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Predator | Rob Papen   robpapen.com $179

Predator's three oscillators and wide variety of waveforms make this synth shine. Notice at the bottom right the morphing and variation options.

By Norman Weinberg

Drummers do not live by playing beats alone. Sometimes we must program beats, compose tunes, create soundtracks, or sculpt our musical moods from sonic seeds. The recent advances in software synthesis have produced a slew of new programs that are designed to push the boundaries and create brand new sounds.

As a foundation for understanding what we're talking about, here's how a basic synthesizer works: An oscillator generates a waveform — sine, sawtooth, square, etc. — that serves as the raw musical material. The waveform then passes through a filter that increases or decreases certain frequencies to alter the original. Once the sound leaves the filter, it heads off to an amplifier that determines the overall volume of the sound.

If that's all there was to it, the world of electronic music would be pretty damn boring! LFOs, envelopes, audio effects, and even arpeggiators get added to give a basic synth more individuality. But, with software, there is really no limit to the functions a creative designer can build into an instrument. Want to have an audio sample used as the oscillator's waveform? No problem. Want to let the musician design her own waveforms from

scratch? You got it. How about adding a step sequencer or a series of X/Y pads for live performance? Done.

We're going to take a look at a few newer instruments that have made their mark on the cutting edge of sound design and creative musical applications. If you haven't heard these yet, check 'em out.

ROB PAPEN – PREDATOR

With a name like Predator, you'd expect this Rob Papen synth to be a beast — and it's nice when you get what you expect. When you enter Predator's world, you get your hands on a ton of sounds that cut, bite, scratch, and claw their way through a mix.

In terms of presets, the synth comes out of the box with more than 30 extreme banks

that are named for their musical genre and potential use. For example, you'll find dance, dubstep, hardstyle, Dutch hardcore (aka, "gabber"), trance and psytrance, as well as several more. From each bank, you select from a large number of different presets that fit within that particular style bank. All in all, Predator comes out of the box with more than 4,400 presets. That should keep you busy for a good long while.

Predator's oscillator section consists of three different oscillators, each containing 128 different waveforms ranging from the typical analog–style waves we all know and love, to waves that are vocal, additive, and spectral. There is also a symmetry control that changes the shape of the wave. Typically, this sort of control is primarily used to change a square wave into a pulse wave.

But in Predator, this control can affect any of the waveforms, thus making a near–infinite variety of initial sounds. As you might expect, the oscillator section allows you to fine-tune the wave, and tune the semitone control over an eight–octave range. There is also a sub oscillator that adds an additional lower octave to the sound. A spread control has the effect of adding a number of layers with just a little detuning between them. You can also select the oscillator to be free running or have it begin anew with each new note. If that's not enough variety for you, there is also a Pulse Width Modulation control (along with a "speed" control) that acts as a dedicated LFO for the symmetry of the wave. As you can tell, with all this control and variety, you can take a single oscillator and make it sound incredibly thick and rich. Last but not least, the output of the oscillator can be sent to the filter, or to another oscillator for further modulation!

A variation option lets you quickly and very easily make variations to a preset to create a new preset that is related to the original. The variation control consists of four parts (A, B, C, and D). The first three create variations on the synthesizer parameters while the "D" variation modifies the effect section of the preset. Predator also has the ability to create brand new presets by morphing between any two presets you select. A simple click of the morph button and you're in the preset creation business.

Most synths have an LFO that can be routed to pitch in order to modulate the pitch for vibrato effects. The cool thing about Predator is that you can use this dedicated pitch modulator instead of using up one of your other LFOs, saving them for more important, and mutant, purposes.

While not nearly as obvious as some of the other controls inside this synth, Predator allows you to change the slope and shape of the attack and release portions of the amplitude envelope. When these controls are in their center position, the shape is linear. You can also select exponential or logarithmic. There is also a strum option that adds an automatic and adjustable delay between the notes of a chord, offering still more variety and creative applications.

Predator offers up three different effects to the output arranged in series. This means that effect one will feed into effect two, and two will feed into effect three. There are 27 different effects that run the gamut of nice and friendly reverbs, delays, and filters; to more aggressive distortions, phasers, and flangers. Each time an effect is selected, a window dynamically changes to offer all of the effect's parameters. For those of you with real–time-control issues, Predator lets you select any two MIDI controllers and route them to any of the effects' parameters.

Alchemy | Camel Audio camelaudio.com **$249**
Four possible sources and flexible modulation routing along with two master filters offer a wide variety of sounds. In this screen shot you can clearly see the available slopes for the AHDSR envelope.

Most drummers I know are suckers for good arpeggiators. Getting a synth to play melodic and rhythmic figures on a single note-on event is a great way to thicken a texture or create an interesting groove. Predator has a pretty advanced 16–step arpeggiator that can be used as a normal step sequencer, or as a modulation source for the parameter of your choice. Each step can be tuned over a four-octave range, and includes controls for tie, slide, and velocity. And the direction of the sequencer can be set to run up, down, up/down, down/up, random, ordered, reverse ordered, and more.

CAMEL AUDIO – ALCHEMY
Is there anything that Alchemy *can't* do? As you might have gathered in reading about Predator's oscillators, the more variety and flexibility, the better. Here's a short rundown of the basic building blocks of Alchemy's sound — one of the most powerful on the market.

Each Alchemy patch can be created from up to four different "sources" (the term Alchemy uses to describe a sound's building blocks). Each source can have up to four different elements — three that produce sound and one that acts as a filter. The audio elements offered are additive or virtual analog, spectral, and granular or sample. And, each of these different elements can be edited in a

variety of ways that correspond to the type of synthesis employed. Like I said, there's almost nothing it can't do.

The filter element can be comprised of up to three different types of filters that can be arranged to affect the sound in series or in parallel. With 15 different filters to choose from, you should be able to find something that is going to fit your needs. In addition to the filters that are available for each of the four sources, there are two available master filters that affect the entire composite sound (with 50 different choices!).

Alchemy's modulation matrix is nothing short of spectacular. Available modulation sources include LFOs, AHDSR envelopes, multiple-segment envelopes, and sequencers. There are also modulation maps that are used in a similar manner as a velocity curve in electronic drumming. In other words, you can place a modulation map on top of a modulator to further control how the modulator will interact with the patch. There is also an X/Y multi–segment envelope. *Sheesh!* Each of these modulators has a huge number of variables that can color the sound in a subtle or more aggressive manner. For example, the LFOs have dozens of different waveforms available along with delay, attach, phase, rate, and more.

There is an extensive performance section that contains eight different knob controllers

that can be routed to any number of parameters. There are also two X/Y controllers for smoothly changing and blending between two parameters. Want more? There's even a master ADSR envelope generator that can be controlled in real time. With eight "Remix Pads" that allow for smooth transitions between the knob controllers and the X/Y controllers, you've got a nearly endless variety of real-time control.

The effects area of Alchemy serves up all the effects from the company's CamelPhat and CamelSpace effect plug-ins. You can have up to five different effects loaded into the patch at one time. Each of the effects has a full set of controls that can be tweaked as needed. There are reverbs, delays, modulation effects, distortions, EQs, additional filters, a bass enhancer, and more.

Alchemy's arpeggiator offers up a variety of mode styles, as well as amplitude, tuning, panning, duration, the addition of octaves, and more. Oh, did I mention that the arpeggiator inside Alchemy can have up to 128 different steps?

Alchemy ships with more than 5GB of samples and more than 1,000 presets. I've got to mention something about the manual that's provided with Alchemy: It's an online manual. While this might seem to be a drag at first, it's filled with great images, and a number of outstanding tutorials. This makes the manual act more like an iBook rather than a static manual that might be offered as a pdf.

U-HE – ZEBRA 2.5

U-he is a relatively small outfit that just happens to make really cool synths. Zebra is somewhat unique in that it acts as a sort of virtual modular synth. In other words, you can build your sounds up from scratch by selecting and routing various on-screen synth modules in a very flexible manner.

The front-end of Zebra has three main pages that serve as your interface to the program: Perform, Synthesis, and Patches. The Patches page is pretty self-explanatory. This is where you load patches into the software, and it's extremely easy to navigate.

The Synthesis page is where all your creative juices come together to build the sound of your dreams. In the middle of the screen is the main grid where you can drag in any number of modules: up to four oscillators, two noise generators, FM oscillators, multi-stage envelope generators, four VCF (voltage controlled filters), two comb filters, two ring modulators, wave shapers, and more. Lots more! Modules can be added to the matrix, moved around to change their routing, mute, or remove them all together.

No matter how simple or complex your patch might become, the page only shows the

" THESE PROGRAMS CAN BE DOWNLOADED AS A DEMO VERSION TO EXPLORE BOTH THE FACTORY PRESETS AND CREATE YOUR OWN SOUNDS AND EFFECTS."

modules that are currently being used in the patch. For most soft synths, all the controls are on screen all the time. But in Zebra, you'll only see what you're actually using. For all but the most complex sounds, this makes the program visually cleaner and finding the parameter you want to tweak much easier. Modules that generate sound are on the left side of the screen while modulators that affect the sound are on the right side.

For each oscillator, the initial waveform is a simple sawtooth. But from there, you can actually create your own waveforms in four different methods that make use of waveshape drawing and/or spectrum drawing. Each oscillator can have up to 16 different waveforms that are morphable. Create a custom waveform in slot 1 and another in slot 16, and ask the program to morph between them. Presto! Fourteen brand new waveforms.

Zebra has a huge selection of controls that affect the way voices are triggered and how they sound. There are five different voice modes, including one that emulates a classic "duophonic" analog synth. There are settings for voice drift (slight detuning), microtuning, pitch-bend range, semi-tone, and fine tuning ranges, two different glide controls, and more.

In the effects pantry, Zebra stores all the usual suspects along with a number of special spectral effects that you don't normally see in soft synths, including crossfading even and odd number harmonics, and effects with names such as registerizer, scrambler, turbulence symmetry, trajector, formanzilla, and exophase, to name just a few. In the words of one of my musical heroes, "a little experimentation goes a long way."

For me, the most interesting aspect of Zebra is the performance window. Here you'll find the four performance pads. These pads are X/Y

Zebra 2.5 | u-he u-he.com/cms $199

The layout of Zebra puts the sound generators on the left side of the screen, the modulators on the right side, and the signal routings in the middle.

controllers that can be programmed to alter multiple parameters of the sound at once (up to 16, to be exact). Pad positions can be moved around in real time by external MIDI controllers, or you can just play with the pads to create variations on the original patch. Oh, and if all this wasn't enough to get you drooling, throw in a very cool and flexible arpeggiator.

Iris | Izotope   izotope.com $249

In this screen shot, you can clearly see the spectrogram of the original sound, the selected frequencies, loop points, and control settings.

Stutter Edit | Izotope   izotope.com $249

A single MIDI note message brings all these variations to life at once. This is truly unlike anything you've worked with before.
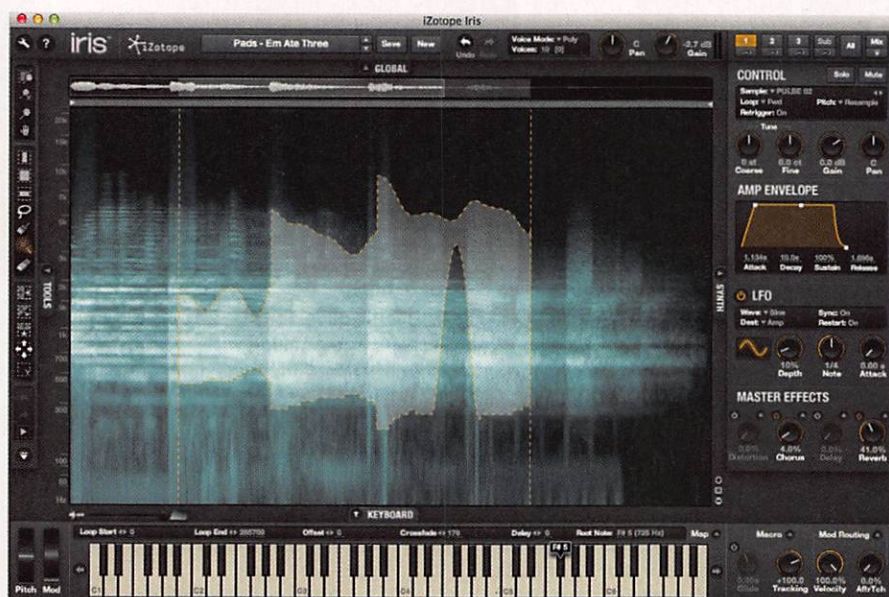
IZOTOPE – IRIS

Izotope is a company well known for its high-quality audio processing plugins, but Iris isn't a processor, it's a synth … well, maybe it is … I'm not really sure.

With Iris, an oscillator's waveform or a simple sample is no longer the initial building block of a patch. Instead, when you load in a waveform, sample, or sound file from your desktop, Iris creates a spectrogram, offering a visual window into the sample's frequency content and frequency intensity over time. The vertical axis displays the frequency while the horizontal axis shows the sample's duration. Weaker frequencies are darker, while more powerful frequencies are brighter. Once you're viewing the image of the sound, Iris offers tools that allow you to highlight or erase certain portions of the sound in a manner that would be just impossible with any type of standard filters.

The editing portion of the program will remind you more of an early version of MacPaint (for those who remember) or other graphic editing programs, as these tools are meant to select different sections of the image, and therefore, different frequencies and the intensity of those frequencies over time. There are squares, ovals, and even a lasso tool to bound and play oddly shaped specific parts of the sonic makeup. Other tools include a magic wand, a paintbrush, and some tools designed to invert time and/or frequency.

Looping is supported so that any portion of a sound can be looped, making it pretty easy to set up patches that offer anything from subtle hints of rhythmic pulsing to beat components. Loop styles include forward, backward, forward/backward, and backward/forward. Izotope also offers the standard synth-style controls that are more commonly used to define a sound. There are the expected envelope generation tools to affect the sound's attack, decay, sustain, and release. There's also a pretty sophisticated LFO control that includes waveshape, destination choices, syncing options, and more.

Each complete patch is comprised of up to three of these sample spectrograms (along with their independent edits and loops) along with a sub oscillator that offers the addition of a more standard waveform. With an audio engine this complex, you'd think that it would be impossible to navigate. But the fact is that playing around in Iris is a joy and totally inspirational. It's surprisingly easy to create bubbling, morphing, swirling sounds that are completely unique. The program also lets you add some effects as well. When editing each part, the effect knobs act as sends, setting the amount of the signal that will be routed to the effect. Once these are determined, there are master controls that determine all the programmable aspects of the effect (distortion, chorus, delay, and reverb).

It's a little difficult to know the results of your editing experiments in advance. But, that's part of the charm of this machine. You can use Iris to create long, flowing soundscapes, or design percussive one-shots from sonic slices of other files. Once you get the hang of it, Iris is an amazingly powerful audio design tool that will give you plenty to work with. So, with that I think I've made my decision: It's a synth!

IZOTOPE – STUTTER EDIT

While it may have been a little difficult to determine if Iris was an effect or a synth, there is no question that Stutter Edit is an effect. Well, it's an effect that can be played by MIDI notes, so maybe that makes it a synth. But it doesn't generate any new sound on its own. So, yeah, it's an effect — that you play.

Stutter Edit is a MIDI controlled effect that came from the mind of artist BT (Brian Transeau), and makes his signature stutters easy to duplicate. Rather than creating sounds from oscillators feeding filters, envelope generators, or arpeggiators, Stutter Edit mangles audio from another source to create entirely new musical ideas.

Stutter Edit can be just a little tricky to set up because it both receives audio from an-other source and MIDI information from a MIDI controller or from a sequencer. To make setup a little easier, there is an online help file that walks you through the necessary procedures for a variety of DAWs such as Live, Logic, Pro Tools, SONAR, Reaper, FL Studio, Digital Performer, Studio One, and Cubase/Nuendo. Once you get the hang of it, and get a handle of the signal routings, you'll feel right at home.

With Stutter Edit, audio routed to the plug-in is totally unaffected until a MIDI note is received. The "gesture" is the term used for the specific effects that are going to alter the sound when that MIDI note is received by the software. Each gesture can activate a single effect or a number of different effects simultaneously. There are a large number of modules (Stutter Edit's term for specific effects that can be called into play), and they can be controlled over time in a number of different ways.

To offer an example, a single gesture might take place for any duration between a sixteenth-note and two bars (latch mode is available as well). It could, perhaps, cause a small portion of the audio to stutter while having the slices jump from right to left audio channels, and sweeping a bandpass filter's cutoff frequency and resonance. It's this ability to have several parameters altered at once that gives Stutter Edit its flexibility and power. In addition, a Stutter Edit bank can put up to 127 different gestures into your hands at one time (one for each MIDI note number). Keep in mind that Stutter Edit can be used on a single track, a single sound, a group of sounds, or even an entire project. With all of this power to create entirely new sounds, you should have plenty of inspiration.

Stutter Edit comes with 35 different preset banks that include more than 800 gestures, so there's plenty of fun and games to keep you inspired. If you're at all interested in glitch-style sounds (that are being used in more and more pop music genres), you need to check out this program. As an electronic drummer, it seems built just for us. You can play beats and mangle them at the same time. There's really nothing like it. I've used this program extensively to create amazing rhythmic textures that I then resample and use as one-shots.

TRY BEFORE YOU BUY

Each of these programs can be downloaded as a demo version to explore both the factory presets and create your own sounds and effects. At the very least, you should see and hear what these great programs can do and how they might fit in with your musical projects. You won't be disappointed! **DI**