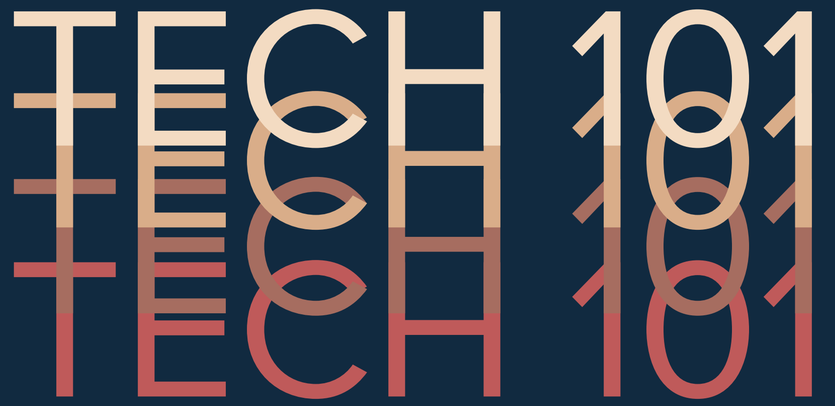
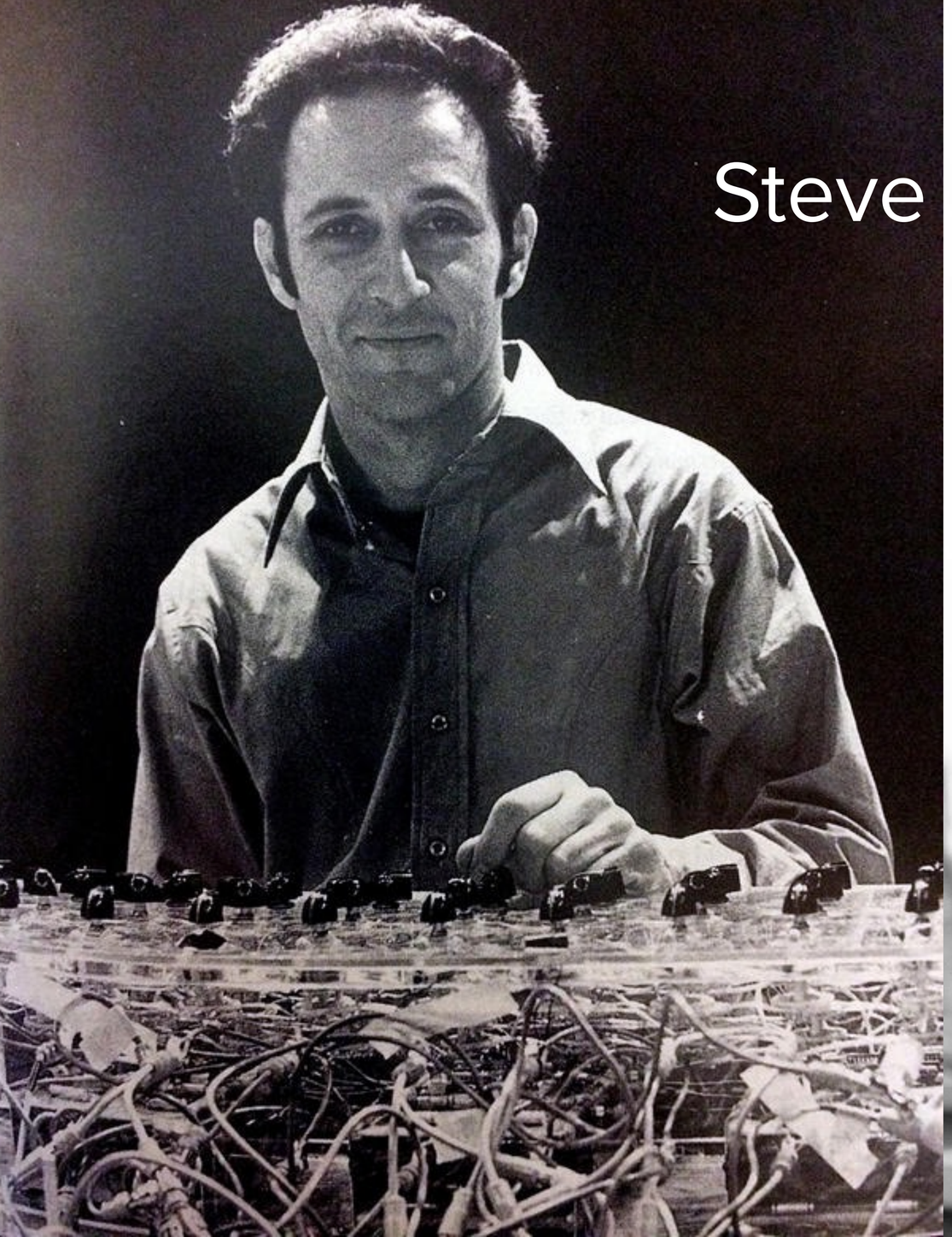

TECH 101

Steve Reich



BRIAN ENO

ROXY MUSIC

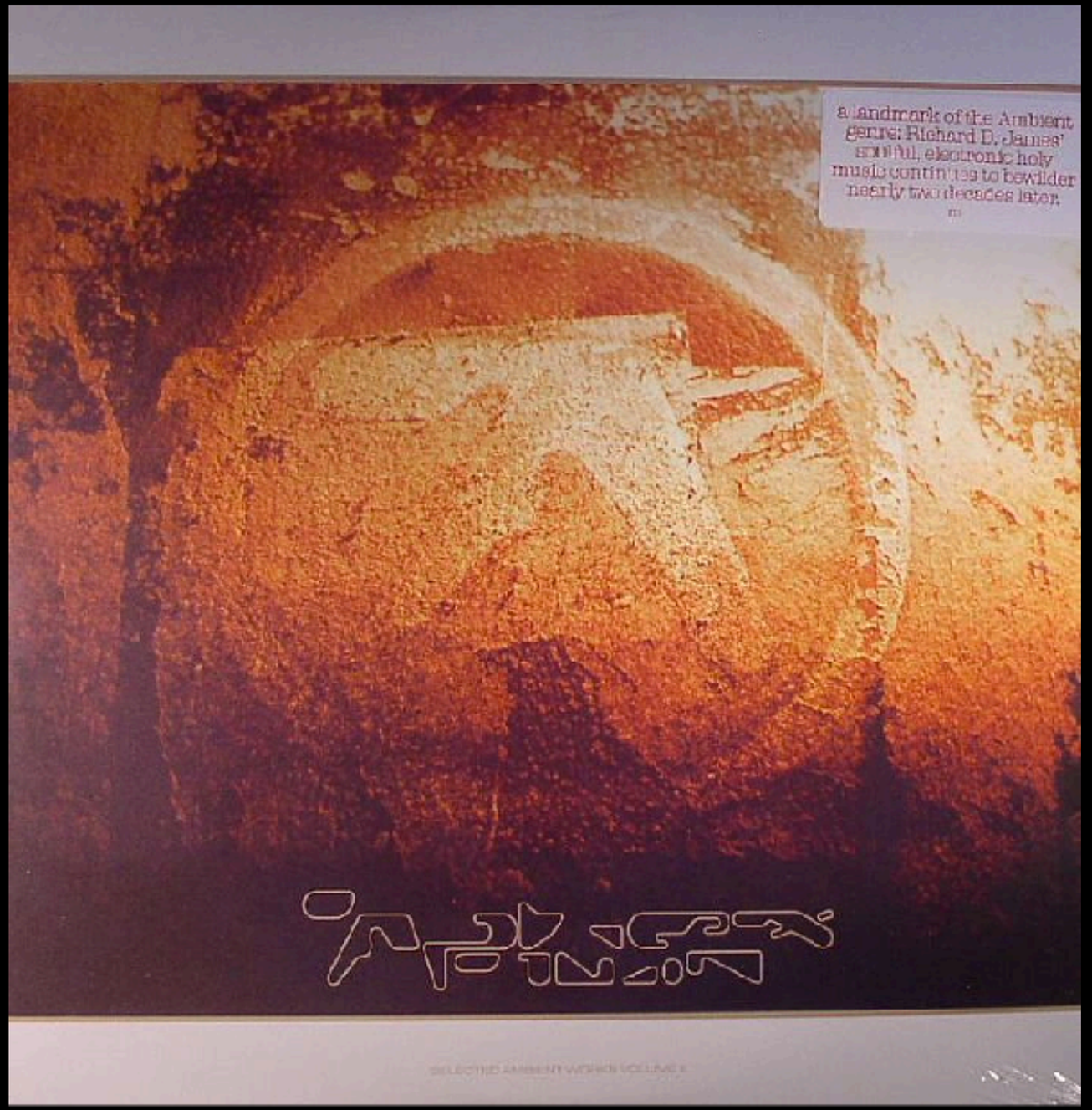
BRIAN ENO

Eno's Ideas about Ambient Music

Eno contrasts canned music (or "muzak"), which tries to cover up surrounding sounds, with ambient music, which is intended to enhance the sounds of the environment.

Muzak		Ambient Music
Blankets with sound, covers up the space		Invites you into the space, incorporates the space
Strips away all sense of doubt and uncertainty	**vs.**	Mysterious, uncertain
Brightens the environment, stimulating		Induces calm and a space to think

DONATO WHARTON TRABANTEN


a landmark of the Ambient
genre: Richard D. James'
soulful, electronic holy
music continues to bewilder
nearly two decades later.
Aphex Twin

FX *part 2*

Audio Effects I:

Echo/Delay

Definition: *Adding delayed copies of a signal to itself*
Typical Parameters: delay length, feedback, filtering, wet/dry
Example REAPER plug-in: *ReaDelay*

Stereo Imaging

Def.: *Changing the perceived width of a stereo signal*
Params.: width, delay, mid/side, wet/dry
Ex. Plug-in: *Stereo Enhancer*

Reverb

Def.: *Emulating the reverberance of a room*
(using many delays or a special room recording ('impulse'))
Params.: length, size, dampening, stereo width, wet/dry
Ex. Plug-in: *ReaVerbate* (*ReaVerb* more advanced version)

Modulation Effects

Def.: *All involve using a control signal, called a low frequency oscillator (LFO), to modulate parameters of the signal*

Tremolo – changing **amplitude** over time with an LFO
Vibrato – changing **pitch/speed** over time with an LFO

Flanger and **Chorus** operate similarly: a delayed, modulated copy of a signal, with the delay and modulation changed over time by an LFO, is added to the input signal. Depending on the length of the delay (in ms) different perceptual effects will occur.
Phasers operate differently, using a phase-shifting delay (called an all-pass filter), and their parameters often allow you to control the frequency range effected.

Phaser – alters phase relationship between incoming signal and its copy, perceived not as a delayed signal but rather a shimmer-y, sweeping effect.
Flanger – longer delay times than phaser (1ms – 10ms), perceived as a water-y, swirling effect.
Chorus – longest delay times (10ms – 100ms+), perceived as multiple copies of the input signal.

Params.: depth, length, feedback, rate, low/high range (Phaser), wet/dry

Ex. Plug-ins: *Tremolo, Chorus, Flanger* (is broken…), *4-Tap Phaser, Ring Modulator*

Audio Effects II:

Dynamics

Def.: *Automatically changing the amplitude of a signal based on its amplitude*

Compressor – turns down amplitude by a particular value (ratio) when it goes ***above*** a certain level (threshold)
Limiter – Compressor with infinite ratio, preventing signal from going above threshold
Expander – in downward version, turns down amplitude by a particular value (ratio) when it goes ***below*** a certain level (threshold)
Gate – Expander with infinite ratio, silencing a signal below threshold

Params.: threshold, ratio, knee, attack, release, makeup gain
Ex. Plug-ins: *ReaComp, ReaGate*

Equalization/Filtering

Def.: *Changing the amplitudes of particular portions of the frequency range*

High-pass filter – pass frequencies ***above*** a cutoff frequency, attenuate others (same as **Low-cut filter**)

Low-pass filter – pass frequencies ***below*** a cutoff frequency, attenuate others (same as **High-cut filter**)

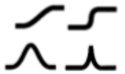
Band-pass filter – pass frequencies ***around*** a center frequency, attenuate others

Notch filter – inverse of Band-pass filter: attenuate frequencies ***around*** a center frequency, pass others

High-shelf filter – boost or attenuate frequencies ***above*** a center frequency

Low-shelf filter – boost or attenuate frequencies ***below*** a center frequency

Peak (also called "Band" or "Bell") **filter** – boost or attenuate frequencies ***around*** a center frequency



Params:
Slope – the intensity of attenuation across frequencies
Resonance or Q ('quality factor') – the sharpness or focus of the filter.

Params.: frequency, gain, slope, 'Q'/resonance
Ex. Plug-in: *ReaEQ*

Dynamics

Def.: *Automatically changing the amplitude of a signal based on its amplitude*

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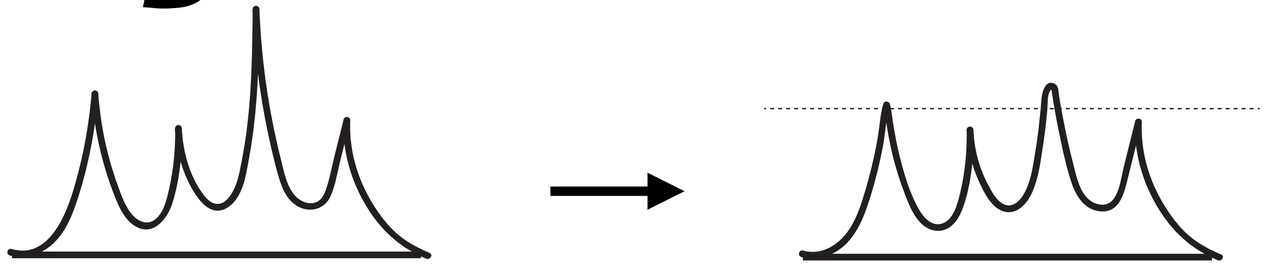
Params.: threshold, ratio, knee, attack, release, makeup gain
Ex. Plug-ins: *ReaComp, ReaGate*

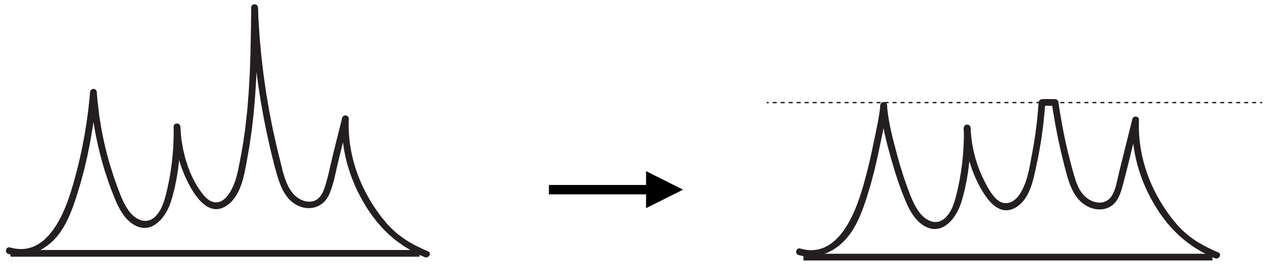
Dynamics

Compression:



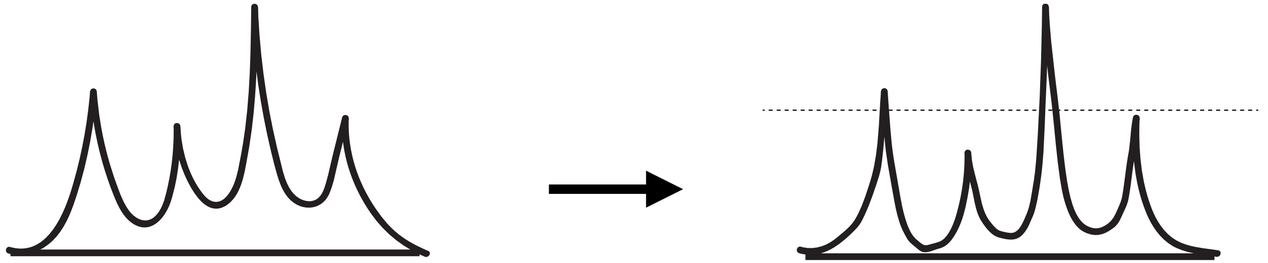
Smooth out peaks

Limiting:



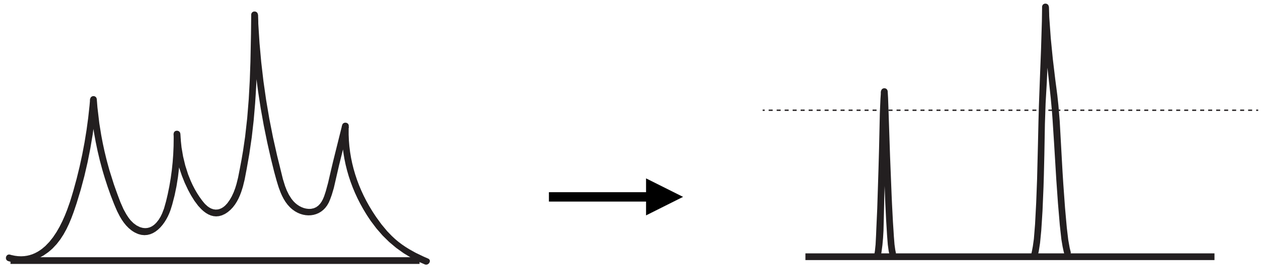
Chop off peaks

Expansion:



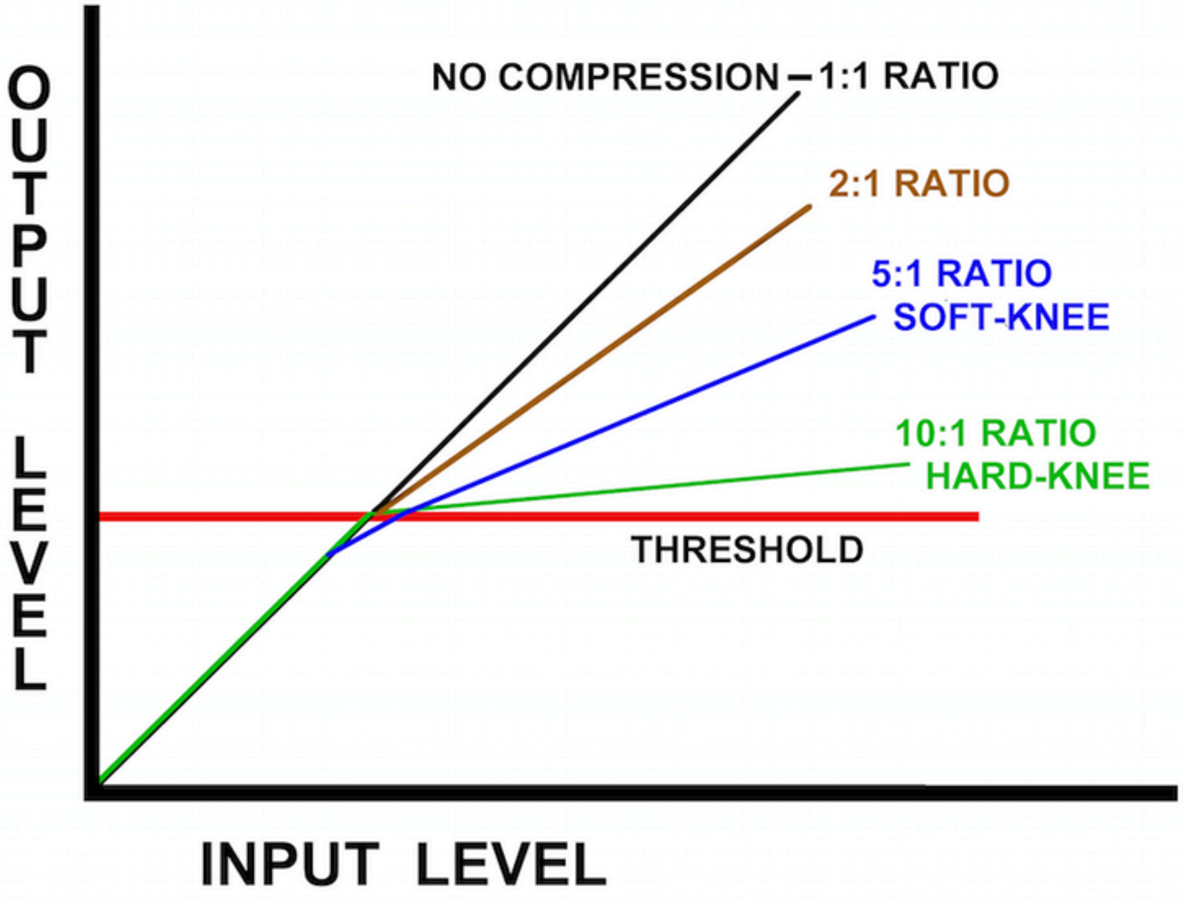
Enhance peaks
(make everything else quieter)

Gating:



Only peaks

Dynamics



Threshold:

Amplitude level above (or below) which the amplitude-changing is done

Ratio:

Intensity of the amplitude change (10:1 means the signal is made to 10 times as quiet, in a compressor, for example)

Attack + Release:

The time is takes for the dynamics processing to start (attack) and stop (release)

Makeup Gain:

Post process that boosts the signal after being compressed/limited

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Resonance or Q ('quality factor') – the sharpness or focus of the filter.

Params.: frequency, gain, slope, 'Q'/resonance
Ex. Plug-in: *ReaEQ*

Mini-Lab:

Take **20 minutes**

Make **10 seconds** of materials (using REAPER)

Use **automation** and **effects**

Think about smoothness and transitioning