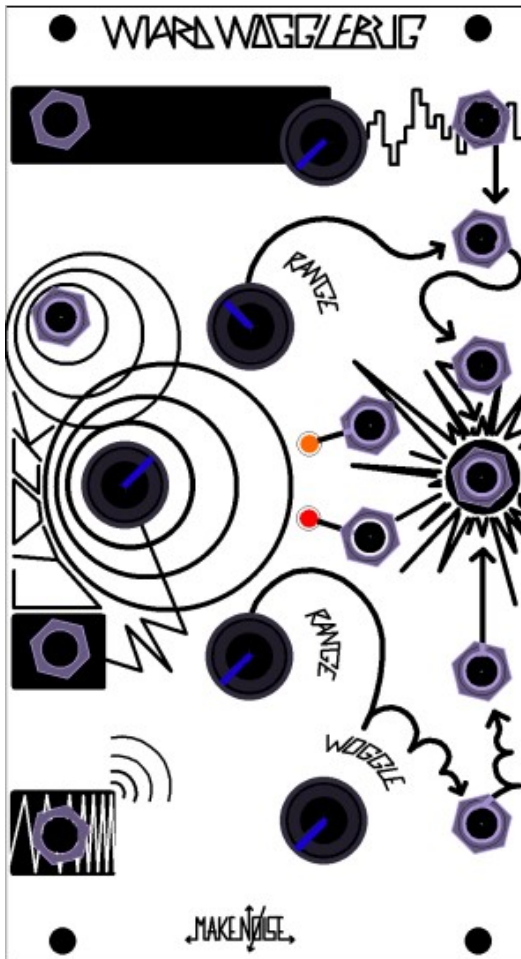


# MAKE NOISE WOGGLEBUG



## IS THE WOGGLEBUG MY SYNTHESIZER'S ID MONSTER? SHOULD I BEWARE the WOGGLEBUG?

YES, and Maybe.

The "WoggleBug" is a random voltage generator, originally designed by Grant Richter of Wiard Synthesizers. The Wogglebug's purpose is to overtake the control voltages produced by your keyboard during performance, and to give voice to your synthesizer's ID. It is your synthesizer's ID MONSTER.

A continuation of the "smooth" and "stepped" fluctuating random voltage sources pioneered by Don Buchla, the core of the circuit is based on the Buchla Model 265 "Source of Uncertainty" module, which many consider to be the most musical of all random voltage generators. Like the 256, the Wogglebug utilizes a vactrol based low frequency smoothing filter, VCO and Sample & Hold to produce Stepped and Smooth (or lagged, slewed) control voltages in the range of 0 to 10 volts. Grant's Wogglebug design expands on this system to include the other-worldly Woggle CVs (stepped voltages with decaying sinusoids at the edges), which must be heard in action to be truly appreciated. In a moment of considerable noise, Richter decided to tap into the sound sources at the uncertainly beating heart of the Wogglebug, and bring them forth to the instrument's panel. He then figured a clever way to "ring modulate" these sounds, and that too, is on the panel of all Wogglebugs. Thus, the Wogglebug is a complete system, no external modules are necessary... however, all voltage controlled systems long to be tickled, bitten, plagued and eventually destroyed by the Wogglebug.

I fell in love with Grant's #3 circuit the moment my first Wogglebug came to life on my experimenter's breadboard. Since then, I have built a few DIY Wogglebug #3, including the Ryan Williams designed clone PCB. I have been lucky enough to have used the Wiard Wogglebug #5 extensively, and I now feel VERY HONORED to be presenting this circuit as a Make Noise module.

Until now, the Wogglebug has only been available as the Wiard Wogglebug #5 for the 300 series or as the Wogglebug #3 DIY project, popularized by the folks at electro-music. The Make Noise Wogglebug is neither #3 nor #5. In the truest spirit In the truest spirit of Wiard Synthesizers, the Make Noise Wogglebug is not a clone, but instead it is a tribute to all that Woggles, a continuation of the Wogglebug.

Like the #3, the Make Noise Wogglebug is a single Wogglebug system. However, the Make Noise Wogglebug improves upon the #3 by offering further functionality such as an External IN for the ring mod circuit, the ability to directly inject a signal to the heart of the Wogglebug via Heart IN, and the Random Gate Burst function, all of which have never appeared on any Wogglebug. I have also redesigned the Cluster circuit, and thus it has been renamed as CHAOS BALANCE to reflect it's further purposes. This control now allows for some new functionality that has again, never appeared within any Wogglebug to my knowledge.

Extra Special Thanks to Grant Richter for his genius and contributions to the world of synthesizers! Thanx to Wiard for granting Make Noise permission to manufacture a Wogglebug. Thanx to Shawn Cleary, Richard Devine, Aaron Abrams, Tom Rolando, Rosemary Rolando and Kelly Kelbel for support in the development of the Make Noise Wogglebug.

## Overview

Amongst other things, the Make Noise Wogglebug contains the following:

- 1 Voltage Controlled Clock
- 1 Sample & Hold
- 2 Lag Processors
- 1 Random Gate Burst Generator
- 2 VCO
- 1 Digi Ring Mod

Most of which is patchable via the instrument's panel.

While I have broken the Panel Controls & I/O description into Sections for explanation, please understand that ALL portions of the Wogglebug Interact in a system that is capable of CV and Signal generation As well as CV and Signal Processing. For example, changing the Chaos Balance Will affect the Stepped, Smooth and Woggle CVs, the Smooth VCO, Ring-Mod and Woggle VCO OUTs!

The way that I like to think of the system is that the Woggle circuit (bottom) is chasing the Smooth/ Stepped circuit (top) which is being kicked in the ass by the Clock (center).

It is very possible to make patches and panel settings which lock up the System, and thus the CV outputs will hang at whatever was the last voltage and The VCOs will drone on almost unchanging. When this happens, a tweak to just about any panel control will wake and disturb the Wogglebug.

Especially the Range controls will cause great variation in the system. With The Smooth Range set lower then the Woggle Range, the Woggle circuit will more Easily "catch" the Smooth circuit. If the Woggle range is set lower then the Smooth Range, the Woggle circuit will never be able to catch the Smooth VCO.

Finally, consider that many changes in the system are NOT immediate. This Is due in part to the slow response of the Vactrols used in the circuits.

## Installation

The Make Noise Wogglebug is an analog electronic instrument requiring 50mA of +/-12V regulated power and properly formatted distribution receptacle to operate. It is designed to be used within the euro format modular synthesizer system. Go to [http://www.doepfer.de/a100\\_man/a100t\\_e.htm](http://www.doepfer.de/a100_man/a100t_e.htm) for the details of this format.

To install, start by turning OFF your synthesizer, find 14HP of space in your euro-rack modular synthesizer system, plug the 16pin power cable into the euro-rack style power distribution board, minding the polarity so that the RED stripe on the cable is oriented to the NEGATIVE 12V supply. This is USUALLY at the bottom. Please refer to your case manufacturers' specifications for location of the negative supply.



## **Smooth & Stepped**

(Shot to the) Heart IN: signals applied here will be injected directly To the uncertainly beating heart of the Wogglebug. Accepts Control Voltages or Audio Rate signals.

Chaos Balance: when nothing is inserted at the External Control IN, Chaos Balance acts in a way similar to the original Wogglebug Cluster Panel control, setting the range of probable values. Turning this Control CCW, the random values generated by the system tend to "cluster." With a signal applied to the External Control IN, it Allows that external signal to be balanced with the internal signal source.

Stepped OUT: at lower Clock rates, the stepped Control Voltage appears here. A new value occurring at every clock pulse. At higher clock rates Bit reduction effects may be achieved by inserting an audio signal at Heart IN.

Smooth OUT: the Smooth Control Voltage appears here, the smoothness of Which is set by the Clock RATE/ Chaos Control.

Smooth RANGE: This control sets the upper limit for the Frequency of the Smooth VCO.

Smooth VCO OUT: square wave, audio rate signal appears here, controlled in part By the Chaos Balance, Heart IN, Smooth Range and Clock Rate/ Chaos.

## **Ring-Mod**

Ring-Mod External IN: any audio rate signal may be applied here, for injection to the Ring-Mod circuit. The digital nature of the Ring-Mod circuit makes Simple waveforms (Pulse, Square, Triangle, Sine, Saw) almost necessary to Achieve something remotely musical, but don't let that stop you from pumping Motown samples into this circuit!

Ring-Mod OUT: audio rate signal. The ring modulated product of Smooth VCO, Woggle VCO and Signal at External Ring-Mod IN. It gets messy, real fast.

## **WOGGLE**

Woggle CV: a of product of the Smooth/ Stepped CV, this voltage quivers, shakes and Chases after the heart of the system... always.

Woggle: This control Sets how quickly (or slowly) the Woggle is able to catch the Smooth/ Stepped circuit.

Woggle Range: This control sets the upper limit for the Frequency of the Woggle VCO.

Woggle VCO OUT: square wave, audio rate signal appears here, controlled In some part by the Woggle and Woggle Range panel controls as well as the Smooth VCO.

## **CLOCK**

Clock RATE & Chaos Control: this dual purpose control sets both the Rate of the Wogglebug system Clock & the lag processor feeding the Smooth VCO. Turning it CCW slows the system and smooths it's response.

Clock RATE & Chaos Control CV IN: control voltage IN for the above functions.

External CLOCK IN: any signal may be applied here, and upon every detected rising edge the Wogglebug System will be kicked in the ass.

Clock OUT: Squared, clock signal, 0 to +10V.

Random Gate Burst: Squared, gate signal, 0 to +10V. Random but Controlled gates, synced to the Clock, though sometimes sputtering and spazzing off for brief Moments of brilliant freedom, only to fall back into the hands of the clock.

## Tips & Tricks:

- Utilizing an external clock will allow for separate control of the rate of change within the system, and the smoothness of response. When an external clock is inserted, the Clock Rate/ Chaos Control affects only the smoothing circuit.
- Utilizing high frequency external Clocks, such as a VCO or the Clock from the Doepfer A-188 BBD modules, will produce interesting results at the Stepped OUT, not unlike bit crushing.
- Patching the module back into itself often produces interesting results. Try applying the Stepped OUT to the Clock CV IN.
- To achieve something similar to Child Tones, utilize 2 Wobblebugs, inserting the Smooth or Wobble VCO out from one, into the External Ring Mod IN of The other. The Child Appears at the Ring-Mod OUT of the second Wobblebug.
- It is sometimes exciting to kill the bug; stop it dead in its tracks! Plugging a dummy cable into the External Clock IN does just this! The whole system will hang, and ever so uncertainly.
- A method similar to the above suggestion is to kick the Wobblebug with a GATE Or pulse instead of a Clock. For example, apply a keyboard gate to the External Clock IN. Every time you hit a key the Wobblebug is disturbed and new voltages Appear.
- The control voltages produced by the Wobblebug are capable of large swings, to achieve more subtle effects when using the Wobblebug to Modulate, for example a VCO or VCF, set the Chaos Balance knob some what CCW, And attenuate the Wobblebug CV before applying to the destination.
- To Disturb the Wobblebug, set the Chaos Balance at 50% and apply the disturbing control voltage to the Heart IN.

Limited WARRANTY:

Make Noise warrants this product to be free of defects in materials Or Construction for a period of two Years from the date of manufacture.

Malfunction resulting from wrong power supply voltages, backwards power cable connection, abuse of the product or any other causes determined by Make Noise to be the fault of the user, are not covered by this warranty, and normal service rates will apply.

During the warranty period, any defective products will be repaired or replaced, at the option of Make Noise, on a return-to-Make Noise basis, With the customer paying the transit cost to Make Noise. Please contact Make Noise for Return To Manufacturer Authorization.

Make Noise implies and accepts no responsibility for harm to person or apparatus caused through operation of this product.

Please contact [tony@makenoisemusic.com](mailto:tony@makenoisemusic.com) with any questions, needs & comments... otherwise go MAKE NOISE.

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