

Session 10

Simple chaotic systems

VA309 Modular Sound Synthesis @ EKA
Aubery Lis

Informational / Organisational

Coursework 4 handed out today!

The deadline is in two weeks (December 6th)

Final project guidelines to be sent in 7 days, deadline = christmas

Session 9 recap

- What is a transducer?
- How are they musically useful?
- Is there any other useful information that can be extracted from the amplified signal? How is *it* useful?
- Is one limited to amplifying acoustic sounds “from the air”?

Today

- First half: brief theory on chaos, basic patch ideas
- Second half: poking around for more complex chaos, exercise

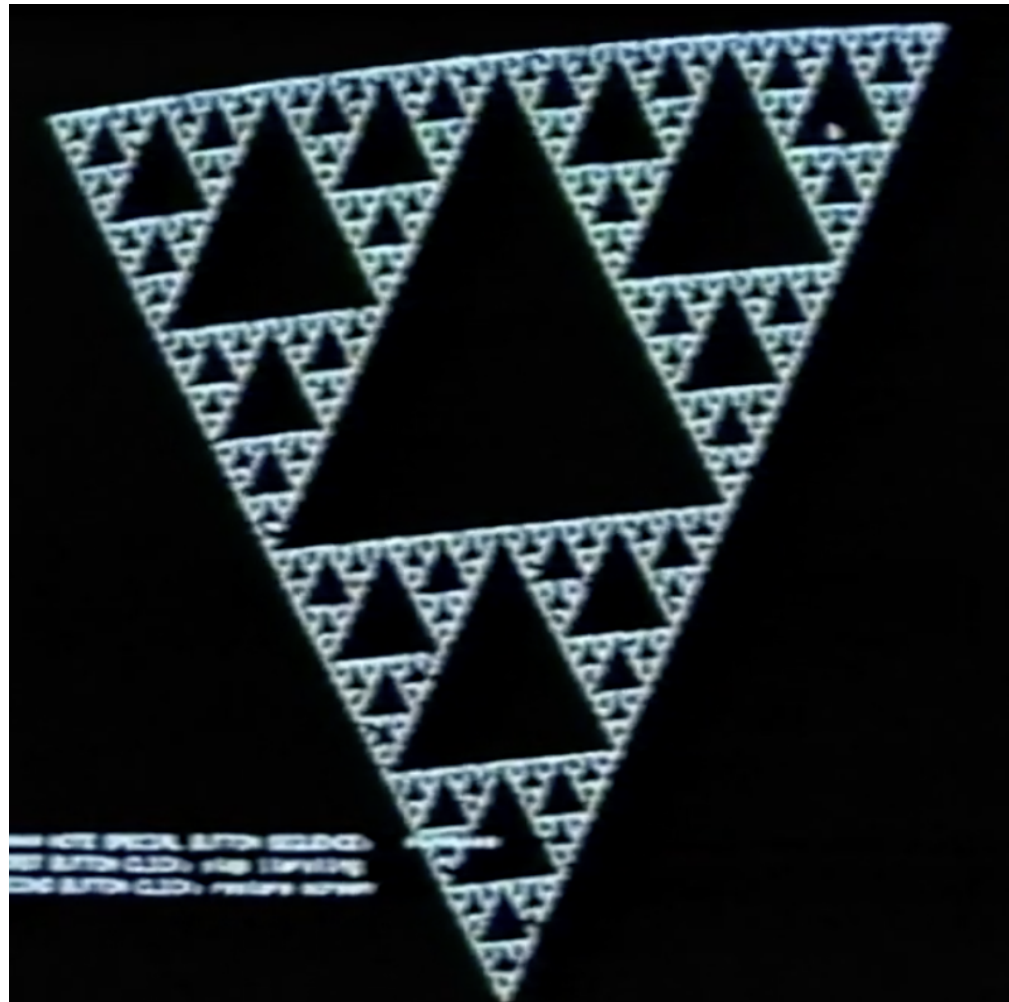
Chaos theory

- Pattern: can be predicted easily and repeats itself to a fair degree
- Randomness: cannot be predicted whatsoever using any tools
- Chaos: exists on a very fine edge between the two
- Theoretically, chaos is predictable, and often involves no sources of randomness
- Practically, chaos is so complex that it only makes sense to generalise its behaviour, not predict its exact states

Chaos theory: a quick demo

This one is based on “[The New Strange Science of Chaos](#)” - a game at 1:01 and onwards

Chaos theory: a quick demo



Chaos in everyday life

- Dripping water tap
- Clouds and wind
- Ball-draw lottery

Chaos in music

- Chaos in musical context was always interesting to people
- Earliest examples include chime-bell wind toys
- In modular, chaotic patches are interesting and a lot of fun

However,

- Chaotic generators usually don't serve immediate musical functions on their own
 - often they are used together with conventional techniques

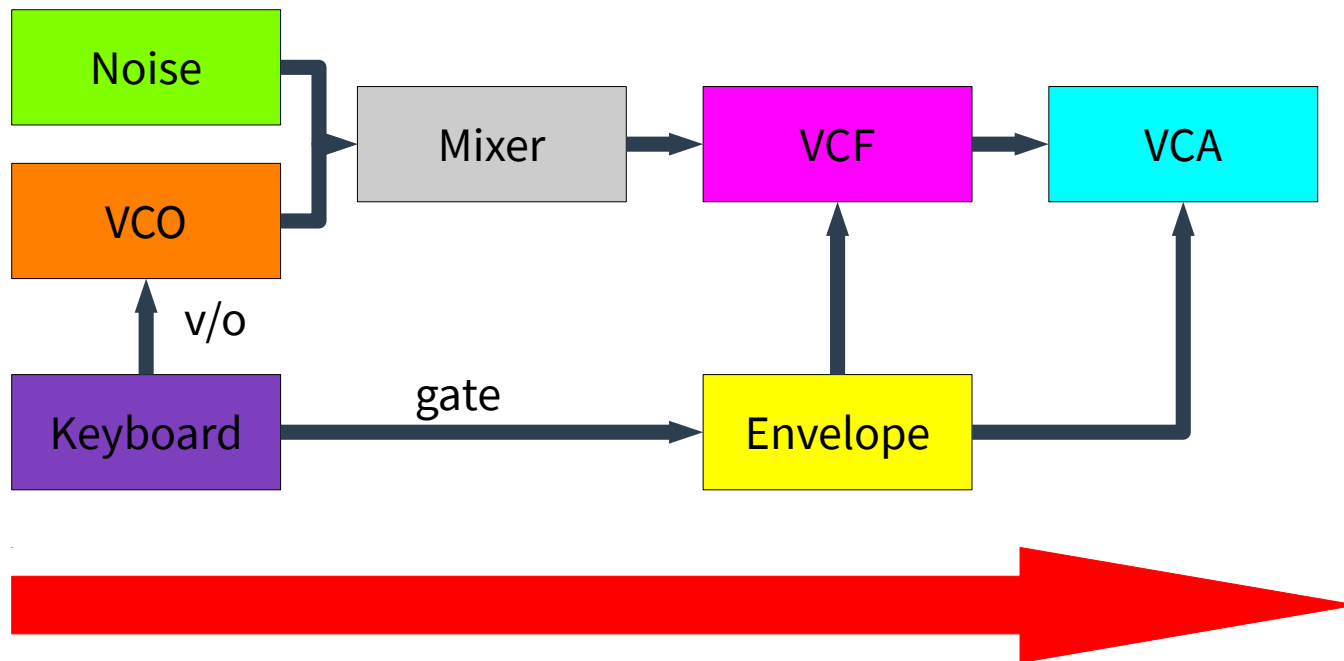
Finding chaos in a modular synth

Two major ways about it:

1. Just use a ready-made chaos generator module (A-118 *kind of* fits the purpose) → fast *but* boring, poor customisation...
2. Use a set of basic ideas to poke around and find your own chaotic patches → slow *but* fun and fully customisable!

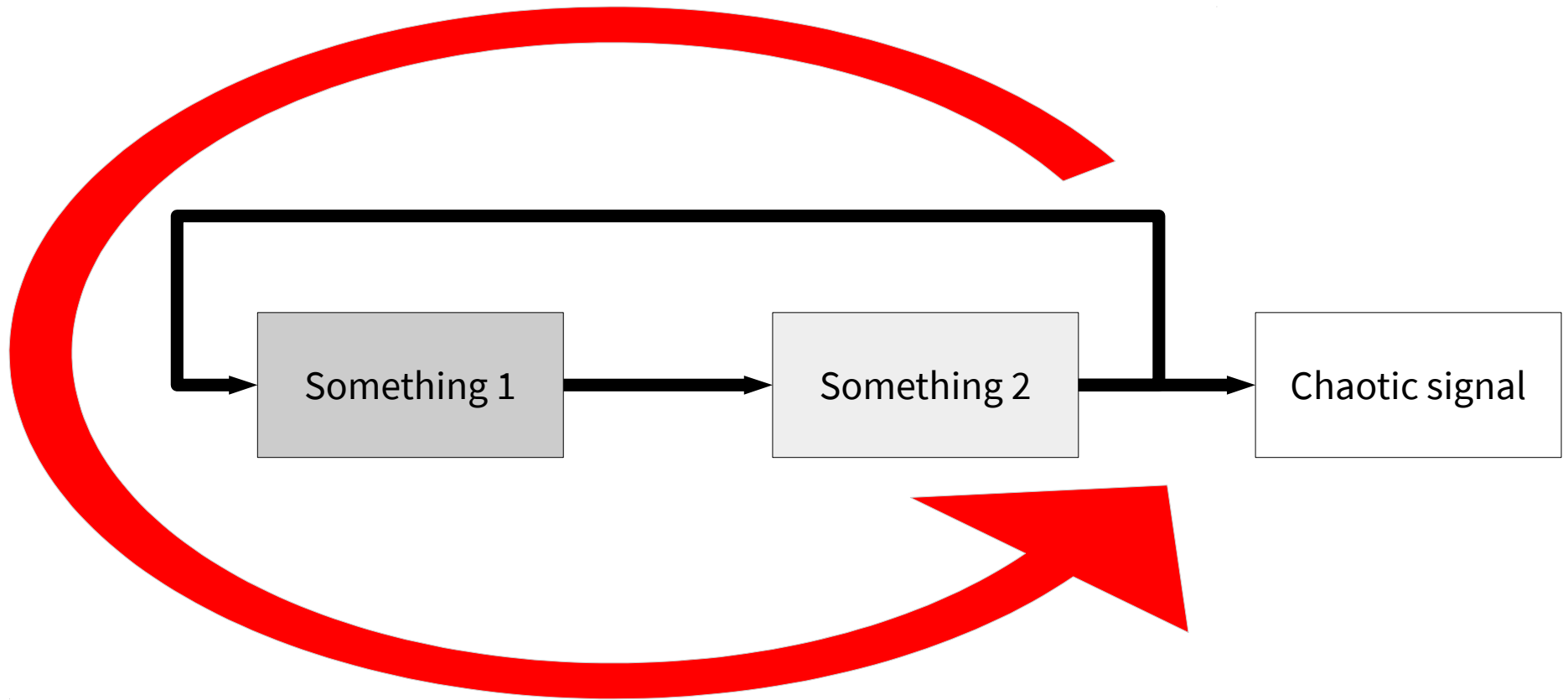
Finding chaos in a modular synth

So far, the patches went more or less linearly:



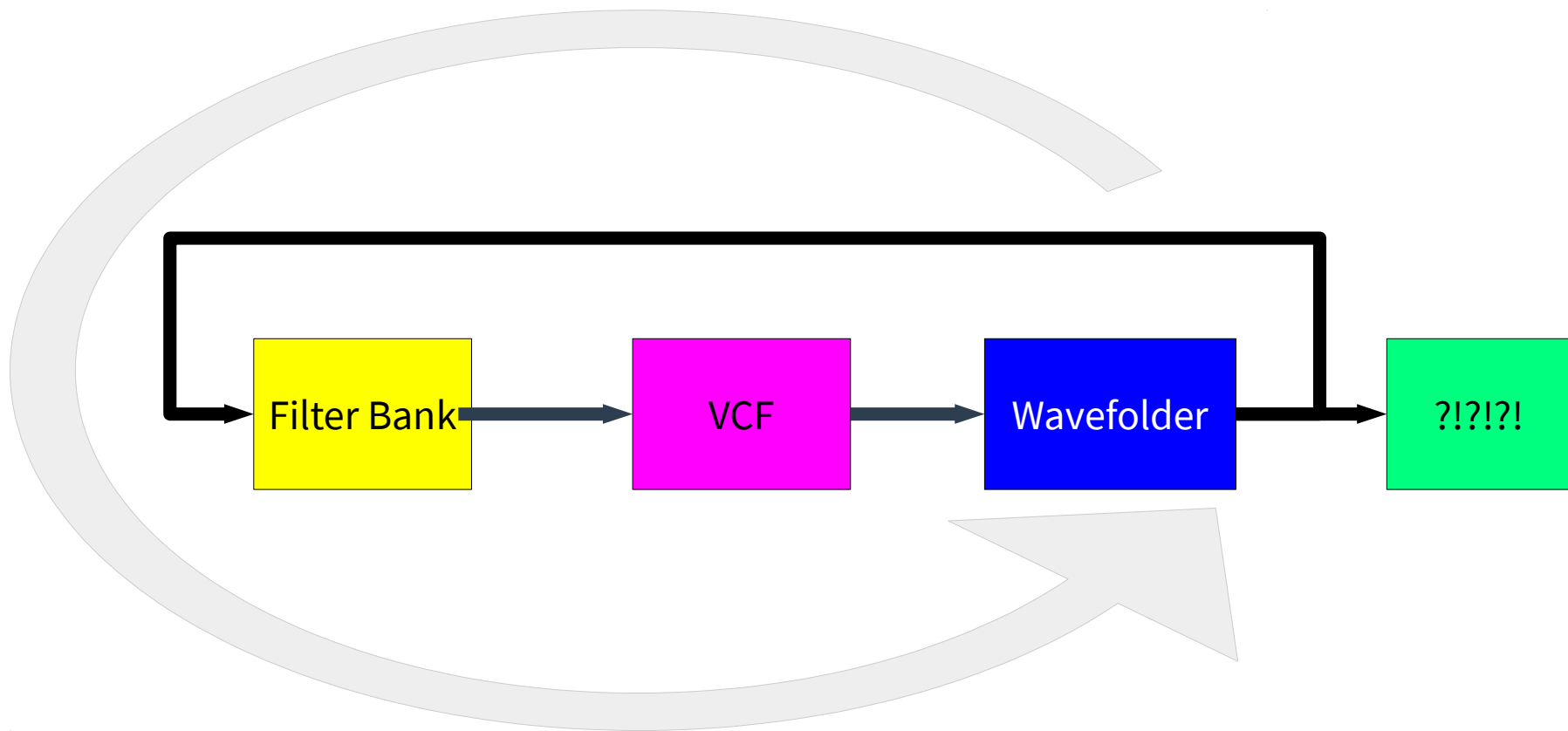
Finding chaos in a modular synth

A basic chaos technique – feedback. The patch gets “circular”!



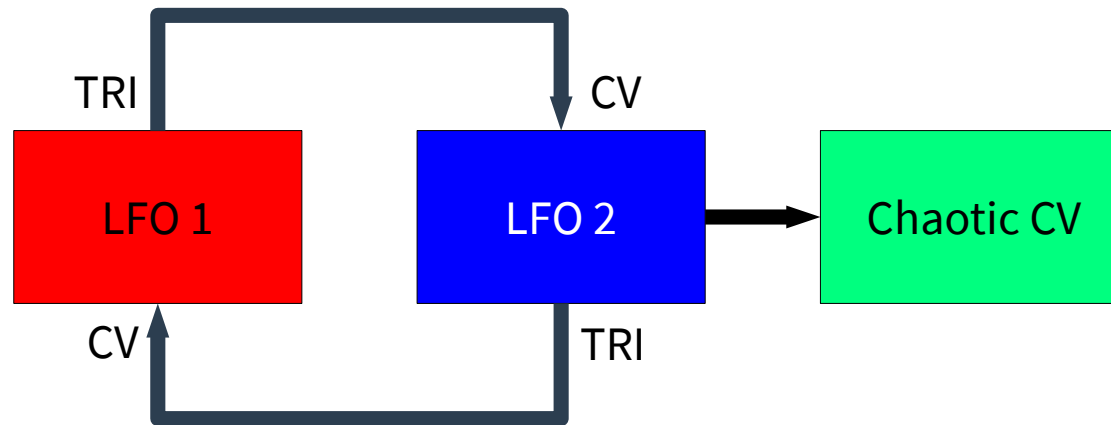
Audio chaos

A basic chaos technique – feedback. The patch gets “circular”!



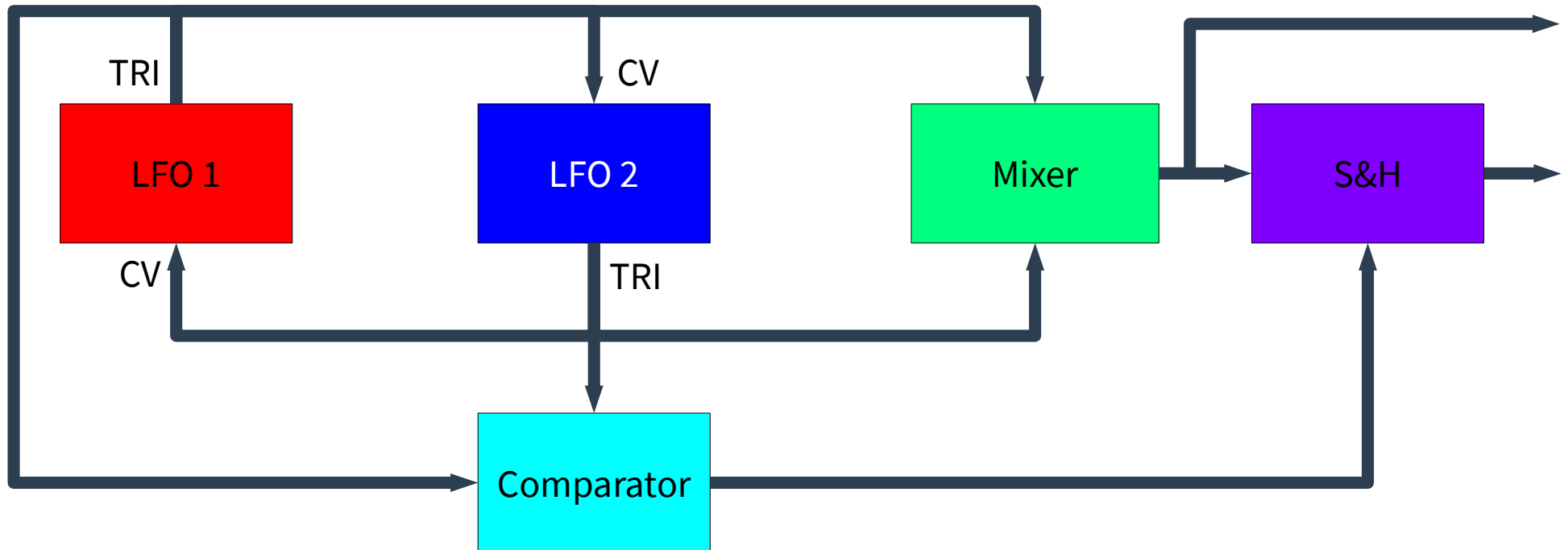
CV chaos

Feedback is not limited to audio! Voltage-controlled CV generators controlling each others is crossmodulation, or “CV feedback”!



Chaos complexity

Chaotic patches are highly experimental – add more layers and see where it goes!



Exercise!

- Create a chaotic generator
- Use it in an otherwise non-chaotic/less chaotic environment
- Experiment around!