Nervous Squirrel — Conway's Game

- Manual PDF

Manual PDF / source

Nervous Squirrel — Conway’s Game

How it can be used for melodic components in a Eurorack system

This module is unusual: it is **not a pitch CV sequencer**, but a **64-output trigger/gate matrix** driven either by:

- **Conway’s Game of Life** on an 8×8 grid, or
- **MIDI note input** mapped to 64 outputs

That means its strongest melodic role is as a **rhythmic and structural brain** for melody generation rather than as the direct source of note voltages.

What the manual shows

Core functions

- 8×8 LED matrix displays Conway’s Game of Life
- 64 outputs correspond to the 64 cells
- Outputs can operate as:

- **Triggers**: 20ms pulses
- **Gates**: held high while a cell is alive
- Internal clock defaults to **10 Hz**
- External **CLOCK IN** can drive it up to about **270 Hz**
- **RESET** starts a new random cell population
- **MIDI mode** responds to notes **C2 (36) to E7 (100)** across the 64 outputs
- Output level: **8V**

Musical implication

This is essentially a **large parallel event generator**. It excels at: - distributing timing events, - creating conditional note changes, - generating layered phrase structures, - animating quantizers, switch networks, sequential switches, sample & holds, and envelopes.

Best ways to use Conway's Game for melody

1. Use it as a trigger source for a pitch-generating voice

The simplest melodic use:

Patch concept - One Conway output → envelope trigger - Same output or another related output → sample & hold clock - Random or structured CV source → quantizer → oscillator pitch

Result - Conway determines **when notes happen** - The quantizer determines **what notes happen**

This works well because Conway produces patterns that feel more organic than a regular step sequencer.

Example patch

- Noise / random CV → S&H input
- Conway output 1 → S&H clock
- S&H out → quantizer
- Quantizer out → VCO 1V/oct
- Conway output 1 → envelope → VCA

This gives you a melodic line whose rhythm is derived from one cell's activity.

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2. Use multiple outputs to build phrase hierarchy

Because there are 64 outputs, you can treat different cells as different musical layers.

Suggested layer roles

- **Fast cell outputs** → note triggers
- **Slower/looping cells** → phrase reset or transposition
- **Sparse cells** → accent or ratchet triggers
- **Long-lived gates** → drone enable / sustained note hold

Example

- Output A → main melodic trigger
- Output B → transpose quantizer by +5th when high
- Output C → switch quantizer scale
- Output D → reset a sequential switch
- Output E → open a secondary VCA for harmony voice

This is where the module becomes powerful melodically: one automaton creates **correlated control structure** across many parameters.

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3. Use gate mode to create sustained melodic states

The **TRIGGERS / GATES** switch matters a lot for melody.

In trigger mode

Good for: - plucks - short envelopes - clocking S&H - advancing sequencers

In gate mode

Good for: - sustained notes - holding switches in one state - enabling quantizer transpose inputs - keeping a voice active while a cell remains alive

Melodic application

A gate from one cell can: - hold a note open, - keep a sub-oscillator harmony active, - maintain a transposition offset, - keep a sequencer direction or range altered.

That lets the Game of Life behave like a **phrase-state generator** rather than only a trigger source.

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4. Turn 64 outputs into note selection logic

If you have utility modules such as: - logic, - OR combiners, - trigger combiners, - matrix mixers, - sequential switches, - addressed switches,

then Conway's 64 outputs can become a **decision field** for melody selection.

Patch idea: note pool selector

- Prepare 4–8 fixed voltages representing scale degrees
- Use Conway outputs to clock/select a sequential switch
- Other Conway outputs enable or mute certain note lanes

- Quantizer or precision adder organizes the final pitch

Result: the melody evolves according to automaton behavior, not just random voltage.

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5. Use Conway to animate a sequencer instead of replacing it

This is probably the most practical musical use.

Patch concept

Traditional sequencer + Conway modulation

- Pitch sequencer provides stable tonal material
- Conway outputs affect:
- clock skips
- stage advance
- reset
- transpose
- rests
- octave jumps
- envelope variation

Example

- 8-step CV sequencer → quantizer → VCO
- Conway output 1 → master trigger to envelope
- Conway output 2 → sequencer reset
- Conway output 3 → precision adder +1 octave
- Conway output 4 → switch between two sequencer rows
- Conway output 5 → disable trigger path for rests

This preserves musical intention while adding evolving melodic variation.

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6. Use the MIDI mode as a 64-way note-to-trigger decoder

The manual states that MIDI input can control **64 separate trigger outputs** across notes 36–100.

This is very useful if you compose from a DAW, hardware sequencer, or MIDI keyboard.

Melodic uses of MIDI mode

- Convert specific MIDI notes into individual modular events
- Use MIDI clips to “draw” melodic activation patterns across the 64 outputs
- Trigger different melodic functions from different incoming notes

Example hybrid patch

From DAW MIDI: - C2 → trigger note event - D2 → transpose +2 semitones - E2 → switch to a different scale - F2 → trigger harmony voice - G2 → reset sequencer - A2 → clock burst generator - B2 → accent

So instead of using MIDI to directly play pitch, you use it to **orchestrate modular melodic logic**.

This is especially strong for: - generative composition with controlled form, - live performance cueing, - complex melodic state changes from a single MIDI track.

Musical strategies for actual melody creation

Since Conway’s Game does not generate pitch CV directly, you’ll want one or more of these companion module types in your rack:

A. Quantizer

Essential if you want tonal melodies.

Why Conway gives timing and logic, not note voltages.

How to use together - Random CV or stepped CV → quantizer - Conway output clocks the note changes - Additional Conway outputs transpose or switch scales

This produces coherent melodies from otherwise abstract activity.

B. Sample & Hold / Track & Hold

Very strong pairing.

How - Source CV: noise, chaotic CV, sequencer row, LFO, Wogglebug-like source - Conway trigger → sample clock - Quantize sampled voltage

Different Conway cells will sample at different moments, creating multiple interrelated melodic lines.

C. Sequential switch / addressed switch

Excellent for melody.

How Use Conway outputs to: - advance the switch, - reset the switch, - choose between several pitch sources.

Pitch sources could be: - fixed voltages, - sequencer rows, - quantizer outputs, - intervals from a precision adder.

This creates melodies with recurring but non-linear form.

D. Precision adder / transposer

One of the best pairings.

How - Main melody from sequencer or quantizer - Conway gates add interval offsets: - +octave - +fifth - +third - modal shifts

Because Conway cells often form loops, these transpositions can feel motif-like rather than random.

E. Clock divider / multiplier

Useful for extracting musically different time scales.

How - Master clock → divider/multiplier → Conway CLOCK IN or downstream modules - Conway outputs then interact with divided clocks for: - slower transposition - faster ornaments - phrase resets on long cycles

This gives structure to the melodic motion.

F. Envelope generators and VCAs

Needed to hear the triggers as notes.

How - Conway trigger output → envelope - Envelope → VCA - Quantized pitch CV → oscillator

Different cells can trigger: - main voice, - harmony, - accent voice, - bass punctuations.

Strong patch recipes

Patch 1: Organic mono melody

Modules needed - Conway's Game - random CV source - sample & hold - quantizer - VCO - envelope - VCA

Patch - Random CV → S&H in - Conway output 1 (trigger mode) → S&H clock - S&H → quantizer → VCO 1V/oct - Conway output 1 → envelope → VCA - VCO → VCA → mixer

What happens A single Conway cell becomes a melodic trigger stream with nontrivial phrasing.

Patch 2: Melodic line with evolving transposition

Add - precision adder

Patch - Main melody as above - Conway output 2 in gate mode → precision adder transpose input (+7 semitones) - Conway output 3 in gate mode → another transpose input (+12 semitones) - Sum into oscillator pitch

What happens The melody shifts between root, fifth, and octave regions according to cell life states.

Patch 3: Two-voice canon from neighboring cells

Modules - two S&H paths or two oscillators - one quantizer with multiple channels, or two quantizers

Patch - Random / slow CV source shared by both voices - Conway output 10 → voice A S&H clock + envelope - Conway output 11 → voice B S&H clock + envelope - Each S&H → quantized pitch for separate oscillator

What happens Because nearby cells in Game of Life are related, the two melodic voices often feel connected but not identical.

Patch 4: Sequencer mutation engine

Modules - CV sequencer - quantizer - precision adder - resettable switch or sequencer controls

Patch - Sequencer CV → quantizer → VCO - Conway output 1 → note gate - Conway output 2 → sequencer reset - Conway output 3 → transpose +12 - Conway output 4 → switch between 2 sequencer rows - Conway output 5 → trigger extra ornament envelope

What happens Your composed sequence becomes a living melody machine.

Patch 5: MIDI-directed melodic architecture

Use MIDI mode - Feed MIDI notes from DAW or keyboard - Assign selected notes to structural events via specific outputs

Patch - Certain MIDI notes trigger melody - Others transpose - Others switch scale or route voices - Others trigger harmony or bass

What happens You can “play” the modular’s melodic behavior with MIDI notes instead of only playing pitches directly.

Performance ideas

1. Use RESET as a phrase refresh

The manual says RESET starts a new set of cells and also clears stuck MIDI notes.

Musically, this means RESET is a **form control**: - hit it at section changes, - trigger it every 8 or 16 bars, - let the patch evolve within a bounded phrase length.

This is one of the best ways to keep the melody interesting but manageable.

2. Modulate the clock source

Because CLOCK IN can be driven externally up to around 270 Hz, you can: - use a steady clock for structured phrases, - use a divided clock for slow melodic evolution, - use audio-rate or irregular clocks for glitch ornamentation.

For melody, modest clock variation can create: - denser note clusters, - rubato-like irregularity, - sudden fills and embellishments.

3. Use trigger mode for articulation, gate mode for harmony states

A good live strategy: - one group of outputs in trigger role via selected patches - another group in gate role for longer state changes

This creates a melody that has: - note events, - phrase-level modulation, - harmonic motion.

Limitations to understand

It does not output pitch CV by itself

This is the main thing. To make melody, you need companion modules: - quantizer - sequencer - random source - fixed voltage source - precision adder - switch

64 outputs can become patch-dense very quickly

You likely won't use all 64 directly for melody. More practical is: - select 4–10 musically interesting outputs, - route them to utilities, - create a smaller controllable melodic ecosystem.

Internal behavior may settle into loops

The manual notes it resets when patterns die out or become stationary; loops can persist in forms like blinkers or gliders. That's actually musically useful: loops create recurring motifs. But if you want more variety, patch RESET periodically.

Best overall role in a melodic rack

Conway's Game is best thought of as:

- a **melodic event ecosystem generator**
- a **phrase and articulation controller**
- a **multi-lane trigger source for quantized pitch systems**
- a **MIDI-to-64 trigger decoder for compositional control**

It is **not** the voice of melody by itself, but it can become the **behavioral engine** that makes melodies feel alive.

Most effective pairings

If your goal is melody, pair it with: 1. **Quantizer** 2. **Sample & hold** 3. **Precision adder** 4. **Sequential switch** 5. **Traditional CV sequencer** 6. **Envelope/VCA voice chain**

That combination turns Conway's Game from a trigger novelty into a deep melodic composition tool.

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