

Chapter 1.2: Other Devices Generating Regular Cycles

And don't worry, the 6 types of networks are valid with the other "cycling" modules too. Each of the following is able to substitute an element or a whole block of the above mentioned classes/types of networks.

Chapter 1.2.1: Looping Envelopes

If our envelope generator is equipped with an end-of-cycle output/signal jack, we can make the envelope loop. There are advantages and disadvantages (like always) of using a looped envelope instead of an LFO. The biggest advantage are the two, three, four or more stages of the envelope, which allow us to create more complex cycling curves. Not only sine, triangle, saw and square, but different wave shapes. But we have to be careful: attack, decay and release are **times**, not levels. This means, that the length of a cycle depends on its shape. If I want the slope of the cycle to rise more gently without making the fall less gentle at the same time, there is no way to maintain the same frequency, the same length of the cycle. There isn't anything like a frequency knob in most of the AR, AD and ADSR modules.

And there is another feature to take care of: the sustain parameter is a **level**, not a time. This means turning the sustain parameter completely up to 100% leads to no development at all with some modules. Decay means a fall to the level of sustain, and with sustain = 100% there won't be any decay, and no decay may – depending on how the electronic circuit is set up – mean no cycling back to the first stage of the cycle. The graphic shows some typical shapes produced by a looped ADSR module.

No sustain, release and decay, but only attack:



No sustain, release and attack, but only decay:



only attack and decay:



attack + sustain + decay (the curve doesn't touch the zero level anymore):



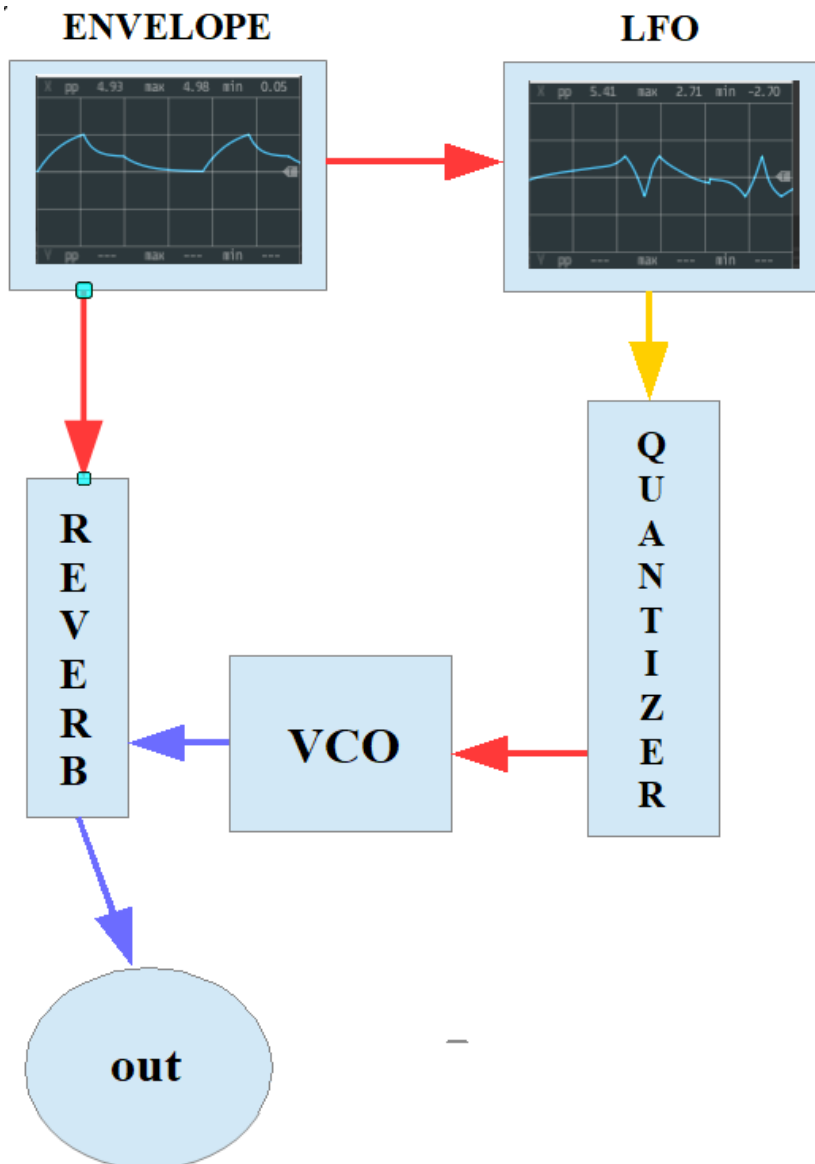
The video behind the following link demonstrates the behaviour of a looped envelope generator, and the preset “loopedEnvelope.vcv” (only in the ebook, see <https://dev.rofilm-media.net>) shall serve as a starting point for experiments of your own.

<https://youtu.be/pqWEOcRqn9Q>

There are envelope generator modules, which deliver end-of-phase” trigger outputs for each of the stages of the envelope. And envelope generators, which have CV inputs to modulate the length/value of each stage bear great generative potential. I’m going to introduce some of these modules in the chapter “The Generative Potential Of Certain Modules”.

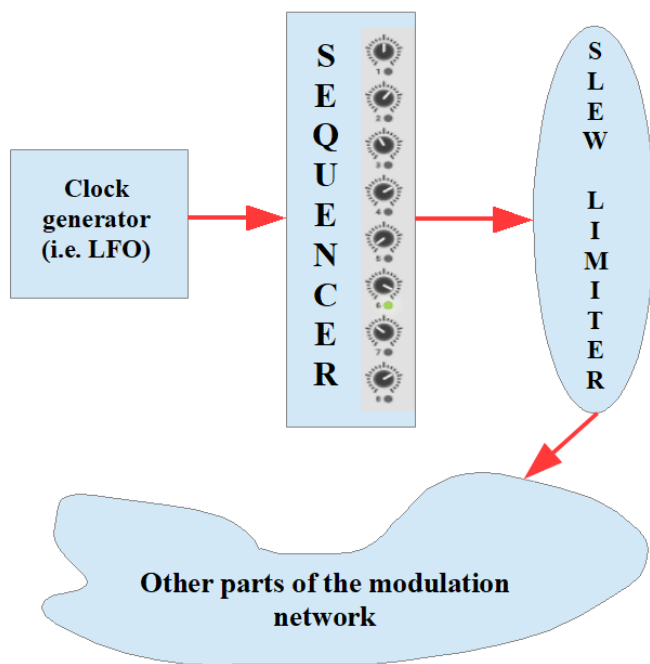
Only one example of how to integrate a looping envelope in a modulation network may be sufficient here. And again there is a preset for you: “loopEx.vcv” (only in the ebook, see <https://dev.rofilm-media.net>) and a video:

<https://youtu.be/e2AQ59uTu5A>



Chapter 1.2.2: Sequencers

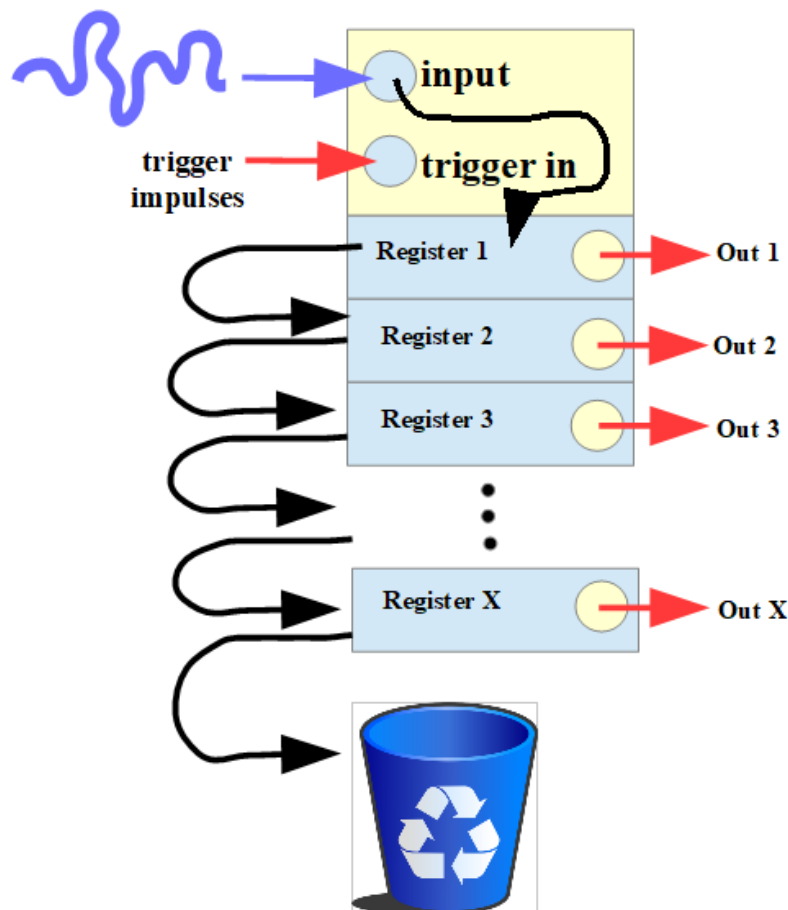
You may not think of sequencers at once, when talking about sources of cyclic/repeating CV. But sequencers are quite useful a tool if we want to sculpture a complex shape of cyclic CV, and together with a slew limiter these shapes won't even be only square-cut.



The preset “sequencer_slew.vcv” (only in the ebook, see <https://dev.rofilm-media.net>) may inspire you to develop examples of your own, and there is of course a video clip demonstrating the matter: <https://youtu.be/Wum3lO0llyM>

Chapter 1.2.3: Shift Register With Feedback

Even less than of sequencers you might think of shift registers as sources of regularly cycling CV generators. But shift registers can be downright exciting sources of regular CV cycles. We must apply a little trick though. Let me recapitulate, how a shift register works. There are (at least) two inputs, one of which is a trigger input. Always when an impulse reaches the trigger input the shift register takes a sample of the voltage level, which is at the other input at that moment, and leads it to the first of its outputs. The voltage value, which had been there before is shifted to the second output. The value of this second output is shifted to the third output and so on. The value, which had been at the last output of the shift register vanishes to the sound heaven (“is thrown out of the register module”). It reminds a lot of the behaviour of a sample and hold unit, because we cannot predict, which voltage level is at the non-trigger input most of the times, and there isn’t any new level taken as long as no new trigger impulse arrives at the trigger input.



To make shift registers generating regular and repeating cycles I have to achieve two things:

first: the last step (pushing the content of the last register out of the module and into the waste basket) must be redirected back to register 1.

second: the register must start working at all!!!
And this means it must get trigger impulses and an initial signal at the non-trigger input, but then no further signals to sample, because the content of the registers would permanently change otherwise.

If I were able to achieve that, I would get a regular sequence of output CVs. Well, which levels they would have I don't know, but the levels, which they adopt once would never change, the sequence, the cycle would be an unpredictable one, but a regular one, after its first initialisation. The randomly achieved cycle would go on and on – unchanged, as long as I won't change the patch.

It's kind of being in my own garden of regularity, but having a short glimpse over the fence to neighbour's garden of randomness.

But how to fulfil the above mentioned two conditions? Well, there are two ways to achieve that, one using switches – which I won't do now, but will do and demonstrate later in this book – the other is using a mixer, one channel for the trigger, another one for the signal the sample is taken from. And once there is content (= there are samples taken) in the registers of the module I fade out or disconnect the signal channel manually.

The preset “shiftregister.vcv” (only in the ebook, see <https://dev.rofilm-media.net>) is a good starting point for your own experiments, and the video behind the following link shows what I'm talking about here.
<https://youtu.be/gsr95YezR-A>

Or – what great fun it will be – I use the square wave output of an LFO running at a quite low frequency to switch the signal channel of the mixer on and off.

Watch the video behind the following link to see what I mean, and the preset “squareshift.vcv” (only in the ebook, see <https://dev.rofilm-media.net>) delivers a starting point for you.
https://youtu.be/lG3_sl09k2E

There are **8** outputs of the shift register, right?! So why not using more than only one (perhaps even all 8) to modulate the pitch of more than only one (perhaps even of 8) oscillators? And even if polyphony is a matter of the chapter “Compositional Aspects” I can't help demonstrating a bit of it in the video behind the following link already now and here (and the corresponding preset is “earlypolyphony.vcv”).
<https://youtu.be/lutaAlIdays>

