Evolution Sequencer

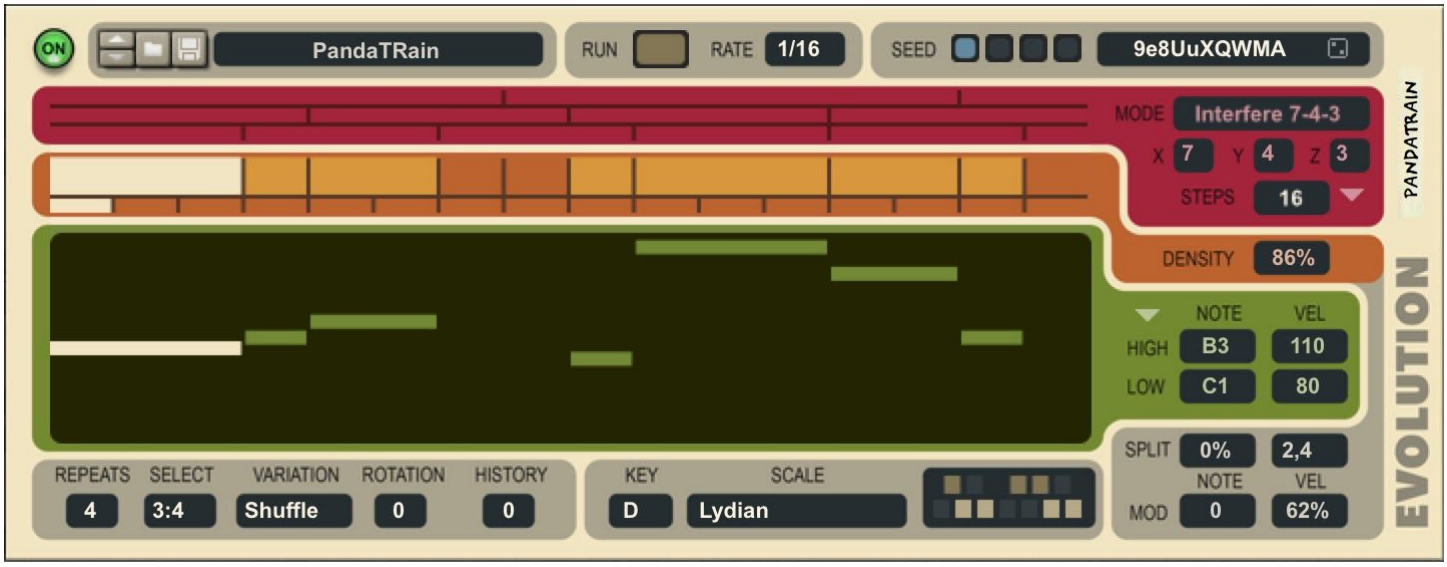
Operation Manual

Version 1.0.0

Table of Contents

Introduction

Evolution is a generative player that uses seeded, deterministic random numbers. These numbers are locked against the transport timeline, which allows replay, looping, and repeatable pattern-to-track functionality. Rhythmic pattern generation and sequence variations are rooted in the [Schillinger System of Musical Composition](#).



Front Panel

Back Panel

Main

Run

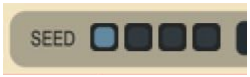
Start and stop the sequencer's run state.

Rate

The duration that each box in the sequencer corresponds to. Available rates: 32/4, 28/4, 24/4, 20/4, 16/4, 12/4, 8/4, 7/4, 6/4, 5/4, 4/4, 7/8, 3/4, 5/8, 2/4, 7/16, 5/8T, 3/8, 4/8T, 5/16, 1/4, 3/16, 2/8T, 1/8, 1/8T, 1/16, 1/16T, 1/32, 1/32T, 1/64, 1/128.

One sequencer unit equals the set duration.

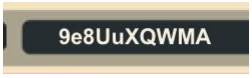
Selection and Pattern



This sets the seed currently in use. There are up to 4 text slots used to generate a pattern. This doubles as the pattern selection for the main sequencer's pattern automation.

Pattern Selection Automation Lane

Seed Text Entry

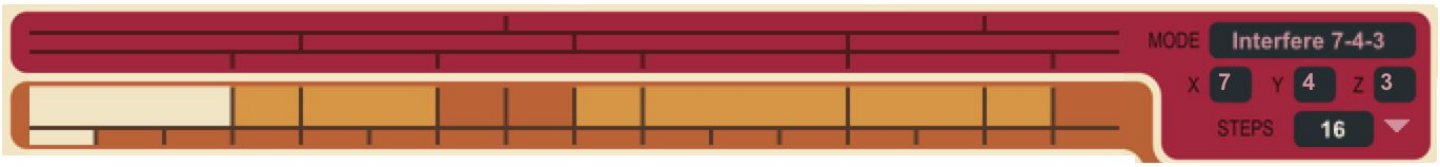


Enter any text to be used to seed the random number generator.

Randomizer

Clicking on the dice will generate a random string in the seed text entry.

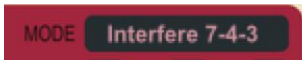
Rhythm



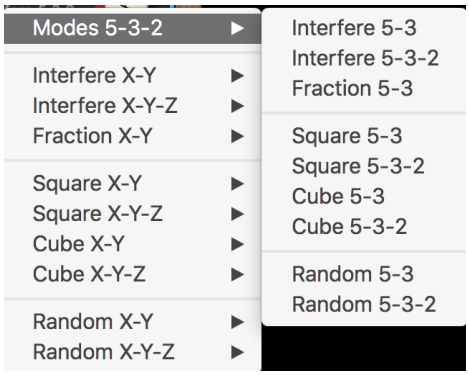
X Y Z Parameters

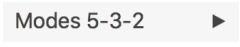
Three number parameters X, Y, and Z are used in various rhythmic generation algorithms. Each has the range 1 to 15.

Mode Selection



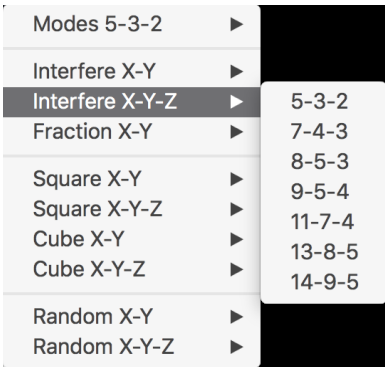
Mode only options



The mode drop-down menu presents the different rhythmic algorithms available. The top-most item on the main menu (

) presents the different modes for the currently selected X-Y-Z. The example shown has values of 5,3,and 2. Choosing one of these sub-items changes the mode, but not the X-Y-Z values.

Mode and value options



Other items on the main drop-down (shown with X-Y or X-Y-Z) will change the mode *and* the current X, Y, and Z values. The X,Y, Z preset values available in the sub-menu are known to have interesting rhythmic properties together for that mode.

Rhythm Lanes

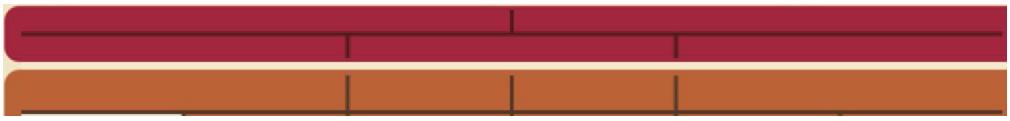
The top red section shows the rhythm parameters X, Y and Z. In the example above, we see values 5 on the top, 3 in the middle, and 2 on the bottom.

The top of the orange section is the result rhythm of the X,Y, and Z parameters and the selected mode. In this example, we have the result of Interfere 5,3, and 2, which starts with unit durations 2,1,1,1,1,2,1,1,2,2 ...

The bottom on the orange section is a grid of 1-unit lengths.

Interference Patterns

Interfere X-Y

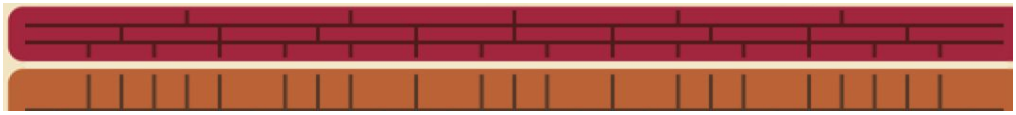


Interfere 3-2, Length = 6

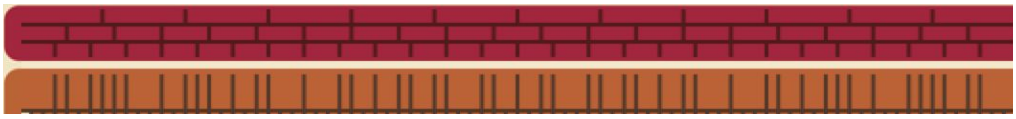
Interfere 5-3, Length = 15

Overlay the durations of each base rhythm X and Y on top of each other to produce a new rhythm. Length is the least common multiple of X and Y.

Interfere X-Y-Z



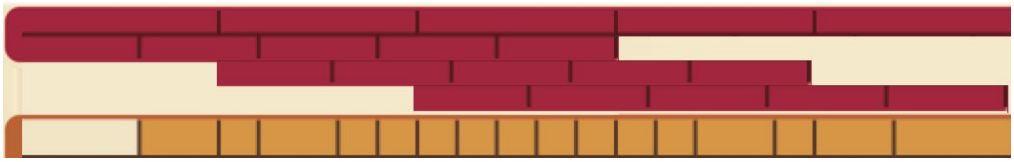
Interfere 5-3-2, Length = 30



Interfere 7-4-3, Length = 84

Overlay the durations of each base rhythm X, Y, and Z on top of each other to produce a new rhythm. Length is the least common multiple of X, Y and Z.

Fraction X-Y

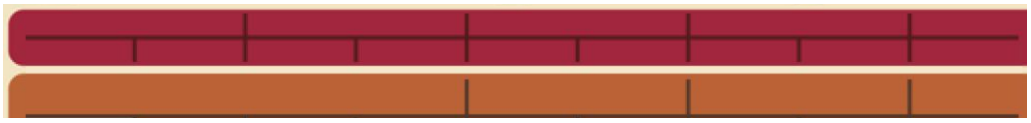


Fraction 5-3, Length = 25

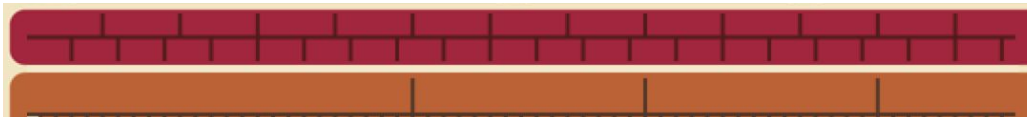
Overlay the durations of base rhythm X with multiple copies of Y, each Y copy resynced at the next X. Length is X squared.

Polynomial Expansions

Square X-Y



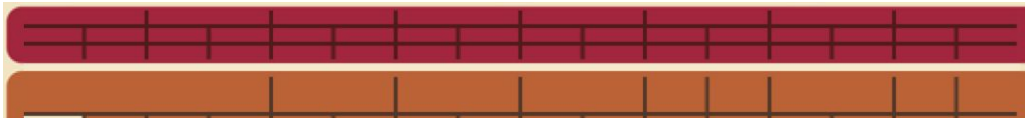
Square 2-1, Length = 9



Square 5-3, Length = 64

Polynomial expansion of (X Y) * (X Y) without simplification.
(X*X, X*Y, Y*X, Y*Y). Length is (X+Y)^2

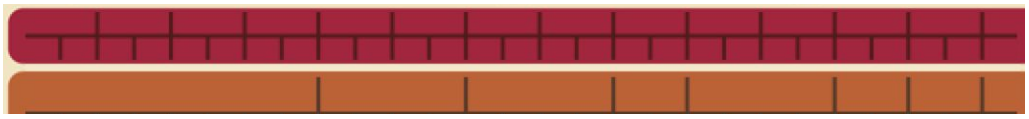
Square X-Y-Z



Square 2-1-1, Length = 16

Polynomial expansion of (X Y Z) * (X Y Z) without simplification.
(X*X, X*Y, X*Z, Y*X, Y*Y, Y*Z, Z*X, Z*Y, Z*Z). Length is (X+Y+Z)^2

Cube X-Y

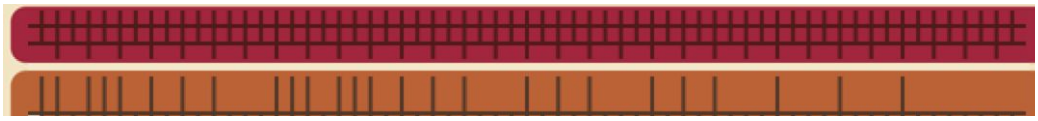


Cube 2-1, Length = 27

Polynomial expansion of (X Y) * (X Y) * (X Y) without simplification.
(X*X*X, X*X*Y, X*Y*X, X*Y*Y, Y*X*X, Y*X*Y, Y*Y*X, Y*Y*Y). Length is (X+Y)^3

Cube X-Y-Z

Cube 2-1-1, Length = 64

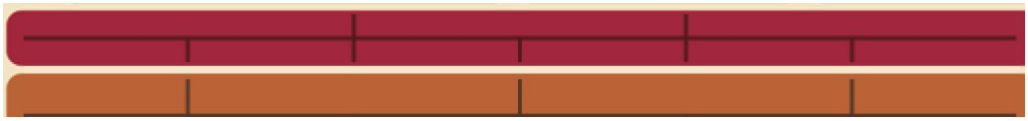


Cube 1-1-2, Length = 64

Polynomial expansion of (X Y Z) * (X Y Z) * (X Y Z) without simplification.

Random

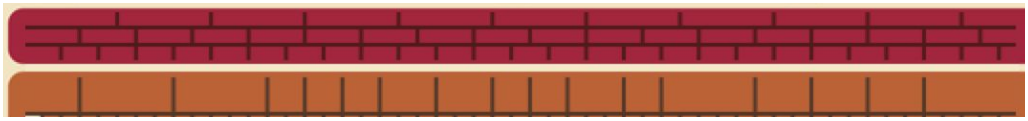
Random X-Y



Random 2-1

X and Y chosen randomly.

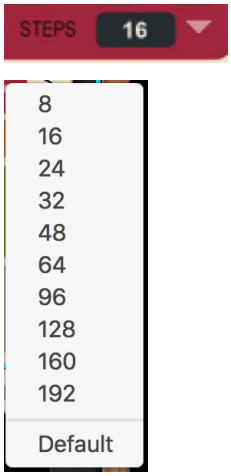
Random X-Y-Z



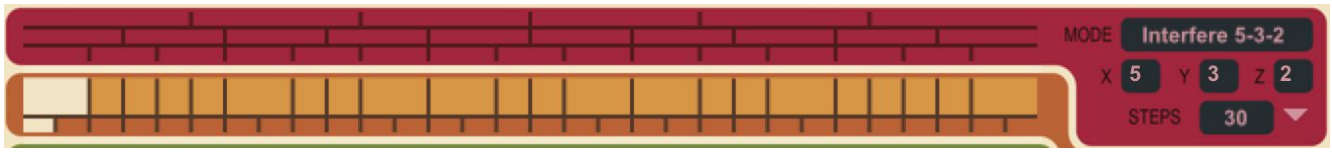
Random 5-3-2

X, Y and Z chosen randomly.

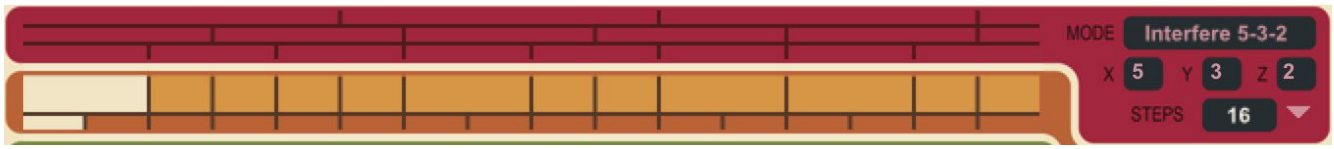
Steps



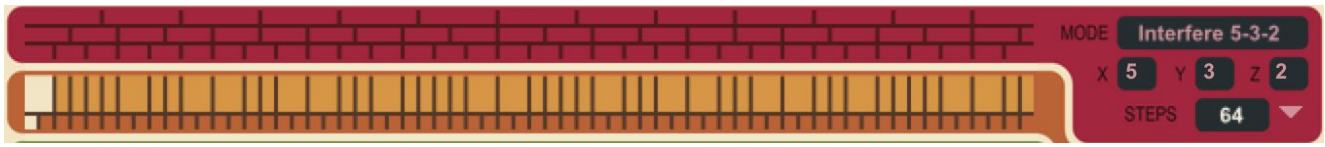
Sets the length of the sequence. Rhythm parameters X,Y,Z, and rhythm modes will always have a ‘natural’ length at which they repeat. The ‘Default’ value of steps will use this natural value. Setting a specific value will override by clipping or extending.



Interfere 5,3,2 with Default steps, which 5x3x2 = 30



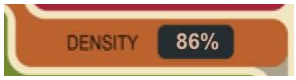
Interfere 5,3,2 with 16 steps



Interfere 5,3,2 with 64 steps

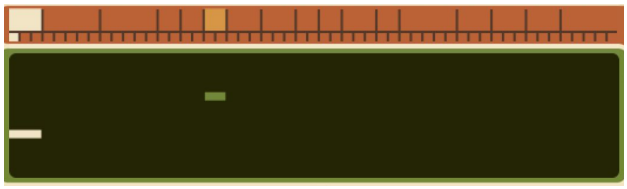
Steps are limited to 192. Any Rhythmic patterns with natural lengths larger than 192 (Such as Cube 9,9,9 = 19683) will be clipped to 192.

Density

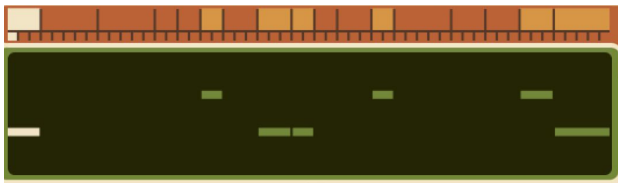


Density assigns the percentage of chance that any note is active.

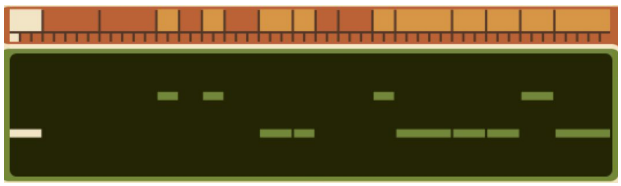
Active notes are lighter in color and will have a corresponding note activated in the green note area.



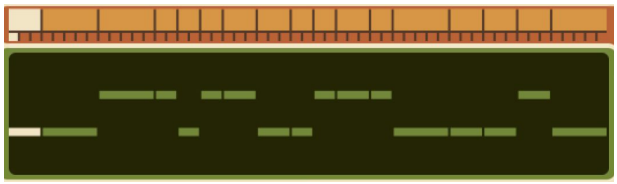
Density 25%



Density 50%

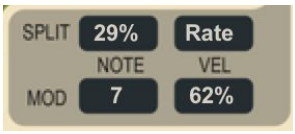


Density 75%



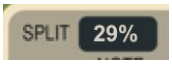
Density 100%

Splits



Each note can be divided further creating interesting ratcheting behavior.

Split Density



Density assigns the percentage of chance that any note is split.

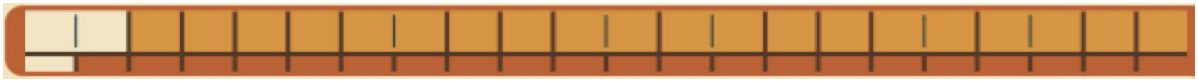
Split Density 30%

Split Density 60%

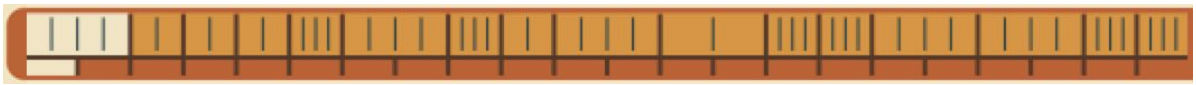
Split Mode

Split mode drop-down menu determines how the notes may be split.

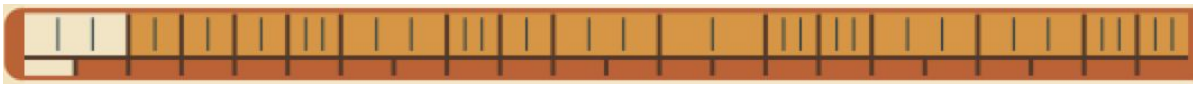
Rate	Split on the 1-unit grid.
2,4	Half and Quarters
2,3	Half and Thirds
Even	Even values 2,4,6,8,10
Odd	Odd values 3,5,7,9
2-10	All values 2,3,4,5,6,7,8,10



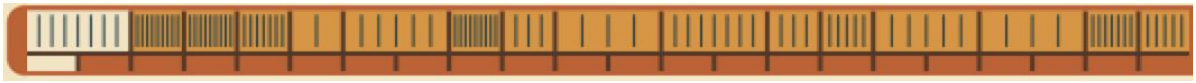
Rate



2,4

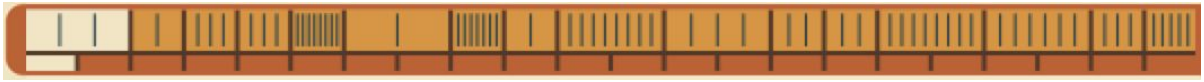


2,3



Even

Odd



2-10

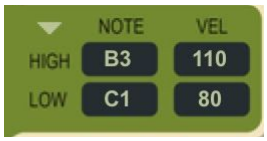
Note Mod

Each successive note split will increment or decrement the note value. These are snapped to the selected scale.

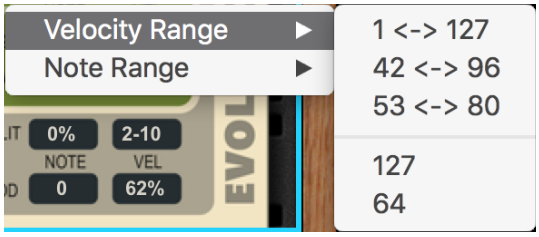
Velocity Mod

Each successive note split will multiply the note velocity. This can create a fade / echo type effect.

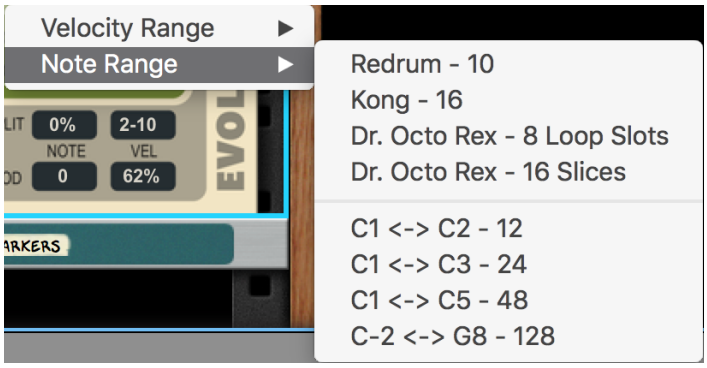
Note and Velocity



Sets the note and velocity ranges for note generation.

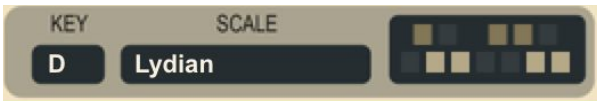


Velocity Range Presets



Note Range Presets

Scale

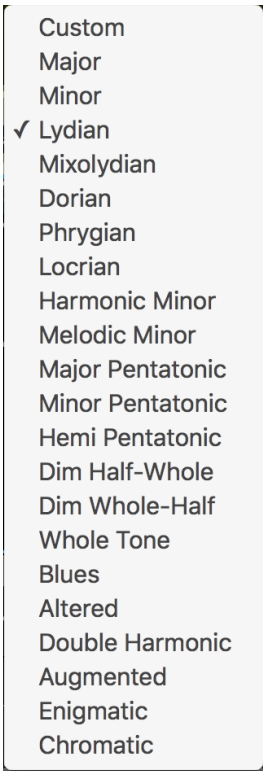


Key

Scale key

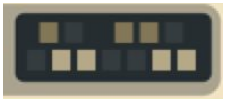
Scale

Musical Scale



Scale Options

Custom



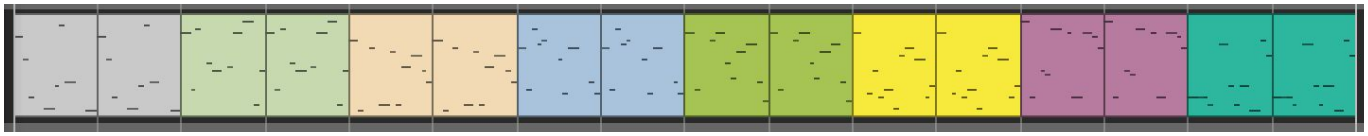
Custom scales can be created by enabling and disabling notes.

Repeats and Variations

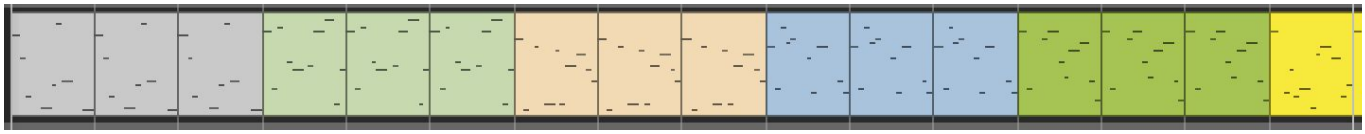
These control the changing of the patterns

Repeats

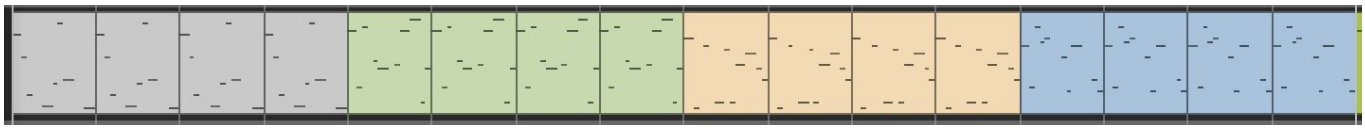
The number of times the sequence will repeat before switching to the next generated sequence.. Zero will repeat forever.



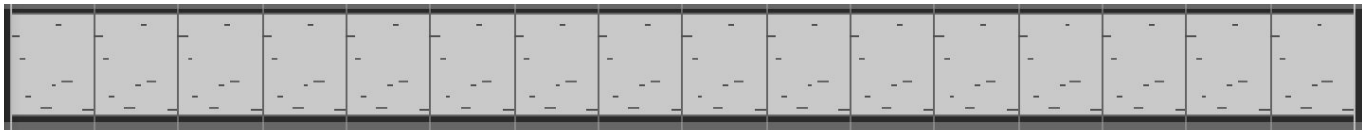
Repeats 2



Repeats 3

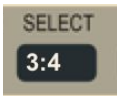


Repeats 4

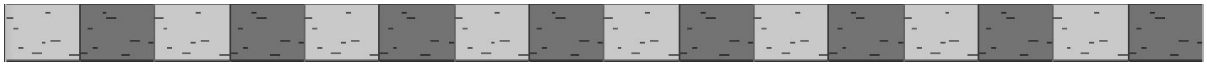
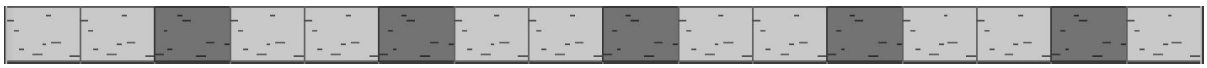
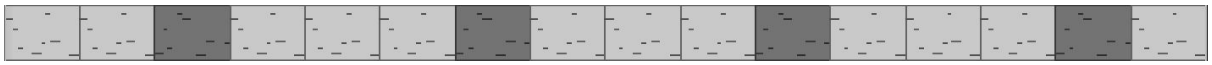
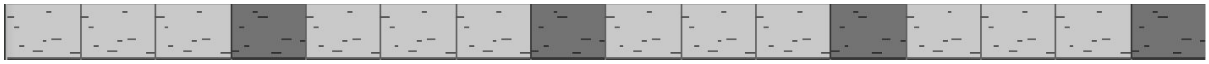
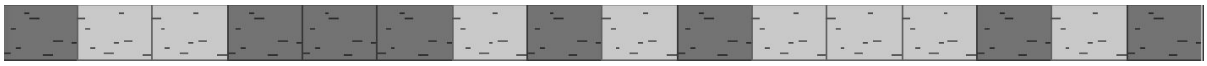


Repeats 0

Variation Select



Select which repetitions will have a variation.

Off	None
2:2	 2nd out of every 2
2:3	 2nd out of every 3
3:3	 3rd out of every 3
2:4	 2nd out of every 4
3:4	 3rd out of every 4
4:4	 4th out of every 4
2+	 2nd and above
3+	 3rd and above
5+	 5th and above
Xor	 Binary xor of bits in the sequence index.
Rand	 Random selection

Variation

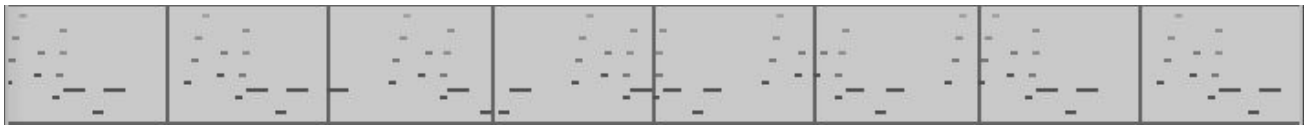
Each variation that is selected will be modified with the variation parameter.

Rotate	 Rotate the variation sequence a number of steps. Uses the Rotation parameter.
Rotate N	 Rotate the variation sequence a number of steps. Uses the Rotation parameter. Each successive variation is rotated further.
Shuffle	 Shuffle the variation sequence.
Shuffle N	 Shuffle the variation sequence. Each successive variation is shuffled again.
Reverse	 Reverse the variation sequence.
Inverse	 Invert the density value of each note in the variation sequence.

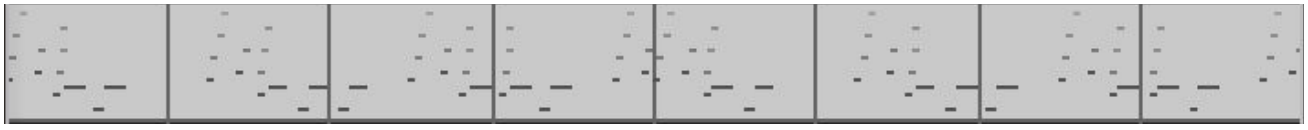
Rotation

Parameter for the Rotation Variations.

Rotation 1



Rotation 2



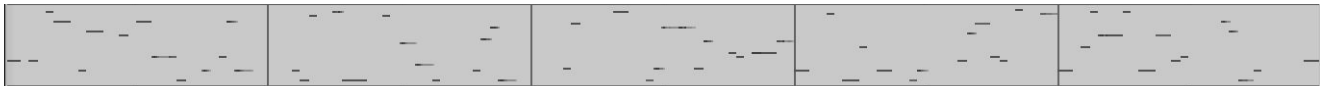
Rotation 3

Rotation -1

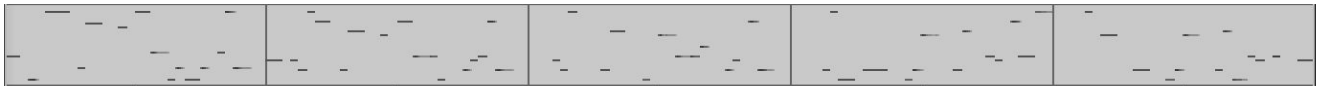
History

Each new sequence can be influenced by past sequences. A setting of zero will not use any previous history. A max setting of five will use the five previous sequences creating slowly morphing sequences.

History 0



History 2



History 5

CV Connections

Gate & Note

Classic Gate and Note CV output.

Pitch

Note Pitch for controlling oscillator pitches in synth devices that have oscillator CV Pitch inputs, or allow controlling oscillator pitch via a Modulation Matrix.

Rand 1-4

Deterministic random CV curves that are locked to the patterns, transports, and variations. These are generated from the seed values just like notes are.