Welcome to article 17 of this series about making generative music with modular synths. You´ll find more about this matter on my website https://dev.rofilm-media.net.

Chapter 3.2:
Basic Compositional Techniques

There are three groups of basic compositional techniques, which are not exclusively generative music, but are taught at any school, high school and university, which deals with musical matters, only that we meet them in slightly different shape and forming here in generative music than we are used to see them in other musical styles (classic, common pop etc.). These techniques are:

contrasting sonic events,
repeating sonic events,
inverting relations between sonic parameters.

Let´s go and have a look of their specific form, that they take in generative music.

Chapter 3.2.1:
Contrasting

Pre-recorded sound files vs. patch generated sonic events

We can contrast pitch developments (with or without a noticeable melody line) from parts of our patch with pre-recorded sounds, either from the “real world” (like in musique concrète), or from more or less conventionally composed pieces of music.

VS.

The preset “realworld.vcv” and the video behind the following link give an example. The sounds from the last two presets/videos alternates with a recording from a supermarket in the Czech Republic. An intentional choice. The the Czech girl asks “What is the meaning of all of this?” pointing at the goings on in the supermarket. I was lucky to catch this moment with my field recorder.
https://youtu.be/rP2eA4wkPBY

Classic and common ways to generate contrast

We can contrast long sounds (notes or other kinds of sonic phenomena) with short ones, we can let our pitch development (random or not) limit to rather low frequency regions and contrast it with pitches from rather high frequency regions from time to time, and we can contrast different timbre families, and last but not least we can contrast different scales and keys (in classic musical theory they call it “modulation”) – all of this is self-evident and common knowledge I think. No further explanations or examples needed.

A bit less common may be the idea of contrasting different envelopes, not only the stereotypes of plucked versus bowed, hit versus blown etc. but also no release versus long release, multistage envelopes versus AR envelopes and others.

Melody vs. random pitches

Contrasting melody vs. random pitch developments is a specific method in generative music. Preset “contrasts.vcv” and the video behind the following link combine some of the last mentioned contrasting methods.
https://youtu.be/ObIUn-tI--8

Chapter 3.2.2:
Repeating, Modifying and Inverting Relations

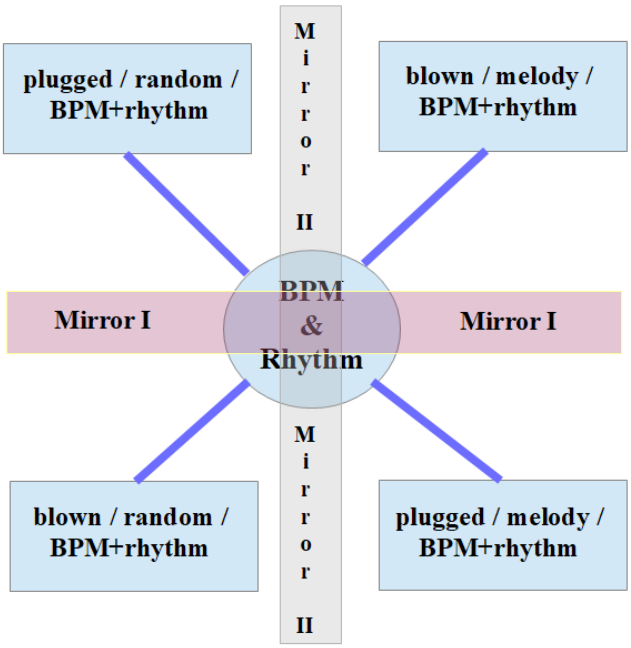
Repeating and modifying is bread-and-butter exercise in classical music, in pop (well, more repeating than modifying) and other common fields of sonic manifestation. But how can I repeat random goings on? And what shall I call a modification, a variation (as a compositional technique), if everything is randomly changing anyway?

Well, let me go back to the idea of musical “moments” from some pages earlier. Each of these moments is distinguished by a certain relation of a couple of sonic parameters or by a succession of those relations. Different relations of sonic parameters cause different sensual and emotional impressions.

It´s these relations (combinations) of sonic parameters which we can repeat, modify and invert. Not a certain pitch development (or even melody) alone. Not a certain rhythm alone. Not certain timbres (= instruments in classic music) alone. But all of these parameters together in their specific relation, set by a compositional will at a certain (but not always fixed) point in the whole piece, that is, what we can return to, in the same way and simply repeating, or in modified shapes, or mirrored along sonic axis (e.g. high pitches plus bowed plus random mirrored along the sonic axis of the envelope gets low pitches plus bowed plus recognisable melody).

To make it absolutely clear: we don´t change one parameter, but the **relation** of (all) sonic parameters, which make the musical (sub-)moment in question.

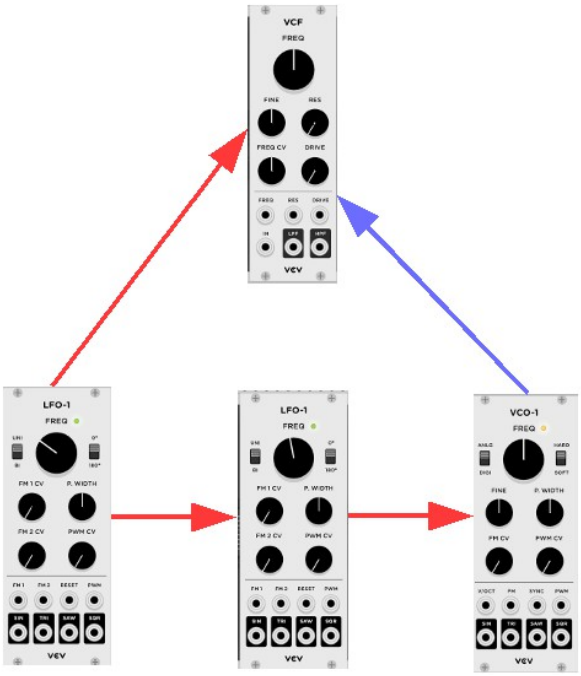
The preset “mirror.vcv” and the video behind the following link give an example and further explanations and demonstrations. Here the inverting, the mirroring doesn´t happen along an axis, but related to a point, it´s like a mathematical point reflection. And there are two inversions going on: the pairs random pitch plus plugged vs. melody plus blown run all at the same BPM and with the same rhythm:



https://youtu.be/sIqFyA-c5og

Chapter 3.2.3:
Basic but Exclusively Generative Techniques

The above mentioned aspect of relations leads us to the real power and meaning of networks of modulations (described in chapter 1): defining and setting relations between otherwise different and independent sonic parameters. Please look at the following block diagram:
The left LFO modulates the frequency of the right LFO as well as the cut-off frequency of the filter.



The right LFO modulates the pitch of the VCO.
This means, that when the frequency of the **changes** of the VCO´s pitch (not the pitch itself) increases, then the cut-off frequency of the filter increases too.

The pitch of the VCO´s sound and the cut-off frequency of the VCF (two musically tightly-knit parameters) stay completely independent from each other, but the frequency of pitch **changes** and the cut-off frequency (two formerly completely independent and musically not nearer related parameters) are bound into a fixed relation now.
The preset “relations_1.vcv” and the video behind the following link show this patch.
https://youtu.be/_GxhOo9sKmo

The next graphic shows a more complex example. The modulation network containing 5 LFOs, two submixers and one so called “main mixer” is one of the networks, which I discussed in chapter 1. I have added two voices, which are modulated by this network. Each voice contains a VCO, a VCA (in the video I have substituted this VCA by the channel CV of a mixer) and a quantizer. The VCA in voice 1 (VCO 1) is modulated by an envelope, but the VCA in voice 2 (VCO 2 is modulated from within the modulation network (square wave of LFO 2) with “tamed” flanks (Slew Limiter). Voice 1 has got a sequencer, but the pitch CV of voice two is generated by the mixer called “main mixer”.

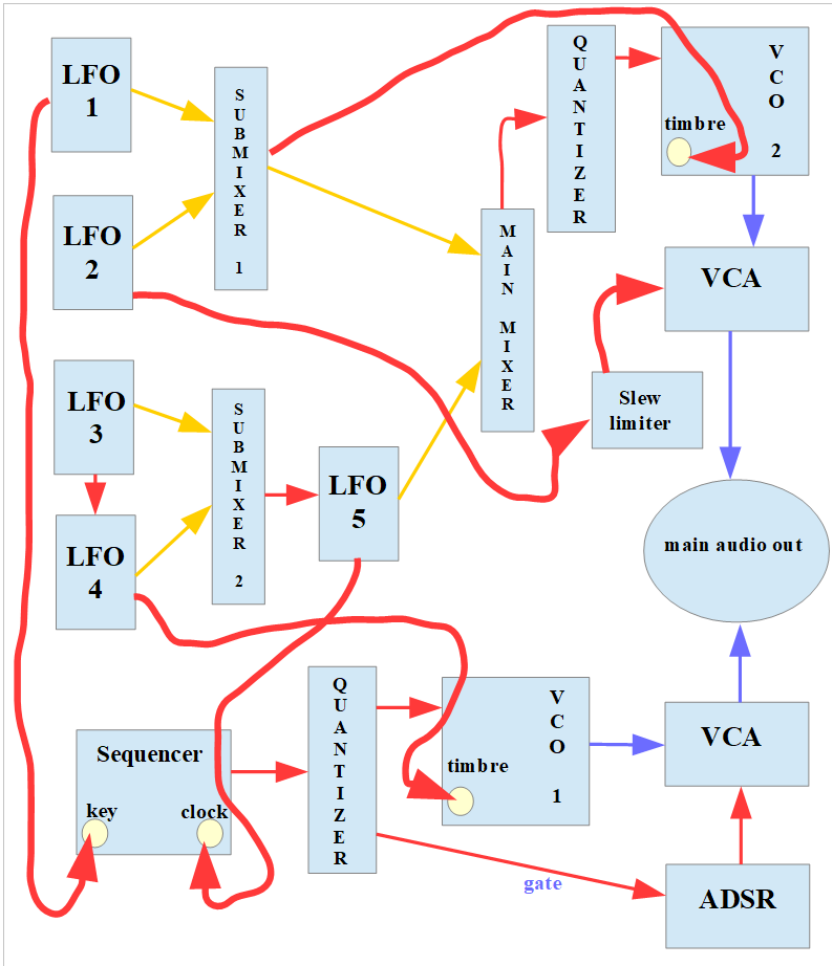
The sequencer is clocked by LFO 5, and its key changes according to LFO 1, and the timbre of VCO 1 is modulated by LFO 4.

The timbre of LFO 2 is modulated by Submixer 1.
The preset “relations_2a.vcv” and the video behind the following link show this patch.
https://youtu.be/7B4dJPs81Jo

But let me talk about the sonic relations, that this patch establishes now.

When the output level of LFO 1 rises, and the rise is not compensated by a decrease of the the output of LFO 2, then the submixers output level rises as well, which leads to a change of the waveform of VCO 2 as if we had manually turned the waveform knob to the right.
At the same time the level of the main mixer rises, if not neutralised by what is coming out of LFO 5. This means that VCO 2 generates higher

pitches.
The sonic relation reads (for voice 2):
higher pitches <---> more (inharmonic) partials
lower pitches <---> less partials



But this relation can be destroyed by the sub-net of LFO 3,4 and 5. How often this relation is made invalid (= how often the CV level coming from submixer 1 is partly or completely cancelled out by LFO 3 – 5) depends on the frequency relation of LFO 3, 4 and 5. With similar frequencies the phases of the CV from submixer 1 and submixer 2 are only very seldom opposite to each other.

But the above mentioned relation can also be set invalid by LFO 2 alone. But we wouldn´t hear that, because when the triangle wave of LFO 2 starts going down, the square wave switches to LOW, and therefore the VCA (mixer channel in the video) of VCO 2 is switched off.

But LFO 1 modulates also the key of the sequencer (= voice 1).

The second sonic relation reads therefore:
More inharmonic partials in voice 2 to means increasing key values (C → Csharp → D etc.) of voice 1 most of the times.

Let´s look at the other modulation of voice 1 now.
When the level at the output of LFO 3 rises the frequency of LFO 4 rises as well, and with that the frequency of changes in the timbre, the spectrum of VCO 1.
At the same time the frequency of the changes of the output level of submixer 2 increases, but at an increasing base-level (because of the rising slope of LFO 3, which is added to the (faster changing) level of LFO 4 in submixer 2, and the output level of LFO 5 follows this CV level development – and so do the changes of the clock ("speed") of the sequencer.

The third sonic relation is:
Timbre changes and rhythm are related to each other.

Just watch the video behind the last link again to follow these explanations.

Well, let´s leave the matter of networks and setting up relations for a moment. There is another important compositional technique, which is not specific for generative music – but which gets an increased importance with generative music: using stable elements, elements which can give the listener orientation, which return from time to time (perhaps slightly changed), or which are always audible, sometimes in the background, sometimes more prominent. Those elements make the overwhelmingly big ocean of seemingly unstructured (and sometimes very small) changes, which are dominant in generative music better digestible for the listener, as they serve as a lighthouse giving a direction.

And the last aspect of this sub-chapter is not new to us at all: it´s our good old "set limits to randomness" techniques, limits which can change over time of course.