

cheat codes



v1.3.1

updated: 200504

CHANGELOG

1.3.1: released May 4, 2020

Watch a thorough walkthrough of these features: <https://youtu.be/dNlWIG53YBQ>

live buffer improvements

- NEW: PARAMS > '1-shot sync' allows 1-shot buffer recording to sync to the global clock, to capture clean quantized recordings. Options include 'next beat', 'next bar', and 'free' (no clock sync).
 - If set to 'next beat' or 'next bar', a running 1-shot recording will ignore additional triggers until it has reached the buffer window's end-point.
- NEW: PARAMS > 'rec loop encoder resolution' will auto-align the live buffer window to the specified resolution and will clamp encoders to add, subtract, or shift at multiples of that resolution. Options include '0.1' and '0.01' (standard), as well as tempo-aware '1/16', '1/8', '1/4', '1/2' and '1 bar'. To get odd divisions or lengths greater than 1 bar, use encoders on the [loops] page (while the live buffer is highlighted) to add/subtract/move the loop window incrementally.
- NEW: PARAMS > 'random rec probability' can be set to randomly toggle recording into the selected section of the live buffer.
- CHANGE: PARAMS > 'live buffer max' adjustments will automatically enforce a 'global pitch offset' to match.

auto-slice

- NEW: 'auto-slice bank' feature will slice the current live buffer window across all of a bank's pads. To perform the action, press grid-ALT + the first key in the row underneath the bank you wish to auto-slice the live buffer into.
- NEW: 'auto-adjust buffer' feature will adjust the live buffer's window to match the window of the currently selected pad in a bank. To perform the action, press grid-ALT + the third key in the row underneath the bank whose pad you wish the live buffer to mirror.

new default state

- CHANGE: when loading a fresh cheat codes session, live buffer will not be automatically engaged/recording.
- CHANGE: when loading a fresh cheat codes session, pads will be set to 1-shot (previously, set to loop).

etc

- FIXED: if a collections-saved grid Pattern included a pad that was raised by a fifth, the Pattern would stop playing when it hit that pad.

CHANGELOG

1.3: released April 26, 2020

global clock

- NEW: clocking is handled by the norns global clock, enabling Ableton Link as a clock source
- CHANGE: all four *rec modes* are available, regardless of clock source
- CHANGE: [timing] screen no longer features *clk* – use PARAMETERS > CLOCK to adjust clocking
- IMPROVED: tighter clock-synced gestures

[timing]

- NEW: two pages per Pattern! use K2 to access new controls.
- NEW: *rand pat* with control over how rates/pitch are distributed (p. 13)
- NEW: *pat start* and *pat end* to adjust Pattern loop points (p. 13)
- NEW: gridless control over random Patterns
 - K3 + *rand pat* selected: random Pattern generated
 - K1 on a $P[x]$ screen: pause playing Pattern $[x]$
 - K1 + K3 on a $P[x]$ screen: clear current Pattern $[x]$
- CHANGE: [timing] screen no longer features *clk* – use PARAMETERS > CLOCK to adjust clocking
- IMPROVED: visual indicator next to each $P[x]$ to show whether Pattern $[x]$ is playing, paused, or cleared
- IMPROVED: if Pattern $[x]$ is playing, step number will appear next to each $P[x]$

[loops]

- CHANGE: if there's headway in the buffer, record buffer window movements (E1) now jump the length of the current window. previously, the window would slide incrementally – this makes sense for playback buffers, but clean windows for recording are more helpful.

experimental

PARAMETERS > loops + buffers > loop encoder resolution

In addition to its prior “coarse” (0.1) and “fine” (0.01) options, there are now tempo-locked divisions available – 1/16, 1/8, 1/4, 1/2, 1 bar.

These “quantize” encoder movements on the [loops] page to match the current tempo. This is an easy way to slice loops without a grid.

nb. Quantized encoders do not currently recalculate changes to bpm — they ingest the value at the time of selection and there is no independent callback to update them. If you change the tempo after choosing a quantized encoder resolution, simply re-select the resolution and the value will be updated.

cheat codes is a live + pre-recorded sample playground for norns.



It's called cheat codes because it's sorta like being transported 20 minutes into a cranes session, where things start to get meaty. Instead of having to play through, you can just start at the boss level.

It's also called cheat codes because it uses ~25 different grid key finger combos to manipulate three Softcut voices. Softcut is the sampling engine built directly into norns – cheat codes does not require any additional engines to be installed.

cheat codes can also record gestures on grid + arc to navigate changes to a bunch of different parameters (sample windowing, playback position, rate + direction, filter, which sample is playing, one-shot/loop, panning, volume, etc). These gestures are stored as patterns and can be quantized to a clock (internal, MIDI, Ableton Link or CV), saved between sessions (each bank has 8 save slots), and sequenced using a built-in meta-sequencer similar to Kria.

requirements:

- norns (200426 or later)
- grid highly suggested – full functionality is harder to access without grid
- arc strongly encouraged – arc provides fine-tuned control over parameters and gestures can be recorded for playback on top of grid patterns
- TouchOSC strongly encouraged – leaps and bounds better for cheat codes vs MIDI

This guide will be updated as folks ask questions, challenge my assumptions, and share their work.

dynamic help:

Included in cheat codes is a dynamic help menu, which can be accessed by selecting [?]. In this menu, you can hit any key on an attached grid to learn more about it - this includes both its primary function and how it works in cooperation with other keys:

```
help
bank: 2 | pad: 13
pads recall parameters:
- rate: 1.00 - pan: 0.81
- start: 7.31 - end: 7.96
- loop: false etc.
...
```

```
help
4th row action: 124
- 2x pad's current rate
- upper limit: 4x

rate: 2.0x          try: 134
...
```

The help menu can be accessed at any point and does not interrupt your current session. Every action you take in the help menu executes in real-time, so you can jump in and out of playing and learning.

Table of contents:

grid overview	-----> p 3
-----banks + pads	-----> p 4
-----zilchmo	-----> p 6
-----buffers	-----> p 8
Patterns	-----> p 10
CLOCK	-----> p 11
[timing]	-----> p 12
meta-sequencing	-----> p 15
Buffers + [loops]	-----> p 18
-----gridless	-----> p 20
[levels]	-----> p 21
[panning]	-----> p 22
[filters]	-----> p 23
[delay]	-----> p 24
arc	-----> p 25
crow	-----> p 27
OSC	-----> p 29
save/load	-----> p 30

```
cheat codes

[ loops ]   filters
levels      delay
panning     timing

?
```

All illustrations made by Zach Spindler, founder of [Zilchmo's Za](#) (a Creative Studio)

When you plug grid into cheat codes, turn it so it's 16 tall and 8 wide (versus the standard 8 tall and 16 wide) and this is what you'll see:

```
x x x x | 1 2 3 f
x x x x | L C r P
x x x x | * - Z Z
x x x x | - Z Z Z
- - - - | Z Z Z Z
x x x x | 1 2 3 f
x x x x | L C r P
x x x x | * - Z Z
x x x x | - Z Z Z
- - - - | Z Z Z Z
x x x x | 1 2 3 f
x x x x | L C r P
x x x x | * - Z Z
x x x x | - Z Z Z
- - - - | Z Z Z Z
A 1 2 3 | p p p m
```

cheat codes is broken up into three banks of two main playing surfaces:

banks and pads

```
x x x x
x x x x
x x x x
x x x x
```

and...

Zilchmo's right-angle slice

```
- - - P: pattern recorder
- - Z Z: level + play/pause
- Z Z Z: panning
Z Z Z Z: start/end points, rate, direction
```

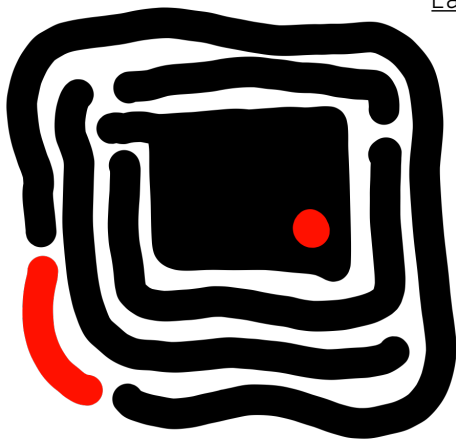
There are some additional functions in-between and underneath, which we'll cover later on, but those two sets of grid keys will be the ones you use most.

In the bottom-left corner of the grid is a momentary **ALT** button, which can be held to change the scope of a control from local to global, or vice versa. Any time a control has an ALT behavior, we'll mention it!



banks and pads

There are three banks, a b and c. Each bank has 16 pads (x's). Pads within the same bank cut each other off when triggered (think "choke group"), but they do not affect pads in the other banks - cheat codes has 3 voice polyphony.



Each pad contains its own individual settings for the following parameters:

- which buffer to use (Live or Clip)
- which buffer segment to use (there are three Live segments and three Clip segments)
- playback start + end points
- playback rate / pitch + direction
- whether to play as a loop or 1-shot
- level / gain
- envelope settings
- panning position
- filter tilt
- filter ease timing + style

When you load a fresh session, these are the defaults for each bank's pads:

- *which buffer to use*: Live buffer 1
- *which buffer segment to use*: segment 1 of Live buffer 1
- *playback start + end points*: each pad will step through an even distribution of the 8 second buffer, eg:
 - pad 1 starts at 0, ends at 0.5
 - pad 2 starts at 0.5, ends at 1
 - pad 7 starts at 3, ends at 3.5
- *playback rate / pitch + direction*: each pad plays the recorded audio at 1x rate, forward
- *whether to play as a loop or 1-shot*: each pad is set to loop
- *level / gain*: each pad has gain 1.0
- *envelope settings*: no envelope is applied to any pads
- *panning position*: each pad is panned to center
- *filter tilt*: each pad is set to neutral, with a mild resonance
- *filter ease timing + style*: each pad has a 0.5s filter frequency glide and each pad is set to "cont(inuous)" changes

f: focus

You'll notice that if you press a pad, it is immediately executed. This is expected during performance, but when you're editing a pad, this coupled interaction becomes undesirable. To decouple pad presses from execution:

- hold ALT
- press *f* (the key at the far right of each bank's first row)
- the currently-playing pad will dim and a new, brighter *focus* indicator will appear
- press any pad to change the *focus*

- if you open an on-screen menu with *focus* enabled, you'll be able to change parameters for that pad

copy/paste

While in *focus* mode, you can also copy/paste parameter information from one pad to another, even across banks. To copy/paste:

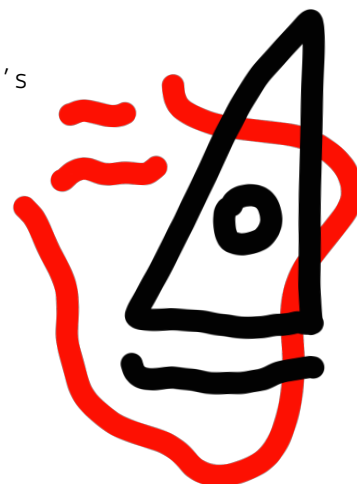
- ensure you're in *focus* mode
- hold ALT
- select a pad to copy
- select a pad to overwrite

Zilchmo's right-angle slice

My friend Zach is starting a pizza company. It's called Zilchmo's and its specialty is square-shaped pizzas, cut diagonally into two right-angle slices.

In cheat codes, the big right triangle next to every bank is a Zilchmo, split into four rows of quick-control keys which affect each pad's parameters:

- - - P: pattern recorder
- - Z Z: level + play/pause
- Z Z Z: panning
- Z Z Z Z: start/end points, rate, direction



The keys in each Zilchmo row each have their own function, but you can also combine keys horizontally for additional functions. This is where cheat codes starts to feel like mashing buttons in a video game to unlock hidden features. The paradigm was initiated by Rod Constanzo's Block Party, which was goddamn gold.

Starting from the bottom row:

Z Z Z Z: start/end points, rate, direction

1	2	3	4	function
x	-	-	-	set pad's start (s) point to 0
-	x	-	-	restore default (s) + (e) points (based on pad ID)
-	-	x	-	1/16th @ bpm (s) + (e) points (based on pad ID)
-	-	-	x	set pad's end (e) point to 8
x	x	-	-	random (s) point
-	-	x	x	random (e) point
-	x	x	-	random window, (s) + (e) move together
x	-	x	-	double the loop length
-	x	-	x	halve the loop length, (s) + (e) move inward
x	x	x	-	loop sync across banks: a = b, b = c, c = a
-	x	x	x	loop sync across banks: a = c, b = a, c = b
x	x	-	x	2x current rate (4x max)
x	-	x	x	0.5x current rate (0.125x min)
x	-	-	x	toggle reverse playback
x	x	x	x	1.5x current rate (raise a fifth)

Z Z Z: panning

-	1	2	3	function
-	x	-	-	hard-pan pad L
-	-	x	-	hard-pan pad C
-	-	-	x	hard-pan pad R
-	x	x	-	nudge pad's panning to L
-	-	x	x	nudge pad's panning to R
-	x	-	x	reverse pad's current panning
-	x	x	x	random panning

Z Z: levels + play/pause

-	-	1	2	function
-	-	x	-	reduce pad's level by -0.125
-	-	-	x	increase pad's level by +0.125
-	-	x	x	toggle pad's playback (bright is paused)

nb. Though cheat codes can parse multi-finger presses within a right-angle slice, it can only parse presses on a single right-angle slice at a time. This won't limit playability, as you'll often use your left hand to play pads in the banks and your right hand to change parameters in the right-angle slice. You can even execute multiple commands on the same right-angle slice at the same time. Just don't get worried if you try to execute multiple commands on two separate right-angle slices at the same exact time and one of them doesn't happen.

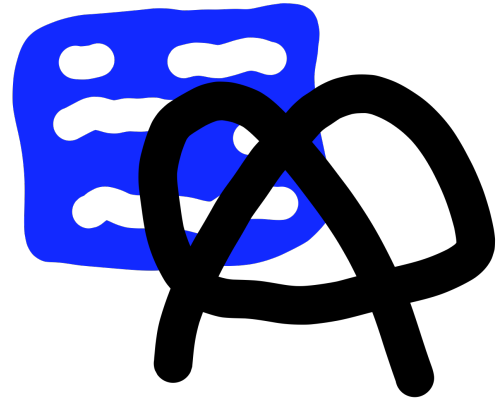
bank-wide changes

Holding ALT while performing a Zilchmo gesture will change the scope of the action to affect all the pads in the corresponding bank. For example, hold ALT and execute 2x current rate to multiply every pad's rate by 2x (1 -> 2, 2 -> 4, 0.25 -> 0.5, etc)

cheat codes has 6 buffers: 3 loopers for live recording + 3 static clips to load pre-recorded samples. To make things simple, these buffers are capped at 8 seconds of audio each.

Buffers can be switched and managed from grid directly, using the 1 2 3 and L C keys in the first and second row located between the bank and the Zilchmo right-angle slice:

```
x x x x | 1 2 3 f
x x x x | L C r P
x x x x | * - Z Z
x x x x | - Z Z Z
- - - - | Z Z Z Z
```



L(ive) and C(lip)

Using the L and C keys, you can tell the selected pad to apply its stored parameters to either the Live input or the loaded Clip.

If you load a Clip and play a Live instrument in the same tonality, a nice performance trick is to create a pattern of pad presses and dynamically change whether the pad is playing from the pre-recorded Clip or from the Live audio.

1 2 3

After you set a pad's audio stream (Live or Clip), use these keys to switch between the three buffers for that stream. For example: load 3 Clips in the PARAMS and for each of three pads in a bank, select Clip and choose a unique buffer for each. This allows you to play audio from three different pre-recorded samples in a single bank.

*** (pad playback loop or 1-shot)**

To set whether a pad loops its audio or performs a 1-shot, use the * toggle.

the 1 2 3 at the bottom of the grid

The bottom row of the grid interface looks like this:

```
A 1 2 3 | p p p m
```

Let's just focus on the 1 2 3 keys. This is how you can change which buffer the Live loop is recording into. By default, cheat codes is set to record into buffer 1. You can change this to record into buffer 2 or 3 with just a key press!

clearing your Live buffers

To clear the audio between the Live buffer's loop points, hold ALT and press the 1 2 3 key corresponding to the buffer you wish to clear. This will also put the record head into a disabled state, so you can choose when to record anew.

Let's change how the record head moves between the loop points!

Head to PARAMS, where you can switch the **live rec behavior** to *loop* or *1-shot*.

Live buffer **loop**

- Live buffer will loop between the start and end points
- When you press any of the 1 2 3 keys, you will switch to a new Live buffer and immediately begin recording; the loop window stays the same length
- If you press any of the 1 2 3 keys twice, you will toggle punch-in / punch-out (the grid LED will be bright for punch-in, dim for punch-out)
- *nb. Have a crow? Use input 1 to toggle punch-in/punch-out!*

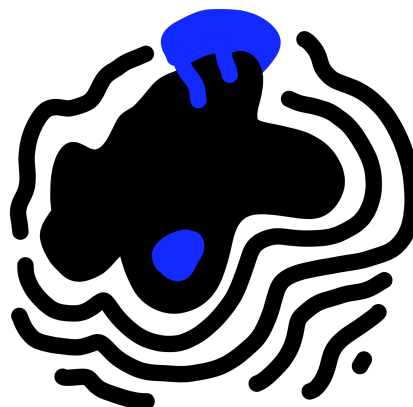
Live buffer **1-shot**

- Live buffer will perform a single recording pass from the start point to the end point
- When you press any of the 1 2 3 keys, you will switch to a new Live buffer and immediately begin recording; recording will stop when the end point has been reached and the loop window will stay the same
- If you press any of the 1 2 3 keys twice before the record head has reached the end point, the record head will jump back to the beginning of the Live buffer
- When the record head is recording, the grid LED will be bright; when the record head reaches the end point, it will stop recording and the grid LED will dim

By adjusting the Live buffer's loop points and behavior, you can easily structure a fun playground.

World 1: Recording Live

- Set the live rec behavior to 1-shot
- On the screen, set unique playhead loop points for the pads in banks (a), (b), and (c) so they each cover their own slice of the Live buffer
- Narrow the Live buffer's loop points and navigate to one of the sections that has a playhead
- Play your external sound source and trigger the 1-shot recording
- Navigate the Live buffer's loop to another section with a different playhead
- Play your external sound source and trigger the 1-shot recording
- Rinse + repeat to build a galaxy of micro-loops inside of the Live buffer



Patterns: an introduction

At the far (top) corner of each Zilchmo right-angle slice is a pattern key, which records pad playing for the Zilchmo's corresponding bank. Patterns will not record presses from other banks, only the bank to the left of the Pattern key. This creates opportunity for asynchronous pattern looping, where pad presses in each bank phase in and out of time.

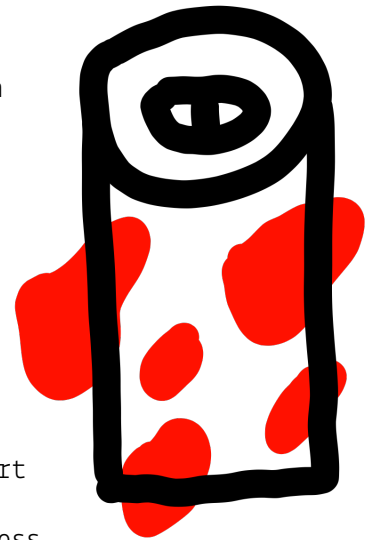
Pattern recording has two modes: classic and rad sauce. Switch between them in the PARAMS menu under pattern rec style.

classic: v1 behavior. Record pad presses in the bank, play them back. Zilchmo modifications change the pads parameters as the Pattern plays back. Great for morphing looping patterns + injecting quick shifts.

rad sauce: Pad presses and gestures on the fourth row of the Zilchmo right-angle slice are recorded. When the Pattern plays back, it will recall a pad's state both pre and post-Zilchmo. Really nice for capturing + repeating performances.

There are various LED indicators:

- base-light: No pattern recorded. Press the Pattern key to start recording!
- blinking light: Pattern recording. Play some pads and then press the Pattern key to stop recording + start playback.
- bright solid light: Recorded Pattern is playing. Press the Pattern key to stop playback.
- mid-level solid light: Pattern is recorded, but not playing. Press to the Pattern key to start playback.



clearing Patterns

Holding ALT while pressing any Pattern key will clear out that recorded Pattern.

random Patterns

Random processes can unlock your id and stoke the fires of inspiration. cheat codes features a comprehensive Pattern randomization function that works in conjunction with the [timing] modes that follow to create new sequences and re-build your pads' foundations (including pitch, loop location, and loop duration).

Just hold ALT + press the blank key next to the Pattern key!

Currently gridless? You can still create random Patterns! Head to the next section to find out how :)

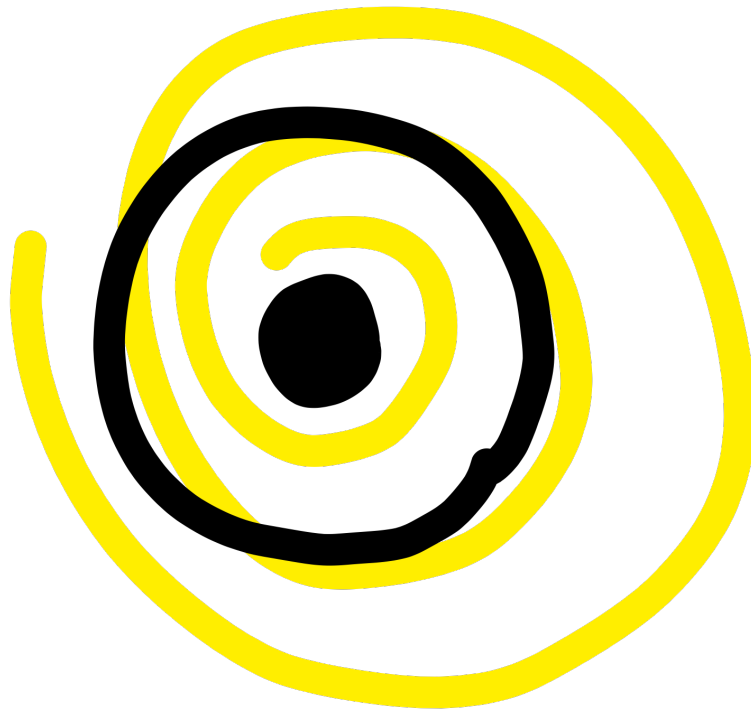
While cheat codes is well-suited for asynchronous explorations, Patterns open up a whole world of clock-friendly possibilities!

With norns update 200426, cheat codes is able to speak ticks with the following:

- the norns internal clock
- MIDI
- crow
- Ableton Link

To set things up, head to the main SYSTEM menu and navigate to CLOCK. You'll see a number of options. Here are how the various settings interact with cheat codes:

- source: pick any! cheat codes vibes with 'em all :)
- tempo: this sets the pace of Pattern playback as well as the delay rates
- reset: resets the clock counter to 1.1
- link quantum: you should be fine to leave this at '4' – if two Link devices have the same quantum they'll be in sync and '4' is a good baseline for 4/4 sessions. I like running Live with Global Quantization set to 1 bar to stay synced to cheat codes.
- midi out: if you want midi clock out, regardless of source, set to the desired port
- crow out: set to output 4, as the first three outputs are handled by the [timing] menu
- crow out div: send subdivisions of the clock source, adjust to taste
- crow in div: depending on your modular clock source, adjust to taste to get cheat codes clocking as expected/desired



[timing]

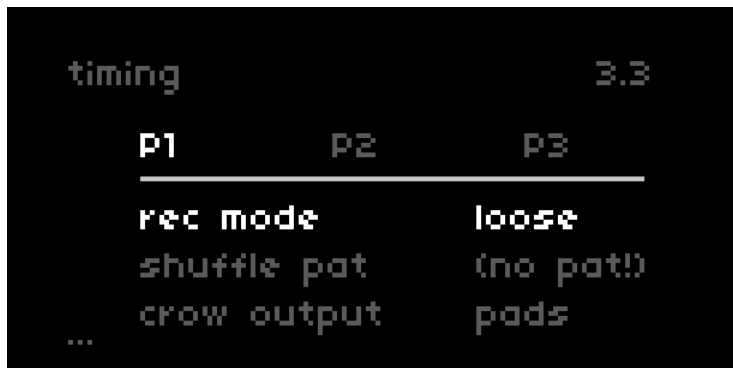
[timing] holds a number of powerful + quickly accessible controls. Use E1 to navigate across the different domains, E2 to choose a submenu item, and E3 to change it.

P(atterns)

rec mode

There are four modes of Pattern recording + playback:

- *loose*: Exactly as played. Use this for asynchronous, wandering phrases.
- *distro*: Using the CLOCK tempo, cheat codes will manipulate the timing of your recorded Pattern to fit the events into the closest whole bar count. In this mode, if you record a Pattern that lasts 2.3 seconds at 120 bpm, cheat codes will dynamically shrink the time between events to fit the whole Pattern into 2 seconds. Use this for “fuzzy clocking”, when you want natural timing in a fixed length.
- *quant*: Using the CLOCK tempo, cheat codes will snap the timing of your recorded Pattern events to the nearest sixteenth note. Length of the Pattern is untouched. Use this for tightly-synced events with dynamic loop lengths.
- *quant+trim*: Using the CLOCK tempo, cheat codes will snap the timing of your recorded Pattern events to the nearest sixteenth note *and* adjust the total loop length to the closest whole bar count. Use this to improvise predictable Pattern loops with strongly-synced events.



The two *quant* modes have an extra benefit of event execution being driven by the CLOCK source, rather than the series of de-coupled timers that drive *loose* and *distro*. This means that if you change the tempo while *quant*'d Patterns are playing, the timing of the Pattern will also change.

After you've already recorded your Pattern, you can freely switch between *loose* and *quant* – playback timing will dynamically adjust. *nb. since distro and quant+trim are destructive modes (they add or remove events), they are record-only modes...they do not affect playback if a Pattern wasn't recorded in their modes.*

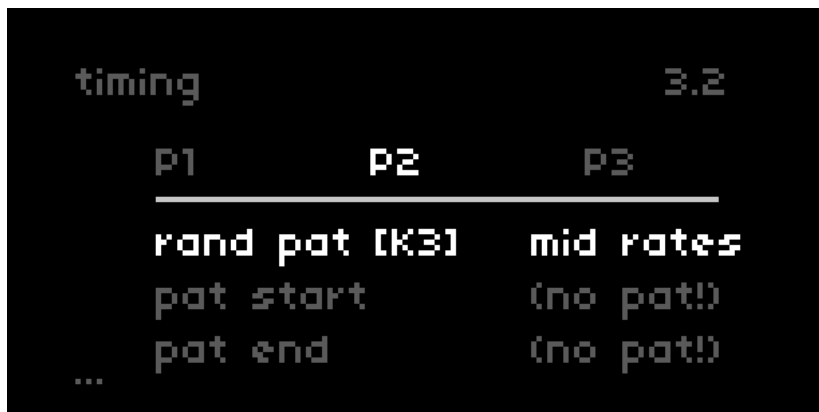
cheat codes: [timing]

shuffle_pat

Once you record a Pattern, use K3 on this line to shuffle the order of events in your Pattern. Timing of individual events will remain the same, so loop length will be unchanged, but the order in which the events are executed will be brand new!

crow output: details on page 23

nb. cheat codes 1.3 now features TWO [timing] menus per Pattern. Use K1 to scroll down to page 2:



rand_pat

On page 10, we discussed how to execute random patterns from the grid – here, we can perform this task gridless (by highlighting this menu item and specify the distribution of random rates.

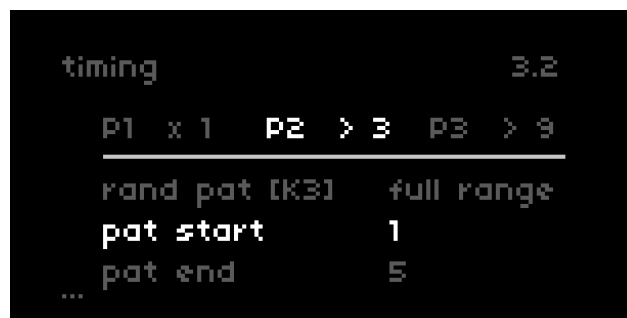
rand pat has four options to generate random rate values (inclusive of reverse):

- *full range* (default): 0.125x -> 4x
- *hi rates*: 2x + 4x
- *mid rates*: 0.5x, 1x, 2x
- *low rates*: 0.125, 0.25x, 0.5x

gridless? Use K1 to pause a playing Pattern. Use K1 + K3 to clear a Pattern. These actions affect the Pattern whose page is currently in focus on the screen.

pat start + pat end

Whenever a Pattern is loaded, its start and end points will be reflected by these two variables. Use them to fine-tune your random Patterns to tase or window selections of your composed Patterns.



World 2: Shaping Time

nb. Please set up audio for your banks and pads ahead of this section. It might be best to just load a pre-recorded sample.

These three sub-worlds will help you explore the possibilities of incorporating varied clock sources and Pattern recording modes into your cheat codes sessions. For the best results, reset changes between sub-worlds.

2.1: Internal Clock

- Set CLOCK to *internal* + adjust tempo to taste
- On P1, set *rec mode* to *quant + trim*
- Arm Pattern recording for bank 1 on grid (notice the Pattern key flashes at the specified tempo)
- Play a one-bar pattern on the corresponding bank's pads
- End the Pattern recording and the Pattern will play + loop
- Choose a new tempo; Pattern playback will change as well
- On P2, set *rec mode* to *loose*
- Arm Pattern recording on grid and complement the steady Pattern with a fluid and asynchronous "counterpoint"
- On P2, execute *shuffle pat* to subvert the timing of your second Pattern

2.2: Link

- Set CLOCK to *link* + connect to another Link device on your network
- On P1 and P2, set *rec mode* to *quant*
- Arm Pattern recording for the two banks and record Patterns of different lengths
- Try adjusting *pat start* and *pat end* to spice things up!

2.3: crow Clock

- Connect crow to noins
- Set CLOCK to *crow*
- Connect a pulse signal to crow's first input
- Record a pattern (button mash a bit, independent of the clock)
- After ending the recording, the Pattern will play back at the pulse signal's rate
- Change the speed of your pulse signal's rate; the Pattern playback will morph as it adjusts to match the crow-derived tempo

cheat codes: [timing]

Patterns: meta page

The bottom-right grid key toggles grid's display between our main performance page and a special Pattern meta page. Here, you can save up to 8 grid Patterns per bank and sequence them using a meta-sequencer similar to Kria.

This page is essentially three instances of this configuration (one for each bank):

```
[P] [P] [P] [P] [P] [P] [P] [P]
[c] [c] [c] [c] [c] [c] [c] [c]
[~] [~] [~] [~] [~] [~] [~] [~]
[~] [~] [~] [~] [~] [~] [~] [~]
[d] [d] [d] [d] [d] [d] [d] [d]
```



P: Pattern save/load slots

If a bank has a Pattern recorded, that Pattern can be saved for long-term storage in any of the slots in this section's first row. Once a Pattern is saved, it can be erased from the play page and re-loaded from the meta page.

To save a Pattern in a slot:

- record a Pattern on the play page
- switch to the meta page
- press and hold any slot to save the corresponding Pattern there
- the slot's LED brightness will increase to show a Pattern is saved there

To load a Pattern from a slot:

- on the meta page, press any slot that has a saved Pattern to load that Pattern immediately
- Loading a saved Pattern slot will overwrite any currently unsaved Pattern on the play page

To erase a slot:

- while holding ALT, press and hold a Pattern slot that has saved data
- after one second, the Pattern slot will be erased

c: meta-sequence clock divider

Each bank's meta-sequencer can be set to divide the clock (internal or external) by integers 1 through 8. Each click of the clock divider pushes the **d** (duration) counter.

~: the meta-sequencer

Each bank's meta-sequencer can trigger up to 16 Pattern switching events.

To assign a Pattern slot to a meta-sequencer step:

- press and hold a meta-sequencer step
- while holding, select a Pattern slot from the section's top row
- after selecting, release all keys

To clear a meta-sequencer step:

- press and hold ALT
- press the meta-sequencer step you wish to clear

nb. changes you make to a step's duration or Pattern loop state will remain

To see which Pattern slot a meta-sequencer step is assigned:

- press and hold a meta-sequencer step and its corresponding Pattern slot will illuminate

d: step duration counter

The step duration counter is driven by the meta-sequence clock divider. You'll notice that the default step duration is 4 clock ticks. When the step duration counter reaches its end, it will move the meta-sequencer to the next step.

To set the duration of a step:

- press and hold a meta-sequencer step
- while holding, select a new end point for the current step's duration counter
- hold ALT while adjusting the duration counter to adjust all steps at once

To see a step's duration:

- press and hold a meta-sequencer step
- while holding, you'll see a change in LED levels to indicate the selected step's duration counter end point

Bottom Row

Along the bottom of the meta page is a series of handy controls, some currently implemented and some planned:

[A] [t1] [t2] [t3] - - [1] [m]

We've already covered ALT and the meta page toggle.

toggles on/off

t1, t2, and t3 act as multi-function toggles.

meta-sequencer toggles:

- when no other key is held, they toggle their respective meta-sequences on/off (which will pause the respective meta sequencer)
- hold ALT and press any of these toggles to reset the meta-sequencer counters and steps to the beginning of the loop

per-step Pattern loop toggles:

- press and hold one of the steps and you'll notice the toggle indicators change intensity
- if the key is illuminated, this means that the currently held step is set to loop its pattern
- press the toggle to turn this looping behavior on/off

meta-sequence loop points

Hold the *l* button in the bottom row to perform loop mods. While *l* is held, your first press will always establish the start point for the meta-sequence's loop and your second press will always establish the end point. If you set an end point that's before the start point, you will get a single-step loop.

World 3: Remember

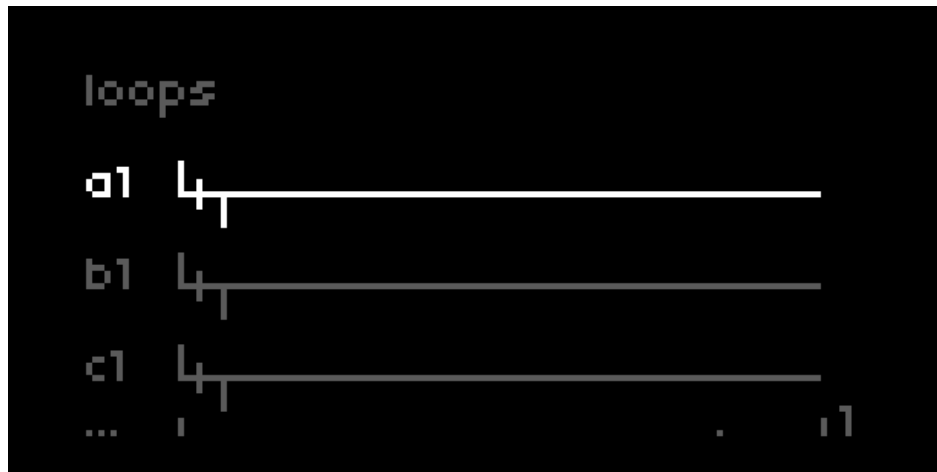
- Record some audio into the Live buffers
- Set Zilchmo's style to **rad sauce**
- On the play page, record a Pattern of pad changes and Zilchmo gestures
- After you record a Pattern, switch to the meta page and save this pattern in an empty slot
- Switch back to the play page and erase the Pattern (don't worry, it's saved in the slot on the meta page)
- Record a new Pattern of pads + gestures with the same bank as before
- Save this pattern in an empty slot
- Repeat until you have four pattern slots saved
- On the meta page, switch between your saved Patterns (you'll hear them start playing)
- Figure out an order for your Patterns and enter some as steps in the meta-sequencer
- Use the *l* mod to change loop points

cheat codes: buffers + [loops]

buffers + [loops]

As mentioned earlier, cheat codes has 6 buffers: 3 loopers for live recording + 3 static clips to load pre-recorded samples. To make things simple, these buffers are capped at 8 seconds of audio each.

When you load a fresh session of cheat codes, Live buffer 1 is already recording in a loop. To see the record head's position, navigate to the [loops] menu:



The record head is the small dot at the bottom of the screen.

Using K3, you can navigate down to the Live buffer's loop and adjust its start and end points the same way you adjust the other loops':

- E2: start point
- E3: end point
- E1: move loop window

PARAMS

In the PARAMS menu, you'll find a number of "set it and forget it" parameters that don't require an in-script shortcut:

feedback

By default, the record head has a 25% feedback setting - this means that when it passes over previously recorded audio, the previous audio's level will reduce by 75%. Adjust to taste.

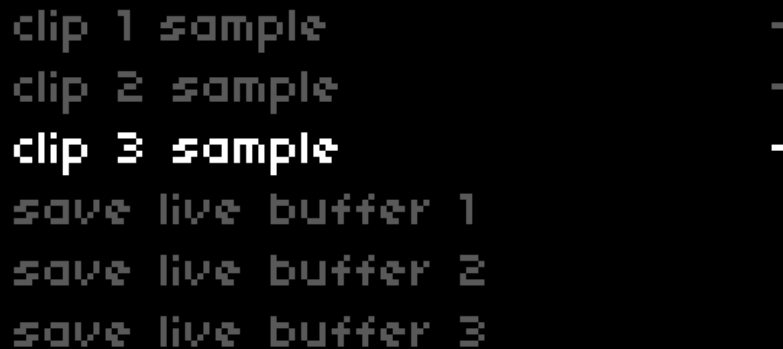
loop encoder resolution

By default, the encoders on [loops] will scroll at 100ms intervals. This can be changed to 10ms intervals by adjusting this parameter to 0.01

cheat codes: buffers + [loops]

clip [x] sample

Load a sample into one of the three static clips or save the audio in the Live buffers as a clip:



```
clip 1 sample -
clip 2 sample -
clip 3 sample -
save live buffer 1
save live buffer 2
save live buffer 3
```

nb. norns + cheat codes expect .wav files @ 48khz. You can load files with other sample rates, but their pitch will be wonky.

save live buffer [x]

If you've recorded something into the Live buffer of cheat codes and wish to save this audio as a Clip for future manipulation, highlight this parameter and hit K3 to write the audio into a special folder, located at `we/dust/audio/cc_saved_samples`. The file will be named as `cc_YYMMDD_TIME-buffBUFFERNUMBER.wav`

World 4: Gaming the System

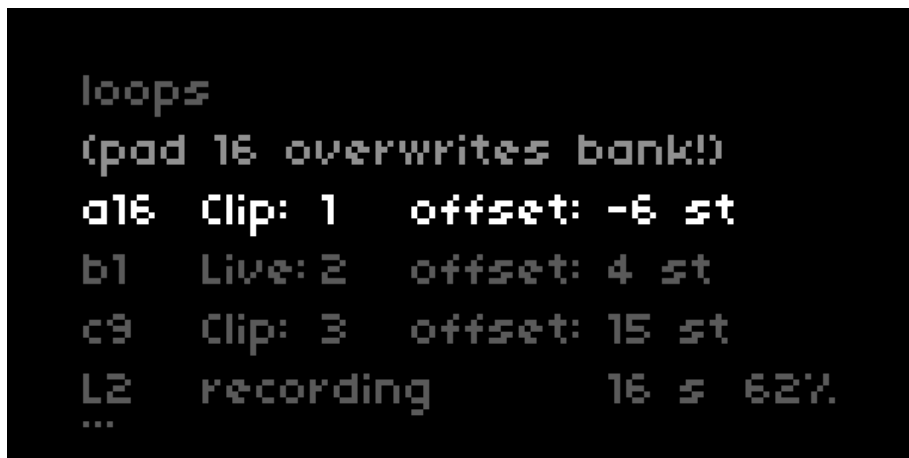
- Load a sample into clip 1 and use grid to switch a bank to reference it
- Set Pattern recording to **rad sauce**
- Set the pads to **loop**
- Arm Pattern recording, but don't touch any pads yet (*nb. Pattern recording doesn't actually start until a pad is pressed*)
- Navigate to the [loops] page and use E1 to move the loop window, then press the corresponding pad
- Move the loop window and press the same pad again
- Again (and as many times as you'd like – same pad, but using E1 to change loop windows)
- Play the pattern back

You'll notice that even though we didn't change what pad we were hitting, the loop window's loop points were recorded with each press. This is because **rad sauce** mode records not only which pad was pressed, but also its parameters' states.

Though the grid interface for cheat codes provides the most comprehensive control over its features, gridless play is totally possible and may provide a nice challenge to shake up your muscle memory.

Through the [—] menus, it's easy enough to make choices and changes, but one facet of play had previously been locked to the gridless: selecting, swapping, and manipulating the six buffers.

In [loops], hold K1 to access an alt menu:



Use K3 to move down the screen.

For the first three lines:

- E1: switch between pads, 1-16, across each bank (*nb. changes made to pad 16 will map to all pads in the bank, as an approximation of grid's handy ALT functions*)
- E2: switch which buffer the selected pad references, Live (1-3) then Clip (1-3)
- E3: add a semitone offset to the selected pad

For the last line:

- E1: switch between the three Live buffers, to record unique audio into each
- E2: enable or disable recording into the selected Live buffer
- E3: extend the maximum Live buffer recording time

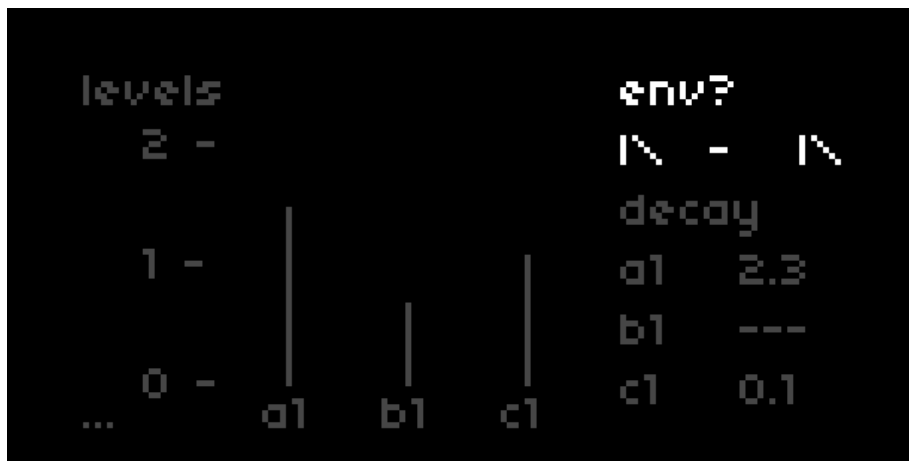
A note about extending the maximum Live buffer recording time:

This control slows the rate of the Live buffer record head, so it's still only traveling along an 8 second buffer, but it's doing it at half (or a quarter) of the normal rate. This introduces a nice sprinkling of grit but also an immediate chipmunk effect. For "normal" play with a slower Live buffer, you can use the offset controls to subtract octaves: a 16s Live buffer corresponds to a -12st offset, 32s corresponds to -24st.

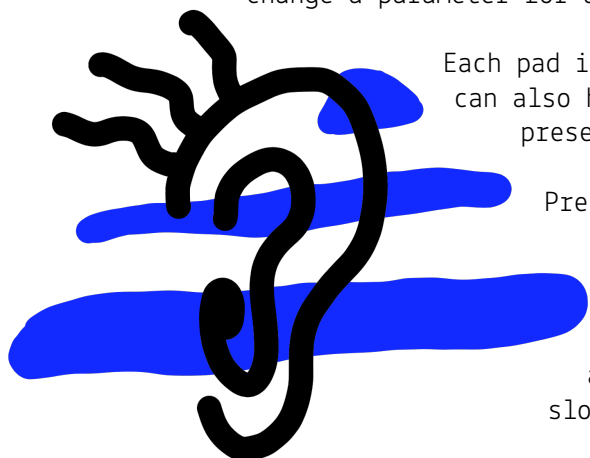
cheat codes: [levels]

[levels]: volume and envelopes

When you navigate to the [levels] menu, you'll find controls for volume and envelopes:



By default, these controls only affect the currently selected pad. Use ALT (or K1) to change a parameter for all the pads in the bank.



Each pad in each bank can have its own volume, but each pad can also have its own decaying envelope to shape its presence in your mix.

Press K3 to navigate to the **env?** submenu and use the encoders to enable/disable the envelope for each bank's current pad. Press K3 again and use the encoders to choose a decay length for each bank's current pad. Envelopes can be as short as 100ms for snappy perc, or as long as 60sec for slow fades.

Envelopes work with both 1-shot and looping pads:

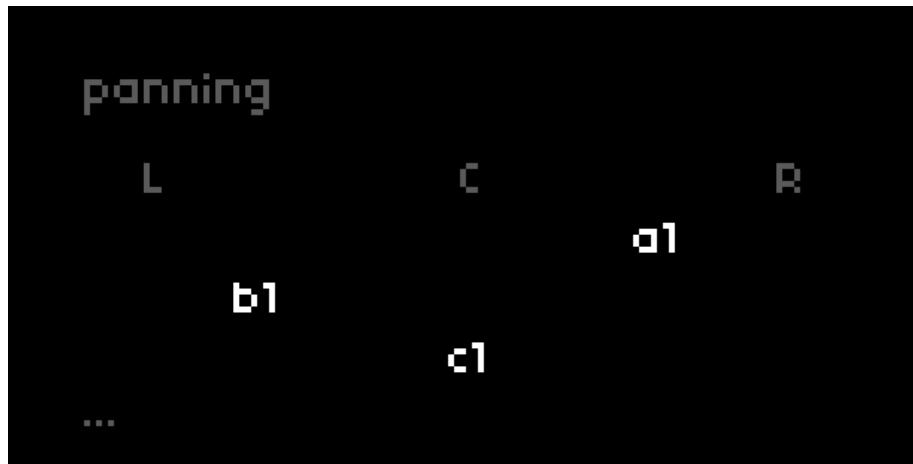
- Try setting a pad to a super-short loop, double its rate, enable the pad's envelope, tune it to a 0.9 sec decay, and trigger the pad
- Try setting a pad to 1-shot with a long loop, enable the pad's envelope, tune it a 2.3 sec decay, and trigger the pad

ALT is particularly helpful on this page, as it will allow you to fade in an entire bank's worth of pads, or evenly adjust bank-wide envelope decay. When Patterns are in full-swing, this can be very handy.

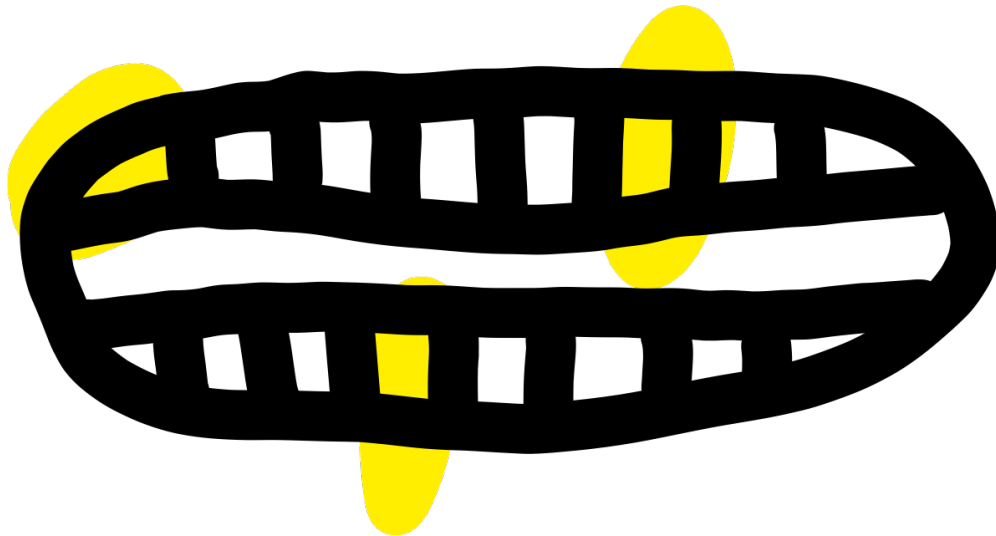
cheat codes: [panning]

[panning]: movement in the field

To help layer your worlds, utilize per-pad and bank-wide panning:



Each encoder controls the panning position of the currently-selected pad in each bank. Hold K1 to adjust all of the pads in the bank uniformly and from their current position – eg. if pad 1 is set slightly L and pad 2 is set C, a K1-held clockwise encoder adjustment would bring pad 1 to C and pad 2 slightly R.



cheat codes: [filters]

[filters]: timbral shaping

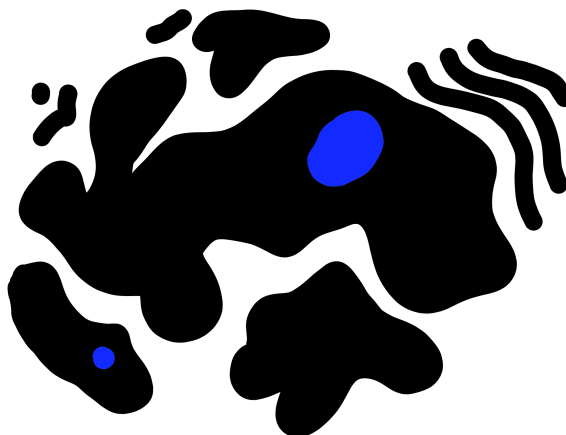
When you navigate to the [filters] menu, you'll find a set of streamlined LP/HP dj-style filters:



By default, these controls affect the entire bank of pads at once. This makes it easy transform the frequency content of a playing Pattern. Hold ALT to change the filter parameters of a currently selected pad.

Use K3 to switch between:

- *filter tilt*: CCW for LP, CW for HP, with a neutral middle
- *ease timing*: if two pads have different *tilts*, *ease timing* defines the length of filter sweep between the two values
- *transition character*: if the *tilt* is *easing* between two values and a new pad is pressed, should the *ease* simply pivot toward the new value (*cont*) or should it jump to its original destination and then *ease* toward the new value (*jumpy*)?



If you have individual *tilt* values for each pad, performing a global adjustment will add or subtract from the individual values accordingly. There is no limit, however – so it's entirely possible to spin an encoder for a while and min/max-out your individual values. This may be desirable in some cases, but it might be unexpected in others.

cheat codes: [delay]

[delay]: in stereo

cheat codes comes with its own super-utilitarian stereo delay:

delay			
	/1 1/3	rate	x1 1/3
	32	feed	92
	7787	cutoff	7202
	0.36	q	0.09
...	0.88	level	0.71

Use E1 to navigate the rows, E2 and E3 to change left and right, respectively.

- *rate*: adjust the multiplier/divisor for unique delay rhythms
- *feed*: feedback control
- *cutoff*: cutoff param for a LP filter
- *q*: lower values = higher resonance
- *level*: how present should each channel be in the mix?

By default, all banks feed into the delay lines. You can turn bank sends on/off in the system PARAMS, under *delay L/R: [x] send*. Map a MIDI fader to quickly toggle 'em!



cheat codes: arc

The Rumble Pak of cheat codes.



parameters

The arc parameter selectors are the first three keys underneath each bank:

- selector 1: loop window
- selector 2: loop start
- selector 3: loop end
- selector 1+2+3: filter tilt

cheat codes will also recognize if an arc is connected and display the selected arc parameter underneath each bank.

Each arc encoder linearly corresponds to each bank; 1:a, 2:b, 3:c. The fourth arc encoder controls both the Left and Right delay rates. By default, it displays and controls the Left channel – hold ALT to display and control the Right channel.

arc patterns

There are also three pattern recorders just for arc!
Remember those p's in right of the grid's bottom row?

A 1 2 3 | p p p m

Use these to control pattern recorders for each arc encoder. These will record both arc encoder turns as well as arc parameter changes. Record + playback follows the exact same process as the grid patterns. Similarly, you can use ALT to clear the arc patterns.

arc patterns are special – gestures are localized. This means that when you record an arc pattern, cheat codes remembers which pad each gesture affects. This provides an

alternate take on patterning that grid-based Patterns can't replicate – it also opens up new possibilities for cross-talk between the two interfaces.

Thanks to Labor Camp's suggestion, the April 8, 2020 update allows you to save your arc patterns as part of a Collection!

There is no menu or on-screen UI. If you have any arc patterns recorded when you save your Collection, they'll save with your Collection. If you open any Collections that have arc patterns saved, they'll restore!

FWIW, arc patterns are saved here: ``dust/data/cheat_codes/arc-patterns/collection-X`` as ``encoder-Y.data``.

World 5: Ebb and Flow

5.1: *alone*

- Load audio
- Make a single pad loop
- If not already selected, set an arc encoder to *window*
- Arm the corresponding arc pattern recorder
- Travel the window
- Switch arc encoder to *start point* + manipulate
- Switch arc encoder to *end point* + manipulate
- Disarm arc recording and everything you performed will play back

5.2: *changes*

- Keep the arc pattern playing (or if you already erased it, record a new one)
- On grid, change the pad focus
- Notice that the window, start, and end point adjustments do not affect other pads
- When you change focus back to the arc-recorded pad, the arc pattern picks back up where it left off
- When the arc pattern loops to its start, the arc-recorded pad will jump back into focus

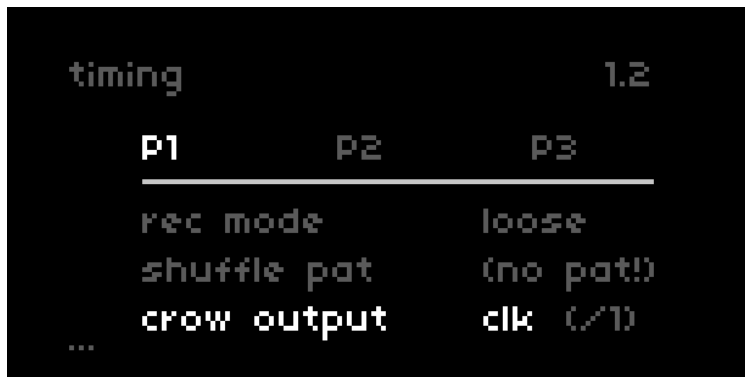
5.3: *partners*

- Keep the arc pattern playing (or if you already erased it, record a new one)
- On grid, enable grid Pattern record
- Record a grid Pattern that departs from and returns to the arc-recorded pad
- Disarm grid recording and (unless you have superhuman timing) the two patterns will work together to create a subtly ever-morphing sequence of micro-adjustments

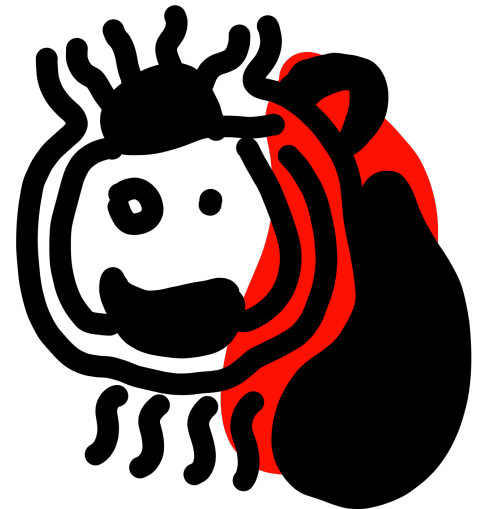
cheat codes: crow

nb. Use crow's first input to toggle Live recording on/off

Through the [timing] page, you can customize how crow interacts with cheat codes:



timing			1.2
	P1	P2	P3
	<hr/>		
	rec mode		loose
	shuffle pat		(no pat!)
	crow output		clk (/1)
	...		



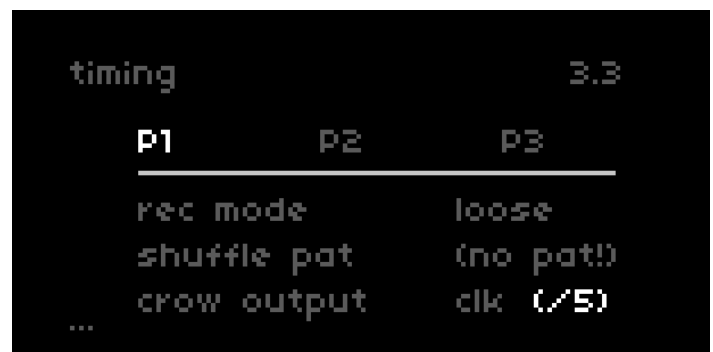
There are two primary modes, which can be mixed and matched:

- *clk*: send steady divisions of the clock (whether the clock is internal, MIDI, or from crow itself)
- *pads*: any time a bank's pad is pressed, send a pulse to the corresponding crow output (very fun, especially once you start sequencing Patterns)

clk

If you wish to send divisions of the clock through crow's outputs, you'll first need to enable *send crow clk?* in the *clk* [timing] domain. As soon as you enable this mode, crow output 4 will emit a steady pulse. crow output 4 has a steady 1/1 division.

Now, enter any of the *P*(attern) domains to specify the division for the other crow outputs. If *crow output* is already set to *pads*, use E3 to change to *clk*. Then, use E2 to navigate over to the divisor selector and choose a division 1-16.



timing			3.3
	P1	P2	P3
	<hr/>		
	rec mode		loose
	shuffle pat		(no pat!)
	crow output		clk (/5)
	...		

pads

In this mode, presses on a bank's pads will send a quick trigger signal through the corresponding crow output. If a Pattern is playing with this mode enabled, playback will also fire off triggers. Combine with other [timing] actions for unique rhythms.

By default, all pads produce a pulse. Thanks to Cool Maritime's suggestion, cheat codes allows you to specify this setting per-pad.

To access the per-pad crow pulse control:

- press grid-ALT + focus (see p.4 of the cheat codes manual) to enter focus mode for any bank
- you'll see the LED right under pad 16 illuminate – bright means the pad will produce a pulse, dim means it won't
- in focus mode, hold grid-ALT and press the per-pad toggle to set all of the pads in the bank to the current setting

Since this is a focus mode setting, you can toggle pulses on/off while a grid Pattern plays, to add rhythmic variance!

cheat codes: OSC

OSC is a fantastic way to reimagine control over cheat codes beyond grid and arc. To kick things off, give the new TouchOSC template a try:

- Download TouchOSC on an iPad
- Load the 'cheat_codes' layout into TouchOSC
- With norns on the same WIFI network, open TouchOSC's "CONNECTIONS" menu -> OSC and select norns as a host
- Open TouchOSC's "Options" menu and toggle on Bundle Messages + Send Ping, and set Delay to 1s
- Tap "Done" in the top right corner of TouchOSC
- After a second, cheat codes should automatically recognize your iPad's IP and port in its **OSC setup** parameters menu
- You should now be able to control cheat codes from your iPad!

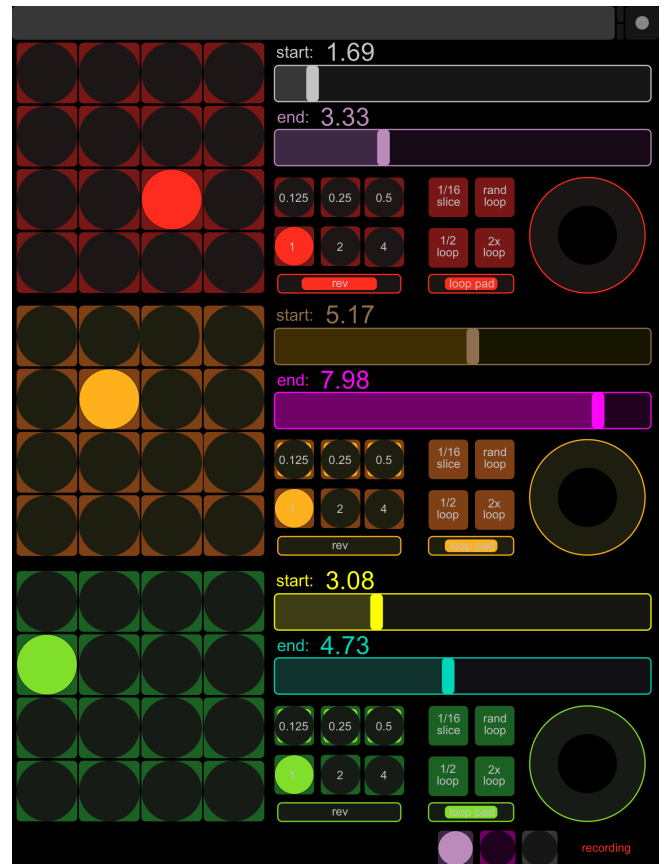
Pads are pads, start/end are loop start and end points, the jog wheel moves the loop window, etc.

To switch which buffer a bank/pad references:

- navigate to [loops] and hold K1 on norns
- tap a pad to bring it into focus and use E2 to cycle through the Live and Clip buffers
- tap pad 16 in any bank to change *all* the pads in that bank

To help facilitate your development of new interfaces to control cheat codes, the end-points have been exposed for bi-directional OSC mapping:

- /pad_sel_X: jump to a new pad in bank X
- /rate_X: assign rate to the current pad in bank X
- /rate_rev_X: reverse the rate of the current pad in bank X
- /pad_loop_single_X: loop the current pad in bank X
- /pad_loop_all_X: set all the pads in bank X to loop
- /pad_start_X: set the start point for the current pad in bank X
- /pad_end_X: set the end point for the current pad in bank X
- /pad_window_X: move the loop window for the current pad in bank X
- /pad_loop_slice_X: set the length of the current pad in bank X to 1/16 current bpm
- /pad_loop_double_X: double the loop length of the current pad in bank X
- /pad_loop_half_X: halve the loop length of the current pad in bank X
- /pad_loop_rand_X: randomly create a loop window for the current pad in bank X
- /rec_clip_X: switch which Live clip should be recording, send the same argument to toggle recording off/on



collections

Everything you change in a cheat codes session – banks, pads, Patterns, meta-sequences, params, audio in the buffers (Live and Clip), etc etc – can be wrapped up and saved into a single collection.

Navigate to the system PARAMS menu for cheat codes and you'll see a **collection** selector up top. You can save up to 100 collections, so don't feel bashful – if you land on a nice thing, feel free to save it and revisit it later.

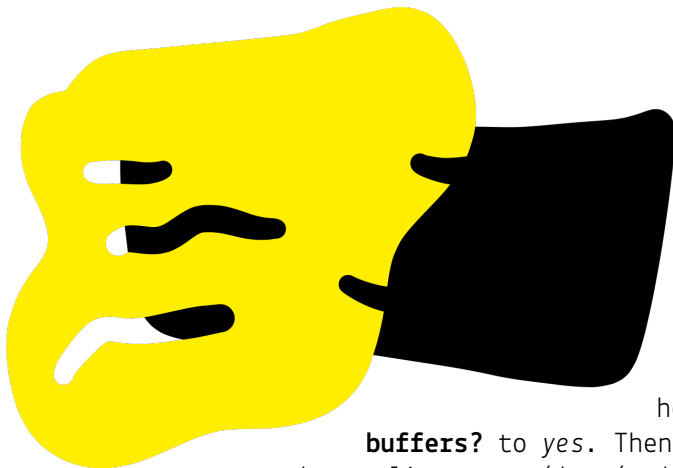
Once you decide on a number, highlight *save* and hit K3.

When you decide you want to re-open a collection, simply select the number that corresponds, highlight *load* and hit K3.

If you make changes to a loaded collection, you'll need to *save* the collection again in order for cheat codes to commit the changes. Otherwise, you can just reload the collection and your session will restore to its previous state.

If you load a fresh cheat codes session, nothing will be reinstated from your previous session. You always have to *load* a collection.

As you add to your collections, please be careful when saving – there is no undo!



how does audio save?

When you load a collection, cheat codes will always restore the pre-recorded audio in each of the Clip slots (provided that you haven't moved/deleted them). If you've recorded something into the Live buffer of cheat codes and wish to restore this audio into the Live buffers whenever you load this collection in the future, head to PARAMS and set **collect Live**

buffers? to yes. Then, save your collection. This will save three clips at `we/dust/audio/cc_collection-samples/`
`COLLECTIONNUMBER` as `cc_COLLECTIONNUMBER_BUFFERNUMBER.wav`. When you load that collection in the future, these samples will be loaded into the Live buffers and Live recording will be disabled (so the record head doesn't overwrite your restored audio).

Additionally, you can simply save whatever audio is in your Live buffers without having to save a collection (let's say you don't need the other settings to persist, but you dig what you sampled). Head to PARAMS, highlight **save live buffer [x]** and press K3. This will write the audio into a folder at `we/dust/audio/cc_saved_samples`. The file will be named as `cc_YYMMDD_TIME-buff[x].wav`