

# Chopitch

## What is Chopitch?

Chopitch is a pitch shifting effect without the drawbacks of a standard harmoniser. It completely eliminates the warble effect which is normally associated with pitch shifting, and there's no added latency in the process, so it's not necessary to adjust for delay after treating your tracks (and it's great if you're using plugins for live music).

Chopitch also provides a range of amazing pitch bend tricks, all of them triggered by the sound, which makes them very easy to use.

- Make that drum hit sound huge, while keeping the original attack.
- Make a guitar sound like a bass.
- Turn any pitched sound into unpitched percussion.
- Put accurate bends onto guitar notes.
- Make any drum into a "talking drum".

Remixers can take a beat, and dramatically (or gradually) change the feel just by playing with the chopitch controls.

- Lower the pitch for a lazy feel at the same tempo.
- Add a hint of swooshy flanger.
- Pick out the snare hits and give them a dramatic sweep.
- Turn a beat into a melody.
- Simulate DJ scratching.

All in perfect time.

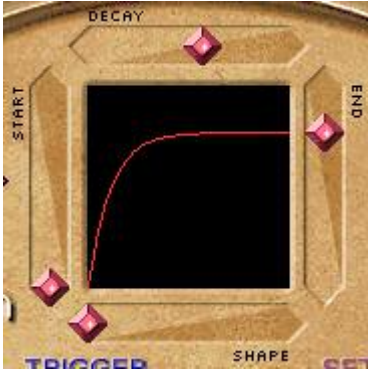
What's the catch then? None really, but be aware that Chopitch only pitch shifts downwards. This is because it's actually impossible to pitch shift upwards cleanly without a delay. You'll also find that Chopitch works best on sounds with a well defined rhythm, and is not intended for long sustained notes or "legato" playing (where one note slurs into another). The Chopitch technology is very different from a normal harmoniser, and we know you'll find so many uses for it that these restrictions will be forgiven.

## Setup.

Chopitch works by detecting each beat in the sound, and normally our default setting for "Selectivity" will work fine with your music. However if things don't sound as you expect, maybe you need to adjust the Selectivity control. If you adjust the pitch so that Start is full up, End is full down and Decay is fairly short you'll hear when Chopitch finds the hits in the audio. It should trigger cleanly on each note, if not it needs adjusting.

First bring "Thresh" (trigger threshold) down to zero. Next try the selectivity control, as you lower it there will be more triggers, and eventually there'll be false triggers which you don't want. As you raise it, there will be less triggers, until at the highest setting there won't be any at all. Try to find a setting where you only get the hits you want, but if that isn't possible then you should find the point where you get all the hits you want, with as few false triggers as possible. Often it's possible to remove the false triggers by raising "Thresh". If you find it hard to set up for a particular instrument, it's best to set "Trigger Mode" to "Normal".

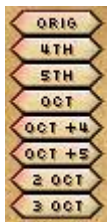
## Pitch



As long as "Start" and "End" are equal you'll get a plain pitch shift. Now try Start=1 and End=0, you'll hear the pitch sweep downwards at a speed which is determined by the "Decay" control. The "Shape" control lets you change how the decay sounds, low values make the pitch drop faster to start with, then the rate slows down. High values give a more even pitch drop. Of course, it's also possible to start the pitch low and let it rise.

Pitch "End" can be controlled in a number of other ways; with the "Pitch Buttons", by typing in a value, or even with a MIDI keyboard. All this is explained fully later in this manual.

## Pitch-End Buttons



To accurately set the end pitch to some useful values, you can use these buttons. An interesting effect can be had by setting "Decay" to minimum, and then using these buttons to jump cleanly from one pitch to another.

The (downward) pitches available are :-

1. Original (no pitch change)
2. A fourth
3. A fifth
4. An octave
5. An eleventh (octave plus a fourth)
6. A twelfth (octave plus a fifth)
7. Two octaves
8. Three octaves

## Enter Pitch By Typing



If you click into the small pitch display above the Pitch Buttons you can type in a pitch very accurately using your computer keyboard. Then as soon as you hit <enter> the End Pitch will move to your new setting. You need to know what fraction of the original pitch you want (e.g. 0.5 is an octave down, 0.25 is two octaves), so to get a musical interval you'll probably need to calculate it.

You don't have to type the decimal point if you don't want, just put in a figure and Chopitch will make it into a fraction for you. You can type in 6 figures, which should be accurate enough for any scale you wish to use.

## Slope Button



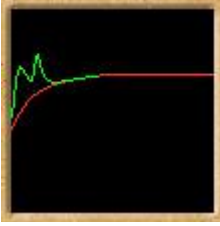
When "Slope" is on you get the full pitch bending capability which makes chopitch so unique.

When "Slope" is off the "Start" control is held level with "End". So it's really easy to do a straight pitch shift (as long as you have Mod at Zero). Try moving End, or using the Pitch-End buttons.

If you have Slope switched off, you can still move "Start", and Slope will be switched on automatically.

If you need to set Start Pitch accurately, first switch Slope off, then set End Pitch, then switch slope back on.

## Pitch Display



The red line shows the setting of the "Start", "End", "Decay" and "Shape" controls. The green line is drawn when the effect is working, and shows the actual pitch. On each retrigger the green line starts at the right of the display.

When the Trigger Mode is "normal", and Envelope Mod is zero, the green line will usually follow the red line. When those controls are used, the green line makes it easy to get an idea of what is happening.

## Envelope

More pitch control! The "Mod" control let's you use the volume of the input to control pitch. When Mod is greater than zero, louder sounds will have a higher pitch, and when it's negative louder sounds will be lower. Remember, we don't do an upwards pitch shift, so if the Pitch controls "Start" and "End" are full up at one there's no point in putting "Mod" above zero, as it won't be able to push the pitch any further up. If Start and End are fairly high however, you can use a positive Mod value to push the pitch up to one, which can add an exotic feel to a melody while still keeping things in tune.

A quick and accurate way to set "Mod" to zero is to click the small "0" button to the left of the control.

The Envelope's "Attack" control alters the speed with which the volume or the input can change the pitch. A high setting of Attack will create a gently undulating pitch, while a low value allow sudden leaps in pitch. A middle setting will allow you to clearly hear a rise in pitch when there's a sudden attack in the audio.

## Gate

In order to make a small drum sound big, the sound from Chopitch will usually continue after the input sound has finished. This is because a big drum usually goes on for longer than a small one. This isn't always desirable, so Chopitch has a handy gate to stop the notes you play ringing on after you've damped them.

The Chopitch Gate turns on every time a hit is detected, and will always let some of the note through. The Gate "Release Level" control let's you determine when the gate shuts off. The gate will remain open as long as the sound level stays above the Gate Release Level.

For stopping a note ringing on after damping (which will feel like playing using a delay) a Gate Release Level of 20-30% will probably work.

There's a lot of scope for the creative use of the Chopitch Gate, particularly for mangling drum beats, and because we spent a lot of development time on the trigger for chopitch it work's incredibly well on complex signals. In fact we're so pleased with it that we're now working on "Chop-It", which will just be a very neat gate.

## Feedback

Since harmonisers were invented, people have been routing the output back into the input for weird and wonderful sounds. So with Chopitch we had to include this feature. The default setting for feedback is with the control centered, which is zero feedback (no change in sound). Negative feedback is more hollow sounding, especially when pitch isn't far off natural pitch. Positive feedback is fuller sounding, but when pitch is 1 it can produce overloads in sound level. The maximum feedback possible with chopitch is 90% (or -90%), which can produce interesting ringing tones.

Feedback, used in conjunction with subtle pitch change settings near natural pitch, will produce flanger type sounds even if the pitch bend is too slight to be effective.

A quick and accurate way to set "Feedback" to zero is to click the small "0" button which is just above the Feedback knob.

## Trigger



### Threshold

The Chopitch beat detector is very sensitive, and catches hits at any volume. Trigger Level can be used creatively to select just the loudest hits from a beat for a different sound. For instance, quite often a beat has a loud snare, slightly quieter bass drum, and a hi-hat sound which is lower than either. The best way to experiment is to set up a steep slope (e.g. Start=1, End=0, Decay about 0.3), then try changing the level and see what happens.

The Envelope is switched off when a hit below Trigger Level is detected, and turned back on when the next hit above it occurs. (This process is smoothed out by the Envelope Attack control).

### Trigger Mode

Once you've got to know how to pick out parts of a beat for treatment, using the "Trigger Level", it's time to explore some of the "Trigger Mode" settings:-

- **Normal.**  
If the hit isn't above the threshold for Trigger Level then the pitch just continues to change until it reaches "Pitch End". Unless you are picking out just the loudest hits from a beat to process, it's easiest to stay in this Mode.
- **No Slope**  
If the hit is below Trigger Level the pitch goes to "Start" and stays there. You can set up two different pitches, and Chopitch will switch between them depending on the volume of the input notes. Make Decay=0, and set Start and End to different values.
- **Bypass**  
Hits below the Trigger Level are heard with no pitch shift, and no feedback. This works best when "Start" is set near to one, but an interesting click effect is produced when Start is at zero, you'll just hear the start of the hit before it reaches Trigger Level. In Bypass Mode, "Feedback" is switched only on for hits above the Trigger Level.
- **Mute**  
Hits below the Trigger Level are muted to produce a gating effect.

If you set up the Chopitch controls cleverly you can remix a looped beat just by varying the Trigger Level.

If you don't get the sound you expected, check the settings for Envelope Mod and Envelope Attack. The Envelope is switched off for low level hits, but because the Envelope changes at a rate determined by Envelope Attack it's possible to hear pitch bends in "Dry" and "No Slope" Modes. To get rid of this effect, set Envelope Attack to zero, to enjoy it, push Envelope Attack up towards one.

## Crossfade

Usually you won't need to shift this, but if you hear clicks at the beginning of notes you can remove them by increasing Crossfade. It's more likely you'll get these clicks when the Trigger Level control is high.

If the attack on the note isn't as sharp as you'd like, you can try decreasing Crossfade and see if that improves things.

## Mix

Just a simple wet/dry mix control, in case your vst host doesn't offer this already. With a 50/50 mix, and using just a hint of pitch change, you'll start to hear phasing sounds. This is particularly effective if you add just a hint of Envelope Modulation.

## MIDI Features:

Depending on your VST-Host, you should be able to control all Chopitch parameters with MIDI controllers. Since this is achieved differently in each VST host application you need to refer to the documentation for that application in order to know how to set it up.

Chopitch can also receive MIDI "Note ON" commands to control the pitch. A C3 note (MIDI note value 60) corresponds playback at normal pitch. Each semitone down from C3 corresponds to semitone drop in pitch, for example F2 would be a perfect fifth (7 semitones) down.

Pressing higher keys than C3 will be ignored.

How exactly Chopitch responds to a MIDI Note-On depends on the MIDI velocity, if velocity is 64 or over the slope will retrigger, just like trigger from an audio signal which is louder than the level you set for threshold. If velocity is less than 64 then the slope won't retrigger, and the pitch heard will depend on the setting of the "Mode" switch. If you've familiarised yourself with the Mode switch and Threshold settings, then this works in the same way, except that the "Midi Velocity Threshold" is fixed at 64.

We recommend that you set the Mode Switch to "normal" when starting to use a MIDI keyboard to control pitch. The other Modes may be useful to you, but won't feel natural to start with.

In order to use the Midi Trigger without the usual audio triggering, you need to put "Selectivity" up to maximum.

The tricky part about it is to set up your VST-Host to route MIDI commands into Chopitch. Unfortunately, there are only a few hosts supporting this at the moment. We can only give you a tutorial of how it's done in Steinberg Cubase/Nuendo:

1. Insert a Chopitch into any of your audio tracks.
2. Add a MIDI track to your project. For input, select your MIDI port. For output, you should now be able to select Chopitch.
3. Enable monitoring on that MIDI track.

For other vst hosts, it may be possible to do something similar, you need to look at the documentation for the host.

## Presets

The 8 icons at the bottom right of the plugin are presets. These are designed to show the wide number of sounds possible with Chopitch, and are good starting points for creating your own sounds.

- **Big Drum**



Pitch sweeps downward. Makes any drum sound bigger, without losing the attack.

- **Talking Drum**



Envelope Mod is used to make pitch depend on the volume of the sound input. Adds interest to any percussion.

- **Electro Drum**



Makes any beat sound like it's played on electronic drums. It also turns pitched sounds into unpitched, so you don't have to worry about which key the music is in. This is a good sound to start with for some dramatic remixing.

- **DJ Decks**



Approximates the popular "scratch" sound, makes any beat sound like it was scratched from vinyl.

- **Bass**



A straightforward one octave shift down, play bass lines on any instrument. The Gate is used to stop the note from continuing after you stop playing. This is the only preset which has "Slope" switched off.

- **Hawaiian Guitar**



Each note bends upwards until it's in tune. Change the sound of a melodic instrument while keeping the melody.

- **Flanger**



A more subtle effect (by our standards!). A variant of the well known flanger (or phase) effect, here the sound responds to the input volume.

- **Sweep**



Sweeping...swooshing...extreme feedback for a dramatic change of sound.

Please don't think for a minute that you should stick to our suggested uses for these presets, try them on anything...and use them as a basis for your own sonic experiments.

Have fun!

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