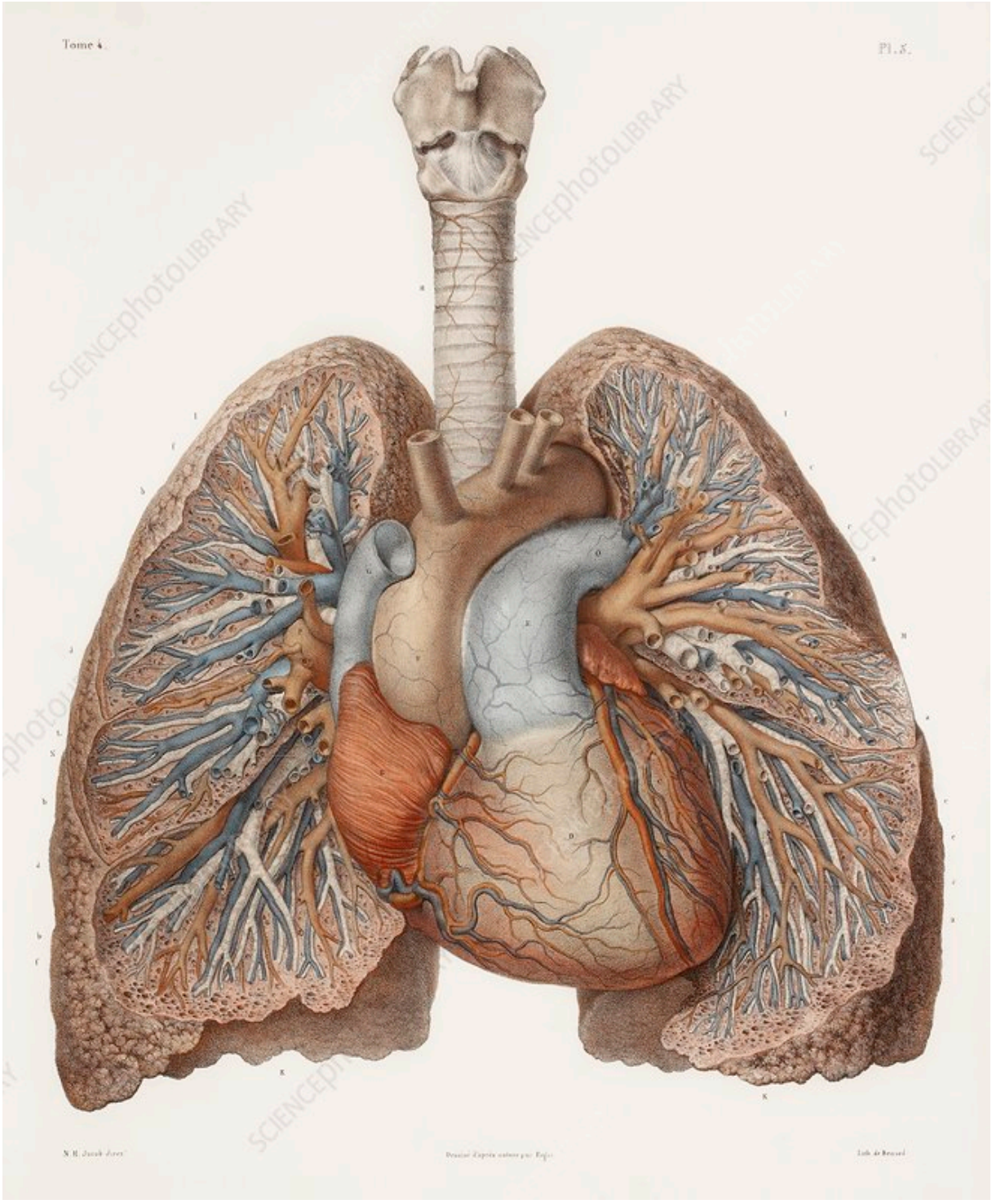

CLOT Build Doc

First let me give some credit where credit is due: CLOT is based on an original idea of Jan Hall firstly published in Electronotes EN 92 page 14-15[1] then refined and published as manufactured

[1] https://electronotes.netfirms.com/HallBiNTic.PDF

PCB by Ken Stone as the "Bi-N-Tic" filter[2]. All I did was to completely butcher these great ideas and turn this thing into a misbehaving "monster". The principle is the same: an internal (or external) vco drives two analog switches which bounce between two banks of eight capacitors. In the original layouts these were all the same value, but using completely different values is what makes this "filter" shine in my opinion. I also introduced switches for regulating the tempo and offset filter frequency pots and some logic.

Also a proper thanks is due to Ken Stone who as helped med tremendously through the years and who's designs truly speaks for themselves. He also gave me his permission to use his design as a starting point. You should really check CGS and his designs if you already haven't.

So as for my design: There are 2 controls for the filter, frequency (where I split the original layout of a dual pot into 2 independent single pots, creating even further misbehaving sounds when these are offset from each other) and "damp" i.e.. Resonance/Q whatever. Ken writes: "Not all combinations of these two are actually valid, some resulting in silence, but none the less, quite an array of variations is possible" this is even more true with my version[3].

It has an input for an external VCO to override the internal top left input labeled "Osc in". This is largely to drive the clock of this filter with a more precise 1v/per octave oscillator (Like the Dual Bristol Bloodhound) which I usually sequence to create interesting effects like flanging sounds etc. with the filter. Below it are 2 inputs for sound, the bottom one has an attenuator connected to it and the pulses from the analog switches are normaled (through some logic) into this input for pinging action or accentuation of the "tempo" of the filter. The associated pot lets you dial in how much of that you want present. Of course this can also be used to mix a second incoming signal into the filter and dial in the correct amount.

In the middle you have the 3 switches alternating the tempo, ie what pulses from the analog switches are sent to switching capacitors. These are (just like on HEALTH) labeled "Rhythms" because usually this creates different rhythms also present at the clock output.

On the top right we have the onboard clock oscillator with CV control (top right jack), the potentiometer attached to the cv input is the tempo (with no signal plugged into the cv input) with a cv inserted it acts as an attenuator for the incoming signal. The jack below labled "Clock" is an output with some ANG-gate logic attached to it. It very high speeds you'll have a drone-ing free square oscillator present here, at lower speeds you can use this output to clock other modules, drum machines etc. At the bottom right you have the filter output.

Build guide:

Building this is straight forward. I usually place the power header and solder it in first. Then I place all the jacks and solder in the ground pin (the one sticking out from the jack) from above. Place the pots and switches, put the panel on and make sure everything looks good from the front. Solder everything in. Double check for any shorts before plugging it in. You are then done. Please enjoy CLOT.

---

[2] https://sdiy.info/wiki/CGS_Bi-N-Tic_voltage_controlled_filter/oscillator

[3] I beleive

BOM

Part	Designator	QTY	INFO	Product link
Thonkiconns	J1-J6	6		thonk, tayda, aliexpress: https://www.thonk.co.uk/shop/thonkiconn/
Alpha 9mm potentiometer T18 100K Lin	RV1-RV5	5		https://www.taydaelectronics.com/tayda-100k-ohm-linear-taper-potentiometer-spline-shaft-pcb-mount-9mm.html
Eurack power pins 2x5	SV1	1		https://www.taydaelectronics.com/2x40-pin-2-54-mm-double-row-pin-header-strip.html
Micro knobs T18	For RV1-RV5	5	Must be Black	https://www.thonk.co.uk/shop/micro-knobs/
SPDT ON-ON	SW 1-3	3		https://www.taydaelectronics.com/mini-toggle-switch-spdt-on-on.html