our directory

> The **cm** Plugins collection is a suite of complete, limitation-free instrument and effects plugins. It's an incredible resource, boasting more than 90 pro-quality plugins that you won't find anywhere else, all for PC and Mac, in VST and AU formats. All of the included software is created exclusively for us by respected commercial developers such as D16 Group, u-he, AudioRealism, Ohm Force, KV331 Audio, Cableguys, XILS-lab, AudioThing, Vengeance-Sound, Rob Papen, zplane and more.

FREQUENTLY ASKED QUESTIONS

Enough talking! Where do I get these plugins?

You can grab them all on the cover DVD with our print edition, or as a download from FileSilo (see **p5** for instructions on how to access).

How do I install cm Plugins?

It depends on the plugin. Some have dedicated installers, while others

just drop into your plugin folders. There's a bit more info on **p113**, and there are specific installation instructions for each in the **How To Install** file in the **CM Plugins** folder.

What do I need to use them?

A PC or Mac and a music program (aka DAW) to host them. You need a DAW that can host VST or AU plugins, such as Ableton Live, Reaper, FL Studio (PC), Cubase, Sonar (PC), Logic (Mac) or GarageBand (Mac). A free PC/Mac option is Tracktion 6.

What happened to...?

As of **cm209**, almost all **cm** Plugins are 64-bit compatible. The few older **cm** Plugins that remain 32-bit-only - such as Amplifikation CM, Rhino CM and KR-Delay/KR-Reverb - are now included in the **32-bit only** subfolders. These plugins require either a 32-bit host or a suitable 'bit bridge' (eg, jBridge) for use in a 64-bit DAW.

Still got questions? See the full FAQ at bit.ly/cmpluginsfaq



FEATURED PLUGIN

HY-Plugins HY-FX CM

This unmissable plugin is guaranteed to spark creativity. Choose one of the 22 processors (five flavours of delay, four filters, four modulation effects, pitch/frequency shifters, dynamics, distortion and reverb), then get the trio of modulators involved.

hy-plugins.com



INSTRUMENTS

HYBRID SYNTHS

Our synths have been created by the best software developers in the world to bring you a suite of sound-making tools for all music production scenarios



u-he Zebra CM

- Blendable oscillator waveforms
- Super-programmable step LFOs
- Slick delay, reverb and chorus
- Original synth designed just for CM
- AU/VST, 32-/64-bit

u-he.com



KV331 Audio SynthMaster CM

- Dual wavescanning oscillators
- Multimode filter and built-in effects
- FM/AM synthesis modes
- Based on SynthMaster 2.5
- AU/VST, 32-/64-bit

kv331audio.com



Synapse Audio Dune CM

- VA and wavetable oscillators
- Powerful per-voice modulation
- 12-slot modulation matrix
- Based on the full version of Dune
- AU/VST/RTAS, 32-/64-bit

synapse-audio.com



u-he Bazille CM

- Patchable modular synthesiser
- Sequencer and Mapping Generator
- Audio-rate modulation, Fractalizer
- Huge how-to guide in **cm232**
- AU/VST 32-/64-bit

u-he.com



Dmitry Sches Thorn CM

- Dual spectral oscillators
- Analogue and Harmonic Filters
- Spectral and real-time effects
- Glitch Sequencer and Arpeggiator
- VST/VST3/AU/AAX, 32-/64-bit

dmitryshes.com



Psychic Modulation Phonic CM

- Retro-inspired four-voice synth
- Two oscillators, noise osc and sub
- EchoShifter, Chorus and Melt
- Four envs, two LFOs, Arp and Seq

psychicmodulation.com



Seaweed Audio Fathom CM

- Monster modular polysynth
- VA, FM, wavetable, additive + more
- Envelopes, LFOs and sequencing
- Tons of filters and effects
- AU/VST, 32-/64-bit

fathomsynth.com

PLUS...

Enzyme CM

- Scanned synthesis instrument
- AU/VST, 32-/64-bit

humanoidsoundsystems.com

Klevgränd Enkl CM

- Fun, quirky one-osc monosynth
- AU/VST, 32-/64-bit

klevgrand.se

Cableguys Curve 2.6 CM

- Design-your-own-waveforms synth
- Phat 16-voice Unison mode
- AU/VST/RTAS, 32-/64-bit

cableguys.com

VIRTUAL ANALOGUE SYNTHS

Get the sounds of sought-after circuits with our classic collection



LinPlug Alpha CM

- Dual oscillators with wave blending
- Mod matrix, slick chorus effect
- Polyphonic glide between notes
- Based on the commercial Alpha
- AU/VST, 32-/64-bit

linplug.com



XILS-lab PolyKB II CM

- Models the ultra-rare PolyKobol
- Packed with mix-ready presets
- Assign knobs to main parameters
- Based on XILS-lab's PolyKB II
- AU/VST/RTAS, 32-/64-bit

xils-lab.com



Madrona Labs Aalto CM

- Unusual oscillators with FM
- Intuitively patchable modulation
- Onboard reverb • Step sequencing
- Based on the full Aalto synth
- AU/VST, 32-/64-bit

madronalabs.com



XILS-lab XILS 3 CM

- Modelled on the EMS VCS 3 modular
- Authentic circuits of the original
- Added chorus and delay effects
- Pin matrices to 'patch' signal flow
- AU/VST, 32-/64-bit

xils-lab.com

DRUM MACHINES

Get heads nodding and design better beats



DopeVST Beat Machine CM

- 50 ready-mixed royalty-free kits
- 50 MIDI beats included
- Kick, Snare, Hi-hat and Misc parts
- Level, Pan, Pitch and Reverb
- AU/VST, 32-/64-bit

dopevst.com



XILS-lab StiX CM

- Drum synth with sequencer
- Load preset kits and grooves
- Apply effects and mix each sound
- Polystep modulation and more
- AU/VST, 32-/64-bit

xils-lab.com



Thenatan Trax CM

- Sample-based drum machine
- 20 awesome preset kits
- Noise layers and distortion
- Pitch, Filter and Reverb
- AU/VST, 32-/64-bit

thenatan.com

More drum machine plugins

brunsandspork Groove CM

- Load in two samples per sound
- 50 built-in **cm** Micro Kits to play
- AU/VST, 32-/64-bit

brunsandspork.com

AudioRealism ADM CM

- Old-school-style drum machine
- Emulates Roland's TR-606
- Also contains custom **cm** samples
- AU/VST, 32-/64-bit

audiorealism.se

SAMPLERS

Import, slice and loop your audio files with these creative and highly customisable instruments



Expert Sleepers XFadeLooper CM

- Creative crossfade-looping sampler
- Hard Sync mode and modulation
- Saturation section, flexible looping
- AU/VST, 32-/64-bit

expert-sleepers.co.uk



Loomer Cumulus

- Granular sampler with sequencing
- Scenes function to sequence slices
- Not based on an existing plugin
- AU/VST 32-/64-bit
- RTAS/Standalone 32-bit

loomer.co.uk

OTHER



DopeVST Bass Engine CM

- 45 authentic hip-hop bass patches
- Three eras of faux-sampled bass
- 50 MIDI riffs included
- Envelope and note controls
- AU/VST, 32-/64-bit

dopevst.com



Kirnu Cream CM

- Get more out of plugin instruments and master arpeggios with this tool
- Program and store complex patterns
- Musical controls for rhythm/notes
- AU/VST, 32-/64-bit

kirnuarp.com



Monoplugs B-Step CM

- Step sequencer for beats and chords
- Easily creates chord progressions
- Seven pages of controls to dial in
- Based on the commercial B-Step
- AU/VST, 32-/64-bit

monoplugs.com



zplane vielklang 2 CM

- Pitch-correct and retune audio
- Harmonise melodies with ease
- Level and pan harmony voices
- Algorithms by zplane's experts
- AU/VST, 32-/64-bit

zplane.de



Eisenberg Einklang CM

- Morph between a trio of oscillators
- Envelope and timbre controls
- Modulate tone with the LFO
- Based on the full Einklang synth
- AU/VST, 32-/64-bit

eisenberg-audio.de



Rob Papen RG-Muted CM

- Create realistic funk guitar grooves
- Onboard sequencer
- Effects and modulation options
- Based on Rob Papen RG
- AU/VST, 32-/64-bit

robpapen.com



AudioThing miniBit CM

- 15-waveform chiptune synth
- Envelope and LFO modulation
- Bit-depth/sample rate reduction
- Based on the commercial miniBit
- AU/VST, 32-/64-bit

audiothing.net



Squaredheads Nora CM

- Input up to four notes, output chords and arpeggios
- Program velocities & store patterns
- Mac users require macOS 10.8+
- AU/VST, 32-/64-bit

squaredheads.com



RF Music Scale Player CM

- Play scales in new, creative ways
- Set a 'home' note and scale
- Play other keys to alter settings
- Based on the full Scale Player
- AU/VST, 32-/64-bit

rfmusic.net



AutoTonic CM

- Always stay in key with this MIDI app
- White keys play notes while black keys select the scale you're in
- Choose from a variety of scales
- Standalone, acts as your MIDI input

autotonic.net



CM PLUGINS TUTORIAL BANK

To help you get the most out of our immense plugin collection, we've assembled the **cm** Plugins Tutorial Bank, containing over 100 guides and tutorials for our **cm** Plugins, specially selected from past issues. You'll find *Getting Started* PDFs and videos for most of the individual plugins, along

with tutorial PDFs and videos on using **cm** Plugins for sound design, mixing, and even creating entire tracks. You'll find all of this as a handy download from FileSilo - go grab it now and start getting more out of your plugins!

filesilo.co.uk/computermusic

EFFECTS

DYNAMICS

Check out this huge collection of processors – from classic compressors to modern digital creations, we’ve got everything you need to shape your signals



eaReckon CM-COMP 87

- Slick, punchy compressor
- Mix knob for parallel compression
- Limiter to keep the output in check
- Clear VU- and LED-style metering
- AU/VST, 32-/64-bit

eareckon.com



Acustica Audio Violet CM

- Three-band multiband compressor
- SHmod to shape attack response
- Impart analogue-style valve tone
- Ideal for mixing and mastering
- VST/AU/AAX, 32-/64-bit

acustica-audio.com



Audiority TS-1 CM

- Flavoursome transient shaper
- Set attack and sustain gain
- Blend control for parallel processing
- Based on the full TS-1 plugin
- AU/VST, 32-/64-bit

audiority.com



Unfiltered Audio G8 CM

- Get tight dynamics or creative FX
- Includes advanced gating controls
- Real-time waveform display
- Use MIDI as a trigger or output
- AU/VST, 32-/64-bit

unfilteredaudio.com



HoRNet Fat-FET

- FET-style compressor
- Similar to the classic Urei 1176LN
- Ultra-fast attack as low as 0.02ms
- Based on HoRNet MultiComp
- AU/VST, 32-/64-bit

hornetplugins.com



HoRNet DrumShaper

- Instant EQ & compression for drums
- Dial in effect amount & in/out gain
- 7 algorithms: kick, snare, loops, etc
- Based on HoRNet TrackShaper
- AU/VST, 32-/64-bit

hornetplugins.com



audioD3CK SunRuys CM

- Characterful bus compressor
- Dry/wet mix and blend controls
- Advanced options to go deeper
- Based on the full SunRuys plugin
- AU/VST/RTAS/AAX, 32-/64-bit

audio.d3ck.net



WA Production Puncher CM

- Three-pronged mixing multieffect
- Boost transients for punch
- Four-band multiband compressor
- Weighty parallel compression
- AU/VST, 32-/64-bit

waproduction.com



D16 Group Frontier

- Superb mixing/mastering limiter
- Set Threshold and Output
- Choose detection and release styles
- Soft Clip control for drive/distortion
- AU/VST/AAX, 32-/64-bit

d16.pl



Ignite VST Vice One

- Talented compressor sold for \$49
- Choose between analogue or digital response characteristics
- In/out and gain reduction metering
- AU/VST, 32-/64-bit

ignitevst.com



Toneboosters Barricade CM

- Intelligent mastering-grade limiter
- Dynamic response controls
- Stereo options, versatile metering
- AU/VST, 32-/64-bit

toneboosters.com



SKnote Snap

- Boost or tame transient brightness
- Brighten or dull a sound's sustain
- Uses two intelligently-linked filters
- Not based on any existing plugin
- AU/VST, 32-/64-bit

sknote.it

PLUS...

Toneboosters Sibalance CM

- Pro de-esser and de-harsher
- Four modes for different use cases
- Reduction and Attack parameters
- (AU/VST, 32-/64-bit)

toneboosters.com

LVC-Audio Transector CM

- Transient tweaking and saturation
- Define and process envelopes
- Useful metering and visualisation
- (AU/VST, 32-/64-bit)

lvcaudio.com

ANALYSIS

Rule the waves and make your music come alive before your very eyes with the help of these pro visualisation tools



Blue Cat Audio FreqAnalyst CM

- Pro-quality, feature-packed analyser
- Numerous customisation options
- Based on Blue Cat FreqAnalyst
- AU/VST, 32-/64-bit, RTAS 32-bit

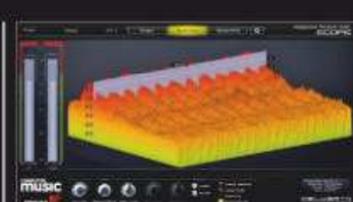
bluecataudio.com



Photosounder Spiral CM

- Musical, note-based analyser
- Useful for figuring out notes in audio and grasping music theory
- Based on the full Spiral plugin
- AU/VST/AAX, 32-/64-bit

photosounder.com



Vengeance-Sound Scope

- Spectrum for frequency analysis
- Oscilloscope for waveform view
- Stereo phase and level metering
- Tons of advanced analysis options
- AU/VST/AAX, 32-/64-bit

vengeance-sound.com

EQ/FILTERS

From basic clean-up filters to juicy, analogue-style EQ units and creative effects, get your spectrum sorted with these virtual signal-sculptors



Acustica Audio Pink CM

- Analogue-modelled API-alike EQ
- Four EQ bands, two with shelf toggle
- Output adjusts to match Input Trim
- Cut from the full Pink channel strip
- AU/VST/AAX

acustica-audio.com



DDMF CM EQ Pack

- Two superb equalisers
- IIEQ Pro CM: 19 filter types
- LP10 CM: Linear phase EQ
- Based on commercial DDMF plugins
- AU/VST, 32-/64-bit

ddmf.eu



Vengeance-Sound Philta CM

- Dual high- and low-pass filters
- Four slope settings: 12/24/48/96dB
- Resonance and width controls
- Link function and notch mode
- AU/VST, 32-/64-bit

vengeance-sound.com



AudioThing The Orb CM

- Morphing vowel formant filter
- Choose five vowels from a list of ten
- Move the dot to change the sound
- Smooth, Gain and Mix to refine
- AU/VST, 32-/64-bit

audiothing.net



OverTone DSP Program EQ CM

- Pultec-style vintage EQ emulation
- Dual bass boost/attenuate knobs
- Tube amplifier circuit-only option
- AU/VST, 32-/64-bit

overtonedsp.co.uk



AudioThing ValveFilter CM

- Gorgeous filtering and drive
- Low-pass filter circuit emulation
- Vintage valve saturation section
- Based on Valve Filter VF-1
- AU/VST, 32-/64-bit

audiothing.net



OverTone DSP AF2-10 CM

- Four-band EQ with ten filter types
- Band gains adjustable +/-24dB
- Flatten and clear curve, resize GUI
- AU/VST, 32-/64-bit

overtonedsp.co.uk

More EQ/Filter plugins

eaReackon CM-EQUA 87
Three-band EQ with high/low shelves
(AU/VST, 32-/64-bit)

eareckon.com

DELAY/REVERB

Add space and ambience, or throw your sounds into a completely new dimension



LiquidSonics Reverberate CM

- Convolution reverb with real-world presets and processing controls
- Import your own impulse response
- AU/VST, 32-/64-bit

liquidsonics.com



PSP Audioware cmDelay

- Modulatable delay with LFO
- Dial in delay time, filtering and width
- Feedback and ping-pong operation
- Based on the full stompDelay
- AU/VST/AAX/RTAS, 32-/64-bit

pspaudioware.com



Surreal Machines Microfuse

- Delay/reverb hybrid plugin
- Modelled on hardware effects
- Broad palette of timbres
- Nine modes, plus presets
- AU/VST, 32-/64-bit

surrealmachines.com

More Delay/Reverb plugins

Acon Digital CM Verb

- Simple-but-versatile operation
- Five modes: hall, plate, studio, etc
- Based on Acon Digital's Verberate
- AU/VST, 32-/64-bit

acondigital.com

Ignite VST Arena

- Beautiful algorithmic reverb
- As sold for \$49, but yours for free!
- Room and plate algorithms
- AU/VST, 32-/64-bit

ignitevst.com

MULTIEFFECTS

Get your creativity all in one place with these all-purpose plugin effects



Subsonic Labs Wolfram CM

- Pitchshifting, distortion, phase-shifting, panning, delay and filter
- Flexible modulation
- AU/VST, 32-/64-bit

subsoniclabs.com



LVC-Audio T-Chain CM

- Take your choice of six effects
- DynoPhuzz CM distortion effect
- Two dynamics processors to try
- EQ, ClipShifter and filter effects
- Customisable waveform display

lvcaudio.com



HY-FX CM

- Choose one of 22 processors
- LFO, Envelope Follower and Sample & Hold modulators
- Wet/dry mix for parallel processing
- PC/Mac, AU/VST/VST3

hy-plugins.com

More multieffects plugins

Inear Display Eurydice CM

- Stutter, buffer and edit signals
- Buffer override, repeat, delay, bitcrusher and filter with modulation
- AU/VST, 32-/64-bit

ineardisplay.com

Tek'it Audio CrossDr CM

- Three independent bands of drive
- Drive, Warp, Crush and Clip signals in three parallel bands
- AU/VST, 32-/64-bit

tek-it-audio.com

EFFECTS *Continued*

DISTORTION/SATURATION

Fuzz up your signals with custom dirt - from waveshaping to saturation and soft clipping, this diverse bunch of plugins are guaranteed to play as rough as you like with any audio material



Kuassa Amplifikation 2 CM
 • Twin-channel guitar amp
 • Three cab models
 • Flexible mic positioning
 • AU/VST/VST3/AAX, 32-/64-bit
kuassa.com



NoiseAsh SpeakerSim CM
 • Four speaker models
 • Onboard EQ and HP/LP filters
 • Internal limiter and distortion
 • In/Out level, Mono/Stereo
 • VST/AU/AAX, 32-/64-bit
noiseash.com

PLUS...

- Kuassa PreMix CM**
 • Preamp drive with Baxandall EQ
 • AU/VST, 32-/64-bit
kuassa.com
- Audiffex STA Enhancer CM**
 • Valve-style signal exciter/enhancer
 • AU/VST/AAX, 32-/64-bit
audiffex.com
- Audio Assault BassAmp CM**
 • Ampeg-inspired bass amp sim
 • AU/VST/AAX, 32-/64-bit
audioassault.com



Sonimus Satson CM
 • Classic mixer channel emulation
 • Subtle warming saturation
 • Gentle, musical high/low filters
 • Full Satson Buss also available
 • AU/VST, 32-/64-bit
dsp.sonimus.com



Rop Papen RP-Distort CM
 • Five crunchy distortion algorithms
 • EQ, dynamics, widener, modulation
 • Filter and parallel processing controls
 • AU/VST, 32-/64-bit
robpapen.com



Audio Assault GrindMachine CM
 • Five amp and ten cab emulations
 • 3-band EQ plus depth and presence
 • Djentbox to tighten low tunings
 • AU/VST, 32-/64-bit
audioassault.com



Cableguys WaveShaper CM
 • Graphically editable distortion
 • Design curves by dragging nodes
 • Input vs output oscilloscope
 • Event Player to simple sequences
 • Not based on an existing plugin
 • AU/VST, 32-/64-bit
cableguys.com

Mercuriall U530 CM
 • Emulation of ENGL's E530 preamp
 • AU/VST, 32-/64-bit
mercuriall.com

HoRNet Graffio CM
 • Flexible three-flavour distortion
 • AU/VST/VST3/AAX/RTAS, 32-/64-bit
hornetplugins.com

Lindell 6X-500 CM
 • Classic preamp emulation with EQ
 • AU/VST, 32-/64-bit
lindellplugins.com

Shattered Glass Audio Inferno CM
 • Two analogue preamp models
 • AU/VST, 32-/64-bit
shatteredglassaudio.com

OTHER

More esoteric and incredibly useful plugins from recent issues of **cm**



Auburn Sounds Management CM
 • Psycho-stereo toolkit plugin
 • Place sounds with Binaural Pan
 • Edit perceived distance and width
 • Stereoise mono sounds
 • AU/VST, 32-/64-bit
auburnsounds.com



JST & Boz SideWidener
 • Add stereo width to mono sounds
 • Signal retains mono compatibility
 • Goniometer for stereo visuals
 • Three widen modes, Width & Tone
 • AU/VST/AAX/RTAS, 32-/64-bit
joysturgistones.com
bozdigitalabs.com



New Sonic Arts Freestyle CM
 • Host and chain together your **cm** Plugins VSTs
 • Route and split signal paths
 • Event Player to simple sequences
 • Save snapshots of whole setups
 • Runs as AU/VST/Standalone
newsonicarts.com



Nyrv Agent CM
 • Create custom effects chains with this valuable utility plugin
 • Host your VST/AU plugins
 • Design your own interface
 • Based on the full Agent plugin
 • AU/VST/AAX, 32-/64-bit
nyrvsystems.com



Dotec-Audio DeeMonitor
 • Handy monitoring utility plugin
 • Emulate NS10, Genelec and Auratone 5C speakers in your DAW
 • Invert and Solo left and right feeds
 • Mid/Side balancing + Output gain
 • AU/VST, 32-/64-bit
dotec-audio.com



Inear Display Litote CM
 • Granular effect to slice and dice signals on a microscopic level
 • Tweak speed and introduce jitter
 • Adjust the Timbre Frequency, Feedback and Diffusion
 • AU/VST/AAX, 32-/64-bit
ineardisplay.com



HoRNet FreMo
 • Mini frequency modulator effect
 • Oscillator frequency can be set manually or follow input pitch
 • Scale the oscillator from 1x to 10x
 • Set mod amount and osc waveform
 • AU/VST/AAX, 32-/64-bit
hornetplugins.com



Audio Vitamins Life CM
 • Modulation and widening plugin
 • Vary pitch or amplitude with LFOs
 • Widen, sweeten and improve audio to a mix-ready state
 • AU/VST/AAX, 32-/64-bit
audiovitamins.com



HoRNet Chorus CM
 • Modelled on a famous BBD unit
 • Three independent delay lines
 • Speed, Level and Pan controls
 • Analog and Hiss modes
 • Input, Output and Dry Level
 • AU/VST/AAX, 32-/64-bit
hornetplugins.com

Loading plugins in your DAW

Though there are a wide variety of DAWs, each with its own unique interface, there are similarities when it comes to loading up and using plugins, and most stick to one of two approaches. The first - as seen in Steinberg's Cubase, Apple's Logic, and Cakewalk's Sonar - involves insert slots on a track or mixer channel. These are used in the same way as an insert effect would be used on a hardware mixer. In other words, the effect is placed 'in line' on that mixer or track channel. Plugins might be loaded in by use of a dropdown menu tree or right-clicking in the effects slot. Clicking in the insert or effects slot in some DAWs - Cakewalk's Reaper, for instance - will reveal a dedicated browser from which the desired plugin may be selected.

It's common to stack multiple effects plugins together to form an effects 'chain', much in the way a guitarist might connect various stompboxes together to form a custom sound. In some DAWs, these effects chains may be saved and recalled at a later time.

If your DAW uses a sidebar browser, here you can find your plugins displayed and possibly arranged into categories. The plugins may be dragged into the project and placed directly onto a track or channel. Ableton Live, Bitwig Studio, Cakewalk's Sonar and PreSonus Studio One can all open effects and even instrument plugins in this manner.

On the subject of instrument plugins, we should discuss the different methods you might encounter when loading up instruments. As mentioned, sometimes they can be dragged and



See how to load plugins in eight different DAWs with our videos at the URLs below

dropped from a browser onto a specific track. However, many DAWs distinguish between instrument and audio tracks, so you'll need to keep this in mind. Those that allow you to drag instruments in from a browser might offer the choice of using an existing instrument track or creating a new one. Some DAWs (Cubase, Sonar) allow you to open instruments in a 'rack' and then connect to them from MIDI or instrument tracks. Others (Logic) make a plugin menu available from the track itself.

We've prepared videos for eight major DAWs showing you the basics of loading plugins, along with a few handy tips you won't want to miss:

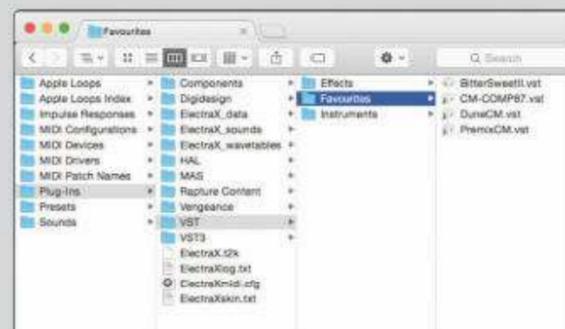
- > Cakewalk Sonar - bit.ly/LPIsonar
- > PreSonus Studio One - bit.ly/LPIstudioone
- > Apple Logic - bit.ly/LPIlogic
- > Image-Line FL Studio - bit.ly/LPIflstudio
- > Steinberg Cubase - bit.ly/LPIcubase
- > Bitwig Studio - bit.ly/LPIbitwig
- > Ableton Live - bit.ly/LPIableton

Plugin folder locations

So how does your DAW know where to look for your plugins? Actually, it might not. Mac users have it easy, as there are OS-specified folders into which plugins are installed. These folders can be found by going to your Library folder (if you can't find it, go to the Finder's **Go** menu, hold **Alt**, and a **Library** option should appear). Find the **Audio** directory, and then the **Plug-Ins** folder within. There you will find more folders still. One will be labelled **Components** - this is where your AU plugins reside. Other folders will be found alongside it for **VST** and **VST3** plugins. If you're a Pro Tools user, you'll find your plugins in an Avid or Digidesign folder. If your installers don't automatically install the plugins into the proper folder, you should manually copy them into the relevant folders listed above.

One caveat: there will likely be two sets of folders under two different Library locations.

One is for all users, the other is for administrator use. If your DAW has trouble seeing a plugin, you might need to move it



If you're using Apple's OS X, all your VST, VST3 and Audio Units go into pre-determined locations

from one Library to the other, though the system folder is usually the one to use. Uninstalling plugins from OS X usually

requires little more than putting the Component or VST file in the Trash. Sometimes an uninstaller will be offered to you, though.

On Windows, you can choose the location of your VST plugin folders. Some DAWs will create one when you install them, but both DAW and plugin installers will often give you an option of pointing to the plugin directory you'd like to use. It usually looks something like C:\Program Files\Steinberg\VST Plugins.

Some plugins are delivered as only DLL files, and need to be copied to your chosen directory. Once you've installed your plugins, think twice about moving them. Some plugins rely on support files installed into the same directory. To duplicate plugins elsewhere on the drive, use shortcuts on Windows (right-click to create one) or aliases on Macs (Cmd-Alt-dragging). **cm**

BLAST FROM THE PAST

Elektron's metronomic masterpiece reignited interest in drum machines and secured the quirky company's place in the history of electronic music



Elektron Machinedrum SPS-1

> In the 1980s, drum machines were ubiquitous. Initially available only to the moneyed few, as the cost of computer tech plummeted, so did the price of drum machines new and used, allowing access to all.

Eventually, sequencer-equipped sample-playback 'workstations' would push the drum machine out of the limelight, and by the 1990s, they were seen as little more than metronomes and practice aids for would-be guitar heroes. It was, therefore, something of a shock when up-and-coming Swedish outfit Elektron followed up their popular SidStation synthesiser with a dedicated - and decidedly electronic - drum machine in 2001. Dubbed the Machinedrum SPS-1, it would reshape what a modern beatbox could be, even while wearing its influences proudly on its brushed aluminium sleeve.

With the Machinedrum, the emphasis was squarely on the 'machine'. While it was perfectly capable of producing realistic drum sounds (especially in the sampling UW incarnation), the patterns were very much 'on the grid', placed there not by finger drumming on the velocity-sensitive pads of most machines, but via clacking and decidedly insensitive buttons splayed across the panel's lower edge.

While such archaic note entry would have been universally panned by those who were seeking out so-called 'real' rhythms, it was ideal for dance and IDM musos. Those same musicians lapped up the Machinedrum's realistic recreations of xOx-style beatboxes that, while digitally derived, could be made to sound very much like the real thing. Better still, they were just the tip of the iceberg, as the SPS-1 also offered another four synthesis methods, each one with a unique subset of 'machines' dedicated to specific types of drum sounds (bass, snare, etc). In turn, each machine had its own unique set of tweakable parameters.

The aforementioned xOx-like TRX synth was joined by the FM-based EFM engine; the physical modelling PI synth; a 12-bit sample-playback synth in the form of E12; and the utilitarian GND, used to generate noise or sine waves, as well as allowing the inputs around the back to be routed and processed.

In 2005, the SPS-1UW brought two more machines that helped realtime sampling and playback of user waves. As well as the user-assigned machine, the Machinedrum's 16 tracks offered EQ, sample-rate reduction, filtering, LFOs and effect sends.

TECH SPECS

Year of manufacture	2001
Original sale value	\$1100
Current price	£400-£800, dependent on version in question
Number made	3000 Mk1 units

All of this would earn the Machinedrum favour, but there was one more very important feature that pushed it over the top. Known as 'parameter locking', it allowed users to define the states of a vast number of synthesis and effects parameters for each step of a sequence. This meant that no two steps needed sound even remotely alike.

The Machinedrum was continually updated and occasionally upgraded by Elektron, eventually ending its lengthy lifespan in 2016 as the Machinedrum SPS-1UW+ MkII, which brought increases in power, pattern length, and onboard storage space.

Elektron still make drum machines, though these days, they're largely based on analogue and/or sampling. The company is rightly proud of the Machinedrum. **cm**

Three great plugin alternatives



AUDIOSPILLAGE ELEKTROID

While few plugins are going to be as fully-kitted out as the Machinedrum, some offer a similar combination of synthesis and sampling. Elektroid is one example, with four different synthesis models and drag-and-drop sample support, plus a built-in sequencer and effects. Their DrumSpillage 2 offers more models, but ditches the sampling.

audiospillage.com



ROB PAPEN PUNCH

Again, this isn't going to replace Elektron's beatbox classic, but it provides a healthy selection of sampled sounds and combines them with some rather powerful drum-based synthesis. User sample support is also here. Additionally, there's a slightly unusual layered sequencer and a comprehensive effects section to spice things up.

robpapen.com/punch



IZOTOPE BREAKTWEAKER

The most expensive of our group, BreakTweaker is the one that arguably comes closest in spirit to the power of the Machinedrum's groundbreaking sequencer. Produced in collaboration with one-time trance darling BT, BreakTweaker's sequencer offers oodles of control over the synthesised drum sounds, plus some clever timing options.

izotope.com

CHANGE THE WAY YOU THINK ABOUT SOUND DESIGN

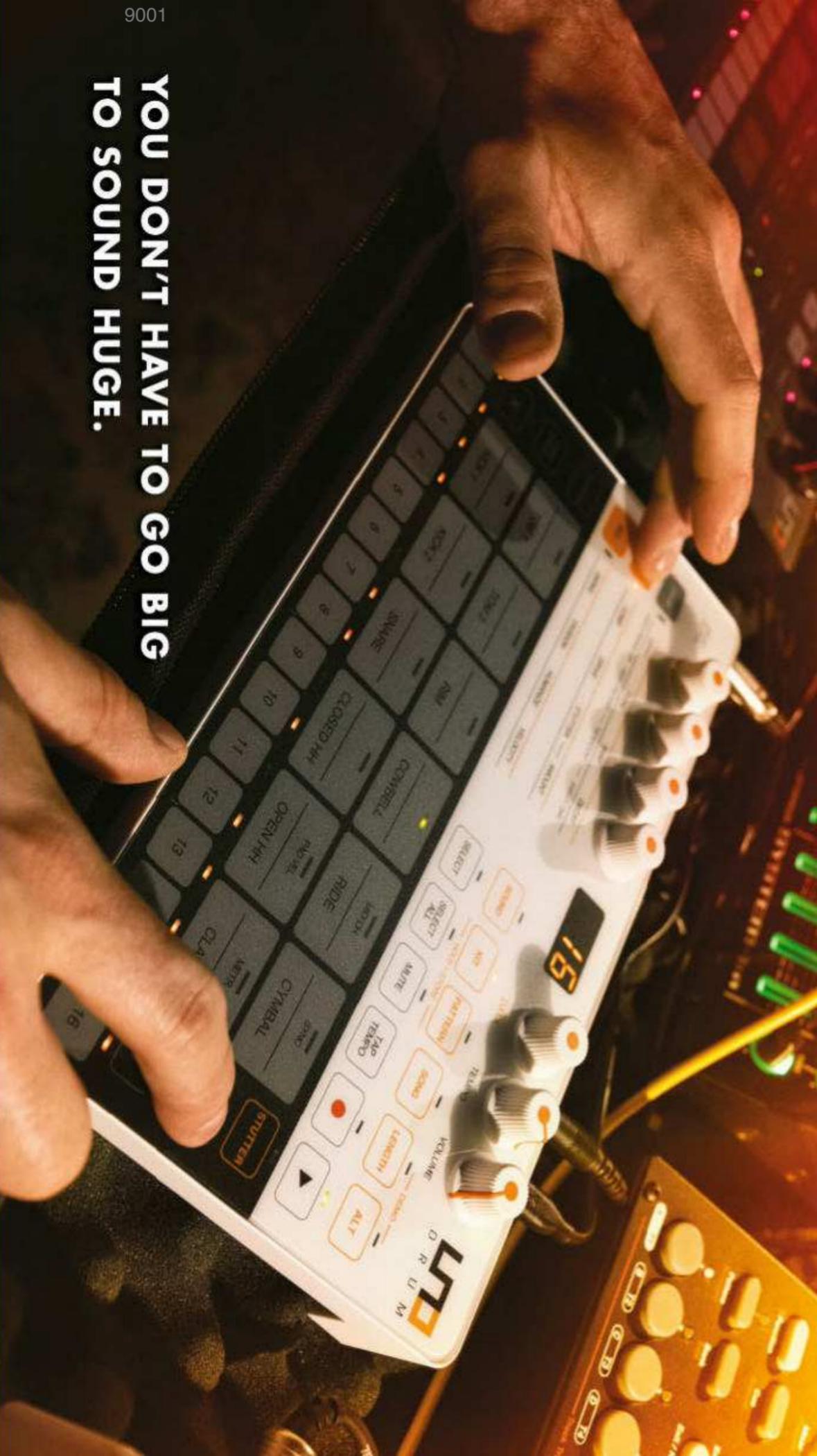


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