Progressive Patches

aperiodic audio signal:

NG = Noise Generator

periodic audio signal:

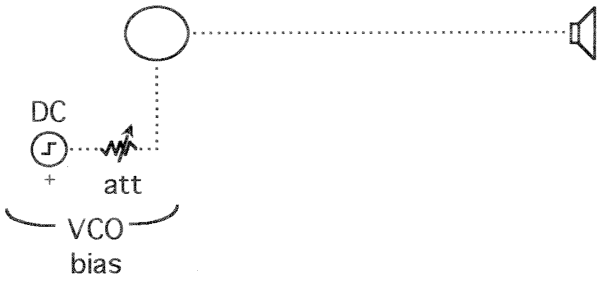
VCO = Voltage Controlled Oscillator

periodic audio signal:
fixed frequency control (VCO bias):

= DC = Direct Current (positive)

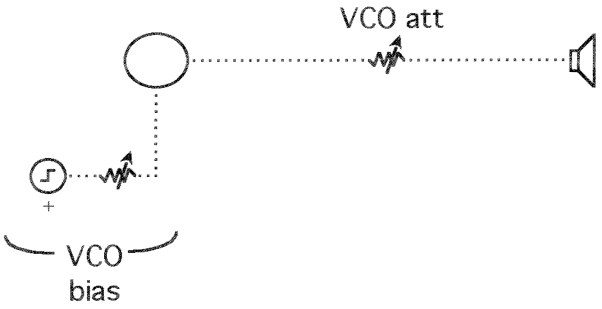
= att = attenuator

bias = attenuated DC



periodic audio signal:
fixed amplitude control (VCO att):

fixed frequency control (VCO bias):

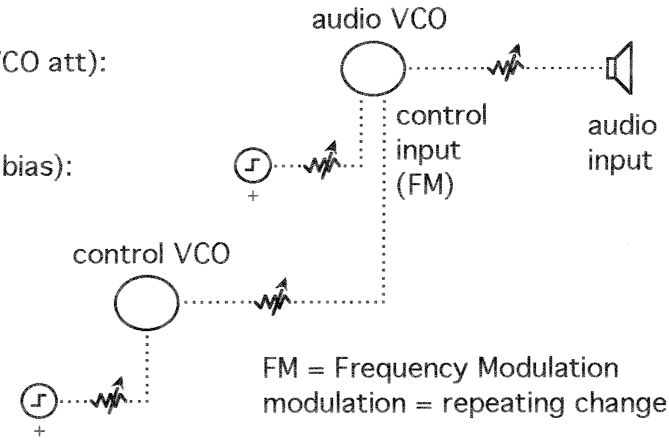


periodic audio signal (audio VCO):
fixed amplitude (loudness) control (audio VCO att):

fixed frequency (pitch) control (audio VCO bias):

periodic control signal (control VCO):
fixed modulation depth (control VCO att):

fixed modulation rate (control VCO bias):



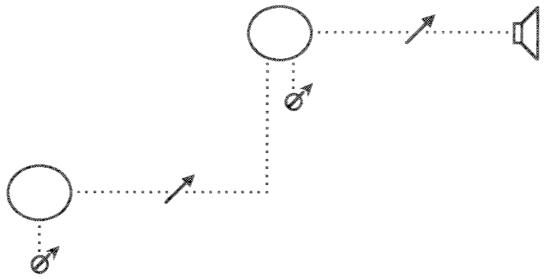
FM = Frequency Modulation
modulation = repeating change

Each VCO in the graphic immediately above is called an "audio" or "control" device strictly by its function within the particular patch. Function is defined strictly by connection of module output to either an audio input (e.g. monitor), or a control input (e.g. VCO FM). Analogous module parameter settings, e.g. VCO frequency and/or waveform, and respective VCO output attenuator settings play no role in defining whether a module functions as a "control" or an "audio" device. The type of input to which any module's output is connected is the only basis for identifying that module as an "audio" or "control" device. With appropriate settings above, change of analogous audio and control parameters produces different audio results. For example, control VCO bias governs vibrato rate, whereas audio VCO bias governs pitch; control VCO attenuator governs vibrato depth, whereas audio VCO attenuator governs loudness!

graphically simplified
patch showing audio
and control VCOs with:

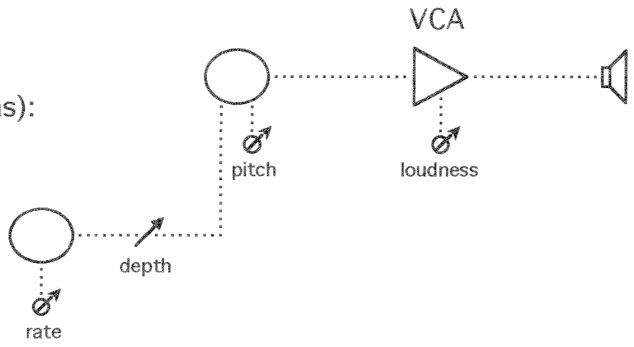
= DC bias

= attenuator



periodic audio signal (VCO):
fixed (frequency) **pitch** control (VCO bias):
fixed (amplitude) *loudness* control (VCA bias):
VCA = Voltage Controlled Amplifier

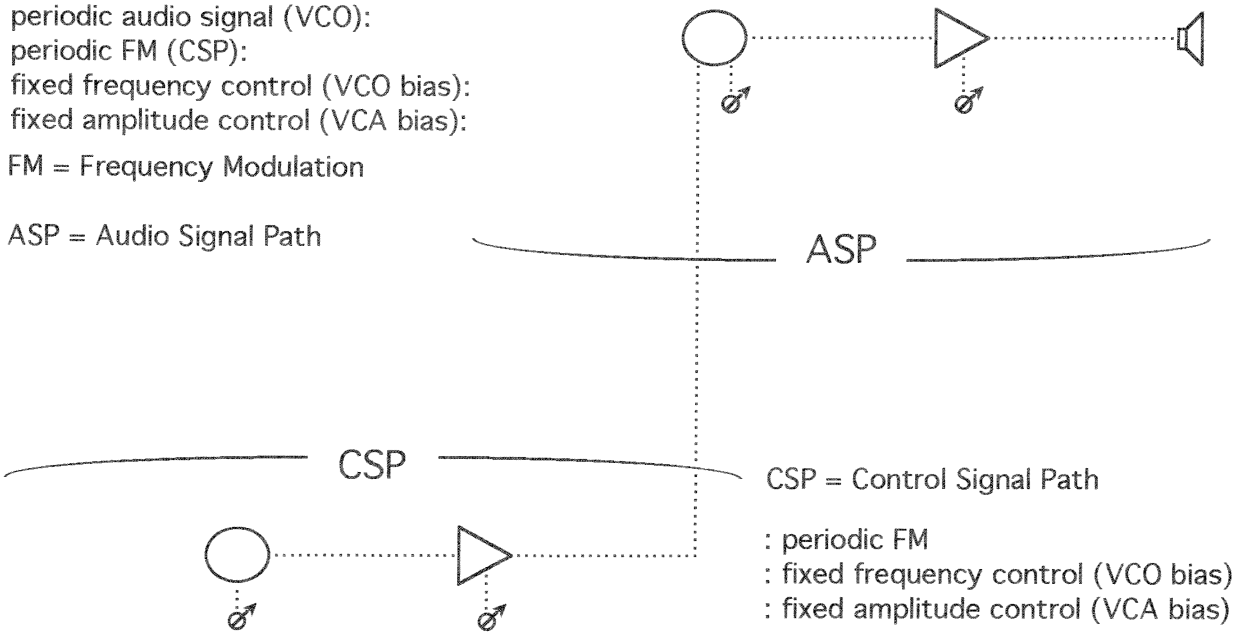
periodic control signal (VCO):
fixed (frequency) **rate** control (VCO bias):
fixed (amplitude) *depth* control (VCO att):



periodic audio signal (VCO):
periodic FM (CSP):
fixed frequency control (VCO bias):
fixed amplitude control (VCA bias):

FM = Frequency Modulation

ASP = Audio Signal Path



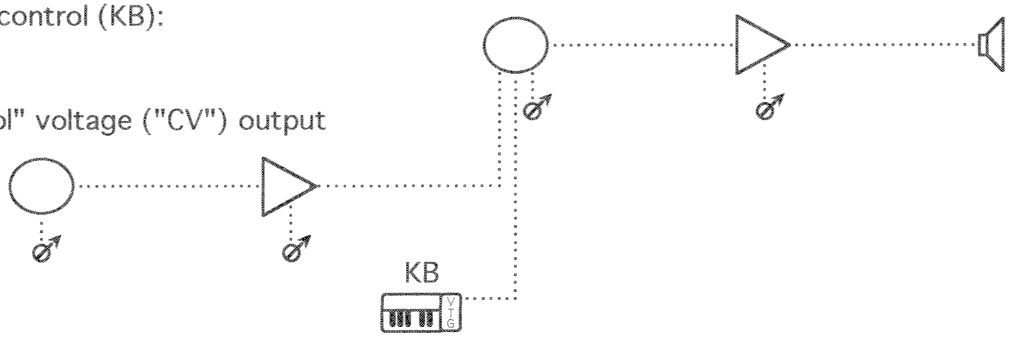
CSP = Control Signal Path

: periodic FM
: fixed frequency control (VCO bias)
: fixed amplitude control (VCA bias)

An ideal module would be capable of functioning equally well in the ASP or the CSP, as indicated above. Some signal and/or control input(s) on realworld modules may *not* be designed to handle both audio and subaudio (below audio) frequencies equally well. An input may be either "capacitor coupled," which *blocks* DC (Direct Current); or "direct coupled," which *passes* DC (subaudio). In many patches, a useful signal may be DC or subaudio, with a frequency that approaches 0 Hz, or DC . A *bias* is such a DC signal. Periodic signals lower than 20 Hz are subaudio signals. A module with a capacitor coupled input may distort or reject subaudio signals. Some implementations have a separate "direct" input which *does* admit signals as low in frequency as 0 Hz, or DC. Capacitor or direct coupled inputs may be referred to loosely as "AC" or "DC" inputs respectively. A switch may be provided to select between "AC" or "DC" response.

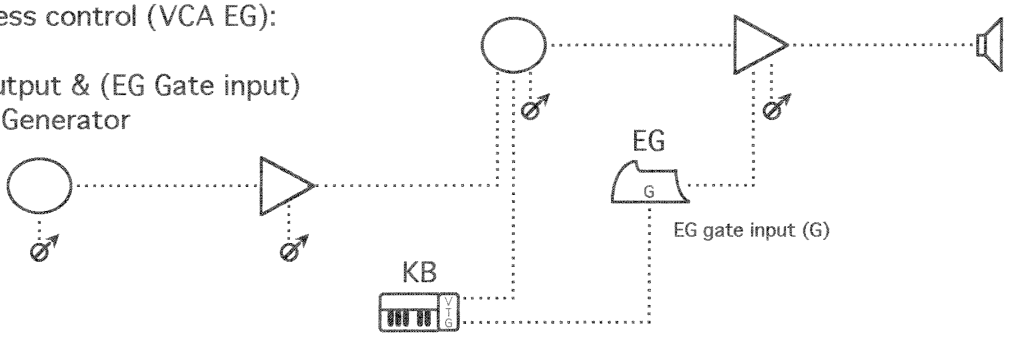
stepped pitch control (KB):

KB = keyboard
V = KB "control" voltage ("CV") output



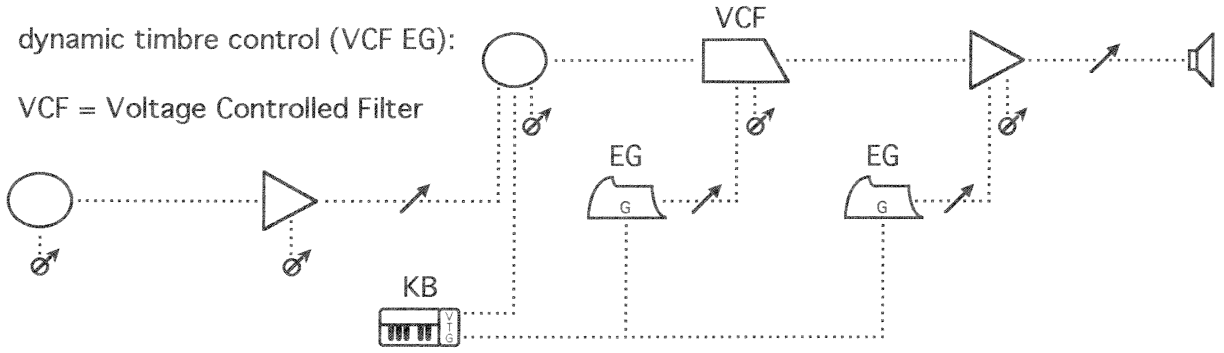
dynamic loudness control (VCA EG):

G = KB Gate output & (EG Gate input)
EG = Envelope Generator



dynamic timbre control (VCF EG):

VCF = Voltage Controlled Filter



The patch above has the fewest modules required for a useful pitched patch. The Voltage Controlled Filter (VCF) shown is a LPF (Low Pass Filter). VCF bias and VCF EG (Envelope Generator) control the Low Pass Filter's cutoff frequency, below which partials are passed.