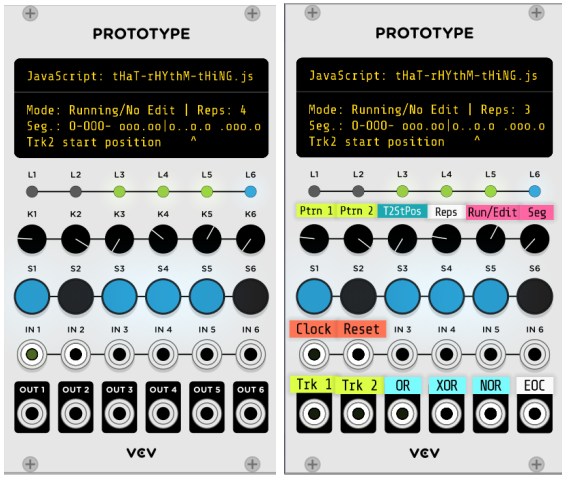
That Rhythm Thing (V2.0)



With default labels (L) … and labelled using GLUE (R)

That Rhythm Thing is a Javascript program running in a **VCV PROTOTYPE** module. To get a feel for what it does, look for videos on YouTube that show how Steve Reich's 1972 piece, *Clapping Music*, works. In short, you have two tracks playing a rhythm in a loop. Each track loops for a set number of repetitions and then one of the tracks jumps ahead by one step and the cycle continues. In Reich's piece, both "tracks" are playing an identical pattern and a cycle lasts 8 repetitions at which point one of the tracks starts looping from step 2 of the pattern while the other continues to start on step 1 …

That Rhythm Thing works in a similar way. Track 1 always starts its loop at step 1 of its pattern but Track 2 moves its starting point up by 1 step each time a new *cycle* starts. Unlike with Reich's piece, each Track can play a different rhythm and the number of repetitions per cycle can be changed. You can change the number of repeats or select different patterns for either Track at any time. You can also edit individual steps in a pattern, all while the module is active.

The Basics

To activate	Use **IN 1**, **IN 2**, **OUT**s **1-5**, and **OUT 6**	Patch **IN 1** (input 1) to a clock source. Optionally, patch **IN 2** to receive a **RESET** trigger. Use **OUT 1** to send a trigger based on the Track 1 rhythm pattern and **OUT 2** for the Track 2 pattern. Use **OUT**s **3-5** for logical combinations of the two track patterns (**OR**, **XOR** and **NOR**). Use **OUT 6** to send an **EOC** (end of cycle) trigger. A **RESET** puts both tracks back in sync, bringing their play positions back to step one and the internal cycle count back to zero. It does not affect any of the changes you have made.
To select a rhythm pattern	Use **K1** and **K2**	Knobs (or dials) **K1** and **K2** will select one of 30 predefined rhythm patterns for Track 1 and Track 2, respectively. All 30 patterns are listed on **Page 2**. When you save your patch, your pattern selections will also be saved.
To see what patterns are selected	Use the *display area*	While you are selecting a pattern (using **K1** or **K2**), a pattern number and representation of the pattern are shown in the last line of the display area. The selected patterns for both tracks are also shown in the "`Seg`" line of the display. *See* **Page 3** *for more information about the display lines.*
To "fix" (lock) the start position for Track 2	Use **K3**	When **K3** is set to 0, the starting position for Track 2 advances one step at each **EOC** (end of cycle – a cycle ends when Track 1 has played through its pattern the number of times specified by **K4**). However, when **K3** is set to something above 0 (i.e., 1-12), Track 2 will no longer advance its start position and, instead, will always start at the selected step. **Note** that a change to the start position will not take effect until the next **EOC**.
To change repeats per cycle	Use **K4**	The number of repeats is shown at the end of line 1 in the display—e.g., `Reps:3`. Using **K4** you can change the number anywhere between 1 and 12.
To pause trigger outputs	Use **K5**	 When **K5**'s indicator line is left of center, trigger outputs will pause, **L5** will turn red and the Mode display line will show "`*Paused`" instead of "`Running`". Setting the indicator line back to the right of center (as shown here) will resume output, picking up right where it stopped. (**K5** is also used to enable segment editing—see **Page 4**).
To change which pattern segment is shown in the buttons	Use **K6**	The **K6** dial will change the segment shown in the 6 buttons (i.e., switches **S1-S6**). This change will also be reflected in the *Seg.* line of the display area (for example, a selected segment might change from `oo.ooo` to `oo-ooo`). A segment is either the first or second set of 6 "steps" in a selected 12-step pattern (for either Track 1 or 2). *You only* need *to select a segment using* **K6** *when you are going to edit it. See* **Page 4** *for more on editing.*

Rhythm Patterns

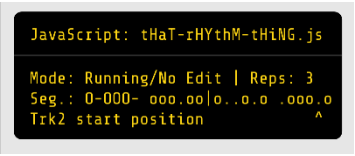
You can load any of the following 30 patterns (including the same one) into Tracks 1 and 2.[1] While the patterns are shown here (and on line 2 of the display) as two separate 6-step pattern segments (e.g., "`ooo-oo -o-oo-`"), they are always "played" as contiguous 12-step patterns ("`ooo-oo-o-oo-`") where the "`o`" represents a beat and "`-`" a rest.

1	`o----- ------`	just the first	16	`-oo-oo -oo-oo`	3/4 on the 2 and 3
2	`o----- o-----`	on the sixes	17	`o--oo- o--oo-`	3/4 on the 1 then on the 1 and 2
3	`o---o- --o---`	4/4 on the 1	18	`o-o-oo -o-o-o`	standard bell pattern
4	`oo--oo --oo--`	4/4 on the 1 and 2	19	`-o-o-o --o-o-`	reversed inverse standard bell
5	`o-o-o- o-o-o-`	4/4 on the 1 and 3	20	`o-o-oo -oo-o-`	bell pattern 2
6	`oo-ooo -ooo-o`	4/4 on the 1, 2 and 4	21	`oo-oo- o-oo-o`	bell pattern 3
7	`o-ooo- ooo-oo`	4/4 on the 1, 3 and 4	22	`ooo-oo -o-oo-`	Reich pattern
8	`ooo-oo o-ooo-`	4/4 on the 1, 2 and 3	23	`---o-- o-o--o`	inverse Reich pattern
9	`-o---o ---o--`	4/4 on the 2	24	`-oo-o- o--o-o`	reversed 2nd halves of 22 and 23
10	`-o-o-o -o-o-o`	4/4 on the 2 and 4	25	`o----- -o----`	on the 1 and 8
11	`o--o-- o--o--`	3/4 on the 1	26	`o-o--- -o-o--`	on the 1, 3, 8, 10
12	`-o--o- -o--o-`	3/4 on the 2	27	`-oo-o- o---o-`	primes (2, 3, 5, 7, 11)
13	`--o--o --o--o`	3/4 on the 3	28	`o--o-o -ooo-o`	inverse prime (1, 4, 6, 8, 9, 10, 12)
14	`oo-oo- oo-oo-`	3/4 on the 1 and 2	29	`-o---o -o-oo-`	reversed primes (2, 6, 8, 10, 11)
15	`o-oo-o o-oo-o`	3/4 on the 1 and 3	30	`-ooooo oooooo`	All but the first (inverse of pattern 1)

Pattern Types: Miscellaneous 4/4 3/4 Bell Patterns Reich Patterns Prime related

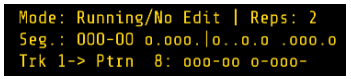
[1] For what it's worth, there are 900 (30 x 30) ways to combine the patterns. And, as Track 2 changes its starting position each cycle, that "900" is actually more like 10,000. (If you account for the **OR**, **XOR** and **NOR** combinations, that makes about 30,000 different trigger patterns.)

What The Display Area Shows



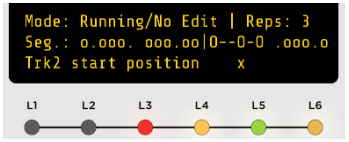
Aside from the Javascript program name at the top, the **VCV PROTOTYPE** display area has 3 lines in which runtime information is displayed. In *normal operation*, the display will be similar to what is shown here, on the left. These lines contain:

1. The runtime `Mode` and Number of repetitions (`Reps`) per cycle.
2. The currently selected patterns for both tracks, displayed as four 6-step segments (`Seg`).
3. A "pointer" (i.e., `^`) to the current `start position` for Track 2. As shown above, Track 2 begins playing at its 11th beat (or step) during this cycle. The indicator will advance at each **EOC**, wrapping back around to beat 1 when it reaches the end.



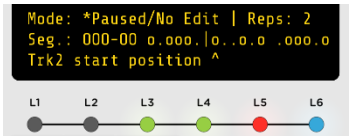
When you are selecting a new pattern for Track 1 or 2, the pattern number (matching what is shown in the table on Page 2) and pattern are displayed on line 3 of the display for a few seconds.

Line 3 will also temporarily display an "error" message if you try to edit a segment while the module is in **`No Edit`** mode. (See **Segment Editing Mode** on the following page.)



When **K3** is greater than 0, the start position for Track 2 has been fixed at some location. **L3** will be red and Track 2's start position indicator changes from **^** to **x** and is moved to just below the corresponding starting position in line 2.

As shown above, **K3** has been used to "fix" the start position of track 2 at the 4th beat. In addition, **L4** is yellow indicating that, while **EOC** triggers will continue to be sent at the end of the specified number of repeats, the Track 2 start position will not advance until **K3** is set back to 0.



When the module is paused by turning **K5** to the left of center, **L5** will turn red and `Mode` in display line 1 will change from `Running` to `*Paused`.

Patching Ideas

To familiarize yourself with the kind of "evolving beats" *That Rhythm Thing* produces, start with "short and snappy" sounds triggered by **OUT 1** and **OUT 2**. Pan the tracks' outputs hard left and right, and don't use any delay/echo effects. Try different pattern combinations and let them play for a while so you hear how the shifting of Track 2 affects the rhythm. Use a fast clock (> 300 bpm) and set the Reps (**K4**) to 2 or 3. Listen for the interplay between the stable rhythm (from track 1) and the changing rhythm (track 2).

Hook all the outputs up to modules that will make the rhythms visual (like the **AS StereoVUmeter** or **VCV Scope**).

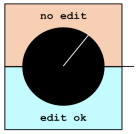
To recreate Steve Reich's *Clapping Music*, the original inspiration for this module, load pattern 22 into each track, set the number of repeats to 8 and connect **OUT 1** and **OUT 2** to something making a clapping sound.

The rhythms that the patterns create can *sound* random, but they are also predictable making them both interesting and useful. For example, using a slow clock and sparse patterns (i.e., fewer beats in the pattern), use the triggers to drive alterations of other aspects of your patch (like pitch shifts, resets, etc.).

Try different patterns in each track and different combinations of the trigger outputs (Track 1, Track 2, 1 OR 2, 1 XOR 2, and 1 NOR 2). Patch **OUT 2**, for example, to the clock input of a sequencer that is patched to a **Bogaudio FM-OP** but then use the **XOR** trigger to "gate" that FM-OP.

As the **EOC** trigger output will "signal" the beginning of a new rhythm (because track 2 will now skip forward one step), try using it to advance through different **stoermelder 8FACE** settings that change the sounds you are using.

Segment Editing Mode



When the indicator line for **K5** is turned so that it is below the midpoint of the knob, the module is placed in segment editing mode. This will be reflected in display line 1 either as `Running/Edit OK` or `*Paused/Edit OK` depending on whether the indicator is also to the right or left of center.

As explained on Page 1, the **K6** knob will change the segment shown in the 6 buttons (i.e., switches **S1-S6**). This change will also be reflected in the `Seg` line of the display area (for example, a selected segment might change from `oo.ooo` to `OO-OOO`). A segment is either the first or second set of 6 steps or beats in a selected 12-step pattern (for either Track 1 or 2). [The main reason for having these 6-step segments is because there are only 6 buttons available (**S1-S6**) through which to edit them.]

To Edit a Segment:

1. Use **K1** and/or **K2** to select the pattern(s) you want to edit.
2. Use **K5** to place the module in `Edit OK` mode.
3. Use **K6** to select the segment you want to edit. As shown (on the right), for example, the 3rd segment (i.e., the 1st segment of the Track 2 pattern) is selected. Note that its representation in line 2 of the display (`O-O-O-`) matches the light pattern on the **S1-S6** buttons.
4. Click on any button to toggle it on or off. The change will be reflected in the button light as well as on line 2 of the display.
5. When done editing a segment, you can use **K6** to choose another segment for editing.

You can edit any of the loaded segments while the module is running. The changes will take effect immediately. It is okay to leave **K5** in `Edit OK` mode, but to prevent accidental edits you might want to turn it back to `No Edit` mode.

IMPORTANT NOTE: Unfortunately, the **VCV PROTOTYPE** module does not support a way to save your edits to patterns. Edits, therefore, will only last until they are overwritten, either by you loading a different pattern or when your patch, itself, is reloaded.