Inferno Suite for VCVRack and Chamber Ensemble

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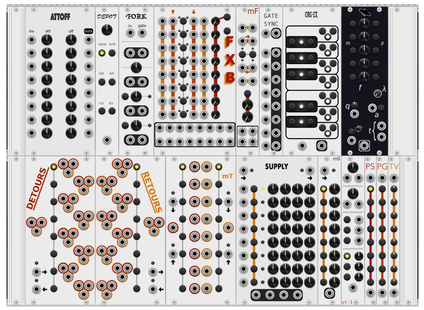


The VCVRack modules programmed for the Inferno Suite

Modular Synthesis

Modular synthesis has all the same components as regular "fixed" synthesis – oscillators, amplifiers, envelopes, and everything else. The only difference is that modular synthesis comes with nothing pre-wired, and you have to plug everything in yourself. This can be a benefit, as it allows for wild flexibility compared to "fixed" synthesis setups.

The *Inferno Suite* modules

Most of the modules I programmed are various utilities that provide functionality I couldn't get from pre-existing modules or could make work more efficiently.

Some of the modules in the suite (DE/RE/MiniTOURS, SUPPLY and MiniSUPPLY, GATESYNC, UT-1, and PUSHSYNC) share a system I refer to as the "sync cable", where modules with multiple "channels" can be daisy-chained together in order to link their selected channel together. This works by sending an integer voltage from 1v to 8v across a cable, which is read by the receiving module. This signal, if connected, overrides the user choice in which channel is enabled. This functionality allows a cleaner patch with simpler user control.

ATTOFF – an attenuversion/offset module. Essentially, it applies y=mx+b to an input x, where the "att" parameter specifes m and the "off" parameter specifies b.

DEPOT – originally created for testing purposes, DEPOT outputs a voltage in the selected range.

FORK – uses conditional logic to route two inputs based on the first's value; intended to allow the user to play multiple synthesizer voices from a single keyboard.

FXB and **MiniFX** – fancy bypass modules meant for multiple effects at once. Essentially, a bypass routes a signal either from A to B to C, or from A directly to C. This is useful for audio effect processing but can also handle pitch modulation.

GATESYNC – takes in gates and generates a sync voltage, or vice versa.

ORGEX – quarter-tone pitch class retuner based on the Arabic 'org.

SATURN – an esoteric saw wave drone oscillator, evolved from ELTA MUSIC's SOLAR 42.

DETOURS, **RETOURS**, and **MiniTOURS** – fancy sync-able routing switches. DETOURS can route 3 sets of up to 16 voltages to one of 8 outputs, and RETOURS does the same with 8 inputs and 1 output. Minitours has one set of each for a more compact patch.

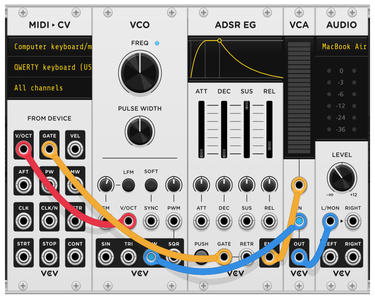
SUPPLY and **MiniSUPPLY** – channel-selectable and sync-able voltage sources

UT-1 – has a few small utilities. One attenuversion knob, one offset knob, three high gate generators, and a 3-channel version of SUPPLY

PUSHSYNC (**PS**), **PUSHGATE** (**PG**), and **TURNVOLT** (**TV**) - 2hp modules that provide various control functionalities. PS generates a sync signal, PG generates eight gates, and TV generates eight scalar voltages.

VCVRack

VCVRack is a software Eurorack modular synthesizer. It has a plethora of features that make it a powerful electronic music tool, and once I knew how to use it, I knew I wanted to use it for my Independent Study's music. I chose modular synthesis because of its incredible flexibility, and I chose VCVRack specifically for its free-and-open-source nature, as well as its strong compatibility with MIDI and OSC protocols. It does also have a specific feature that makes it better for live performance of classical-style music than most other modular setups, which is the ability to use "polyphonic" cables to play multiple notes with one small setup, a feat difficult to impossible to implement in hardware due to the way wires work.



Up: A basic synthesizer voice assembled in VCVRack

Inferno Suite

The *Inferno Suite* is a contemporary suite of nine pieces for chamber ensemble and modular synth based on the Inferno segment of Dante Alighieri's *Divine Comedy*. Besides the straightforward synthesized voice elements, it also uses electroacoustic textures provided via VCVRack, especially in tandem with the recorder part, another instrument that I don't think anyone utilizes enough for how well it sounds when it's played by someone skilled at its performance. I took advantage of the modularity of the synthesizer, which made it simple to do things like implement two-dimensional panning around the room and balance the oscillator output with the microphone outputs from the trombone and the recorder. I drew a lot of inspiration from non-classical sources for the music – electronic music, of course, but also a significant amount of non-western music. Bollywood soundtracks and classical performance from the MENA region. As an example, the microtonal 24EDO elements usually follow the *maqamat* structure from Arabic classical music.

Below: The patches for each movement of the Inferno Suite