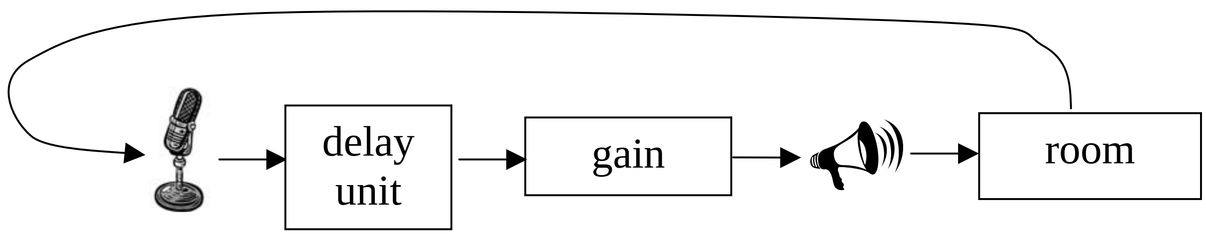
- **Background Noise Study (Audible EcoSystemics n.3a)**

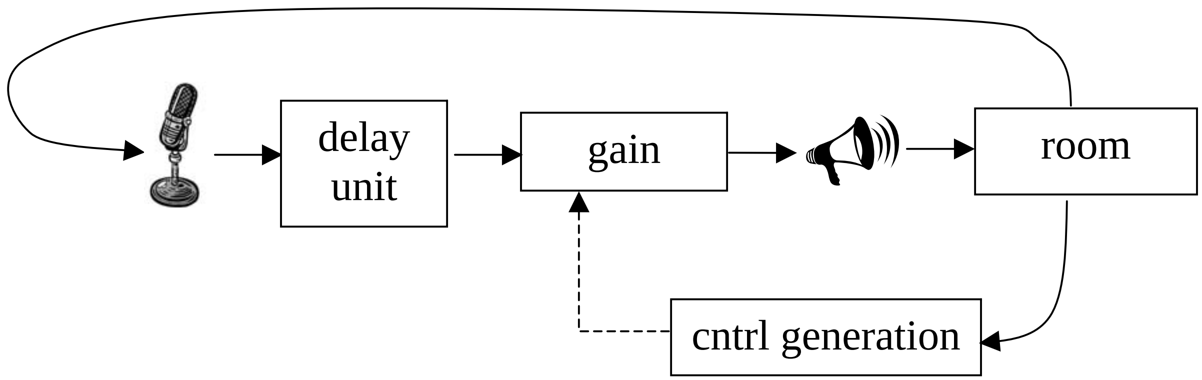
- **Background Noise Study, in the vocal tract (Audible EcoSystemics n.3b)**
  3 pezzi muti

- notation of live-electronics
  L.Nono's **A Pierre. Dell'azzurro silenzio**

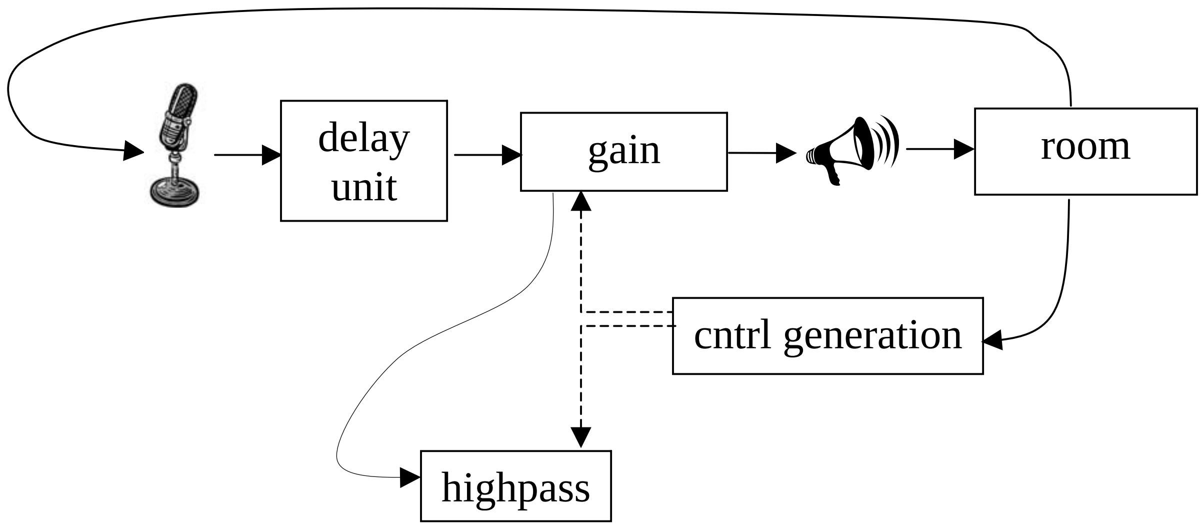
Background Noise Study (Audible EcoSystemics n.3a)



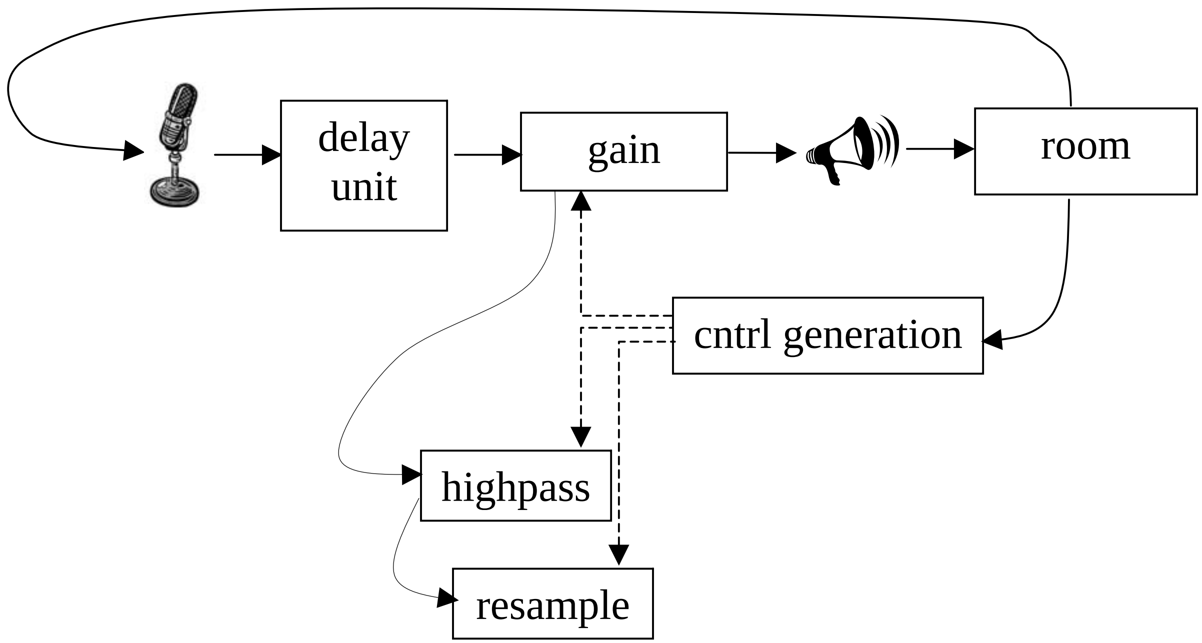
Background Noise Study



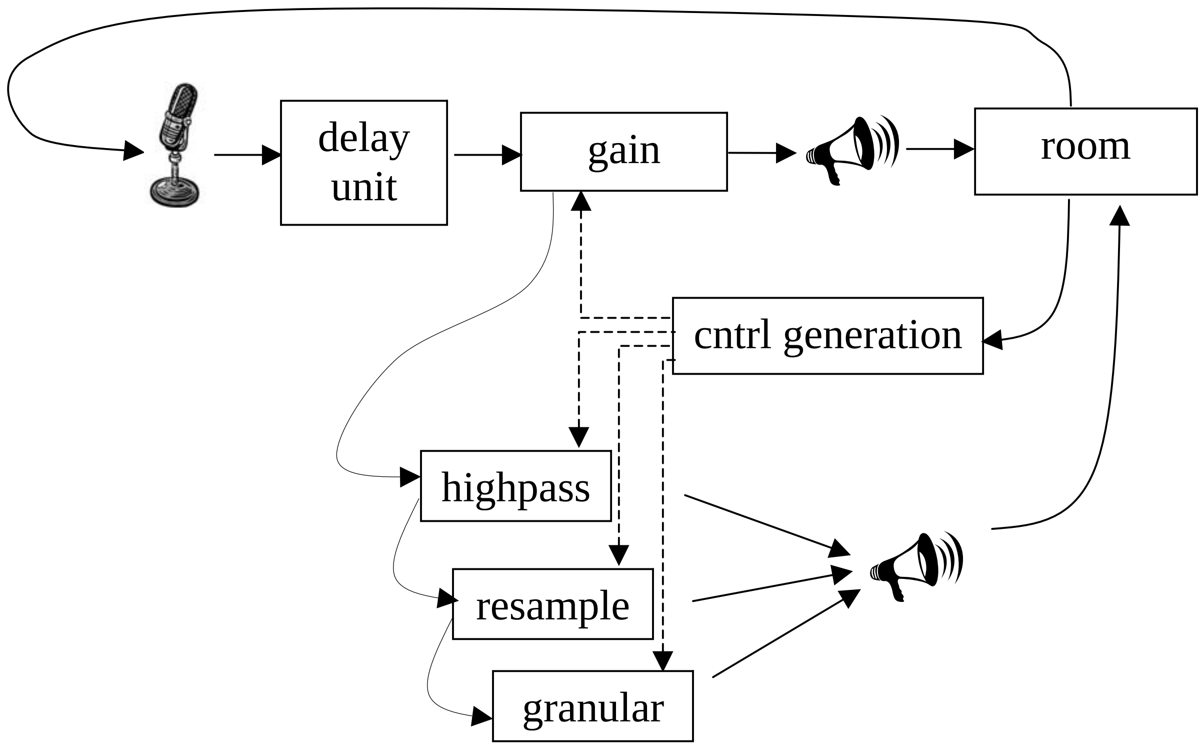
Background Noise Study



Background Noise Study



Background Noise Study



Background Noise Study

accumulation by delayed feedback (reinforce resonant frequencies)

input amp > threshold? write to memory buffer, and and discontinue feedback output

↓

resample and playback

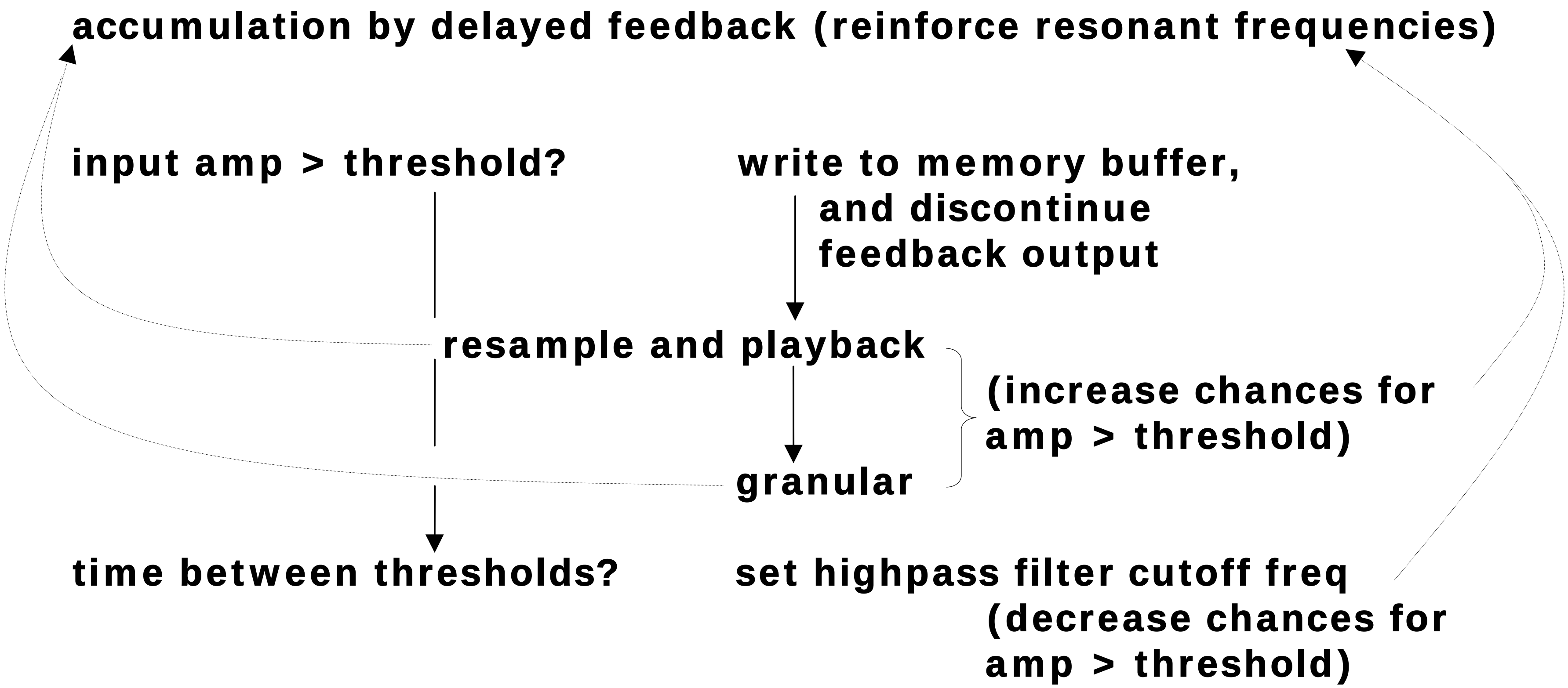
↓

granular

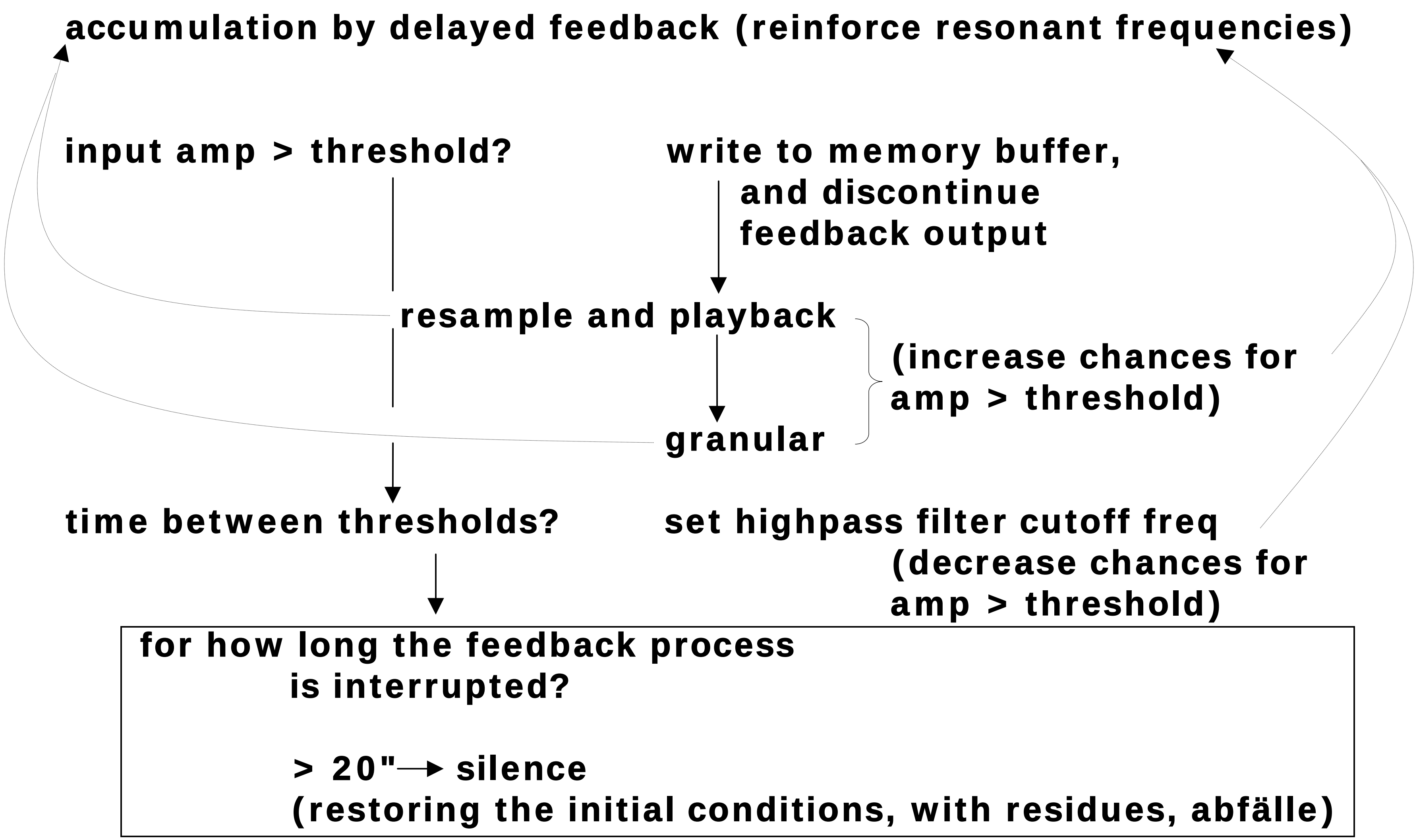
(increase chances that amp > threshold)

time between thresholds? set highpass filter cutoff freq (decrease chances that amp > threshold)

Background Noise Study



Background Noise Study



Background Noise Study

simplified categories of sounding results:

simple accumulation (continuing texture)
simple accumulation + sparse resampled materials
simple accumulation + sparse resampled materials + sparse grain texture
simple accumulation + dense resampled materials + dense grain texture
dense resampled materials + dense grain texture
dense grain texture

(silence + residues)
start again

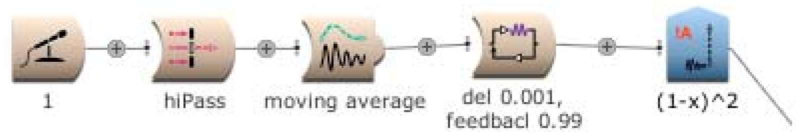
start with "no sound" and try to do something with "that"

- **welcome usually unnoticed or undesired sound events (musically irrelevant)**
- **consume minimal external energy**

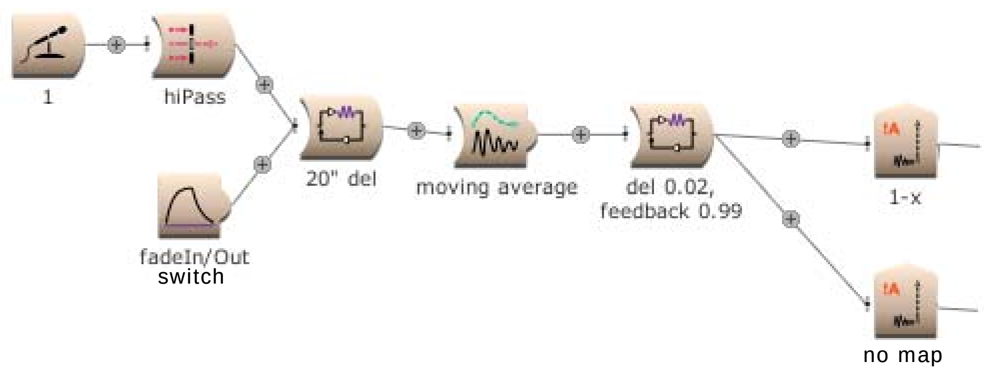
music emerges out of micro-time-level (signal-level) dynamics

composing-the-interactions (mutual exchange of system components, including room) at signal-level

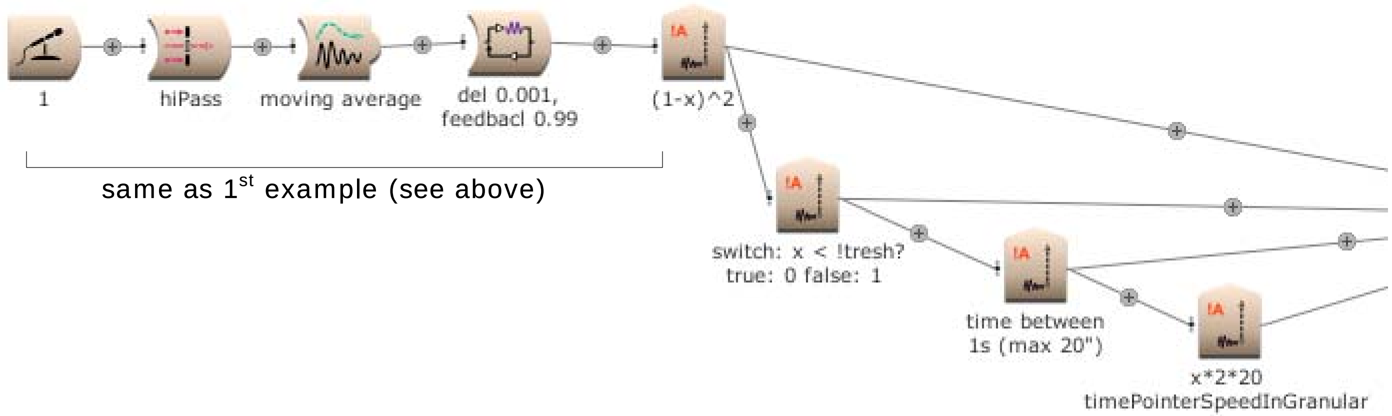
examples from the network of cntrl-signals in *Background Noise Study*



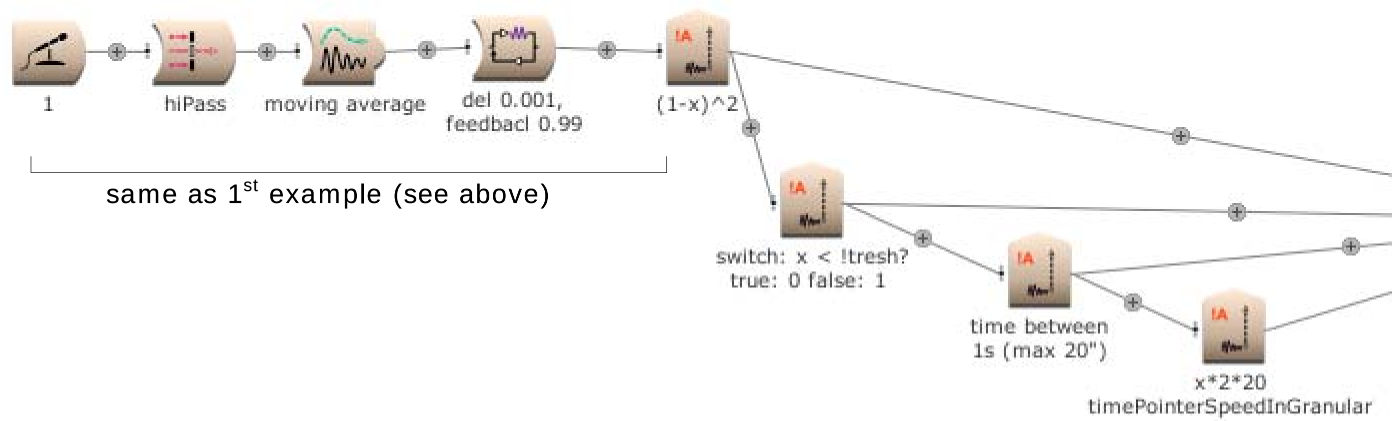
input audio signal is subect to highpass filtering, and to an amp follower (moving average) to estimate the local amplitude, and that is sent to high-feedback delay to induce some latency into the signal. The final mapping is the exponential of the reverse numerical range $(1\text{-}x)^2$. It is used to scale down the direct connection of audio input to output (dampens recirculating audio signal).



input audio signal is either ON or OFF (some fading-in and -out is applied), then high-pass filtered and delayed by 20". The moving average takes an estimate of the delayed signal' amplitude. The high-feedback delay is used to give the averaging signal some latency. The output is used as such (no mapping) and with reverse numerical range mapping (1-x) to be used as control signal. The unmapped cntrl signal is used to drive the grain duration in the internal granulator: a larger input amp (room sound) will make grains heard over the speakers longer, increasing the chance that the room sound will get even larger. The reverse map scales down the output of the internal resampling circuit.



the first cntrl-signal is subject to logical operand: is the instant amplitude lower than some given threshold value? yes = 0, no = 1. That switches ON (0) and OFF (1) the 20"-delayed input signal (see one example above). Then a time counter counts time elapsed between the previous 1 message and the current (if longer than 20 it is clipped, i.e. forced to = 20). That "time between switches" value is used to set the cutoff frequency in the highpass filter (the filter instance in this picture is actually the same one included in the previous pictures). The mapping is 100+(x * 100) hz, that is, cutoff freq varies between 100 and 20000 Hz (not shown here). Longer "time between switches" cause the highpass cutoff frequency to shift in the higher. The "time between switches" value is also used to drive the memory scan speed in the granular processing. The map is such that longer time spans make the scan pointers slower (time-streching of the stored sample signal): 1" is mapped onto a speed 2 times slower than real (and that means, in turn, it will take 80" for the scan pointers to go throught he entire mem buffer).



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when switch is OFF, the 20" feedback loop is temporarily discontinued, and that stops the recirculation of sound material

the higher the filter cutoff freq, and the less substantial the accumulation in the delayed feedback loop, so the chances for new off-switches are reduced for a while

slower scan speed values will prolong the granular texture, adding to the room total sound for a longer time, causing more materials to recirculate in the delayed feedback loop (that in turn increases the chances for new switch-OFFs of the feedback loop itself)