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welcome

Cerebral, inventive, heavily computerised and boasting a rich, colourful history, drum 'n' bass is a genre close to the hearts of many **cm** readers. Being primarily synth- and sampler-driven, DnB is the perfect fit for the digital home studio, its experimental ethos encouraging today's software-centric producer to really push the

"We've enlisted five supremely talented DnB/dubstep crossover artists"

many powerful tools at his or her disposal.

Distinctly postmillennial, dubstep can proudly call itself the most computer-generated form of dance music yet. Dubstep producers don't generally have much time for

hardware synths and outboard gear, preferring to work entirely 'in the box' in the interest of flexibility, speed and sonic control.

In this issue, we're bringing these two increasingly connected and predominantly software-based styles together for a production masterclass of epic proportions. We've enlisted the educational services of five supremely talented DnB/dubstep crossover artists, all of whom are ready and willing to show you how they do their thing, both in the magazine and on the DVD. Beats, basslines, the dubstep wobble – it's all here, so go get it.

ENJOY THE ISSUE...

Ronan Macdonald **Editor**



The cm Mission Our goal is to help you create great music with your PC or Mac. With that objective always in mind, we bring you step-by-step tutorials on all aspects of software-based music production, unbiased reviews of the latest products, technical Q&As, and a Dual Layer DVD-ROM packed with exclusive software and samples.

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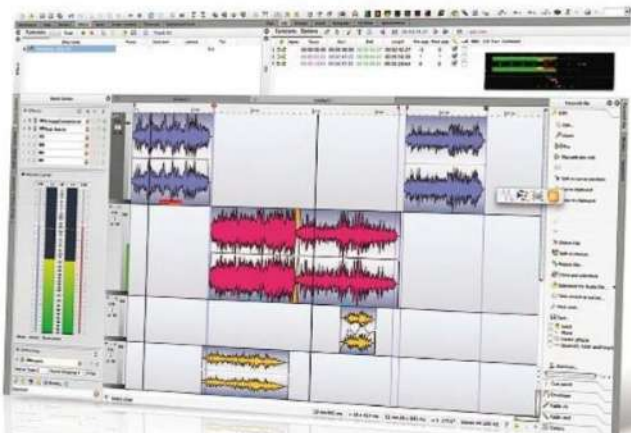
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If you're a rookie, check out the **CM Beginners** folder on the DVD – a library of material put together to help you get your head around many basic computer music concepts

cm/inbox



Got something to say to us and our readers? Email cminbox@futurenet.co.uk

Message of the month

Am I right to think of computer musicians as a picky bunch, rather hard to please? As soon as a new piece of gear is released, its faults are laid bare on numerous internet forums. A quick search for any software or hardware will reveal a long list of problems that people have encountered. While it's great to be able to share information with such a community - who are enormously helpful when things actually *do* go wrong - all these negative reports are enough to put you off buying anything.

I just wanted to reassure any doubters to take the plunge, and also give a big pat on the back to all those software developers out there. I've been making computer music for nearly 30 years now, off and on - usually more off than on because of offputting user interfaces, intractable manuals

and sundry software gremlins. Somehow the tools seem to have gotten in the way of making music. But not any more! I've just treated myself to a new laptop, upgraded all my old software, and invested in the latest generation of software synths. I've been astonished by the results. Many of these synths now have intuitive interfaces that are a joy to use, and the quality of the sounds they make is simply awesome. Incredibly, I now have a setup that actually does everything I want it to, for the first time ever. Making computer music is now fun!

So, if any readers are having doubts about taking the plunge and investing in some new gear, I say go for it - there's never been a better time to do so.

Adrian Newton, Wimborne

Never let online hearsay alone determine your buying decisions. Seek the advice of others, of course, but always try the demo if there is one, read the **cm** review (obviously!) and make sure you've got all the facts as well as opinions. Get all that right and you can't really go wrong with the majority of today's music software, which is, as you rightly say, mind-blowingly powerful and supremely inspiring. **RM**

The writer of our Message of the Month will receive u-he's superb Uhbik effects bundle for Mac and PC, worth \$149!

www.u-he.com



We are your friends

Your magazine is very important to me for a reason that I'm sure a lot of readers can relate to but perhaps have not yet realised or been able to put a finger on. For most of us, music production is a solitary thing; we sit in the studio alone for hours upon hours, fixated on getting the perfect sound, and, honestly, it can get quite lonely. One of the main reasons for this is because production is a real language in itself, and if the people around you in your life do not speak that language, you can easily end up feeling isolated. Fortunately, whenever I feel this way, I can pick up *Computer Music* and instantly feel as though I've tapped into some kind of community with other producers around the planet.

I hope you realise that your magazine is not just a useful resource for production tips and tutorials, but is in fact quickly becoming one of the few decent communities of producers on the planet. Sometimes, just reading a few pages of your articles can be the all-important piece of hay in the haystack that gets me back into the studio to spend those last few vital hours finishing that all-important track; and in the end, that's all that really matters, right?

Thanks a lot from the most isolated city on the planet!

Rory Garton Smith, Perth, Australia

Glad to hear we're helping you stay connected. Hopefully you've also discovered our

Facebook page (facebook.com/computer.music.mag), through which you can get in touch with thousands of like-minded musicians and producers. RM

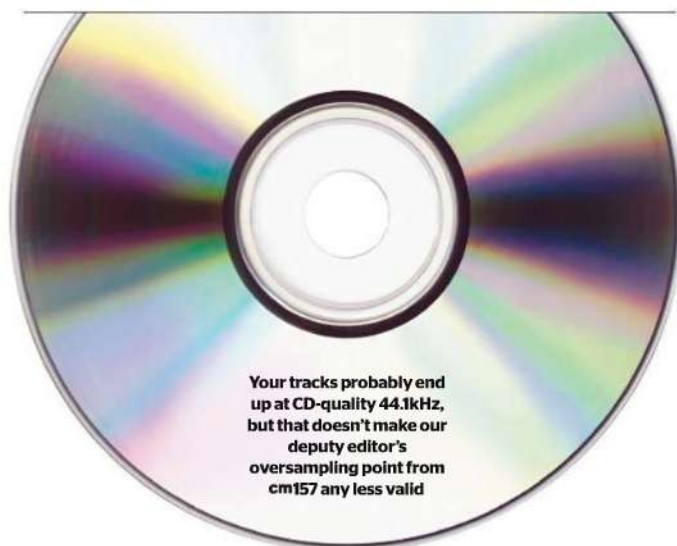
Reason to abstain?

I've adored Reason since its birth, although it had serious limitations from the beginning! However, although I feel very strongly for this application, I was quite surprised by your review in **cm156**, especially after reading your verdict: "Reason finally feels complete!"

For me, this update brings very little to my workflow, and I was hoping for some serious tools, especially when you consider that it took over three years to develop!



Was our Reason 5 verdict a fair one? One reader reckons not



In my experience, since Record launched, Reason has become an inferior application if you use it standalone! Besides the fact that you can't record audio, you can't use the bass/guitars modules of Record or the Neptune in Reason! I really can't see why Reason users are forbidden from these devices.

It's almost 2011 and Reason still lacks a spectrum analyser, a dedicated filter, direct integration of ReCycle, a user-friendly sequencer, etc. I thought that Logic, Cubase and FL Studio were complete, but these programs continue to surprise me as they add more exciting stuff with every update!

Compared to these programs, Reason has had a very poor progression over these years and I feel that verdicts like "Reason finally feels complete" are pushing the program backwards rather than forward. Reason is losing more and more of its charm because of its slow and unexciting updates!

Dim Apos, Germany

Clearly, Propellerhead want you to buy both Reason and

"What's the point of increasing the sample rate if my tracks are going to be burnt to CD at 44.1kHz anyway?"

Record, so it's no surprise that each has features not built into the other. I don't see anything unreasonable in that. And it's obviously not true to say that Reason has become "inferior" since the launch of Record. The new features added in Reason 5

improve the program in many areas and don't detract from what was already there. RM

Sample rate silliness

In response to Lee du-Caine's article on sample rates (*Mixdown*) in the Autumn 2010 issue of *Computer Music* I just thought I would throw my penny's worth in. I can fully understand that higher sample rates are generally better for sound quality, etc, but what I'm thinking is: What's the point of increasing the sample rate if my tracks are going to be burnt to CD at 44.1kHz anyway? The difference in sound quality may be heard while mixing down tracks, but when burnt to CD, will this quality not degrade?

Ben Daly, London

My point wasn't that 88.2kHz audio sounds significantly better than 44.1kHz, but that 88.2kHz processing can give better results. In theory, you'd be better off running your entire DAW at, say, double the sample rate, as opposed to using 2x oversampling in each plug-in. You'd get the benefits of oversampling (less aliasing, etc) without the disadvantages (constant up/downsampling using sharp filters, etc).

It's a little trickier than that in reality because many plug-ins don't give the user control of oversampling, so they could end up running at an even higher internal rate, which might use too much CPU power. Perhaps one day we'll see a more cohesive approach to DAW/plug-in oversampling, offering more transparent user options and the ability to downsample the output to 44.1kHz on the fly, so that what you hear when mixing will definitely sound the same 'on CD'. LDC

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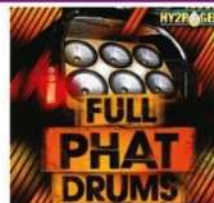


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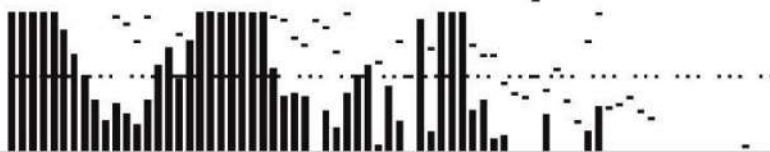
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cm/news

NEW RELEASES > COMMENT > INDUSTRY HAPPENINGS

Sonar X1 announced

New version of Cakewalk's DAW provides an innovative new interface

> Cakewalk are about to launch a major update to their PC DAW Sonar. They're tweaking the numerical nomenclature to deliver Sonar X1, the most notable new feature of which is a massive overhaul of the interface. We've seen X1 in action and can report that it's looking very promising.

The name of Sonar's new "next-generation workspace" is Skylight, and Cakewalk reckon it "moves beyond single-window design and layout clutter". It's split into four components: Inspector, Browser, Multi-Dock and Control Bar. Each can be hidden, docked, floated, collapsed or expanded to create a highly customisable workspace. The Inspector area displays all clip, track and channel data and is home to simple controls for track and clip properties, while the Browser plays host to virtual instruments, MIDI and audio effects, ReWire devices, video files, samples, patterns and more. All can be dragged from

All members of the Sonar X1 family run the new Skylight interface, but only the Producer edition includes the Pro Channel



the Browser directly into your arrangement. The Control Bar presents the usual transport options in a "sensible layout", while the Multi-Dock enables you to dock multiple windows for one-click access.

Sonar X1 also features a "completely revamped" tool system: each function is "performed with a single implement that switches automatically based on context". If you do need a specific tool, however, there's a conventional tool palette, too: the six tools work across all of X1's Edit views, again with the aim of reducing the need for tool-switching. Also, the new keyboard shortcut system sees related functions grouped on the same key - eg, quantising functions are accessed via the Q key in conjunction with Shift/Alt/Ctrl modifiers.

The big new feature sonically is Pro Channel. This is a high-end channel strip integrated directly into the Sonar X1 mixer, offering modelled compression (SSL 4000 bus-style or a UREI 1176-alike), tube saturation and a six-band EQ with Pure, Vintage and Modern modes. Having heard Pro Channel in action, we certainly wouldn't file it under 'standard built-in DAW effects'.

X1 also features FX Chains, with which you can create "complex arrangements of different effects" that can be manipulated as though they were a single entity.

Sonar X1 Producer is the full package, weighing in at \$399, while the Studio and Essential versions will set you back \$199 and \$99 respectively. Sonar X1 is out on 8 December. The full **cm** review and our in-depth guide to all the new features is coming next issue.

www.cakewalk.com



Sonar X1's Skylight interface is all about customising your workspace: windows can be arranged, docked/undocked and accessed in whatever layout you like, enabling you to build a bespoke production environment

LinPlug MorphoX

Morph-heads should rejoice as powerful new synth is born

Mixdown



Our Deputy Editor pens a touching commentary on DAW interface design

> When a major DAW update is announced, we tend to expect a featurelist rammed full of crafty audio editing functions, slick new plug-ins, and other 'exciting' features. Therefore, some might be underwhelmed with the Sonar X1 update detailed opposite, which is primarily concerned with an overhauled interface. Personally, I think this is exactly what Cakewalk needed to do with Sonar at this stage in the product's life. It's sprouted tons of terrific features over the years, but this has in turn led to a slightly fragmented interface experience that has no doubt been a barrier to newcomers. Interface design is only going to become more important, I reckon. While music

"The keyboard/mouse combo is all that most of us have ever known"

software has advanced immensely over the last ten years, the way in which we interact with it hasn't changed *that* much, at least not in any revolutionary way. Indeed, the keyboard/mouse combo is all that most of us have ever known. Alternative interaction methods - in particular multitouch displays - are finally becoming mainstream, though, and music software will surely have to adapt in the near future.

I'm not saying we'll necessarily ditch the keyboard and mouse for good but it would surely be foolish not to reap the benefits of alternative devices. For instance, multitouch essentially offers 'random access' to everything on-screen, so you could quickly select options from a toolbar whilst working on another area of the screen, as opposed to dragging a mouse pointer back and forth.

It'll be a real challenge for DAW developers to come up with sensible ways of supporting new interaction methods, and to truly make the most of it, they'll have to seriously overhaul their existing interfaces, or even come up with a whole new DAW that's designed for multitouch operation. Just adding 'multitouch support' to existing DAWs will probably only lead to a frustrating and disappointing user experience.

Of course, the whole multitouch concept might turn out to be unsuited to music production, but the company that brings out the first multitouch-focused DAW will certainly earn my respect for being brave enough to give it a go.

MorphoX aims to make magnificent patch morphing as simple as possible



> Legendary plug-in peddlers LinPlug are known for their splendid synths, but it's been quite some time since the release of their last one, SaxLab2 notwithstanding. Rectifying that situation is MorphoX, a soft synth embodying the motto "morphing made simple" and claiming to put "yet unheard expression and transformation in sound" at your fingertips.

"Morphing made simple, in real-time; drastic changes in sound, right at your mod wheel"

LinPlug

MorphoX comprises a subtractive synth with chorus, delay and a 16-step arpeggiator built in. A MorphoX patch actually consists of two patches, which you can morph smoothly between using the Morph Wheel (which is bound to your keyboard's mod wheel). This isn't simple crossfading but complete morphing of all parameters, including modulation matrix assignments.

Speaking of which, the modulation matrix features ten routings, over 20 sources and in excess of 40 destinations. On a filter tip, there are simultaneous low-, band- and high-pass modes as well as filter FM and stereo operation. For those unsure of how to kick things off, there are 400 presets to play with.

MorphoX is available in VST, AU and RTAS formats, priced \$129.

www.linplug.com

Like it loud?

Brainworx go XL with their new limiter plug-in

> Brainworx are enjoying something of a release frenzy this Autumn: hot on the heels of their stereo-enhancer **bx_shredspread** (reviewed on p104) comes the new mastering limiter **bx_xl**.

Built to "help you get your mixes loud while keeping them clear", **bx_xl** converts stereo signals into mid and side components, with the mid signal split again into high and low bands. Owing to this process, you can limit and level the three channels individually. Brainworx claim that this system leads to "fewer distortion artefacts, while keeping much more punch than any other limiter system".

Also on hand to help you get your mixes as loud as your ears can handle them is "psycho-acoustic" loudness maximisation via the per-band XL option, and a stereo master limiter on the output.



Brainworx **bx_xl** is all about giving your mixes more punch without sacrificing their clarity

Brainworx **bx_xl** is available now in VST, AU and RTAS formats and will set you back €355.

www.brainworx-music.de



Akai's MPK Mini stuffs 25 keys and eight pads into its compact frame, providing a tidy mobile solution

Little wonder

Does the best hardware come in small packages?

> If last issue's round-up of compact keyboards wasn't enough to sate your lust for tiny gadgets, you're in luck: a couple more diminutive devices have pinged up on our radar.

The first titchy piece of kit on our miniature agenda is the Vestax Pad-One. This MIDI pad controller offers 12 velocity- and pressure-sensitive pads for real-time performance. The plug-and-play Pad-One has two programmable banks, so 24 assignments can be accessed at once. It also features an XY touch pad and several additional functions, including Roll and Hold buttons.

Vestax bill the Pad-One as "tough as a brick", claiming that its aluminium chassis "will never warp or crack". That's quite a promise - we look forward to punishing the little fella with our manic finger drumming just as soon as we can. The Pad-One is class-compliant with both PC and Mac, and its release date and pricing have yet to be confirmed.

www.vestax.com

Akai Pro's MPK Mini is an "ultra-compact mini-keyboard" that weighs just over 1lb and measures less than 13" across. It appears to be an amalgamation of Akai's LPK25 and LPD8 models, comprising both a mini

keyboard and pad bank. Both of those are solid, well-liked products, which bodes well for the MPK Mini. In the words of Akai, the keyboard aims to strike "the perfect balance between portability and comprehensive software control".

Controls-wise, you're looking at 25 velocity-sensitive keys, eight back-lit, velocity-sensitive MPC-style pads, and eight assignable Q-Link knobs. Sustain, Tap-Tempo, Arpeggiator and Octave Up/Down buttons are all present and correct, while the Bank button toggles between two pad setups, giving access to a total of 16 pad assignments. That's not too shabby for such a tiny device.

The MPK Mini is a plug-and-play device that works with PC and Mac systems. Should you fancy letting your fingers loose on it, you can do so now for £70.

www.akaipro.com



Vestax reckon the Pad-One is "tough as a brick". We haven't put that claim to the test... yet

Damaged



Chris Randall would rather set fire to his fingers than rely on sample libraries

> While all respect is due to samples and the samplers that play them back, I'm a big fan of doing things procedurally, and I've never met an algorithm I didn't like. Now, I'm no Luddite, and when there's work to be done, the path of least resistance is the quickest way to get Their money in to Your bank account, where it belongs. But when it comes to making music for the sheer enjoyment of it, rather than strictly for commercial gain, then I would much rather synthesise or make sounds outright via hitting, plucking and the like.

In this modern age we live in, it really is more of an issue of semantics than anything else, since Ableton Live - or any other DAW - is really just a sampler with a Napoleon complex. But I have to draw the line somewhere. I feel that the best artistic expression results when we set limits for

"The best artistic expression results when we set limits and improvise within them"

ourselves and improvise within them, rather than looking at a limitless environment and trying to make something interesting.

In that light, I adamantly refuse to use convolution reverbs, which I feel are just a sample of a particular moment rather than a living, breathing reverb. It is a rare day that I pull out a sample library, and generally when I do it's one I made myself, of a piece of gear that I own or owned. Woe unto them that suggest a sample library of a guitar, bass or other nominally electrified or acoustic instrument to me. I'm not knocking them, mind you; I've just set a limit for myself in that regard.

As I've often said, in this column and elsewhere, it's sometimes better to do things the hard way, if only for personal satisfaction. If you're personally satisfied with your creation method then this will come through in the song, and the listener (who wouldn't know a Prophet 5 if it fell out of a tree and landed on his head, let alone a sample of the same) will know this. Job done.

Chris Randall is the co-owner of Audio Damage, Inc, and proprietor of the Analog Industries blog, on which he regularly pulls no punches.

www.audiodamage.com
www.analogindustries.com
Twitter@Chris_Randall



GarageBand '11 arrives

Apple's latest aims to make us all better musicians

GarageBand '11 contains easy tools lifted from Logic to correct errant timing



> In October, Cupertino's finest announced the new iLife suite, including GarageBand '11. GB's updated features include Groove Matching and Logic's Flex Time, both of which are intended to fix rhythm and timing issues in your recordings and "tighten the groove of your tracks". Flex Time focuses on the adjustment of specific audio events: you can move, stretch or shorten individual notes without affecting the others, with the edited sections highlighted for reference. Groove Matching looks at the bigger picture: if a few tracks are slightly out of time with each other, pick one as the Groove Track and "all other tracks [will] instantly match it". If you'd rather leave certain tracks out of the equation, you can Groove Match only selected ones, too.

Guitarists will be glad to see seven new guitar amps "modelled after the most revered amps in the world - from clean sounds to total distortion". Five new stompbox effects mean that the DAW is now home to 15 virtual pedals in total.

The new How Did I Play? tool picks up where the previous version's piano and guitar lessons left off, recording your efforts and revealing whether you were hitting the right notes. GarageBand '11 also features 22 new lessons for piano and guitar, all of which feature video demonstrations, animated instruments and synchronised notation in a bid to "make lessons fun and easy to follow".

We'll give you our verdict on all this in next issue's review. GarageBand '11 is part of the iLife '11 suite, which costs £45 and requires OS X Snow Leopard to run.

www.apple.com/uk

"With GarageBand, you have all the instruments, bandmates, and talent you need"

Apple

Trackers & Demoscene



We draw your attention to the world's first browser-based online tracker

> After years of silence, Baktery - author of Skale Tracker - has announced a brand new version of his Fasttracker II-alike. First released in 1998 under the moniker Fasttracker III, Baktery was later forced to change its name to Skale Tracker for legal reasons. This new version doesn't introduce any new features as such, but has become the world's very first online tracker. With an online sample library and tons of example tunes, you can now compose tracker music directly in your web browser. The latest Windows and

"The new version of Skale Tracker doesn't introduce new features, but it has become the world's very first online tracker"

Linux versions are freely available for download from www.skale.org.

The C64 community has just released a fitting tribute to early C64 pioneer and games musician Richard Joseph, who passed away in 2007. Joseph was responsible for producing many of our best-loved game soundtracks over the years, including *Gods*, *Magic Pockets*, *Cannon Fodder* and *Mega Lo Mania*, to name but a few. This C64 production features music from 20 artists, including RJ himself - grab it from fwd4.me/i22.

DEMO OF THE MONTH

MF Real by Kewlers

Winner of the demo competition at last month's Stream 2010 party in Tampere, Finland, *MF Real* is a high-octane, urban affair combining fantastic morphing polygons, high-volume particle systems and more swearing per minute than an episode of *The Wire* (it doesn't take a degree in vernacular to figure out what the MF stands for). Find links to this demo and more on your **cm** DVD.



More morphing polygons than, er, a polymorph

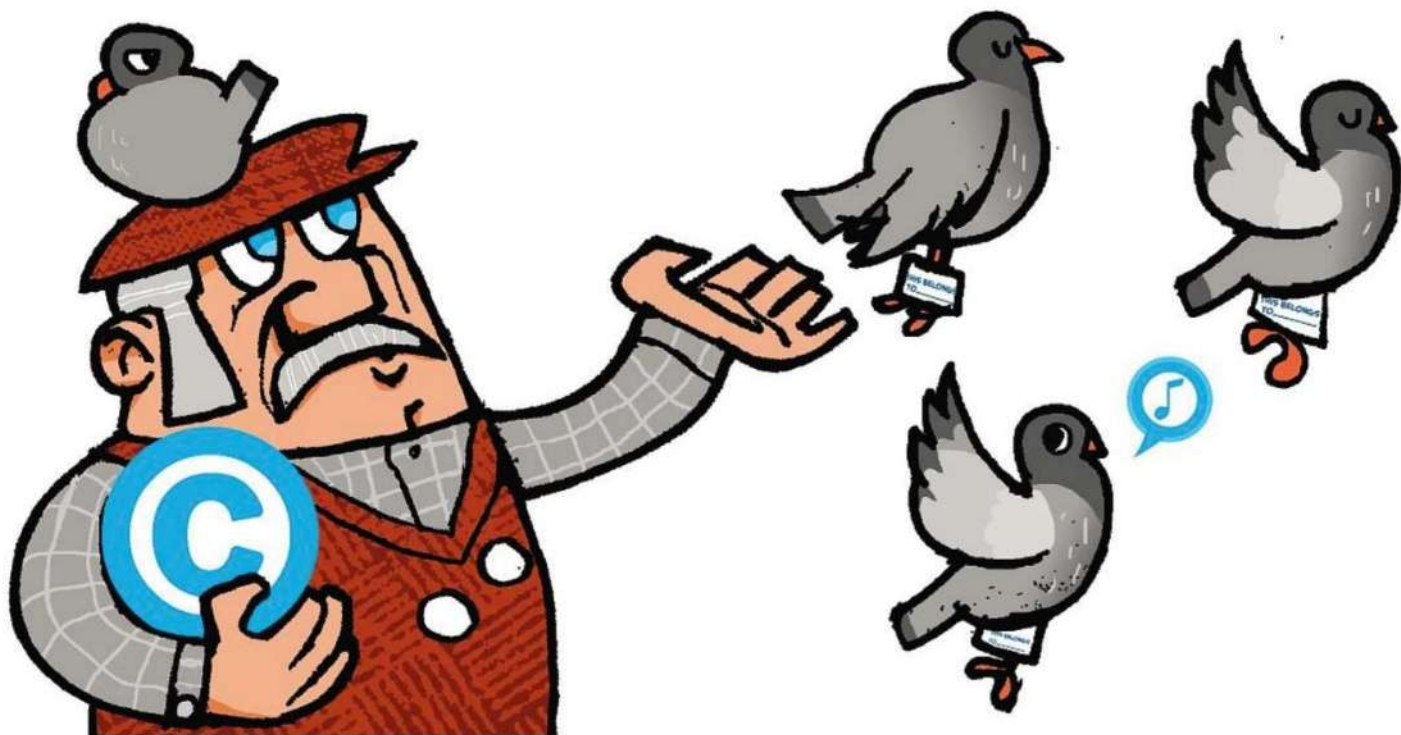
cm Freeware Special

> Want to get your hands on a superb, **cm**-recommended collection of the best free music software around? Then pick up the all-new **cm Special 44**. It features a massive collection of 99 plug-ins, plus a host of other indispensable software tools. Every single one is on the included DVD and has been hand-picked and tested by us, so you can rest assured that it's all killer and no filler! Synths, drums, unusual instruments, a huge collection of processing tools and much more - it's everything you need to make great music.

Turn to p90 for stockist details and on sale dates, or order at the site below.

www.myfavouritemagazines.co.uk





What is Creative Commons and why should I care?

> Most people have at least a vague idea of what copyright law is, but as we all know, that doesn't mean that the majority of people respect it. Anyone who downloads a piece of copyright music from the internet is breaking the law, but the practice is rife nonetheless. And do you always think through the copyright implications of sampling commercial tracks?

While some might argue that the upshot of all this is that copyright laws should be more brutally enforced, others see said laws as archaic and unenforceable. Perhaps, then, we need to find a different solution, and one such option is Creative Commons licensing.

"Some think copyright laws should be brutally enforced, others see them as archaic"

Creative Commons is a non-profit organisation based in San Francisco that, since 2001, has been working to make it easier "for people to share and build upon the work of others, consistent with the rules of copyright". That last part is important: CC-licensed works aren't 'free'; it's just that their authors don't

have 'all rights reserved'. Instead, they choose to reserve *some* of their rights.

Six of the best

There are six main CC licences, and as a content author (a musician, for example), you choose the one that reflects what you want others to be able to do with your work. At the most relaxed end of the scale, there's Attribution, which lets others "distribute, remix, tweak and build upon your work, even commercially, as long as they credit you for the original creation". The most restrictive is Attribution Non-Commercial No Derivatives, which allows others to "download your works and share them with others as long as they mention you and link back to you, but they can't change them in any way or use them commercially". The licences in between offer variations on these two extremes - details are at creativecommons.org/about/licenses.

Peter Kirn, who runs the Create Digital Music blog and is a keen advocate of CC, believes that it's a good fit for those who plan to distribute their music via the internet. "In the web age, there are many instances when your primary goal is really to share. You upload your work with the hopes that it'll get widely distributed or remixed, and you don't necessarily want people to ask permission," he says.

"The licence here is a tool for making that explicit. It doesn't mean that music has 'less value' - to me, it's about music for which the greatest value to use is sharing broadly."

Chris Randall (of Audio Damage fame) was one of the first artists to commercially release a CC-licensed album - he says he was looking for a licence that enabled him to "unambiguously allow consumers to sample and share my work, while still keeping in place the legalities necessary to ensure I got paid for the commercial uses of my songs," - but he isn't quite the CC evangelist you might expect.

"The main issue, in my opinion, is that most musicians - never mind the average blogger or consumer - don't have the faintest idea of how copyright works, or the differences between mechanical synchronisation rights and performance rights," he argues.

"A musician (or blogger or photographer) chooses the CC licence that seems to best integrate with his worldview, without having any idea of what he's giving up or getting. It just seems like the 'cool' thing to do. For the vast majority of creative output, the existing copyright laws of most Western nations are perfectly serviceable."

That a CC licence isn't always necessary is one argument, but isn't there also a danger that a lot of people with just a little knowledge of what CC is about will simply choose to act as if music licensed this way is free of all copyright restrictions rather than just some of them?

"There's an enormous danger that people assume CC means free - but then, right now, many people assume 'on the internet' means free," points out Peter Kirn. "Non-commercial use is probably the biggest problem; many publishers and bloggers don't understand that putting an image or track on a site with ads - even a personal blog - counts as commercial use. But you know, with both copyrighted and

CC works, you often see things appropriated without attribution."

Chris Randall again: "The continual repetition of the word 'free', in this context, is really irritating. There's nothing free about any of this. The value an artist assigns to their output has absolutely nothing to do with the rights he applies to it. All these licences are the creator saying, 'I probably won't sue you, unless you do something I really don't like'. People forget that, and just assume that a CC licence means, 'I won't sue you, no matter what'."

The future for any kind of copyright system, them, might appear to be bleak - but Kim does see reasons to be optimistic.

"It might seem hopeless on the internet, but then you see communities that do the work to follow the [CC] rules, to properly attribute work, to be responsible. And very often, creative people gravitate to the responsible communities and publishers, and those are the ones that have the greatest value. So, even if parts of the net remain lawless, you can build communities that value work and responsibilities."

The sound of freedom

As well as presenting a flexible set of rules under which you can release your own music (go to creativecommons.org/choose to license your own work), CC can help in the music production process, too. As we've already seen, you often have permission to remix music released under a CC licence, and you'll find Creative Commons-licensed samples on the internet, too.

Bram De Jong runs The Freesound Project (www.freesound.org), which now offers more than 100,000 CC-licensed samples. He sees Creative Commons as the only way to stop "the restrictive 'all rights reserved' madness", but is also realistic about its effectiveness.

"People are going to do whatever they want, no matter what," he accepts. "We know that people use samples from Freesound without crediting, just like we all know that you can download any album on the web. There is no way of stopping this. However - and this is the important point - you give people the tools to use your content legally. If they want to be legal they can, and they can still use your material! With 'all rights reserved', no matter what you do, you are breaking the law."

De Jong also points out that licensing under CC gives you a way of reasoning with people rather than simply threatening them: "We see a lot of proud creators coming to Freesound, saying, 'Oh, look at my cool YouTube video'. Once we say to them, 'Hey, where's the attribution?', people in general are very quick to adapt. We've even had cases of famous musicians doing it wrong, but the problems were solved very quickly and amicably."

While there are always going to be those who take your work and do what they want with it, with Creative Commons, you can at least strike a realistic balance between withholding all your rights and hanging out the white flag. As awareness of its licences and values grow (and it is growing; SoundCloud now enables you to search for CC-licensed content and clearly labels the type of CC licence in its player, for example), so will its effectiveness, encouraging artists and audiences to think more carefully about the way they distribute and consume content. **cm**

Ins & outs

THIS BEAT IS FILTATRONIC
Synth legends Moog recently released their first iPhone app, Filtatron (p107). It's a blast, but we do hope Moog are thinking what we're thinking: how incredibly sweet a plug-in version would be. Oh, mighty Moog, won't you heed our synthetic cries?

WALKMAN EJECTED
Rewind your mind back to the turn of the 80s (well, if it'll go that far) and shed a tear for the venerable Sony Walkman: the old chap is to cease production in his birthplace of Japan. It's the beginning of the end...



SOUNDCLOUD UPDATES
SoundCloud have added a bunch of cool new features of late, like a revised Dashboard; a Spotlight feature for 'sticking' your best tracks; a new uploader; and a 'sharing note'.



SQUEEZE PUT ON LIMEWIRE
Pirates the world over will be sobbing into their grog at the news that P2P file-sharing client LimeWire has been shut down. The US District Court ruled that Lime Company were responsible for copyright infringement and served them with an injunction.

WHAT'S IN STORE?
As part of their Back to the Mac event, Apple let us know that OS X Lion is on the way. Rawr! They also bigged up the impending Mac App Store for desktop apps. Will it affect musos? Hard to say, but here's some food for thought à la CDM: www.bit.ly/dqMSBH.

ROTTEN APPLE
It's not all plain-sailing in Apple land, with iPhoto '11 upgradees reportedly suffering unexpected photo deletions, necessitating a quick trip in the Time Machine. Elsewhere, reports say that an iOS bug makes it possible to dial any number on a 'locked' iPhone.

Busting jargon



Computer music terminology explained.
This month: **Filters**

Filters are found in a variety of audio devices, and as the name suggests, they work by filtering out - ie, removing - elements of the sound, rather than adding anything. By 'elements', we mean frequencies, and a filter's 'type' gives you a clue as to what it will let through.

A low-pass filter lets through frequencies that are below a certain point, which is called the cutoff frequency, or cutoff for short. It's important to understand that filters are far from precise and the so-called 'cutoff' isn't an abrupt one. Let's say that the cutoff frequency is 1kHz (1000Hz) - this doesn't mean that the sound at 999Hz will come through perfectly whereas 1001Hz will disappear altogether. It's actually a gradual slope, so frequencies up to, say, 800Hz might be unaffected, then above that, they'll start to 'roll off', becoming quieter and quieter.

The steepness of the filter slope can often be set by the user and is given in decibels per octave (dB/oct). Let's consider a 12dB/oct low-pass filter with a cutoff of 1kHz: a 2kHz frequency sent into this filter will still be

present at the output, but because it's one octave above the cutoff it'll be about 12dB quieter. Similarly, a 4kHz frequency is two octaves above 1kHz, and so will be around 24dB quieter.

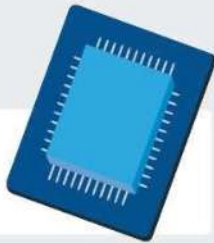
A high-pass filter works in the same way, but lets through frequencies above the cutoff. A band-pass filter, meanwhile, passes through frequencies around the cutoff, dropping off either side of it.

Many filters also have a resonance (aka 'Q') control. Resonance uses internal feedback to boost frequencies around the cutoff point, leading to a distinctive sound. Note that this only amplifies existing frequencies - filters in their basic form do not introduce any new ones.



A low-pass filter with resonance in Ableton Live. The graph shows us the filter's frequency response - note the peak around the cutoff due to the cranked resonance

System check



Weird and wonderful goings-on in the wider world of computing

BYE BYE BIOS

Waiting for a computer to get its act together and boot up is a regular annoyance for the computer musician, but boot times in the future should be much shorter thanks to new technology. The now rather long-in-the-tooth BIOS (Basic Input/Output System) – the black-and-white screen that you see when you power your PC up – could soon be usurped by the newer and quicker Unified Extensible Firmware Interface (UEFI), which could mean practically instant boot times for future machines. UEFI started life as an Intel specification but has become a general standard not tied to any particular processor architecture. It's already being used in some devices, and it looks likely that we'll see much more of it in 2011.

www.uefi.org



The crazy folk at US Defense Agency DARPA are trying to create batteries that are smaller than these ickie grains of salt!

SALTY SURPRISE

The high-tech megalomaniacs at DARPA (the US Defense Advanced Research Project Agency) are funding a project aimed at creating batteries smaller than a grain of salt, for the purpose of powering nano-scale devices. The batteries would potentially have the same power density as their traditional lithium ion equivalents, just in a much smaller area. Engineer Jane Chang from the University of California recently showed off the technology at the AVS 57th International Symposium & Exhibition in Albuquerque, which involved nano-wires being coated with lithium aluminosilicate through a process of atomic layer deposition. Though the electrodes have been developed, a fully-functioning salt-sized battery has yet to be constructed, so we're safe from brain-eating nanobots for the time being.

www.darpa.mil

GET BENT

Electronics manufacturer TDK has shown off an amazing new OLED-based display at the CEATEC conference in Chiba, Japan. The flexible film device can show images whilst being bent, and the transparent display can only be viewed from one side. This could be great for mobile devices, enabling the user to keep their activities private from those around them. More excitingly, it also suggests the awesome possibility of augmented reality glasses through which you could view all kinds of data in privacy. TDK hope to begin production of the displays within the next year, so our futuristic 'info-visor' fantasies could come to fruition sooner rather than later.

www.tdk.com

Get with the programmers

Vir2's VP of Instrument Development David Das reveals what goes into the company's releases



Vir2

David Das

cm Give us the history of Vir2.

DD Vir2 Instruments is a division of Big Fish Audio. Big Fish Audio have been creating sample libraries since 1986, when we released the first commercially available sample library under the Prosonus brand name. In 2005 we brought in a new creative team to found Vir2 Instruments. Vir2 is made up of a small team consisting of engineers, two script programmers, a product manager and some support staff. Vir2 is run from the Big Fish Audio facility in Los Angeles and utilises Big Fish Audio for administration and studio facilities.

Vir2 Instruments evolved out of the team that created VI.One, which was a really key product for users who needed a workstation library in software. Most recently, Electri6ity has been a new

benchmark in terms of complexity. Reverse-engineering the electric guitar from the physical, to the playing, to the sonic aspects took years of work, but the results have been impressive.

cm Why do you use the Kontakt engine for all of your products?

DD We chose the Kontakt Player for several reasons. It's a very stable sampler engine that is both memory- and processor-efficient. It can run standalone, or as a plug-in in any of the current DAW applications. It's well-known and widely used by many musicians, composers and sound designers. The biggest reason we chose Kontakt is because of its powerful scripting engine, which allows us to program real-time, performance-enhancing features that make our instruments more musical and enjoyable to use. Our team works closely with NI to develop new features. Some of the current features in Kontakt 4 were born out of the close partnership between our team and NI's programmers.

cm Do you have any tips on making multisampled patches?

DD That's a tricky question because every instrument is different and requires a unique approach. Some instruments require more velocity layers or round-robin takes than others; others require release layers;

"Each instrument is different and requires a unique approach"

others require multiple articulations; and then thought needs to be given to how to control them. Many instruments benefit from scripting to enhance (or even define) how they respond. All in all, the key is to deconstruct the physical instrument into its component parts, sample

them, then tell the sampler how to reassemble them in real-time, so that the end result is a realistic recreation of the original instrument. It's not a simple task!

cm What's next from Vir2?

DD Our next release is a very unique sound design instrument called Q, which is a 16GB library of cinematic content: thunder drums, winds, percussion, vocals, atmospheres, synth landscapes, and trailer-ready effects. It's specifically tailored for modern composers and producers who work in TV, film, commercials and games. There's a treasure trove of new and unique material in it.

We also have a few other very interesting instruments in the pipeline that you'll see early in 2011. And yes, by overwhelming demand from users of Electri6ity, you'll be happy to know that we are currently working on an acoustic version of Electri6ity.

Smack my pitch up

> Antares have released a new version of Auto-Tune, their legendary pitch-correction tool for vocals and solo instruments. The seventh edition of the plug-in keeps its coveted pitch-correction tools at the expected high standard: it "instantaneously detects the pitch of the input, identifies the closest pitch in a user-specific scale and controls the input pitch to match the scale pitch".

The biggest change for v7 is that you can now adjust the timing of notes as well as their pitch, with the freedom to move a selected point around in time as well as a selected range.

Also new is the second generation of Antares' Evo Voice Processing Technology, the update to which offers "even more natural pitchshifting and throat modelling

"Auto-Tune 7 brings a combination of power, superb audio quality and ease of use to rhythmic editing"

Antares



Antares Auto-Tune now has time-manipulation tools for individual notes and ranges

over a wider transposition range". You can now adjust the Throat Length independently on each individual correction object (curve, line or note).

Other improvements include several upgrades to the GUI, intended to smooth workflow, and the ability to modify the depth of natural vibrato found in the original performance.

Auto-Tune is available in RTAS, VST and AU formats and is priced at £310 (TDM, £500). Upgrades start at \$129.

www.atarestech.com

Soundware news

> New from Loopmasters this month are the next few instalments of their **DJ Mix Tools** series (£15 a pack). Covering Groove Tech, Dubstep, Trance, Tech House, Builds & Breakdowns and Mix FX, each DJ-focused bundle contains four tracks broken down into royalty-free loop, stem and FX elements, ready to drop into your sets.

In a very different vein is Dubmatix's **Automatic Reggae** (£35), which contains 1.4GB of samples, loops, single-hits and patches to provide your tracks with "sultry melodies overridden by a bass-heavy groove."

www.loopmasters.com



If you want to give your productions a marching band feel, look no further than Garritan **Concert & Marching Band 2** (£99). It's stuffed with trumpets, cornets, tubas, trombones, mellophones, euphoniums, baritone, sousaphones, clarinets, piccolos, flutes, saxophones, percussion and more, as well as ensemble presets - enough to satisfy even the biggest of bands. Parp parp!

www.timespace.com

Sounds/To/ Sample's **Darkroom Techno** (£13) is your key to making "deep, relentless, afterhours techno". It contains 449

24-bit loops and one-shots, including synthetic drum hits and kicks, basslines, FX and drum loops "built for mind-bending early morning dancefloor adventures".

Get glitchy with Beatluxe's **Glitch House** (£13): it combines "groovy background house workouts and pumping techno rhythms with tweaked and twisted elements". The pack comprises 150 24-bit construction loops, ranging from stripped-down drum and bass loops to bleepy sonic artefacts.

If you need some vocals for your glitch tracks, check out Hy2rogen's **Glitch Tech Vocals** (£13): this promises 270MB of one-word shots and full phrases to provide that crucial "infectious vocal element".

Want energetic synths that stand out? Digg Audio **Big Ass Synths** (£20) has got your back with 264 multiformat samples arranged into 25 construction kits of "naughty" hooks aimed squarely at hip-hop, R&B and pop.

www.soundstosample.com



News in brief

RIDING THE WAVES

Waves have released a new compressor based on the venerable C4 plug-in. The C6 multiband compressor takes "the tried and tested functions" of the company's older effect and adds two additional bands plus a sidechain feature for good measure. Waves



claim it's "all the multiband compression and dynamic equalisation you need" - with six bands of the stuff, they could be right. It's available in native and TDM versions for \$400 and \$800 respectively. www.waves.com

SNAP-HAPPY

Mac-wielders may be interested to hear about a tool that aims to "open up" sound files in OS X. Audio Ease's **Snapper 2** displays a waveform whenever you click a sound file and allows you to manipulate it from within Finder. You can, for example, select part of a waveform and drag it either into another Finder window to create a new sound file, or into your DAW. You can also extract audio from a video file, normalise a clip, split it into left/right files, convert formats, and more. Grab it for \$79.

www.audioease.com

A FRESH START

Plug-in developers OtiumFX have taken the plunge and changed their name to Tone Projects with immediate effect, unveiling a new website and issuing v1.5 updates for all of their plug-ins in the process. The team reckon reassure us that they'll "continue with the same philosophy and carry over our tradition for making finely tuned plug-ins". Their previous releases are "lo-fi workstation" Sonitex, the beat-focused dynamic processor Compadre, and freeware classic Basslane.

www.toneprojects.com

COMPETITION WINNERS

In cm157, we teamed up with bad-boys Audio Damage to offer two wicked prize bundles, each containing every single AD plug-in. We can reveal that the lucky winners are Jacqueline Petty and Jennifer Hamilton - congrats, ladies!

If that's got you in the mood for winning a load of superb audio software, then turn to p91 to find out how you could win every Vengeance-Sound plug-in!



Based on the Reactable interactive instrument, Reactable mobile is perfectly suited to the iPad

App watch

New music-making apps for iPhone, iPod touch and iPad

> If you've never seen the Reactable interactive instrument in action, put this down for a sec and check it out on YouTube. It enables users to make music by moving blocks around a reactive table-style display. Now, the team behind it, Reactable Systems, have created the Reactable mobile app. It's billed as combining the "concepts of modular synthesis, sampling, digital audio effects and DJing with modern human/computer interaction and multitouch tech".

Reactable mobile contains a set of generator objects for you to build on: synths, oscillators, loop players and an input object for your iDevice's mic. To modify generated sounds, there's a wide range of effects, including wave shapers, delays, modulators and filters. On hand to further embellish your sonic chaos are controller objects that modify other objects' parameters, as well as global objects for modifying tempo, volume and harmony settings for the whole table.

Reactable mobile is available for iPhone and iPad at £5.99 – a snip compared to the physical instrument's €9700 price tag!

www.reactable.com

A more conventional music app is multitrack app studio.HD. Manufacturer Sound Trends



studio.HD aims to capture your musical inspiration before it vanishes, wherever you happen to be

say the idea behind it is to "get your ideas down fast and start working with them anywhere". The app offers eight multitrack tracks and over 900 instrument loops, including drums, guitars and keys. You can import your own loops, buy additional loop packs and also record from your iPad's mic input. Clever editing functions designed to make the most of the iPad's screen, and faders and FX polish things off. You can export your mix when you're done, too. Studio.HD is available for iPad for £4.99.

www.soundtrends.com



Game overture

The latest goings-on in the world of videogame music production

> Ever wanted to know more about the amazing musicians who lend their talents to music game franchises like *Guitar Hero*? Well, if you've been impressed with that game in particular, you might want to check out the debut solo album from guitar guru Steve Ouimette: his top-notch covers of tracks like *The Devil Went Down to Georgia* from *Guitar Hero III* should give you an idea of his skills.

The album *EPIC* showcases Steve's diverse playing style, bringing together cinematic stylings with massively over-the-top guitars. What else would you expect from a man known the world over for his sterling version of Harold Faltermayer's *Top Gun Anthem*?

The album is available now from Sumthing Else Music Works, with digital downloads available on Sumthing Digital (www.sumthingdigital.com), Amazon

"What else would you expect from a man who's known the world over for his sterling version of *Top Gun Anthem*?"

MP3 and iTunes. Have a listen for yourself – if you dare!

If you haven't heard of Team Meat's bizarro indie platformer *Super Meat Boy*, then you've missed out on a treat. The best way to introduce yourself to this loopy action-fest is probably through the team's new trailer. It's a brilliant pastiche of 90s game advertising, and it features some of the most high-energy chiptune-esque breakcore that we've heard in quite a while. You can even download the MP3 for free via a link in the description of the video, which you can watch online at www.bit.ly/dh4yX4: prepare to be bouncing in your seat!



If you like energetic, one-of-a-kind games with excellent sound tracks, you need to see Team Meat's new platformer *Super Meat Boy*



Drive time

Max Cooper

The techno producer and DJ reveals his top software for creating mathematical minimal grooves

LIINE GRIID

"The thing I most like about Griid is how smooth the performance experience is. There's a lot of attention to detail, and that sets it apart from other Ableton Live control apps. The smooth inertia scrolling and the overview so I can see my whole set in one glance are killer. The fact I can launch two, three or four clips with one effortless swipe means that it takes up less of my mental resources and lets me focus on the music."

EXPANSION DCAM SYNTH SQUAD

"The simple method of assigning one variable to modulate another on this set of machines is the best I've come across, and gives an intuitive flow to the sound design process. The central visualisation of the envelopes/waves and modulation occurring also helps massively in making the synths easy to use, as you can link the visual and audible changes as you play with it, and quickly gain a feel for how the synth works."

CYCLING '74 MAX FOR LIVE

"Max for Live provides a framework for creating instruments and effects in Ableton, as well as for modifying anything that's already there. I'm not an expert in Max/MSP programming, but I love the potential for almost limitless artistic freedom it provides."

OHM FORCE PREDATOHM

"When I was first starting out and was desperately looking for something to turn my synths into growling monsters, Predatohm came to the rescue, and has stayed firmly around ever since. It's really easy to use and has a useful multiband distortion function. One oddity I love is the Oms setting on the stereo widening function,

"I love the potential for almost limitless artistic freedom Max provides"

which seems to psycho-acoustically place the sound right inside your head!"

ABLETON OPERATOR

"Operator is my most frequently used synth for basslines, leads and drums. It's great for room-filling sounds. The quick and simple sound design process means that sounds can be constructed to fit well within the context of a track, and because it's an FM synth, higher frequencies can be introduced in order to fill the mix just right - maximising the warmth and loudness of the piece, without going too electro-banger."

Max Cooper's new EP Series is available from November on Traum.
www.maxcooper.net

COMPUTER music 10 years back

Early 2001 heralded the arrival of Reason and saw us letting our childish sides out...

> Issue 29 had us getting our hands on the first release of Reason. With breath so bated that we'd been writing a *Reason watch* column for months - even when the news consisted only of the confirmation of mouse pointer shapes - the team were stoked to finally try the DAW. We liked what we saw, calling it "beautifully conceived, lovingly crafted and expertly implemented". We're not sure our description of the GUI as "a damn fine-looking beast" stands the test of time, though; this was the age of Windows ME, after all.

"Our round-up of MIDI controllers had clearly been amusing the team for weeks"

Our round-up of MIDI controllers had clearly been amusing the team for weeks: the cover screamed "Knob gags!", while the contents page urged readers to "Get your hands on a hard one." The feature itself was devoid of knob jokes, though - perhaps they were too hard to slip in.

Finally, our wish list for MIDI interfaces provided a quaint view of our hopes for the future. "Wouldn't it be nice if we lived in a harmonious MIDI world, where one song could be engineered from start to finish with full, embedded control of every bit of hardware in your studio? Is this just a pipe dream?" we asked wistfully. As it turned out, yes - but only because things turned in a different direction, and now your computer *is* your entire studio.



We finally got to play with the first ever release of Reason - but did we like it? Of course we did!

Zen

If you're never sure what presets your plug-ins have up their sleeves, Big Tick's innovative patch manager can help you get to the bottom of things

Developer Big Tick
Format PC VST
Web www.bigtickaudio.com

France's Big Tick have been responsible for some cult instruments, including Rhino and Cheeze Machine. Their latest venture isn't an instrument or an effect, but a patch management tool that loads as a VSTi and enables users to tag and use presets across a range of plug-ins. We asked Big Tick big cheese Patrice Tarabbia all about it.

What inspired this departure from Big Tick's usual output?

"The idea for Zen came about one year ago. I was considering quitting my job in corporate IT management and going full-time with my first love: music software development. Even though I already had a good base of loyal users from my previous virtual instruments, I knew I'd have to come up with something innovative – something with the potential to improve the music-making workflow. So I wrote two lists. The first one enumerated software or websites I considered inspiring, whose innovative concepts could maybe translate into useful music apps. The second one listed the shortcomings of current music apps. After some time, these thoughts were refined into a basic idea: no DAW offers anything to manage the hundreds of plug-ins that most people own – and a fortiori, nothing to manage the hundreds of thousands of presets either. In addition, they hardly do anything useful

"Whenever you need a new track, add Zen as the instrument and use it to find the perfect sound: you might discover gems"

with the now ubiquitous network connection. There had to be a need for a universal presets management system combining the UI simplicity of Ableton Live, the online social interactions of Stack Overflow, Last.fm or Facebook, and a browsing/purchasing system similar to iTunes. This was the basis for Zen."



Find presets you might not know about with Zen's search tools

Did Zen require cooperation from other software developers?

"Yes, in several ways: first I needed to make as many plug-in instruments compatible as possible. Most independent developers have been really open and supportive, and I'd like to thank LinPlug, U-he, Wusik, ConcreteFX, DiscoDSP, Tone2, LennardDigital, ProgressAudio, Image-Line, Schwa, SonicProjects, Humanoid Sound System and VAZ Synths for helping with suggestions, NFR versions and debugging. I also needed to make sure I wasn't getting myself into legal issues by sharing factory presets for commercial synths. The presets are only useful for people who have purchased the synths anyway, but still some companies required a little convincing."

Do you have any tips for Zen users?

"Integrate Zen into your recording workflow. Whenever you need a new track, add Zen as the instrument for it and use it to find the perfect sound. You might discover gems in plug-ins you don't go for so often. You can search for presets

that don't have a given tag by using Shift+click on a tag. There is no way to remove a preset so it never appears in the search results, but if there are presets you dislike so much that you don't want to see them, you can create a personal tag called 'crap', tag these presets with it and use the previous tip to see only presets that are 'not crap'. Finally, take some time to tag presets! The more you tag, the better the database is for everyone."

How do you plan to improve it in the future?

"More stability! Users will adopt Zen if it is rock solid, and this is something that needs to be improved. I also plan to implement social features like most popular presets, collaborative preset design and user groups, plus commercial preset support, support for present assets and support for integrating Zen directly into hosts."

Thanks, Patrice. We look forward to seeing more of Zen. PC users can find the VST on the **cm** DVD, and Mac users should look out for OS X AU and VST versions, which are coming soon. **cm**

+phasor

Spectral shaping specialists SoundHack have released +phasor, a flexible phase shifting effect with 2-8 filter stages and base frequency control, as well as LFO, timing lock and phase controls. +phasor is currently Mac VST only, but plans are afoot to port it to AU, RTAS and VST formats for Mac and Windows – keep your eye on Soundhack's site for news. www.soundhack.com

TAL-NoiseMaker

Togu Audio Line have unexpectedly added some cool new features to their superb TAL-NoiseMaker synth. The latest version includes a graphical envelope editor with several destinations, a new resizable tab UI and vintage noise control, alongside other new functions. If you want to check it out for yourself (which you do), it's on the **cm** DVD. kunz.corrupt.ch

BattleComp

Veterna Buzz Machine developer JoaCHIP have released a new free PC VST compressor in the shape of BattleComp, which includes a sidechain high-pass filter and EQ, tube emulation and a soft-clipping circuit. The plug-in itself and a large number of demo audio files can be downloaded from the site. www.robotplanet.dk/audio/vst_battlecomp_vintage/

SonEQ

SonEQ from Sonimus is a digital EQ combining elements of several pieces of vintage gear in a single, handy plug-in. It comprises three frequency bands and a preamp section, and includes high and low-pass filter, and a bass-booster at the pre-amp stage for giving sounds low-end weight. It's available in VST format for PC, and AU and VST formats for Mac. www.sonimus.com

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Zoom H1 Bundle

Mobile digital audio recorder

24bit/96kHz linear PCM, real X-Y mic arrangement, built-in monitor speaker, auto recording level, lo-cut filter, timestamp, track mark function, A/D and D/A conversion, 128 times oversampling, recording media: micro SD memory card and micro SDHC memory card (up to 16GB), USB 2.0, incl. 2GB micro SD card. Bundle incl. the t.bone HP-66 headphone and 2m USB cable.

€ 88.-

order code 253718

Tascam DR-07

Mobile digital audio recorder

Record and play mp3 (up to 320kbps) and WAV files (up to 24bit), 44.1/48kHz, built-in stereo mic, analogue automatic level input control, analog limiter, stereo in for external mic, stereo line input, headphone/line out (stereo mini-jack), USB 2.0, powered via AA alkaline or NiMH batteries, includes 2GB SD Card and windshield.

€ 139.-

order code 223287

M-Audio

MicroTrack II

Mobile 24bit/96kHz recorder Records WAV, BWF and MP3 to Compact Flash cards or Micro Drives, optimized gain adjustment, 48V phantom power, analog limiter, USB 2.0 connection, balanced line ins, built-in high-fidelity microphone preamps, S/PDIF input, lithium-ion battery (recharge via USB).

€ 155.-

order code 184184

Zoom H2 4GB Bundle

Mobile recorder

24bit/96kHz, USB interface, record 360° sound as 2 channel data or 4 channel data simultaneously, mic/line input, headphone output, perfect for interviews, podcasts, meetings and live recording, incl. USB cable, stand, power supply, windshield and 1GB SD card. Bundle includes additional 4GB SD card.

€ 175.-

order code 203048

Olympus LS-5

Portable digital recorder

24bit/96kHz, WAV, WMA, MP3 and PCM recording, built-in microphone, large back-lit display, 2GB internal memory, SD/SDHC card extension slot, internal stereo speaker, USB 2.0 connection, optional remote control, dimensions WHD: 4,8 x 13,15 x 2,24cm, weight: 165g (incl. battery).

€ 179.-

order code 250006

Eidiol R-09 HR 4GB SD Card Bundle

24bit/96kHz mp3/WAV recorder

Up to 320kbps mp3 playback and recording, recording on SD or SDHC card (up to 8GB), integrated stereo condenser mic, OLED display, built-in preview speaker, incl. wireless remote control with split function, USB 2.0, stereo mic in, stereo line in, incl. power supply, 512MB SD card, USB cable, Cakewalk Pyro AudioCreator LE, wireless remote controller and small table mounting plate. Bundle incl. 4GB SD card.

€ 279.-

o. code 207377

Sony PCM-M10

Portable 24bit/96kHz audio recorder

Built-in stereo microphone, internal speaker, cross-memory recording, internal 4GB flash memory + MicroSD/memory stick memory slot, limiter and low-cut filter, 5s. pre-record buffer, manual or automatic recording level control, USB-2.0 connection, includes power supply, SoundForge Audio Studio LE, cable remote, 2 AA batteries and cable, finish: grey.

€ 325.-

o. code 238886

Zoom H4 N

Wizoo Bundle

24bit/96kHz digital recorder Perfect for interviews, podcasts, meetings and live recordings. 2 built-in stereo microphones, requires 24V or 48V phantom power, USB port. Includes windshield, USB cable, cover and Cubase LE4. Bundle includes 4GB SD card, Superlux HD681 stereo headphone and Wizoo Publishing, 'Mobile Recording' Thomann Special Edition by Kai Schwirzke.

€ 339.-

o. code 232016

Zoom R16 Bundle

USB audio interface and DAW controller

16-track playback and 8-tracks recording, 24bit/48kHz PCM recording, internal stereo condenser mic, 8 mic ins, 2 outs, 8 balanced XLR / 1/4" TRS connections, internal effects, Mackle Control emulation via USB, works as USB storage, support for Win XP/Vista and Mac OS, incl. Steinberg Cubase LE4 and 1GB SD card. Bundle incl. the t.bone MSL66 stereo headphones and 4GB SD card.

€ 355.-

order code 245233

Zoom R24 Bundle

Digital recorder

24-track playback and 8-track recording simultaneous, 24bit/96kHz, 8 ins and 2 outs, built-in stereo mic, compressor/EO, tuner and metronome, support SDHC cards up to 32GB, USB 2.0, 8x XLR-7/8" Input Mic/Line/Hi-Z, headphone out, incl. Steinberg Cubase LE, 1GB SD card, USB Stick (2GB with Drum Loop Library), power supply and cable. Bundle incl. the t.bone SC400 studio microphone, the t.bone HD-800 stereo headphones and cable.

€ 515.-

o. code 253669

the t.mix Mix 502

5-channel mixer

1x mic in with 2-band EQ, 2x stereo ins, 2-track I/O, 1/4" balanced jack out. Dimensions: 13,8 x 22 x 2,8-4,5cm. Weight: 0,8kg

€ 31.-

order code 207200

the t.mix Mix 802

2x mic ins with 3-band EQ, 2x stereo ins, 2-track I/O. Dimensions: 19,3 x 26,8 x 2,8-4,5cm. Weight: 1,2kg

€ 46.-

order code 207202

Alesis Multimix 4 USB

4-channel mixer with digital output

16bit, 44,1kHz signal on USB, 4 line level ins, 2 XLR ins with gains and switchable 48V phantom power, high impedance guitar input, 2 channel EQ on mic ins, multicolor LED metering, main and headphone outs with independent level controls, incl. power supply, dimensions WHD: 15,2 x 19,6 x 5,5cm, weight: 0,6kg.

€ 85.-

order code 235244

the t.mix 1832 FX

Rack mixer

18 channels, 6 microphone inputs, 4 stereo inputs, built-in USB/MP3 player, 24bit DSP effects unit with 256 programs, 9-band EQ, 3-band EQ mid parametric mids (channels 1-4), 4-band EQ (channels 5-12), 2-track I/O, 4 aux outputs, dimensions: 41,5 x 40 x 11,5cm, weight: 6,7kg.

€ 245.-

order code 242617

Allen & Heath

ZED-10FX

Mixer 4 mic/line ins, 2 dual stereo ins, DuoPre™ preamp, 2 aux sends, USB send/return, internal 24bit FX processor, HP-filter, stereo return, 2-track return, main insert, internal power supply, weight: 3,3kg.

€ 275.-

o. code 246916

Allen & Heath ZED-10 without FX processor. € 189.-

order code 246915

Soundcraft EFX 8

8-channel mixing desk

8x mono inputs, 2x stereo inputs, inserts on all channels, 1x FX send, 1x aux send (pre/post), 48V phantom power, solo/mute switch, integrated Lexicon FX with 32 presets, peak LEDs on all channels, integrated power supply. Dimensions: 33 x 9,1 x 36,2cm. Weight: 4,6kg. Optional rackmount available.

€ 285.-

order code 118879

Behringer Xenyx X2442 USB

24-channel mixer with 60mm faders

10 mic ins with 48V phantom power, 75Hz low cut, compressor, 24bit multi FX with 16 presets, internal USB sound card, 4 stereo ins, 3-band EQ with parametric mids, 4 aux (pre/post), insert, Peak LED and mute each channel, 2-track I/O, XLR main out, 4 sub groups, internal power supply, includes 19" rack kit and energyXT2.5 compact music production software.

€ 299.-

o. code 242913

Yamaha MG 166cx

16 channel mixer

8x mono mic/line ins (XLR/jack), 2x mic/line ins (XLR/stereo jack), 2x stereo line ins (jack), 3x aux sends, 8x inserts, 3-band EQ with parametric mids, internal compressors per mic channel, SPX FX processor with 16 programs, 18dB high pass filter, high-end mic preamps, 48V phantom power. Dimensions: 47,8 x 10,2 x 48,9cm. Weight: 5,5kg

€ 358.-

order code 115511

Yamaha MG 166cx

16 channel mixer

8x mono mic/line ins (XLR/jack), 2x mic/line ins (XLR/stereo jack), 2x stereo line ins (jack), 3x aux sends, 8x inserts, 3-band EQ with parametric mids, internal compressors per mic channel, SPX FX processor with 16 programs, 18dB high pass filter, high-end mic preamps, 48V phantom power. Dimensions: 47,8 x 10,2 x 48,9cm. Weight: 5,5kg

€ 358.-

order code 115511

Alesis MultiMix 16

FireWire

16ch. mixer with FireWire interface 8x mic/line ins, 4x balanced stereo line ins, 3-band EQ per channel, 2x aux send/returns, 100x 28bit FX programs, headphone out, FireWire interface: 18 ins, 2 outs, 24bit/48kHz, ASIO/WDM drivers for Win XP SP2, Core Audio drivers for Mac OS X, includes Cubase LE.

€ 389.-

order code 186079

Behringer SX2442FX

24-channel mixing desk

16x XLR mic ins, Xenyx mic preamps, 3-band EQ, 2x FX processors with 100 presets, stereo 9-band graphic EQ, FBD feedback detection system, 4x subgroups, 4x auxes per channel, internal power supply.

€ 428.-

order code 217454

SX3242FX 32 channels. order code 217456

Yamaha MG 32/14FX

32-channel live mixer

24x mic ins, 4x stereo ins, 2x SPX-quality FX processors, 7-band master EQ, 2x aux sends, 2x stereo returns, 24x inserts, 3-band EQ with parametric mids, 18dB low cut filter, 48V phantom power, internal power supply. Dimensions: 102,7 x 14 x 55,1cm. Weight: 20kg

€ 1066.-

order code 161994

Mackie Onyx 32.4

Live mixer

28x mono ins, 4x subgroups, 3x outs, 4-band EQ with fully parametric mids and fixed lo/h, 30dB pad, low cut, 6x aux sends, LED and insert per channel, 6x2 matrix, internal compressor/limiter, D-Sub 25 direct out, talkback, phones out, main insert, internal power supply. Weight: 21,8kg

€ 1125.-

order code 194635

Phonic Summit

Digital mixer

16 channels, 24bit/96kHz, phantom power, 17x 100mm motor fader, touch screen, 26 semi-parametric 4-band-EQ for all inputs, AES/EBU I/O, 8 multi-function outs, 2 effect processors, 26 dynamic processors, SD card, optional Expansion Card compatible with Win XP/Vista/7 and Mac OS X (incl. Snow Leopard), ext. power supply, weight: 10,5kg, incl. 19" rackmounts.

€ 1777.-

order code 246336

Presonus

Studiolive 16.4.2

16-channel digital mixer Built-in 32x18 FireWire audio interface, 'Fat-Channel' processing with 4-band EQ, compressors, limiters and gates. 16x inputs, 6x auxiliary mixes, 4x subgroups, 16x Class A XMAX mic preamps, 44,1kHz & 48kHz sample rate, 2x master DSP FX, talkback. Dimensions: 43,7 x 17,5 x 56,8cm (WxHxD).

€ 2169.-

order code 225534

Mackie DXB200

Refurbished Bundle

Digital open architecture mixing desk 72ch/96kHz (36ch/192kHz), 8 busses, 2 touch screens, 25 motorised faders, 4-band EQ, compressors and gates, VST plug-in compatible, 2 PCI slots, flexible I/O, 9 slots for optional I/O cards (not included in basic config), Mackie Control Universal mode for DAW control. Bundle incl. Xbus AES card, Xbus digital card and 2x Xbus line card. B-Stock with full warranty!

€ 3666.-

order code 251867

www.thomann.de

Telephone Hotline: +49 9546 9223-55

Fax: +49 9546 9223-24

Miditech Midistart Music 25

MIDI master keyboard

25 touch sensitive keys, joystick for pitchbend and modulation, octave up/down, MIDI output, USB connection, includes USB cable and Magix SampleRate SE, dimensions WHD: 38 x 8 x 24cm, weight: 2.3kg.



order code 230804

€55.-
€49.-

Miditech Midistart 3 USB

MIDI keyboard

49 full-size touch sensitive keys, pitch bend and modulation wheels, USB port for direct connection to Mac/PC, MIDI out, includes USB cable and Magix SampleRate SE PC software. Finish: Silver



order code 116317

€65.-
€58.-

Thomann SP-5500

Stage piano

88 hammer action keys, 559 sounds, 203 styles, 3 user styles, 100 songs, 64-note polyphony, accompaniment control (start/stop, sync start/stop, fill-in A/B, fade), dual mode, split mode, DSP, transpose function, lesson function, pitch bend, headphone out, stereo aux I/O, MIDI I/O, USB port. Finish: Silver Grey



order code 154087

Thomann SPWS-5500

Wooden stand for SP-5500

order code 204071

€388.-
€329.-
€46.-
€41.-

Korg SP-170

Stage piano

88 natural weighted hammer action keys, 2x9W built-in speakers, 10 sounds, effects: reverb and chorus, key transpose and pitch control, 2 line/headphone outs, MIDI out, dimensions: 131 x 32.5 x 13.3cm, weight: 12.1kg.



Black

order code 242228

White

order code 242231

€499.-
€446.-
€499.-
€446.-

Yamaha P155

Stage Piano

88 graded hammer action keys, pure CFIII piano voice, 17 voices, polyphony 128 voices, dual and split mode, metronome, 2 headphone outs, 2x 12W, includes note stand, FC-4 pedal and PA301 power supply, weight: 18.6kg.



Black & ebony

order code 223258

Black & mahogany

order code 223244

€1135.-
€1015.-

Kawai ES 6

Stage piano

88 keys, 32 sounds, 192-voice polyphony, 100 rhythms, transpose, infonation, string response, brilliance, dual/split mode, 2-track recorder, metronome, 2 headphone outputs, MIDI I/O, line I/O, USB-host. Includes F10H sustain pedal, power supply and music rest.



Finish: Black

order code 218136

Finish: Silver

order code 218137

€1150.-
€1028.-

Roland FP-4

Compact digital piano

Speaker system, 88 PHA Alpha II keys, 128 voices, 333 sounds and 9 drum sets, GM2 system, 3-track recorder, 1/4" jack I/O, 2x 1/4" TRS stereo headphone outputs, USB, MIDI I/O, foot pedal inputs (damper, soft, sostenuto), DC in (9V AC power supply). Dimensions: 134.2 x 30.5 x 13.5cm (WxDxH). Weight: 15.3kg. Finish: Black



order code 112451

€1169.-
€1045.-

Clavia Nord Electro III

Stage keyboard

Based on authentic emulations of Hammond B3 and electric pianos, Nord sample library support, flash memory for 256MB samples and 126 programs, new effects and amp emulations, compressor and EQ.



61 waterfall keys

order code 220551

73 waterfall keys

order code 220582

€1577.-
€1410.-
€1725.-
€1542.-

Clavia Nord Stage 88 EX

Stage piano

88 weighted keys with aftertouch, 3 split zones, organ section with Hammond B3, Vox Continental and Farfisa organ, piano section with Grand Piano, Rhodes, Wuritzer, Hohner Clavinet and many more, large effect FX, 256 MB memory for piano samples.



order code 219785

€2959.-
€2645.-

Rhodes Mark 7 73 S

Black Road Touch

Analogue electric piano
73 keys, an extremely responsive mechanical action with the most professional touch, includes stand and pedal, dimensions WHD: 118.1 x 20.9 x 58.4cm, weight: 43.1kg, finish: Black Road Touch.



order code 244334

€2999.-
€2681.-

Doepfer Dark Energy DVD Bundle

Expander

Monophonic stand-alone analog synthesizer with USB and MIDI interface, USB, MIDI input, 4 CV outputs, 1 gate output, external power supply, dimensions WHD: 18.5 x 14.5 x 6.5cm, weight: 1.2kg. Bundle including german video tutorial DVD "Hands on Synth Sound".



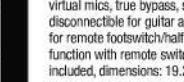
order code 245106

€375.-
€335.-

Neo Instruments Ventilator

Rotary Cabinet Simulation

Reproduction of a Leslie 122 Roto effect, rotor speed adjustable, drive section for real tube feeling, variable mic position of the virtual mics, true bypass, speaker simulation disconnectable for guitar amp, connection for remote footswitch/halfmoon switch, stop function with remote switch, power supply included, dimensions: 19.2 x 15.3 x 5.5cm, weight: 1.1kg.



o. code 237621

€377.-
€337.-

Akai Miniak

Performance and production synthesizer

8 voices with 3 oscillators, up to 8 multi-timbral parts with stereo effects and 40-band vocoder, 2 multi-mode filters, 3 envelope generators, 2 LFOs, sample and hold, tracking, dynamic real-time and step sequencers, arpeggiator, and drum machine/rhythm, sequencer, 37-key synth-action keyboard with velocity sensitivity, includes VPM1 gooseneck microphone and power supply.



order code 228545

€295.-
€264.-

Yamaha Motif XS 7

88-key workstation

355MB Wave ROM, 128 voices, presets: 1024 normal voices + 64 drum kits, colour display, 4-part arpeggiator, 4 layers or splits in performance mode, sequencer, internal sampler, USB, Ethernet



order code 111124

€2099.-
€1877.-

Hammond XK-3C

Organ with 73 keys

11 presets x 12 banks + cancel, 2 sets, digital Leslie and Vibrato scanner, real dual tube amp for pre amplification and Leslie overdrive, Vase III sound generator, 10 reverb modes, MIDI in/out, thru, line out, foot switch/Leslie switch, expression pedal, dimensions LWH: 119 x 40 x 12cm. Weight: 18.5kg, finish: walnut.



order code 138158

€2444.-
€2185.-

Novation Launchpad

Ableton Live/MIDI controller

Bi-directional communication, 64-button grid with colour-synched status feedback, scene control switchable to control volume, sends, muting and more, up to 6 units may be operated simultaneously, USB bus-powered, large rubber grips, automap-enabled, includes Ableton Live 8 Launchpad version. Weight: 0.76kg



order code 236641

€175.-
€156.-

Native Instruments Traktor Kontrol X1

USB DJ controller bag bundle

Instant recognition by Traktor, software controlled backlit buttons, fits perfectly alongside a standard club mixer, super-intuitive loop and cue control section, 8 knobs and 8 buttons, push encoders, expandable (connect two X1s to control four decks), incl. Traktor LE, Kore2 Player (incl. selection library) and MIDI templates for controlling other DJ and performance software. Bundle incl. X1 Bag



o. code 243915

€199.-
€178.-

Akai APC 40

Ableton Live DAW controller

USB control-and-play, 40 Triggers, 16 rotary control knobs with LED, 8 channel faders, 1 bus fader and 1 crossfader, 2 footswitch connections for tap tempo, tempo nudge, record enable, solo/cue function, for PC/Mac, includes Ableton Live Lite Akai APC40 Edition.



order code 223229

€379.-
€339.-

Native Instruments Maschine

Groove production studio

Pad controller, 16 dynamic pads with aftertouch, 2 backlit displays, 11 rotary knobs, 41 buttons, USB-powered, MIDI I/O, pattern-based sequencer with 64 patterns per group, step sequence programming and realtime recording, drum grid and piano roll editors, sampler, > 20 built-in effects, > 5GB sounds, PC/Mac.



order code 223060

€499.-
€446.-

Euphonix MC Control V2

DAW controller

Touch-sensitive knobs, motorised faders, touchscreen display and OLED, supports HUI and Mackie Control compatible DAW software for Mac OS X. Dimensions: 50 x 23.5 x 3cm. Weight: 2.5kg.



order code 248964

€1399.-
€1251.-

ESI DuaFire

24bit/96kHz FireWire audio interface

2x ins with level controls (1/4" jack), mic preamps with phantom power (XLR), 2x hi-Z ins, 4x analogue outs, direct input monitoring with level control, headphone out, bus powered or via separate power supply. Supports DirectWIRE 3.0, MME, ASIO 2.0, GSIF 2.0.



order code 206255

€95.-
€85.-

M-Audio Fast Track MKII

USB audio interface

24bit/48kHz, XLR microphone input with 48V phantom power, 1/4" stereo input with gain control, 1/4" stereo headphone output, RCA stereo speaker outputs, plug-and-play USB connection (USB 2.0 compatible), including Pro Tools M-Powered Essential.



order code 237376

€118.-
€105.-

M-Audio Fast Track Pro

USB audio interface

4x4 24bit/44.1kHz, stereo in up to 24bit/96kHz, USB powered, 2x mic/instrument preamps with switchable phantom power, 2x inserts, 2x balanced line outs, 4x additional RCA outs, S/PDIF coaxial I/O, S/PDIF out (AC-3/DTS surround sound compatible), MIDI I/O, compatible with both Mac and PC.



order code 184360

€155.-
€139.-

ESI ESP1010e

24bit/96kHz PCIe express audio interface

PCIe card with external 19" interface, 8 analog ins (2 with mic preamp and 2 Hi-Z instrument), +48V phantom power, up to 8 analog ins/outs, coaxial S/PDIF I/O, 2x headphone outs, 2 MIDI I/Os, support for DirectWIRE 3.0, EMDM driver: MME, DirectSound, ASIO 2.0 support, Windows 7/Vista/XP/2000/2003



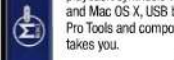
order code 230632

compatible, power supply optional, incl. Steinberg Cubase LE 4.
€155.-
€139.-

Digidesign MBox 2 Micro

Mobile Pro Tools LE system

About the size of a typical USB flash drive, high-quality sound, stereo out for headphone or speaker monitoring (no audio ins). Digidesign Pro Tools LE, Bomb Factory® and Digidesign™ plug-ins and Digidesign's Xpand™ sample-playback/synthesis workstation, for Win XP and Mac OS X, USB bus powered. Work with Pro Tools and compose wherever inspiration takes you.



order code 139283

€225.-
€201.-

Focusrite Saffire Pro 24 DSP

FireWire audio interface

Virtual reference monitoring technology, real-time FX (EQ, compressor, comfort reverb), 24bit/96kHz, total I/O count of 16 ins (including internal loopback) and 8 outs, 2x mic preamps, 4x analog ins, ADAT optical I/O, 1x coax S/PDIF I/O, 2x headphone outs, MIDI I/O, 48V phantom power, LED meter, includes plug-in suite and power supply.



order code 233752

€349.-
€312.-

Presonus Firestudio Project

FireWire audio interface

24bit/96kHz, 8 MMAX Class A mic preamps, 8 analog mic/line ins, 2 instrument ins, 8 analog line outs, S/PDIF digital I/O, MIDI I/O, balanced send/return, zero latency monitoring with FireControl mixer/router, headphone output, 8 input level meters, includes recording software Presonus Studio One Artist, 19"/1U.



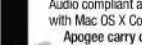
order code 199889

€389.-
€348.-

Apogee Duet Bundle

FireWire audio interface

24bit/96kHz, 2 channels, Firewire 400 I/O, breakout cable with 2 XLR mic ins, 2 1/4" jack instrument ins, 2 1/4" jack monitor outs, multi-segment LED display input and output levels, multi-function controller knob, headphone out, Maestro software for advanced control and low latency mixing, compatible with any Core Audio compliant audio application, compatible with Mac OS X Core Audio. Bundle incl. original Apogee carry case and 2GB USB stick.



o. code 209773

€415.-
€371.-

Focusrite Saffire PRO 40

24bit/96k FireWire audio interface

20x I/O, 8x mic preamps, 8x analog I/O (2x mic/line/instr: combo XLR, 6 mic/line: combo XLR), ADAT I/O, 2x S/PDIF I/O, 2x monitor outs, monitor switch, 2 separate headphone buses, MIDI I/O, zero-latency DSP mixer/router, internal power supply, includes plug-in suite. Dimensions: 19"/1U. Weight: 3kg



order code 219725

€458.-
€409.-

MOTU Ultralite MKIII Hybrid

FireWire and USB audio interface

24bit/192kHz, 2 mic/instrument ins, 6 bal. ins and 10 outs (1/4" TRS), 48V phantom power, S/PDIF I/O, headphone out, CueMix FX, internal DSP, LCD display, suitable for use as a standalone mixer, compatible with Windows and Mac, supports WDM, ASIO and Core Audio, incl. AudioDesk software for Mac.



order code 239141

€479.-
€428.-

Focusrite Liquid Saffire 56

FireWire audio interface

24bit/192kHz with Liquid preamps, 28x I/O, 8x XLR mic ins, 2x ADAT I/O, coax S/PDIF I/O, 8x analog ins (4x balanced jack), 10x analog outs (1/4" balanced jack), Word Clock, MIDI I/O, includes Focusrite VST/AU plug-ins. Dimensions: 35 x 9 x 23.5cm (19"/2U). Weight: 5kg



order code 228525

€679.-
€607.-

RME Fireface 400

FireWire audio interface

24bit/192 kHz high performance FireWire audio interface, analog technology from ADI-8 converter, mic preamp technology from Quad and OctaMic (2 mic preamps), TotalMix technology from Hammerfall DSP series, very reliable drivers.



order code 193883

€799.-
€714.-

RME HDSPe Madiface

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Fax: +49 9546 9223-24

The Thomann services

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- free shipping to the UK and Ireland on orders above £159

Sennheiser MKE 400

Microphone for video cameras
Hyper-cardioid polar pattern, frequency range: 40Hz - 20kHz, 3.5mm stereo jack plug connection, includes windshield, connection cable and 1x 1.5V battery (AAA). Size of base plate is 180 x 180mm.

order code 204069
€ 139.-
£ 124.-

Rode NTG-2

Directional condenser microphone
Broadcast quality, condenser transducer, low-noise circuitry, low handling noise, phantom powered (44 - 52V) or battery powered (1.5V), 20Hz-20kHz, 131dB SPL max., ideal for film/TV/video, includes stand mount, windshield and zip pouch. Weight: 161g

order code 179393
€ 185.-
£ 165.-

Rode NT5-MP

Condenser microphone stereo bundle
2 matched small diaphragm condenser microphones, 0.5" gold sputtered capsule, cardioid, 20Hz-20kHz, excellent for drum overheads, acoustic guitar and stereo live recordings. Including plastic case, microphone clips and wind screens.

order code 154595
€ 269.-
£ 240.-

Oktava MK012-01 MSP2 Matched Pair

Matched stereo set
2x small diaphragm condenser microphones, cardioid, 20Hz-20kHz, delivered in a wooden box. Finish: Silver. Made in Russia!

order code 165104
MK012-01 MSP2
Single mic, cardioid
order code 165103
€ 279.-
£ 249.-
€ 149.-
£ 133.-

Neumann KM 184 Stereo-Set

Small diaphragm condenser mic bundle
2x KM184 condenser microphones with sequential serial numbers, cardioid, 20Hz-20kHz. Includes 2x WNS100 windshield, 2x SG 21/17 stand adapters and wooden box.

Finish: Silver
o. code 153692
Finish: Black
o. code 158648
€ 1029.-
£ 920.-

the t.bone SC440 USB

USB condenser studio microphone

USB connection for direct access to Mac and PC (not compatible with Windows Vista), cardioid polar pattern, 20Hz-18kHz, includes plastic case.

order code 197603
€ 55.-
£ 49.-

the t.bone SC450 Set

Large diaphragm studio microphone

Cardioid, external low cut and -10dB pad switch, 2000 Ω impedance, requires 48V phantom power, 30Hz-20kHz, includes shockmount and PVC case. Dimensions: 50.5 x 190mm. Bundle includes the t.bone MS180 pop shield.

order code 203194
€ 93.-
£ 83.-
SC450 Stereo-Set - matched stereo pair in case (pop shield not incl.)
€ 169.-
£ 151.-

StudioProjects B1

Large diaphragm condenser microphone

1" Capsule, transformerless circuit, requires +48V phantom power, cardioid, 20Hz-20kHz, -34dB sensitivity (0dB = 1V/Pa), 2000 Ω , 132dB maximum, 120dB-A noise (IEC651). Includes foam wind screen, zippered bag and shockmount.

order code 180703
€ 105.-
£ 94.-

Rode NT1-A Complete Vocal Recording Solution

Large diaphragm microphone
20Hz-20kHz, 1000 Ω impedance, 132dB dynamic range, 137dB max SPL. Includes SM6 deluxe shockmount, 6m cable and Peter Freeman 'Studio Secrets' tutorial DVD.

order code 235937
€ 179.-
£ 160.-

AKG C3000

Studio large diaphragm condenser mic
Cardioid, 20Hz-20kHz, 2000 Ω , switchable -10dB pad, includes shockmount. Diameter: 53mm. Length: 162mm

order code 141408
€ 185.-
£ 165.-

Rode T-1000 Thomann Edition

Large diaphragm condenser microphone
Identical as Rode NT-1000, transformerless SMT circuitry, 1" HF2 capsule with gold-plated diaphragm, incorporating internal shock mounting, 134dB dynamic range, 140dB SPL capabilities, frequency response 20Hz - 20kHz. Cardioid polar pattern, Thomann Edition in durable satin black finish including shockmount SM6, cable and bag.

order code 247421
€ 211.-
£ 189.-

the t.bone SCT2000 Set

Valve studio microphone

Truly warm sound, 20Hz-20kHz, omni/cardioid/fig-8 plus 6 intermediate stages, up to 130dB SPL. Includes case, shockmount and power supply. Bundle includes the t.bone MS180 pop shield.

order code 203196
€ 279.-
£ 249.-

Rode NT2-A MS-180 Bundle

Large diaphragm microphone
Switchable polar pattern (omni, fig-8, cardioid), 1" diaphragm, 20Hz-20kHz, 147dB max SPL, includes SM2 shockmount. Bundle includes the t.bone MS180 pop killer.

order code 223002
€ 285.-
£ 255.-

SE Electronics SE 2200T

Large diaphragm condenser mic
Gold plated 1" diaphragm, 100Hz switchable high-pass filter, -10dB switchable pad, frequency response: 20Hz - 20kHz, sensitivity: -33dB +10dB (0dB = 1V/Pa 1000Hz), impedance: <= 2000 Ω , equivalent noise level: 16dB (A weighted), max SPL: 130dB (0.5% THD @ 1000Hz), connector: 7-pin, power supply and shockmount included.

order code 244907
€ 339.-
£ 303.-

Shure SM 7 B

Studio microphone
Dynamic studio microphone with cardioid polar pattern, 50Hz-20kHz, bass rolloff switch, mid-boost switch, 150 Ω , shielded against broadband interference, fixed stand adapter, XLR connector, includes windscreens.

order code 129929
€ 385.-
£ 344.-

EV RE20

Dynamic large diaphragm microphone
RE series, cardioid, switchable HP filter, variable D design, 150 Ω , 45Hz-18kHz, includes clip and box, ideal for vocals, brass and bass drum. Length: 217mm. Diameter: 54mm. Weight: 737g

order code 128926
€ 449.-
£ 401.-

Neumann TLM 102

Large diaphragm condenser microphone
Cardioid pattern, 20Hz-20kHz, 500 Ω impedance, 120dB-A equivalent noise level, 144dB max SPL for THD 0.5%, includes SG2 stand mount swivel. Weight: 260g.

Finish: Nickel
o. code 237768
Finish: Black
o. code 237769
€ 539.-
£ 482.-

AKG C414 XLII

Large diaphragm condenser mic
9 polar response patterns (cardioid, wide cardioid, eight, hypercardioid, omni and 4 mix pattern), 20Hz - 20kHz, 6/12/18dB pad, 40/80/160Hz HP filter, 140dB SPL max., CK12 capsule, high boost above 4kHz, peak hold LED, lock mode to save preferences, transformerless FET XLR out, incl. CK12 mic head, H85 shockmount, popfilter PF 80, windshield W414X and alu case.

o. code 240602
€ 885.-
£ 791.-

Brauner Phantom Classic

Solid state microphone
Cardioid polar pattern, pressure gradient transducer, equivalent noise <11dBa, signal to noise: 83dB, 20Hz-22kHz, 142dB max SPL @ 0.3% THD, requires 48V phantom power. Includes flexible suspension mount, aluminium case and Vovox cable.

order code 139461
€ 985.-
£ 881.-

Neumann U87 Ai Set

The studio microphone classic
Variable large diaphragm microphone, pressure-gradient transducer with double membrane capsule, 3 directional characteristics (omni, cardioid, figure-8), switchable low frequency roll-off, switchable 10 dB pre-attenuation, 20Hz-20kHz, 2000 Ω . Finish: Nickel. Bundle includes E87 shockmount.

order code 169705
€ 2333.-
£ 2086.-

ART Tube MP

Tube microphone preamp
Hand selected 12AX7A valve, limiter, 48V phantom power, phase reverse, XLR and jack I/O, perfect for hard disc recording or as a valve DI.

order code 191529
€ 37.-
£ 33.-

Focusrite OctoPre MkII

8-channel mic preamp with A/D
Integrated 8-channel 24bit/96kHz digital output, -10dB pads, 5-LED input metering and direct output on each channel, internal clocking and external via BNC, 8 inputs (2 mic/line/instrument combo XLR, 6 mic/line combo XLR), 8 outputs jack, 2 ADAT outputs (dual LightPipe), sync-to-wordclock input, JitterPLL. Jitter-elimination, 19", 1U, weight: 3.6 kg.

order code 236376
€ 389.-
£ 348.-

SPL GoldMike 9844

2-channel valve preamp
Discrete Class A solid state, 48V phantom power, phase reverse, pad function, flair presence enhancement, very clear and warm sound. Dimensions: 19"/2U

order code 123370
€ 425.-
£ 380.-

Universal Audio 710 Twin-Fifty Bundle

1-channel mic/line/DI preamp
Dual path 310V class A valve & transimpedance solid state preamp, +70dB gain, 48V phantom power, -15dB pad, phase invert, 75Hz low cut filter. Bundle includes UAD-2 Solo PCIe DSP card, VST and AU support, LiveTrack™ low-latency live monitoring/recording mode, Mix Essentials II (1176SE Limiting Amplifier Emulation, RealVerb Pro, CS-1 Channel Strip, Pultec EQP-1A EQ Emulation).

order code 244200
€ 679.-
£ 607.-

Universal Audio LA-610 MkII UAD-2 Duo Bundle

Classic tube recording channel
Based on the legendary Bill Putnam 610 tube mic pre and EQ, Authentic Teletronik LA-2A style T4 opto-compressor, complete vintage channel strip, mic pre with gain and level controls, true bypass, large metering and improved signal output. Bundle incl. Universal Audio UAD-2 Duo PCIe DSP Card.

o. code 252465
€ 1499.-
£ 1340.-

Behringer FBQ1502 Ultragraph Pro

2x15-band graphic equalizer
FBQ feedback detection system, servo balanced ins & outs (jack & XLR).

order code 167770
€ 77.-
£ 69.-
Behringer FBQ6200 Ultragraph Pro
2x 31-band graphic EQ, FBQ detection system, jack & XLR I/O.
order code 172364
€ 166.-
£ 148.-

FMR Audio RNC 1773

Really nice compressor
Stereo compressor with two modes: 'Normal' for effective compression and 'Super Nice' for transparent compression. Controls: threshold, ratio, attack, release and gain. Switches: bypass & Super Nice.

order code 179985
RNL 7239 Really nice levelling amplifier
10Hz-100kHz 0.5dB @ 0dBu clip point
+22.5dBu @ 3% THD.
order code 190166
€ 205.-
£ 183.-

dbx 266 XL

Stereo compressor/limiter/gate
Patented OverEasy technology (attack & release times), XLR I/O, -10/+4dB switch, stereo link, dbx sound.

order code 131808
€ 175.-
£ 156.-
dbx 166 XL
2-channel compressor/limiter/gate, stereo or dual mono, OverEasy or hard knee mode, PeakStop limiting.
order code 131035
€ 286.-
£ 238.-

Behringer ADA8000

8-channel AD/DA converter
8x mic preamps with phantom power, 24bit AD/DA, 44.1 & 48kHz, Wordclock or ADAT or USB, ADAT I/O, ADAT in can be routed to line outs, mic and line in/outs are routed to ADAT out, excellent expansion for DD3216 or any interface/mixer with ADAT I/O.

order code 164573
€ 179.-
£ 160.-

Benchmark DAC1 Pre

USB audio interface and D/A converter
24bit/192kHz with internal analogue preamp and USB interface, dynamic range: 116dB @ 52kHz, 6x stereo inputs (1x analogue, 3x coaxial, 1x optical and 1x USB), balanced XLR output, unbalanced RCA output, connection for monitors and headphones, UltraLow jitter elimination, internal power supply.

order code 215623
€ 1390.-
£ 1243.-

tc Helicon Harmony-G

Compact vocal processor
Harmony arrangement algorithm listens to guitar and voice to follow your music, 6 reverb/delay combinations for vocal and guitar in, 10 presets each with A/B location, selectable harmony voicing, XLR mic in with 48V phantom power, stereo line out (balanced XLR), guitar in and pass-thru for separate amp/tuner, includes external power supply.

order code 205731
€ 149.-
£ 133.-

Boss VE-20

Vocal Performer
Vocal effects dynamic compressor / de-esser, enhancer, delay, reverb, 2 harmonist and pitch correction, LCD display, looper mono, 38 sec., sounds: 30 preset + 50 user, requires optional power supply Boss PSA-230 (order code 102842, not included).

order code 235812
€ 185.-
£ 165.-

Digittech Vocalist Live 3G

Vocal harmonizer
Automatic intelligent 3-part harmony, your voice plus 2 more, gender controls, 5 harmony patches, real-time chromatic pitch correction, warmth, compressor, 2-band EQ, low cut, noise gate, reverb, 5 delay settings, chorus and reverb effects, built-in tuner, XLR mic/line in, 48V phantom power, headphone output, incl. power supply.

order code 243163
€ 269.-
£ 240.-

tc Helicon VoiceLive Touch

Vocal harmony effect processor & looper
Effects by VoiceLive 2 incl. HardTune and more, 8 voices of NaturalPlay harmonies, MIDI or USB/aux input, 200 presets, 25 favorites, voicing buttons offer instant harmony arranging, VLOOP performance vocal looper, talk button bypasses all effects, XLR Mic in, Guitar in and thru, aux input, MIDI in, USB, headphone out, TRS and XLR output, incl. external power supply unit.

order code 250437
€ 473.-
£ 423.-

tc electronic Voice Live 2

Vocal multi FX pedal
Up to 8 voices or 4 doubled harmonies, reverb, tap delay, megaphone and distortion, compressor, de-esser and EQ, MIDI or mp3, LCD display, XLR, line in, aux in, headphone output, coax S/PDIF I/O, backup and audio streaming, incl. power supply. Dimensions: 35 x 7.6 x 21.6cm. Weight: 2.3kg.

order code 225557
€ 699.-
£ 625.-

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- 30-day money back guarantee
- free shipping to the UK and Ireland on orders above £159

AKG K 240
Studio stereo headphones
Half open, 550, 88dB/mW, 15Hz-20kHz, ear-enclosing, cable connection, distortion-free playback (new XXL cap), involving sound from new Varimotion system, ideal for Walkman and sound cards. Weight: 240g

order code 153257
€89.- **£80.-**

AKG K 141 MKII
Dynamic, semi-open, 550, 18Hz-24kHz, plug-in cable. Weight: 225g

order code 206955
€82.- **£82.-**

Sennheiser HD25 BE
Dynamic DJ headphones
Impedance 700, SPL max. 120dB, frequency response: 16Hz - 22kHz (-3dB), closed system. Includes 150cm cable with 3.5mm mini jack and adaptor for 6.3mm jack. Weight: 140g.

order code 249403
€139.- **£124.-**

Sennheiser HD 212 pro
32Ω, 12Hz-19kHz

order code 161045
€87.- **£33.-**

AKG K271 MKII
Closed dynamic studio headphones
Circumaural design, 550, 200mW max input, 16Hz-28kHz, 104dB/V sensitivity, self-adjusting headband and auto-shut-off feature, 3m cable. Includes 5m coiled cable, 1 pair velvet pads and gold plated mini-jack to 1/4" screw-on adaptor. Weight: 240g

order code 209551
€145.- **£130.-**

5m extension cable
1/4" stereo jack

order code 153216
€650.- **£5.80**

AKG K 701
High-end reference headphones
Revolutionary flat wire voice coil technology, dynamic, open back, 62Ω impedance, 105dB efficiency, 10Hz-39.8kHz, 200mW max input power, hard gold plated 1/4" jack plug, 3m cable. Weight: 235g (not including cable).

order code 185476
€199.- **£178.-**

Sennheiser HD-650
HiFi headphones
Open back, dynamic, impedance 300Ω, frequency response 10Hz to 39.5kHz, 103dB SPL, 3m cable, 3.5mm stereo mini jack with 1/4" adapter. Weight: 260g (excluding cable).

order code 165585
€255.- **£228.-**

ESI nEar04 Classic
Active 4" studio monitors
Magnetically shielded, bi-amped, 20W bass + 20W treble, balanced/unbalanced 1/4" jack inputs. Dimensions: 20.6 x 13.6 x 14.9cm. Pair price!

order code 232799
€91.- **£81.-**

KRK RP5 Rokit G2
Active studio monitor
45W, 5" + 1" speakers, 53Hz-20kHz, magnetically shielded. Dimensions: 27.6 x 18.5 x 25cm. Weight: 8kg. Unit price!

order code 213024
€144.- **£129.-**

KRK RP8 Rokit G2
8" + 1", 140W.

order code 213090
€266.- **£238.-**

ESI nEar05
Active 5" studio monitors
Magnetically shielded, 37Hz-22kHz, bi-amped, 42W bass + 33W treble, balanced XLR & 1/4" jack inputs. Dimensions: 25 x 16.6 x 20cm. Pair price!

order code 160180
€169.- **£151.-**

Mackie MR8
Active nearfield monitor
8" woofer (100W), 1" tweeter (50W), frequency response: 40Hz - 20kHz, max. SPL per pair: 116 dB SPL @ 1m, XLR, jack (6.3mm) unbalanced and RCA, magnetically shielded, dimensions HWD: 40.6 x 27.6 x 34.6cm, weight: 12.5kg. Unit price!

order code 207242
€209.- **£187.-**

Tannoy Precision 6
Passive 3-way studio monitors
6" dual concentric driver, frequency response: 62Hz - 51kHz, crossover frequency: 2.5kHz, nominal impedance: 6Ω, recommended amp power: 60 - 120W @ 8Ω, dimensions: 35.6 x 22 x 26.1cm, weight: 8.9kg. Pair price!

order code 113056
€245.- **£219.-**

Tannoy Precision 8
8", 54Hz - 51kHz, 44 x 27.2 x 28.7cm, 12.7kg. Pair price!

order code 184262
€283.- **£253.-**

Genelec 8020BPM
Active 2-way studio monitor
Power switch, 66Hz-20kHz (±2.5dB), 105dB SPL peak @ 1m, 95dB SPL @ 1m, 105mm (4") high efficiency bass driver, 19mm (3/4") metal dome tweeter with Directivity Control Waveguide, 3kHz crossover, magnetically shielded, aluminium cabinet, includes wall bracket. Power per channel: 20W (bass), 20W (treble). Dimensions: 22.6 x 15.1 x 14.2mm. Weight: 3.7kg. Unit price!

o. code 235038
€279.- **£249.-**

Yamaha HS50M Stativ-Set
Active 2-way studio monitor
70W bi-amped bass reflex system, 5" woofer, 3/4" tweeter, 55Hz-20kHz, XLR & TRS ins, adjustable input level, mid EQ, room control, high trim, switchable low cut, fully magnetically shielded. Bundle with 2x HS50M and 1 pair Millennium BS-500 adjustable nearfield monitor stands.

order code 244787
€311.- **£278.-**

Adam A7 Special Edition
Active nearfield studio monitor
Finish: black piano lacquer, 6.5" Rohacell / kevlar sandwich woofer, A.R.T. tweeter, frequency range 46Hz to 35kHz, 100W (sin), 150W (rms), XLR and RCA input, dimensions: 18 x 33 x 28cm, weight: 8kg. Unit price.

order code 241073
€377.- **£337.-**

Adam A7 Special Edition
Active nearfield studio monitor
Finish: white piano lacquer, 6.5" Rohacell / kevlar sandwich woofer, A.R.T. tweeter, frequency range 46Hz to 35kHz, 100W (sin), 150W (rms), XLR and RCA input, dimensions: 18 x 33 x 28cm, weight: 8kg. Unit price.

order code 244787
€377.- **£337.-**

Adam A7X
2-way active bassreflex nearfield monitor
7" carbon/rohcacell/glass woofer with 100W, X-A.R.T. tweeter with 50W, shelving filter tweeter: >5kHz ~ ±6dB, shelving filter woofer: <300Hz ~ ±6dB, frequency range: 42Hz - 50kHz, crossover frequency: 2.5kHz, SPL max. / pair 1m: 114dB, gain: +14dB / -8dB, gain tweeter: ±4dB, THD 90dB/1m > 100Hz: <0.5%, inputs XLR and RCA, input impedance: 30kΩ, dimensions: 20.1 x 33.7 x 28cm, weight: 9.3kg. Unit price.

o. code 245513
€428.- **£384.-**

Genelec 8030APM
Active 2-way studio monitor
58Hz-20kHz free field frequency response, 108dB SPL peak @ 1m, 130mm (5") bass driver, 19mm (3/4") metal dome tweeter with DCW (Directivity Control Waveguide), 3kHz crossover frequency, amplifier power: 40W bass + 40W treble, magnetically shielded, aluminium cabinet, balanced XLR input. Dimensions: 28.5 x 18.9 x 17.8cm. Weight: 5.6kg

order code 171718
€469.- **£419.-**

Yamaha HS80M stand bundle
Active 2-way studio monitor package
120W bi-amped bass reflex speaker, 8" woofer, 1" tweeter, 42Hz-20kHz, XLR & jack input, mid EQ, room control, high trim, switchable low cut, magnetically shielded. Bundle includes 2x HS80M and 1 pair of Millennium BS-500 nearfield monitors.

o. code 227555
€469.- **£419.-**

Tannoy Precision 6D
Active 3-way studio monitors
Active assist, 6" dual concentric driver, frequency response: 59Hz - 51kHz, max. SPL 116dB, crossover frequency: 2.5kHz, amplifier output power: LF - 75W, HF - 35W, XLR/jack combo input, S/PDIF coax input with sample rate up to 96kHz, S/PDIF slave out, dimensions: 35.6 x 22 x 37.8cm, weight: 13kg. Pair price!

order code 184257
€473.- **£423.-**

Mackie HR824 MK2
Active 2-way studio nearfield monitor
8.75" low-distortion LF woofer, 1" titanium dome ferrofluid cooled tweeter, twin FR series amps (150W LF & 100W HF), passive radiator provides tight, articulate bass extension down to 35Hz, balanced XLR/TRS and unbalanced RCA inputs. Unit price!

order code 138446
€519.- **£464.-**

Adam A8X
2-way active bassreflex nearfield monitor
9" carbon/rohcacell/glass woofer with 150W, X-A.R.T. tweeter with 50W, shelving filter tweeter: >5kHz ~ ±6dB, shelving filter woofer: <300Hz ~ ±6dB, frequency range: 38Hz - 50kHz, crossover frequency: 2.5kHz, SPL max. / pair 1m: 120dB, gain: +14dB / -infinite dB, gain tweeter: ±4dB, THD 90dB/1m > 100Hz: <0.5%, inputs XLR and RCA, input impedance: 30kΩ, dimensions: 25.5 x 40 x 32cm, weight: 12.8kg. Unit price.

o. code 245573
€569.- **£509.-**

Behringer DJX 750
5-channel DJ mixer
24bit digital effects, BPM counter with time and sync display, Ultralight faders, XPO stereo surround effects, 3-band kill EQ, 3-way kill switch, monitor function with master/cue balance control and split option, auto talkover.

order code 223751
€158.- **£141.-**

Behringer DDM 4000
32bit digital DJ mixer
Beat-synchronized sampler, 4 multi-FX sections, 2 patented BPM counters, digital crossfader and MIDI, 4x phono/line stereo channels. 2x mic inputs with gain, EQ, talk function and FX. 4x stereo channels with gain, programmable parametric 3-band EQ with kill function, fader curve control and flexible crossfader.

order code 206918
€289.- **£267.-**

Pioneer DJM 400
Professional DJ mixer
2 channels, mic/aux switch (to select 2x mic inputs or 1x stereo line input), fader start, crossfader curve adjustment, talkover (-20dB), peak level meter.

order code 191081
€433.- **£387.-**

Allen & Heath XONE:42
4-channel DJ mixer
2 turntable ins (RCA phono RIAA), 2 line ins, X-FX send, 3-band EQ, 60dB total-kill EQ on all channels, internal switch-mode PSU, 2 headphone outs (1/4" and 3.5mm), VCA crossfader with curve control, VCF filter with independent I/O, resonance & frequency controls, USB 1.1 port (stereo I/O), XLR mic in with 2-band EQ and level control, finish: black.

o. code 231622
€777.- **£695.-**

Pioneer DJM-700
Professional 4-channel DJ club mixer
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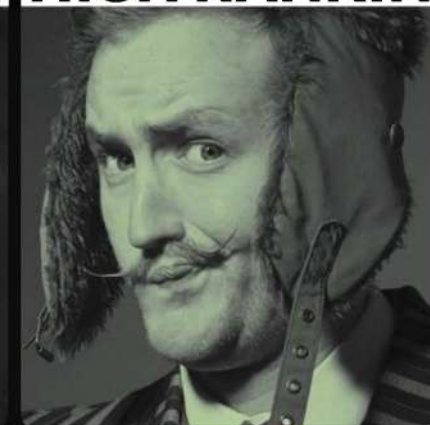
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DUP VS STEP

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The UK's two biggest, baddest electronic styles are hotbeds of innovative production technique, and now the lines between them are blurring. We infiltrate the studios of five of today's most influential artists for the ultimate genre-bending masterclass

> Dubstep and drum 'n' bass are two of the UK's most exciting and boundary-pushing musical genres. Both are also hugely popular among CM readers, thanks to their heavily software-based approaches and relative accessibility from a production point of view.

Of late, the relationship between DnB and dubstep has become symbiotic, to the extent that sounds, rhythms and ideas can be heard moving freely from one to the other and back. While many now take this musical cross-pollination for granted, only a few short years ago the two styles had little in common beyond a shared ancestry of techno, hip-hop, dub and house.

Nowadays, the success of artists like Chase & Status and Nero - who flit between genres at the drop of a hat - has inspired many producers to experiment freely with both drum 'n' bass and dubstep, from tear-out merchants like Original Sin to more minimal producers such as Alix

Perez. As a result of this, a hybrid style called - predictably but effectively - drumstep has emerged, taking dubstep's half-time beats and upping the tempo from 140 to 170bpm.

Even the lines between dubstep and the more bass-driven forms of house are now becoming increasingly indistinct, with artists like Foamo, Jack Beats and Black Noise incorporating DnB and dubstep sounds into

"With genre-defining boundaries fast evaporating, it's an exciting time to be making dance music"

their four-to-the-floor productions.

With genre-defining boundaries fast evaporating, it's a very exciting time to be making dance music. In this star-studded guide to DnB and dubstep in 2010/11, five of the scenes' leading lights share some of their most closely guarded production secrets with us, including a deconstruction of Reso's massive drumstep anthem *War Machine*, a breakdown of how The Qemists created the dubstep remix of their track *Renegade*, Icicle's guide to creating beats and bass, further massive (and, indeed, Massive) bassline action from High Rankin, and a look at how Cutline process their drums to get those big dubstep and DnB beats.

But that's really only the tip of the iceberg. On your CM DVD you can see and hear three of our five featured artists put their words into action, in three hours of exclusive video masterclasses. So fire up that DAW and let's begin our journey into the deepest bass known to man...

Reso started in breaks, crossed over to dubstep and is now attacking DnB tunes with renewed vigour

RESO

Reso - aka Alex Melia - has only been releasing music for a few short years, but he's quickly established himself as one of dubstep's top filth-mongers. Recently he's branched out into DnB, spinning out tracks such as *Slap Chop* on Hospital Records and a tearing 170bpm remix of The Qemists' *Your Revolution*. But Alex's first steps into music didn't point to a future as a cutting-edge producer, let alone a dubstep one; his introduction to production was pretty low-tech, and live rock used to be more his thing.

"I've played drums since I was nine, and I played in bands and whatever too. My mate Jamie got a computer when he was 18 and we first started messing around on HipHop eJay and Dance eJay!" confesses Alex. "They were wicked because they teach you arrangement - you haven't got to make any music, you can maybe do a little bit of automation, but that's it.

"It's not that I wasn't
into drum 'n' bass
back then, I just
wasn't good enough
to make it"

"Eventually I got a computer and a copy of Logic when I was 21. I made crappy breaks and DnB - it was rubbish! I was introduced to dubstep, and eventually it took over what I liked about breaks. I began making dubstep and developing along with it, and then my friend

Rogue Star - who runs Urban Graffiti - introduced me to a bunch of people in the scene and I started giving tunes out. I got offered £50 to DJ for someone, so I promptly learned to DJ! Eventually I got some tunes released - first on mates' labels, then elsewhere - and I kept improving my production and making better tunes."

More recently, Alex has turned his attention to the sounds of DnB and drumstep. "It's not that I wasn't into DnB back then, I just wasn't good enough to make it. Now I just scrape through being good enough!" says Alex. He's being modest - his epic drumstep track *War Machine* is a frankly ridiculous combination of slamming beats and dozens of incredible bass noises. In this tutorial and the accompanying video on the **cm** DVD, Alex takes us through the processes behind his awe-inspiring beats and bass.

www.myspace.com/corgrimey

> Step by step Building big beats



1 > Alex uses Logic's EXS24 sampler to program his beats, set up so that the drums can be routed to different auxiliary outputs if they need to be processed individually. All the single-hit drums are triggered from a single EXS24, so that the MIDI of the drum part can be edited on a single track.



2 > He EQs the kick drum to bring it out at **98Hz**, will a roll-off at **76Hz** to get rid of the extraneous low end. He also attenuates the top end slightly: the kick will be layered with a hi-hat, which will provide the top-end energy.

POWER TIP

>Golden rules

To ensure that he gets consistent mixdowns, Alex follows a few self-imposed rules when making both dubstep and DnB tracks:

"I'll generally have the kick and the snare peaking at -10dB, though in *War Machine* it's more like -7dB. I'll have the sub at -13dB; and the top sort of character at -13 or -15dB. It helps to get an even mixdown.

"I usually make all my tunes on E, F or G because they're the three notes or keys that are really good for DnB and dubstep. E is quite low but sounds super-fat. You can go up to G and it'll still sound quite fat but will also come out on not-so-great systems."



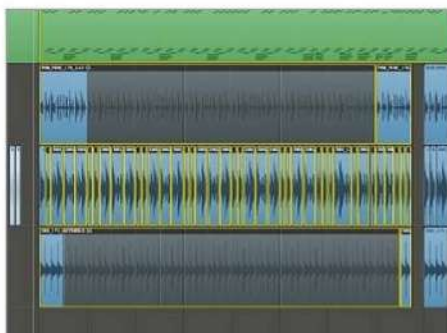
3 > Alex uses Schaack Audio Technology's Transient Shaper to make his drum sounds as punchy as possible. "It tightens it up and gives it a really nice attack, and you can adjust the tail, too," he explains. Here he uses two instances of Transient Shaper on the drums: one before and one after the EQ.



4 > To get that big snare sound, three different samples are layered on top of each other. One provides bottom-end punch, peaking at around 200Hz, with EQ cuts at **630Hz** and **2.6kHz**. "I'm a fan of subtractive EQ – a good analogy is to think of the frequency spectrum like a chest of drawers. You can't just keep shoving things in: if you take things out and move them around, you can make everything fit!"



5 > Alex layers the low-end sound with a more clap-style snare, which he drives through Logic's Bitcrusher effect, then Transient Shaper to tighten up its tail. He then rolls it off at **4.25kHz** so that it doesn't interfere with the bottom-end snare. The final element is another snare sample; Alex boosts its top end slightly to fill out the sound.



6 > To fill out the single-hit drum sounds, Alex layers up a shaker and a DnB loop, then chops them up to make them follow the rhythm of the existing beat. In order to ensure they fit the beat at all times, he manually edits them so that they slot in nicely with the various drum fills that occur throughout the track.



7 > To help get the right combination of punchy dynamics and a heavy, compressed drum sound, Alex uses dynamic compression. The drums are routed to a bus, where they're compressed with Logic's built-in Compressor in **Platinum** mode. He EQs the bottom end out, then applies a Transient Shaper with a high **Drive** setting to the whole bus to make it louder and crunchier.



8 > For the final touch on the parallel compression bus, Alex applies Logic's Space Designer reverb, with the **Dynamic Hall** preset loaded, to give the sound a smooth sheen. Finally, he routes all the drum sounds to a single channel, which is limited to even out the peaks.

> Step by step Making War machine's grimy bass



1 > The Massive, Albino and Predator soft synths are Alex's main sources of bass sounds. The first sound in *War Machine* was created in Massive, and is based on three oscillators: one set to a **Square** shape, another set to the **Polysaw I** wavetable and pitched up a couple of octaves, and the final oscillator set to **Triangle**.



2 > Alex runs these oscillators through Massive's **Bandreject** filter, the **Cutoff** of which he modulates via an LFO. He then distorts the signal via the Sine Shaper and Classic Tube effects and tweaks it further with Massive's built-in EQ. "I like Bandreject. If you move it slightly it can completely change the characteristics of the sound," enthuses Alex.



3 > A trick Alex uses to create variations on a sound is bouncing the original part to audio, then tweaking the synth patch to create a new version. He runs the second version of his bass sound through Camel Audio CamelPhat, automating its high-pass filter **Cutoff** so that it sweeps over two bars.

POWER TIP

>Bass in your face

It can be tricky to get the low end of any track right, but Alex has some words of wisdom for those making their own bass sounds.

"With basses, put the polyphony mode on your instrument to Mono, because if you have it on Poly you're going to have all these weird pops and clicks as notes overlap.

"I roll absolutely everything off the top of my subs at, for example, 70Hz, then roll off the bottom of the top layer of the bass sound at, say, 78Hz. Basically, you're crossing over the bottom of the mid-range sound and the sub, so you don't want either taking up any more room than it needs to."



4 > Alex created *War Machine*'s vocal-style bass sound using Rob Papen's Albino 3. It's made up of a combination of stacked square, sawtooth and triangle waveforms in different octaves. The key to the sound is Albino 3's mode 3 saturation, which adds plenty of extreme harmonics to the sound.



5 > To beef the sound up, Alex rolls off the low end and runs the signal through several effects: Logic Distortion; AutoFilter with the **Drive** level turned up; Bass Amp set to the **Top Class DI Mid** model; another AutoFilter with the **Drive** level turned up; Bitcrusher; Schaack Transient Shaper; and another EQ. Then Alex rolls off the low end again and scoops out a little at **200Hz** to help the snare punch through.



6 > To replace the rolled-off low end of each bass sound, Alex uses Logic's EXS24 sampler's default (ie, no sample loaded) sine wave patch to double them up and replace the missing frequencies. To make this sound meatier, he turns up the **Drive**, and if the original sound has any LFO-driven filter movement, he uses the same settings to modulate the EXS24's filter **Cutoff**.



7 > The next bass sound comprises another set of stacked waves in Massive. This time we've got a square wave pitched at **-12**, a square/saw mix at **0** and a triangle wave at **+12**. Alex runs these in parallel through Massive's **Scream** and **Band-pass** filters, and modulates their **Cutoff** frequencies with an LFO.



8 > To rough up the sound, Alex applies Massive's Parabolic Shaper, Frequency Shifter and Tele Tube effects. He plays the sound with a quickly rising pitch bend and layers it again with an EXS24 sine wave sub-bass. Finally, he sets up another bass tone - run through Tone2's BiFilter2 plug-in set to **Comb 2x** mode - to play directly after the sound, creating what sounds like a single dynamic movement.

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> Step by step

Making another of *War Machine's* many bass sounds



1 > To create the next bass sound, Alex resamples a tone from Massive, plays it back via the EXS24 and runs it through BiFilter2 set to **Phaser** mode. He automates the **Frequency** of the phaser effect to create a vowel-style sound.



2 > He duplicates the track and runs the copy through a different series of plug-ins to get an alternative effect. This time he goes for Logic's Bitcrusher, Guitar Amp Pro, Distortion, Transient Shaper and, finally, Channel EQ, with which he rolls off the lows and scoops the low-mids at **200Hz**.

POWER TIP

>Distort it again

As you'll no doubt have realised by this point, Alex is a rather heavy user of distortion plug-ins, and he has some advice for those of a similar tonal bent:

"The trick is: a little bit of distortion, a lot of the time. I want things to sound distorted, but I want it to be a clean distortion. So, rather than putting one distortion plug-in on a track and ragging it - and it consequently sounding nasty - I'll put four or five different distortions on and drive them all a little bit. The different effects interact with each other, and it gives the sound a nice quality."



3 > The final bass sound in the first section is a rapidly stuttering patch created in Massive. "It doesn't sound like anything... it sounds like a fart. But when you play quick notes, you can't tell it sounds that crap." Alex sets one of the LFOs to a saw wave shape and uses it to modulate the **Pitch** of the oscillators.



4 > He runs the sound through CamelPhat using a **Notch** filter. "I find that with bass sounds, if you make them pitch down or pitch up, it works with the way the filters are moving - gives it a load of movement and makes it sound gnarly." The sub-bass for this sound is a copy of the Massive patch using a single sine oscillator with the same pitch modulation.



5 > A new wobble noise is required, so Alex makes one in Massive. This sound uses a **Square-sawtooth** oscillator on the root note, with a **Drive1** oscillator **28** semitones above and a **Straight** sawtooth oscillator **36** semitones above. Alex runs all of these through a **Scream** filter, the **Cutoff** of which is modulated by an LFO.



6 > To get a rougher feel and spread the sound across the stereo spectrum, Alex applies Massive's Classic Tube and Chorus Ensemble effects. He then inserts Logic's Bass Amp and sets it to **American Scoop** mode to give the sound more of a lo-fi, organic quality, before throwing in Distortion and CamelPhat to for even more dirt.



7 > Alex routes all of the bass noises through their own bus, onto which he places a Logic PlatinumVerb to add ambience, and PSP VintageWarmer to add a little drive and adjust the tone slightly. He adds an EQ to roll off the low end, and cuts the **200** and **500Hz** ranges, which can be muddy with these kinds of sounds.



8 > A Compressor and Expander are used to make the sound as big as possible. "It's all fattening tools essentially," explains Alex. "The whole point of this tune is that it's just stonking bass, so I want the bassline and the mids to sound as fat as they can." The final touch is a Transient Shaper with the **Drive** turned up: this works as a limiter.

THE QEMISTS

If you're a fan of stadium DnB (or you read our interview with them in **cm157**), you'll be familiar with The Qemists and their larger-than-life blend of rock and drum 'n' bass. For their second album, *Spirit in the System*, the band also incorporated dirty dubstep styles into the mix.

The latest single from the album, *Renegade*, is a full-on vocal track. We hooked up with Qemists Leon and Dan in their Brighton studio to find out how they created the tear-out dubstep VIP remix from the single.

"We wanted a club version that we could play in our DJ and sound system sets," explains Dan. "We were happy with the original,

and thought it sounded good, but there were things that needed changing to make it sound good on a club's sound system. We wanted to strip out the vocals and make the structure really easy to DJ. The drums had a really rocky sound and there's a lot of live kit in there - it's layered to give it that fatness, but it was a very kit-like sound, which needed to be sorted out. The bassline was a bit light and smooth, too, so we needed something a lot more modern."

This tutorial and accompanying video reveal how The Qemists remixed the track using Ableton Live and Steinberg Cubase. www.theqemists.com



The Qemists' high-energy DnB tunes make perfect fodder for dubstep remixes

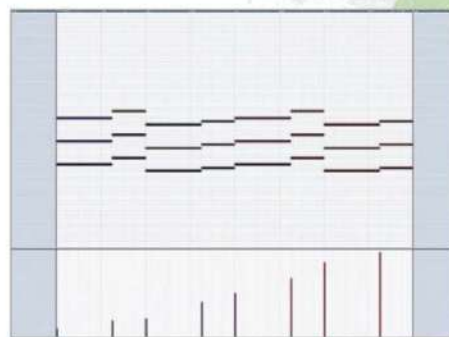
> Step by step Remixing *Renegade* VIP



- 1 > The first thing The Qemists need to do is decide what elements from the original version are to be kept, so they load the original project into Cubase. They decide that the vocals are to be stripped out and that the structure needs to be made easier to DJ with.



- 2 > Next, The Qemists create a new structure with a DJ-friendly 32-bar introduction. They loop the vocal hook over the intro, and layer the first of the new sounds - an airy synth pad patch from Cakewalk Z3TA+ - over the top. With that done, they set note velocity to modulate the filter **Cutoff**.



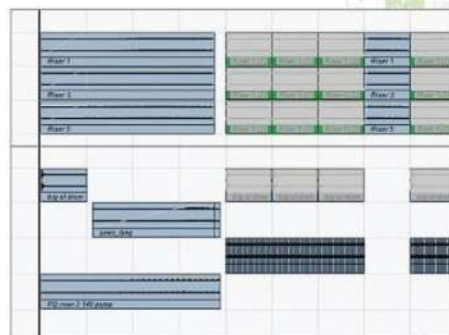
- 3 > The part plays over three octaves with the velocity increasing each time round, resulting in a gradually-opening filter that brings in the high frequencies as the part progresses. The Qemists use Cubase's Chopper effect to give the sound a side-chain-style pumping effect.



- 4 > "The important thing when going from a preset to something we can use is to get the EQ right," explains Leon. "We keep boosting the gain and cutting the EQ, using the spectrum analyser to work out what needs to be cut. We don't want anything to be too harsh as the filter comes up, so we keep the curve on the spectrum analyser flat."



- 5 > After the EQ, The Qemists apply Antares' Tube distortion effect to bring out the sound a bit. "Again, you can do this if you're looking at the analyser - add distortion all you like, just use the analyser to see where it's peaking too hard, and to see if the distortion is introducing stuff that you don't want," they explain. They use a second EQ after the distortion to remove unwanted peaks.



- 6 > To get a big rising effect to build up to the drop, The Qemists layer up several 'riser' sounds. These comprise a real mixture of noises created in Native Instruments Massive and Ableton Live's Sampler. "Try to keep your risers starting and ending on the root note of your track," suggests Dan.

> Step by step *Remixing Renegade VIP (continued)*



7 > Getting the snare sound right is a hugely important part of creating any dubstep track, and The Qemists take particular care when EQing the main snare hit. Subtractive EQ is used to tame the peaks at the high end of the frequency spectrum. The only part of the sound that peaks over -10dB in the spectral analyser is the low-end 200Hz thump.



8 > Next, Audio Ease Altiverb 6 is loaded up for the reverb on the main snare hit. This reverb has a long tail, which fills the space between drum hits. It's followed by a limiter with a heavily boosted **Input** level - this squashes the tail and makes it louder for longer.

POWER TIP

>Analyse this

Careful EQing is a big part of The Qemists' working method. "We do it quite a lot, on a lot of different sounds" begins Dan. "We'll make a sound, EQ it to be quite smooth, then add distortion and EQ it again." Leon is emphatic about the importance of the analyser: "A lot of people will use an analyser, but only on the whole track. Use it on everything: when you start adding a sound, look at the sound in the analyser straight way. Is your kick drum peaking where you want it to peak? Is there any sub on the hi-hat that you can't hear? It'll make you tracks easier to mix if you keep your sounds nice and flat in the analyser in the first place."



9 > Having sorted some new sounds and rejigged the beat, The Qemists export some stems to Ableton Live so that they can work with the material as audio. This makes it easy to quickly edit the beat track, as it's a single audio file.



10 > They decide to use one of the bass noises from the original version in the remix, but to spice it up, they cut it up and edit it in Live to change the rhythm. They use Live's Auto Pan set to **0.00 Phase**, which makes it work rather like Cubase's Chopper effect. They also use an automated **Rate** setting to create a new sidechain-style pumping effect.



11 > It's important that the first bass note after the drop has huge dancefloor impact, and The Qemists use a descending bass sound with an opening filter that works against the dropping pitch to achieve this. The sound actually comprises two layered tones: one providing the low end and the other providing the mid.



12 > The boys leave some of the guitar chords from the original version in to provide that essential Qemists vibe, but more mid sounds are still required. The answer is found in an electro-style stab, which they make in Massive. It's based around square-saw mix oscillators tuned to **-12.0** and **+15** semitones. The boys run these through the synth's **Daft** filter, which is modulated by a **Performer** oscillator.



13 > With all the parts for the remix created, The Qemists bounce the stems down again and import them back into Cubase. One of their cunning mixing techniques is to set TC Electronics' Character harmonic exciter plug-in to **100%** in order to add mid-range presence to various parts. They follow Character with a limiter to bring up the level.



14 > When doing the final mix of the remix, The Qemists use the Inspector XL plug-in to check the spectral content throughout. They keep the top end flat, with only the bass sounds and snare peaking over the -10dB line.

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> make music now / dubstep vs drum 'n' bass

ICICLE

Over the past few years, Holland's Icicle - aka Jeroen Snik - has notched up releases on a number of drum 'n' bass labels, ranging from liquid stalwarts Fokuz and Soul:r to darkside heavyweights Renegade Hardware and Cylon. His minimal yet muscular sound has made him the darling of the DnB scene, and recently he's started creating dubstep too, with tracks such as the dark and funky *Xylophobia* on Shogun Audio. How does Jeroen find producing dubstep in comparison to DnB?

"In drum 'n' bass you can get away with drums that are more punchy - you don't need as much sound because there are just more hits per second, they've got less

room," muses Jeroen. "With dubstep you have much more space in the drums; when I first started making it, I struggled because the drums are so sparse. Because of that space, your drums are far more exposed! So, they need to sound better: they need to have a bit more release and more character. I never used to put reverb on drums, but when you're producing dubstep you have freedom to experiment more with your drum sounds."

In this tutorial and his video on the DVD, Jeroen show us how he makes his distinctive beats and bass using Logic and Reason, and gives us a few helpful hints on producing big, punchy mixdowns. www.myspace.com/iciclednb



Icicle finds dubstep to be a more demanding but less confined genre than DnB

> Step by step

Building a dirty bass sound



- 1 > Jeroen starts with the default 'no sample loaded' sine wave tone in Logic Pro's EXS24 sampler. To stop this clicking at the start and end of each note, he turns up the Amplitude Envelope's **Attack** and **Release** times.



- 2 > Next, he runs the sub through Logic's **Overdrive** plug-in, turning the **Tone** and **Overdrive** controls all the way up. "At this stage it can be very dirty, but make sure that you still have enough low frequencies - you don't want to break it up so much that it turns into rumble rather than a coherent bass sound," he warns.



- 3 > Jeroen uses Logic's **Ensemble** chorus plug-in to add some modulation movement to the sub. He follows this up with an **AutoFilter**, the LFO of which is set to a triangle shape to sweep the filter **Cutoff** over two bars. This drops down to almost the fundamental note frequency at the middle of the two-bar section.



- 4 > Jeroen uses SSL's **Duende Channel Strip** to bring out the bass' mids. Rather than routing the resulting sound directly to the Master Out, he runs it through a selection of busses. Two are used at first: one with a low-pass EQ inserted, the other with a low-cut EQ. This allows the sub to be processed separately from the mids. He uses Logic's **Gain** effect in **Mono** mode to mono-ise the bass buss.



- 5 > Next, he creates a third bus, featuring selection of effects intended to create a differently modulated and EQed version of the same sound. Logic's **Phase Distortion** effect is first, and it roughs up the bass nicely.



- 6 > PSP Audioware's **Nitro** is inserted after the **Phase Distortion** to add a phasing effect to the sound. Then **Sugar Bytes'** envelope-following filter **Wow** is deployed in **Low-pass** mode to add some filter movement. Finally, Jeroen adds an SSL **Channel Strip**, which cuts the low-end to stop it interfering with the sub, and another **Auto-Filter** with its modulation offset against the one on the first bus.

> Step by step Making driving beats in Reason



- 1 > To make his beat, Jeroen starts with a simple DnB rhythm played back using Reason's Redrum drum machine. The sounds aren't as weighty and as full as he wants, so he cracks out PSP VintageWarmer in **Fat** mode, bringing up the level of the drums' tails.



- 2 > Next he calls on iZotope Alloy's transient processing. "Most people do the kick, snare and hi-hat on different channels and merge them together later, but I like to process them together," he says. He uses **Multiband** mode to split the sound into three regions for kick, snare and hi-hat, tweaking the **Attack** and **Time** to give the drums maximum impact.



- 3 > Next, he loads up another Redrum to layer more sounds on top of the initial beat. He applies delay to these extra hi-hat and tambourine hits courtesy of Logic's Tape Delay. In that plug-in, he applies a little **Low Cut** and drops the **Feedback** level to prevent it muddying the mix. He then runs the signal through GoldVerb to add a little reverb.



- 4 > To emphasise the stereo width of this channel, Jeroen uses Logic's Sample Delay to delay the left side by **48** samples relative to the right. This widens the stereo field and gives the impression that the sound is coming more from the right. "You're delaying the start point of one of the channels, so if you do it a lot you can mess up the quantise of your beats - things will sound out of time or late," he warns.



- 5 > Next, he adds a hi-hat loop from Dr. Rex. The pattern is copied from the player onto the MIDI track and quantised to make sure it's nice and tight. Jeroen adds a low EQ cut to make sure there's no unwanted low-end rumble, and layers the sound with a tambourine loop from another Dr. Rex player.



- 6 > To glue the bass and the beats together, the Waves API 2500 compressor plug-in is placed on the master channel. "Because it's on the master, the ratio should be quite low: **1:1.5** is enough," he explains. This is followed by a final EQ from the Duende Channel Strip, which boosts the highs slightly. "The sound I like when I'm working lacks a little bit of high - I just like that bass-y sound."

Making bass sounds in Reason's Thor synth

- 1 "I like to use wavetables with this synth because the analogue oscillators are synced, so you can get problems at the start of the waves, like clicks or phasing issues. The basic analogue waveform that loads up by default is great because it goes from sine to square to saw. For the first oscillator, I keep the harmonics quite low and subby; then I give the second one more harmonics just to make it a bit more interesting. Then I detune each one by about 20 cents."

- 2 "I use a low-pass filter to get rid of the nasty high bits - it's all about envelopes and filters for me. So here I use the filter envelope to modulate the cutoff. So then you have the detuned movement of the sound plus the filter movement. I might assign an LFO or automate the cutoff, but I do all the post-processing in Logic because you've got more control in there and more high-quality effects."

- 3 "By using the chorus you get a bit of stereo movement, which is kind of undesirable, but Reason has a very good stereo imager, which you can use to make everything below a certain frequency mono. It's very useful to put after anything that will add stereo to your bass."

- 4 "I like to use the positive comb filters: they create weird resonance and sounds, and you can slightly drive them as well. It helps you to get a more distinctive sound. Everyone searches for that particular frequency on the filter where their sound is best, but that means you get different results with different notes. Get around that by automating the filter on each note, or making a long note, bouncing it down and using it in a sampler. You can also use the Keyboard Tracking knob on the filter, but that's tricky and doesn't work very well for me. With bass, I only play one or two notes, so it's a waste of time."



HIGH RANKIN

Self-styled gentleman rogue William 'High' Rankin has accrued a plethora of releases on a number of big labels including Dogs on Acid, Cheaper Thrills and Sub Slayars. One of his more notorious tracks is *Meow Meow*, a tune highlighting the potential dangers of indulging in the at-the-time-legal high.

Equally hard hitting as his view on drugs are William's killer drum beats. How does he get them sounding so sweet?

"I get asked how I get my drums so punchy quite a lot," he laughs. "To be honest, it's just a combination of layering and EQ. To make bass, Native Instruments' Massive is my fave - it's amazing. It's great for making Noisia-style bass sounds."

Does William have any other general production tips? "My best tip for improving your production is simply to make as many tunes as you can. Make four a day. Each one will be better than the last. Don't labour over one tune for weeks."

What DAW does he use to make his music? "FL Studio is amazing," he replies. "People who slate it are generally twats that don't even put out tunes - they're too busy crying on forums."

In this tutorial and its accompanying video, Will shows us how to make filthy dubstep wobbles using Native Instruments' ubiquitous Massive, the demo of which can be downloaded from www.native-instruments.com. www.myspace.com/highrankin



Whether it's DnB or dubstep, High Rankin ensures his beats pound the dancefloor

> Step by step The dubstep wobble



- 1 > Starting with Massive's default patch, the first thing Will does is select the **Scrap Yard** shape for the first oscillator. Then he clicks the **Voicing** tab and turns the **Unison** up to 10. He sets the first oscillator's **wt-position** to maximum, drags the wave handle from **5 LFO** to the first slot under the oscillator and pulls down for maximum negative modulation.



- 2 > Next, Will sets Massive's first effect slot to **Tele Tube**, with the **Dry/Wet** and **Drive** parameters both at 12 o'clock. Then he chooses **Dimension Expanders** for the second effect slot and puts both the **Wet/Dry** and **Size** parameters to about 11 o'clock.



- 3 > Back in the **Voicing** tab, Will sets the **Voicing** mode to **Monorotate** and the **Trigger** mode to **Legato Triller**. This means that when one note is held and another is played, the pitch will glide from the first note to the second. In the **Osc** tab, he puts the **Time** knob to 10 o'clock - that determines the time that the glide takes.



- 4 > The next task is to turn 4 Env's **Decay Level** knob fully up, in order to make the volume stay at the same level over the whole note. After that's done, he activates the **Modulation Oscillator** and sets the **Phase** modulation to **Oscillator 1**. Now when he sweeps the **Phase** knob it creates a horrific frequency modulation-style sound.



- 5 > Will selects the **5 LFO** panel and drags the **6 LFO** modulation handle onto the slot under the **Rate** knob. He sets the **Rate** to 11 o'clock and turns the modulation up to three o'clock. Then he selects **6 LFO** and changes its mode to **Stepper**, before setting the **Length** of the sequencer to **4** and activating **Sync** and at **4/16**. Finally, he creates a sequencer in the stepper for his trademark mad modulation.



- 6 > For the final terrifying touch, Will activates **Oscillator 3** and cranks its **wt-position** knob all the way up. He sets the **Amp** and the **Intensity** at 3 o'clock, and uses **5 LFO** to modulate the intensity as above. Finally, he switches the oscillator mode from **Spectrum** to **Formant**.

CUTLINE

Cutline might be a new name in the world of dance music, but Dan Wilberforce and Jeryl Wilton have been working behind the scenes at various distributors and labels for years. This year, their Cutline project has seen them remix the likes of Nick Thayer, The Qemists and new Shogun Audio signings The Prototypes, and their tracks have created waves in the breaks, house, dubstep and DnB scenes. How do they keep on top of such a wide variety of styles?

"We've always been interested in bass music," enthuses Jeryl. "From jungle in the mid-90s to now, we've kept an eye on the various genres that have sprung up: garage, breaks, electro-house and dubstep.

These days audiences are open to producers who make a variety of styles, so it makes sense to try our hand at whatever's interesting and inspiring. Trying new ideas, sounds and techniques makes more sense to us than just bashing out variations on the same old thing."

In this tutorial, Cutline's production mastermind Dan reveals his recipe for getting that perfect beat. Note that while Roger Nichols Inspector XL is no longer available, there are plenty of alternatives, including **cm**'s own Blue Cat Audio FreqAnalyser CM (on the **cm** DVD) and Voxengo's SPAN v2 which can be downloaded for free from www.voxengo.com. www.myspace.com/cutlinemusic

Cutline love to trample over boundaries and work in as many genres as they possibly can



> Step by step Producing beats for dubstep and drum 'n' bass



1 > Before Cutline begin creating their beat, they set their working environment up for maximum control. They create group busses for each element - kick, snare, hats, claps and so on - and lay down short reverb, long reverb and delay sends. Finally Dan routes all of these tracks to a master 'beats' buss.



2 > Dan inserts three plug-ins into the beats buss. The first is Camel Audio CamelPhat, favoured for its warm filters. They turn everything but the filters off and turn the volume all the way up. Next is iZotope Ozone 4 - Dan uses the Stereo Imager to make everything below 300Hz mono. Lastly, a spectrum analyser is added to monitor the frequency content.



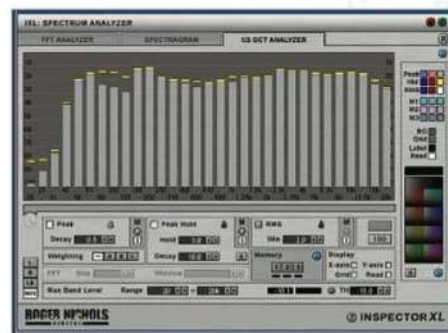
3 > Next, Dan loads up the main kick and snare in Battery on separate mono channels. He then layers another snare - pitched up and high-pass filtered at around **200Hz** - with the main snare to give it more weight.



4 > Dan then routes the Battery output channels to the appropriate group channels, and programs a kick and snare rhythm over a four-bar loop. Next, he layers the snare with some wide stereo claps. The clap channel contains a high-pass filter set to around **4500Hz**, and Dan uses its auxiliaries to send it to the reverb busses.



5 > Next, Dan adds layers of hi-hat rhythms and breaks over the top, and routes them to the hi-hat and percussion group channels. He high-pass filters the sounds at **4500Hz** so that they don't interfere with the beat's low end. Finally, he mixes all the separate parts down using the Inspector XL Frequency Analyzer to gauge the levels.



6 > Whether Cutline are creating Dubstep or DnB, they use the same mix levels. Kicks hit no higher than **-15dB**, snares hit at **-10dB** and all high frequencies are around **-15dB to -20dB**. Dan EQs out the low frequency of the kick so that it peaks between 70 and 100 Hz, creating space for the sub-bass to come through. **cm**

> on the disc / dvd contents

> Full contents of your 7.8GB Dual-Layer disc

cmDVD

PC MAC

Synapse Audio Plucked String, 1952 24-bit Old-Skool Rave samples, the latest reader demos, tech house genius Dom Kane on video and more, all on this issue's disc

DVD contents Full software

Full software

Synapse Audio Plucked String
(PC/Mac)
Togu Audio Line TAL-NoiseMaker
(PC/Mac)
Big Tick Zen (PC)

Demo software

Blue Cat Audio MB-5 Dynamix
(PC/Mac)
Brainworx bx_shredspread
(PC/Mac)
WaveMachine Labs Drumagog 5
(PC/Mac)

Tutorial files

cm Focus
cm Studio Session
Off the Dial
Get the Perfect Bass
Q&A
Sound Essentials
The cm Guide to Riffs
Totally Trackers
World Music

Samples

The 24-bit Old-Skool
Rave Collection
Including loops, breaks,
synth and bass
multisamples, vocals,
FX and hits

Reader Music

Audio Irony - *Silent Hill*
Nurses Club Band
N-GeniuZ - *After Hours*
Xsara - *Grey Air*
Yes..Pinkpink - *Seize Me*

Full software SYNAPSE AUDIO PLUCKED STRING (PC/MAC)

If you want to pluck, you're in luck this issue, as we've teamed up with Synapse Audio to bring you their excellent Plucked String synth! See over the page for your complete guide to installing and using this fantastic plug-in.

System requirements

PC VST host
Mac AU/VST host
Web www.synapse-audio.com

Add gentle fingerpicking or frantic strumming to your tracks with Plucked String, as originally sold for \$29



TOGU AUDIO LINE TAL-NOISEMAKER (PC/MAC)

The latest synth from TAL has been updated with several new features including a graphical envelope editor, resizable UI and vintage noise control. It's without doubt one of the best freeware synths around.

System requirements

PC VST host
Mac AU/VST host
Web kunz.corrupt.ch

BIG TICK ZEN (PC)

This new patch-management software aims to making finding the right sound as easy as possible with its handy tag-based cataloging system. You can find out more about it in our interview with its developer on p18.

System requirements

PC VST host
Web www.bigtickaudio.com

Enjoy the latest version of the excellent synth TAL-NoiseMaker



Get more out of your presets with Big Tick's innovative patch-management system Zen



Demo software

BLUE CAT AUDIO MB-5 DYNAMIX

(PC/MAC)

This hugely flexible dynamics processor from Blue Cat Audio can be called into service as a multiband compressor, limiter, gate, expander, waveshaper or all combined at once on any part of the frequency spectrum. The limitations of the trial version are that you can only use a single instance of the plug-in per session, and that the output is regularly silenced.

System requirements

PC SSE2-enabled processor, Windows XP or later, RTAS/VST host

Mac OS X 10.5 or later, AU/RTAS/VST host

Web www.bluecataudio.com

BRAINWORX BX_SHREDSPREAD

(PC/MAC)

Designed for making doubled guitar parts as wide and fat as possible, bx_shredspread is billed as an intelligent stereo processor. You can find our review on p104. The trial version will expire after 14 days.

System requirements

PC 1GHz CPU, 256MB RAM, Windows 2000 or later, RTAS/VST host

Mac 1GHz CPU, 256MB RAM, OS X 10.4 or later, RTAS/VST host

Web www.brainworx-music.de

WAVEMACHINE LABS DRUMAGOG 5

(PC/MAC)

The veteran drum-replacement tool just keeps getting better and better, and the new features in the latest version include an overhauled triggering engine and auto hi-hat tracking. The demo version will expire after 14 days.

System requirements

PC Windows XP or later, RTAS/VST host

Mac OS X 10.4 or later, AU/RTAS/VST host

Web www.drumagog.com



Get started with our **BEGINNERS' GUIDES**
If you're new to computer music, our five *Beginners' Guides* will get you moving in the right direction. They're in the **CM Beginners** folder.



Brainworx's stereo enhancing plug-in for guitars, bx_shredspread, is reviewed on p104



The latest version of WaveMachine Labs' drum replacement plug-in Drumagog excels when it comes to realism and dynamics

USING THE DVD INTERFACE

- 1 Put the DVD-ROM in your DVD drive, let it spin up, and wait for the interface to appear. If it doesn't autorun, browse to it in Explorer/Finder and double-click **Computer Music** for OS X or PC, as appropriate. Read the disclaimer and click **Accept** when you're done.
- 2 The main interface will open. Mouse over the links for each section to get a brief description of their contents, and click on your button of choice – in our case, **Software**.
- 3 An Explorer/Finder window will open, showing you the contents of that folder. Any executable files can be run directly from the DVD by double-clicking them. Demos are generally presented as installer applications, but check any Readme text files for additional installation information.

PROGRAMS & PLUG-INS

Most of the programs on the DVD-ROM are presented as installers – simply double-click the installer icon and the application does the rest. However, plug-ins are often presented as .dll (PC), vst or .component (Mac) files. To 'plug' the plug-in into your VST/AU host, just copy the plug-in file into your VST or AU plug-ins folder, as appropriate.

SAMPLES

Every month we give you a wealth of royalty-free samples! You can use them in your music in any way you see fit, without having to pay a penny, even if you end up commercially releasing your work. The only thing you *can't* do is redistribute them as samples – eg, by making a sample CD with them. To install our samples, simply copy them to your hard drive.

> make music now / synapse audio plucked string

> Exclusive full software!

Synapse Audio Plucked String

PC MAC



Looking to get some twanging string-based action into your productions but with more sound design flexibility than samples can deliver? Step this way...

> Picture this: You've got the track nailed – the drums, bass and keys are all grinding away. The only thing missing is a fingerpicked acoustic guitar lead that you just know will make the arrangement shine. The only trouble is that your guitarist is nowhere to be found. What to do? Your own skills with a six-string are nothing to write home about, and though your hard

drive is bursting with sampled guitars, none of them have the realism of the real thing.

Enter Plucked String. This physically modelled marvel comes from Synapse Audio, whose theoretical thaumaturgy was responsible for the awesome Orion, an underappreciated PC software studio packed with impressive plug-ins of every

persuasion. Plucked String made its first appearance as a part of that package and was embraced by Orion users for its realistic representation of acoustic guitars. Eventually it was made available to both Windows and Mac users but now, alas, it's no longer sold. How thoroughly excellent, then, that Synapse have elected to give Plucked String away as an

exclusive giveaway with this issue of *Computer Music*!

Over the next few pages we'll give you the complete lowdown on Plucked String, with a step-by-step tutorial exposing its innermost workings. Once mastered, you'll be able to produce stunningly realistic acoustic sounds and odd-ball alien orchestrations alike using this excellent plug-in.

COARSE AND FINE-TUNE

The tuning of these self-explanatory controls interacts with the Output section

TIMBRE

Modelling gives you control over the physical characteristics of the instrument and how they affect the timbre. Change it here

FILTER

Yup, there's a filter section! Still, this isn't like the filter section found on an analogue synth. Here, you get Cutoff and Damp controls

VIBRATO

A vibrato effect is a necessity at times. Control the vibrato rate, delay and amount

ENVELOPE

Envelopes shape the way the sound behaves over time. This is a three-stager, with knobs for Attack, Decay and Release



MODEL

This is where you get to decide what sort of instrument you'd like to model. Choose from acoustic, nylon, noise and more. Flipping through this one can dramatically alter a patch.

VOLUME

It doesn't go up to 11, since we're dealing with a primarily 'acoustic' sound. Nevertheless, this does just what you'd expect it to.

OUTPUT MODE

Fatten up your sound by doubling or even tripling the notes being produced. These selections interact with the Fine-tuning control up top.

> Step by step

Plectrum power with Plucked String



1 > Find your Plucked String plug-in on the **cm** DVD. The Windows version is in **Software\PC Software\Full Software**, while the Mac version is in **Software\Mac Software\Full Software**. Mac users will need to copy the **Plucked String** component into **Library/Audio/Plug-ins/Components** and the VST into **Library/Audio/Plug-ins/VST** for them to work in AU and VST hosts respectively.

2 > Windows installation is a bit more involved, since it requires a serial number and uses a proper installer. Start by running **PluckedStringSetup.exe**. Follow the onscreen instructions. You will be asked to supply a serial number. That number is **PLST-21DA-130D-2314-634B**. You'll also be asked to locate your **VST Plugins** folder so that the installer knows where to put the thing.

3 > You'll need a plug-in host to use Plucked String. It will work in hosts supporting Audio Units (Mac), DXI (Windows) or VST (Mac and Windows) formats. We're going to use energyXT2, of which there's a free version in the **cm** Studio. Everything we show you here will be applicable in any suitable VST, AU or DXI host, however.



4 > Every host will use a different method to load plug-in instruments. Some DAWs have an instrument rack or dedicated instrument tracks; in others, you just need to drag them in from the browser. This is how it's done in energyXT2. Open the plug-in and have a play with the included presets.

5 > Clearly there's a lot of flexibility on offer. Some patches are realistic, while others are out of this world. Mac users may notice that when they change presets, it isn't reflected in the instrument's GUI. Don't worry: that isn't a problem for this tutorial. When you've reviewed the presets, return to the first patch, **Acoustic Guitar**. Try playing a note, then turning the **Coarse** knob all the way down.

6 > Now, twist the **Coarse** knob in the other direction and play. Unlike a sampler-based tone, this one sounds authentic across a wide range. That's the magic of modelled instruments! Return the **Coarse** knob to the centre. Return the **Fine** knob: this interacts with the Output section. Centre it and play some notes. Turn it clockwise a little and play a few more.



7 > With the **Fine** knob still turned a little right-of-centre, go to the Output section, change the Output mode from **Double** to **Single** and play your sound. Now try **Triple**. Twist the **Fine** knob counter-clockwise while repeatedly triggering some notes. As you can hear, there are three notes being sounded. The **Fine** knob affects the individual tuning of these notes.

8 > Return the **Fine** knob to the centre position and select **Single** mode. Try turning the **STRN** knob down. This controls the strength of the strings in the model. Lower values will emulate softer materials, such as nylon, while higher values simulate less elastic strings. Likewise, the **Pluck** knob affects the way the string is excited. Higher settings represent hard materials, like picks, while lower settings are softer.

POWER TIP

>Be a player

As with all modelled instruments, Plucked String responds well to the performance input. The more you practice playing the thing, the better it will sound. This is especially true when you're attempting to emulate the sound of real-world instruments. How can you make your playing sound more authentic? Study the real thing. For example, it's easy to think of a guitar as possessing six-voice polyphony, when it's more accurate to say that it has six independent monophonic voices (one for each string). Keep this in mind when voicing your lead lines and chords.

> make music now / synapse audio plucked string

> Step by step **Plectrum power with Plucked String (continued)**

9 > If you've kept your knobs set the way we had them in the last step on the previous page, you'll have something like a koto sound. The string is soft, but we're plucking it with a hard surface. Turn the **Timbre** knob counter-clockwise: you'll hear the sound of the instrument get deeper, as if the body of the instrument has suddenly increased in size.



10 > Let's move on to the Filter section. First, though, turn the **STRN** knob up to around 3 o'clock - that should provide a fuller tone for our filter to play with. Set the filter **Cutoff** to around 10 o'clock. Notice that the high frequencies are now rolled off the string sound. Try turning the **Damp** knob up to around 2 o'clock.



11 > As you can hear, higher Damp settings result in harsher sounds. The **Damp** knob acts as a sort of filter Q adjustment, controlling the steepness of the filter's curve. As you'll have noticed, the 'plucked' attack of our sound is less affected by the filter **Cutoff**. Reduce the **Pluck** value with the new filter settings. We've set ours to about 12 o'clock.



12 > Moving on to the Envelope section, there are three stages to Plucked String's envelope: Attack, Decay and Release. The **ATK** knob affects the way that the sound comes in. Turn it up to almost halfway, then play and hold a note. It appears we've left any semblance of a plucked instrument behind! Slower attacks can be used to emulate bowed sounds.



13 > Return the **ATK** knob back to the full counter-clockwise position. Let's try adjusting the Decay (**DEC**) knob. Set it to 12 o'clock and play some notes. The decay setting controls how the sound fades over time before the note is released. Think of this as a sort of 'pre-release' that occurs before the note is lifted.



14 > The Release (**REL**) knob affects how long the sound takes to fade away after the note is released. Set it to somewhere around 3 o'clock. Now, play a note but lift your finger off of the key immediately. Note that the sound takes a while to fade away.



15 > Play and hold a note: the sound dies almost immediately. That's because the decay stage is reaching its full length before the release stage is triggered. You can achieve some very realistic strumming sounds by carefully adjusting the **DEC** and **REL** knobs so that they interact with your playing techniques. Let's move on to the Vibrato section. Start by cranking the Amount (**AMT**) up to around 1 o'clock.



16 > Play a note or chord. Nothing happens. Why? We need to increase the **Rate**. Try setting it to 1 o'clock. Play another note. Nice - there's a real retro vibe happening. Turn the **Delay** knob up to just past the centre position. The vibrato no longer comes in immediately, but hesitates a bit.



17 > If you haven't already, you might want to try selecting some of the four other models to hear how they sound. We settled on **String** because it suits our Eastern patch very nicely. Also, be sure to check out the **Settings** menu. Go there to adjust the polyphony and the range of your controller's pitchbend wheel. Most of all, experiment: Plucked String can produce a wide variety of timbres. **cm**

>Royalty-free, pro-quality sounds!

PC

MAC



1952 rave samples

It's time to dust off your whistle: we take things back to the 90s with a collection of bouncy old-skool rave sounds to rev up your tracks

The 24-bit Old-Skool Rave Collection

The musical influences of the early-90s rave movement have been a consistent source of inspiration for dance music producers, and currently the house, dubstep, breaks and DnB scenes are all experiencing their own rave revivals to varying degrees. Never ones to miss an opportunity for a trip back to the old-skool, we tasked our producers with building a library of loops and sounds to bring that 'ardcore rave flava flooding back...

Groove Criminals

7 multisampled basses
160 beats
157 drum hits

95 FX
191 musical loops
88 single hits
10 multisampled synths
46 vocal hits

Since 1994's Criminal Justice and Public Order Act made it illegal to get down to repetitive beats in a field, the Groove Criminals have made it their mission to violate the law as often as possible. This gurn-inducing collection of samples includes noises from some classic late 80s and early 90s sound modules, plus various vintage synths and drum machines.

www.groovecriminals.co.uk

Cyclick

96 bass loops
195 beat/percussion loops

112 key and synth loops
6 multisampled basses
81 drum and percussion hits
135 break slices
15 breaks
2 multisampled synths

Cyclick take us back in time to the stomp-loving 90s with this collection of uplifting piano and synth riffs, breakbeats with a convincing 'sampled from vinyl' feel, and big 'n' bouncy multisampled bass sounds. Please avoid listening to these sounds under a low ceiling lest you spontaneously feel the need to wave your hands in the air - cm will not be held responsible for any damage incurred to light fittings.



Sample and video playback

cm videos are presented in MOV format, which means that you need QuickTime, QuickTime Alternative or VLC installed on your system to play them. Macs feature QuickTime as standard, and PC owners who don't have QuickTime installed can use VLC instead. VLC is an open-source media player that can handle pretty much any format you can throw at it - you'll find it in the VLC Media Player folder on the cm DVD. VLC is also recommended to Windows users who find that 24-bit samples won't play back in their Windows Media Player. For the latest version, go to www.videolan.org.



Producer Masterclass Video

Artist **Dom Kane**

Minimal maestro Dom is a musical jack of all trades, in demand for his skills as a world-class DJ, producer and sound designer. In this exclusive video he shows us a work in progress and explains exactly how he gets his amazing sounds and polished mixdowns.



Web www.myspace.com/dom.kane

Dubstep vs DnB

We take to the studio with Reso, The Qemists and Icicle in more than three hours of exclusive video, plus High Rankin spoils us with his guide to making dirty bass sounds in Native Instruments Massive.



HAVING PROBLEMS?

In the unlikely event that you have trouble with your disc, send an email to support@futurenet.co.uk and they'll help you out. Please do not phone us, as we don't give technical support over the telephone!

If you experience a problem with your software, you should first refer to the software manual. This is often delivered with the software itself or is sometimes placed on your hard drive when you run the installer. If you find that you don't understand some of the features of the software, remember to read the manual first. Should you be unfortunate enough to run into any technical difficulties with the software, it is often best to get in touch with the developer of that software - they are probably better-equipped to offer you the support you need than we are.

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on the disc / **cm** studio session

cm STUDIO

Our exclusive suite of applications, instruments and effects is on the DVD every month – it's quite literally all the software you need to make great music now!

APPLICATIONS

Outsim SynthMaker CM (PC)

Create your own VST synths and effects

XT Software energyXT2.5 Core CM Edition (PC/Mac/Linux)

VST host and sequencer with modular routing

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AlgoMusic ElectraBass Rack CM (PC)

Easy-to-use bass synth that's packed with presets

Big Tick RhinoCM (PC)

Amazing hybrid synth with cool FM capabilities

CM WusikStation (PC)

Hybrid sampler/synthesiser

Dominator (PC)

Virtual analogue synth with a classic feature-set

FabFilter One 2.01 (PC)

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Homegrown Sounds Astralis CM (PC)

Modulation-heavy 'soundscape' synth

Homegrown Sounds Astralis Orgone CM (PC)

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Humanoid Sound Systems Scanned Synth CM (PC)

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Muon CM-101 (PC)

Analogue-style VST synth

Muon SR-202 (PC)

16-pad VST drum machine

Muon CM-303 (PC)

Emulation of the classic Roland TB-303 synth

Muon DS-404 (PC)

Powerful 16-part multitimbral VST sample

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C64 SID chip-emulating VSTI

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Synapse Audio Junglist (PC)

Effects-packed virtual analogue synth

u-he ZebraCM (PC/Mac)

Amazing virtual analogue synth

Ummet Ozcan Genesis CM (PC)

Another amazing virtual analogue synth

XT Software EnergyCM (PC/Mac)

Analogue-style sequencer

EFFECTS

Aixcoustic Creations Electri-Q CM (PC)

Sweet-sounding and flexible equalisation

Audio Damage Pulse Modulator (PC/Mac)

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Betabugz Audio Vascillator (PC)

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HERE**

Get the **cm** Studio installed with our easy-to-follow PDF guides! They're on the DVD in **The CM Studio/CM Studio Tutorials** folder.

Blue Cat Audio FreqAnalyst CM (PC/Mac)

Sophisticated stereo spectral analyser

Camel Audio CMFuzz (PC)

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Image-Line CM Vocoder (PC)

Special **cm** version of FL Studio's FL Vocoder

Image-Line CM WaveShaper (PC)

Flexible wave distortion effect

Intelligent Devices MegaDelayMassCM (PC/Mac)

Sound design-orientated delay module

Intelligent Devices Slip-N-Slide CM (PC/Mac)

Easy-to-use double tracker

KResearch KR-Delay CM Edition (PC/Mac)

Dual delay lines with filters and sync ability

KResearch KR-Reverb CM Edition (PC/Mac)

Easy-to-use, algorithmic reverb effect

Martin Eastwood Audio CompressiveCM (PC/Mac)

Compressor/limiter with side-chain input

Martin Eastwood Audio Duet (PC)

Easy-to-use double tracker

NuGen Audio Stereoizer CM (PC/Mac)

Useful mixing tool for control over your stereo spread

Ohm Force Ohmygod! (PC/Mac)

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Sanford Phaser-CM (PC)

Phaser effect with advanced modulation abilities

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Plug-ins modelled on classic guitar effects and amp

Sugar Bytes Artillery2 CM Edition (PC)

Multi-FX with internal sequencer



ZebraCM is an absurdly powerful virtual analogue synth that every computer musician should have in their arsenal

Making patches in Artillery2 CM

How to program your own patches in Sugar Bytes' excellent multi-effects plug-in



1 > Last month we showed you how to use Artillery2 CM to create sequenced effects using the supplied preset patches. Now we're going to help you program your own patches. Set the tempo in your DAW to **130bpm** and drag **House130.wav** from the **Tutorial Files\CM Studio Session** folder on the DVD onto an audio track.

2 > Add Artillery2 CM as an insert effect on the audio track. The default empty patch will appear. To add an effect, drag on the bar above the virtual keyboard at the bottom of the interface. A red block reading **Empty** will appear. Drag the left and right edges of this block so that it covers the first octave like so.

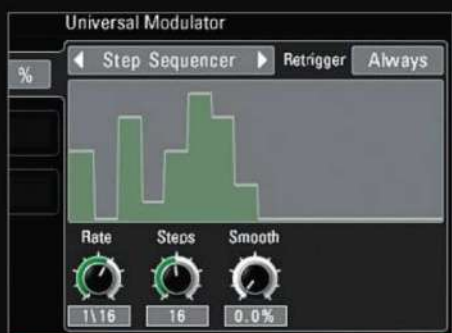
3 > To assign an effect to this keyrange, click **Select Effect**, towards the top left-hand corner of the interface. You'll be presented with a range of six effects to choose from. Select **Lowpass**, which, as you will have guessed, is a simple low-pass filter effect.



4 > Play the loop back and try clicking and holding on any one of the keys on the virtual keyboard. You'll hear the loop become slightly duller. Change the **Cutoff** to **255Hz** for a stronger effect. Now when you click a key, everything but the kick will be filtered out.

5 > At the moment you'll get the same effect no matter what key on the virtual keyboard you play. Turn the **KeyTrack** knob to the right of the **Cutoff** knob up to **100%**. Play the loop back and try clicking different keys. You'll hear the filter cutoff open up the higher up you go.

6 > It's also possible to use Artillery2 CM's internal modulators to affect the parameters. In the **Universal Modulator** panel, click **Select Modulator** and pick **Step Sequencer**. Right-click the lowest note on the virtual keyboard to keep it active. Raise the **Mod Amount** knob in the **Cutoff** row to **100%**.



7 > On playback you'll hear the filter cutoff skip around: this is because its level is being controlled by the step sequencer. You can change the level of each step by simply dragging it. Set the **Rate** to **1/16**, **Number of Steps** to **16** and **Retrigger** mode to **Always**.

8 > Draw a smooth curve in the step sequencer and turn the **Smooth** amount up to **100%**. This will give you a cool filter sweep. You can select a different modulator for each parameter. Click **Resonance** to select it, and change its **Modulator Type** to **LFO**. On playback you'll see the level move up and down.

9 > Create a new region by dragging over the next octave up on the keyboard. This time select **Amp**, change the **Level** parameter's modulator to **Step Sequencer** and set its **Retrigger** mode to **Always**. Change the **Rate** and **Step** parameters to **1/16** and **16** respectively, and draw in a comb pattern to make a gating effect. **cm**

on the disc / reader music

Reader music

Roll up, roll up! We explain to four lucky readers just what's right – and wrong – with their productions



Send us your music

For the chance to be featured in *Reader Music*, simply send us your track via the SoundCloud DropBox on our website (see the walkthrough below for instructions), along with a description of your act, an image (sleeve art, photo or logo that you own the copyright to), and your equipment list. Be absolutely certain that no copyright samples have been used! The best tracks we receive each month will be reviewed here and featured on the **cm DVD**, so send yours our way today!

Rules:

1. Send no more than two tracks
2. Submit your track(s) via the SoundCloud DropBox on our website
3. The audio and MIDI files used must all be original and/or royalty- and copyright-free

SILENT HILL NURSES CLUB BAND Audio Irony

Artist Brett Grace
Web www.audioirony.com



> Let's venture into the darkness with some sonic sculpting of the 'interesting' variety. You'll either love it or hate it, but this track could easily grace a suspense movie soundtrack or sit on the weirder end of a Tricky record. Most of the darker sounds are made from slowed-down and cut-up vocal clips put through various

distortion processes and panned around the soundfield. Other sounds are courtesy of glitched synths and echoed and wowed bell patches. The end result is a very complete abstract composition.

A brief trip-hop beat is the only nod to an orthodox production; all else is drifting, amorphous sonics. Brett uses the stereo field to its fullest with a lot of dynamic panning and extreme width. The only element missing from the picture is a low-frequency part (other than the kick in the loop): a low drone or pulse could possibly help to bring an increased sense of size to the scene. It might also allow an extension of the length from its current all-too-short two minutes.

The balancing is good because your ear is lead easily from one sonic event to another and you never have to struggle with too much information. We like!

What the artist says:

"I started with the mantra 'No new music' by piecing together single spoken words. I then gathered random Apple Loops and set about mangling, stretching, cutting and forming them into an aural anamorphosis. The final result reminded me of the grotesque and disturbing imagery presented in the movie adaptation of *Silent Hill*."

Equipment used Mac G5 dual 2.3GHz, Logic Pro 8, Midiman/M-Audio Oxygen 8, M-Audio Audiophile 192.

AFTER HOURS N-Geniuz

Artist Spyros Papadakis
Contact ngeniz@gmail.com



> This deep house tune has a really gentle vibe, which is conjured up by layers of warm tones over a classic house beat and tempo. All of the sounds pulse with dotted rhythms (created through the use of either delays or played parts), which combine to breezily roll with the skip of the hi-hat.

The result is a perfect chill-out tune that isn't going to offend even the staunchest hater of the genre. Even though there's quite a build up of parts – piano, strings, pads and synths – the arrangement is such that it never feels clogged up. Instead, the parts complement each other and riff around with calls and answers. Spyros' claim that *After Hours* is an experiment in minimalism is one that we would argue against, though – there are many different elements to be found here.

One of the most successful sections has to be the intro, because it sets the tone so perfectly – especially the echoey, throaty synth part. We also like the tremolo electric piano that modulates in time with the track, and the very cool sub-bassline. All you have to do is lie back and enjoy the easy groove.

What the artist says:

"The track is an experiment in minimalist electronica. It's the first tune on which I tried a more repetitive approach, layering loops one by one like construction blocks to slowly and steadily build the intensity."

Equipment used PC, Presonus Firepod, Steinberg Cubase SX2, Sony Acid Pro 7, Spectrasonics Omnisphere, NI Absynth, reFX Nexus, EWQL Symphonic Orchestra Silver Edition. Loops from Peace Love Productions, Producer Loops and Sounds/To/Sample.



SoundCloud makes sending and receiving music easy. Anybody can sign up for a free account and start sharing tracks straight away, although you don't even have to do that to submit your track to *Reader Music*...



1 > Go to www.computermusic.co.uk and look on the right-hand side of the page for our SoundCloud DropBox widget. Click **Send me your track**, then **Choose a file** and select your track.



2 > Enter *all* of the following in the **Track description** box: track name, artist name, your name, email address, website (or MySpace), equipment list and a brief description of how your track was made.

SEIZE ME Yes..Pinkpink

Artist Yes..PinkPink
Web yespinkpink.bandcamp.com



> The track starts with a drum pattern that sounds like it's straight out of an 80s drum box. Next, other retro-electro sounds perforate the air, and when the song emerges, it owes quite a debt to the synth pop of that decade. The track also has an interesting anarcho-post-punk ethos in the delivery of the vocal: it's along a Devo vein,

layering shouted falsetto vocals and harmonies.

Initially, the production seems empty and lightweight, which isn't helped by the levity of the vocal sound, the lack of a bassline and the simplicity of the plinky synth sounds. But the introduction of big synth sounds and a bassline as contrast creates a fullness and intensity. The quirky humour continues with a very short theatrical interlude.

When the verse returns, it has a fuller bassline and, as a result, stands up by itself. The first verse could do with a bit more grounding from that fuller bass to establish a stronger foundation. The mix is good on the whole, but the vocal balance is a bit ragged and could do with a bit more attention being paid to compression and level. On the other hand, it might lose its naïve charm if it was tidied up too much.

What the artist says:

"My goal was to make a simple, open and transparent song with a minimum set of elements that still stood out. *Seize me* is about zombies having all access within total isolation... About the lightness of madness or the madness of lightness... Yeah all about zombies..."

Equipment used Korg Microsampler, iPhone synths, Nintendo DS Lite & Roland SH-32, Ableton Live 8, TC Electronic konnekt24, Pro Tools LE 8, Mackie Onyx run into two Electro-Harmonix custom 12ay7 tube mic preamps.

Video link: YouTube, Vimeo, Google Video and VODder videos will appear in an on-site player

Artwork: You can upload jpg, png, gif, tiff images up to 2 megabytes

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3. Your contact info
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A confirmation email will be sent to this address before we send your track

4. Terms of Use
☒ I agree to the Terms of Use of SoundCloud

3 > Click **Upload new artwork** and choose an image. Confirm that you agree to SoundCloud's **Terms of Use** towards the bottom of the screen, hit **Send Track** and you're done!

What's wrong with my mix?

Emerald Isle-orientated producer John Reynolds gives his considered opinion on what might be done to improve this issue's featured reader track

Producer John Reynolds



Always busy producing anything of quality that's Irish, John is currently putting the finishing touches to a new Sinead O'Connor album, while at the same time wallowing in the delights of Seun Kuti's decidedly not-Irish afrobeat.

GREY AIR Xsara

Artist Xsara Helmi
Web www.xsara.co.uk



> It makes a change to review a song with lyrical intensity of poetic proportions. Musically and vocally, it brings to mind Bjork or the performance art of Laurie Anderson.

The arrangement is welcome unorthodox, with little adherence to obvious verse or chorus construction. The first three minutes or so are a gradual building of intensity with half-spoken, half-sung vocals over a suspenseful musical backdrop that

slowly gathers power. That passage draws into a focus around the 'There he was' lyric and a glissing piano part. Next is a sharp left turn into a weird semi-operatic scene with soaring 'aahs' and big backing vocal sections. This is definitely odd, but I buy it in the context of what's gone on earlier, and the dynamic transition into it is a good one. However, things go a bit awry after that, with the music falling apart and the vocal losing its way. Worse is to come when one of the poorest 'distorted guitar' patches I've heard in a long time - playing an equally poor part - destroys the atmosphere and intensity that had been set up earlier. I feel a bit let down.

The track starts with an echoed kick drum pattern, the sound of which is reminiscent of the 80s hyper-clicky sound taken to its extreme by Herbie Hancock's *Rocket*. It's good here and works with the double bass part, which at times is tracked with a harmony part. I like the way the intensity is built using increased delay feedback on the kick. The minimalist approach continues with sporadic whooshes and explosions before the gliss piano and then a stabbing marimba part come in, which is as musical as it gets. The character of the tune is defined by the delivery and layering of the vocal. It's got great attitude in its looseness, and the intensity of the backing track would be nothing without the power that builds within the vocal. It all works well together as a composition until that guitar part arrives.

I like the overall sound and production. It's quirky, but it has character and individuality - which is all too rare these days.

What the artist says:

"This is one of my most personal songs, which is why it contains spoken word, and is one of my more indulgent pieces of work. The lyrics were written beforehand. It was recorded at home on Cubase Studio 5. The double bass is from the Roland piano. It gradually crescendos into the final melody."

Equipment used Acer PC with AMD Athlon 64 processor, Shure SM58 mic, Cubase Studio 5, E-MU 0404 soundcard, Behringer Xenyx 802 mixer, cm samples/loops, M-Audio AV 40 monitors, Roland RD-600 digital piano, various free plug-ins.



cm Producer Masterclass

DOM KANE

As a producer, DJ and commercial sound designer, tech house titan Dom Kane has musical skills in spades. Here and in our exclusive video, he shows us how he puts them to use



ON THE DVD



Shoulder-surf Dom's studio session and hear his top tech house tips



www.computermusic.co.uk

Breaking into the big time

> Ministry of Sound resident, Moog preset programmer and sound designer for Xfer Records: these are just some of the highlights of tech house star Dom Kane's short but illustrious career. To get the inside story on Dom's production techniques, we headed way out west to his studio in Cardiff, Wales.

"Music is probably the only thing I've ever really known in my life," Dom begins. "I was born from a classical jazz musician of a father, and although he wasn't around for very long I think he imparted something. Though she didn't play, my mum had a huge passion for music, and by the age of about four my sisters would test me on my music skills by playing the first 20 seconds of a concerto. I'd be able to name the composer and the score! So from a really early age it was quite clear what I was going to be!"

Growing up in the rave-tastic 90s, it wouldn't be too long before the young Dom was introduced to electronic music. "When I was around ten or 11, one of my sisters came home with some rave mix tape and played it to me. Up until that point, all I'd ever known was jazz, classical or what I'd heard played on the radio. I can remember hearing a 'hoover' noise and thinking, 'What the hell is that? How the hell can you get that from a violin, piano or trumpet?' I was too young to understand it was a synthesiser! I can

"Anyone who has seen my DJing will agree that I'm probably the one dancing the hardest!"

remember clicking at that exact moment and going, 'I've got to get me some of this'. That's the point at which I decided I wanted to be a DJ and producer."

Addicted to Cubase

However, in the mid-90s, the world of home music production wasn't nearly as accessible as it is now. "We had a family computer running MS-DOS, and there was a program that came with it called Presto Arranger 32. You had up to eight channels of MIDI and I'd come up with these drum beats and a piano line, thinking it was the best thing since sliced bread! Eventually I started using Cubase and a couple of keyboards, and I took it from there."

"After years of Cubase abuse I was introduced to Reason. I used that for all of about six months and then went back to Cubase, because I realised that you couldn't really do as much as you could with Cubase - particularly with audio, unless you were sampling little snippets. There were silly little things like if you wanted to use a drum loop you couldn't stretch it, you'd have to pitch it, and there was no accuracy in that."



Dom's home studio in Cardiff - a bijou powerhouse of tech house production

Eventually Dom's DJing career would lead him to discover his ideal DAW. "I'd seen people use Ableton Live and had heard great things about it, so I used a copy to put together a couple of promo mixes while I was on tour in Eastern Europe. I thought it was the future of DJing, but it wasn't until MIDI controllers started coming out that it seemed to be a realistic proposition. I didn't want to be staring at a laptop screen during my gig - anyone who has seen me DJing will agree that I'm probably the one dancing the

hardest! The last thing I want to do is be crouched over a laptop all night long. I started DJing on Ableton, and as I was travelling I started putting together some arrangements from tracks and drafting down ideas, and I came to the conclusion that Ableton could do everything I wanted."

In this month's *Producer Masterclass* video, Dom talks us through his track *Intraphase* and delivers plenty of tech house tips. Turn the page for an accompanying guide to the track arrangement.

Interior design

As well as producing and DJing, Dom works as a commercial sound designer, with three Loopmasters sample libraries under his belt as well as presets for Moog's Little Phatty synth. How did he get into the sound design business?

"It was a bit of a weird one. I got an email from a guy who runs a company called Soundsnap," says Dom. "They were looking for some dance music stuff, so I did it and sent it off to him, and I sort of fell in love with the process of doing it. If I was putting together a drum loop, I was suddenly paying so much more attention to each individual

component of that loop. It opened my eyes to a whole new level of production really. When you're going from making a full-on seven minutes of audio to like maybe five seconds of audio, or even half a second, you're suddenly looking at things from a different perspective."

"When you're designing just a drum loop, you've got nothing to compare it to - you need to make it a good drum loop relative to something else. So when I'm working, I'll make the groove of a track and put together drum loops, a bassline, a melody and whatnot - treat it as like I'm writing an original track. Then I analyse it from there. The kick drum might be coming out above everything else, so I'll pay careful attention to that, which might entail redesigning it so that it fits. Sometimes certain frequencies of particular drum sounds cut through everything else, and I'll think, 'If it's not good enough for me it's not good enough for anyone else'. If you design the world's loudest snare drum, that's all well and good, but no one's going to want to use it."



The Little Phatty is home to some of Dom's carefully considered sound designs

A guided tour of Dom Kane's *Intraphase*



1 BEATS "I programmed the drums in Xfer Nerve using a bank that I put together especially for this track. I've got kicks, a sub-bass knock, a snare, a clap, a couple of hats, and some percussion pieces. If I'm using a fairly subby kick then I always have the 16th pad as a transient, which will be played together with the kick. That adds a lot more depth and detail to the kick. All these sounds came from Wave Alchemy Drum Tools 01, which I got recently and have fallen in love with."

"For this pattern I'll record the MIDI out of Nerve onto a separate channel, then bring it back onto the Nerve channel once it's done. After I've built up a solid groove, I'll have a good listen to identify the most intrusive noises, then get rid of them. Once that's done, I'll colour-code all the drums by intensity - that means you can quickly see where the breakdowns are just by looking at the drum channel alone."

"The beauty of Nerve is that it has multiple audio channel outputs. I take advantage of this by always sending my kick to its own group, so that I can run a high-pass filter on it separately."

2 SHAKER "Along with the drums, I've got a really simple shaker - it's actually very low down in the mix, peaking at -12dB. I've passed it through a high-pass filter to get rid of any unwanted low-end noise - I like my shakers to be really clean and crisp, so even if something's already just in the high end, I tend to put a high-pass filter on it anyway, so that I can make sure there are absolutely no interferences. I think it's good common practice."

"I tend to bring shakers or anything running in 16th-notes down quite heavily in the mix. I find that anything at that speed or faster tends to be too much for the brain to handle if it's too high up in the mix."

3 STABS "This sound is a fairly simple detuned saw made in Sylenth1. In the chain I've got an equaliser to cut off the low end, a low-pass filter which is automated later on in the track, and the Ableton Reverb preset **Forest Floor**. I've made the **Dry/Wet** level really dry at just **16%**, with a **Decay** of just over a second to give it some atmosphere."

"Then there's a simply Utility, where I've automated the gain. I

sometimes automate the volume levels on the mixer, but sometimes you'll want to change the level and it's really annoying trying to drag the whole automation down by, say, half a dB. What I tend to do is drag and drop a Utility on there, and knock that down instead."

"Finally I've got a limiter on the track so that it doesn't peak when the filter cut-off is automated."

4 VOCAL "At the moment the vocals are at a draft stage, so I've got the whole channel muted. I work with a couple of vocalists and we tend to bounce vocals between each other [before deciding on the final take]."

"When I'm playing around with draft ideas, I put George Yohng's W1 Limiter on the group, which I use a lot on my music. It's freeware and I highly recommend it, particularly for laptop DJing: just stick it on your master with zero threshold and zero ceiling and it acts as a really comfortable limiter."

5 BREAKDOWN STAB "I rendered the stab, dragged it into a Simpler instrument and set it to loop. After I'd done that, I automated the loop start and the loop length, with the loop start

getting later and the loop length getting smaller."

"This technique actually came about from DJing. One of the tricks I enjoy doing most as a DJ on the CDJ 1000s is using the loop function at the peak of a breakdown: if you press the **Loop Out** button and drag the jog wheel backwards, it starts shortening the loop, and the sound eventually becomes this bizarre zippy noise. If you catch it at the right time, at the peak of a breakdown, you can send the crowd in to a frenzy of bleeding ears - so the idea to use it in my tracks came about from that."

6 SQUARE BASS "Next in line is a square bass. This comes from Strobe, which is used in 99% of the tracks that I've done in the last couple of years. In fact I was lucky enough to be a tester on it before it came out!"

"This sound is one of the presets from the final version, though I think I've tweaked the cutoff and the pulse width. I did that because the sound was a bit too much for me, and it went a bit too saw-y, I guess, so I levelled all of that out. This component is just a stabbing bass on a low octave that plays every four beats or so."



Dom's studio gear

1 YAMAHA MSP-5 MONITORS
"Horrible, horrible monitors... and that's why I have them! People always said that if you could make something sound good on the NS-10, it would sound good on anything. I think the same is true of the MSP-5s."

2 FOCAL CMS 65 MONITORS
"They're an absolute dream. I've been blown away by their sound - their clarity over such a huge spectrum. I did have a subwoofer under the desk, but the Focals are so good that I got rid of it! There was too much low end with it there."

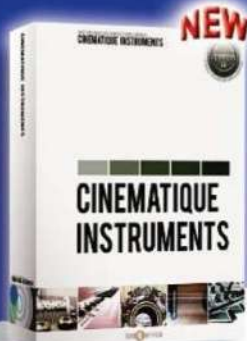
3 EVOLUTION UC-33E MIDI CONTROLLER
"I use this mainly for DJing, but sometimes I'll assign it to a particular synth. There's never really any need for MIDI control from a production point of view. I've played around with it but I don't really end up using it that much when I'm actually seriously producing."

4 NOVATION XIOSYNTH
"I bought this because I saw that James Zabiela had done some of the sounds for it! There are some really good sounds on there - it sounds like

5 M-AUDIO PRO FIRE 610 AUDIO INTERFACE
"This is probably the weakest link in my chain at the moment, but the Pro Fire 610 is as sturdy as hell, and I really like its Octane preamps. For dance music production it does a really good job, but I don't think I'd want to hook up vocals and acoustic recordings to it."

6 MACKIE BIG KNOB
"This is a brilliant bit of kit. I love the simple things like being able to nicely A/B between two sets of monitors, I think it's every producer's home studio dream, the Big Knob - it's what everyone needs. Let's face it: the reason why we all got into dance music in the first place was to have a room full of knobs!"

7 APPLE IMAC
"I was PC-based, and while that does have its advantages (you can rip apart a PC and build everything as you want it from scratch), it wasn't enough for me. When a Mac switches on and works straight away and does everything you need, there's just no point in going back to the PC." CM



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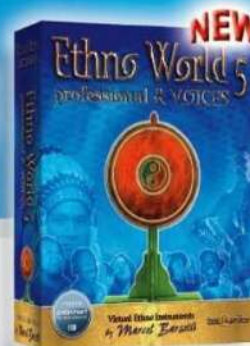
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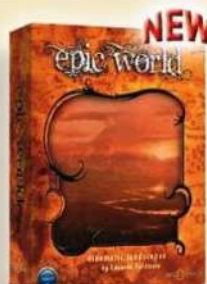
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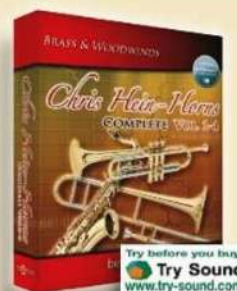
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WORLD DOMINATION

Are you looking to broaden your instrumental roster? Why not add a didgeridoo bassline or sparkling sitar solo? We look beyond the West

➤ **World music often gets a bad rap. It's commonly derided by fans of other musical genres as being soft, pretentious and overly new age - and when compared to the grittier sounds of most other modern styles, there can arguably be some truth to this.**

But there's one thing world music has in its favour that isn't often taken into account: a deep, varied sonic palette. World music artists have the advantage of working outside the framework of Western music, with a huge range of instruments from dozens of countries at their disposal. In this tutorial, we'll show you how to create the sounds of these instruments in your DAW, then explain how to process and mix them to make them as authentic as possible.

Every country in the world has its own set of traditional instruments, and here we've gone for those most commonly used in world music tracks. Our journey takes in China, Australia, Southern Africa, India and Cuba. Using these nations as a starting point, you should gain the confidence to jump headfirst into the dizzying array of styles and instruments that comprise the wide-ranging genre of world music.

We're going to look at several specific instruments from around the globe. First, we have three traditional percussion instruments: the African djembe, and the Cuban bongo and conga. We'll explore their sequencing and processing needs and explain why they differ to those of your standard Western kit. From there,

we'll delve into traditional string instruments like the Chinese guqin and guzheng zithers and the Indian sitar, investigate the Southern African kalimba (or thumb piano) and take on the imposing and compositionally challenging Aboriginal didgeridoo.

If you're worried about how you're going to blend all these traditional instruments in with your current production, don't be. Over the following pages we reveal some of the best ways of mixing these sounds into contemporary productions with the help of a demonstrative funky house track. All of this plus a selection of the best world music-orientated plug-ins (many of them free) should add up to more than enough to get your tsuzumi shaking.

> make music now / world domination

> Step by step

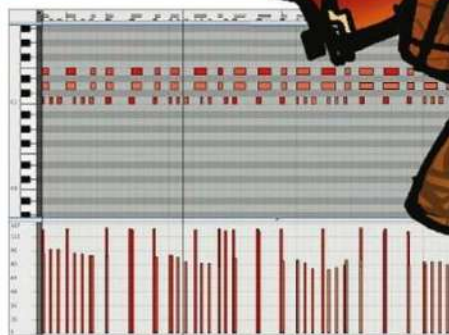
Congas, bongos and djembe



POWER TIP

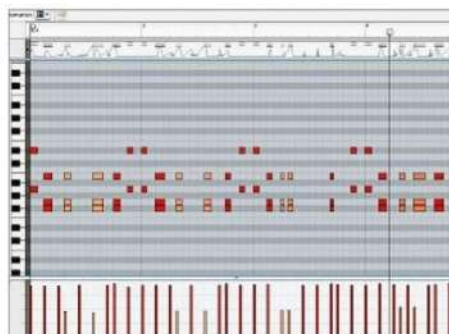
> Played out

Western drum rhythms are quite different to those of much of the rest of the world, tending to be generally more rigid. The freeform nature of world rhythms make manually writing them into your DAW seriously tricky. Performing them on a MIDI keyboard is the preferable option: when you've got to lay down multiple takes for complicated parts, actually playing them is a lot easier than using the pencil tool. If you've got a drum pad controller, that's even better.



1 > Specialised plug-ins for synthesising drums like congas, bongos and djembe are few and far between. Sample packs, however, are not - here we're going to use the samples that come with Reason's NN-19 and NN-XT samplers. They provide us with a huge range of great percussion sounds and make for a solid first port of call.

2 > Let's start with the djembe. Deep and full, this evocative African drum is ideal for setting a solid rhythm, and our pattern needs to mimic the various ways in which a drummer would strike it. We do this by adjusting the velocities for our notes and spicing things up with the Regroove mixer. (Audio on the DVD: **DryDjembe.wav**.)



3 > This sounds OK, but we need to give it a little something extra. Djembes have both bass and rim notes (think kick and snare, loosely speaking), so pan the rim samples out a little. A little tape distortion works really well with these drums, so we run the track through Reason's Scream 4 distortion unit. (Audio: **WetDjembe.wav**.)

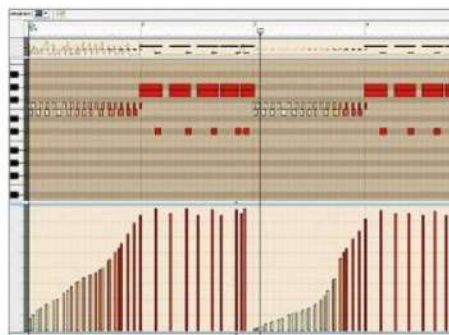
4 > Bongos - small twin drums commonly heard in Afro-Cuban music - are a lot lighter than the djembe. You'll find that you can use far fewer notes to create a great bongo pattern: here, we've kept it very simple, relying on the different tones of the notes to give our bongos some texture. (Audio: **BongoLoop.wav**.)

5 > Reverb doesn't always work well with percussion instruments. In the case of the bongos, however, a tiny bit makes them a little more realistic. Bongos aren't the loudest of instruments, so you may find you need to boost them later if you want them to be prominent in the mix. (Audio: **ReverbBongo.wav**.)

POWER TIP

> Don't forget EQ

Bear in mind that because traditional percussion samples often sound pretty cool straight out of the box, as it were, it can be easy to forget to apply things like compression and EQ - especially when you're piling up a range of different drum types and loops to create a complex pattern. Your percussion may not always desperately need processing, but a little light compression can really help to bring drum sounds to life and lift them out of a busy mix.



6 > Finally, the congas. These are the middle ground between the djembe and the bongo, comprising two (or more) large drums capable of a broad range of tones. Their versatility means that they're great for rapid-fire drum rolls as well as rather more considered thumping. (Audio: **CongaLoop.wav**.)

7 > You can bring a lot of character out of congas by lengthening their **Attack** slightly (and, to a lesser extent, playing with the **Release**). Here we automate the **Attack** that so it gets longer towards the end of the loop, where you'll hear the sound become a little warmer and more fleshed-out. (Audio: **WetCongas.wav**.)

Chinese zithers

There are few sounds in world music as distinctive or as evocative as Chinese zithers. This group of string instruments has existed in one form or another for at least 1500 years (though some sources say it's as many as 2000). Their distinctive plucked tones can be heard not only in countless Chinese and Japanese films, but in many world music pieces as well.

Generally speaking, there are two main types of zither: the guzheng and the guqin. The former is a long, ornate wooden board with around 21 strings. The guqin looks very different to the guzheng: it resembles a slightly elongated guitar, has fewer strings and

produces a very different sound. The guzheng's sound is quite piercing, and clever manipulation of its strings causes the pitch to bend slightly. The guqin on the other hand is often played in a slightly lower register (this is the instrument that you'll hear in those tense moments in kung-fu flicks!) and is more full and powerful.

Emulating these tones in a DAW can seem tricky at first, but there are a few key things you can do to make sure your guqin and guzheng twangs sound authentic. The first is to make sure you don't skimp on the reverb or release envelope, as it's important to preserve those nice long tails. Secondly, the two

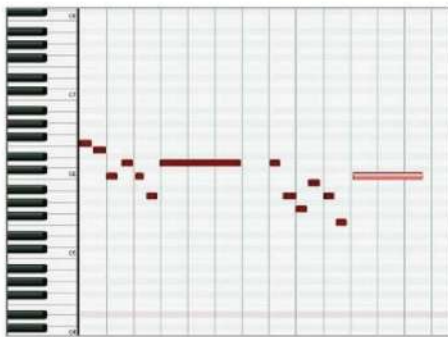
instruments are suited to different styles, so make sure that you use them appropriately. The guzheng often sounds good playing tightly packed groups of notes followed by a pause as the tail dies off, while the guqin works best with notes that are more evenly spaced. Finally, you want to concentrate on getting that distinctive 'glide' going, so that the notes change character as they're played. This applies to both instruments, and your zither won't sound right without it.

The guzheng is the higher pitched of the two main types of Chinese zither



> Step by step

Zither and yon: guzheng and guqin



- 1 > Let's start with the guzheng. Kong Audio's **ChineeGuZheng** (\$60 from www.kongaudio.com) is relatively easy to get to grips with. We draw in some MIDI data: a cluster of quick notes followed by a long, drawn-out one. At this point it sounds more like a plucked electric guitar, but we're just getting started. (Audio on the DVD: **BasicGuzheng.wav**.)



- 2 > Once we've got the pitch we want, the first thing to do is take control of the portamento. ChineeGuZheng has a section labelled **P.Env** (Portamento Envelope), that lets you control just how far each note 'slides'. Remember that this slide doesn't function from note to note: the effect is only meant to work on each note individually. (Audio: **GlideGuzheng.wav**.)



- 3 > It's up to you whether or not to use the envelope **Release** to control the tail or set up a reverb unit as an insert effect. The reverb will give you much more precise control, but the **Release** can sound more natural for the instrument. We opt for the **Release**, setting it mid-way to give us a decent tail. (Audio: **EnvGuzheng.wav**.)



- 4 > The ChineeGuQin instrument is far more complex. For one thing, it enables you to combine several different patches to form a single sound. Because it's suited to slightly heavier playing, we go easy on the **P.Env** function, dialling just enough in so that there's a slight tweak for each note. (Audio: **BasicGuqin.wav**.)



- 5 > We'd generally stay away from the effects that these plug-ins have built in. They can be useful, but zithers seem to sound better without any extraneous processing, so think twice before you start adding buckets of effects.

POWER TIP

> Trem and us

One of the key components of the sound of the zither – and those of many other string instruments, in fact, including the sitar – is tremolo. This effect is often accompanied by the clicking, wooden sound of the strings vibrating against the body of the instrument. You could apply this tremolo manually, but ChineeGuZheng includes a preset that adds some serious tremolo to your notes, emulating the effect of rapid string bending without the need to draw in all that tedious MIDI data or fiddle with the settings on an insert effect.

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Kalimba

Also known as the 'thumb piano', the African Kalimba sounds as distinctive as it looks. It comprises a flat wooden box, usually about the size of two outstretched palms, with numerous metal 'keys' sticking out of it. These keys are played with the thumbs. Imagine holding a PlayStation or Xbox control pad, using your thumbs to strike the buttons, and you'll get an idea of how the kalimba is played.

It's an extremely simple instrument to get the hang of, and is closely related to other African keyboard instruments like the Mbira. That said, when emulated digitally, the exact sound can often be a little difficult to get right. For one thing, the tones produced by the kalimba's keys have a lot of resonant characteristics naturally gifted to them by the body of the instrument. If you're replicating the sound in your DAW then you'll need to push your effects

harder than you might think to faithfully reproduce these sounds.

In almost all cases, a kalimba's sound will contain some natural reverb thanks to its boxy base. Some saturation or distortion will work wonders for giving this incredibly gentle sound sound a bit of extra oomph. Finally – and perhaps most importantly – you should take the time to vary the velocities of each of the triggering notes. Because of the way that the instrument is played, the outer keys (the ones further away from the natural resting position of the thumbs) are often struck more softly than the middle ones. Varying the notes' velocities in your DAW is a good way to get your virtual kalimba sounding as natural as possible.



Kalimbas are played all over Africa and vary in tuning, note placement and design

> Step by step

Thumbs up: emulating a kalimba



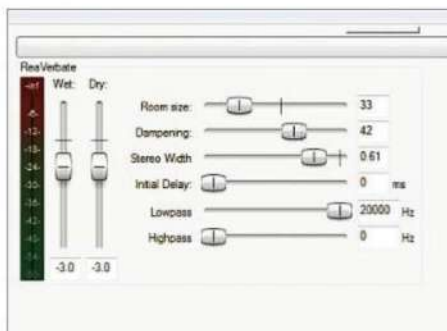
- 1 > Kalimba software instruments – such as the Joe Real Axe (rapidshare.com/files/219059127/Joe_s_Axe.rar) – are often very basic. In this case, you get a tone generator and a basic reverb. Leave the reverb off for now, and play some notes. They sound harsh and unnatural, so play with the velocities a little until it sounds as if a human is playing it. (Audio on the DVD: **HarshKalimba.wav**.)



- 2 > Axe doesn't come with any envelope controls, so consider adding an envelope plug-in to your signal chain, such as DigitalFishPhone's Dominion Signal Modeller (www.digitalfishphones.com). This will give you very fine control over the **Attack** and **Sustain** parameters, which are crucial to the sound of the kalimba.



- 3 > In general terms, you want a short, sharp **Attack** and a lengthy **Sustain**, to mimic the sound of a key being hit. Be wary about sliding your **Attack** parameter down too far, however: you want a little 'click', but too much will end up sounding artificial. You have a lot more leeway with the **Sustain**, however. (Audio: **EnvelopeKalimba.wav**.)



- 4 > You only need to dial in a little reverb to replicate the sound of the notes bouncing around the sounding box. Try to keep the **Stereo Width** fairly wide, go easy on the length of the tail and let your ears decide the point at which the reverb threatens to overtake the actual kalimba sound. (Audio: **VerbedKalimba.wav**.)



- 5 > We've used the Filter knobs on our CM Fuzz plug-in (on the DVD) to warm up the kalimba a little – again, not much is needed to get the desired effect. It might be worth putting the distortion before the reverb in your signal chain, as this will give you a cleaner tail. (Audio: **FinalKalimba.wav**.)

POWER TIP

>Holey moley

Most kalimbas feature 'sound holes' – holes in the sounding box that are manipulated with the thumb after a note has been struck. The effect is a bit like the sound you get from a wah-wah pedal, with the sound oscillating rapidly back and forth. Replicating this effect can add great variation to your kalimba sound. The best way to do it is to load up a modulation plug-in – a tremolo or vibrato one can work wonders in limited doses, but if you can find a dedicated wah-wah plug-in, that's even better.

> Step by step

Catch the tube: doing didgeridoo



1 > The beauty of emulating the didgeridoo is that entering MIDI data for it is a breeze. For the most part, you'll be working with one long, sustained note. Load up Cosmodelia's Didjerimoo (www.brothersoft.com/publisher/cosmodelia.html) - all we need is a sustained two-bar note to get started. (Audio on the DVD: **BareDidg.wav**.)



3 > The Envelope parameters are crucial for shaping the sound. We opt for high **Decay** and **Sustain** settings, as these will mimic the breathy sound of a real didgeridoo. The **Attack** and **Release** values can be a lot shorter, but you may want your didgeridoo to come in gradually. (Audio: **WetDidg.wav**.)



4 > You don't just want a long, sustained note: it's got to waver and pulse like a real instrument. If you have a MIDI keyboard, use the modwheel, or experiment with your plug-in's built-in options. In this case, Didjerimoo provides us with something called The New Thing Effect, which enables us to introduce a pulsing effect. (Audio: **ProperDidg.wav**.)

2 Initially, this note won't sound great, probably resembling an annoyed bullfrog more than anything else. Find the pitch you want and fine-tune it using the **Key** and **Harmonics** controls. Here, we go for an evil-sounding note with minimal extra harmonics.

POWER TIP

>Echo one

While reverb, delay and even flanging make a didgeridoo sound good, what really takes it to another level is a bit of echo. Didjerimoo comes with a built-in delay, but if you have a favoured plug-in, use that as an insert effect instead. You'll find that you don't need to push it too hard to get a fantastic atmospheric effect. A little automation probably won't go amiss, either, especially if your track features a breakdown and don't want the echoes from your didgeridoo to interfere with it.



5 > Another way to get the timbre of the didgeridoo is to use plug-ins to mutate existing sounds. We add Virtuasonic Didj'tizer (\$30 from www.virtuasonic.com) as an insert effect, which spits out a really trippy 'didgeridoo ensemble' sound. It's not always subtle, but if you're looking for something different, it could be the way to go. (Audio: **DidgChorus.wav**.)



Yellow Tools' Gu Zheng provides another take on the traditional Chinese instrument

Which world?

The instruments we've featured here are just the tip of the iceberg. There are hundreds of world instruments, and many of them have been emulated in software.

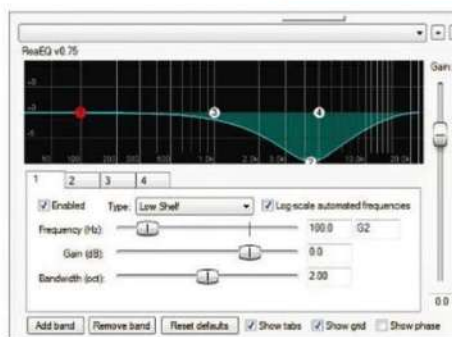
The maker of the guqin and guzheng plug-ins discussed earlier, Kong Audio (www.kongaudio.com), specialise in world music plug-ins. We really like their Chinese NanXiao (helpfully subtitled The Flute Of Melancholy) and Matouqin - or horse-headed fiddle, which is guaranteed to help you - in Kong's own words - get the Mongolian vibe. Just what your latest fidget house track has been crying out for. For an alternative guzheng, try Yellow Tools (www.yellowtools.us) - their version clocks in at €119.

If you're looking for traditional percussion, you're more likely to find sample packs than you are emulation plug-ins. However, there are plenty of excellent software drum machines available, many of which ship with extensive collections of world percussion samples. Try the built-in instruments in your DAW to start with, and beyond that, Native Instruments' Battery 3 (www.native-instruments.com) and MOTU's Ethno 2 (www.motu.com) are both packed with superb sounds from all over the world.

We haven't dealt with shaker instruments like maracas here, but if you're after that sort of thing, Musicrow's ShakerMaker (www.mcrow.net) is a good place to start. It's an effects unit that turns any sound into, well, a shaker.

Even more esoteric instrument plug-ins can be found with a little digging. Take pan-pipes: if you want to add that fairytale, woodland aura to your tunes, we recommend DMI Flute by Smart Electronix (www.dmi.smartelectronix.com). It'll take a little tweaking to get the right sound, but if you're after a software woodwind emulation it's one of the best of the bunch.

> Step by step Sitar



1 > The sitar sounds most authentic when its notes are really high-pitched, but they can be very needling in their dry state. We lay down a loop with La La's Syntar (www.freemusicsoftware.org/514) and use an EQ to take out some of the highs. It might seem counterintuitive for an instrument that relies on high pitches, but it works. (Audio on the DVD: **EQSitar.wav**.)

2 > The notes from a sitar build upon each other, creating loads of additional harmonics that fatten the sound. We set the envelope **Sustain** and **Release** settings really high, so that even as new notes are played, we can still hear the tail of the previous ones. This seems to work better than applying additional reverb. (Audio: **EnvSitar.wav**.)

3 > Some sitar synths – like Synthway's Virtual Sitar (www.synthway.net) – will need even more processing to get them to sound natural. A tiny amount of delay really helps to get the sound feeling authentic, fattening it even more without removing the slightly piercing quality a sitar should have. (Audio: **FinalSitar.wav**.)

> Step by step Mixing world instruments into a track



1 > Let's add our world instruments to a funky house track. First we mix the congas and bongos in on top of the beat, livening it up a little. These small drums are great for this, while deeper ones, like the djembe, are good as the main rhythm, with a standard house kit lowered slightly. (Audio on the DVD: **PercBeat.wav**.)

2 > Kalimbas are great for adding gentle overtones to a track, but they're even better in a breakdown. Here we do both: we add some low-level kalimba notes over our basic drum break, then snap it off on the fourth beat for some rapid-fire plucking. (Audio: **KalimbaBeat.wav**.)

3 > Sitaras are sometimes difficult to place. Their high pitch keeps them out of the way of other instruments, but they can feel forced if you just throw them in. That said, they shine when given the task of opening the track with a heavy strum, and are then littered sparsely over the rest of the beat. (Audio: **SitarBeat.wav**.)

POWER TIP

>An inspired choice

Mixing world music sounds with Western ones can be a daunting task, but if you're stuck for inspiration, there are plenty of classic examples you can check out. The Beatles often used Indian instruments – for example, *Norwegian Wood* uses the sitar to great effect – and there are plenty of more contemporary successes, too. *Anyway I Tell Ya* by Ganga Giri mixes didgeridoo with a psytrance beat, and Mr Scruff's *Kalimba* puts its title instrument at the centre of a fat funk break. So experiment, look around and see what's out there. And most importantly – have fun doing it!



4 > The didgeridoo can be quite imposing thanks to its ominous, dominating sound. If it winds up in a song with a lot going on, it can clash with quite a lot of elements – particularly basslines. If your track is quite minimal, however, it can provide a great centrepiece – as with this glitchy beat. (Audio: **DidgBeat.wav**.)

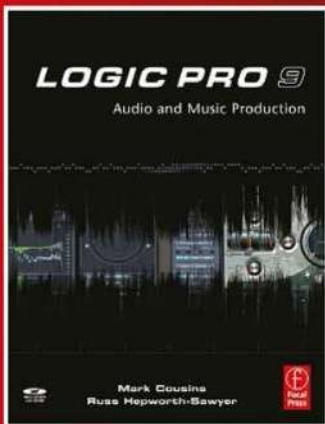


5 > The same goes for the guqin and guzheng zither sounds, which are at their best played in isolation. If you use them in a track, try pairing them with massive drums for an effective contrast. You shouldn't need to add too many instruments into a track to get it sounding great. (Audio: **ZitherBeat.wav**.) **cm**

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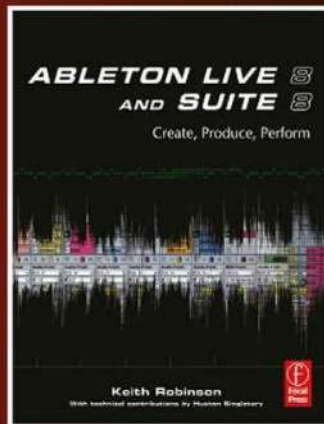
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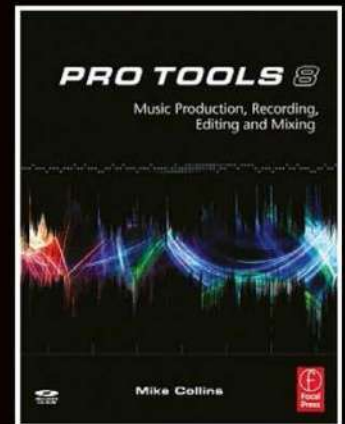
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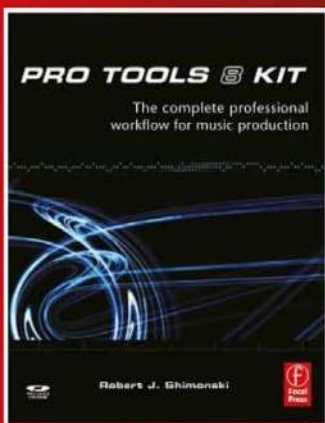
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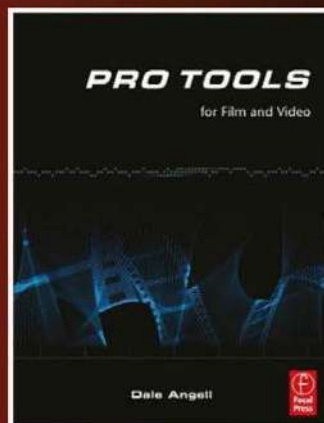
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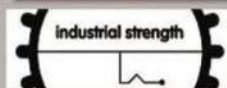
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GET THE PERFECT BASS

There's much more to getting a frequency-rich, mix-filling bass guitar sound than you might think. Layering, EQ, compression and more come into play, as our guide reveals

> Nowadays it seems that producers and mix engineers of all genres are locked in an eternal struggle to get the biggest, fattest drum sounds possible. But massive drums alone don't a great mix make. The industry's highest-standard tunes make sure they do two things: fully exploit the relationship between drums and bass; and carefully sculpt the space and place where the bass sits around the drums and within the whole mix.

The world's top producers fully understand the vital importance of the drums/bass relationship, particularly concerning the way the kick and bass work together. The importance of this aspect of a mix is one that's frequently underestimated and misunderstood by the novice engineer.

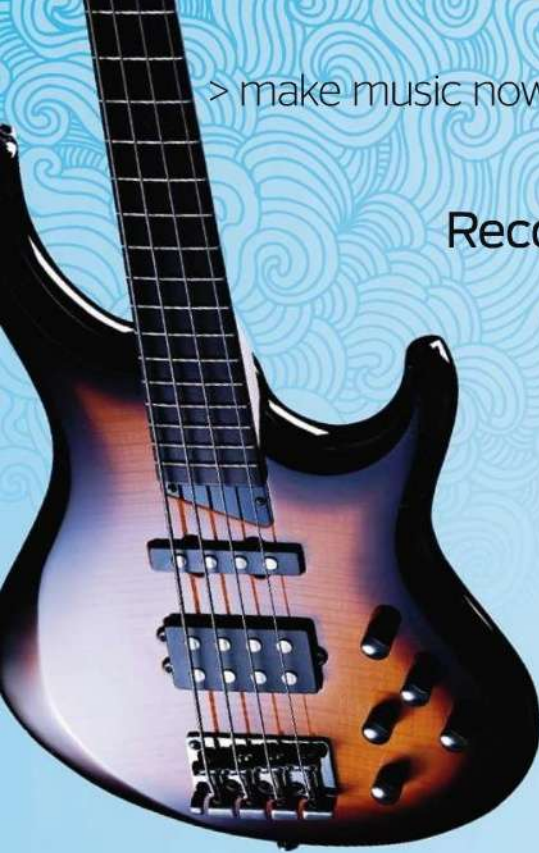
Back to basics

In this tutorial we'll look at the fundamental principles behind getting a big, tight electric bass guitar tone while retaining note definition and clarity. We'll then explore various processing techniques to ensure that this foundation of your mix - and in particular the way that the bass sound locks and interacts with the kick drum - is optimised.

From there, we'll move on to processing techniques with distortion to make the bass cut through the mix. After that we'll examine how to use distortion to better enable a bass part to sit properly in the mix alongside other instruments. This concept in turn enables the level of the bass to be increased without making it sound intrusive, thereby leading to a bigger production with a fuller bottom end.

Whether you've recorded a live bass in the studio and are mixing files from that performance, or you're using samples, these principles and processes can all be exploited and adapted to your own productions. Once you've heard the difference they make, you won't look back.





Recording bass guitar

Before we tackle the drum/bass relationship, we must understand how to produce a top-notch bass tone. The first principle of getting a big bass sound is making sure you capture – or generate – sufficiently rich harmonic content across the appropriate frequency range. A very common misconception is that equalisation can be used to correct deficiencies in the frequency spectrum of a source. In reality, an equaliser can't generate frequencies or harmonic content – it can only amplify or attenuate those that already exist.

The traditional route to acquiring 'coverage' of these required frequencies, and therefore giving the right size and definition to the bass sound, is to combine the DI (Direct Injection – the feed taken from plugging the bass' jack output directly into a preamp) with the miked sound from an amplifier and bass cab.

Let's consider what each of these two sources bring to the overall bass sound, then reflect on the principles behind why combining them is effective for mixing purposes.

Lethal injection

The DI signal is unquestionably a prerequisite of any serious bass recording. If you don't track this essential, core element of your bass sound, it will inevitably mean that you're unable to go down the reamping route, or severely limited in terms of the software that you can effectively use for tonal modification.

How good a DI sounds at the tracking stage is an excellent indicator of the standard of sound likely to be achieved when the signal is translated through a bass amp/cab/microphone or software emulation of the same. At this early stage, you're looking for clarity of notes with minimal fret buzz and fullness, and punchiness of tone. Many producers will check the sonic merits of a bass DI before they even begin to consider the amp and cab to which this signal will be routed.

Using a microphone to capture the physical movement of air from a bassist's cab and amp rig will give you the player's sound according to

what they're used to hearing. Unlike a DI signal, bass amps don't have a flat frequency response, providing extended low-end frequencies and featuring an EQ section for overall control. Many valve or hybrid amps will enrich the harmonic content of the bass sound through distortion; and even if you're using a solid-state amp, a bass cab's speaker cones produce and add rich and complex 'distortion' to the sound, due to the manner in which they move. They also have the pleasant effect of rolling off a lot of the more undesirable high frequencies from the DI signal, which are there partly due to its limited frequency response.

Classic combination

So, the traditional route to acquiring sufficient and rich enough harmonic content across the appropriate frequency range is to combine a

"The experience of many is that solely relying on the DI/mic combination results in a bass tone that falls short"

DI characteristics and Mr Munson

Three adjectives often used to describe DI bass recordings are 'boxy', 'wooden' and 'rattling'. This is partly due to the DI signal predominantly consisting of mid-range combined with some higher harmonics, but also because it's just the clean, pure sound of the bass, and therefore significantly affected by fret and string rattle, as well as the sound of the bassist's fingers moving over the strings. Nevertheless, the DI signal is a crisp and tight tone, and will contain an essential note clarity and 'wiriness' in the mid-range that will usually prove to be a vital component of the composite tone, despite the fact that the DI may not contribute to the overall tone level-wise as much as your other bass source(s).

With the exception of minimal arrangements or particularly thin instrumentation, perhaps the most easily relatable way to consider the DI signal is that regardless of the quality of the bass guitar, the musician's performance and the mic preamp, the result will lack depth, punch and power when combined with other instruments, particularly when the mix is referenced at lower volume. This is due to the 'Fletcher-Munson effect', which essentially dictates that humans do not hear low frequencies and extreme high frequencies as well at low volumes as they do at high volumes.

DI signal with a mic signal, in order to get two qualitatively different bass sounds for balancing, processing and manipulating during the mix.

One error frequently made by the novice is failing to compensate for time delay differences between the DI and mic channels. These are often due to the differing cable paths involved in each. Despite the fact that this delay is likely to be relatively minimal in terms of milliseconds and samples, it could still result in comb filtering, causing a 'hollowing out' of certain frequencies. To correct this, simply zoom in on a significant transient on both tracks and align the mic signal waveform to the DI one so that they're perfectly synchronised. (You can even find plug-ins to do this for you, such as Sound Radix's Auto-Align, which scored 9/10 in **cm157**.) Needless to say, the

Which two-channel combo is best?

The first alternative to the DI/mic combination that many will opt for is simply to replace the amp/cab and mic part of the equation with an emulation of the same. Today's bass amp simulation software is arguably more successful at replicating the inherent nonlinearities of an amp and mic combination (due to power amp response, cabinet resonance, speaker cone break-up, etc) than when attempting the same for guitar. From nothing other than a reasonably well-recorded bass DI, a skilled engineer with access to the right software will have no

problems building a bass tone boasting all the requisite low-end fullness and tightness along with the essential note clarity and definition, without the need for reamping.

In this scenario, the advantages of using emulation software to replace the mic, amp and cab are numerous. The first benefit is that the standard of the acoustics in your studio's live room becomes irrelevant, as does the quality of your microphones and preamps. Additionally, you can choose to change the make and model of amplifier, the equalisation, the

drive and all relevant settings when mixing. This can be a considerable advantage during the mixing stage, as the clarity, definition and overall sound is manipulated at source, rather than on a recording of the source.

Despite this, many bassists, as well as producers, believe that the main disadvantage of such software is that you can't perfectly replicate the sound of the amp being emulated, and that the feel and dynamics of amp/speaker modelling are inferior to the real thing. Our advice: try both techniques and let your ears do the work.

Adding electronic layers

Let's look briefly at the bass requirements for electronic music. Basslines with sufficient and rich enough harmonic content across the appropriate frequency range in dance and electronic styles can usually be made through layering multiple synthesised or sampled sounds. Each of these various layers can come from a different source, but they should still come across as a cohesive tone, rather than separate elements. This can be achieved by sending your individual layers to a bass sub-group or auxiliary channel and collectively compressing the composite sound to 'glue' them together.

When treating these separate layers for your mix, experiment with assigning each to one of either three

or four frequency ranges: bass, mid and high (20-200Hz, 200-2kHz and 2kHz+), or sub-bass, bass, mid and high (20-100Hz, 100-200Hz, 200Hz-2kHz and 2kHz+). If you go down the sub-bass route, however, ensure that your monitor setup includes a subwoofer and that heavy compression or limiting is used.

With the advantage of independent level control over the sub-bass and bass elements of the composite bass sound, you have a vital edge when it comes to mixing.

The frequency ranges given above are intended as a rough guide, and you should experiment with the filters used to band-pass them, particularly with regard to how they impact on the mix when crossing over each other.

collective phase should still be checked and the mic signal inverted to reinforce the DI signal if that's felt to be necessary.

For most situations, the DI/mic combination will deliver the right ingredients for a mix, resulting in a bass sound that won't be killed at lower playback volume.

The next step

When taking the traditional route outlined so far, the experience of many is that relying solely on this bass DI/mic combination results in a tone that falls short of the huge, punchy bass sounds being achieved on the world's top productions. The ever-advancing standards and ever-greater heights that today's producers are reaching constantly raise the bar for what can be achieved sonically.

The next step towards achieving these huge bass tones is to add a 'third element' to the DI/mic combo: a channel of appropriately manipulated bass emulation. When controlled correctly, this will provide an alternative tone that reinforces the other components and supplies better harmonic coverage by packing a fuller low end (preferably without losing the essential tightness of the sound) and perhaps a definition and clarity of tone that the DI and mic signals might be missing.

The advantage of this technique is that you can manipulate your bass emulation software to a very great extent. Although it is worth initially fine-tuning this channel of bass emulation in isolation from other sources, priority should be given to getting the tone right when it's heard in context with the DI and mic. In many instances, it will be quite surprising what the optimum tonality of this channel will be in order to reinforce the DI and mic best. Frequently, it will be far from the sort of sound that you would go for when dialing in a bass tone in isolation. But what producer doesn't like sonic surprises? Experiment to see what fits your production.



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One step beyond

What do the following songs have in common: The Beatles' *Think for Yourself*, Jamiroquai's *Deeper Underground*, Red Hot Chili Peppers' *All Around the World*, Muse's *Time Is Running Out*, Ben Folds 5's *Jackson Cannery*, The Prodigy's *Fuel my Fire*, and Us3's *Cantaloup*?

In all of these tracks, the bass sound involves the use of distortion, regardless of whether it's a live performance, samples or programmed. The use of distorted bass on album productions can be traced right from the mid-60s through to modern day dance music, where the majority of mixes feature this particular type of processing.

A common mistake made when capturing bass distortion is attempting to do it when recording the main body of the bass sound – usually the amp/cab tone. This will frequently result in a far from ideal bass tone, as it's very easy to get the distortion settings wrong when applying them to the bass away from the context of the other instruments.

The vastly preferable route is to either record a completely separate channel of distorted bass by splitting the DI signal to an appropriate pedal and/or suitably miked-up amp; or to duplicate and then process the DI signal with software during the mixing stage.

The first option has the advantage of retaining the feel, dynamics and nonlinearities of an amp, moving speaker coil and microphone, while the second option has the benefit of adjustable parameters at source.

This method gives you absolute control over the driven bass element – you can manipulate it without having any impact on the other bass sources, which should contain all the depth and note clarity. This is an important aspect, as distorted bass tones will sound particularly muddy in the

sub-200Hz frequencies and, without proper control of the high-end, can sound extremely abrasive. Whether you're using hardware or software to achieve a completely separate track of bass distortion, you can afford to be fairly aggressive with the amount of drive, as this channel won't be used for the main body of the sound and most of the unwanted artifacts from the distortion will be minimised through corrective EQ. This EQ will have a significant bearing on the way the bass sits in the mix and blends with the other instruments.

The walkthrough below looks at EQing a distorted bass component to provide not only a punchy and aggressive mid-range with plenty of harmonics above the fundamental, but also rich high-frequency harmonics to help the bass cut through the mix. These high-frequency harmonics also encourage the psychoacoustic impression that the instrument is louder than it would seem without distortion.

Distort to win

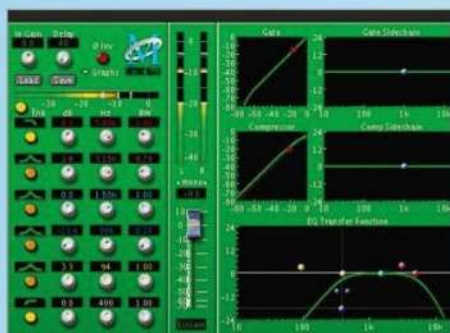
By using a channel of distortion in addition to the DI, microphone and software emulation components, you have four differing bass layers available to you at the mix stage.

When balancing these sources, focus on the DI, mic and emulation layers first, ensuring that you produce a bass tone that's tight in the low end and provides clear overall note definition before introducing the distorted bass channel. After you've introduced the rest of the track's instruments to the mix, experiment with pushing up the level of the distorted channel and assessing the impact it has on the mix. You'll need to spend time playing around with the settings of the high- and low-pass filters in order to gain the impact you require.

With the right balance, processing and manipulation of parameters, the ingredients from these four different sounds should combine to create a killer overall bass tone.

"The use of distorted bass on album productions can be traced from the 60s to modern day dance"

> Step by step EQ a distorted bass tone



1 > Here we're using a high-pass filter to remove the frequencies below **400Hz**, which usually lack clarity and get muddy when a bass is distorted. The presence and note definition of a bass sound is normally in the 2-3.5kHz range, so the low-pass filter has been set to around **5kHz** to remove any potentially abrasive high frequencies. If left alone, these could mask guitars, cymbals and so on.



2 > Next, experiment with the frequency settings of the high- and low-pass filters, both of which will have a huge impact on the way in which the bass cuts through the other instruments. While you're doing that, have a go at amplifying different regions within the band-limited area, again in order to increase the harmonic content and enhance the presence of the bass.



3 > Here's a more aggressive use of filters: band-limiting the distorted channel to the upper mids between **700Hz** and **2kHz**. This setting would be appropriate when attempting to get the bass to 'sit into' overdriven rhythm guitar, enabling you to give more overall level to the bass without it sounding overly loud. At a similar level without distortion, the bass would jump out of the mix and overpower the guitars.



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Putting the bass in context

The next stage in getting the perfect bass tone is considering how to process your sound so that it locks and interacts with the kick drum – and the rest of the drums and instrumentation – as effectively as possible.

After making sure that all your separate bass sources are time-aligned and phase-coherent, group them all to a mono mixer channel. How this grouping affects your use of EQ and dynamic processing, and how that in turn impacts on the overall result, is another area misunderstood by the novice. The question of whether to use EQ and compression on the individual channels, just the bass group, or both the channels and the group is an important one, and it's worth developing your own processing preferences here. A good way of doing this is exporting bass sections with different approaches to EQ and compression implementation, then blind-testing them within the context of the rest of the mix.

If you apply different EQ curves to each of your individual bass channels, the sound will be considerably different to what you'd get if you just used a single EQ on the overall bass group. Unless there are significant unwanted resonant frequencies within the individual bass channels,

such as might well be the case with the distorted source, it will usually prove more effective to use EQ on the bass group alone. By doing so, you'll have overall control of the bass' frequency content, which usually proves more effective (not to mention easier!) than making adjustments at the channel stage, which may not have the desired effect on the composite sound.

If you do decide that you prefer manipulating the individual bass channels rather than the group EQ, then avoid boosting and cutting exactly the same frequency areas across them.

Serial compression

When highly aggressive compression is required, it's often more effective to use two separate compressors in series – one on each channel and one strapped across the group – rather than just a single effect for all channels. For this technique to be effective, ensure that differing compression parameters are used on the channels and the group, otherwise this serial compression becomes redundant – you could simply double the ratio of a single instance of compression for the same effect, and that's certainly not what you're looking for.

Multiband compression

At the mix stage we tend to use single-band compression, where the whole signal is processed identically. However, in order to achieve a full and consistent low end, many engineers opt for multiband compression.

The first thing that needs to be said here is that unless you know what you're doing, you shouldn't use multiband compression for a mix of any importance, as there's every chance that your settings will result

in a mix that doesn't translate well to other systems.

A multiband compressor divides the audio signal into two or more frequency bands (usually three or four), which are then compressed separately from each other, enabling you to set different threshold, ratio, attack and release settings for each.

For a three-band application of compression, start by setting the frequency crossover points at 120Hz

(to treat the lows and subs of the kick drum and bass) and 2kHz (above which the attack, note definition and presence elements reside).

We recommend that you adopt one of the two different approaches to compression for each band explained in the walkthrough below. Beyond that, if your kick or bass is lacking depth and weight in the low end, experiment with using an aggressive higher ratio for the low

band, but implement it with a relatively high threshold, so that only the peaks are reduced. Combine this with low ratios and thresholds in the mid and high bands, to provide gentle gain reduction there, and your mix should sound pretty darn great.

Alternatively, to enhance the clarity and 'air' in the kick or bass, play around with heavier, lower-threshold processing for sounds that fall in the band above 2kHz.

> Step by step Serial bass compression



1 > We've set our channel compression to clamp down on the peak of the signal with a high **Threshold**, fast **Attack** and high **Ratio**. These settings should vary across the differing bass channels, the **Threshold** in particular. Don't be afraid to use higher compression ratios such as **8:1** and above. Due to the nature of distortion, it probably won't be necessary to compress the distortion channel.



2 > The group compressor is set to compress the body of the signal with a low **Threshold**, slow **Attack** and medium **Ratio**. Spend some time experimenting with the channel compression set to compress the body of the signal. After that, work with the group compression to clamp down on any remaining peaks, so that you can establish which route is most appropriate for your bass tone and mix.



3 > If your kick drum needs real prominence (in dance or hip-hop styles, for example), specific additional space can be created by bussing the kick drum to the sidechain input of the bass group compressor. Set the compressor up so that the bass 'ducks' slightly with every kick hit, thereby creating the space in the low-end required for the kick drum to have dominance.

> Step by step **Fit the bass around the kick drum**

- 1** > To effectively shape the frequencies of the bass, we need to remove its 'nonessential' content. This will stop the bass masking (see next page) or fighting other instruments for space. Experiment with a high-pass filter set between **50-85Hz**. The busier and denser the drums/bass, performance or instrumentation, the higher you'll likely need to set your high-pass filter.



- 2** > It can also be a good idea to remove the nonessential high-end frequencies of the bass, as they could potentially get in the way of the guitar, vocals and even cymbals. Experiment with rolling off the high end from anywhere as low as 3kHz up to around **6-7kHz**.

POWER TIP

>The bigger picture

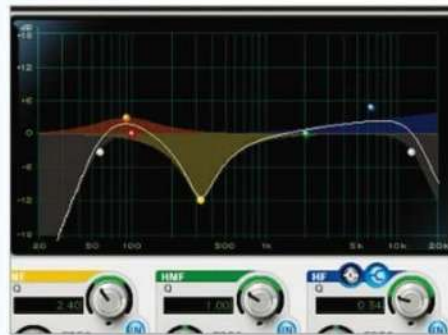
Since the context within which your bass is placed is an essential consideration in all of this, after making some initial corrective/creative EQ decisions, you should approach your final EQ with the bass playing alongside the rest of your instrumentation.

You may have heard that it's a good idea to route your kick drum and bass guitar to the same group and EQ them collectively. Forget it - it's a myth. Any boosts or cuts will result in poor separation or an unstable low end.

Don't amplify any bass or kick drum lower than 65Hz: this will result in an excess of mix-wrecking boominess. Most domestic speakers roll off below 70-75Hz anyway.



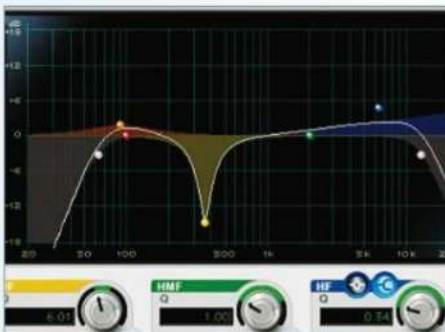
- 3** > Following the removal of nonessential bass frequencies, we can emphasise the fundamental low-end frequencies to provide the right depth to the mix. The fundamental low-end weight of kick drums and bass will usually be within 60-105Hz, a frequency range that tends to be felt rather than heard. Generally speaking, it's inadvisable to amplify a bass or kick drum frequency lower than 65Hz.



- 4** > When EQing bass, first consider the kick drum's frequency content and EQ curve. Don't boost the same frequencies in the bass and the kick, as this will result in an unnatural-sounding 'accumulation' in that range. Vary any low-end boost on the bass to that applied to the kick drum. This will achieve a more balanced tonal distribution, and thus a louder, fuller and punchier kick drum and bass combo.



- 5** > If you specifically want to boost the bass at a particular frequency, but the kick drum requires dominance of this range, a neat trick is boosting the bass frequency an octave higher. In other words, if your kick drum sits perfectly at 75Hz but you want to boost the same on the bass, try boosting at 150Hz in the bass instead. Doing so will have a similar psychoacoustic effect.



- 6** > Next, we need to process both the kick drum and bass to bring more clarity to both, while giving space to the other instruments. Examine the frequency content of your kick drum between 325-475Hz: this range often contains unwanted content that causes hi-fi speakers to 'pop'. Attenuate this with an appropriate **Q** width to create more kick definition and clarity as well as space for the bass to breathe.

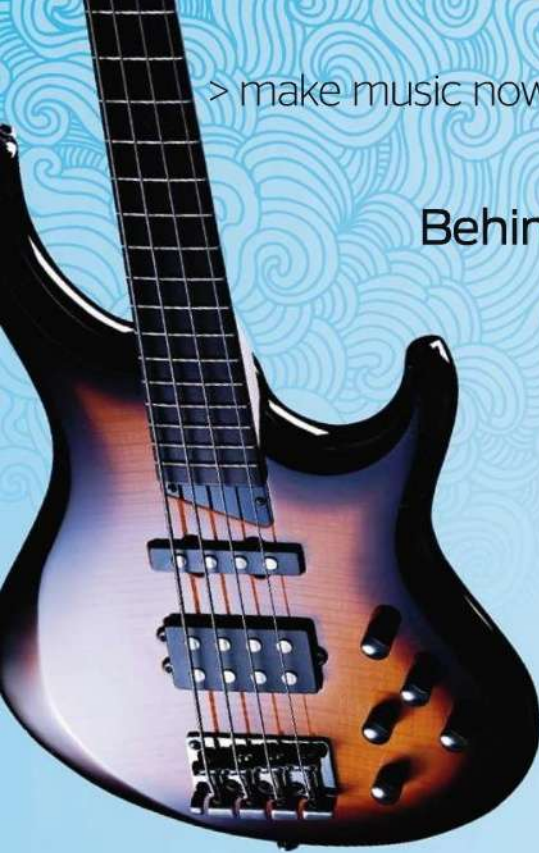


- 7** > The low-mid 225-500Hz frequency range in the bass tends to sound very 'woofy', so you may need to attenuate that with a wide **Q**. This will provide more space for rhythm guitar or synth sounds to sit in. The frequencies attenuated in the kick and bass shouldn't be the same - experiment with these cuts to specifically assess the way they lock, interact with and reinforce each other.



- 8** > Finally, the attack, note definition and presence of the bass guitar can be emphasised by boosting around 2-3.5kHz. Experiment with widening the **Q** curve on a lower dB boost to avoid frequency accumulation, but ensure that you're not amplifying any high-frequency hiss or noise in the process.

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Behind the mask

Masking is what happens when two or more instruments containing similar frequencies in certain areas battle for prominence. The result is that the weaker sound has its content obscured (masked) or made inaudible. This inevitably leads to a lack of separation and thus reduced definition and intelligibility in those instruments.

Avoiding masking is of fundamental importance when processing the bass and low-frequency content of your mix, since masking is more pronounced in low frequencies than high.

To avoid this happening, a specific frequency place needs to be found for each instrument, enabling them to breathe and sit together in the mix without fighting each other for sonic space.

Avoiding accumulation

As you'd imagine, carving out sonic niches using your EQ tools requires some careful thought. When amplifying certain frequency ranges as outlined on the previous page,

watch out that you don't accidentally make any decisions that could result in unnatural-sounding accumulation. Due to the fact that this is more likely to occur at low frequencies, it's

important to be aware of techniques for avoiding this. Here are three tried and tested possibilities...

Yin and Yang

When a certain frequency range is lacking in a particular instrument, we tend to automatically reach for the EQ and boost it. However, this can quickly lead to masking

and frequency accumulation, particularly if the process is repeated on other instruments, as their frequencies become obscured by the first boost.

To avoid this, attenuate the frequencies in other instruments that could be causing masking. For example, to give more clarity, note definition and presence to your bass, experiment with attenuating the same range on the guitars, strings, brass section, etc, rather than immediately boosting the 2-3.5kHz range.

The wider the Q, the lower the boost

Boosting a narrow range of frequencies can sound highly unnatural, particularly in the low-end, so simply widen the Q to enable a much lower, more natural-sounding dB boost.

EQ Mirroring

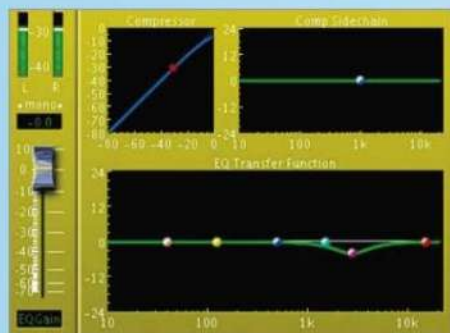
Rather than just making a frequency boost to a certain source, combine it with a cut to the instrument that could be masking it. By doing this, the impact of a far greater boost can be achieved with much less gain, thereby minimising the possibility of an accumulation of frequencies.

For example, if you want to amplify the kick drum at 95Hz, try mirroring it by attenuating the bass at 95Hz, thereby providing space for the boost. Similarly, if you found a frequency range with pleasing tonal characteristics in the bass sound at around 75Hz, you could combine amplification of this range with attenuation of the same on the kick drum.

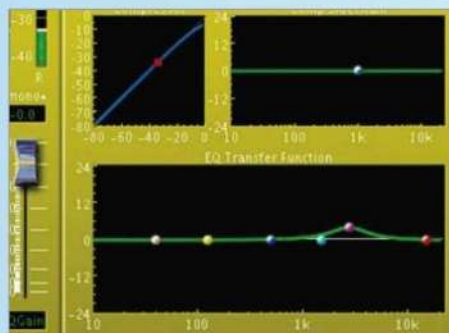
Mirroring your EQ boosts with cuts in this way will usually result in a louder and fuller production than you'll get by applying frequency boosts alone, and the lack of accumulation should ensure that it sounds as natural and unprocessed as possible.

"A specific frequency place needs to be found for each instrument, enabling them to sit together"

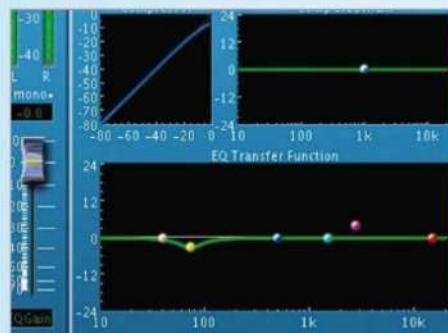
> Step by step EQ mirroring



- 1 > Rather than automatically opting to simply boost the 2-3.5kHz range on the bass to enhance note definition, clarity and presence, cut the same frequency range on any instruments that could be masking it.



- 2 > In order to avoid frequency accumulation and achieve a more natural-sounding, louder and fuller mix, we opt for a 4dB boost to the bass rather than an 8dB boost.



- 3 > We combine this boost with a corresponding cut to the kick drum in the same frequency range - in this case, 73Hz - that uses the same width of Q. By adopting this EQ-mirroring technique, more boost can be achieved without loads of gain being applied, thereby avoiding frequency accumulation. **cm**

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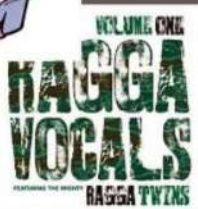


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THE cm GUIDE TO RIFFS

Every great track needs a catchy, memorable hook, no matter what genre it's in. Here's our in-depth guide to writing killer riffs

> When you hear the word 'riff' you might conjure up images of long-haired guys in tight jeans strumming out three chords. Well, it's time to rethink. Riffs are by no means limited to rock - the mighty riff is a universal concept, and one that most people are familiar with even if they don't realise it.

Riffs are the repeated musical phrases that usually form the 'hook' or lead element of a track. Try humming your favourite track, and unless you're humming the vocal line, chances are you're humming the riff. If you're still not sure, think of Nirvana's *Smells Like Teen Spirit* and things should become clear.

There's no doubt that the twin powers of rock music and the electric guitar popularised the idea of riffs, so much so that the two are

almost synonymous with each other. But you should be under no illusion about the importance of these musical motifs in electronic genres too. Keyboards, samplers and synths are just as suited to reeling off epic riffs as any dusty old Fender.

Electronic musicians are increasingly recognising the importance of recognisable, catchy melodies and their commercial potential. The good news, then, is that the principles are the same regardless of your musical preference.

The aim of this guide is to arm you with all the tools you need to set your riffs on fire. We'll look at the theory behind them, the importance of expectancy and sound selection, and how these short musical elements can be used as the basis for complete musical works.

The anatomy of a riff

In this three-minute radio edit era, the riff is often the single most important element of a song, and a good one can bring success and profit. Let's take a look at exactly what makes a riff, breaking the concept down into its component parts.

The first element common to all riffs is that they provide a 'signature' for the track. The riff may manifest itself in different forms throughout the song, but at each point you should immediately be able to recognise it. An excellent example of this is *Insomnia* by Faithless. The riff appears throughout the song in various forms and is so recognisable that you need only hear a few notes to be able to identify the track.

The next quality that most good riffs share is simplicity. This doesn't mean that they're easy to play or basic in terms of composition, however. What it means is that the idea of the melody should be easy to follow and almost logical in its structure. Possibly the best analogy of this simplicity is to think of language. You might ask a complicated question, but the composition of that question can be simple. You may have already heard people refer to 'question and answer' in music, and this is often what happens in a good riff - something we'll touch on in more detail later.

She got rhythm

After simplicity, the next key factor is rhythm. A strong, identifiable rhythm using a simple note progression is all you need to create a basic riff. Try imagining the famous *James Bond* theme with every note lasting exactly a second and no gaps in between. If you manage this - it's harder than you think - you'll appreciate just what a huge difference rhythm makes.

Of course, you need to partner rhythm with pitch to really make things work. Imagine the piano roll on your DAW's MIDI editor. The markings from left to right

represent rhythm, and up and down - as marked by the piano keys - indicate pitch. This two-dimensional space is the area in which riffs live. Every melody ever written is hidden in that space somewhere, just waiting for someone to carve it out.

The language of music

We won't wander too far down the path of traditional musical theory just yet, but a light appreciation of notes and scales is extremely helpful. Notes are essentially

"The riff is often the single most important element of a song, and a good one can bring success and profit"

markers for different pitches, and scales are collections of musically cooperative notes. A riff in its most basic form is simply a rhythmic arrangement of notes from within a musical scale.

Understanding these different concepts and how they work together as a whole will make your journey into the world of riff creation much smoother. Start listening to tracks that feature riffs and you'll soon begin to hear how all of these elements interact and work with each other. Much like learning a language, with understanding comes the ability to construct your own simple phrases, and with practise you will become more fluent.

Over the next few pages we'll build upon these foundations of knowledge and learn how to use some simple techniques for taking your riff and growing it into the framework for a complete track.

You don't have to brandish a keytar to fit sweet riffs into your dance music productions... though you can if you want



What do the tunes of Beethoven, Kurt Cobain, Coco Pops and Indiana Jones have in common? Riffs of course!

Smoke on the Wagner

The word 'riff' has become so overused to describe the thrashing melodies found in rock and metal that you'd be forgiven for thinking the gods of rock themselves invented the things. The truth is that the music world had riffs long before the likes of Page and Hendrix ever picked up a guitar.

Classical music is full of them. The opening four notes of Beethoven's *5th Symphony* are just as much a riff as the guitar line from AC/DC's *Back in Black* or the spun-out, dirty ostinato from Nirvana's grunge masterpiece *Come As You Are*.

The use of musical catchphrases is as old as music itself and found in almost all genres,

from dubstep to dirty south, R&B to reggae. They're even used to get into our mind and sell us products. You'll know these stripped down and overly simple examples as jingles, but many of them are riffs all the same. Anyone who's listened to a commercial radio station for any length of time will know only too well the irritating staying power these short musical viruses can have.

Movies also use riffs to link scenes to certain characters and emotions. The sight of that dorsal fin cutting through the water in *Jaws* wouldn't be the same with a soothing pad in place of the ominous riff that we've come to know as its musical accompaniment.

The science behind the sound

After understanding how a riff is made, the next stage before writing your own is working out exactly what makes a good one. To make something musically special, you really need to understand a small amount of music theory. A little bit of knowledge can go a long way, and spending a few minutes studying will save a lot of time when composing.

The most straightforward of all the scale types is the major scale. You would be hard pushed to not know this one: it's the scale sung in *The Sound of Music*'s classic 'Do-Re-Mi-Fa-Sol-La-Ti-Do' line. The simplest of all the major scales is C major, so this is the one we'll use to illustrate our examples. C major is easy because it starts at C (the white note before the pair of black notes) and dances its way up all of the white notes until it reaches the next C. There are no black notes at all in the scale of C major.

A scale represents a self-contained collection of notes. You could write all of your tunes using only the notes in C major, and while they wouldn't be that interesting, they would be musically sound. To work out other major scales - and therefore other sets of simple note collections - nudge the notes of the C major scale along by one key, or remember the following pattern: 2212221. This pattern shows the increments in keys on your piano roll to count from any starting note in order to make its major scale.

The increments between notes are called 'intervals', and these, too, are an important concept that, when understood, will set you well on your way to musical excellence. Put as simply as possible, an interval is the distance between two notes, regardless of whether they are played at the same time or in sequence. In your riff, two notes that follow each other form an interval - so learning which intervals work well melodically is fundamental to create pleasing phrases.

Using the C major scale as an example, the interval between any notes in this scale will not sound displeasing, but some are particularly

pleasant to the ear. Try playing a 'perfect fourth' interval (play a note and then the one four white keys up) or a perfect five (starting note and then the fifth note along) to see what we mean.

Every piece of music is in a key (ie, it uses notes from a particular scale), so you should always assign one to your track. You can swap into a different scale at any point - every key has several major, minor and modal scales that are closely related to it. (For more on minor and modal scales, see our ongoing music theory tutorial *The Easy Guide*, p81.) You can also use

"The more you learn about chords, melodies and harmonies, the more you can creatively bend the rules"

'chromatic' notes - that is, notes outside the scale - to create tension or give the listener an unexpected lift/drop. Jog your memory on which notes are in the scale you're using by creating a MIDI clip featuring the notes at the beginning of the bar (then mute the clip!). This provides a quick visual reference to make your transition into working with certain keys/scales as easy as possible. Once you get used to working in this way, you'll start to approach writing riffs with more competency.

We can only give a very, very basic idea of music theory in the space we have here, but the point we're trying to get across is that you should always think about note placement within the bigger picture and avoid guess work. There are plenty of resources online that will help you understand these concepts and move on to increasingly complex ideas. The more you learn about chords, melodies and harmonies, the more you can creatively twist and bend the rules to create memorable riffs. Check out www.musictheory.net for lots of free lessons, examples and tools to practise with.

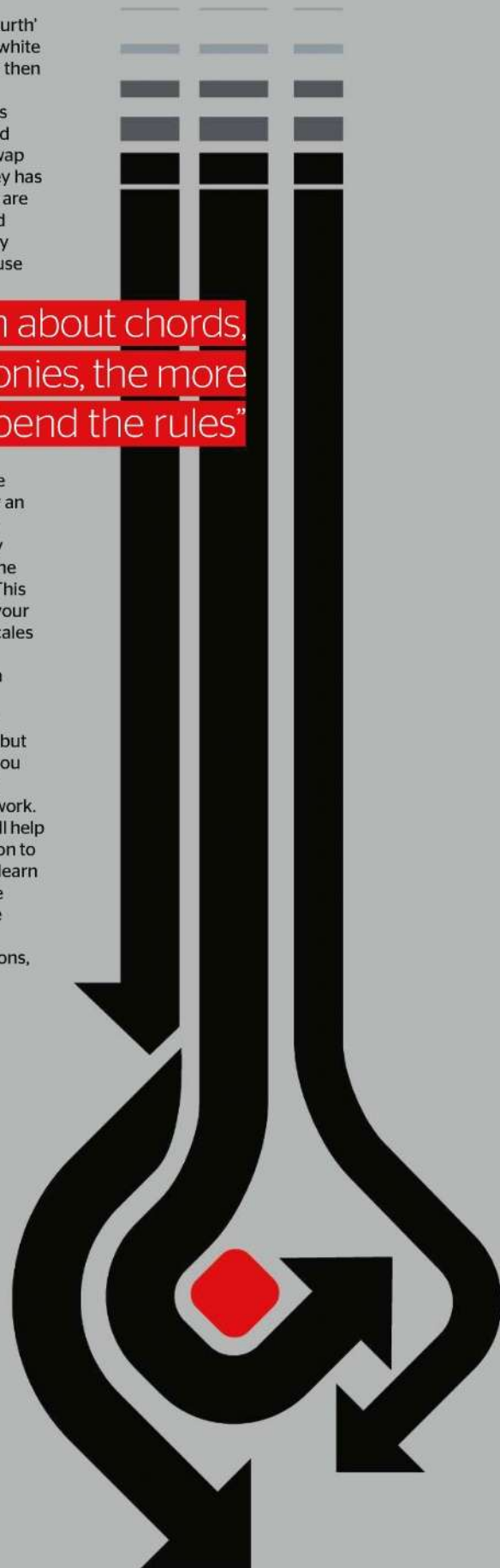
Answering back

We briefly touched on the notion of question and answer - or call and response - earlier, and it's worth looking at in more detail. The basic principle is that the first half of a riff sets up the question, which is answered by the second half. This response provides a sense of musical satisfaction.

Nursery rhymes are good examples of question-and-answer melodies: these simple songs are built on this principle. Think of the melody of the first half of *Row row row your boat* and note how it rises up at the end of the first part, much like your voice might when you ask a question. This is then 'answered' by the descending "Merrily merrily" tune. Another slightly more advanced example is the tune from *Happy Birthday to you*: here the initial

question is repeated twice and then a variation on the question is sung before the answer is finally revealed. This extra stage creates more tension and expectancy, and, ultimately, more satisfaction upon being answered.

Thinking about things in this way can turn a simple melody into a truly catchy riff - one that will be much more memorable and musically pleasing. Have a go at some critical listening to popular tracks and look out for these questions and answers. Keep listening out for them and soon you'll start spotting much longer and more complex versions, each providing an equally intricate sense of balance and resolution. Experiment with this idea in your own riffs and see for yourself the difference it makes.



Select your sound

An essential element of any good melody is timbre, or sound. A pattern and rhythm is nothing without a sound to colour it, and the choice you make will have a profound effect on the end result. It doesn't matter if you make sample-based music, program synth patches from scratch or record live instruments – the importance of timbre is the same for any and every riff.

Hitting the sweet spot

A lot of the time you'll be working with a sound that you like at the start of the riff-making process. This makes sense when that sound is the inspiration for the track, or when it works particularly well for the feeling you're trying to express. But even if that's the case, once you've created a riff, make a copy of it to experiment with: you might be surprised at the difference a new timbre makes. Make it your normal practice to duplicate the channel that your lead melody is on: that way you won't lose your original, and you'll always have it to hand as a benchmark reference.

Using the duplicate, cycle through the presets on your synth and see if any of the sounds leap out at you. The aim isn't necessarily to end up using a preset, but by auditioning them you open yourself up to new ideas, and a certain amount of

Faithless' huge hit *Insomnia* showcases the power of an unforgettable riff paired with an ear-catching sound

"Sound design is a vast topic, but our advice is: don't be afraid – experimentation is never a bad thing"

serendipity. Many of the best producers credit some of their finest creations to 'happy accidents' – and by shopping for sounds in this way you're not only learning what works, but also increasing your chance of discovering something unexpected.

If your riff comprises short notes, you'll find that sounds with a fast attack and a more 'plucked' feel often work best. Likewise, riffs that use chords and longer notes will generally suit instruments with more sustain and longer release and attack. Often you'll stumble upon a sound that almost works but doesn't quite fit. In these cases you might need to change the amp envelope settings or modulation parameters so that the sound suits the rhythm. Alternatively, this can be an opportunity to revise the riff into something new that works with a sound that you particularly like.

Open your ears

Don't think just in terms of changing the entire sound, either: sometimes gentle tweaks or simple modulations can be just the tonic. Play with glide or portamento, and lengthen the notes slightly so that they overlap and create a 'fluid' sound. Try adding another oscillator an octave or two either way with a different waveform, or slightly detune one to thicken out the patch. Sound design is a vast topic in its own right, but our advice is: don't be afraid – experimentation is never a bad thing. Putting extra thought and consideration into your production will see you rewarded with more measured and deliberate results. Nothing is more satisfying than the creation of a catchy riff with an exciting sound, and knowing that it's unique and all yours.

> Step by step Choose the right sound for your riff



1 > Using the MIDI clip on the **cm** DVD – or one of your own MIDI riffs – start a new project. Add a sampler or synth onto the same channel as the MIDI clip, plus some simple percussion if you want to give the melody some context.



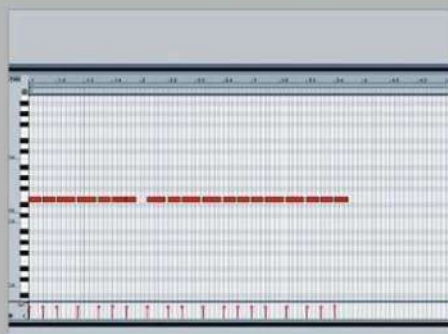
2 > Choose a simple piano preset if using a synth, or a short stab sound if using a sample, and then play the riff. As it loops, decide whether the sound suits the rhythm. Does it need more attack, longer sustain or something else?



3 > Cycle through some different sounds – strings, pads, brass etc – observing which timbres suit the rhythm and progression of the riff the most. Do the sounds work better if you lengthen the notes? Try to analyse each contributing element. Some examples are on the **cm** DVD.

> Step by step

Improvise a simple starter riff



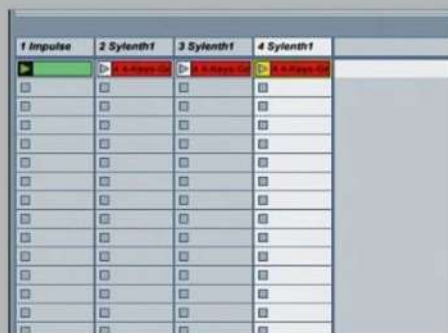
1 > This technique works well as a starting point for riff creation. You'll need a beat or rhythm to use as a foundation for the riff. Open a new project with your beat of choice on one channel and a virtual instrument on another.

2 > Using a simple clear sound, start recording. Tap one note in at a time, in time with the beat. Next, start adding in shorter and longer taps. Once you've got a pattern that you like, stop recording and crop the clip to that section.

3 > Quantise the clip, if you haven't already, so that all the notes are in time. Now, keeping the concept of scales and intervals in mind, move some of the notes up and down while the riff is looping. Keep adjusting notes like this until you have a riff that you're happy with.

> Step by step

Combine two patches for a call and response



1 > Starting with a blank project, add a MIDI instrument. In the piano roll, enter a simple four-bar riff. Try using some eighth-notes that rise or fall by a few tones every bar.

2 > Create two duplicates of this channel. You can use the same instrument or try a completely new one. For this effect we need two sounds that are different but also complement each other. Keep the original muted for now.



3 > In one of the copies, go into the MIDI editor and remove the second two bars of notes. For the other, do the reverse. When played together, the second copy should play straight after the first one so that they sound like the original.

4 > For the first clip, choose a low but defined bass sound. For the second clip, choose something in a higher register. Play these clips together and hear how they interact. Experiment with different sounds for a better fit.

Let the machines do the work

In the world of music-making, a super-program that can do all the creative work for you is yet to be invented. That said, some tools in your audio workstation might give you some assistance in clambering out of a creative rut when it comes to riff-making.

Number one on the list has to be the arpeggiator. Many synths have them built in, and most DAWs come with one as standard. A little bit of arpeggio can go a long way, so don't be afraid to experiment. Try arpeggiating a riff you've already started working on to see if it adds something special. Another option is to add some arpeggiated notes in among regular ones to provide movement and variety.

Just as useful is the humble glide or glissando feature found on many synths and samplers. Ensure that your instrument is in monophonic mode and then start overlapping MIDI notes to hear the effect right away. One common technique is to have one long note lasting two or four bars and then draw in eighth- or quarter-notes in different rhythms. This will give you a much more fluid, almost wobbly riff that can yield fantastic results with experimentation.

Lastly, don't forget about modulation. Changing a sound's texture over time can add that vital third dimension to an otherwise average riff. You don't need to be too heavy-handed with this, but a little bit of filter or distortion can go a long way.

It's good to recycle

Once you've laboured long and hard to sculpt the riff of the century, it would be a shame to waste it on just one moment or section of a song. A good, catchy riff can be reused, stretched out and elaborated on so that it influences almost all of your tune. Don't be shy about using one small idea as the foundation of a whole track: it was common practice in classical music, so if it's good enough for the masters, it's good enough for you.

For starters, you could make a copy of your riff and use it for your bassline. There's no need to do anything more – simply copy it and choose a good low-end patch. If you did want to add some variation, you could take the essence of the riff's melody and boil it down into one-bar-long notes, or rhythmic on-beat eighth-notes to pin the whole track together.

Another popular way to reuse a riff is to break it down into shorter sections and use these as part of the intro and outro. Doing this also introduces the main idea of the track early on – keeping everything tied together while still creating variety. You could use the first part, the end part or even the whole thing with a different start point as a hook to draw the listener in.

"Don't be shy about using one idea as the foundation of a track: it was common practice in classical music"



> Step by step

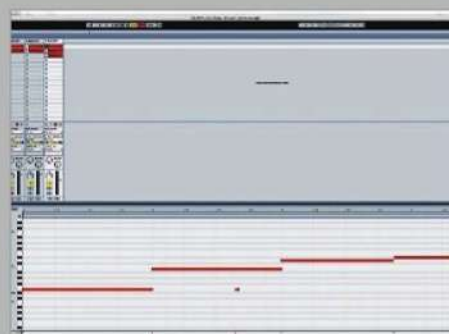
Reuse the riff



1 > Start with a riff you like, or an example from one of the previous walkthroughs. For now we just want the riff and a simple beat. Make a copy of the riff and move all of the notes down in the copy by an octave or two (12 or 24 keys in the piano roll).



2 > Already this should be working like a bassline, but depending on the sound you used in the original, it might be better set to a more solid, thick sound. Try a few until you find one that complements the lead.



3 > To give the track a firm foundation, try taking the first note of each bar in the new bassline and lengthening it out so that it lasts for the whole bar. If this sounds a little plodding, break up the long notes with four quarter-notes every other bar.



4 > Make another copy of the original riff, but this time keep the same patch/sound. Mute all the other channels and set your playback loop points to cover half a bar. Try out different snippets of the riff that work on their own.



5 > When you have one or two snippets that you like, use them liberally in other parts of the song where they won't compete with the main riff. This could be in the breakdown or the introduction. You don't need to keep them at their original positions within the bar, either.

POWER TIP

>Don't be boring

Using new variations on an original riff is an excellent way to create new parts for a track. Getting the balance right is important to stop your song sounding too similar throughout. To combat this, add new elements that don't base their melody on the riff.

A good technique to try is this: when your melody is rising, have your bass line fall, and vice versa. This may seem counter-intuitive, but this 'bi-directional travel' provides a pleasing tension within a melody. Check the example on the **cm** DVD to hear what we mean. **cm**

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Synths in SunVox

Learn how to use MultiSynth, mimic sidechain effects and work with sampled instruments in this multi-platform tracker



> Welcome to part 4 of our guide to SunVox. This time we'll be looking at uses for its built-in MultiSynth, how to set up a sampled instrument and how we can mimic sidechain compression using the Echo as a simple gain device.

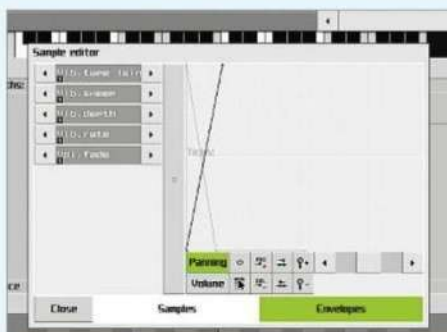
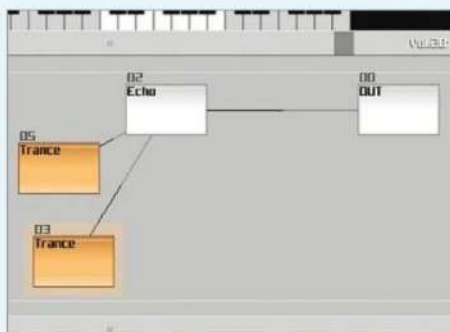
We'll be using a trance synth sample as one of the sounds in this tutorial, but we need to do some preparation in order to loop and fade its volume. Invoke a new Sampler machine in the Synths area, rename it **Trance** and connect it directly to the Out. Click the Sampler machine

to select it, choose **Load** in the Synth Properties area on the left-hand side (you may need to scroll the area to see the button) and load **Trance_synth.wav** from the DVD. Choose **Edit**, highlight the **Samples** tab and change the **Loop** type to **2** (Ping Pong). Audition the sample and drag the two loop markers around until you have a good-sounding loop. Now click the **Envelopes** tab, make sure **Volume** is highlighted green and click the power button icon to enable the volume envelope. Select the penultimate node and click **Del** twice to remove the last two nodes. Drag the

first node to the top and the second node to the bottom - this should give a smooth fade-out on the volume over a couple of seconds. Now click on **Panning**, enable the envelope, remove the last two nodes as before and set the envelope curve to match the Volume envelope, giving a smooth panning transition from right to left over the fade. Click **Close**, choose **Save synth** from the **Synths** menu and call it **Trance**. The accompanying tutorial files along with samples and instruments can be found on your **cm DVD**. Now, let's get into the nitty-gritty.

>Step by step

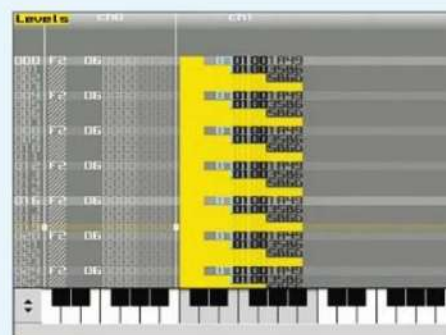
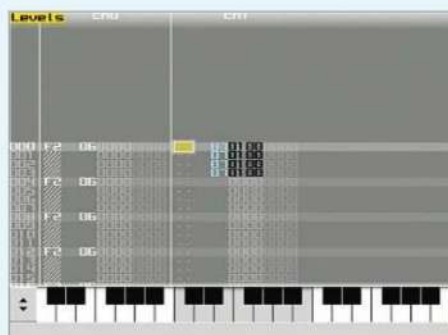
Set up a sampled instrument



1 > First, delete the Generator device, as we won't be needing it. Next, disconnect our new Trance machine from the Out and reconnect it to the Echo device. Now load the Trance machine that we saved earlier, so that we have two of them, and connect this to the Echo as well.

2 > With our second Trance machine selected, click **Edit** in the Synth Parameters box and set **Rel. note** to **+7** semitones (a fifth above the root). Click the **Envelopes** tab and vertically invert the line, in doing so setting the pan direction from left to right.

3 > Invoke a MultiSynth from the **Synths** menu and connect it to both Trance machines. Now when you audition the MultiSynth, it plays notes at both the root and fifth. With the MultiSynth highlighted, input a lead line in the Pattern window at **00, 06, 12, 16, 22** and **28**. Try doubling it up to add depth.



4 > Choose **New pattern** from the Timeline window and drag it above the current pattern. Bring in a Kicker synth and connect it directly to the Out. With the new pattern highlighted, enter in a four-to-the-floor kick line in the first channel. Under the Kicker's parameters, switch **Anticlick** to **1** and adjust the **Release** to about **5**.

5 > Now invoke an Echo device, rename it **Duck**, connect it directly between the old Echo and the Out, and set **Wet** to **0**. On the same pattern as our Kicker, enter the Duck's device number into the next track accompanied by **01** in the next space (Duck's **Dry** parameter). Repeat this over the next three lines.

6 > Choose **Hide / show levels** from the **Pattern** menu, enter Record mode and draw in four ascending values from **25%** rising to maximum. Now copy these four values all the way down the pattern so that they coincide with each Kick. Finally, load in the hi-hats synth provided, connect it to the Duck and enter a hi-hat rhythm into a new Pattern. **cm**

Modes and minors

Life isn't incessantly cheery, and your tracks shouldn't be either. Introduce some melancholy with modes and minor scales

> Last issue, we alluded to the idea that a minor scale borrows its key signature from a related major scale, so let's see how that works, exactly, and at the same time explore the minor scales' relationship with modal scales.

As we've seen, one way of understanding modal scales is to take a familiar major scale and simply start it on a different note. The most commonly used modal scales nowadays are the Dorian (which starts on the second step of its parent major) and the Mixolydian (which starts on the fifth step).

We must now add the sixth mode, the Aeolian, which is also known as the 'natural minor' and these days is probably most often heard in traditional music. If you know the old carol, try figuring out *God Rest Ye Merry Gentlemen* on the white notes starting on A (one-finger-playing allowed). If you succeed in doing this, you're playing a tune in A Aeolian - in effect, C major starting on its sixth step. Its notes are as follows:

A B C D E F G A

So, you can work out the Aeolian mode for every note on the keyboard simply by starting

on the sixth step of any major scale and keeping the key signature exactly the same.

Varieties of minor

We've now looked at two minor-sounding scales - the Aeolian mode/natural minor and the Dorian mode - and the difference between them is merely their sixth steps. The Aeolian on A we've just seen, so let's remind ourselves what A Dorian would be. Dorian is the mode that starts on the second step of a major scale, so because we're starting on A here we must look at the scale of G major to find out the accidentals used. The notes of the A Dorian are:

A B C D E F[♯] G A

A Dorian shares its notes with G major, and therefore uses F[♯] as opposed to the Aeolian's F natural. The Dorian scale contains a major sixth interval from A to F[♯] (a whole tone above the fifth, E) while the Aeolian is home to a minor sixth (A to F, which is only a semitone above the fifth, E). This is the only difference, so it's pretty easy to convert one to the other.

Traditionally, this mobility of the sixth has also been extended to the seventh note (the reasons for which we'll explore in more detail

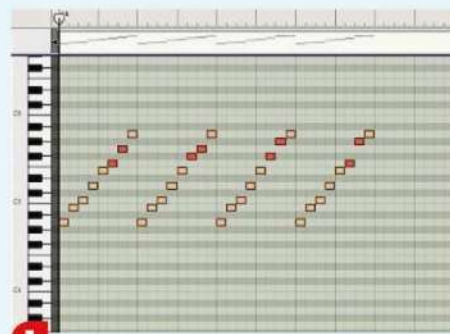


Fig 1: There are four varieties of minor. The fixed notes are shown in pink; the mobile sixth and seventh notes are displayed in red.

next time, as we examine some basic minor chord progressions), so that in minor scales rooted on A, the note G can also be raised to G[♯].

Ups and downs

With this in mind, let's work through the permutations of the two scale notes that can each be raised or lowered (the 6th and 7th). There are four possible minor scales (see **Fig 1**).

Starting with our Aeolian, which has the lower versions of both sixth and seventh notes, we move on to the Dorian, which has its sixth step raised. Next comes a scale with both the sixth and seventh raised - this is known as the melodic minor scale (see below). And finally, the sixth is lowered while the seventh stays up, creating the harmonic minor scale, to which we will return when we discuss progressions in minor keys. Note that the first five notes of all the minor scales are identical.

To gain more than a theoretical knowledge, you will need to play these scales yourself, preferably on a keyboard. Ideally, you should also construct them at a variety of different pitches. Here are some good starting notes: D (using the F major scale), E (G major), B (D major) and G (B[♭] major). If this seems a little challenging because you don't have much musical training, have a go anyway: the more you do, the more you'll learn!

Minor misunderstanding

If you know a bit of traditional music theory, perhaps from doing a few grade exams at school, you may recall that the melodic minor scale is usually presented as having differing ascending and descending forms. The ascending form has a raised sixth and seventh while the descending form has these notes lowered, which in fact makes it identical to the Aeolian mode. However, this distinction has no real practical purpose outside of theory text books, and when making music is not worth considering - it'll just make your life difficult. **cm**

Staff notation special

So far we've kept our notation to scales and melodies displayed one note at a time. Now it's time to have a look at how multiple simultaneous notes - aka chords - are shown.

Notes that are intended to sound simultaneously are placed vertically above one another, usually with the same time value. **Fig 1** shows some diatonic triads (three-scale note chords) built on the first three steps of the scale of G.

Simple chords are easy to spot in staff notation, as the notes all tend to lie on adjacent lines or adjacent spaces. Using the major scale, the chord on the first degree

will be major (G B D in this example) but the chords on the second and third degrees will both be minor (A C E and B D F[♯]). The F is raised to F[♯] because of the key signature.

The second example, **Fig 2**, shows some chords from the F major scale. Can you figure out what the notes are (remember the B[♭] in the key signature), what chord symbols you would use and how you would notate them using the Roman numerals shown in the other caption?

Here are some hints to help you: Count from F; and use upper case for major, lower case for minor. Answers below.

Fig 1: Chords I ii and iii in G, otherwise known as G, Am and Bm



Fig 2: Some mystery chords. Can you work out what notes they contain and how you would notate them?

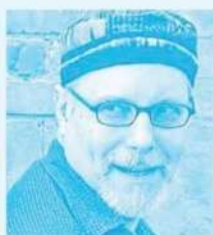


Avant-ifying house music



House music exists to make people dance. Here, rachMiel encourages you to take the genre a few steps further and really rip up the dancefloor

rachMiel



rachMiel has spent the better part of a decade studying composition in America and Germany. A recovering atonalist,

his musical influences range from Frank Zappa, Karlheinz Stockhausen and North Indian classical drumming to 60s pop, horror movie soundtracks, avant electronica and, above all, silence.

> **Welcome to the fourth in my six-part series on creating avant variants of electronic music genres. In the first three instalments I avant-ified downtempo, techno, and DnB. This issue I try my hand at house; still to come are dubstep and hip-hop.**

Divining house's essence

The first step in avant-ifying a genre is divining the essence of that genre. I've been using the HAL approach to do this: history, attributes, listening. Historical research provides a sense of the genre's stylistic roots; compiling a list of a genre's key attributes helps home in on its core musical personality; and deep listening gets the feel of the genre in your head and gut.

For a thumbnail history of house music, see the box below. To summarise, house has deep roots in soul, funk and R&B, and its immediate predecessor - its mama - is disco. In terms of essence, the message is quite clear: house is sexy, playful, pleasurable, perky, cool and, above all, it gets people moving on the dance floor. Essential

attributes of house include: 4/4 meter, 120-135bpm tempo, strong kicks on every beat, backbeats on the second and fourth beats, 8/16/32-bar sections, sparse intros and outros, multiple build-up/breakdown cycles, drops and breaks, tons of repetition, simplicity, lightness, upbeat mood.

Over the 25 to 30 years of its existence, so much good house music has been produced that a comprehensive list would fill this entire magazine. So, how do you go about getting the essential feel of house? I recommend

starting with these classic (Chicago, Detroit, UK, Ibiza) house DJs/producers: Jesse Saunders, Frankie Knuckles, Marshall Jefferson, Chip E, Mr Fingers, Farley Jackmaster Funk, Steve Silk Hurley, Paul Oakenfold and Danny Rampling.

I'll leave the final word(s) on the essence of house to Ishkur, of Ishkur's Guide to Electronic Music (techno.org/electronic-music-guide), who had this to say: "House is the most soulful genre. It's also the simplest, the oldest, the warmest and, where electronic music is concerned, easily the most human-sounding."

Elsewhere, Jakobkreuzfeldt posted this in the IDM Forums (www.idmforums.com): "The essence of house is being lost in the moment: dancing in place to repetitive, continuously mixed music in a dark, sweaty room surrounded by a diverse crowd of people who are at once both your friends and complete strangers."

Finally, composer Pablo Sitauskis wrote these wise words: "If you really want to 'get' house music, go to a club and dance to it!"

Avant-ifying a track

Once you've divined the essence of house - let it possess you, body and soul - you're ready to avant-ify! You can proceed by feel (right brain), allowing your musical imagination to conjure up delightfully warped variants of characteristic house structures, beats, basslines, melodies, pads, FX, etc - or you can proceed systematically (left brain), by focusing on the classic four parameters: pitch (melody, harmony, range); duration (beat, meter, syncopation); timbre (sound, patches, instrumentation); and dynamics (amplitude envelopes, accents, buildups/breakdowns). My favourite way to do things is a hybrid approach (full brain): one part intuition, one part ratiocination.

"The essence of house is being lost in the moment: dancing in place to repetitive, continuously mixed music in a dark room"

House's family tree

In a genealogical nutshell: Soul, funk, and R&B begat disco, disco begat house, and house is still begetting a litter of subgenres including acid, tribal, minimal, progressive, electro, hip, ghetto and many more. The origin of the term 'house music' is unknown. Theories include: it's from The Warehouse, a late-70s Chicago club; it's from Chip E's 1985 track *It's House*; it's because each DJ had his/her own favourite 'house' tracks.

Early 80s Chicago was to house what early 80s Detroit was to techno: ground zero. House kicked off when Frankie Knuckles, Jesse Saunders and a few other Chicago DJs began to produce tracks that were a hodgepodge of disco, Italo, hip-hop, R&B, funk and electropop. Detroit producers Kevin Saunderson, Juan Atkins and Derrick May soon followed suit.

By the late 80s, house music had jumped the Atlantic and become a staple of the

European club scene, particularly in the UK, Germany, France and Spain (Ibiza). Meanwhile, back at the farm, house had progressed beyond Chicago and Detroit to New York, Miami, LA and other centres of urban American music. In the hands of progressive producers, house subgenres began to proliferate. Today, in 2010, house is still a hugely popular worldwide dance music phenomenon, with no end in sight.

>Step by step

Avant-ify house



1 > I start my avant house demo track by using some Sony samples to create the beat. I decide to stick with most of house's conventions: 4/4, 130bpm, heavy kicks on each quarter, backbeats on the 2nd and 4th beat, 32-bar sections (16+16). The beat avant-ification is subtle, accomplished mainly by mixing in reversed segments of the layers. (Audio on the DVD: **Beat.wav**.)



2 > Next I turn my attention to the bass part. Feeling that the relatively conventional beat calls for something bizarre in the bass, I grab two variants of a 12-tone bassline sample I made for an earlier issue of **cm** - one legato and one a bit more percussive - and mix them. For good measure, I use filter envelopes to add timbral shape to the line. (Audio: **Bass.wav**.)



3 > Things are starting to sound promising, but the beat/bass mix needs more depth. I choose two pad samples, both 50s sci-fi kitsch/eerie, one low in pitch and the other very high. I use the lower variant for the first half of the 32-bar section and the higher sample for the second half. In both cases, I mix forward and reverse variants of the samples. (Audio: **Pads.wav**.)



4 > We're getting there! To make things a bit more sparkly, I add a couple of synth leads to the mix, one for each half of the 32-bar sections. I turn to the Sony Acid 7 loop library and pick three samples: two close variants of a bouncy arpeggiated synth line, and one heavily reverbed Theremin-esque saw to underscore the track's 50s sci-fi theme. (Audio: **Leads.wav**.)



5 > At this point, the mix is quite satisfyingly gooey and dancey. I could add some FX to maximise the weirdness factor, or possibly some seductive female vocals to sex things up. But I choose to say no to these temptations; one has to know when to stop, yes? It needs an intro, so I create a minimal foreshadowing of things to come. (Audio: **Intro.wav**.)



6 > I arrange the track into a tidy four sections: intro (8+ bars), main 1 (16+16), main 2 (16+16) and main 3 (16+16). The three main sections are repeats, with each repetition moving further out towards the realm of ecstatic avant-icity. As usual, I master the mix with Wave Arts Power Suite modules. Here's the final track: **Martian_rock.wav**. Enjoy! **cm**

Experimentalists' corner: Yeah, but can you dance to it?

Music is the most abstract of the arts. Unlike language-based art forms, it doesn't communicate semantic meaning; it connotes rather than denotes. Unlike the visual arts, it does not persist in time or space. Music's abstract nature is a blessing and a curse for composers: it gives vast creative freedom, but not much concrete ground to stand on.

Dance music is the least abstract of musics. It has a clear mission: to incite/

facilitate dancing. There's nothing more concrete than a hundred bodies moving in sync to a pounding beat. House is first and foremost dance music. Some subgenres might lean towards headiness: progressive, micro, fidget. But even those have dance roots: 4/4 120-135bpm beats, prominent kicks, backbeats, lots of repetition and more.

The process of avant-ifying a genre grants the avant-ifier near-total freedom.

One could create an avant house track that adhered strictly to the rules of 12-tone serial music. But what fun would that be? The challenge of avant-ification is to retain enough of the original genre that the avant variant is clearly related to it. With avant house, one of the most effective ways of doing this is to retain danceability. Listen to your track and ask: Can I (would I want to) dance to it? If the answer's no, try again.

Pitch modulation

Manipulate the pitches of your samples and synthesised sounds with envelopes and LFOs to create terrifying timbres



> There's a chill in the air as I sit down to write this issue's *Sound Essentials*. For the past few weeks, I've been inspired by the ghoulish adornments to the neighbourhood houses: doorways sprouting faux cobwebs; jack o' lanterns grinning their toothy grins from the porches. Halloween has passed now, but as usual for this time of year, my creative impulses have become a bit more... macabre, shall we say. I dearly love treating the local ghosts and goblins to some sepulchral sounds and graveyard groans as they

scamper about on their quest for holiday treats. This Halloween, I decided to cobble together a crazy cacophony in my studio.

The oft-overlooked pitch envelope is one of my first-call tools for bone-chilling timbres. Longtime readers may recall that I once used pitch envelopes to add realism to drum sounds. This time, we're going to tap into them as a means to create an unsettling mood. We'll combine that with one of my other go-to techniques for spooky sounds: twisting the human voice. The familiarity of the spoken word

is comforting, so it only goes to follow that twisting or mangling the sound can make the listener feel pretty uncomfortable.

I apply these techniques using my modular synthesiser. A DIY sampling module provides the source, while various other modules are used to apply the modulations. This Halloween saw me setting up just such a patch and letting it run all on its own in the background. You can do the same for next year, using various samplers or modular plug-ins. It's quite easy, as you'll see in the walkthrough...

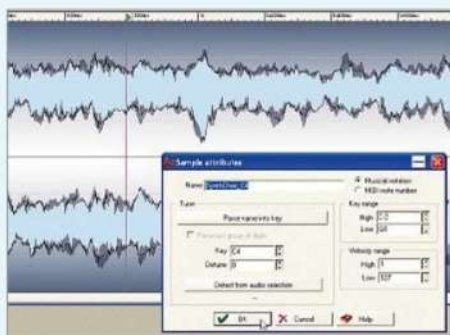
>Step by step Modulate pitch using envelopes and LFOs



1 > To recreate my spooky sounds, we need to combine sampling and synthesis. This will be ideal for a horror movie soundtrack, but we also want it to be useful for other things - so we'll turn it into a sort of musical effects pad. First, we need some vocal samples. I fire up XlutoP Chainer (www.xluto.com) and Big Tick Angelina (www.bigtickaudio.com).

2 > In Angelina, increase the envelope's **Sustain** level, reduce the **Reverb** and swap the default **Bass** and **Soprano** preset voice styles for **Soprano** and **Alto**. Use the Morph pad to adjust the **Tone** to suit your needs and kill the onboard Chorus. Tweak the sound to taste; just be sure there aren't lots of effects. You may need to adjust the main volume.

3 > Let's thicken up the Angelina sound with another vocal patch. I use a Twin Dash Player (www.dashsignature.com), patch using the **VS Voices** waveforms. Try whatever you like: a Mellotron set, another synthesised choir, your own voice. Don't apply a lot of effects as that'll make the samples hard to loop. Use Chainer's **Export** function to sample a few notes.



4 > I make Chainer export three notes, but you can export as many as you like. More notes mapped across your keyboard will give more authentic sounds. I usually do four samples per octave, but three will suffice. Open them in your wave editor to loop and truncate the samples. I embed root-note data into the files using Wavelab's **Sample Attributes** editor.

5 > Once our samples are trimmed and looped, we can turn to our synthesiser. We're combining sampling and synthesis. You could use Reason's Combinator, say, or a sophisticated sampler like Kontakt. Since I make my own sounds on my modular, I use KarmaFX Synth (karmafx.net). I open the patch **CMBasic**, which you can find on the **cm DVD**.

6 > This is as simple as it gets: a single oscillator pumps a sawtooth wave into a state-variable filter and then through an amplifier. An ADSR envelope generator modulates the amp. The Controller module is currently set to **Monophonic Play**. Let's change that to **Poly8** so we can play chords with our sound. Having done that, change the Generator from **Osc1** to **Sampler**.

RECOMMENDED LISTENING

TONES ON TAIL: *EVERYTHING*

This art-rock classic from erstwhile Love and Rockets and Bauhaus guitarist Daniel Ash contains everything from his post-Bauhaus project. Of particular note are the tracks *When You're Smiling* and *You, The Night, and The Music*, both of which use taped, pitched vocals and other musique concrète techniques to create a harrowing atmosphere.

CARTER TUTTI: *CABAL*

Original, unsettling and, in my opinion, utterly indispensable! The haunting voice of Cosey Fanni Tutti is subjected to a plethora of processing on this modern electronic masterpiece. Voices (along with virtually every other sound) are filtered, pitched, chopped, stretched and otherwise manipulated as they slide in and around Chris Carter's always engaging and inspirational electronic compositions.

PRO TIPS

CHILDREN OF THE DAMNED

The Midwich Cuckoos and the movies it inspired are horror classics. What could be spookier than those stoic, cherubic faces, eyes aglow? We have a powerful, instinctive reaction to children, and I have often tapped into that instinct to create disturbing sounds on my albums. One of my favourite tricks is to timestretch the last word in a phrase spoken by a child. Use an envelope or a sample tied to a tempo track to create an effect where time (but not pitch) increasingly slows down, almost to a complete standstill.

FOR WHOM THE BELL TOLLS

Voices aren't the only good subject for creepy pitch processing. Bells, gongs, and other clangorous, metallic tones make ideal sources for the techniques described in our tutorial below. Try replacing the vocal sample that we made with the sound of a church bell for some very eerie atmospheres. Use an amplitude envelope to soften the attack of the bell for an even moodier sound.

Scot Solida



Scot bought his first synth over a quarter of a century ago. A synthesist, sound designer and audio engineer of international repute, he's provided factory presets for many of the music software industry's most

acclaimed synths, samplers and drum machines, not to mention the **cm Studio**. On rare occasions, he manages to find time to make records for Beta-lactam Ring Records under the name Christus and the Cosmonauts.



- 7 >** As you can see, there's a big waveform display area with buttons below it. This is your sample display. Use the **Load Sample** button to import **SynthChoir-C3** from the **cm DVD**. Select **Forward** from the **Loop** dropdown menu to the left and play a chord. KarmaFX Synth should recognise your loop points. Deselect **Trigger** and activate **HQ** mode for a smoother sound.



- 8 >** To start shaping the sound, turn to the ADSR envelope generator that's modulating the amp. Set the **Attack** to **49** or higher. **Decay**, **Sustain** and **Release** should all be at about **85**. This gives us a sound that fades in gradually and then settles down to a slightly softer steady state before fading with a long tail when we release the key.



- 9 >** At the moment the sound is more angelic than spooky! Let's add a second modulator. Right-click an empty area and select **Add Module**, then choose **ADSR** from the **Modulators** category. When it appears, return to the Sampler module and right-click the **Freq** knob. Select **Modulator2** from the **Input** menu to lash that knob to the new envelope generator.



- 10 >** It's time to get scary. Switch the ADSR to **Bipolar** and change the **Curve** from **Exponential** to **Linear**. Set the envelope's **Attack** to **85**, **Decay** to **87** and **Sustain** to **82**. The **Release** should be at least **81**. Next, look for the little arrow on the patch lead connecting the envelope to the sampler. Click it to adjust the mod amount and lower it to just below **0**.



- 11 >** Play and hold a chord. Holy hounds of hell - that's quite chilling! Because I want to be able to apply this sound in a musical setting, it's a good idea to add a synth oscillator to the patch. I mix a square wave osc into the filter and adjust the outputs of both generators to suit my needs. I also turn the filter **Cutoff** down, while increasing the **Resonance** just a tad.



- 12 >** Let's add an ADSR to modulate the Filter's **Cutoff** frequency. Give it a long **Attack**, **Decay** and **Release**, and set the **Sustain** as you see fit. Add a delay effect and connect it in parallel from the Amplifier to the Controller, deactivating the delay's **DryOut** function. Finally, modulate the delay **Time** with a slow LFO. My patch is on the **cm DVD**: **CMSpooky.fxb**. **cm**

➤ **Christian Smith is one of the most sought-after electronic music producers around. Having spent a decade in the upper echelons of the techno world, he's been busy for the last few years reinventing himself as a producer of broader scope. His high-profile releases include tracks like the crossover dance classic *Total Departure* as well as numerous tracks on John Digweed's Bedrock label.**

Christian has also mixed tracks for Steve Angello, remixed the likes of Sharam and Carl Craig, taken the helm on Radio 1's Essential Mix and released the critically acclaimed album *Director's Cut*. After a world tour to promote his album, he also appeared alongside Tiesto on the Brazilian leg of the dance megastar's tour. He's clearly the man of the moment, but it's a moment that's been quite a long time coming. 20 years, in fact!

"Like many current producers," Christian recalls, "I started out as a hobby DJ and slowly started getting curious as to how the tracks I was playing were actually made. Then in 1990 I bought an Akai S950 sampler and a few Roland synths. I started making a few tracks. They were far from professional or good-sounding, but it was my start in music production!"

From Sweden with love

Christian was born and brought up in Sweden, but he went to the States to study, and ended up living there. While at college, his interest in music-making grew. "While I was studying at uni in Washington DC in the early 90s, my studio grew and I became more serious about producing music," he says. "I was collecting loads of analogue gear, like old Sequential Circuits synths and Roland SH-101s. At the same time the Washington DC and Baltimore region had a great rave scene and I played at illegal warehouse parties on weekends, while neglecting my studies a bit. Thankfully I still managed to graduate with honours!"

Christian then took another great leap in his music-making career... by getting a job as an investment banker! After realising his mistake he decided to have a rethink and went right back to the beginning by enrolling on another degree course, this time at the University of Stockholm.

"This was my second chance to spend time on music while studying," he says - and it certainly paid off. "I made a few tracks that were played by everybody from Carl Cox to Jeff Mills, and my successful career as a producer and DJ started!"

From techno to today

Christian certainly makes the transition sound easy. He became well-known in techno circles for both his DJing and production, and stuck with his hardware setup during this time. After all, why change when analogue gear and Roland synths are the staples of techno? After a while, though, he realised that the more advanced technology out there could open some doors.

"I was first exposed to producing inside the computer by my long-time studio collaborator John Selway," he remembers. "He was a very early adopter

of DAWs, using programs such as FruityLoops and Acid back in the day. At the time I wasn't convinced by their audio quality, and I used hardware until around 2005. Now everything I do is made inside the computer: the plug-ins and audio quality are top notch, and it eases the workflow a lot as well."

Christian has truly embraced software, to the point where he recommends spending money on improving the acoustics of your recording studio over splashing cash on nifty pieces of hardware.

"Don't dwell on spending loads on external gear such as tube compressors and so on. The two most important things that I have learnt throughout my career are that you need good monitors and a nice-sounding room. The rest you can get straight out of the computer. I always neglected acoustics and found it very hard to make good mixdowns in different environments. I say go and spend the £2000 you would splurge on a Moog Voyager on acoustics and making your room sound great! Get the Arturia soft synth pack instead of the Moog; I'm blown away how good soft synths have gotten over the years."

The rise of computers in music production has produced more advantages than simply streamlining workflow, as Christian considers. "The mobility is great and, of course, the cost is too," he says. "These days, if you have around £5000 you can build a proper studio - one good enough to produce great music. 20 years ago this would have cost at least £50000. Now even laptops have enough power and I can make proper tracks whilst sitting on a plane to Japan!"

What's the best thing about working with computers? "It's got to be the fact that you can work on multiple projects at the same time," Christian replies. "I love that you have instant recall and don't have to set up tons of stuff when starting the project again. I also think it's great that the advancement of technology

"The two most important things I've learnt throughout my career are that you need good monitors and a nice-sounding room"

has enabled everybody who wants to make music to have a go. Before, you needed big studios, or very expensive project studios - but now if you have talent and know how to use your stuff, you can make great music on a simple laptop. You'd be surprised to know how many big chart-topping electronic tracks were made on laptops."

Nothing fancy

As a producer of note, you'd expect Christian to have plenty of top-quality bits and pieces knocking around, but he describes his computer setup as "nothing fancy". Is he talking himself down?

"I work on a Mac Pro," he explains. "I also have a UAD2 card, Focusrite Liquid Mix, and run Ableton with some controllers. Then there's the Mackie monitors with sub, and a bunch of plug-ins. However, I am in the



CHRISTIAN SMITH

The electronic producer of the moment relates the tale of his transition from hardware to software and the profound effect it's had on his musical career

Pushing limits is what it's all about: Christian's horizons have broadened beyond hardware-produced techno to a whole wide world of computer-enabled possibilities



"I respect any producer who's willing to push his or her boundaries. Too many people in electronic music always do one sound only, and that bores me"

midst of planning my new studio and have recently purchased the Adam S3XV monitors and subwoofer. I can't wait to finally build a proper professional studio in Sao Paulo with my friend Wehbba. I'm also planning on getting the Chandler mini rack summing mixer and some other tasty bits."

As an ex-hardware advocate, Christian has a long history of using synths, so it's no surprise to learn that his setup is pretty well-stocked in that particular department. "I've always been a sucker for analogue synths," he admits, "and I love the Arturia soft synths, all of them for different reasons. I use the Minimoog V a lot for basslines: it's super fat and requires lots of compression, but it never fails to deliver. For pads I use the Jupiter-8V and Prophet V. It's amazing how close to the original synths they are. Other synths that I like are Rob Papen's Albino and Blue. I love them; the more synths, the better!"

As far as effects go, Christian has both classics and new examples in the mix. "I really enjoy SoundToys' PanMan," he reveals. "It's just a panner, but it's great. It helps to place things in the mix, and it sounds amazing. I also really like the UAD2 Roland Space Echo for cool, spaced-out effects. And the UAD2 Fatso also rocks - it's a really nice compressor."

Is there any specific software that Christian's lusting after at the moment? "I would love to get the Lexicon bundle," he grins. "I love their reverbs, but €1200 for the bundle is a little steep, so for now I use my other options. Computer-wise, I hope Ableton will soon be able to take advantage of eight- and 12-core chips."

It seems like Christian has made the transition from the hard(ware) man of techno to the soft side with relative ease, but a few minor niggles do remain. "It annoys me when plug-ins crash and you don't know which one it was," he adds. "Last night I lost three hours of work trying to figure out what kept on crashing Ableton. It's very annoying when you can't see what's causing the problem. With hardware it's often more obvious and easier to fix."

Producing and labelling

Christian has his own label, Tronic Music (www.tronicmusic.com), on which he's released dozens of tunes. What inspires him musically these days?

"I think a lot has to with my background and that I'm heavily influenced by 80s disco and

The good, the bad and the internet

Technology has made it easier to make music, but it's also made it harder to make money doing so. Christian is all too aware of this double-edged sword.

"I support the advancement of technology," he says. "I've signed tracks to my label from people who have contacted me through SoundCloud or Facebook, and it's great. No need to go to the post office anymore to send DAT tapes!"

"On the other hand, illegal downloads really hurt the music

industry. It's close to impossible to make any money from making music and running an indie label, thus making it hard to build new artists. I look at all my music as promotions for my DJ and live gigs.

"I think music will become a promotional tool for live shows rather than the main source of income. This is already happening. The days of big royalty cheques and huge remix offers are over, unless you're making commercial pop music."

The death of the dance album?

Name some classic dance albums and the chances are they'll be just that: classic recordings, probably from the 90s. Nowadays you don't get that many 'proper' dance album smashes, but Christian wants to change that. "These days very few house and techno producers release artist albums," he agrees. "I think this can be attributed to the poor sales of physical CDs and the fact that independent labels don't have the budget to push artists and properly market albums."

"I made an album with John Selway that came out in 2007. Last year I decided that I wanted to focus more on my solo career as a producer, so what better way to make a statement than to release an album, *Director's Cut*? I have a wide musical background ranging from soul to house to techno, and in albums you have the freedom to make songs that aren't all destined for the dancefloor. I think every artist should make albums - it's good for the creative soul!"

early electro music," he replies. "My sound differs from track to track because I like to constantly evolve and try different things. I would be so bored if I just made techno."

This statement partly explains Christian's move into other musical genres, but that conscious decision was also about pushing himself beyond his limits.

"I respect any producer who's willing to push his or her boundaries. Too many people within electronic music always do one sound only, and that bores me. One day I might make a single for Bedrock, but the day after it's likely I'll be doing something totally different, like a track for Drumcode or whatever. I really like producers such as Carl Craig and Laurent Garnier, but I also like newer talent like Florian Meindl and Joris Voorn. If there's one artist that I'd love to work with, it's Grace Jones. I've loved her music since I was a child and her voice is extraordinary."

Christian may work in many different genres, but his workflow is honed to a specific process for each of his tracks. "I usually start with the beats and get a good groove going," he reveals. "I use samples that contain hooks, then I tend to build a track around them. I write the parts - hi-hats, stabs, basslines and so on - and then start arranging. It's all fairly straightforward, though one thing I've been doing recently is finishing projects and then going back to them the day after and fixing things. Then I sleep on the track again and make further changes the day after, until it's properly finished. So far that's yielded good results for me."

As you might expect of a label owner, remixer, producer, TV composer ("I recently had one of my tracks in a Mexican soap opera, which was rather strange, but I didn't complain about the publishing!") and international DJ, Christian has a hectic few months ahead of him.

"I always try to stay very busy," he says. "I'm in the midst of building a proper studio in Sao Paulo, I'm releasing singles every month, and I've done around 20 remixes this year. I've done all of this while constantly flying - DJs travel more than you can imagine! Just this year I've logged in around 150,000 air miles!"

Finally, does Christian have any advice for aspiring DJs and producers looking to compete with him for air miles?

"It's a very tough industry to get into these days," he concludes, "so I suggest you work your behind off, make some big records and be sure to play live a lot." **cm**

Selected Kit List

Adam S3XV monitors
Apple Mac Pro
Ableton Live
Arturia V Collection
Focusrite Liquid Mix
Mackie monitors
Rob Papen Albino
Rob Papen Blue
SoundToys PanMan
Universal Audio UAD2
Various MIDI controllers



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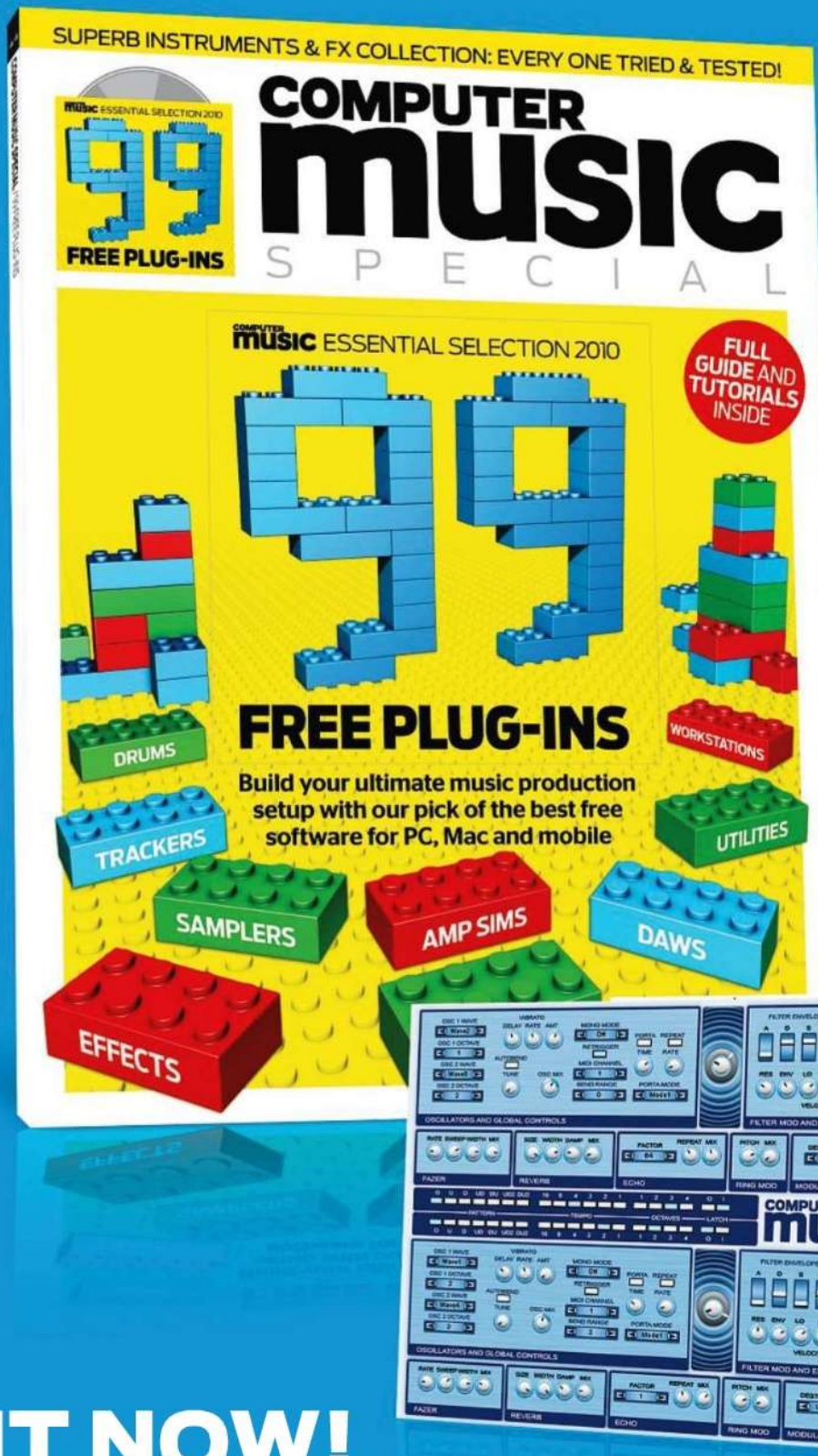
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of Vengeance-Sound plug-ins up for grabs

Win Multiband Sidechain, Multiband Compressor and Metrum!



COMPUTER music

> competition

Vengeance-Sound are most famous for quality dance-oriented sample packs, but they're well on their way to becoming legends in the plug-in world too. Lucky for you, then, that we're giving you the chance to win one of three prize bundles, each containing all of their plug-ins!

Multiband Sidechain (9/10, cm144, £102) makes club-pleasing sidechain pumping effects a cinch to achieve. Forget compressors, routing and thresholds – just slap MBS on your tracks and dial in a custom envelope. The dual-band design makes the bass and treble pump independently.

Of course, no dance track can truly work the floor without a slamming kick drum, and **Metrum** (9/10, cm152, £161) is a go-to source. It's a virtual instrument that uses synthesis and samples to make pro-quality kicks that can be tweaked to perfection.

The third and final plug-in in our prize pack is **Multiband Compressor** (£161) – turn to p98 for our review.

HOW TO ENTER

To enter, send a text to **87474** containing: the keyword **VENGEANCE**, followed by a space, then **A, B** or **C**, then another space, then **your email address**. Alternatively, you can go online and use the form at www.futurecompetitions.com/cm159 to enter the competition. Entries must be received between **November 17 2010** and **December 13 2010**, and only UK residents aged 18+ may enter.

The question

DPC stands for...

A. Dynamic Pattern Compressor
Text: **VENGEANCE A** your.email@address.com

B. Dynamic Pattern Control
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C. Digital Pattern Compressor
Text: **VENGEANCE C** your.email@address.com

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DVD INSIDE

John Foxx
EXCLUSIVE ACCESS Up close with classic gear on his retro tour

2011 NEW SAMPLES
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Starsmith
IN THE STUDIO Get the studio secrets behind Ellie Goulding's *Lights*

Issue 233
Making the future since 1992

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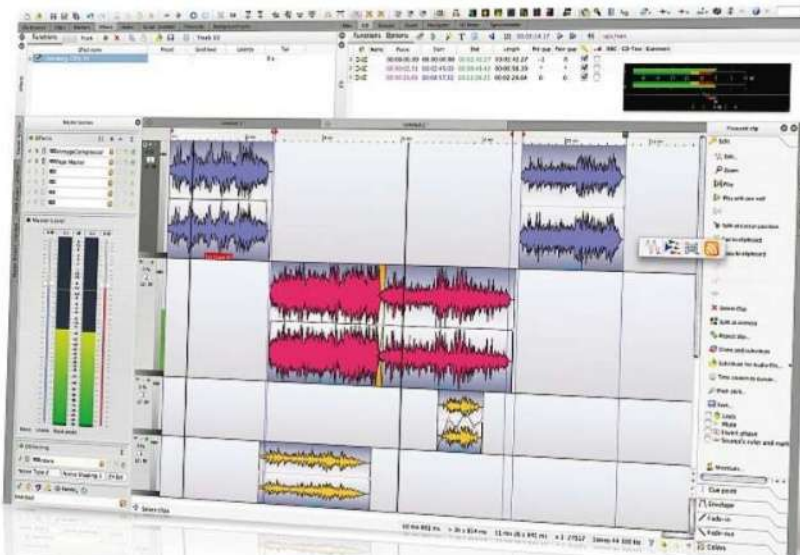
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cm/reviews

The latest computer music gear tested and rated!



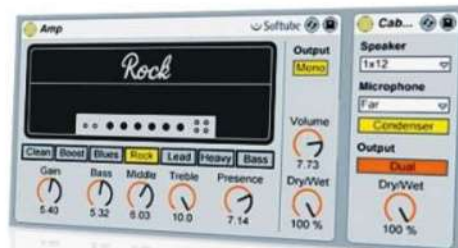
94_ STEINBERG WVELAB 7

The veteran audio editor returns, this time flaunting Sonnox restoration plug-ins and Mac compatibility



98_ VENGEANCE-SOUND MULTIBAND COMPRESSOR

Exciting, effective and versatile. We like!



96_ ABLETON AMP

We have high expectations for this Softube-powered amp and cabinet sim – will they be met?

This issue

- 94_ Steinberg WaveLab 7
- 96_ Ableton Amp
- 98_ Vengeance-Sound Multiband Compressor
- 100_ ProjectSAM Symphobia 2
- 101_ MeldaProduction MMultiBand FreqShifter
- 102_ WaveMachine Labs Drumagog 5
- 104_ Brainworx bx_shredspread
- 106_ Mini Reviews
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Our promise

We bring you honest, unbiased appraisals of the latest computer music products. Our experts apply the same stringent testing methods to all gear, no matter how much hype or expectation surrounds it.

What the ratings mean

- 1-4_ A seriously flawed product that should be avoided
- 5_ This product's problems outweigh its merits
- 6_ A decent product that's only held back by a few flaws
- 7_ Solid. Well worth considering
- 8_ Very good. A well-conceived and executed product.
- 9_ Excellent. First-rate and among the best you can buy
- 10_ Exceptional. It just doesn't get any better than this!



Awarded to products that challenge existing ideas and do something entirely new



A product has to really impress us with its functionality and features to win this one



If the product exceeds expectations for its price, it will receive this gong



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

> reviews / steinberg wavelab 7

SPECIFIC TOOLS

These tabs are always available, but the data changes to reflect the active montage

AUDIO MONTAGE MAIN CLIP AREA

Create blended audio or sequence tracks for mastering by arranging clips

SHARED TOOLS

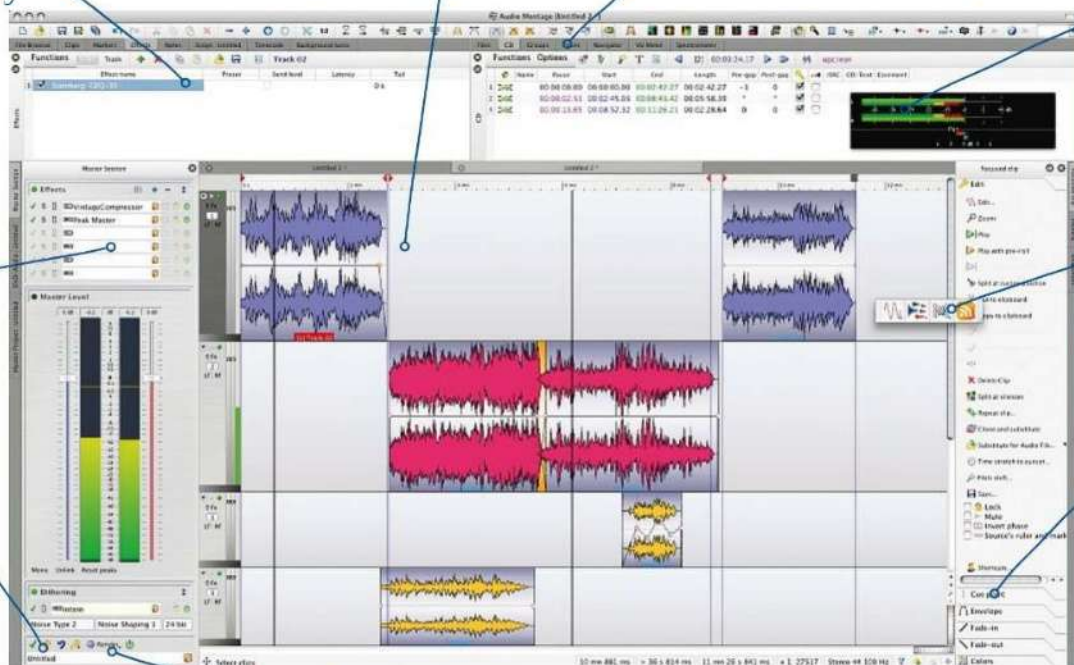
These tabs are general-purpose and are available to all montages

MASTER SECTION

Insert up to ten plug-ins and solo or bypass them as required

SMART BYPASS

Allows for gain-corrected A/B'ing when bypassing master inserts - very handy!



FLOATING METERS

Some options can be 'floated', hiding the window frame for a clean look

SWITCHER BAR

Switch between the four main workspaces or open existing/new files

FOCUSED CLIP

Includes clip options such as envelopes, fades and colours

RENDER

Render files or selected regions in both File and Montage modes

Steinberg

WaveLab 7

PC MAC

£497



We know about its Mac support and Sonnox plug-ins, but what else has the new edition of this veteran audio editor got to shout about?

System requirements

PC 2GHz CPU, 1GB RAM, Windows 7, USB port for eLicenser

Mac Intel CPU, 1GB RAM, OS X 10.6, USB port for eLicenser

> When Steinberg announced WaveLab 7, the big news was that it would finally be available for Mac. Recently, they've also confirmed that their future products will only support Windows 7 and Snow Leopard. So, the first thing to note is that WaveLab 7 is the first major release to follow this path, and although it may well work on an earlier OS, it's only officially supported for those two. The next major thing to note is that WaveLab 7 now includes four task-specific workspace options: Audio File, Audio Montage, Batch Processor and Podcast.

Over time, WaveLab has grown into a powerful application, featuring everything from audio file editing to multitrack processing, recording and arranging. Editing can be either destructive or non-destructive, and the Audio Montage window enables you to apply clip-specific and master effects in real time. Other aspects, such as metering and analysis, have grown to include lots of real-time and offline options, ranging from Oscilloscope and K-System level meters (real-time) to Loudness Distribution and 3D Frequency Analysis (offline). You'll also find Loudness Envelope and Spectrum

Display views, and the latter combines with the Spectrum Editor for frequency-specific editing. Further features include SRC Crystal sample rate conversion, DIRAC timestretching, the External Gear plug-in for patching in external hardware, batch editing, DVD audio authoring and, of course, CD mastering.

Seventh heaven?

In the four years since WaveLab 6, Steinberg have been busy not only developing for OS X, but also pulling together existing WaveLab features into four dedicated workspaces. You can load these up from a number of presets and customise them considerably by adding tabbed and floating windows, as well as rescaling and re-jigging the various elements. You can save the results as a custom layout, if you like.

The Batch Processing and Podcast workspaces are quite task-specific, while Audio File and Audio Montage both deal with audio file editing, but from slightly different perspectives. Audio File is for simple offline editing of individual files, while Montage features more complex layering of tracks (potentially over 1000) and

“WaveLab 7 includes new plug-ins and now features over 30 VST3 plugs from Steinberg’s DAWs”

incorporates more flexible real-time effects. There is some functional crossover between the two (both have ten master plug-in insert slots), and you can drag files between them, but in practical terms, they suit different jobs.

Complementing the four main workspaces is the Control Window, designed for sub-hosting certain information (meters, for example), and most useful for those with two displays.

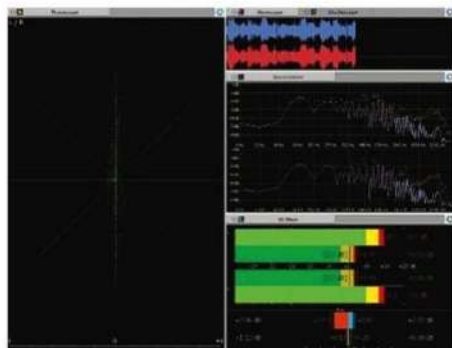
As you would expect, WaveLab 7 includes new plug-ins and now features over 30 VST3 effects from Steinberg’s DAWs. Cubase users will recognise the RoomWorks reverb plug-in, while Nuendo’s PostFilter is also here. In addition there are 15 other plug-ins, including three restoration tools from Sonnox: DeNoiser, DeClicker and DeBuzzer. These deal with hiss, pops/clicks and hum respectively, and are available as inserts in all workspaces (including Batch). There are 13 offline processes that can be applied too.

WaveLab 7’s disc-burning engine is all-new. This revamp improves stability and also supports DDP (Direct Description Protocol). So, you can now master and transfer electronically to the manufacturer without the need to burn discs.

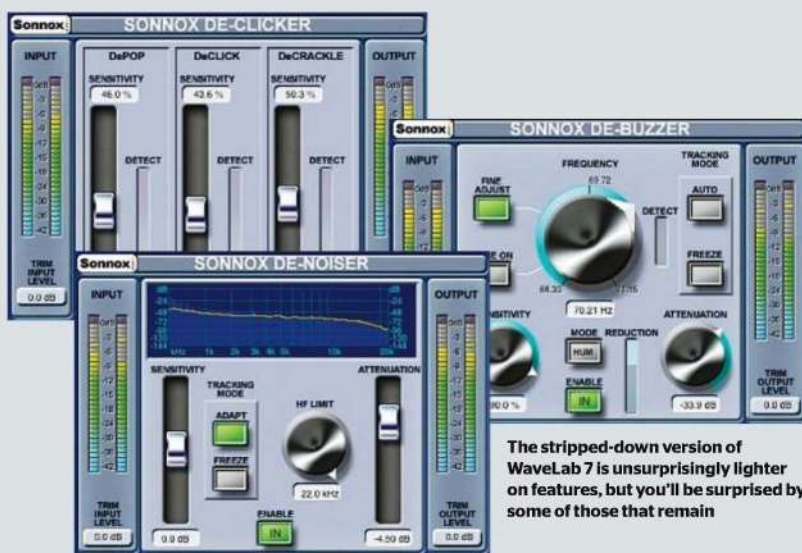
Practice Master

In use, this all adds up to a better experience. For example, the floating switcher bar enables quick movement between workspaces, plus opening of files. You’ll also find you can have multiple workspaces of the same type open. Combined with the option to drag files (or selections) between workspaces, WaveLab 7 is probably the most flexible environment we’ve used.

Of the new stuff, the Sonnox Restoration plug-ins demonstrate good pedigree, although they’re simpler, both visually and in feature-set, than the full Sonnox Restore editions. Also surprisingly good is the Batch Processor, which now lets you limit the CPU resources (number of cores) that it uses – that’s great for background processing. The DIRAC 2.2 timestretching is impressively quick and sounds excellent, plus the Master Effects section now includes a



The Control Window is home to a number of impressive meters that serve up detailed information on your tracks



The stripped-down version of WaveLab 7 is unsurprisingly lighter on features, but you’ll be surprised by some of those that remain

In their Elements

Version 7 also comes in a ‘lite’ version called WaveLab Elements. This is still home to a number of premium features (surprisingly including the Sonnox Restoration plug-ins). However, with only 12 VST3 plug-ins, 15 regular plug-ins and five offline processes, it’s far simpler. Other significant limitations include reduced sample rate support (up to 96kHz rather than 384kHz), number of audio tracks (two), number of master insert slots (four) and maximum number of effects per clip (two). There are also further limitations to the number of analysis and error correction tools, file format support, burning options and labour-saving

editing tools such as autosplit. ‘Pro’ features such as DDP support, batch processing, unlimited file size, spectrum editing and the more impressive meters (Spectrometer, Bit-Meter, Wavescope and Phasescope) are also missing.

However, you still get three of the four workspaces (including the podcasting tools), DIRAC 2.2 time stretching, offline audio analysis, spectroscopy, oscilloscope, VU meters, and the new burning engine for creating CD masters. At £82, it’s not a bad deal at all – in fact, it’s rather a good one. If you’re upgrading from WaveLab LE, it’ll set you back only £40. If you’re strapped for cash, check it out.

gain-compensated ‘smart bypass’, which is something of which we strongly approve.

If you’re new to WaveLab, it’s worth us pointing out that there are 15 years’ worth of cool features stuffed away in there. From nifty visualisations like the 3D Frequency Analysis and Oscilloscope, through to creative options such as effects morphing between clips and more practical stuff like flagging ‘errors’, such as digital clipping and clicks, WaveLab could never be accused of lacking functionality.

So, any downsides? Inevitably, the focused OS support will annoy some, although we tried it using OS X 10.5.8 and had no problems. Also, Mac users used to the swish look of Logic will probably find WaveLab 7 a bit drab, and we feel that the fonts and colours should be smartened up in future updates. Finally, although we feel that the workspaces considerably improve workflow, the depth of features and plethora of icons could still be impenetrable to some new users. Overall, though, WaveLab remains an excellent product, with that long awaited Mac support boding well for its future. **cm**

Web www.steinberg.net
Contact Steinberg, +49 404 223 6115
Info WaveLab Elements 7, £82

Alternatively

Sony Sound Forge Pro 10
cm147 >> 8/10 >> £349
Simpler graphics and fewer plug-ins, but the workflow is great

Bias Peak Pro 6 £486
cm130 >> 10/10 >> £486
Mac-only, with a more attractive interface but not as feature-heavy

Verdict

For Flexible but tailored workspaces
Now cross-platform
New Sonnox restoration effects
Numerous excellent existing tools

Against Visually unappealing
Limited official OS support
Steep learning curve for beginners

WaveLab is probably Steinberg’s most cohesive and well-rounded product, capable of pretty much everything you could want from a modern audio editor

9/10

Ableton Amp \$129

PC MAC



This guitar amp simulator for Ableton Live bears the Softube logo but fails to live up to the company's high standards

> Live has traditionally been associated with programming, loops and synthesis, but over the past few years Ableton have made serious in-roads into the more general multitrack recording/mixing side of DAW usage. To this end, the company have released Amp, a guitar amp package that's free to owners of Suite 8, and available to regular Live owners for a fee.

Amp consists of two Live effects: Amp and Cabinet, which emulate a guitar amp and a speaker cabinet respectively. You need to place Cabinet after Amp for a realistic 'amp running through speakers' tone.

The GUI is pure Live: clean, simple and the usual dinky size due to Live's rack system. Amp's controls are minimal: Gain, Bass, Middle, Treble, Presence, Volume. There's also a Dry/Wet mix control, which will be of most use when processing loops or synths. There are six "legendary" amps to choose from, with models labelled Clean, Boost, Rock, Lead, Heavy and Bass, the latter being a bass amp. The Clean amp makes an aural and visual nod towards the Vox AC30, and the Rock amp appears to be based on the Marshall JTM45.

Cabinet is even more basic. You have a choice of cabinets with a dynamic or condenser mic (see the *Live drivers* box) with a close on- or off-axis placement or a 'far' placement. You also get a bunch of presets in the form of Live racks.

Tone it up

From the tonal modification angle, Amp is unquestionably capable. Synth or programmed bass parts, for example, are immediately fattened when Amp and/or Cabinet are thrown into the equation, and with parameters kept to a minimum, it's clear that this could become an essential tool for those who crave additional sound-sculpting options. It works in stereo, too. Then again, Live already has several overdrive/distortion effects, and there are plenty of other amp sims that could just as easily fulfil this role.



So how does it fare as a guitar amp sim? Well, with DSP wizards Softube being behind Amp, you'd expect it to sound rather good, and... it doesn't, oddly. The blues amp model is quite useable, but most amp sims can dish up decent clean tones these days. As you move up to the amp models with higher gain capabilities, the tone becomes increasingly unimpressive, with a tendency to become muddy or abrasive and quite often both. Amp seems to kick out too much bass, resulting in a strange, boomy bottom end with some odd resonances going on. Cranking up the gain makes the tone increasingly fuzzy and buzzy, with a lack of bite, crunch and dynamics.

The amp sim market is a highly competitive one, and Amp doesn't cut the mustard. There are plenty of choices around this price point (and indeed, below it) offering better tone and far more features - Amp doesn't even have a tuner, for crying out loud! And being a Live effect, you wouldn't be able to load it up in another DAW, further limiting its usefulness. **cm**

Web www.ableton.com
Contact contact@ableton.com

System requirements

PC Ableton Live/Suite 8.2

Mac Ableton Live/Suite 8.2

Alternatively

Kuassa Amplifikation One
N/A >> N/A >> \$50
Highly versatile, with great cab/mic modelling

Studio Devil AMP
cm148 >> 8/10 >> \$149
Gutsy, organic amp tones with great effects and easy interface

Verdict

For Free for Suite 8 users
Suitable for processing synths, loops, etc
Can operate in stereo

Against Unimpressive cab/mic section
'Flat' and uninspiring to play through
Overdriven/distortion tones are poor
Bottom end is muddy and boomy
No tuner... not much of anything, in fact

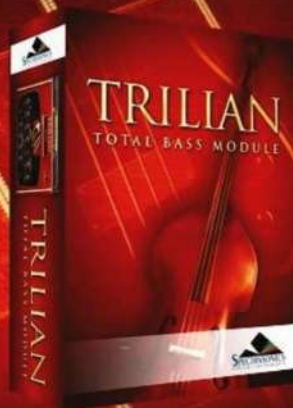
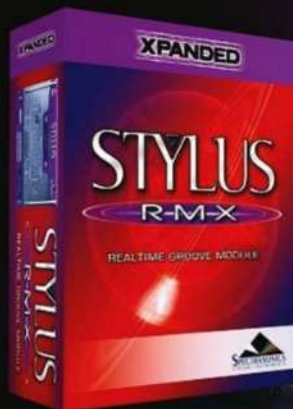
Amp falls short of our expectations and represents poor value for money for those who would have to pay for it

5/10

Live drivers

Cabinet offers 1x12, 2x12, 4x12, 4x10 guitar cabs and a 4x10 bass cabinet. Like Amp, it's a sonic disappointment. For starters, the cabs don't always represent the kind of sound we expect from real-world gear - the 4x12 sounds thinner and 'lighter' than the 1x12, for instance. This wouldn't be such a big deal if the cabs sounded good in their own right, but they're nothing to get excited about, and they do little to bring Amp to life or to curtail its wayward bottom end.

Using an EQ before Amp to shave off some of the low frequencies does help but this really shouldn't be necessary, and the results still aren't great. Likewise, we sometimes found ourselves using a Utility plug-in to drive the input harder, because Amp's Gain knob wasn't enough. Finally, we tried using a third-party cabinet simulator (Audio Ease's Cabinet) instead, and this was an improvement, although Amp still failed to impress us.



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WWW.TIMESPACE.COM/SPECTRASONICS

> reviews / vengeance-sound multiband compressor

METERS

Can be viewed in standard VU display or Density mode, which indicates how compressed the signal is

MULTIBAND DISPLAY

Band boundaries can be adjusted by dragging them. Note the spectral analyser overlay

COMPRESSOR/LIMITER

Advanced options include soft/hard knee and mix control

BAND INPUT/OUTPUT SCOPE

Red shows the original signal, green the compressed signal and grey the intersection of the two

INPUT VU Monitor incoming per-band levels. Note the Threshold slider's red position band

COMPRESSOR PRESET BROWSER Select from presets on a per-band basis

DPC Apply rhythmic pumps and bumps by drawing your own envelopes or selecting presets

GAIN REDUCTION HISTORY A rolling display of the amount of gain reduction. The Zoom knob adjusts the horizontal scale, ie, time

Vengeance-Sound Multiband Compressor

£161



PC MAC

Back with a Vengeance, this time the sample library kings welcome us into their plush new Mastering Suite

System requirements

Mac Intel 1.5GHz CPU, 512MB RAM, OS X 10.5.3, VST/AU host, Syncrosoft/eLicenser USB dongle

PC Pentium III 800MHz, 512MB RAM, Windows 2000/XP/Vista/Win7, VST host, Syncrosoft/eLicenser USB dongle

> Vengeance-Sound made their name with their acclaimed sound libraries, but now they also make plug-ins. So far we've seen Multiband Sidechain for dual-band sidechain pumping effects and Metrum, a kick drum synthesiser. Their latest effort, Multiband Compressor, is the first in their Mastering Suite range, and it is much less esoteric than its predecessors – at least, at first glance. But why go multiband?

Multiband compressors and limiters are designed to apply frequency-specific dynamics processing, making them suitable for applying to complete tracks, since they typically have complex activity taking place across the entire frequency range. Multiband dynamics can be used as a corrective measure, to make a quiet, weak bottom end louder and more consistent, for example. Alternatively, they can be used to enhance a great mix by applying targeted compression or limiting, enabling you to pull

specific frequencies of the track together without the level and balance being affected by other bands.

Multiband Compressor (MBC) offers up to four bands of precise dynamic control. On the surface, it's a pretty standard affair, with compression or limiting for each band and a master limiter on the output. The overall band ranges are set in the display window, as is the gain. It's all very straightforward. Some plug-ins offer more than four bands, but we think four is ample for most people's purposes.

All that glitters is gold

Take a closer look and you'll uncover a huge range of options. You can set the slope of the filters that divide the bands, from a very loose 6dB (resulting in lots of crossover from one to another) to a ruthlessly surgical 96dB. This setting will depend on the style of music you're

"This plug-in looks awesome in action, and the meters give genuinely useful visual feedback"

mastering and the adjustments you're making.

Then there are the dazzling meters and displays. It's fair to say that this plug-in looks awesome in action. The meters give genuinely useful visual feedback on the levels of signals going into and out of sections as well as the amount of attenuation going on. It's as comprehensive a visualisation system as we've ever seen and it makes MBC fun and exciting to use. Our only gripe is that the compression gain reduction meters are quite short but go right down to -48dB, so when applying 'sensible' amounts of compression (eg, a few dB), the meters are barely tickled.

There's a huge range of presets, ranging from fun and creative to the (slightly useless) overall mastering templates; usefully, there are individual band presets too, for both compressor/limiter and DPC (see boxout).

A complex beast

It's hard to give a simple verdict on MBC. On one hand, it is a very good-sounding multiband compressor and limiter, but to our ears, it's not quite as rich or as phat as the likes of Waves L3 or Sonalksis MultiLimit. We found that this made it less suitable for 'natural' sonic material such as recordings of real instruments. If all you want is the very best in multiband dynamics and you work with lots of recordings, there are better (and probably pricier) options.

For dance music, though, MBC can be incredibly effective. We tried it on full mixes ranging from tech house to chillout tracks and found that it can really push the loudness while pulling together the bottom, mid-range and treble. And you can push the levels very hard without causing distortion or any unpleasant sonic artifacts - certainly more so than with, say, the aforementioned Sonalksis processor. MBC's master output limiter is initially unimpressive, with audible pumping; however, disengage its auto release mode and set it to a fast time and it's right up there with the likes of Ozone 4's limiter, which is to say that it's excellent.

With MBC, you also have to factor in the sheer creativity that DPC affords, which is a rare thing in the rather dour world of mastering effects. The level of control shouldn't be underestimated either, and there a number of features we haven't got space to go into, such as hard and



Here we're getting creative with some full-on DPC settings

As easy as DPC

Dynamic Pattern Compression is essentially a tempo sync'd multipoint amplitude envelope for each and every band. The results can range from something as simple as a subtly highlighted kick to utterly outrageous frequency-dependent pumping and bouncing.

Each envelope curve consists of four segments, each with its own start/end height and fully adjustable curve shape. Timing-wise, you can set it so that each step represents a 16th-note, eighth-note or quarter-note. There's a knob for setting the strength of the amplitude modulation, a button to flip the curve upside down, and you can

have the DPC take place either before or after the per-band limiter. The cool thing is that all of these settings are on a per-band basis, so you can mix up different timings, for example.

Vengeance-Sound reckon that DPC is just the ticket for breathing dynamic life back into overly compressed or limited tracks, and when the settings are dialled in judiciously, this can be achieved.

The real fun begins, though, when you start applying it to drum loops, synth lines, and so on, to superimpose wild rhythmic pumping. We strongly advise that you take a listen to the audio examples on the DVD.

soft knee operation, plus global and per-band wet/dry mix knobs, for parallel compression.

When taking everything into consideration, MBC is an incredibly versatile and desirable plug-in, and for this type of processor, the price is quite reasonable too. In simple terms, then, MBC has two target audiences: those who want a well-priced and well-equipped multiband compressor/limiter to apply some final polish to complete electronic tracks, and those requiring an amazingly exciting and creative multiband dynamics processor. And if you want both? Then MBC goes beyond being merely a good deal to become a total no-brainer. **cm**

Web www.vengeance-sound.com
Contact info@Vengeance-sound.de



The System section offers extra options, including the master limiter's settings. Its meters are found here too

Alternatively

iZotope Ozone 4
cm138 >> 10/10 >> \$294

Multiband dynamics, harmonic excitement, limiting, EQ and more

MeldaProduction MTotalBundle
N/A >> N/A >> €599

Practically every type of multiband effect, most available separately

Verdict

For Good overall sound
Excellent single-band master limiter
Comprehensive controls and metering
Sensibly laid-out interface
DPC is a fantastic creative tool too

Against Not quite as warm as some

Solid multiband dynamics combined with a creative edge makes MBC an extremely desirable plug-in for dance-heads

9/10

ProjectSAM Symphobia 2 £979

PC MAC



Part two of the Symphobia story offers yet more top-flight orchestral manoeuvres

> With the 2008 release of Symphobia, ProjectSAM provided a package of orchestral Kontakt instruments to complement those from the likes of VSL. Instead of offering fine-grained control over individual instruments, Symphobia's content used recordings of the orchestra (and various groups therein) playing as a whole, giving quick access to the kind of sounds and 'effects' that it would take weeks of programming to achieve with traditional orchestral packages. The package offered playable ensembles (strings, brass, woodwind, etc) as well as ready-made hits, stings, risers, suspense beds and suchlike.

Symphobia 2 is the logical next step, although interestingly, it's not version 2 but *volume* 2. It doesn't replace the original nor contain any of the same content, so you can use it in conjunction with Symphobia 1, or as a product in its own right. It's in Kontakt 4 format, with the Player supplied.

All together now

Instruments are still based mainly on samples of the orchestra and sections thereof, with a few solo instruments and other cinematic-sounding goodies tossed in. In total there's 33GB of data.

It's divided into five categories: Full Orchestra, Individual Sections, Legato Ensembles, Dystopia and Miscellaneous. Dystopia is volume 3 of ProjectSAM's weird, dark library of atmospheric and mangled sounds (volumes 1 and 2 are found in True Strike 2 and Symphobia 1 respectively). The Miscellaneous category features concert hall noise and orchestra tuning.

You get 11 preset multis offering genre- and atmosphere-specific sound 'palettes' spread over 88 keys, with descriptive names like Fairy Tale or Before The Ship Goes Down. These give an idea of the power of Symphobia 2, and the sounds are beautifully played and recorded.

Loading up the Full Orchestrator instrument reveals both a sumptuous, 'widescreen' sound, and the new instrument interface. At the bottom left is a toggle switch for mic position: close or



stage. Above this is another set of options dealing with release tails, extra octaves, keyswitching, sample selection mode, transposition, etc.

The central panel enables selection of articulations, and the right-hand area presents envelope, filter, reverb and dynamics controls. These are all improvements on Symphobia 1, where the editing options were less immediate and you had separate patches for mic positions. Some instruments also have articulations not found in Symphobia 1 such as major and minor trills, and crescendo and decrescendo samples. While it's mainly about the ensembles, the solo instruments are great too, particularly the uilleann pipes – what a welcome surprise!

Symphobia 2's price means it's for serious composers only, but there's no denying that it's an absolutely top-quality package. It wouldn't work as your only orchestral resource; but then it doesn't attempt that. Combine it with Symphobia 1 and you have a world of orchestral tricks up your sleeve. Once you've experienced its magic firsthand, you won't want to be without it. **cm**

Web www.projectsam.com
Contact Time+Space, 01837 55200

System requirements

PC Pentium/Athlon XP 1.4GHz, 1GB RAM, Windows XP/Vista/7

Mac Intel Core Duo 1.66GHz, 1GB RAM, OS X 10.5

Alternatively

Sonic Implants Complete Symphonic Collection
N/A >> N/A >> £1147

A more complete orchestral solution with strings, brass, woodwind and percussion

Garritan Personal Orchestra 4
cm147 >> 9/10 >> £109

It can't conjure up Symphobia's big-screen sound, but for orchestral on a budget, it's hard to beat

What a performance!

A major new performance feature for Symphobia 2 is the DXF control, available on appropriate patches. It enables the playing strength – but not the volume – of the sound to be varied using the modwheel. The natural overtones and higher frequencies from the instruments ramp up as if the players were bowing and blowing harder, and the sonic benefits of recording the full orchestra playing like this are clear to hear. DXF is available for many Legato Ensembles, too.

Speaking of which, the all-new legato ensembles are excellent. While competing products offer solo legato instruments, here you get whole orchestral sections and combinations of sections and instruments. You can use the full transitional samples, or engage Autospeed, where transitions are 'trimmed' to allow for faster passages. The instruments themselves sound exactly as expected, and use of the sustain pedal is key in maximising the realism factor.

Verdict

For Stunning sound
DXF dynamic control
Switchable mic position
Great legato instruments
Easy access interface
Efficient sample management

Against Nothing, if you can afford it

A magnificent-sounding collection that complements the usual orchestral libraries with its full-on approach

9/10

MeldaProduction €35 PC MAC

MMultiBandFreqShifter



The Prague-based developer shifts its attention to shifting your frequencies, multiband-style



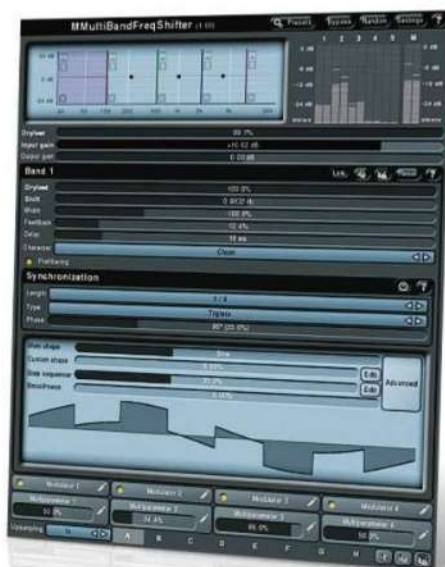
> The coding robots at MeldaProduction stop at nothing to produce a constant wave of plug-ins. In recent issues we've looked at several of their numerous multiband offerings, each of which takes a familiar effect (distortion, chorus, etc) and runs with it, adding a multiband architecture and modulation options aplenty. This time we're trying MMultiBandFreqShifter, which is - wait for it - a multiband frequency shifter. See the *Same difference?* box for an explanation of how this type of processor differs from a pitchshifter.

As with the other MeldaProduction multiband jobs we've looked at, this latest effort features up to six adjustable bands; analogue, digital or hybrid crossover filters; fully automatable parameters with four global modulators; host synchronisation with a comprehensive set of beat divisions; mono, stereo or eight-channel surround processing; and up to 4x up-sampling for higher-quality output at the expensive of an increased CPU hit.

The main action takes place in the central window, where you'll find the following per-band parameters: Shift (+/-10kHz); Width (+/-200%); Delay time (0-1000ms); Feedback; Character (quality) of frequency shifting (Clean, Soft, Rough and Ugly); and Dry/Wet mix.

Clicking a band at the top of the GUI brings up its individual settings. These enable you to process each part of the frequency spectrum in a different way, though it is easy to make a mess of things if you have too many bands on the go simultaneously.

In the top bar of the central window is the highly useful Link button: when engaged, this causes parameter changes to be mirrored by other linked bands. There are Copy and Paste functions, too, so you can achieve the same thing manually. There's also a small button for Prefiltering: this removes extremely high and low frequencies, which can induce aliasing artifacts when shifted. These artifacts can



sometimes sound rather cool, so it's great that the filtering isn't done automatically.

Get a shift on

We found that MMultiBandFreqShifter is capable of producing a huge variety of different effects, from detuning, stereo expansion and chorusing through to adding harsh metallic resonances, dubby tape-style delays and full-on Doppler-like frequency shifts. What's more, it can be used on practically any audio source you can think of - drums, bass, leads, pads and FX all are fair game.

You can almost 'play' MMultiBandFreqShifter by moving its parameters in real-time, or go deeper by setting up complex modulation routings via the highly adaptable LFOs and multiparameter options. You can even morph between up to four 'states', which opens up a whole world of sound design possibilities.

Overall, we found it very hard to criticise. The multiband ethos and well-thought-out design takes what could be just another frequency shifter effect and gives it far more range and longevity. It's not just for those who want to create far-out, ear-bending effects, either. In fact, we reckon MMultiBandFreqShifter deserves a place in any producer's plug-in folder. When you consider how little MeldaProduction are asking for it, it's hard to say no. **cm**

Web www.meldaproductio n.com
Contact info@meldaproductio n.com
Info MCreativeBundle, €150

System requirements

PC Intel/AMD CPU, Windows XP/Vista/7, 32-/64-bit VST host

Mac Intel/x86-based CPU, OS X 10.5/10.6, 32-bit AU/VST host

Alternatively

VirSyn Prism
cm133 >> 7/10 >> €199

A pitchshifter that splits audio into 27 bands, with +/-5 octave shifting range

u-he Uhbik
cm139 >> 10/10 >> \$237

Plug-in bundle containing the excellent (but single-band) Uhbik-S frequency shifter

Verdict

For Superb multiband architecture
Excellent modulation system
A, B, C and D state morphing
Huge range of possible effects

Against Nothing to speak of

Possibly our favourite of MeldaProduction's multiband plug-ins, this one can do everything from subtle enhancements to extreme effects

Same difference?

It would be understandable to assume that frequency shifting and pitchshifting are basically the same thing, but in fact they're pretty different: pitchshifting maintains the harmonic relationship between frequencies whereas frequency shifting moves all frequencies by an equal amount.

Let's look at an example. Say our input signal is made up of a 1kHz fundamental with a harmonic at 2kHz - the harmonic is at double the frequency of the fundamental,

ie, they're an octave apart. If we pitchshift this by a factor of three, we multiply the frequencies. The resulting frequencies should be 3kHz and 6kHz - 6 is 2x3, so the octave relationship is maintained.

If we were to frequency shift this by 2kHz (ie, adding instead of multiplying), the result would be 3kHz and 4kHz. The octave relationship is not maintained here, and the more the frequencies are shifted, the more the original relationship will be destroyed.

> reviews / wavemachine labs drumagog 5 platinum



WaveMachine Labs PC MAC

Drumagog 5 Platinum £305



System requirements

PC Windows XP/Vista/7, 4GB HD space, VST/RTAS host

Mac OS X 10.4, 4GB HD space, VST/RTAS/AU host

> For years, Drumagog was the only drum replacement plug-in worth its salt. It's a versatile and well-respected tool, so to say that we've been agog waiting to see what WaveMachine Labs would come up with for v5 would be an understatement. Downsides to v4 were accuracy issues with fast/complex material, a slightly fiddly GUI and inconsistent phase alignment. Let's see if v5 can remedy this...

Trigger-happy

Drumagog 5 comes in three versions, Basic, Pro and the full-featured Platinum, which we're reviewing. Many of the functions from version 4 are still to be found but it's a huge relief to see a fresh, less-cramped GUI, which is easier on the eye and far less hassle to navigate.

The way you set up Drumagog to trigger from audio source material is still the same: you set the input level so that the incoming signal fills most of the rolling display in the lower left, then set the Sensitivity slider and adjust the Resolution control, which you'll set to a finer value for material where hits are closer together (eg, fast rolls, drags, etc). Alternatively, you can

leave the latter set to Auto, as we did for most of our tests. Detected hits show up as white dots on the display. There's a Transient Detail slider that you can decrease if extraneous hits are generated, though we'd recommend keeping this as high as possible if the drum parts have much in the way of quick flourishes.

By following the above method and using the default Advanced triggering mode, we had no issues getting a kick drum to trigger nicely right off the bat, and it was easy to trigger basic snare work via the (slightly fiddly) Trigger Filter section. We were really impressed with how well dynamics were represented for moderately paced material, which is a real improvement over v4. However, faster and more complex material left us scratching our heads at first, especially if there was bleed in the audio - it turned out to be crucial to apply just the right filter settings. Advanced mode can optionally be used with Auto Align 2.0 (see boxout).

There's a Live mode, too, which has a fixed 2ms latency and isn't phase accurate. While it didn't interpret dynamics quite so well, and is more prone to mistrigging if you set the

"It's a huge relief to see a fresh, less cramped GUI"

sensitivity too high, we were surprised to find that it was often easier to dial in accurate triggering here than with Advanced mode.

The Stealth mode from v4 is still present, which we're happy about. Here, when a hit is detected, the audio fades out briefly while the sample plays. This means you can replace the attack of drums wholesale while keeping all of the interesting stuff that's bleeding through between hits – now that really is useful.

One intriguing addition is Auto Hi-Hat Tracking: this triggers from a hi-hat mic, detecting when it's closed, half-open or fully open, and enabling accurate replacement of all three articulations. It worked like a dream in our tests and we're sure it'll find many fans.

Dynamic drums

Two areas in which Drumagog excels are dynamics and realism; in v5, the Random Multisamples function randomises sample playback, for more natural results. You can also adjust dynamic levels with the Groups button. Further to this, the Dynamic Tracking function acts similarly to an audio compressor, adjusting the level of each sample played to even out the performance. We found one glitch. Let's say you want a fixed-velocity sound and so disable Dynamic Multisamples – Drumagog now plays the quietest samples of the set, which isn't ideal, as even if you boost their level, they're soft hits with a low signal-to-noise ratio, thus they sound too gentle and will introduce loads of noise. Presumably this will be fixed in an update.

Drumagog 5 ships with 4GB of instrument samples, covering a good number of drums and cymbals. Many instruments are velocity layered. Some include rimshot and sidestick material, and a few have overhead and room samples for layering. When available (or imported into a custom instrument), these extra samples can be controlled by the mixer at the bottom. You can also import samples to create layered patches.

Still present is the built-in synth; this has been updated and, while it could be a lot better, is still good for beefing up drum sounds, or, if you want, creating odd effects. Speaking of which, the new MorphEngine introduces wild effects that would be more at home in electronic tracks. It seems a tad gimmicky and out of place to us.



Working with dynamics layers in Drumagog is intuitive yet powerful, and one of the software's strong points



In the Settings page, latency for Advanced mode can be set to 40, 60 or 80ms

Battle of the beats

It's imperative to compare Drumagog 5 to the recently released Trigger (10/10, cm153) from Slate Digital, which we hailed as a "new gold standard". Trigger coped with complex or fast drum parts that Drumagog 4 simply couldn't interpret. We're pleased to report that Drumagog 5 is a huge improvement in this regard, although it requires more experimentation with triggering parameters/modes and filtering to achieve accurate results.

When blending recorded drum parts with triggered sounds, it's desirable for the sampled hits to be in phase with the original audio, for a punchy sound. Both plug-ins give satisfactory

alignment but Drumagog's Auto Align 2.0 algorithm did give a subtly 'fuller' sound, as though the samples were aligned more with the 'body' of each hit. In contrast, Trigger's algorithm seems to focus on transient snap.

So which is best? It's a close call. Trigger has a leakage suppression function that practically eliminates channel crosstalk, and overall we've found Trigger to be easier and quicker to work with. Then again, Drumagog has plug-in hosting, reverb, the synth section and hi-hat tracking. These aren't essential but could seal the deal for some. Drumagog's interpretation of dynamics also has the edge, we feel.

Of course, many of us turn to virtual instruments such as Superior Drummer 2.0 and BFD2 for drum sounds. To this end, Drumagog now features plug-in hosting, enabling you to load your favourite drum instrument directly into Drumagog. We tried this with SD2.0 and it worked nicely. You simply select a MIDI note to transmit to the plug-in and use a slider to set the balance between Drumagog's output and the hosted instrument's. Not everyone will need plug-in hosting, but for those that do, it could be a prime reason to pick Drumagog over Trigger.

Finally, Drumagog 5 features a convolution reverb, which, while 'no frills', is pretty good, although it only applies to the triggered samples, not the audio, which is a bit daft.

Grumbles aside, Drumagog 5 is a worthy successor to v4. The massively improved triggering is by far the biggest attraction. We do feel that Drumagog would benefit from further refinement, and that certain features are superfluous, but current users certainly won't be disappointed should they upgrade. **cm**

Web www.drumagog.com
Contact Sonic8, 0330 2020 160
Info Drumagog 5 Pro, £230
Drumagog 5 Basic, \$149

Alternatively

Slate Digital Trigger Platinum cm153 >> 10/10 >> £149

Top-notch plug-in with great samples and leakage suppression

Avid Pro Tools 8

cm136 >> 9/10 >> £Varies

PT's 'tab to transient' feature has been a triggering staple for years

Verdict

For Auto Hi-Hat Tracking works great
Great dynamics tracking and controls
Plug-in hosting is handy
Solid phase alignment

Against No leakage suppression
Would benefit from some tweaks
Some features are a little esoteric
Fiddly to set up with complex material

An impressive update to a modern-day classic, Drumagog 5 is able to hold its own in the face of stiff competition

8/10

Brainworx PC MAC bx_shredspread €142



This stereo enhancer plug-in promises to make your guitar tracks sound “wide and phatt” with the twist of a few knobs

> At its core, Brainworx bx_shredspread is a stereo enhancer plug-in, with additional features aimed at guitar processing. Despite its amp-esque appearance, though, there's no amp or cabinet simulation here. Each knob's function is activated by the labelled button above it. The speakers beneath slide along to indicate stereo enhancement, with a 'mute' icon appearing during mono events – cute but ultimately pointless and a waste of screen space.

The two basic controls are Shred and Spread. The latter controls the width of the stereo field, ranging from 0% (mono) to 200% (maximum widening). 100% means that no enhancement/reduction is taking place. Shred tames harsh treble frequencies and beefs up the bass and mid-range. This can put meat on the bones of fizzy, thin or overly 'scooped' guitar tracks. The Mono Maker function converts the signal below the specified frequency threshold to mono – that is, it 'monoises' the bass frequencies. This can tighten up boomy/flappy guitars. The Gain control is an overall volume knob. Finally, there's a decent undo/redo system and four memory slots for comparing settings.

We tried bx_shredspread on double-tracked guitars first – ie, the same thing recorded twice and panned hard left and right, with the plug-in placed on the guitar group channel. In isolation, guitars can at first sound thinner when the Mono Maker knob is increased; however, it helps alleviate phasing issues caused by the widening. With the guitars in a mix, the thinness isn't really noticeable but the additional width is, with a greater impression of size.

In use, then, bx_shredspread can impart extra 'life', at least when applied in moderation. Note that using this kind of stereo widening reduces mono compatibility, making the guitars quieter when heard in mono – worth bearing in mind.

We found bx_shredspread more interesting on lead guitars and stereo guitar effect passages, which we felt stood to gain more from the



enhancement. And of course, bx_shredspread can also be applied to non-guitar material.

It's not brain surgery

While bx_shredspread does what it claims, the tech-savvy will realise that its enhancements can be replicated with any half-decent mid/side EQ and a basic stereo expander plug-in. Mono Maker is equivalent to a high-pass on the side channel, Spread is standard stereo width expansion (ie, adjusting the level of the side channel), while Shred seems to be a broad shelving EQ. The only 'unique' part is Auto Pan, then, although you could move mono guitar parts to a 'dry' track for much the same effect.

At the end of the day, our main issue with bx_shredspread is that it's overpriced for what is basically a box of bog-standard mid/side EQ tricks in a guitarist-friendly interface. We'd happily recommend it as a convenient plug-in for novices if it had a price tag to match, but it's got a pro price tag and a pro would know to use stock plug-ins to get the same results. **cm**

Web www.brainworx-music.de
Contact info@brainworx-music.de

System requirements

PC 1GHz, 256MB RAM, Windows 2000/XP/Vista/7, RTAS/VST host, iLok

Mac Intel/PPC 1GHz CPU, 256MB RAM, OS X 10.4, RTAS/VST/AU host, iLok

Alternatively

iZotope Ozone 4
cm138 >> 10/10 >> \$294

Aimed at mastering, but the M/S EQ and multiband stereo manipulation can be used on the guitar bus too

FabFilter Pro-Q
cm148 >> 9/10 >> £154

Bar Auto Pan, M/S-capable EQs like this one can achieve much the same as bx_shredspread

Verdict

For Can add size and width
Shred control delivers heft
Handy for special effects and solos
Auto Pan is a time-saver

Against Overly large interface
Auto Pan not as tight as automating it
Mid/side EQ can achieve much the same
Pricey for what it is

A well executed plug-in that will appeal to newcomers, but experienced engineer's would be better off with an M/S EQ

6/10

Just a phase

bx_shredspread enhances stereo width by boosting the 'side' portion of the signal – ie, the parts of the left and right channels that are out of phase with each other. One downside to this way is that if one of the guitars stops playing, the channel that's supposed to be 'empty' will still contain a quieter, phase-inverted version of the active channel. This would normally be masked by the other guitar, but it can be disconcerting when just one axe is playing.

bx_shredspread compensates for this via its clever Auto Pan section. With this active, whenever there's only one channel of audio present, it deactivates the Stereo Width and Mono Maker functions and the Threshold and Solo Pan settings kick in. Solo Pan lets you pan 'mono' guitar events anywhere from their existing pan position back towards the centre. It works well, and although the panning isn't as instant as if you'd automated it, it sounds fine in a mix.



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cm mini reviews

A rapid-fire round-up of apps, sample libraries, ROMplers and more

Korg microKey £82

Web www.korg.co.uk
Contact 01908 857101
Format PC/Mac, USB

The microKey is aimed squarely at musicians seeking a light, portable keyboard that just plugs straight in and works with no fuss. On that front, it doesn't disappoint, working right off the bat with a variety of systems in our tests.

The keys feel nicely solid, particularly for such a dinky device, though those with larger hands might find them a bit cramped. We're particularly taken with the colourful octave up/down buttons, which change progressively from green to flashing red to indicate how far away from the starting point you are - very useful. The pitch and mod wheels fulfil their roles well enough, and the range of the latter can be modified using the Korg Kontrol Editor software, which is also where you can adjust the keys' velocity curve.

Unusually, there are two USB ports on the side of the keyboard, enabling the microKey to act as a hub, and these worked perfectly for us with a variety of hardware. One tiny



niggle: the included USB lead is extremely short, and as the port is on the left-hand side, we had trouble plugging it into our iMac. Budget for a longer replacement.

Overall, though, this is a mini-keyboard that does exactly what it promises, feels good to play, and even delivers a little extra in the form of those handy USB ports.

8/10

Waves Tony Maserati Artist Signature Collection £646

Web www.waves.com
Contact Sonic Distribution, 01462 424900
Format PC/Mac, AU/VST/RTAS

The Tony Maserati Artist Signature Collection has grown with the addition of the GRP Group Processor, included in the free v7.1 update. It's designed for grouped signals, and has seven modes: drums (live/programmed), guitars, strings, keys, background vocals and master bus. Its EQ is for general shaping (hence the simple low/mid/high bands), and the compressor is more 'mastering' than 'mash-up'. Each mode alters the underlying behaviour, with compression ranging from fast and snappy (drums/guitars) via flattening (keys) to mix-style presence-boosting (master). There's more flavour here than we were expecting and although modes match their intended material, you can always use them as you like. All in all, GRP is a great bonus for existing users and another reason for newcomers to check out the pack.

8/10



Vir2 DOWNLOAD Violence £67

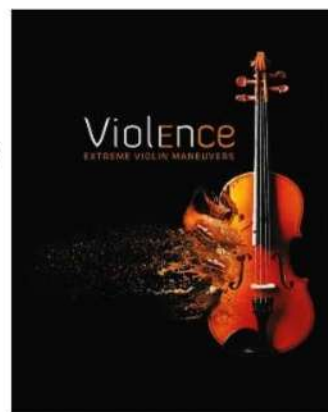
Web www.timespace.com
Contact Time+Space, 01837 55200
Format PC/Mac, Kontakt Player 4

From the makers of the outstanding Electri6ity (cm157, 9/10) electric guitar instrument comes Violence. Although this Kontakt instrument library is inspired by the violin, the complex patches use deliberate, accidental and outright sadistic violin abuse as the source of a large palette of sounds incorporating 'bass', 'drum' and percussion sounds, as well as a wealth of other instrument types.

Four categories, Melodic, Pads and SFX, Drum Kits and Tempo Synced, offer some beautifully textured and atmospheric tones, as well as some surprisingly synth-esque patches. This is one of those libraries you go to when needing some inspiration, and the basic editor controls for each patch give you a handle on the envelope, filter and FX situation. Note that Kontakt Player 4 ships with the library.

This isn't one for purists looking for an accurate virtual violin, but is a quirky and inspiring secret box of trinkets for sound designers and composers who are always looking for fresh sounds to fire up their inspiration.

8/10



Arturia

Analog Experience – The Player £129

Web www.arturia.com
 Contact 2Twenty2, 0845 299 4222
 Format PC/Mac, USB

Whisper it quietly, but all some people really want from a synth is high-quality presets and the ability to tweak their most important parameters. What's more, a good number of said people would also take a dedicated, auto-setup MIDI controller keyboard for that synth.

This is precisely what Arturia are offering with Analog Experience – The Player. It's a scaled-back version of the Analog Factory Experience (cm124, 8/10), which has now been rebranded as Analog Experience – The Factory.

We say scaled-back because, while the Factory model ships with a 32-note keyboard and a version of the Analog Factory 2.5 software that contains 3,500 sounds, The Player comprises a 25-note keyboard and just 1,000 sounds. These are still powered by Arturia's well-regarded synth engines, though – minimoog V, Moog Modular V, CS-80V, ARP 2600 V, Prophet V, Prophet VS and Jupiter-8V –

so are bursting with analogue juiciness.

You can browse the presets by instrument, type or both, with search results thrown up as you go.

Browsing can be done from the keyboard (via a button and knob), which is a retro-looking device made from wood and metal.

It has a pleasing action and feels impressively robust; in fact, the only downside is that it might be a little too heavy to be considered truly portable.

Editing of the sounds is restricted to the filter cutoff/resonance, chorus and delay effects, and ADSR envelope. This is handled by four knobs on the keyboard, the functions of which can be switched with the Shift button. You can also



store five snapshots.

The Player is fine as far as it goes: you can't argue with the sound quality, and it comes with a terrific little keyboard. Yes, it's limited, but it's great fun and delivers good results fast.

8/10

Moog Music Inc. Filtatron £2.99

Web www.moogmusic.com
 Contact via website
 Format iPhone app

You know iPhone music apps are getting serious when even hardware synth legends Moog are after a piece of the pie. Their app, Filtatron, isn't a straight-up synth, however. Instead, you use it to process audio from three sources: the mic input, a sample player or an analogue-style oscillator with blendable saw/square shapes – you get level knobs for each of these inputs, so you can use all three at once, if you like.

These signals are then pumped through a stereo Moog ladder filter with low-/high-pass mode, cutoff, resonance, separation (stereo offset of cutoff frequency), and dry/wet mix controls. You can twiddle the cutoff manually or use an envelope follower and LFO to modulate it. The latter has tempo sync (set it with the Tap button) and five shapes via a continuous knob, so you can smoothly move between them.

That's the main page, in a nutshell, but there's more... On the FX page, there's filter overdrive and feedback, alongside a tempo-syncable tape-style delay with a simple time-modulating LFO. The Pads page, meanwhile offers dual X/Y pads

for controlling parameters in real time.

Filtatron's sound quality is superb, and it's easy to forget that you're using an iPhone app and not a desktop plug-in (actually, we'd love to see a plug-in version!). The filter can go from a bassy thud to all-out resonant whistle, and the drive/feedback options offer plenty of textural variation and wild behaviour. The oscillators sound warm and 'analogue', while the delay is itself a prime source of sonic madness. Just crank up the feedback and start manhandling the delay time – it sounds very smooth and can even churn out pseudo vocoder and old-school timestretching effects.

Using the mic input to manipulate real-world sounds is fantastic fun (especially in a public place using headphones!), and all of your mayhem can be recorded to WAV. There's Audio Copy/Paste for bouncing sounds back and forth with apps like NanoStudio, which facilitates the use of Filtatron to jazz up staid sounds.

Further niceties include a built-in manual and synthesis glossary, a Moog product catalogue and FTP file transfer. While not being essential, Filtatron sounds superb and is a ton of fun. We can't imagine anyone being disappointed with it.

9/10



Soundware round-up

Puremagnetik DOWNLOAD**Ultrakord** \$12Web www.puremagnetik.comContact info@puremagnetik.com

Format Live 8.1, Logic 8, Kontakt 3.5



This pack brings us the vintage tones of the Suzuki Omnichord, a sort of electronic autoharp that appeared in the early 80s. As well as multisampling of three main voices along with bass and drums, there are sampled chords and strums. Making use of these are a set of patches offering arpeggiation and one-shot strums, as well as layered and effected variations. Crucial to the experience are the one-chord-per-key mappings, which are terrific fun to jam with, whether you use them for simple riffs or ear-catching progressive chord changes. The overall sound has a classic 80s electronics vibe, offering simplistic yet characterful bleeps and warbles that would brighten up any track.

8/10Crate Diggers DOWNLOAD**Cylinder Vocals** £15Web www.soundstosample.com

Contact via website

Format WAV

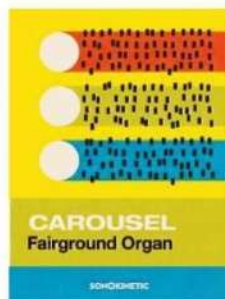


Presumably having exhausted the world's supply of unsampled vinyl, Crate Diggers turn to the first ever commercial recording medium, the wax cylinder. The pack contains 465 spoken vocal phrases plucked from turn-of-the-20th-century cylinders, all broken down into categories like 'city life', 'drugs' and 'love and women', all coming from a great variety of voices. Although the audio has been tidied up using restoration tools, it's still authentically noisy, with enormous variance in clarity between samples. And therein lies the rub: while these are fascinating soundbites, we're not sure how effectively you'd be able to use them in your tracks, as so many would be difficult to discern in a mix.

6/10Sonokinetic DOWNLOAD**Carousel** €20Web www.sonokinetic.net

Contact via web

Format Kontakt 4.1



A 400MB sampled fairground barrel organ with over 400 samples under the hood. The organ features ten registers (voices), which can be played together (tutti) or toggled individually with the interface or keyswitches. There's a simple convolution reverb and percussion comprising kick/cymbal bashes and some snare hits. To expose Carousel's character, you should explore the registers individually. There's subtly detuned reediness, raspy honkings, hollow 'blowing across a bottle' tones, brash strings and more. We'd have liked more control, such as knobs to pan the registers and set the level of the release noises. The recording quality is nothing special but Carousel is usable enough and represents fair value.

7/10Producer Loops £35 DOWNLOAD**SupaLife Dubstep Hard Edition**Web www.producerloops.com

Contact via website

Format Acidized WAV, MIDI, REX2, ReFill, Apple Loops

SupaLife's Dubstep Smooth Edition (cm157, 8/10), impressed us with its slick spin on the gritty sound of dubstep. Now we have Hard Edition to contend with, though it's far from mindless wobbling, with plenty of musicality at play. The production quality of the five construction kits is high, featuring slamming beats, ripping bass noises, slick synths and nifty percussion.

There are loops for each mix element (even down to separate drums), some individual note samples (synths, etc) and MIDI files, and although you don't get single drum hits, you can easily chop them out of their loops. Not only is this pack credible within the genre, but SupaLife have put their own twist on the dubstep vibe. Whether you're seeking inspiration or looking for insight into how to build solid productions, this is one to check out. Note that kits can be bought individually and price varies with format.

9/10Loopmasters DOWNLOAD £40**Designer Dance FX**Web www.loopmasters.comContact info@loopmasters.com

Format WAV, HALion, Kontakt, EXS24, SFZ, NNXT



A straight-up collection of sound effects intended for dance music production, Designer Dance FX delivers 1.2GB of the typical booms, crashes, risers, stabs and other bread 'n' butter noises. Oh, and don't forget the sirens!

While there are some really good sounds here – the crash cymbals and sub noises in particular stand out as highly usable – much of the content is a little lacklustre and dated-sounding when compared to the current cream of the crop. Designer Dance FX is by no means a bad library, but there are better sample packs to put your £40 towards.

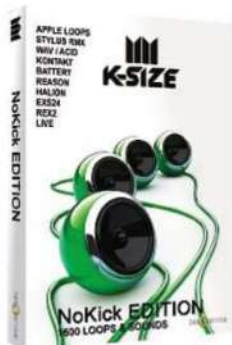
6/10

K-Size

NoKick Edition €87Web www.bestservicede.comContact mail@bestservice.de

Format Apple Loops, Stylus RMX, Acidized WAV, Kontakt, Battery, Reason, HALion, EXS24, REX2, Live

We've been thoroughly impressed by K-Size sample libraries in the past and this title is no exception. Here you get 1500 percussive and FX loops with no kick drum present – a practical format that's excellently executed. All the loops are at 128bpm and clearly designed for upfront house genres. However, despite being so specialised, there's plenty of scope for these very trendy loops to be coerced into other styles. Sonically, the set is up there with the best and there are even 100 bonus kick samples.

9/10

Big Fish Audio

G-Strings £65Web www.timespace.com

Contact Time+Space, 01837 55200

Format Acidized WAV, Apple Loops, REX, Stylus RMX

This release comprises 40 R&B construction kits, boasting the talents of guitarist Tommy O, who's cited as having worked with TLC, Janet Jackson and Toni Braxton. The music is very nice, if a little dated, and the performances are top notch. Each kit includes individual drum tracks and hits as well as the other instrument loops, although the percussive hits are nothing special. The recording quality is good on the whole, but we spotted a few nasty bits of digital clipping that really let it down. With better production and closer attention to detail, this title could have been a winner.

6/10

Nine Volt Audio

Organ Explosion: 9V-B3 Edition £62Web www.timespace.com

Contact Time+Space, 01837 55200

Format Kontakt, Apple Loops, Stylus RMX, Acidized WAV, REX2

This latest edition to the BPM Flex Series consists entirely of performances on the classic Hammond B3 organ. The 706 unique loops are presented in 20 categories, all labelled by tempo and name. The recordings have a lovely warm quality and – possibly a first – the performances are split into left hand (bass) and right hand loops, so that you're free to manipulate the upper and lower parts of each performance without any hassle. Stylistically, it's very diverse, even though all of the sounds originate from the B3, so fear not, there's plenty to play with.

9/10

Big Fish Audio

Metric Odd Meter Drumloops £65Web www.timespace.com

Contact Time+Space, 01837 55200

Format Acidized WAV, Apple Loops, REX, RMX

If you're into music that strays outside the standard 4/4 time signature, you'll probably be aware that sample loop libraries tend to be presented entirely in 4/4 by standard. Editing regular 4/4 loops to force them into other time signatures can be tedious and doesn't always produce satisfying results. Enter the Big Fish solution, Odd Meter Drumloops, in which you'll find 1030 live drum loops in 3/4, 5/4, 6/8, 7/8 and 9/4. It's a nice idea on paper, but the recordings seem to be very meek, lacking punch, depth, volume and brightness.

6/10

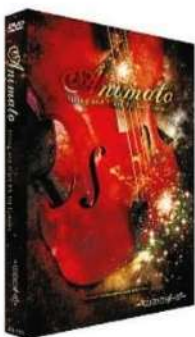
Zero-G

Animato String and Flute FX for Cinema £90Web www.timespace.com

Contact Time+Space, 01837 55200

Format Kontakt, Acidized WAV

A library of string, flute and piccolo performances with a twist. It happily provides the dark and moody textures that typically underlie the most chilling of film scenes. You can expect lots of high-pitched whining and squealing, next to rich-but-soft ambiences that bubble and swell. Some of the effects are so dramatic they enter the realm of the theatrical. The library presents each instrument in live and mutated versions, the latter delving even further into eerie and unnatural territory. While there are WAVs here, you'll definitely want to use the Kontakt instrument to get the most out of this lot.

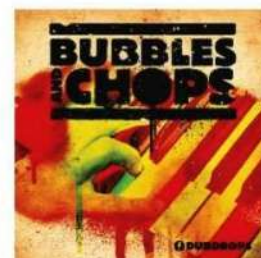
9/10

Dubdrops DOWNLOAD £35

Bubbles and ChopsWeb www.loopmasters.comContact info@loopmasters.com

Format Acidized WAV, REX2, Apple Loops, WAV

Bubbles and chops are those funky off-beat chugs that accompany every reggae classic as a matter of course, usually performed by a guitarist and/or pianist. The most immediately striking quality of this 200-sample set is its authenticity – perhaps both its weakest and strongest point in one. If you're strictly after vintage reggae skank, then you're going to be pleased with this title. It does exactly what it says on the tin and is very well organised. We only wonder whether it's a little too faithful to yesteryear's recording techniques and could have benefited from slightly cleaner production for the sake of flexibility. **cm**

7/10

cm/recommends

The best new gear from the last three issues...



Propellerhead Reason 5 £300 PC/MAC

Rating 10/10
Reviewed **cm**156
Contact Sound Technology, 01462 480000
Web www.propellerheads.se

What is it? A self-contained virtual studio, Reason revolves around a rack that can be stuffed with synths, drum machines, effects and more. Additions for v5 include Kong, an awesome semi-modular drum machine; Blocks, a superb sequencing system; Dr. Octo Rex, which supersedes Dr. Rex and lets you load up to eight REX files at once; hardware-style direct sampling; and a generally slicker GUI.

Verdict "It's always been a superb app, but with v5, Reason finally feels 'complete', offering a highly satisfying musical environment."



Vir2 Electri6ity £259 PC/MAC

Rating 9/10
Reviewed **cm**157
Contact Time+Space, 01837 55200
Web www.timespace.com

What is it? A Kontakt-powered collection of eight sampled guitars, this is like Superior Drummer or BFD but for guitars instead of drums. There's a Fender Strat, a Tele, a standard Gibson Les Paul, a P90-loaded 'Paul, an ES-335 and an L4, and even a Rickenbacker and a Danelectro. Electri6ity's clever under-the-hood humanisation makes programmed or played parts sound more like a real player, and there's surprisingly good amp simulation built right in.

Verdict "A superb solution for anyone seeking a broad palette of convincing sampled axes."



URS Classic Console Strip Pro 2 \$480 PC/MAC

Rating 9/10
Reviewed **cm**158
Contact sales@ursplugins.com
Web www.ursplugins.com

What is it? One of the most comprehensive analogue-modelling channel strips around, CCS Pro 2 doesn't replicate just one hardware unit - it does scores of 'em. There are 30 input/preamp stage models, 60 compressor/limiter types and five EQ band options. Features include dry/wet compression mix, a fast attack option, adjustable routing. Oh, and it sounds terrific!

Verdict "URS's flagship processor hangs on to its 'classic' status with this solid update."

What we've been using this month



Ronan Macdonald
Editor

LinPlug's new MorphoX synth marks the glorious return to form of one of the original soft synth developers. It sounds superb and that mod wheel morphing is truly a thing to behold.



Lee du-Caine
Deputy Editor

Multiband processing is back in my productions, and it's all thanks to Vengeance-Sound's Multiband Compressor, which I've been bandying about with, er, wild a-bando-n.



Tim Cant
Multimedia Editor

As regular readers will know, I like to get my freq on whenever and wherever possible, and recently I've been using MeldaProduction MMultibandFreqShifter to do just that.



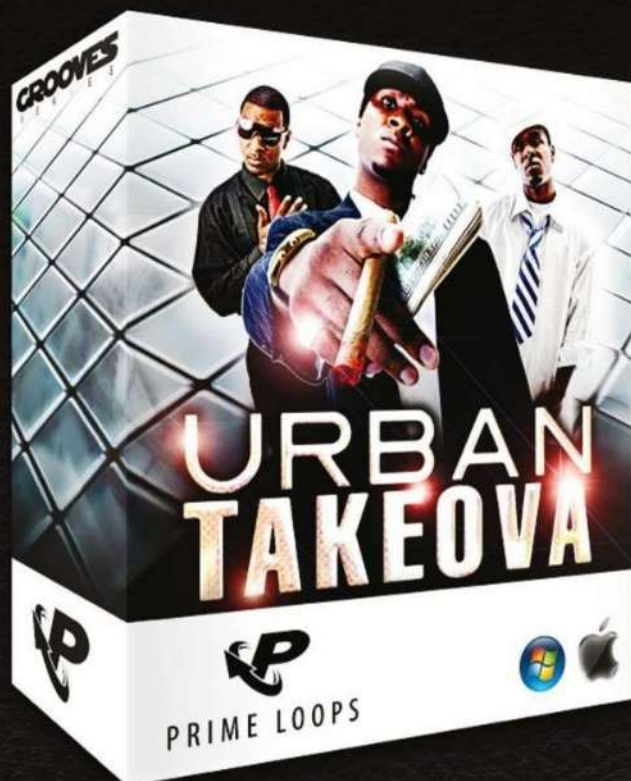
Caity Foster
Production Editor

I moved house this month and my new housemates love impromptu jams - so my teeny Korg microKey is coming in very handy. It's small and light enough for even me to scamper around with! **cm**

PRIME LOOPS

WE'RE IN THE MIX

Prime Loops provide award-winning sound libraries, fresh in-tune with the evolving music scene. We are an extremely passionate team of engineers, sound designers & DJs, hailing from London, UK



TAKING BACK THE STREETS!

It's time to take back the streets! Too many wannabes and fakers think they can test Prime Loops, so we're shutting them all down for good with this one, the heaviest and most devastating hip hop construction kit we've ever produced. Leave your enemies to stand and stare as you blow industry standards apart with a full clip of the deadliest ammunition on the market!

This pack is a beatmaking masterclass for any badboy producer on the scene, giving you all the tools to flex your own flavours. Build up the layers your own way to create battle weapons that nobody can mess with, in classic urban minor keys and at tempos ranging from 80-100bpm. As an extra special for all you MCs out there we have also decided to add 10 fully arranged, absolutely royalty free full-length beats to this pack! It's never been easier to get in the flow!

£19.95



SIRENS IN DUB

We're sending out a warning! This pack is rammed full of hundreds of siren samples, stabs and bleeps, guaranteed to wake up the whole nation. The killer feature is that everything has been recorded using a range of real analogue tape machines, adding the perfect warm, fuzzy saturation to create 100% authentic vibes.

£12.95



XXL HOUSE DRUMS

Get the full force of a true heavyweight producer in your studio with this supersized dancefloor drum pack, stuffed with all the crisp one shots and skillfully programmed patches you need to make house music all night long... so don't hold back, go XXL!

£14.95



RATIOPADZ

Achtung, Achtung! You are just about to fill the arena with guaranteed heart-pumping, crowd jumping, hands in the air euphoria. It's time to hit the big-time and spread your love around the world, and now you have the tools. The only problem is that you might find it difficult to work while you are dancing so hard in the studio!

£14.95



LIQUID D&B ESSENTIALS

If you feel like rolling your drum and bass up with an intelligent nu-soul injection, this mammoth D n' B sample pack will make your year, filled to the brim with all the essential elements you need to immerse yourself in the amazing sound of the current liquid funk movement.

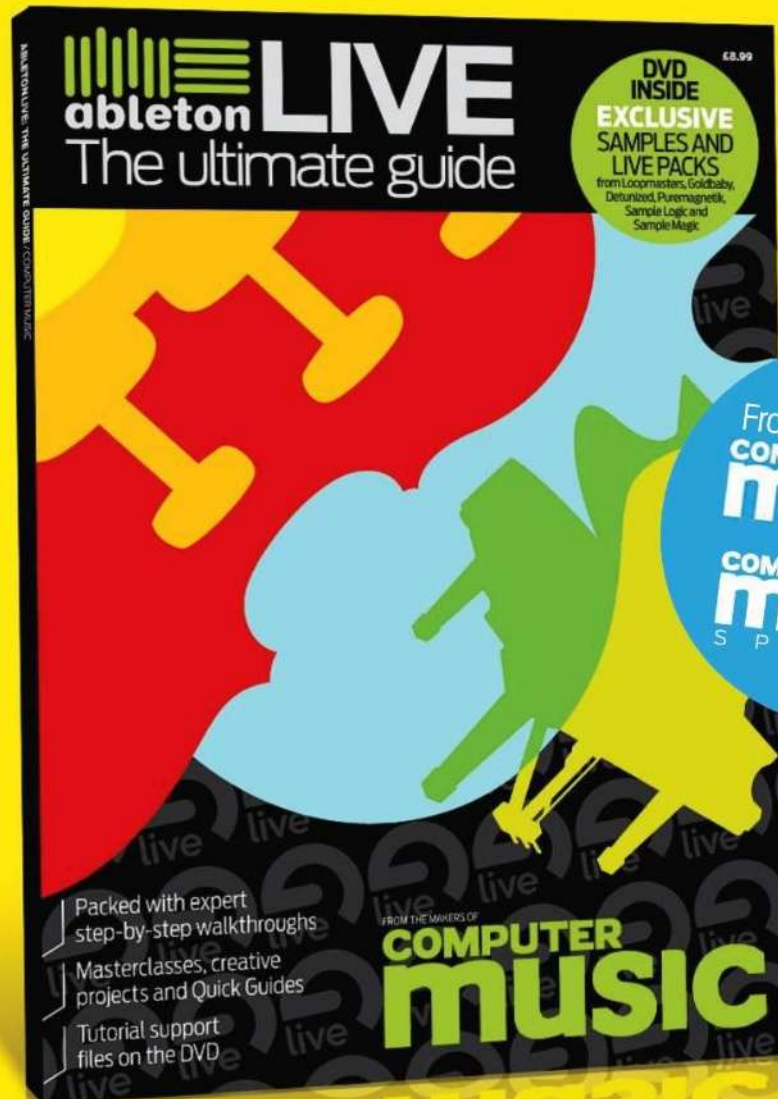
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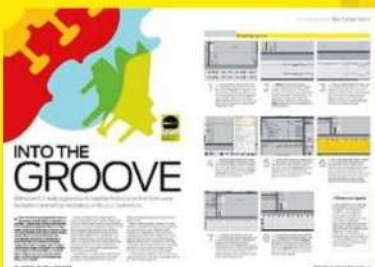
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>Your questions answered

Q&A

Desperate to replicate a sick sound you've heard recently? Scratching your head trying to get all your gear to play nice? Or just stuck on what to buy next? Send your questions to cmhelp@futurenet.co.uk

A guitar too far?

Question After several years without a guitar I recently picked up a Yamaha Pacifica. I'm using Record 1.5 and Reason 5 and want to be able to use my guitar as a MIDI controller (my keyboard skills aren't up to much). I have looked on the internet for guidance on MIDI pickups, etc, without much luck, and have had even less luck in London's music shops (who have been pretty unhelpful). I think I may need a pickup and a separate interface, but am really none the wiser. Any advice on what I can do with a relatively limited budget would be greatly appreciated.



Dave Northfield



The Sonuus G2M slots in between your axe and your MIDI interface, so you can turn your strumming into note data

COMPUTER music QUESTION OF THE MONTH



The writer of our *Question of the Month* will receive their choice of two Artist Series sample libraries courtesy of Loopmasters. www.loopmasters.com



Answer Getting a guitar hooked up with MIDI can be a battle, and a number of innovative products have been released in this area - some good, some dreadful. The most difficult aspect of translating guitar playing to MIDI messages is the tracking. Pitch tracking is hard enough with monophonic sources, and only recently has technology been up to the job for that. The polyphonic tracking required to translate a guitar chord to a group of notes in your sequencer is far more demanding.

So, you have a few options, depending on your specific needs. If you only need basic tracking of monophonic lines, you could look into something like the Sonuus G2M, which is a diminutive, battery-powered device costing about 80 quid. It patches

in between your guitar and your MIDI interface and there's even a version designed specifically for bass guitars. It needs no additional hardware.

Roland's many options are at the other end of the scale. They offer products ranging from the GI-20 MIDI interface to full-on guitar synths, complete with loads of patches ready to play right out of the box. The one thing they all have in common is that they require the additional purchase of the GK-3, GK-3B or GK-Kit-GT3 Divided Pickups. The first two attach to your guitar, while the third requires that you drill holes in your axe - so make sure you're really committed to this idea before taking that step!

MIDI misinformation

Question I just got the Akai MPK88 keyboard, but my sustain pedal won't work. I believe it should be on MIDI channel 64, but mine is showing 67. How do I get it to work



Hold that thought! If you want your MKP88 to recognise your sustain pedal, it'll need to be plugged in before you power up the keyboard

correctly? I was told to unplug, turn it on and re-plug, but that didn't work. Could you guys help me out? Tell me like I'm a five year old.

Diamond Harper

Answer First of all, the sustain pedal should indeed be transmitting MIDI CC 64 (that stands for 'continuous controller', not 'MIDI channel'). However, we suspect that the problem is in the polarity of the pedal you're using. Some devices (and software) allow you to choose the polarity of the pedal, while some (like your Akai) scan the pedal inputs on power-up. We're afraid that you might have been given some erroneous information. You should plug the pedal in before you power up, not after. Assuming that you're not using a proprietary pedal (which may not work at all), and assuming that the sounds you're playing actually do sustain, this should do the trick. If not, let us know and we'll put our thinking hats on again.

Digital manuscripts

Question Can you advise me what software would allow me to connect my Yamaha DGX-205 keyboard to my Mac Pro and create a music score on the Mac as I play my keyboard? To clarify, I want to see my own music score appear note by note on the Mac and also be able to delete and insert new notes as I work.

I have spent many hours searching for a solution that allows me to do this, so I hope

that you can help me figure out what software I need to buy.

Robert Cooke

Answer So much music software is designed to allow untrained musicians easy access to music creation that it's easy to forget some users will have more traditional needs. We've got piano rolls, event lists, drum loops and step-time data entry, yet notation - the very language of music - is often overlooked. For those that feel at home with notes, rests and staves, a piano roll simply will not do.

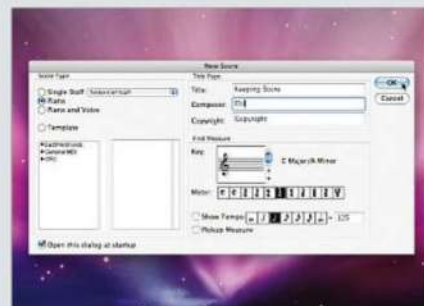
Luckily, music notation applications were among the first developed for computer musicians, even if their output was relegated to the spotty dot-matrix printers of the day. Notation has been (and still is) included in some DAWs, though such complex programs can seem intimidating to those who only need to jot down a score. Still, as a Mac user, you could do a lot worse than Logic's Score editor. It works just like any other aspect of Logic's MIDI sequencer, so anything you play will be dutifully recorded and entered into the staves, and you can edit, cut, copy and paste to your heart's content.

Logic's little brother, GarageBand also has a score pane that will track and record what you play and likewise enables editing. It's not as sophisticated as the one in Logic, but you might want to give it a try to see if it'll do the trick before plumping for the more expensive option.

If you don't want to get bogged down with all the various tools of a DAW, try a dedicated notation program such as Genie-Soft's Score

> Step by step

Use Genie-Soft Score Writer



1 > Your DAW of choice may already have notation abilities, but if you want to concentrate solely on your score, you might feel more comfortable with a dedicated notation application, such as Score Writer from Genie-Soft. When you first fire it up, you'll be asked to choose the sort of staves you want to use, the time signature and more. What? No 7/8 time signature? There go our prog rock dreams!



2 > Once you've filled in all of the particulars, you'll be met with your staves, ready to begin. Those of you working in traditional music will feel right at home. We can, however, avail ourselves of a bit of high-tech. Go to the **Options** menu and check **Transport**. The familiar controls will appear in a floating toolbar that can be docked wherever you like. OK - ready to make some music? Hit **Record**.



3 > Play along to the metronome. When you've recorded a bit that you like, stop the transport. All of the stuff you just played will appear on the staves, ready for you to edit, copy, paste and otherwise rearrange. It's an easy yet elegant system that bridges the old world to the new.

"We've got piano rolls, drum loops and step-time data entry, yet notation - the very language of music - is often overlooked"

> Step by step

Create a sine wave with a self-oscillating filter



- 1** > Though reader Alex Cargill asked about hardware synths, many soft synths can also produce a sine wave via a self-oscillating filter. We're using the free TAL-Bassline, but this technique is applicable to many hardware analogue instruments, too. Load up the **Start Here** patch and reduce the levels of all sliders in the Source Mixer.



- 2** > Try playing the sound. You shouldn't hear anything at all – so what good is it? We'll show you. Move on to the filter (VCF) section, crank the **ENV** slider all the way down and then turn the **RES** slider all the way up. Still can't hear anything? That's because the cutoff (**FREQ**) is wide open. Turn it all the way down.



- 3** > You could use any modulation source to adjust the frequency of the sine wave generated by the filter. Try shoving the **KYBD** slider fully up and playing some low notes on your keyboard controller. If you render the sound as an audio file and zoom in tight, you'll see that TAL-Bassline can produce a sine wave, though it isn't among the waveforms available to the oscillator.

Writer, which provides all of the tools you need for basic notation, but leaves out all the other things that come with a fully loaded DAW. Genie-Soft also produce Overture, a fully professional option that facilitates more sophisticated scoring. See the *Use Genie-Soft Score Writer* walkthrough on p117 for more details.

Avid's Sibelius 6 sits at the top of the line, providing everything you need for fully professional scores. You can even sing into the thing and it'll translate your voice into notes on the staff. Very slick. It comes at a price, though, ranging from around £100 to five times that.

MakeMusic's Finale is similarly priced, though you can avail yourself of an entry-level version (Notepad) for less than a tenner. There's also a free read/print-only version for download.



The Mopho synth packs a lot of power into a bite-sized package, but you'll need to use the software editor if you want to access it all at once

A hard choice

Question I've been making electronic music in all of its various guises for 11 years now. I have a nice little studio setup featuring various bits of hardware and I use FL Studio 7 as my main DAW. Like most of us, I use literally hundreds of VST plug-in FX and soft synths – but I feel it might be time to splash some cash and treat myself to a hardware analogue synth.

I've done a bit of browsing and the ones that really grab my attention right now are the DSI Mopho and the more recent DSI Mopho Keyboard, the Doepfer Dark Energy and the MFB Nanozwerg.

The Mopho reviews all make it sound amazing, but by all accounts it is much trickier to program and far less intuitive than the more hands-on interface of the Mopho Keyboard. It's a shame that DSI doesn't do a Mopho Keyboard but without the keyboard (if that makes any sense!), as the keys are not a priority for me. In other words, I want a Mopho, but with a more intuitive interface.

As I say, I'm new to the analogue synth market, and there is one fundamental thing that I just can't understand: Why don't any of these synths have an oscillator for sine wave? They seem to have oscillators for all of the other common waveforms (triangle, saw, square, etc) but I thought that the humble sine wave would be a standard starting point for building many sounds, particularly bass sounds. I'm a 'real synth' virgin so have probably just asked a really silly question, but please advise me if you can. Many thanks and keep up the fine work.

Alex Cargill

Answer Everyone has their reasons for wanting to go 'out of the box', and though we're steadfast champions of virtual synthesis, we will admit that hardware has a certain appeal. However, you should be certain of precisely why you want to work in the physical domain before you get your credit card out, and

your list of potential purchases exemplifies the need for proper examination. For example, if you want a hands-on instrument, with all parameters at your fingertips, then you may find what you need in the Doepfer or MFB units. Both of these have dedicated knobs for each parameter and make fine candidates for both live tweaking and self-education.

However, your question about sine waves suggests to us that you're searching for a certain sonic experience. If this is the case, the Mopho may be the better bet, as it includes a pair of oscillators as well as a duo of dedicated sub-octave generators. It also enables you to choose between a Moog-styled 24dB filter response and the less precise 12dB response used on certain classic Oberheim instruments.

The Mopho is the most feature-laden of the three synths you've suggested, yet it has fewer hands-on controls. DSI have traded immediacy for flexibility, and it's for this reason that some users have complained that it's somewhat less than intuitive. Nevertheless, it does have a few knobs dedicated to the most commonly needed functions, and you can find free editing software that allows you a much wider view than that of the diminutive onboard display.

Therein lies the reason we suggest that before you decide on what to buy, you ensure that you truly understand what fuels your desire to go hardware. After all, why spend the extra cash if you're going to spend your time editing your new hardware with your mouse? Does the Mopho's sound alone justify its expense? If it's about the tactile experience, then you have to consider whether the price and feature-set of the Doepfer or MFB outweigh those of a dedicated MIDI controller. You've got some experience, and we're not going to try to convince you that they don't. Trust your ears and instincts here.

Now, about that sine wave. First, you should know that the sine wave is the simplest of waveforms, consisting only of the fundamental frequency with no additional overtones.

"Though we are steadfast champions of virtual synthesis, we admit that hardware has a certain appeal"

It is sometimes omitted from the oscillator waveform selection because it has no harmonics that can be filtered out, so it isn't terrifically interesting for subtractive synthesis. Theoretically, if you plumb a square, triangle, or sawtooth waveform through a filter and crank the Cutoff knob nearly all the way down, you'll be left with something akin to a sine wave.

However, the fact that a sine wave is absent from the oscillator section doesn't mean that your synth can't produce one. All three of the instruments you cite are indeed capable of generating a sine wave, since all of them possess self-oscillating filters. Such a filter will produce a sine wave even when there are no oscillators routed through it, assuming that the Resonance is cranked up. In some cases, the frequency of the sine wave can be controlled by the Cutoff value or scaled to the incoming keyboard voltages, though it has to be said that the accuracy of that scaling may be limited to a

narrow octave range. This sort of self-oscillation is often used for sound effects rather than for musical parts.

Don't get us wrong: you're perfectly right to think that a sine wave can be a useful inclusion in the oscillator section, particularly if you have multiple oscillators. At the very least, it can be used to bolster the fundamental of the other oscillators, and more significantly, it makes a great modulator when you're using one oscillator to modulate another. However, the nearly-as-simple triangle wave makes a reasonable substitute.

Perverse reverse

Question I am a keen reader of your magazine and new to synthesis. I have tried various synths to come close to the sound that I've attached to this email. Someone

suggested the Zebra synth and I spent quite a few hours with the demo version using FM oscillators and ring modulation, but that could not do it either. I also tried the Geomorph and Geoblend features on the oscillators but the sound doesn't have the tinge of the audio sample I've provided.

This sound is so fundamental to what I want to compose that I am very desperate. Could you please advise me on whether it is indeed possible to make it with a soft synth at all?

Dimitrios Pananakis

Answer With the vast amount of easily accessible processing available these days, there are a lot of factors that might cause a given sound to be difficult to decipher. Such is the case with the sample you've provided. Though it sounds decidedly electronic in nature, it is not, in fact, the result of subtractive synthesis.

> Step by step Reverse a piano riff



1 > We open Dimitrios' audio in Logic, though this technique will work with all DAWs. To our ears, it's clear that his sound has probably been reversed. We double-check this by opening the Sample Editor, selecting the sound and choosing **Reverse** from the **Function** menu. Playing back the reversed file gives the game away.



2 > Now that we know the source of the sound, we can set about creating something similar. We need a Software Instrument track, which can be created using the **New** command in the **Track** menu. We could use any number of piano or electric piano plug-ins to get the desired result. How about a sampler? Load up Logic's EXS24 sampler.



3 > The EXS24 includes a number of acoustic pianos in its factory sound bank. Open the sampler's built-in browser and select the **Yamaha Grand Piano** from the **Acoustic Pianos** category. Once the piano sound is loaded, play some simple chords to check that the sound is what you're after. Record a simple passage of quarter-note chords, as shown here.



4 > This is very basic stuff, and the sound isn't terribly complex. However, there is some subtle filtering going on, so we need to recreate that before going any further. Listen to the original again (our recreation of the sound is on the **cm DVD**), then mute it and return to the new track. Loop playback and open an AutoFilter plug-in on a track insert.



5 > We're going to use a band-pass filter. Click the **BP** button in the State Variable Filter section to activate it. You can keep the track looping as you work if you need to. Turn the **Cutoff** down to **34%** and the **Resonance** up to **40%**. We need some motion, so go to the LFO section and push the **Cutoff Mod** slider up to **26%** or so. Now, slow the LFO Rate down to about **5 bars**.



6 > Depending on how ambient your piano sound is, you may want to add a bit of reverb. Next, render your sound to a new audio track. Select the new file and reverse it using your sample editor. You may need to go back and mess around with the range of the piano notes, adding a note or two in other octaves, but you should get close to the original sound.

> q&a / expert advice

Rather, it's the product of some rather crafty audio manipulation. The long, gradual fade crescendos give the game away, signifying that the sound itself might be reversed. Opening the file in an audio editor and then reversing it verifies this theory. Having done so, it becomes clear that we're hearing a simple piano passage (possibly an electric grand) with a bit of filtering applied. We'll assume that the sudden pops are due to digital overs. So, let's recreate it: all you need is a piano plug-in and your DAW. See the *Reverse a piano riff* walkthrough on p119 for a step-by-step guide to recreating that sound.

Into the silo

Question I love the huge, echoey noises created by the innovative Silophone project in Canada. How can I recreate the amazing

"A combination of architecture, found art and sonic experimentation, the Silophone is a vast acoustic space inside a disused grain elevator"

sounds of the Silophone using effects from the Computer Music DVD?

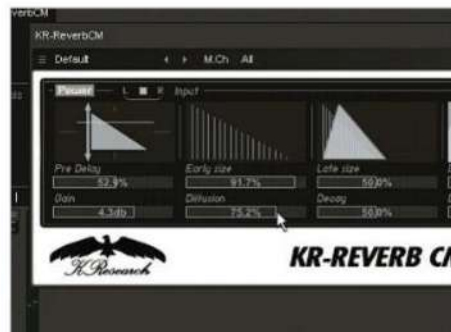
Colin Stevens

Answer The Silophone is a truly brilliant piece of work. A combination of architecture, found art and sonic experimentation, it's simply a vast acoustic space inside a disused grain elevator in Canada that's home to some clever technology. Anybody can go to the Silophone website (www.silophone.net), upload their sound files and wait as they're boomed out into the echoey

space. The resulting noises will then be played back to the visitor through a RealAudio player. Very clever!

If you want to bring the experience closer to home, grab one of Voxengo's free impulse packages - which include files based on the same idea - and throw them into a convolution processor such as Nebula or Logic Pro's Space Designer. Alternatively, you can build an equally dense sound from the ground up by following the steps in the *Recreate the Silophone's sound* walkthrough below. Enjoy!

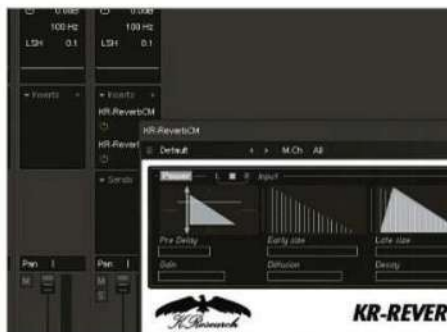
> Step by step Recreate the Silophone sound



1 > The sound of the Silophone is nothing short of remarkable: it's a truly unique reverb space. Needless to say, the acoustics of a disused grain silo aren't something you're likely to have lying around! However, we can recreate the experience using a couple of plug-ins from the **cm** Studio. Start by firing up energyXT CM and dragging an instrument into the project. Let's try CMorg.

2 > Choose a sound without any ambience from the built-in reverb. Try the patch called **Ova-Drive**. The effects are on the left side, near the bottom of the GUI. Turn the **Mix** knob all the way to the left for a totally dry sound. Now switch to energyXT's **Mixer** view and drag an instance of KR-ReverbCM into the **Inserts** box of your organ track. Double-click on it to open the editor.

3 > Play a few notes from CMorg. There's a bit of ambience, but nothing that you could store wheat in! Let's dive in to the reverb's editor and turn the **Pre Delay** up to around **52%**. You can give the **Gain** a nudge too, if you like. Next, boost the **Early Size** slider up to around **90%** or so. Turn the **Diffusion** up to about **78%**. The sound should be getting pretty big.



4 > Crank the **Late Size** up all the way and turn the **Decay** up to around **90%**. Audition the sound. It goes on nearly forever! Let's adjust the **Damping LF** (low frequency) to a value of around **24%** and the **Damping HF** (you guessed it, high frequency) to nearly **50%**. We also want to move the **Listener Position** to **95%**.

5 > The **Dry/Wet** mix is the only thing left to mess with. Set that up to around **74%**. The sound is now vast, but not as rich as we'd like. Let's employ an old engineer's trick to beef it up and strap another reverb onto the one we've already installed. Drag another instance of KR-ReverbCM into the insert and open the editor.

6 > Give the new reverb similarly exaggerated settings, but try to make them slightly different from those of the other one. Try really pushing the **Pre Delay** time on this one - you can get some really long, thick tails. Experiment with the **Dry/Wet** mixes of both reverbs until you find a combination that works for you.

Question

How do I recreate the legendary lead synth sound from Underworld's *Rez*?

Dan Biederman



1 > We've had more than a few requests for this one over the years. We're not sure about the exact gear used in the original, but we do know that the boys have long counted an ARP 2600 and an OSCar among their synths. Both would be suitable choices, though the screeching sound of the OSCar's filter being overdriven makes us think that GForce's impOSCar might be a good place to start.

2 > There are a couple of ways to go about creating a patch similar to the one heard in *Rez*. We could create a static patch and sequence it in our host, or we could use a random LFO to simulate the frenetic sound of the original. We're going to do the latter. Start by hitting the **Recall** button to initialise the patch, then select the **Full Organ** wave for OSC1 and the sawtooth wave for OSC2.

3 > Those waveforms are being filtered pretty drastically. We'll get to that in a moment, but first, let's turn the **Oct Shift** knob down to -1 for a lower pitch. Next, cruise over to the Filter section. Select the second (band-pass) filter type and crank the **Q** up to **0.64**. That gives us a biting, nasal tone.



4 > Leave the filter cutoff (**FREQ**) where it is. We need to liven things up with some auto-triggering action. Before we do that, let's sync the clock to our host's tempo by checking the **Clock** button next to the Arpeggiator. This will allow us to use divisions of the host's tempo in the Triggering section.

5 > Now let's look at the Envelopes and Triggering section. Set the **Triggering** knob to **Rpt 1+2**, and the **Tempo** to **8 Bts/Bar**. Next, set the **Gate Time** to around **36%**, and the **Function** knob to **Poly 8**. You should now hear a hard, repetitive pulse whenever you play a note using your keyboard controller. Now we have some movement!

6 > We'll get even more movement if we get impOSCar's LFO in on the action. We're going to use the LFO to modulate the filter's **Cutoff** frequency. The LFO has a number of waveforms from which to choose. We select the **Random** wave in order to simulate the frenetic action of the original sound. Do that, and then turn the LFO's **Amount** up to around **22%**.



7 > The LFO isn't doing much, and that's because the **Rate** is turned way down. Before we set the **Rate**, we need to switch the LFO's **Sync** function over to **MIDI**. Now, you can adjust the **Rate**. Set it to either **4 Cycles/B** or **8 Cycles/B**. That sound is a little better, but it still lacks the excitement of the Underworld patch.

8 > Activate the **Effect** button, click the arrow to open the panel and turn the **Delay Level** knob all the way up. Click the little **CF** button between the Left and Right delay channels. Set the **Length** of one channel to **4** units and the other to **2** Units. Set both Feedback (**F/back**) levels to **57%** and both **Mix** levels to **50%** or more.

9 > For more oomph, slam up the **FilterDrive** and warm it up with some chorusing. It's not precisely the same sequence, of course: use a step sequencer to hit it right on the head. You could also set the **Delay Gate** to **-22%** and the **Delay Units** to **8/Beat**. Tweak your envelopes and lay this rip-roaring patch over a skittering beat. **cm**

>cmfocus

TIMESTRETCHING

Bend time to fit your track, whether you want to correct an out-of-time recording or go wild with sound design



> In the realm of recorded sound, time is endlessly flexible - in an illusory sense, at least - thanks to timestretching technology. The applications of it are many and varied. You might want to tighten up the recorded performance of a tempo-wandering musician, or sustain an important note for a touch longer; you might be looking to merge two recordings of totally different tempos; or you might be indulging in a spot of creative sound design.

Yet no matter how far technology advances, the laws of physics impose challenges on our time-bending adventures. Tonal sound is the result of vibrating air molecules. All sounds owe their pitch to the frequencies of those vibrations. Therefore, pitch and speed are intrinsically linked, and on the surface it would seem that you can't modify one without affecting the other. Imagine the sound of a tape player running low on batteries, or a record playing at the wrong speed. No doubt you naturally imagine slowed-down sound as having a lower pitch, and sped-up sound as being squeakier.

In recent years, software developers have made it possible to pitchshift digital audio without affecting its length, as well as timestretching/compress it without altering its pitch. Clever stuff!

Invented in the 'sampling golden age' of the 80s, early timestretching technology sounded unusual, to say the least, and wasn't really up to the job of transparent timing correction. However, this only served to make the effect more unique and probably more popular.

"Early timestretching technology sounded unusual, but this made the effect more unique"

As new and ever-more convincing timestretching algorithms have come onto the market, we now have the ability to make time domain edits for purely practical purposes, convincingly maintaining the character and integrity of the sound being compressed or stretched. Still, we should never overlook the array of interesting timestretch effects made possible by older pieces of software and retro processing techniques, from which we can still extract plenty of exciting creative use.

> Step by step Tighten the timing of a vocal



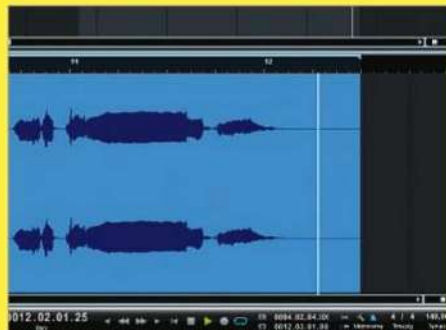
1 > Whether you've recorded a live vocal part or are simply importing a sample, chances are there'll be some room for improvement and a little creative licence as far as the timing goes. We've included a mini acapella on the **cm** DVD so that you can follow along with exactly what we're doing. The file is **Acapella.wav**.

2 > You'll want to cut the performance into a musically meaningful number of beats to make the job easy. The part needs to loop nicely, and ideally you'll be able to cut a loop that's longer than the section you intend to use. Our chosen loop is 88 beats – or 22 bars (four beats per bar) – long.



3 > Adjust your DAW's project tempo until the cut loop adheres as tightly as possible to the desired number of bars/beats. In our case, our 22-bar loop just about touches the edge of bar 23, our tempo is set to **135.70bpm**. It helps to use the metronome and listen while you fine-tune the timing.

4 > Make cuts in the audio at sensible points – preferably where there are silences between phrases, although 'S' and other consonant sounds often make great spots if you want to slice and dice discretely. Essentially, we're chunking up to make the next step more manageable.



5 > Isolate the slices you want, then listen carefully to them as they play in a loop. Adjust the start point of each slice and use stretching to perfect the timing. You might find you need to slice these parts further to get into detail with the timing.

6 > Bounce/export the results of your tightening. It's a good idea to name the file with the current tempo and number of bars (or beats if that's easier). Now you can set your host tempo to whatever you want it to be and simply stretch the whole tightened vocal until it reaches the number of bars required.

Timestretching classics from the 90s

Metalheadz Terminator

This chilling rave anthem paved the way for jungle and drum 'n' bass, and shocked crowds en masse when about halfway through the record, the beats started to shift in pitch. Although technically pitchshifting was used, it inspired a generation of producers to experiment with timestretching on their Akai samplers for the first time.

**The Prodigy Smack My Bitch Up**

So much of this record was made by timestretching samples from other people's music that it would be impossible to list them all here. At the very least you should be able to spot the intentional echoing timestretch artefacts on the main vocal hook, which is sampled from Ultramagnetic MCs' *Give The Drummer Some*.

**Dead Dred Dred Bass**

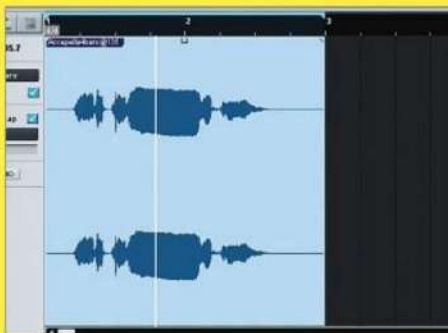
This strange record reinvented the jungle formula by using a bass sound that was neither punchy nor growling. It also tied sections together with a seemingly random sample of a Caribbean chap asking for the time. Oh yes, and said sample was timestretched for no apparent reason other than to add flavour.

**Slipmatt Hear Me**

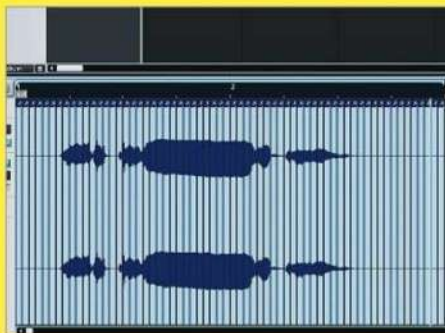
A time-compressed piano and vocal sample lead the way at nearly 160bpm on this jungle-influenced hardcore classic. Then, in a fashion quite different to Metalheadz' *Terminator*, the middle of the record explodes into a breakbeat that's both timestretched and pitchshifted simultaneously. The results are almost melodic.



> Step by step Old-skool manual timestretching



1 > This particular vocal timestretching trick probably won't suit a whole verse or chorus, since we're going to draw out the vocal part, but it's a neat little effect to try on a succinct phrase. If your vocal part is a long one, you'll need to start by trimming it down to a single phrase.



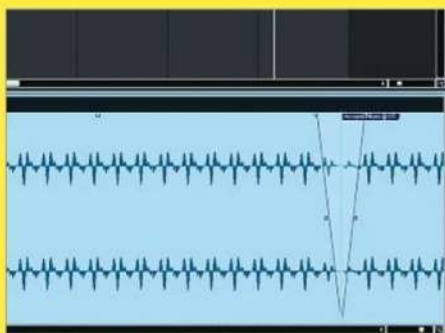
2 > Zoom in and set your DAW's quantise to **1/32**. The effect works with other quantise values and will produce a more extreme sound at 1/64 or 1/28. Here we've used the cutting tool to splice the audio part into 32nd-notes.



3 > Next we space the audio fragments out by the factor by which we want to timestretch. So, for example, if you want to double the length you'll have to make double the space. In this example we're quadrupling, leaving a triple-sized space after every block of audio.



4 > Now we need to fill in those gaps. We do this using copies of the audio slice preceding each gap. This can be a tedious job if you have to manually copy and move each one, so hopefully your sequencer enables you to select and copy several at once.



5 > Play back what you now have. You'll notice that the audio slices click rather unpleasantly. To fix this, select all the slices again and fade them in and out at either end. Keep the fades very short or you'll inadvertently produce an effect worse than the clicking we set out to remove.

POWER TIP

>Out of this world

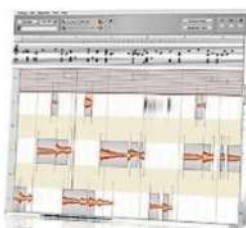
Once you have this technique down, you can get adventurous with it. Go off-road! If you have the patience, you can create a wide array of different effects. Try changing the quantise setting at different points in the audio. You could even have a go at graduating the spacing so that the audio slows more and more over time, or maybe even speeds back up to full speed. One very simple effect is to make an extra large space in, say, a distinct vowel sound and then stretch that one syllable to be much longer than the rest.

Four great timestretching applications



Cockos Reaper \$40/150

Behind the shy price tag, Reaper packs just as much punch as any other professional DAW on the market, and that includes its timestretching and pitchshifting capabilities. You can select from a number of intelligent algorithms, including the world-class Elastic2 Pro, when bending time to suit your requirements.



Celemony Melodyne Editor £299

Arguably the most powerful timestretching system around, the latest version of Melodyne features Celemony's famous Direct Note Access technology (DNA for short), enabling you to timestretch individual notes within a polyphonic recording. If you can afford it, this is where your timestretching lust should ultimately lead you.



Sugar Bytes Effectrix £99

This is a multieffects sequencer rather than a dedicated timestretching plug-in, but it does enable you to create sequences that timestretch the incoming audio in real-time. It boasts built-in automation and fine control over the stretch algorithm's parameters, including time, grain size and fade percentage, for a broad palette of effects.



Ableton Live 8 £400

Ableton's famous DAW treats timestretching as an intrinsic part of its audio engine, rather than a separate element of it. Throw in a bunch of loops and they'll be automatically stretched/compressed to fit the project tempo. This still seems like a music technology miracle even a decade after it was first released.

> Step by step Old-skool beat timestretching



1 > You'll need a sampled drum loop for this effect, so either produce your own loop, bounce it down and reimport it, or load up the file we've supplied on the **cm** DVD: **DrumLoop.wav**. The length is one bar and the tempo is 133bpm.



2 > Next we want to stretch the loop out – or, rather, take its speed down to a quarter of the original tempo. We want to create a sort of echoing effect as we do this (much like the results of the previous walkthrough), so a medium to high **Grain size** is essential if you're using Ableton Live, as we are.



3 > Bounce the stretched copy, then double its speed and pitch using tape- or vinyl-style timestretching – ie, an algorithm in which pitch and speed are directly linked. This produces a loop that's half the speed and double the pitch, with a distinctive old-skool ringing effect.



4 > Now it's just a case of arranging the parts. You might find it fun to chop out bits of the original drum loop and fill the gaps with chops from the timestretched version. That should give the impression of a single beat being twisted.

You do the maths

It's one thing to work with well-cut loops that fit your sequencer's bar grid out of the box, but occasionally when timestretching you might first need to figure out the tempo of a given piece of audio.

The first thing you should do is to cut the audio so that it lasts for a sensible number of beats. That's fairly easy if you're working with a one-bar drum loop, but not so straightforward when you're dealing with a vocal that doesn't start or end clearly on a beat. In that case, select a region over which you think you have a whole number of beats and play it back in a loop. Nod your head or tap your knee where you would expect the beats to land and if the loop seems to come back around too fast or slow, adjust the selection until it loops perfectly. Make sure the beats can be evenly counted all the way through to the end and round to the start again.

Now, let's say that your vocal is 36 beats long. Note how long that 36-beat loop lasts in seconds, then divide that number by the number of beats and note the result. Finally, divide 60 by that final figure, and the result is the tempo of your loop in beats per minute.

> Step by step Modern beat timestretching



1 > For this method you'll need a beat comprising single-hit samples placed on audio tracks. Make lots of space for stretching them. We're simply using a kick, closed hi-hat and snare, all of which you'll find on the **cm** DVD.



2 > You'll need to listen very critically here and judge the results for yourself, but the general idea is to stretch the sounds as far as they'll go without losing all semblance of percussiveness. You might have to bounce the audio and repeat the process if you reach your software's limits.



3 > Now create a rhythm with the stretched hits. Play with the lengths of each hit and work out what sounds good overlapping and what doesn't. You should expect to be able to produce some truly wild and crazy rhythmic effects with your new droning sound-set.

Beyond practicality

Many producers consider timestretching a function to be used for practical and corrective uses, but as we've shown, there's so much more you can do with it than just make a vocal fit your project tempo. As well as the trippy effect it can produce, timestretching's potential applications as a resynthesis tool range from the subtlest of tweaks to the point at which one sound becomes a totally unrecognisable new texture.

You'll find that the timestretching algorithms in different software packages sound different to each other: some have parameters that can be adjusted, or feature multiple algorithms tailored to suit specific instrument/sound types. Of course, the differences between one algorithm and the next might not be immediately obvious, and it's probably not practical to expect to be able to predict how, say, ten different algorithms might sound in any given circumstances. Rather, you'll probably develop a few favourites that you'll begin to be able to predict approximately, over time. This is an important stage in being able to get the most out of timestretching: knowing which stretch to use for which job.

Fear not, though, for some of the best effects you'll discover will come through good old trial and error. Make a point of mentally noting any inadvertent side-effects that occur whenever you apply timestretching (even when you're doing it for corrective reasons), no matter how subtle they might be. Remember that different types of material are prone to different types of artifacts - perhaps drum transients get smeared, or reverberation becomes hard and brittle when you're using a particular algorithm. Maybe you'll notice an echoing or ringing that can be emphasised if you boost certain frequencies with EQ. Like many aspects of music production, there really is no substitute for experimentation. Have patience and be open to trying things even if you don't expect them to work.

> Step by step Build a timestretch soundscape



1 > Now let's take timestretching to the extreme. We're going to build an entire soundscape from timestretched noises. The idea here is to exploit the audible effects of timestretch algorithms as well as turning otherwise too-short sound clips into more versatile sonic tools.



2 > On the **cm** DVD you'll find a file called **MiscellaneousNoise.wav**. It's a tight, photocopier-style sound with a knocking transient. It screeches and whirs, but it's going to sound quite different once we've stretched it to make it a bar long. Check out that natural rhythm.



3 > Next, **MiscellaneousStab.wav**. Again, using your ears to guide you, stretch the stab and keep stretching until you're satisfied. If you don't stretch it enough, it'll remain short and won't accrue much texture; but if you stretch it too far, it'll whine. Find a happy medium and load it into a sampler.



4 > You'll also find **MiscellaneousVocal.wav** on the DVD: this is a one-syllable stab with not much distinct character, taken from a longer acapella. Again, stretch it as far as you think you can get away with, then down it in long reverb.



5 > The process for **MiscellaneousBass.wav** will be very similar to that of the stab, except that this time we can afford to stretch further. This is because it'll be safe to filter out any top-end artefacts on the bass after we've loaded it into the sampler.



6 > With all that done, you're left with a unique palette of atmospheric sounds boasting plenty of personality. All that remains is to arrange them into something that makes musical sense. We loop up the noise, play the vocal forwards and in reverse, and add riffs for the stab and bass. Hear the results on the DVD. **cm**

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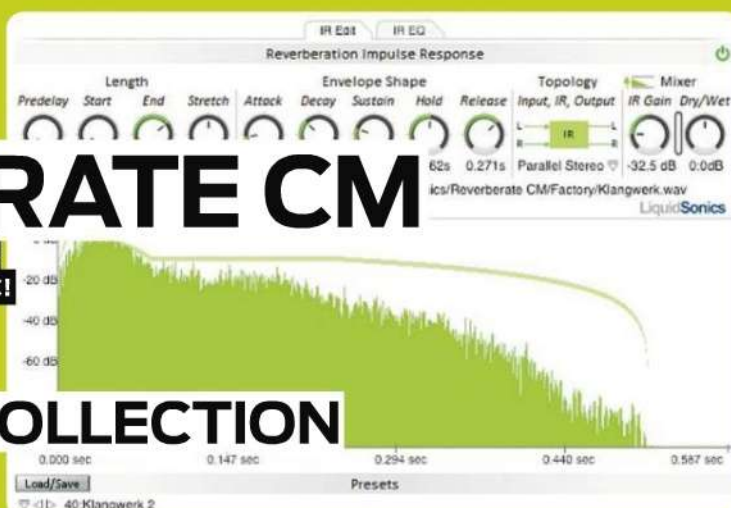
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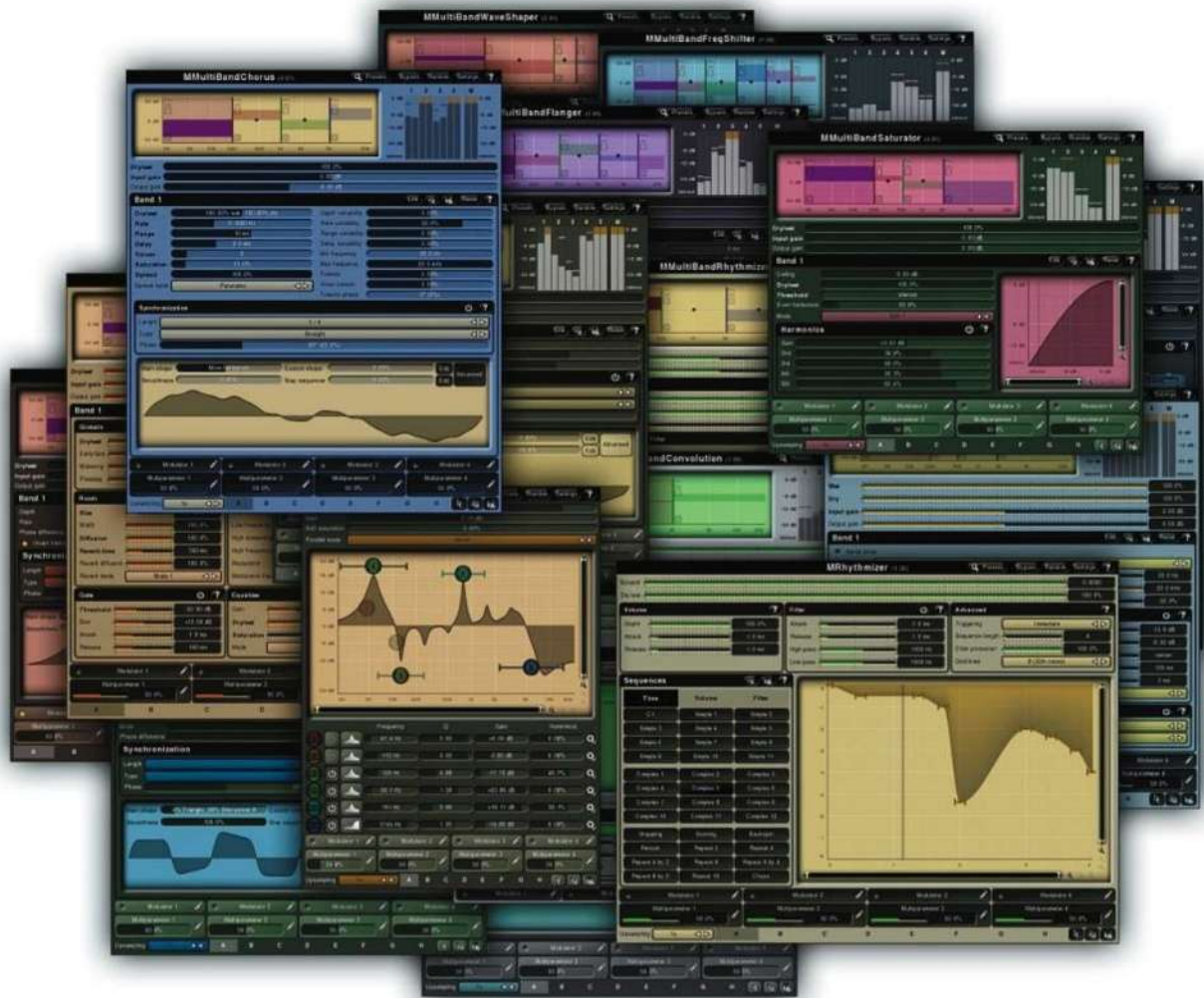
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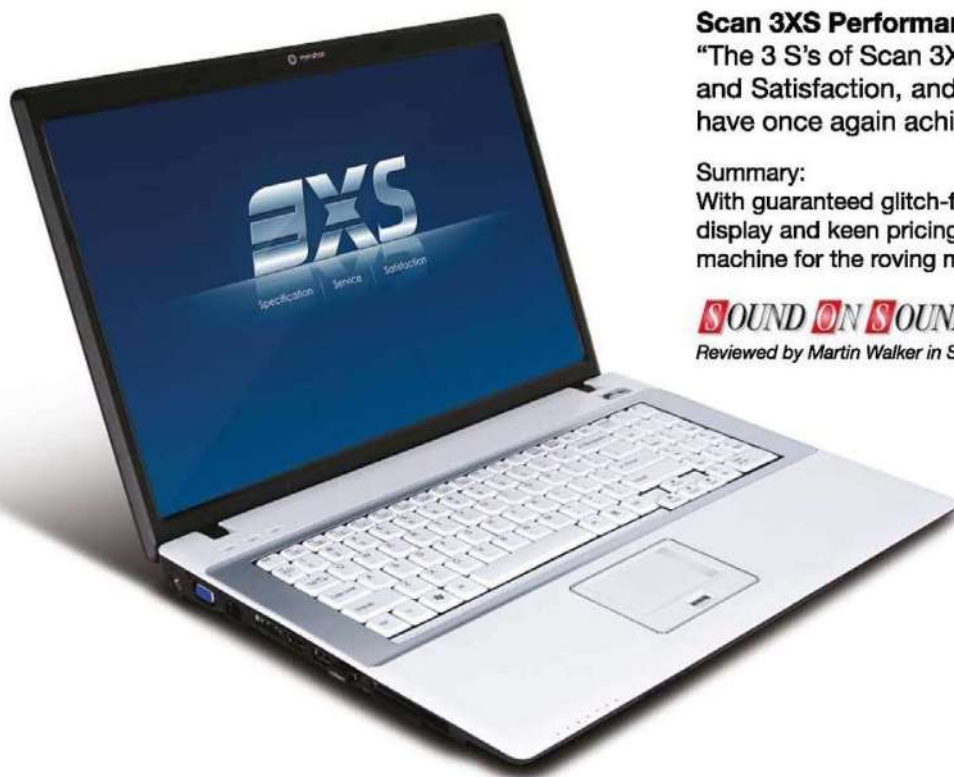
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