CLASSIC ANALOG STYLE OSCILLATOR

KORG MINILOGUE XD / PROLOGUE / NTS-1

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THE BIRTH OF BEAST

INSPIRATION

When I first got the Minilogue XD I was immediately impressed by its sound palette and intuitive design. And yet, I couldn't shake the feeling that a third oscillator — one that perfectly complemented the existing analog architecture — could elevate it to its full potential.

I knew what I wanted: the weight and character of classic analog monosynths coupled with an "it just sounds good no matter what" simplicity and versatility. I set about creating BEAST while drawing main inspiration from two legendary instruments:

Moog Minimoog: its iconic assortment of waveforms combining into a perfectly detuned fatness, with rich low end and a midrange that always sits just right. For BEAST, I matched base classic analog **WAVEFORMS** to achieve this same synergy. The Shape knob allows you to explore all of these waveforms, and intermediaries, without ever compromising tonal integrity. You can even tune the oscillator with the same knob to dial in fine detune, or try out alternate coarse tunings in a snap.

Oberheim SEM: its simple but powerful pulse wave modulation and its wonderfully deep synced sub oscillator were major inspirations. I wanted to replicate that iconic brash tone and push it further into a wider array of possibilities that always sound great. So, I incorporated a virtual LFO that can do **PWM** (and any other "WM"), along with a robust and veratile **SUB OSC**. I also noticed the logue filter has a natural SEM-like quality already — BEAST just gives it that extra energy needed to unleash its more distorted, saturated character.

Of course, the magic of classic synths isn't limited to monosynths. Whether you're channeling the above behemoths — or the lush polyphonics of the Prophet V, Jupiter, or OB-X — the XD and Prologue's versatility lets BEAST shine in both MONO and POLY modes.

ANALOG STYLE

One of my main goals was to deliver a consistently strong fundamental tone, especially on the low end. When designing patches, a single square, sine, or saw wave on the lowest octave often provides that rich foundation — but with existing options I often found myself wanting more precision and weight. To solve this, I spent time analyzing what makes analog waveforms so effective. Turns out, even the smallest details in a wave's shape and curvature make a huge difference!

As mentioned, analog oscillators are known for their distinct tendency to smoosh together in the mixer to form a nicely compressed, saturated layer. Serving up a sizable chunk of rich harmonics for the filter to really bite into. BEAST ensures this by being "maximal" by default. That includes being gainable far louder than the existing oscillators, creating hefty real analog distortion right at the mixer. An automatic gain compensation and phase optimization between the main and SUB oscillator also achieves this by avoiding unwanted "nasal" or "thin" cancellations and sub-optimal curvatures — basically it always seems to just sound right.

And if you want even more saturation, BEAST includes a dedicated analog-style **SATURATOR**. Use it to further fatten the signal, or crank it up as an **EXCITER** for extra sizzle and presence.

Another property of analog oscillators is the tendency towards a natural drift or subtle variability that gives them their organic "alive" quality. BEAST offers two intuitive controls to enhance this:

PITCH WARBLE adds semi-random, non-linear continuous pitch variations for extra thickness and movement. Or if you prefer to push the limits, for slightly broken and Lo-Fi! Meanwhile, **PHASE WARBLE** modulates the waveform's phase over time (like an LFO), creating unique detuning effects and additional depth.

Combined with the existing oscillators, these features transform the logue synths into classic 4-oscillator heavyweights. Making it easy to create patches that feel much more alive, thick, and genuinely vintage sounding!

HOW TO USE BEAST

PARAMETERS

The Minilogue XD and Prologue synths allow for up to 8 parameters of control for the MULTI oscillator engine. BEAST makes use of each of these parameters in simple yet powerful ways. Here you will learn about each parameter.

SHAPE (KNOB) - The main control parameter is via the Shape knob. Turning the knob will generate wave shapes in realtime. Each base shape is modeled after the most common classic analog waveforms listed below (NOTE: knob positions in-between these values produces combination waveforms that are a mix between the two nearest wave shapes):

WAVESHAPE	KNOB POSITION	DESCRIPTION
NOISE	0%	White noise, typically used in FX or percussion patches. Or to add transient character to plucked instruments or top-end on sustained
SINE	17%	The most basic and least harmonically active waveshape. Good for soft sounds or for adding a deep and clean lower fundamental
TRI	33%	Slightly more harmonically active tone than a SIN wave. Used in similar cases but where added harmonic character is useful

WAVESHAPE	KNOB POSITION	DESCRIPTION
SHARKTOOTH	38%	A combination between SAW and TRI waveforms that has more harmonic character than a TRI
SAWTOOTH	50%	A balanced and harmonically rich waveform suitable for a wide variety of synth patches
RAMP	67%	An inverted version of SAWTOOTH that sounds similar, but has special properties when combined with a SAWTOOTH (note: existing logue SAWS are actually RAMPS)
STAIRSTEP	75%	A less common but useful waveform that offers a more harmonically varied foundation (especially when combined with another square)
SQUARE	83%	The fattest basic waveform, which can carry an overwhelming amount of brash harmonic content. Especially useful when filtered to tame harmonics
PULSE	84% - 100%	A modified SQUARE (IE: rectangular) type waveform. Can deliver thinner, reedy tones, or when modulated produces iconic PWM fatness

SHIFTSHAPE (KNOB) - By holding down the SHIFT button and turning the SHAPE knob, you can tune BEAST as you would the other oscillators, -/+ 12 semitones in either direction. At 50% the oscillator should be in fairly precise tuning with the analog oscillators at default position, and small adjustments will result in fine detune.

TIP: It's worth taking note of the percentage value of the SHAPE knob before changing its pitch, since after adjusting SHIFTSHAPE, the knob position no longer represents the actual SHAPE position. Or just get in the habit of saving your patches regularly!

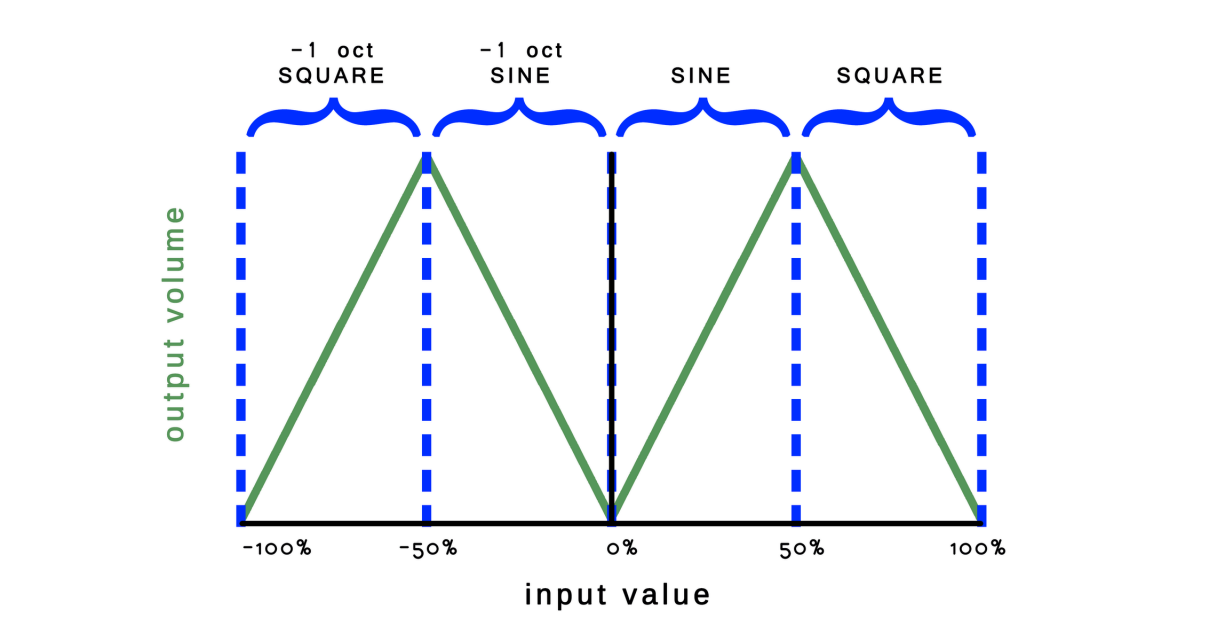
SUB OSC (PARAM 1) - The first parameter in the menu (EDIT MODE > PROGRAM > PARAM1) is for the SUB oscillator. Analog systems often have a sub oscillator (either SINE or SQUARE) that's usually pitched an octave lower in support of a given main oscillator (to thicken the sound and provide a solid lower fundamental tone).

The SUB OSC values for BEAST are bipolar (meaning they can go in minus or positive values), and can be used as a typical sub described above by rotating the PROGRAM/VALUE knob counter-clockwise into minus values. Values between -1 and -49 generate a SINE wave an octave lower than the main oscillator, while values between -50 and -99 generate a SQUARE wave an octave lower than the main oscillator.

The volume of the SUB oscillator increases and decreases in a triangular manner. Meaning, values 0 and 100 are effectively zero volume, while 1 and 99 are the next quietest values and -49 and -50 are the loudest for SINE and SQUARE waves respectively.

Positive values of the SUB oscillator work exactly the same as negative values, except they generate a waveform that is the **same octave** as the main oscillator.

What you just read probably sounds confusing. Don't worry though as everything should be apparent once you try it out. Otherwise, for a visual representation refer to the the diagram below:



Allowing the SUB oscillator to be the same octave as the main oscillator is not typical of analog systems because of the potential for unwanted phase cancellations. However, with BEAST, great care was taken to make sure the SUB oscillator always stays in optimal phase with the MAIN oscillator to produce the strongest combined tone possible. That means you can safely use the SUB to effortlessly fatten up the main oscillator, and further sculpt its tone with perfect phase synchronization (depending on how the PHASE WARBLE parameter is set - more on this later).

To put it simply, phase synchronization means the SUB and MAIN oscillators combine perfectly into a single tone (IE: SAW-SINE, TRI-SQUARE, PULSE-SQUARE... etc). This is particularly useful when establishing the perfect fundamental (IE: lowest tone) in your patch. Often we are stuck using simple saw/sine/square waves as fundamentals, and dealing with the tradeoffs each produce. With BEAST however, we can dial in the perfectly balanced fundamental without any worry of typical phase cancellation.

NOTE: because generated waveform amplitudes are always maximal, the resulting mix between the main and SUB osc will appear as a reduction in volume of the main osc relative to the SUB osc (EG: at 0% SUB osc, main osc appears full volume. At 100% SUB osc, main volume is at lowest relative volume). You can think of this as automatic gain compensation, which helps you land on the the best tone balance possible without perception being clouded by changes in overall volume.

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EXCITER / SATURATOR (PARAM 2) - The next parameter is also bipolar: minus values produce an EXCITER effect, while positive values produce a SATURATOR effect.

The EXCITER is particularly useful to brighten up a "dull" sounding oscillator, particularly on lower notes. But there are other interesting use cases. For example, complex analog signals often have a very strong low to low-mid tone, followed by a scooped out mid section and a strong upper harmonic (IE: think “thick and buzzy” versus “thin and honky”). By combining a MAIN oscillator tone containing a strong upper harmonic (SAW, SQUARE, etc), with a strong lower harmonic SUB oscillator (SINE), you can achieve this "mid scoop" sound by engaging the EXCITER to elevate the high harmonics in support of the naturally elevated low harmonics.

TIP: afterwards, try a bit of SHAPE modulation to get an interesting neuro-y result!

Positive values engage the SATURATOR and result in a pleasant sounding analog-style distortion that is also very common in analog systems. At lower settings saturation can subtly add harmonic depth while at higher settings create significant distortion which can thicken and brighten at the same time. As with other parameters, this effect is gain compensated in order to create maximal waveforms, essentially boosting harmonics to create a perceptually fuller sounding waveform while essentially not changing the decibel level.

When considering which of the two options to utilize, you can almost think of them as EQ’s with special (distortion) properties. EXCITER to add top-end, SATURATOR to boost the low-mids or to equalize quieter harmonics against the naturally present fundamentals. Or, stop thinking and just trust your ears!

PITCH WARBLE (PARAM 3) - One of the most pleasing attributes of classic analog systems is in the subtle fluctuations and variations of voltage parameters. Even systems with aging (broken?) components can often produce a unique subjective sense of a "fatter and more organic" sound. Which is particularly desirable when these variations aggregate across an entire mix.

The variations that most impact this subjective quality is arguably that of pitch and phase variation. Even at subtle fluctuations, detuned oscillators tend to sound bigger, fuller and more dynamic than when perfectly locked. The existing analog oscillators in the logue synths are fairly consistent in terms of pitch and phase variation, however, by adding semi-random variation to the pitch of BEAST you can create additional subtle to extreme detuning.

The general rule of thumb is: low values can safely add depth in virtually all cases. While higher values of drift can add depth without appearing too "broken" in cases of short plucked sounds (such as arpeggios) and/or highly compressed, distorted sounds (IE: when driving the mixer particularly hard).

For a more controlled approach, you can set the hardware LFO at a relatively slow oscillation rate, low depth (1-25) and set to the continuous TRI type to introduce consistent pitch variation to BEAST (and/or the other oscillators). And then using PITCH WARBLE in subtle amount to generate variations within this gentle cycle

More extreme settings will of course land you in the sort of "Lo-Fi" territory that is commonly produced via old tape systems.

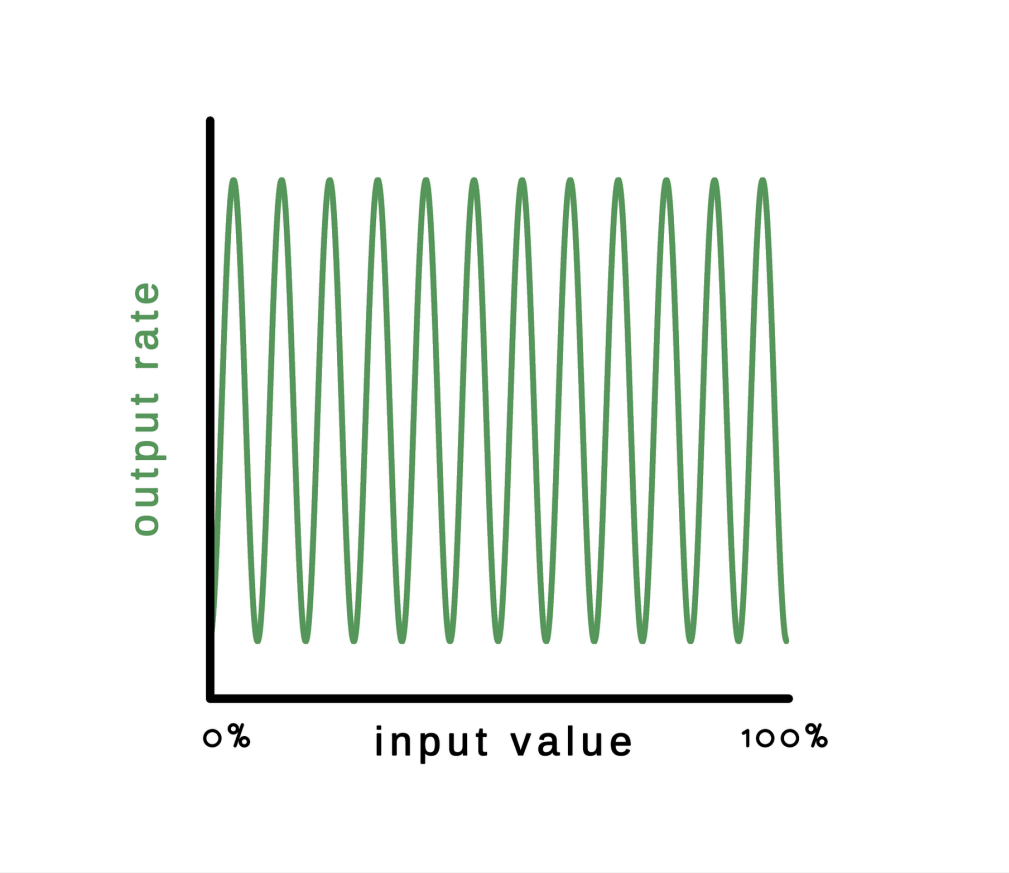
TIP: the EFFECTS>CHORUS>VIBRATO setting can also be used to produce an added underlying pitch oscillation.

PHASE WARBLE (PARAM 4) - The other variation parameter you have control over with BEAST is phase variation. Unlike the pitch variation parameter, this one is more cyclical and consistent in rate and depth, much like a low rate LFO. However, although phase variation can produce a subjective form of pitch variation, it actually shifts the phase of the oscillator over time.

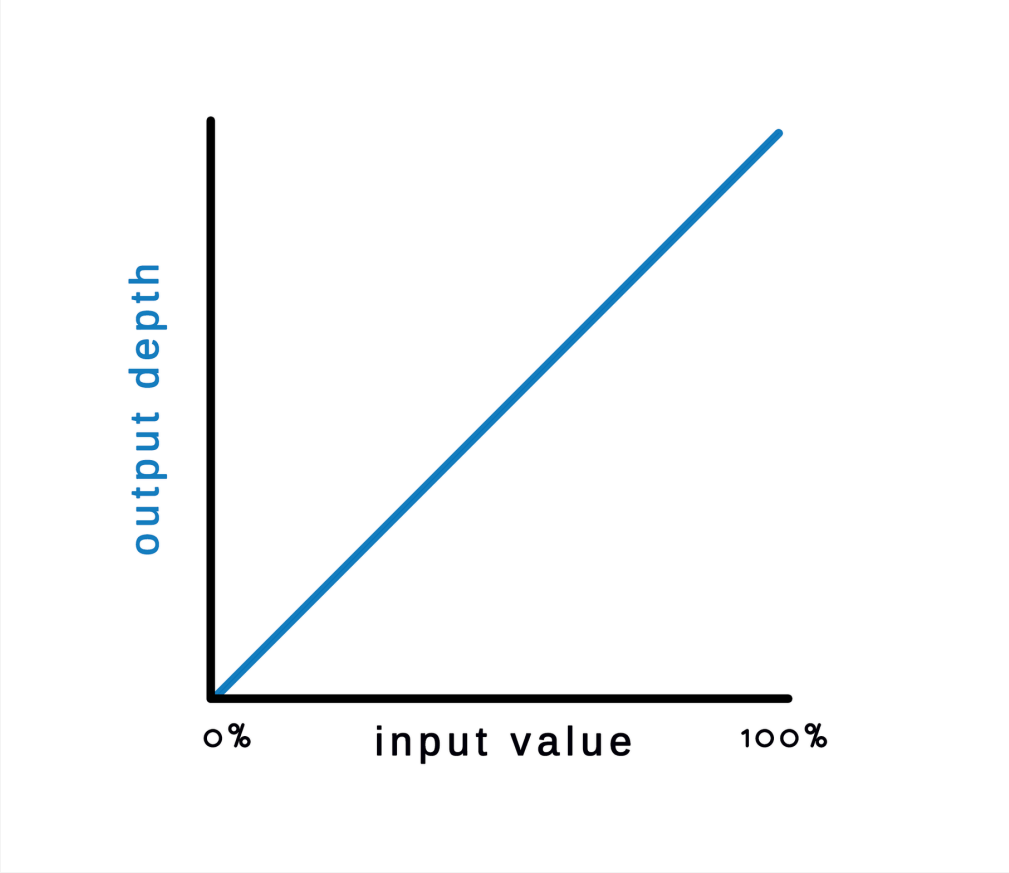
By using this parameter, you can achieve greater and more dynamic detune between oscillators. Try setting BEAST's MAIN oscillator as a SAW wave and pitch matched to one of the analog oscillators also set to SAW. Then instead of detuning by changing the pitch of one of the oscillators, adjust the PHASE WARBLE value to hear the effect.

BEAST is capable of this form of detune internally as well. When PHASE WARBLE is set to zero, the SUB oscillator and main oscillator remain in perfect phase sync (IE: they sound as one single oscillator), however any other value unlocks their phase sync, which can produce a very thick sounding detune within BEAST itself. By using this parameter in such a way and detuning the analog oscillators, huge "supersaw" style detuned patches are possible with very little effort. The result can be used to make fantastic bass and lead sounds through further filter and ENV shaping.

It's worth noting that the PITCH WARBLE and PHASE WARBLE parameters in both cases control the rate AND depth of its warble effect. This is achieved by oscillating the rate slightly between a preset min/max range as the input value increases. This should produce a wide range of options in a single parameter, allowing you to find the optimal setting for the patch you're creating. Below are graphs that show how the values work for these parameters:



While the rate value (above) oscillates as the input value increases, the depth value (below) remains linear, in direct relation to the input value. For PITCH WARBLE, 100% represents 1-semitone of maximum warble depth. For PHASE WARBLE, 100% represents a full phase cycle depth:



SHAPE RATE (PARAM 5) - A "virtual LFO" runs in BEAST whenever the SHAPE RATE and SHAPE DEPTH parameters are both set to anything other than zero. This LFO controls the automatic oscillation of the SHAPE knob parameter, and can be combined with — or used instead of — the hardware LFO.

It's worth noting that the virtual LFO operates unipolar, meaning that wherever the SHAPE knob parameter is set to represents the lowest value in the cycle. For instance, if the SHAPE parameter is set to it's lowest waveform (NOISE) at 0%, and the SHAPE DEPTH is 100%, this will result in an oscillation that spans across all available waveforms. Meanwhile, the hardware LFO is incorporated as a bipolar value. This means that wherever the SHAPE knob is set represents the mid-point in the oscillation of the hardware LFO cycle.

SHAPE DEPTH (PARAM 6) - This parameter increases the depth of the virtual LFO, which determines the amount that the oscillation deviates from the original SHAPE position.

Probably the most common use case for this type of shape modulation in analog systems is that of "pulse-width modulation", or PWM. You can achieve this effect by setting the SHAPE to somewhere around the SQUARE or PULSE shape range (83% and greater), and then setting the SHAPE DEPTH to 1-20%, and SHAPE RATE to anywhere between about 1-70%

Of course BEAST is equally capable of modulating between any shapes within its available spectrum of waveforms. Feel free to experiment with new forms of variable shape modulation (VSM?)

NOTE: Shape modulation can also produce a subjective form of pitch modulation. This can be leveraged to add yet more subtle depth alongside that of the pitch and phase variation options within BEAST.

PATCHES

BEAST comes with 90 preset patches that you can load onto your Logue synth (XD or PROLOGUE). They are intended to be foundational and useful (rather than "whizz-bang" and convoluted) and so can be used as-is or as the perfect foundation for you to tweak and create your own custom patches using BEAST. You can find a demo of the included patches at the PlatinumAudiolab YouTube channel address: youtu.be/EYn_D65H0aA

When loading these patches onto your logue synth via the Sound Librarian, be sure to select the patches in the "slot" folder that correspond to the slot number that BEAST is installed to on your synth. This is because saved patches on the logue synths don't store reference to the oscillator specifically, but rather only saves the slot number that is active at the time of saving.

It's also worth noting that patches were originally constructed on the Minilogue XD. Although most details will remain the same, whether loaded on the Minilogue XD or Prologue, there may be some cases where there are differences. The main differences between the XD and Prologue will likely be in the hardware LFO settings. If a loaded patch has an unusual vibrato or high LFO rate, then this is the likely cause. In these cases you can turn down the LFO INT to zero and the patch should sound pretty close to how it was originally intended.

TIP: since the logue synths are analog in nature, the oscillators sometimes drift and require manual re-tuning. If patches don't sound as expected you can also try initiating the manual tuning procedure: SHIFT+REC

FAQ

Q: I'm having trouble installing BEAST and/or the included patches.

A: Make sure your Korg synth is up to date with the most recent firmware, drivers and Sound Librarian. You can download these from the official Korg webpage for your Logue synth.

Q: Why are the included patches SO DAMN LOUD?

A: The Logue synths are analog instruments, and as such are capable of analog distortion throughout the signal path. There are multiple ways to take advantage of this and for most of the patches the default is to take advantage of all of them! BEAST aims for maximal signal internally, but it's still up to you how much of it you want to add into the mixer. But generally the louder it is, the more it can produce the benefits of actual analog distortion. Gaining the signal at the output AMP can also achieve yet more analog sweetness. For that you can put the MASTER volume at around the highest setting, and you can digitally gain the signal as well. This can be done via EDIT > PROGRAM LEVEL, as well as a somewhat hidden feature of the CHORUS, where the VIBRATO version results in a louder output signal. As you might expect, if you want a more gentle sound the solution is to simply turn down the volume at any point in the signal chain.

Q: When initialized, why are some values set to -100%?

A: A limitation of the LogueSDK is that bipolar values are set to these values by default. The EXCITER in particular is not optimal and can sound overly harsh at -100% by default. A workaround is to load the _INIT BEAST_ included in the patch examples as your default, which is closer to the intended default settings.

Q: BEAST is a digital oscillator that makes my synth sound more analog? How ironic!

A: Yes, maybe! A digital signal will never, at root, be analog. However, there are specific attributes of signals that can blur the distinction. With BEAST in particular, a decent amount of its potential is in maximally pushing the analog mixer (and therefore the filter as well) into actual analog distortion. But, there are other attributes of analog signals (such as pitch drift, variance, etc) along with harmonic structure that can be modeled sufficiently to add analog-style character, and that is the other side of BEAST.

Q: Why just basic wave shapes?

A: Basic waveshapes have endured in synthesis for good reason. They often deliver a sweetspot between harmonic balance and tonal integrity, and when combined should allow for an almost unlimited palette of potential sounds. There is always a place in synthesis for more complex wave shapes, but they come with their own set of tradeoffs. Generally speaking, the more complex the waveshape, the more difficult it is to create a solid tonal structure. A great deal of analog synthesis is oriented towards producing relatively "simple" but consistently great sounding tones with subtle variation (which, incidentally, is often an appealing quality of acoustic instruments as well and might be partly why people identify this sound as “organic”). By contrast, digital FM synthesis, and other similar forms of high-harmonic synthesis, are typically sought when going for more complex and “inorganic” sounds. There are plenty of options available for that and I highly recommend you check them out!

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