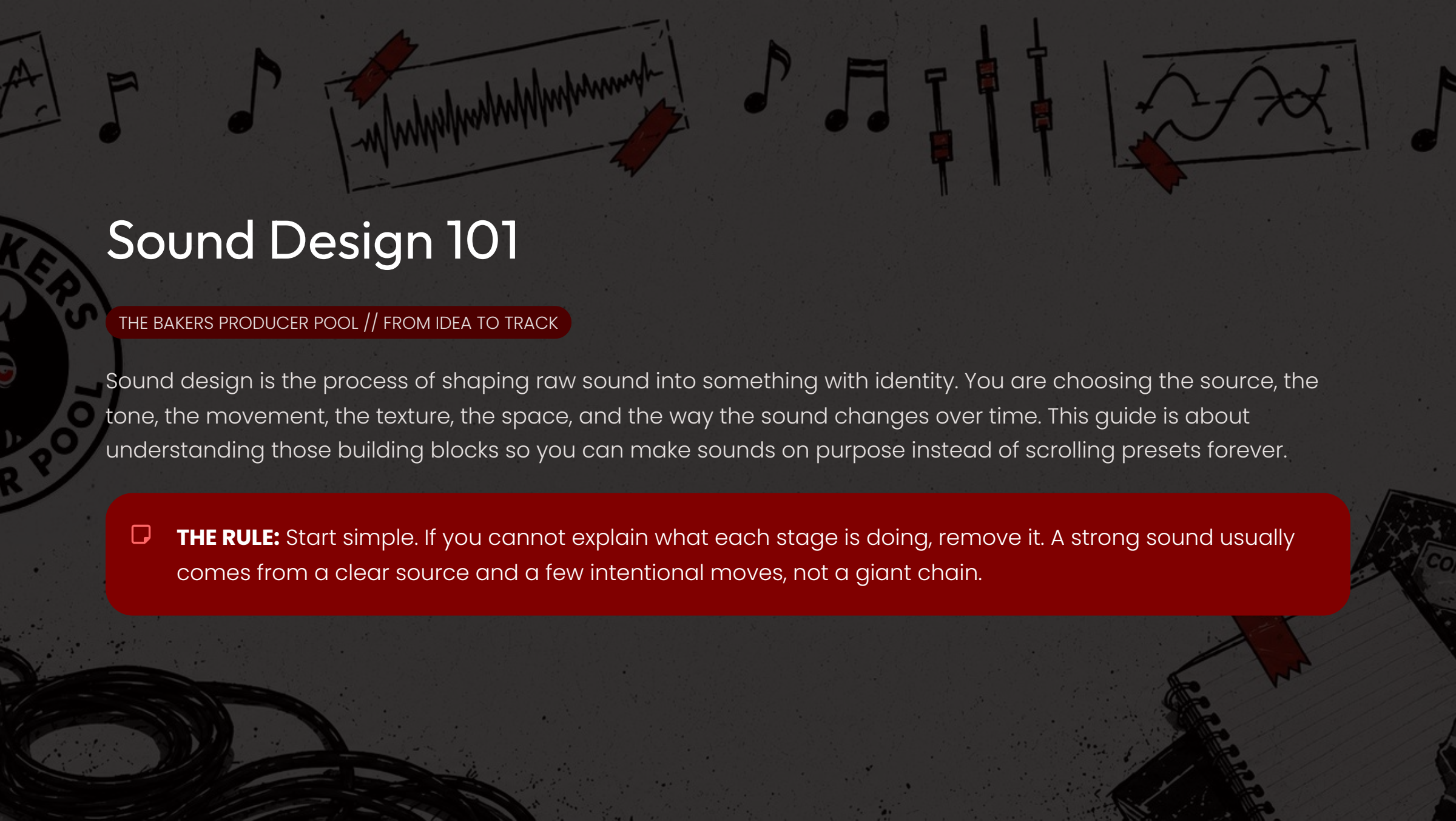




Sound Design 101

THE BAKERS PRODUCER POOL // FROM IDEA TO TRACK

Sound design is the process of shaping raw sound into something with identity. You are choosing the source, the tone, the movement, the texture, the space, and the way the sound changes over time. This guide is about understanding those building blocks so you can make sounds on purpose instead of scrolling presets forever.

❏ **THE RULE:** Start simple. If you cannot explain what each stage is doing, remove it. A strong sound usually comes from a clear source and a few intentional moves, not a giant chain.

What You Will Learn: The Four Stages

Sound design becomes much easier when you stop thinking in presets and start thinking in stages. Every decision you make falls into one of four categories, from the raw material you choose all the way to how you finish and place the sound in context. One sine wave can become a sub, kick, laser, pluck, or pad depending on pitch, envelope, modulation, and effects. The real skill is not memorizing recipes. It is learning what each control changes, then combining those changes intentionally. The goal is not to make every sound from scratch. The goal is to know how to change a sound until it belongs to your track.

SOURCE

- Waveforms
- Noise
- Samples
- Oscillators

SHAPE

- Pitch
- Envelope
- Filter
- Distortion

MOVEMENT

- LFOs
- Modulation
- Velocity
- Automation

FINISH

- Layering
- Resampling
- Space
- Context

Part 1 & 2: Anatomy of a Sound & Waveforms

Almost every sound-design decision fits into one of six jobs: **Source** (what creates the sound: oscillator, recording, noise, sample), **Pitch** (fixed pitch, melody, glide, tuning, pitch envelope), **Amplitude** (how loudness changes over time via attack, decay, sustain, release), **Tone** (which frequencies are emphasized or removed via filters and EQ), **Movement** (what changes after the note begins: LFOs, envelopes, automation), and **Space/Texture** (distortion, chorus, delay, reverb, width, resampling). When a sound is wrong, identify which job is wrong before adding another plug-in. An oscillator repeats a shape extremely fast. That shape determines the harmonic starting point before any filtering or effects.

SINE

Almost no upper harmonics. Clean, round, useful for subs, test tones and building blocks.

TRIANGLE

More harmonics than sine, but still soft. Useful when you want body without the brightness of a saw.

SQUARE

Strong odd harmonics. Hollow, buzzy and useful for basses, chiptune tones and aggressive midrange.

SAW

Rich in harmonics. Bright and dense. Excellent for leads, basses, pads and subtractive synthesis.

❏ **NOISE:** Not pitched like a normal oscillator. Perfect for air, grit, snares, hi-hats, wind, texture, transients and adding life to otherwise clean synth sounds.

Part 3 & 4: Envelopes and Filters

Envelopes: The Shape of Time

A sound is not only what frequencies it contains. The way it starts, holds and disappears is a huge part of its identity. The ADSR model governs this: **Attack** is how fast the sound reaches peak volume; **Decay** is how quickly it falls to the sustain level; **Sustain** is the held level while the note is pressed; **Release** is how long it takes to fade after the note ends.



PLUCK

Fast attack, short decay, low sustain. Hits and disappears quickly.

PAD

Slower attack and release. Fades in and out instead of snapping.

KICK / PERC

Very fast amplitude shape. Pitch envelopes create impact and punch.

BASS

Shorter notes feel tighter; longer release can blur the low end.

Filters and Resonance: Tone

Filters remove or emphasize parts of the frequency spectrum. In subtractive synthesis, the oscillator gives you material and the filter carves it. Cutoff moves the corner frequency; resonance emphasizes the area around it. Extreme resonance can become very loud, so gain-match and protect your ears.



LOW-PASS

Keeps frequencies below the cutoff. Classic way to turn a bright source darker.

HIGH-PASS

Keeps frequencies above the cutoff. Useful for removing low end and creating thinner layers.

BAND-PASS

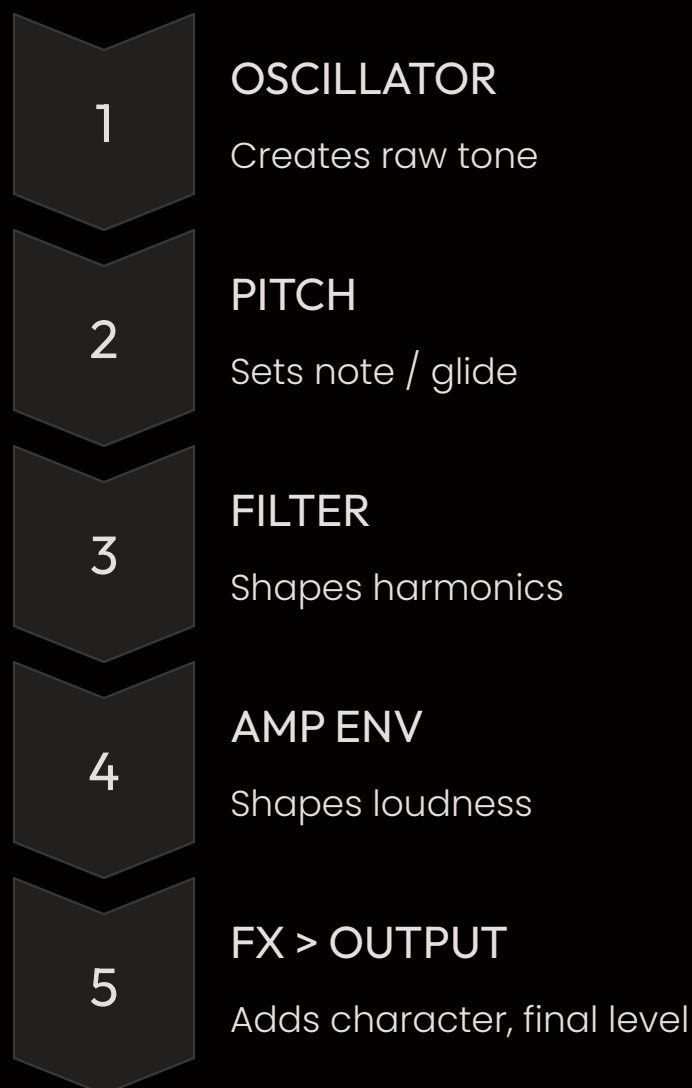
Keeps a middle band. Good for focused, nasal or radio-like tones.

NOTCH

Removes a narrow area. Useful for movement, hollow textures and special effects.

Part 5 & 6: Modulation & Signal Flow

Modulation means one control changes another control automatically. This is how static patches become expressive, rhythmic or unpredictable. Movement should serve the sound: if everything is moving, the listener has nothing stable to hold onto. Different synths look different, but many subtractive patches follow the same basic signal path.



LFO

A repeating shape that moves filter cutoff, pitch, volume, pan, wavetable position and more.

ENVELOPE

A one-shot movement triggered by each note. Great for pitch drops, filter plucks and transient shaping.

VELOCITY

Use performance strength to change volume, brightness, attack or other parameters.

RANDOM / S&H

Creates controlled unpredictability. Small amounts make repeated notes feel less identical.

📌 **Synthesis Methods: Subtractive:** start rich, carve with a filter. **FM/Phase Mod:** one oscillator changes another; small ratios are musical, extreme settings become metallic. **Wavetable:** move through wave shapes over time; table position becomes a modulation target. Judge a synthesis method by the motion and harmonics it can produce, not by how complicated it looks.

Part 7 & 8: Sampling and Resampling

A sampler turns a recording into playable material. The source can be a drum, voice, field recording, instrument hit, noise, or a sound you made yourself. Sampling is not the opposite of synthesis. A sampler is a synthesis tool whose oscillator happens to be a recording. Resampling turns a processed sound back into audio, letting you edit it as a new object instead of carrying an endless device chain. Once the audio is printed, you can stop designing the patch and start designing the performance.

The Sampling Workflow

- 1

FIND

Choose a recording with an interesting texture, transient, tone or rhythm.
- 2

TRIM

Set a clean start and end. Remove silence and clicks unless they are part of the sound.
- 3

TUNE

Transpose or key-track the sample. Extreme pitch changes can create entirely new textures.
- 4

SHAPE

Use amplitude and filter envelopes exactly like you would on a synth.
- 5

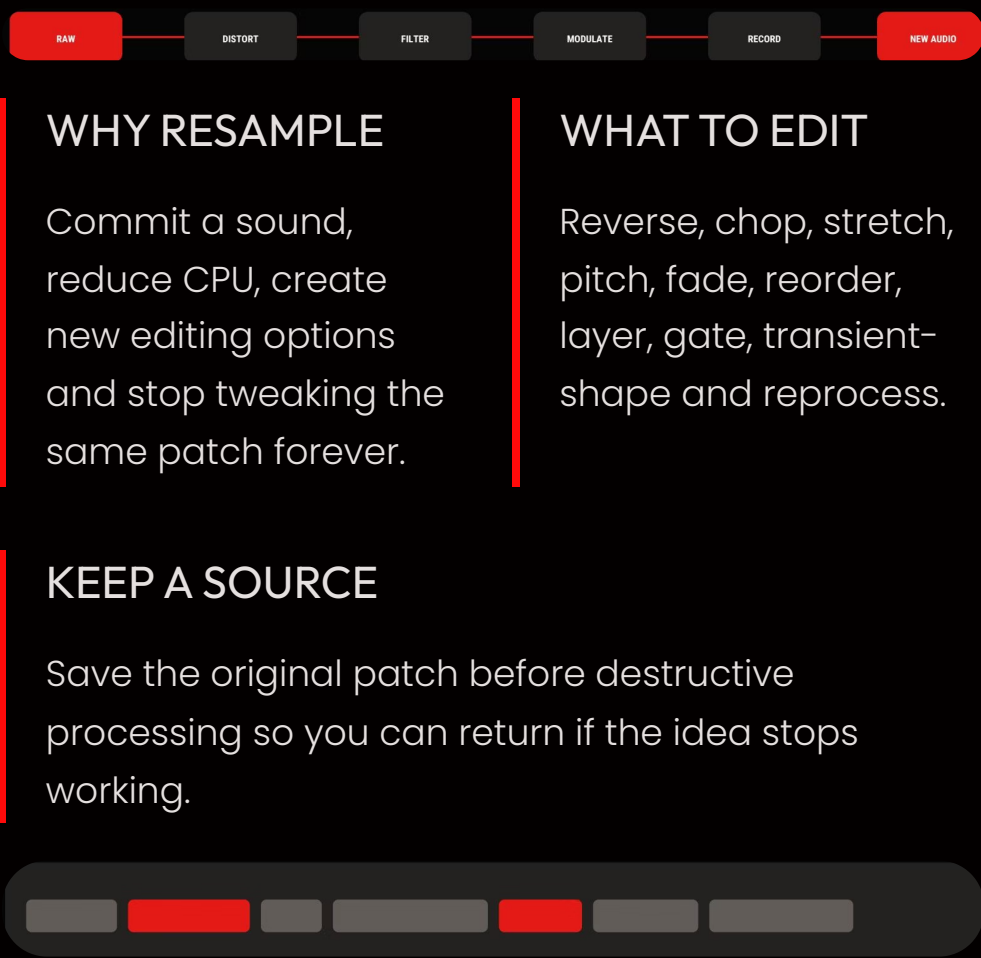
PROCESS

Add saturation, modulation, time effects or spectral processing.
- 6

RESAMPLE

Record the result, then treat that result as a new source.

The Resampling Chain



Part 9 & 10: Layering and Bass Design

Layering works when every layer has a reason to exist. If two sounds are doing the same job, they usually fight instead of becoming bigger. Layer by function: weight, body, attack, width, texture. If you cannot name the job, question the layer. Bypass one layer. If the sound barely changes, that layer may not be helping. More layers do not automatically mean more power. Bass design is easier when the low end is treated as a stable foundation and the aggression lives above it. Heavy bass is not just distortion. Weight comes from stable low end, clear rhythm and controlled harmonics.



SUB

Weight and fundamental. Usually simple, centered and controlled. Start with a sine or simple low-harmonic source. Keep the pitch clean and the envelope tight enough for the groove.



BODY / MID BASS

The main identity. Carries the note, groove and recognizable character. Use a richer oscillator, filter movement, distortion, FM or wavetable motion to create identity.



TOP / TEXTURE

Attack, fizz, noise, grit, stereo movement or air. Add buzz, grit, air or stereo information above the core low end. Test the full bass at low volume. If the note disappears, the low-end relationship needs work.

PHASE CHECK

Layered low-frequency sounds can cancel each other. Flip polarity, move timing, or simplify the layers if the bass gets weaker.

LEVEL CHECK

Bypass one layer. If the sound barely changes, that layer may not be helping. More layers do not automatically mean more power.

Part 11: Effects Are Part of Sound Design

Effects do more than polish. They can change the identity of the source so strongly that they become part of the instrument itself. Effects should change a specific quality: harmonics, motion, space, dynamics, pitch or texture. Know which one you are changing before reaching for a plug-in.



DISTORTION / SATURATION

Adds harmonics and density. Great for making quiet details audible and turning clean sources into aggressive ones.



CHORUS / FLANGER / PHASER

Creates width and motion through short delays or phase relationships.



DELAY

Creates repeats, rhythm, space and feedback textures. Short delay times can become comb-filter-like tones.



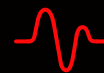
REVERB

Creates an environment around a sound. Short spaces add body; long tails create atmosphere and can be resampled.



COMPRESSION

Controls dynamics, but extreme settings can also reshape transients and sustain.



PITCH / FREQUENCY FX

Pitch shifters, frequency shifters, ring modulation and spectral tools can push a sound far from the source.

Exercise: Make Three Sounds From One Saw Wave

The fastest way to learn sound design is to force yourself to make very different results from the same starting point. Use one oscillator. Do not change the waveform. You may change pitch, envelope, filter, modulation and effects. Save each version before moving to the next. If the three patches sound clearly different, you are learning control. If they all sound like the same preset, simplify and exaggerate the differences.

1. PLUCK

Fast attack, short decay, low sustain. Low-pass filter with a quick envelope. Small room reverb.

2. BASS

Pitch down. Keep the amp envelope tight. Add filter motion, saturation and controlled low end.

3. PAD

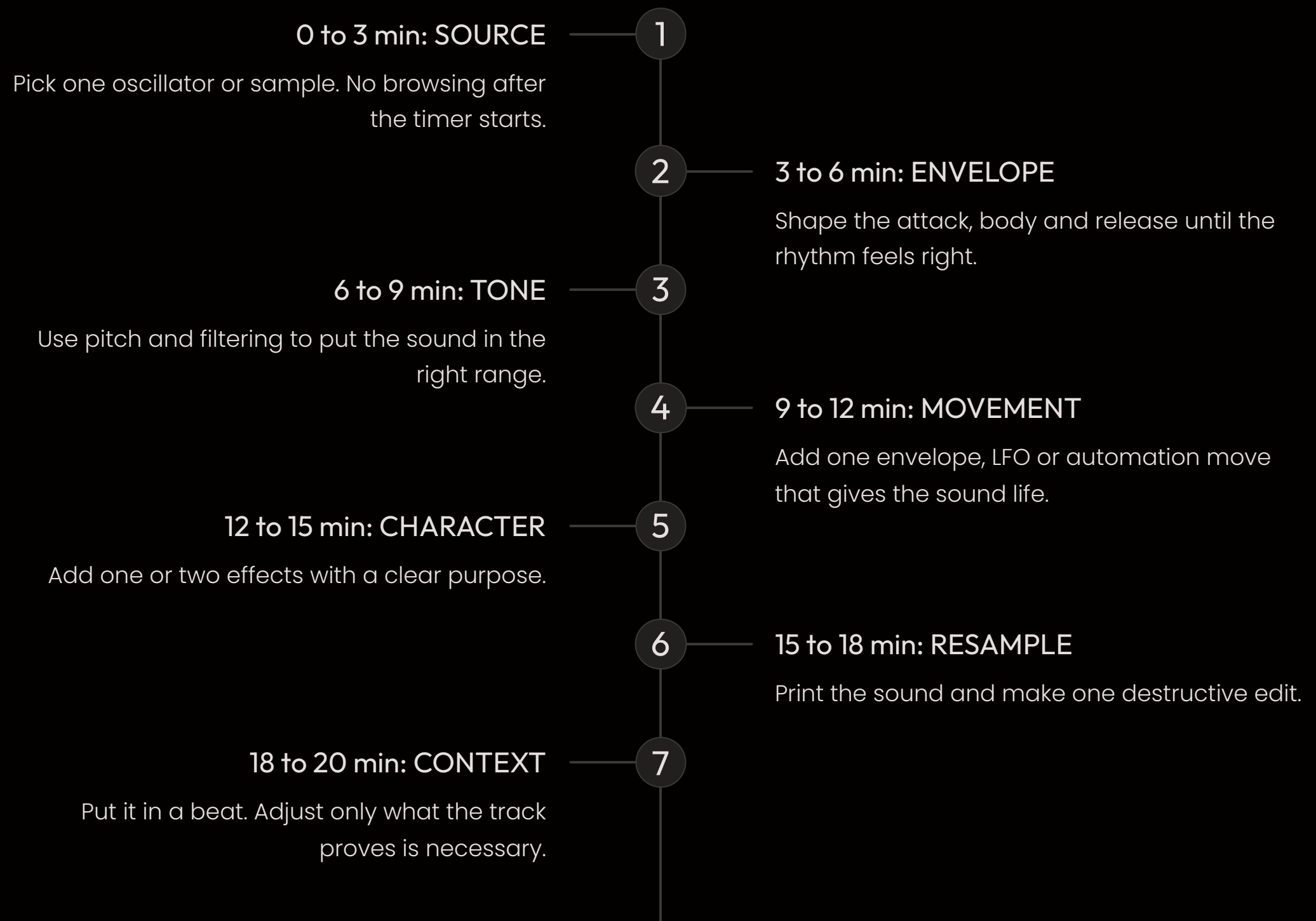
Slow attack and release. Detune or widen the source. Gentle filter movement. Longer reverb or delay.



THE RULE: Use one oscillator. Do not change the waveform. You may change pitch, envelope, filter, modulation and effects. Save each version before moving to the next.

Final Practice: The 20-Minute Sound Design Loop

Do this often enough and sound design stops feeling random. You will start hearing what a sound needs before touching the controls. The goal is not to make the craziest sound — the goal is to hear an idea, understand the tools, and build a sound that performs a clear job in the music.



"The goal is not to make the craziest sound. The goal is to hear an idea, understand the tools, and build a sound that performs a clear job in the music."

— LeMOF