MANGROVE

FORMANT OSCILLATOR WITH SPECTRAL BALANCE AND SUB-HARMONICS

Mangrove holds the essence of instrument in the form of an oscillator. As the earth shakes under foot, a whistle blows on the wind; Sounds are defined not only by pitch but by spectra.

Inspired by the reedy tones of woodwind instruments and the timbral definition of natural resonators. MANGROVE fits into your sonic landscape without dominating. Sculpt a harmonic outline with the BARREL and AIR, or flip into pitch division and melody folding with FORMANT.

OUTPUT

MANGROVE has two independent outputs accessed by the jacks in black rectangles. This dark background indicates outputs on all Mannequins modules.

SQUARE is a raw output affected only by pitch & frequency modulation. This is the most typical element of the MANGROVE and provides a constant modulation or synchronisation source.

FORMANT is a spectrally focussed wave-impulse output. It outputs pulses based on all the settings of the MANGROVE and is the principal out.

AIR

AIR is necessary to make any sound — space is silent. Increase the AIR flow to hear the output rise in volume, then blow out into odd-harmonic overtones.

AIR is a voltage controlled amplifier with a linked overdrive circuit. Using the attenuverter (white on grey knob) control voltages can be applied to increase or decrease the gain of the amplifier.

The response is incredibly fast and entirely capable of audio rate amplitude modulation. Attach an envelope generator to the AIR input and your synth voice is complete, or use a subtle LFO for voltage controlled harmonics.

PITCH & FREQUENCY MODULATION

PITCH controls the frequency of the oscillator; the rate of repetition; the .. pitch. Standard one-volt-per-octave input is available, abbreviated here as 'V/8'. The PITCH knob provides coarse frequency control, plus an additional octave via FINE.

FM INPUT allows linear frequency modulation from another audio source. This input is coupled to the FM INDEX, a voltage controlled amplifier affecting the amount of FM applied to the oscillator. When no FM INDEX is connected 100% modulation occurs. Connecting a CV to FM INDEX stops modulation, increasing with higher voltages.

FORMANT & BARREL

FORMANT & BARREL interact with one another to spectrally shape MANGROVE's output. FORMANT shifts from *contrabass* through *soprano*, sculpting the resonant peaks to emphasise the desired spectrum. BARREL provides control over harmonic density and the *weight* of a sound. Together these controls define an *impulse* that is clocked at the given PITCH.

Set BARREL to twelve o'clock for triangular shapes, and roll clockwise into a *ramp*. The character will intensify as even harmonics are filled in. With BARREL rotated counter-clockwise the wave-impulse becomes *sawtoothed*.

With BARREL here in 'utone' position, FORMANT takes on a new role, allowing the PITCH to be *divided*. Decrease FORMANT and the frequency will drop by an octave, then a fifth, then a fourth.

In this state BARREL & FORMANT are intimately linked. Any change will affect the other. This is a setting off point.

CONSTANT SWITCH

The final and most radical piece of this puzzle. CONSTANT allows two entirely different ways of approaching MANGROVE.

CONSTANT WAVE is the traditional *waveform* approach. Forget all the mention of formants and impulses above, the panel controls simply define your waveform. PITCH stretches it up and down in frequency.

CONSTANT FORMANT decorrelates the impulse from the frequency. This separation splits the pitch and spectra of the oscillator. FORMANT controls how big your instrument is, BARREL makes your trumpet a saxophone.

POWER CONSUMPTION

58mA @ +12V
54mA @ -12V

Shrouded power connector
Red Stripe (-12v) to left
when viewed from rear.

TRIMMING PROCEDURE

One trim only. Controls the width, or span, or size of octaves. Expect 5-6 octaves of tracking.

- Attach CV source to PITCH.
- Set source to 0V
- Tune PITCH knob to 80Hz
- Set source to 2V
- You should see 320Hz
- If flat turn flatter CCW
- If sharp turn sharper CW

Rinse, repeat.

FREQUENCY MODULATION SPECTRA

While FM functions rather traditionally in CONSTANT WAVE, CONSTANT FORMANT allows the spectra of FM to be dialed in.

Patch an FM source to the INPUT and note how the apparent depth of modulation is altered with the FORMANT control. High frequency modulators are most intense with a high FORMANT level.

MULTIPHONICS

Due to MANGROVE's analog approach there is an area of uncertainty between pitch divisions.

Using CONSTANT WAVE mode, set BARREL full CCW and dial in the first division (1 octave down) with FORMANT. Now slowly increase BARREL to create a split tone of the fundamental and sub-octave.

MELODY FOLDING & TRANSPOSITION

Attach a melody CV source to PITCH. Set BARREL CCW for pitch division. As you decrease FORMANT into the pitch division range the sequence will be transposed down (CONSTANT WAVE) or folded down, highest notes first (CONSTANT FORMANT).

SUGGESTIONS

Chaotic LFO: CONSTANT WAVE mode. PITCH, FORMANT & BARREL full CCW. AIR is LFO level, FINE controls speed, and BARREL controls chaos & waveshape.

SQUARE to AIR: Patch the SQUARE output to AIR input and adjust attenuverter for added odd harmonics. This is particularly buzzy when pitch dividing.

CROSS-MOD: Patch SQUARE to SYNC between two MANGROVES, then FM one from the FORMANT of the other. Or, patch FORMANT to PITCH between two for touchy chaotic SQUARE wave bursts.