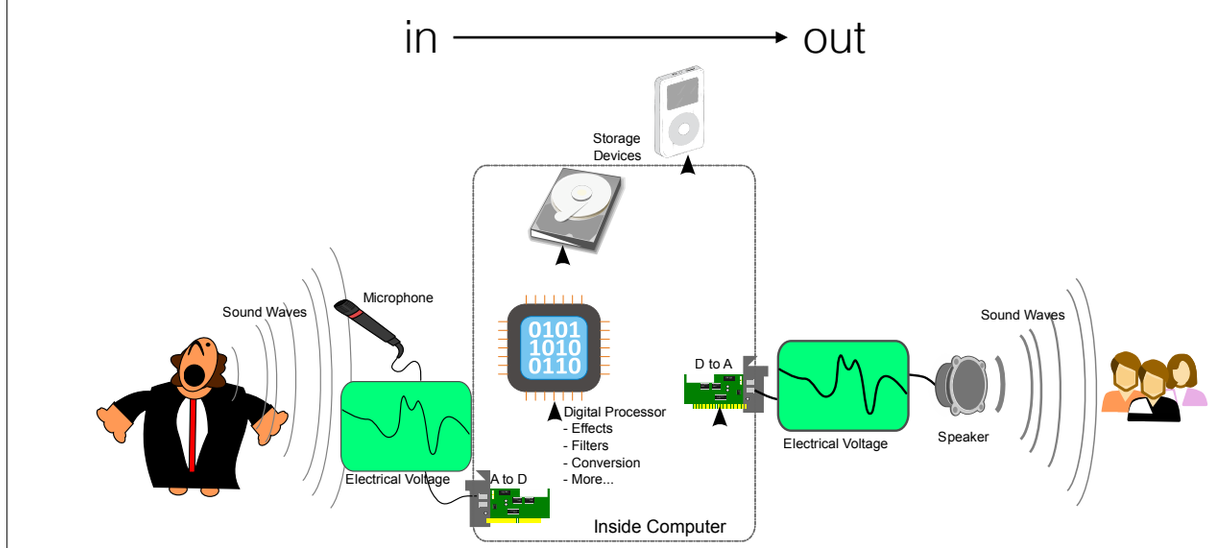
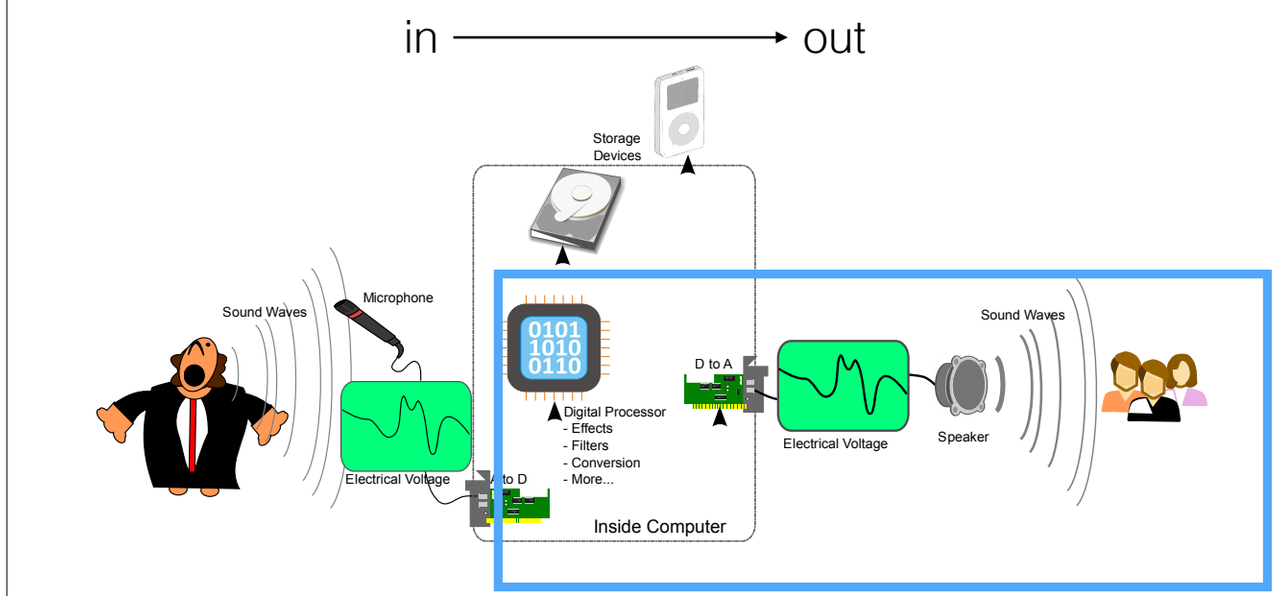
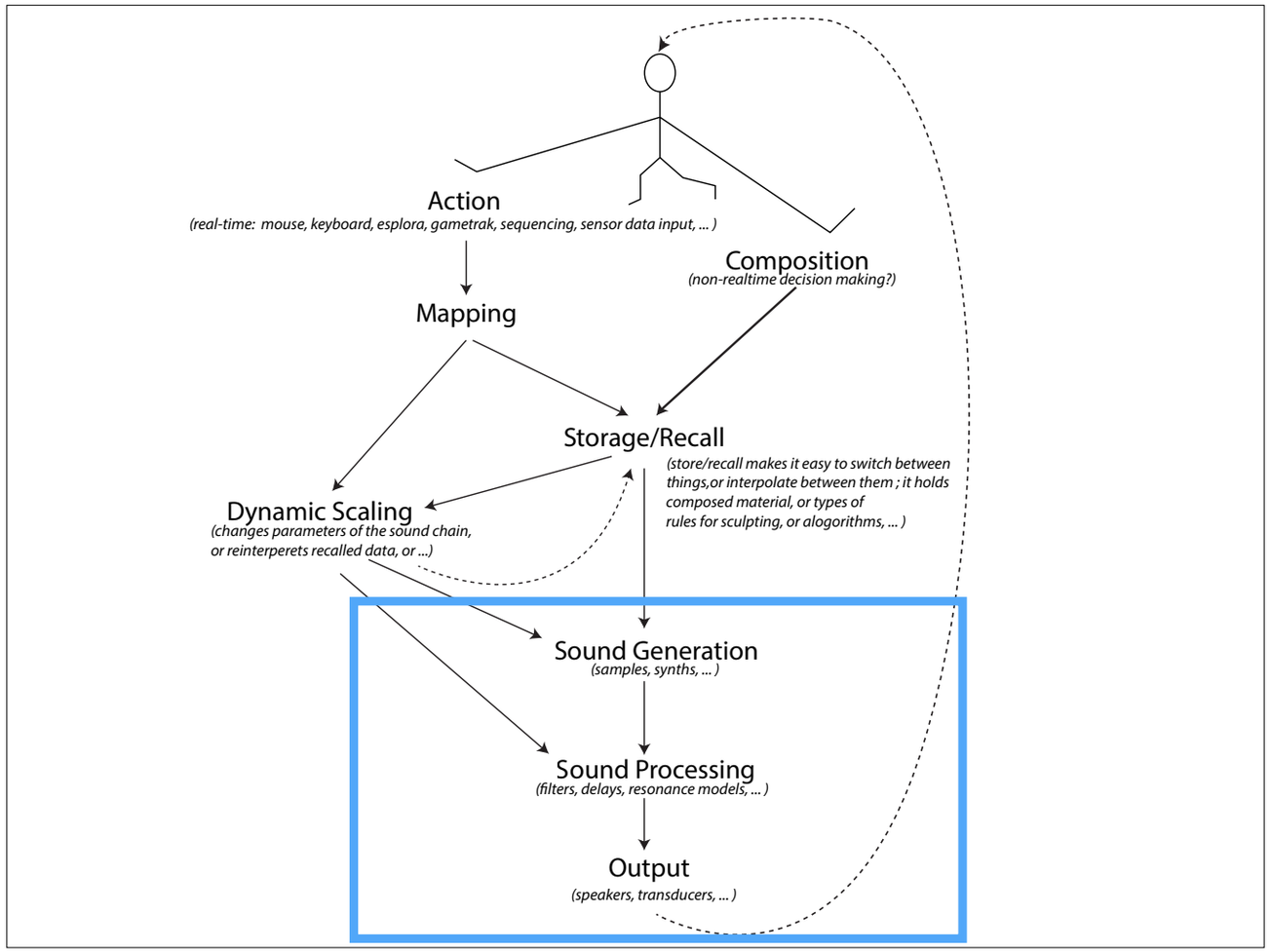
output?



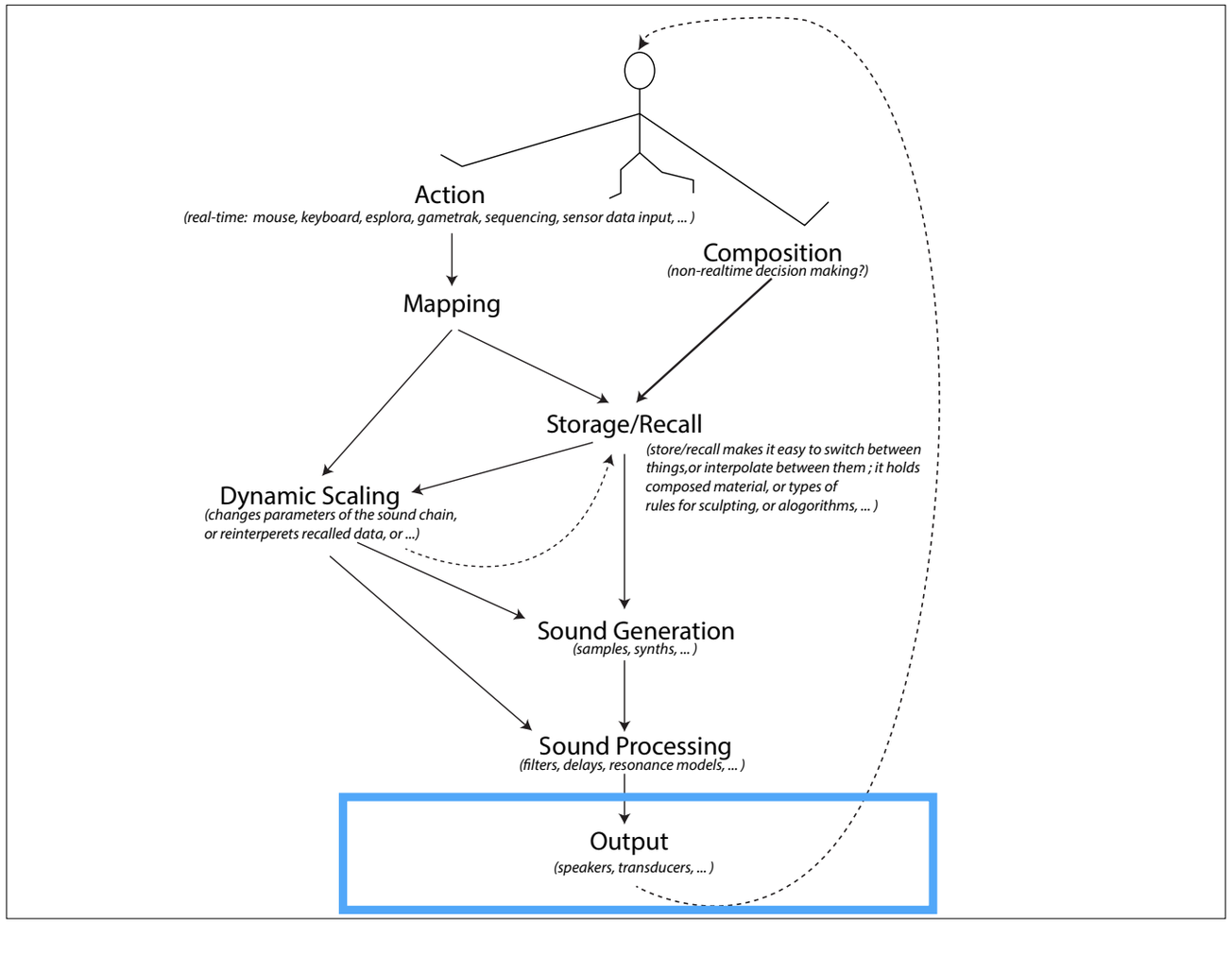

analog to digital to analog



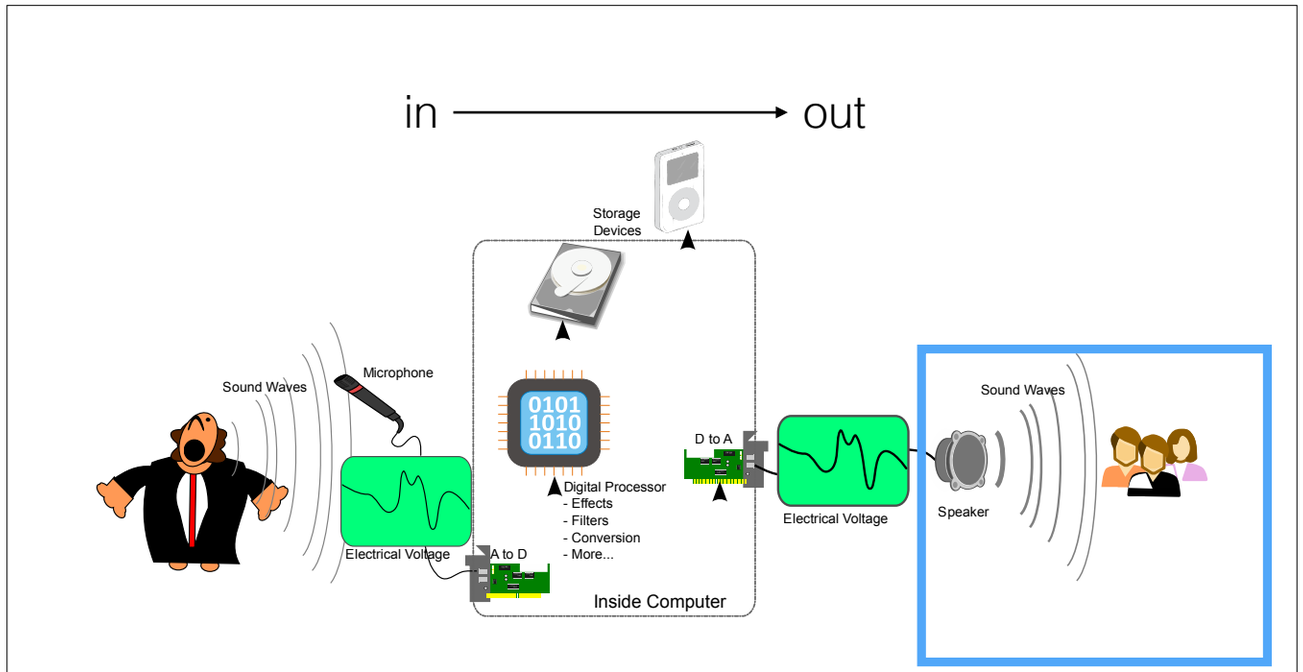

analog to digital to analog




today we're going to start focusing on the Action / Input / Sensing part of this system

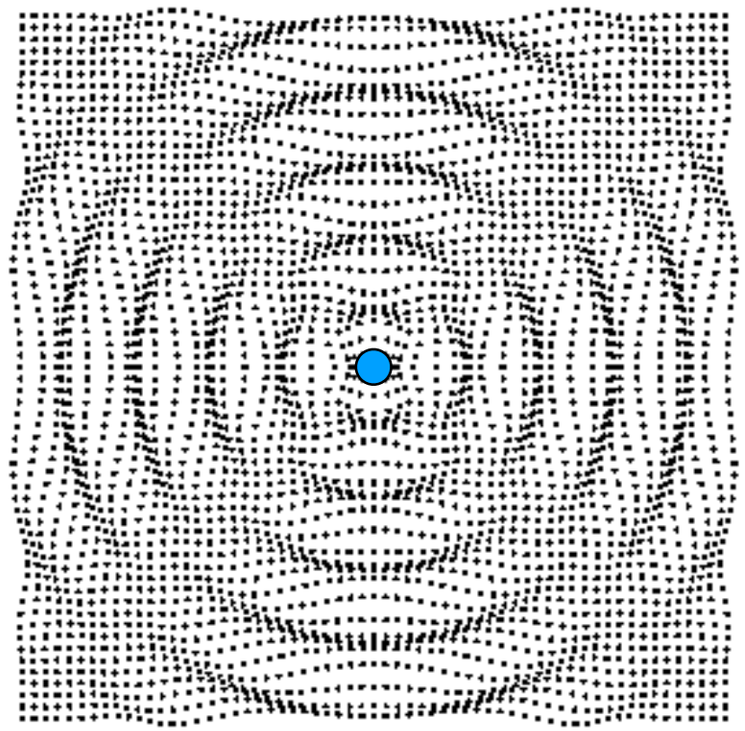



today we're going to start focusing on the Action / Input / Sensing part of this system

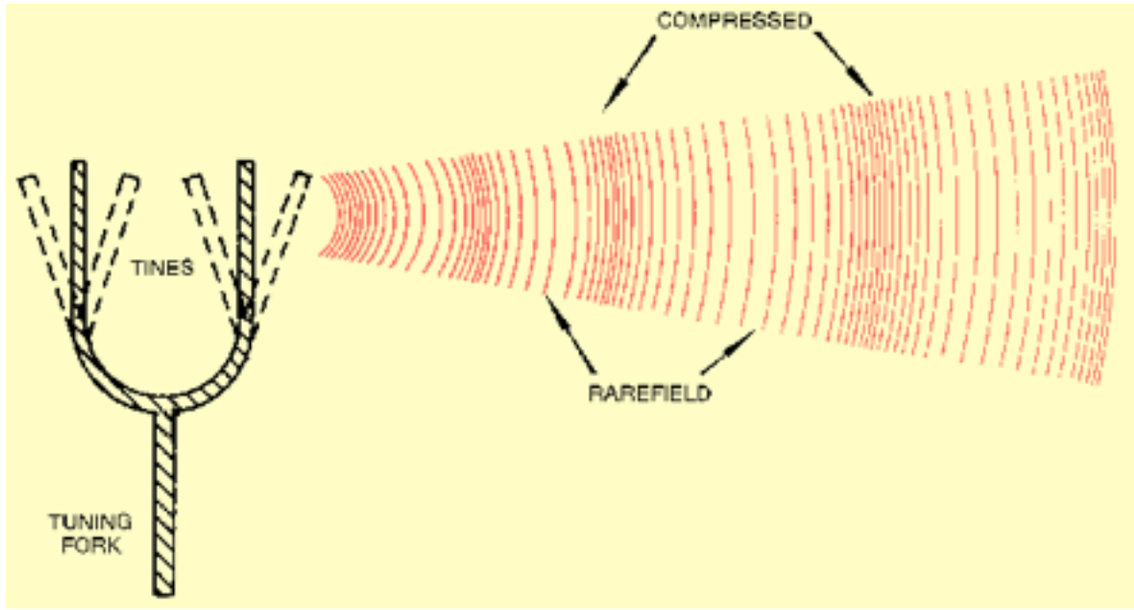



analog to digital to analog

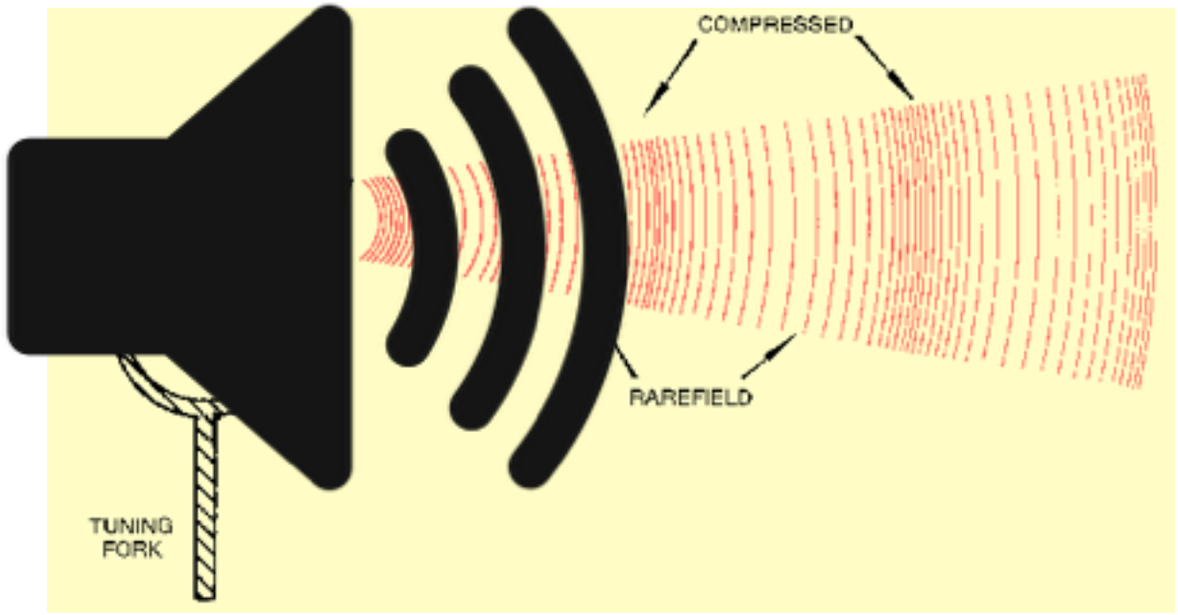
# sound wave propagation



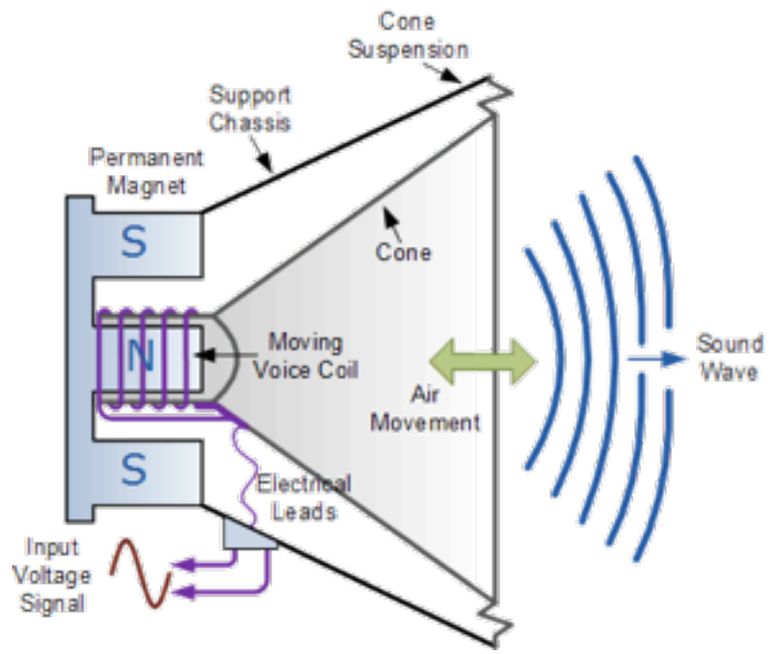
# sound pressure



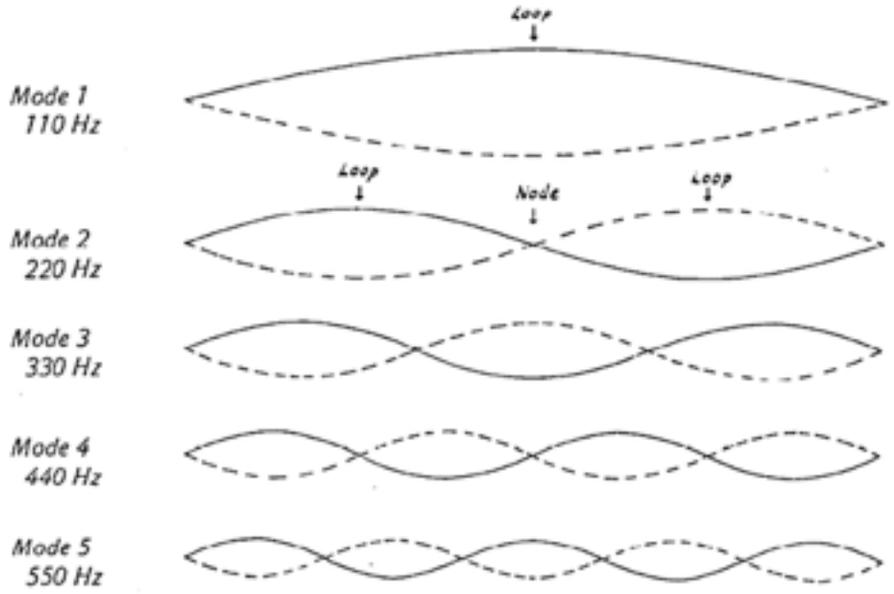
# sound pressure



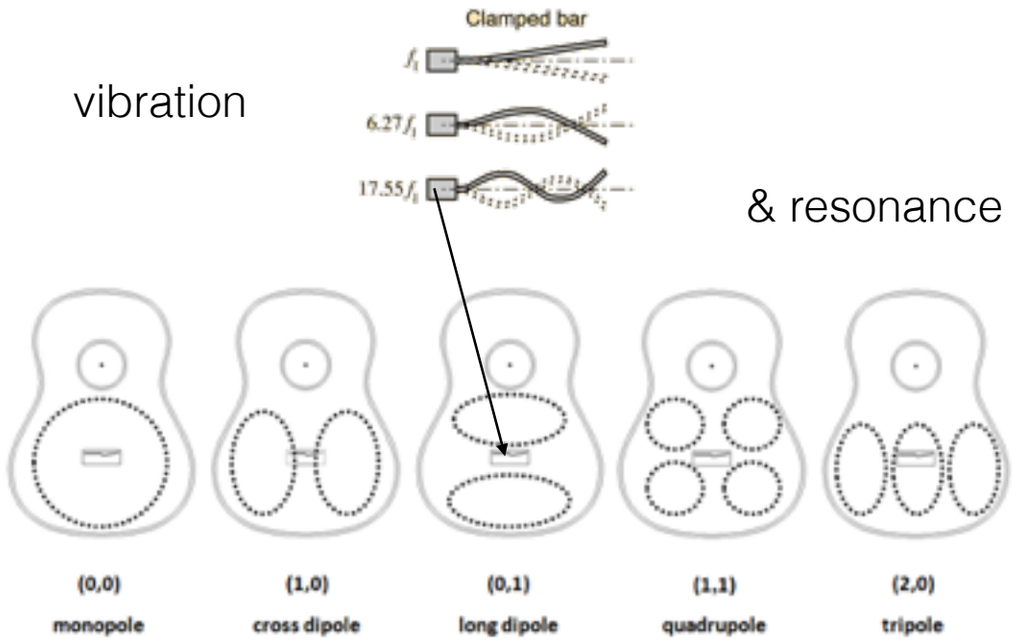
# sound pressure



# modes of vibration

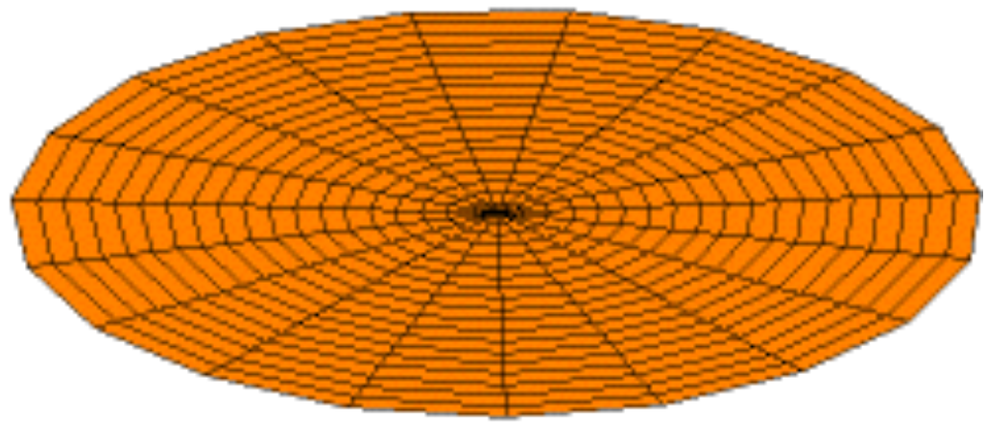


vibration

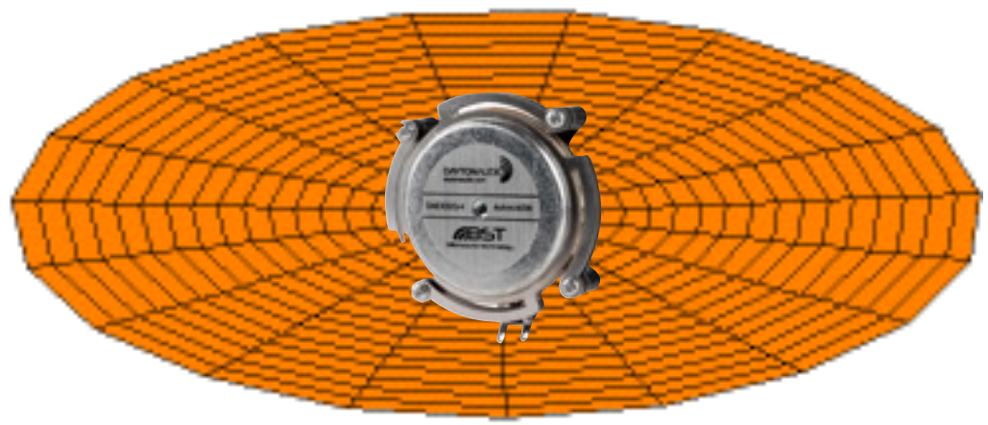



& resonance

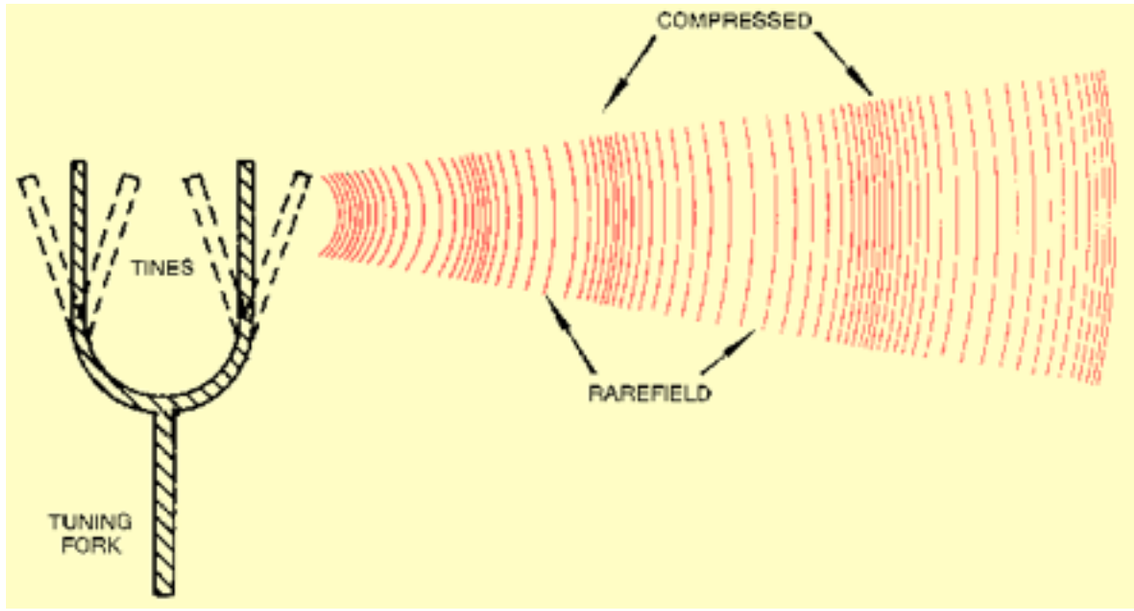
surface vibration



# surface vibration



# so… back to sound pressure



# reflections

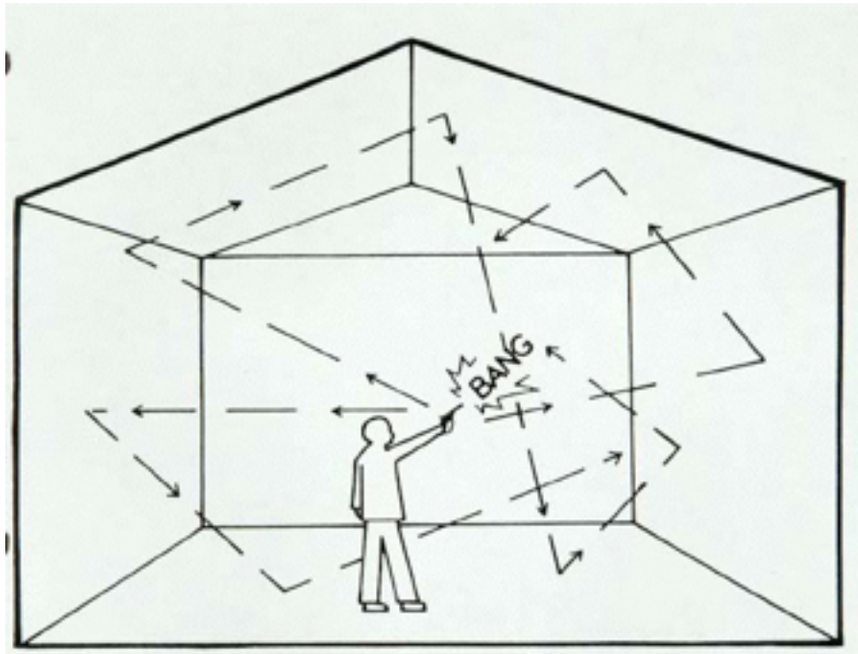
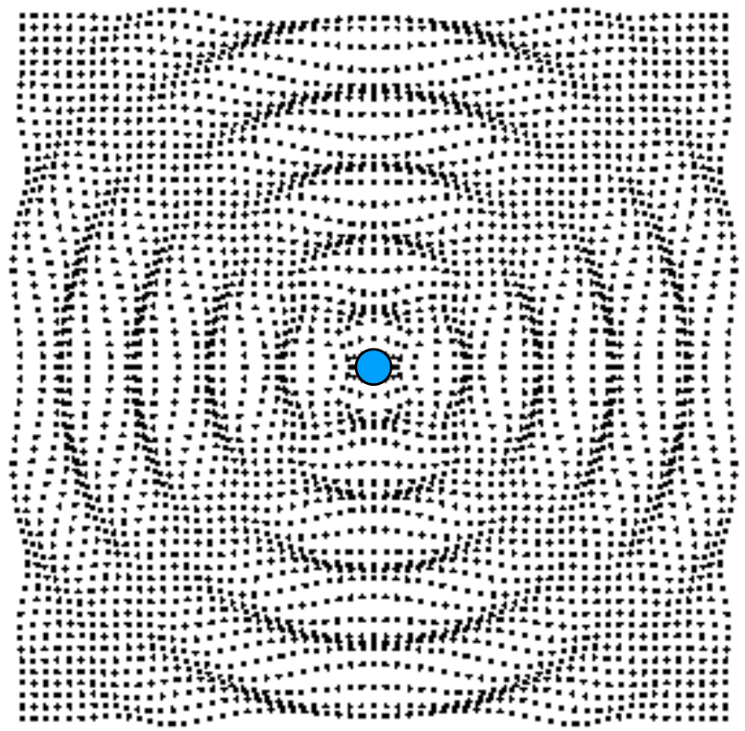
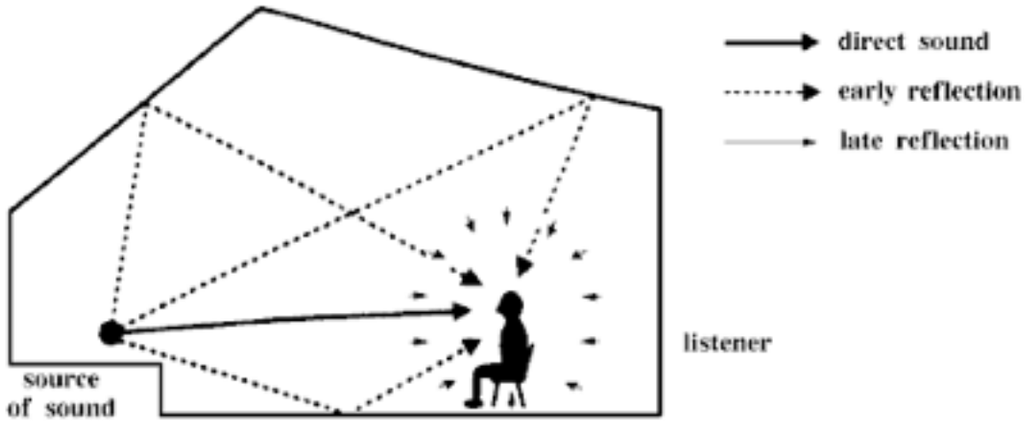



**Fig 10** *Sound reflects off all hard surfaces and will carry on reflecting until it is eventually absorbed.*

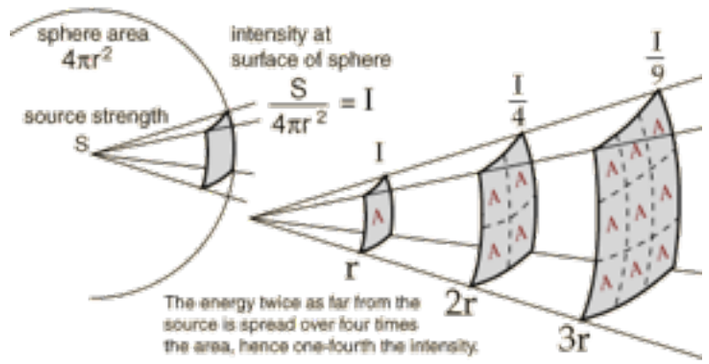
# sound wave propagation (is spherical)



# reflections



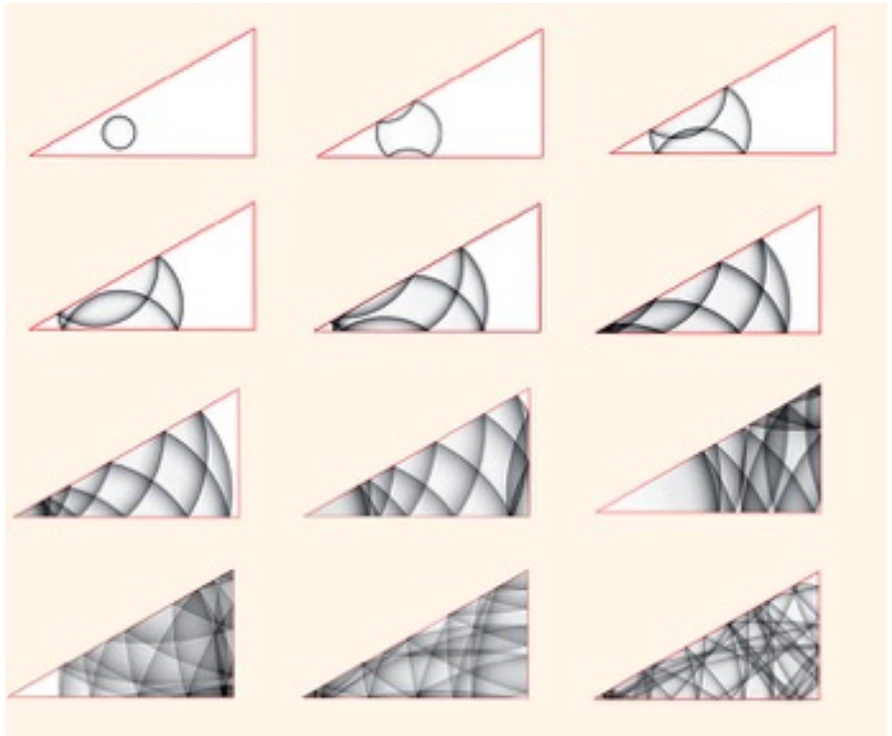
# distance attenuation



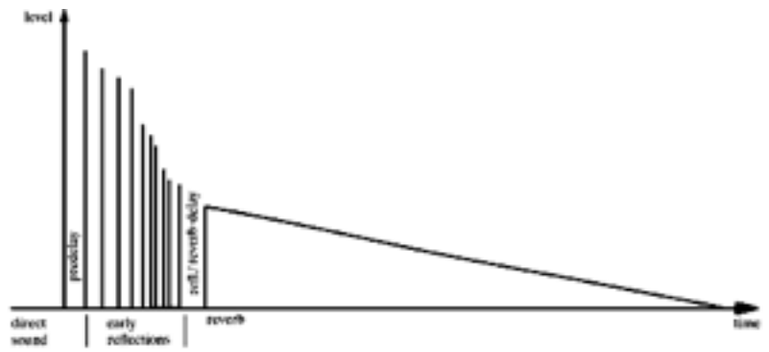

$I \sim P^2$ ⟶ `a = 1 / r`

`I = sound intensity`
`P = sound pressure (amplitude)`

# reflections

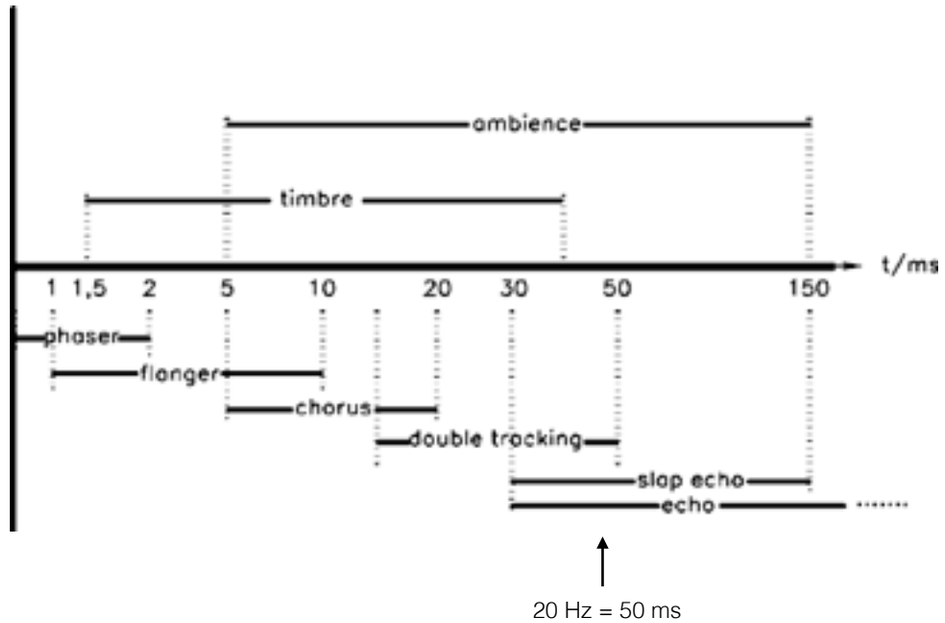


# room response




classic impulse response

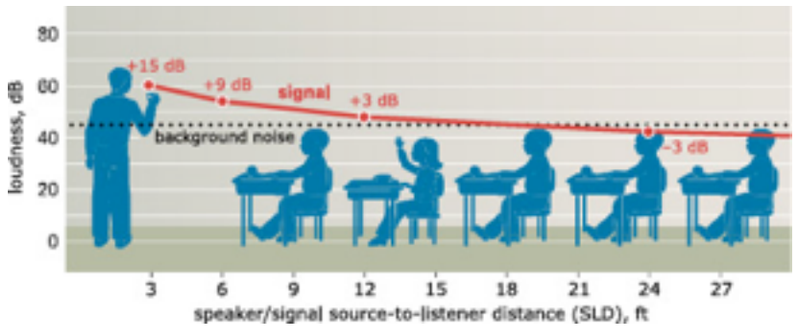
# perceptual delay qualities




from Deutsche Welle (radio) http://www9.dw-world.de/rtc/infotheque/sound_processors/soundprocessors.html

# distance

loudness of source drops -6dB per doubling of distance



# directivity

Jürgen Meyer, "Directivity of the Bowed Stringed Instruments and Its Effect on Orchestral Sound in Concert Halls" (1971)



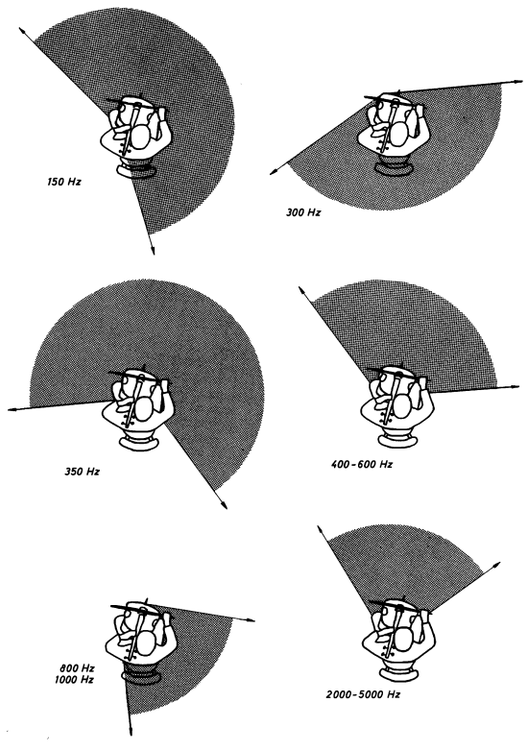
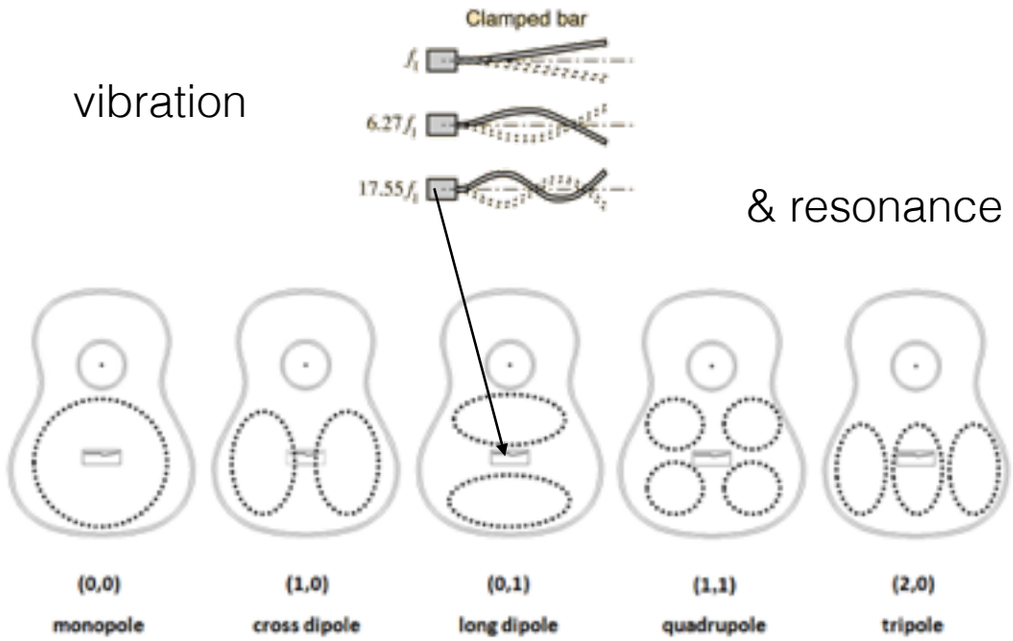
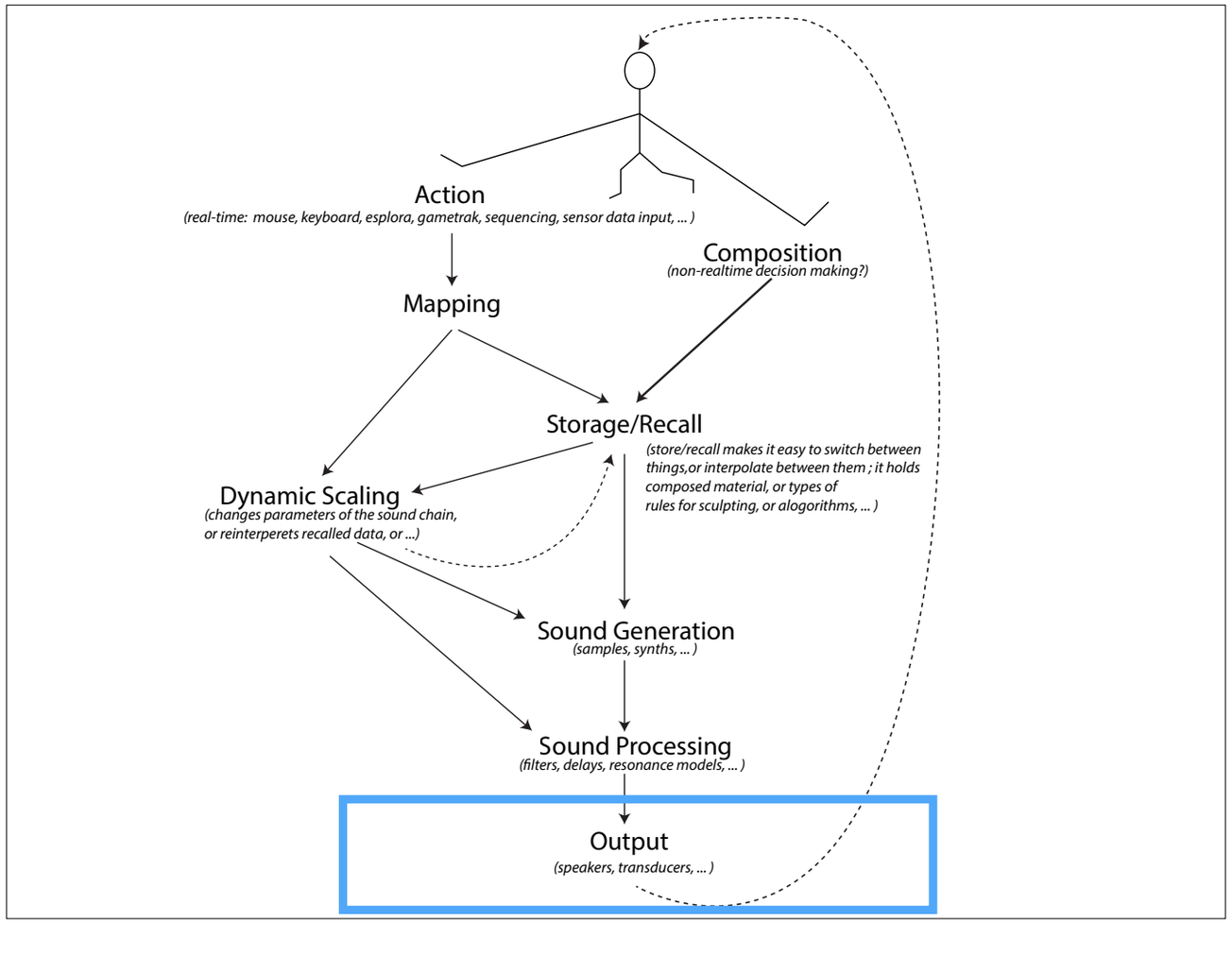



FIG. 6. Principal radiation directions of a cello (plane of the bridge).

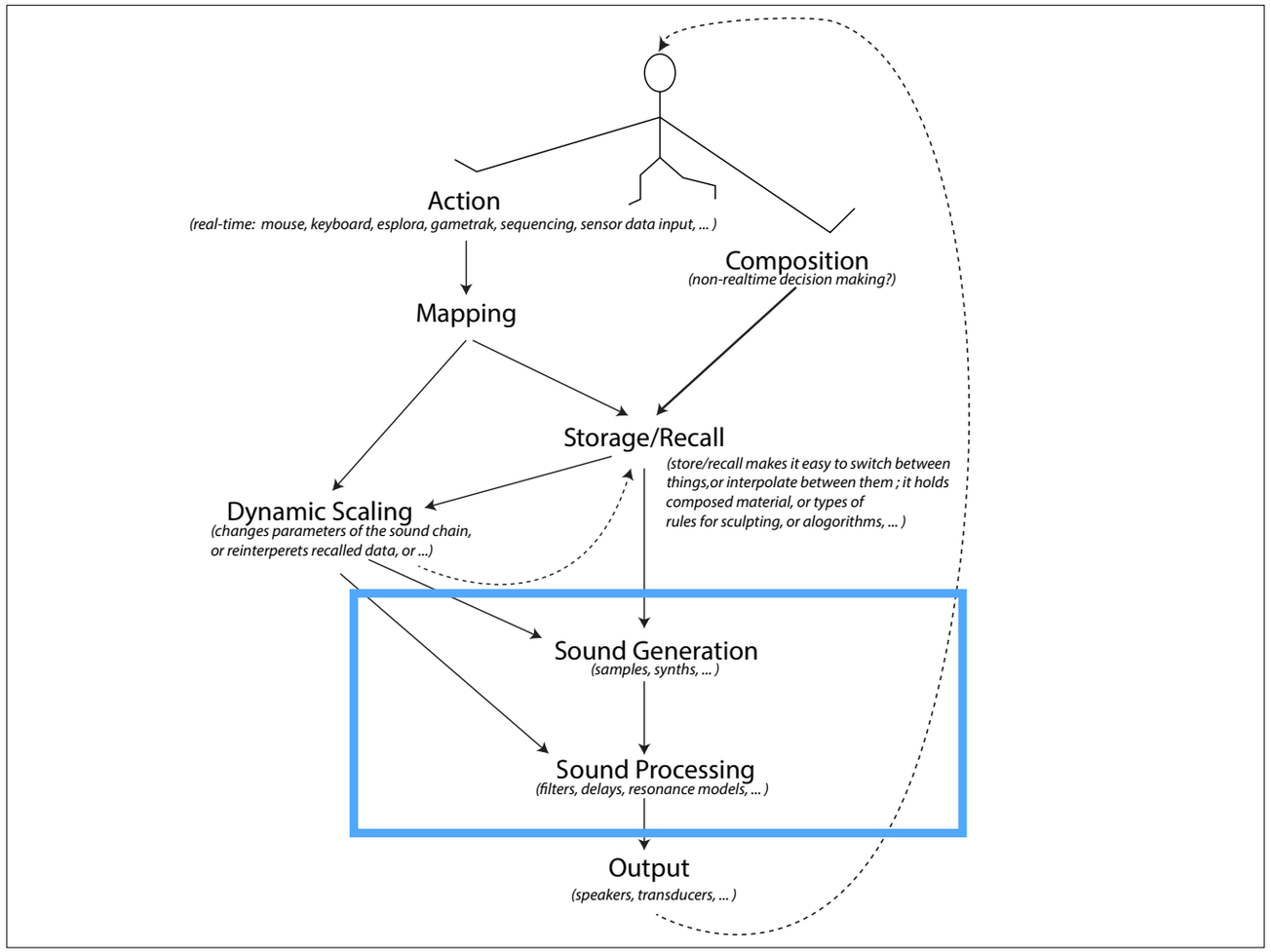
vibration




& resonance




today we're going to start focusing on the Action / Input / Sensing part of this system

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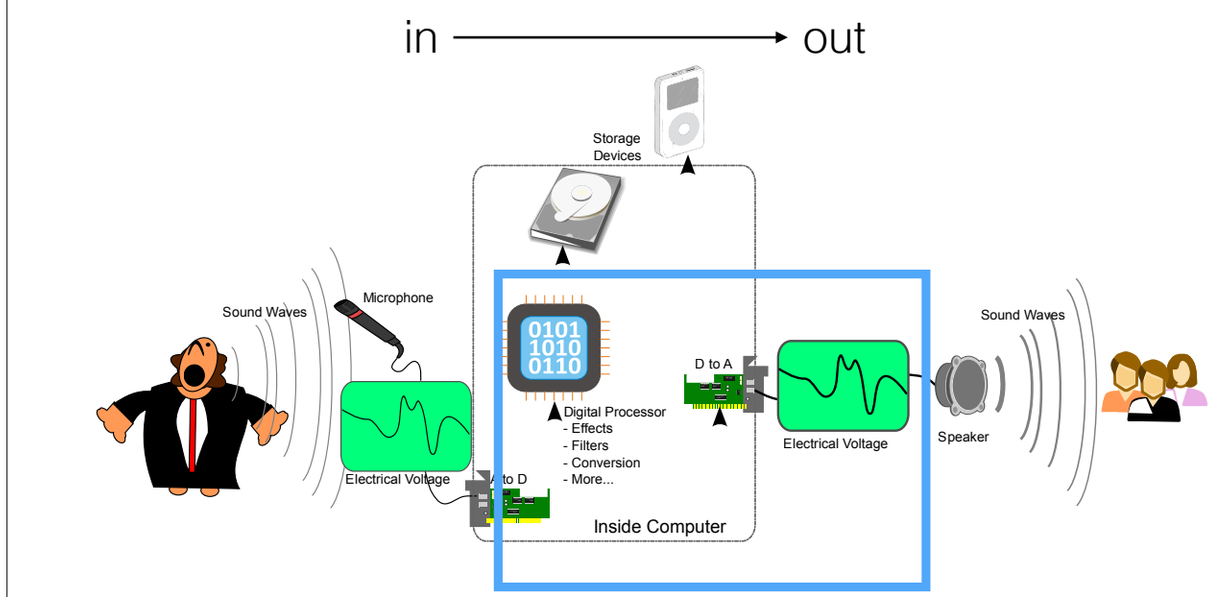
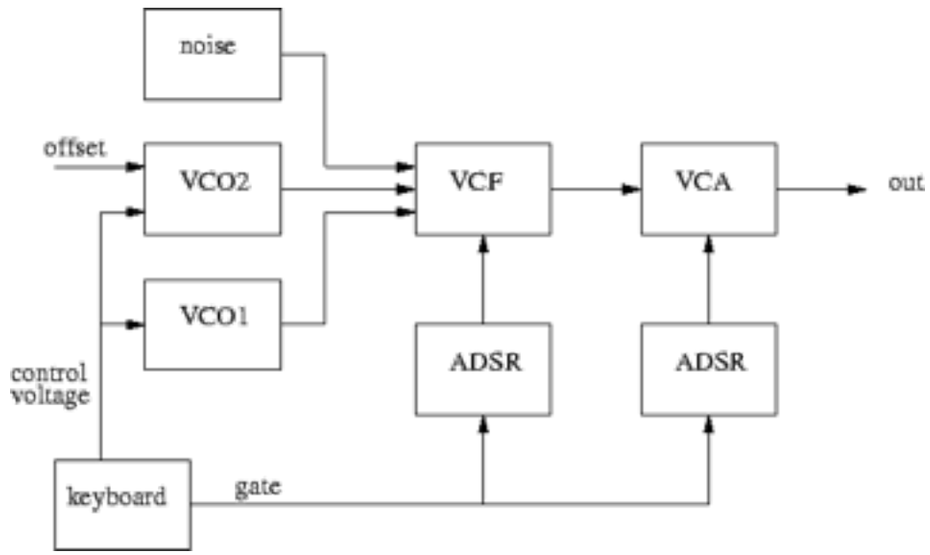
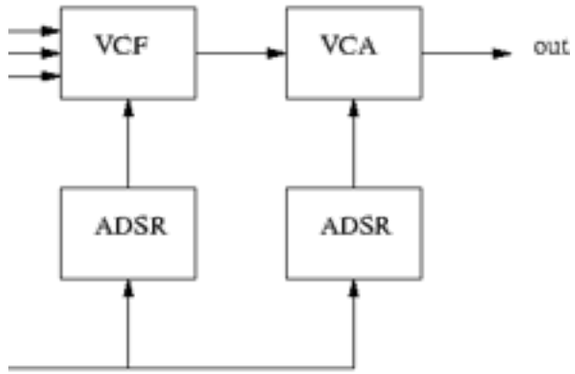



analog to digital to analog




vco = voltage controlled oscillator
vcf = voltage controlled filter
vca = voltage controlled amplifier (and attenuator)
adsr = attack decay sustain release
gate = note on/off state

or microphone




vco = voltage controlled oscillator
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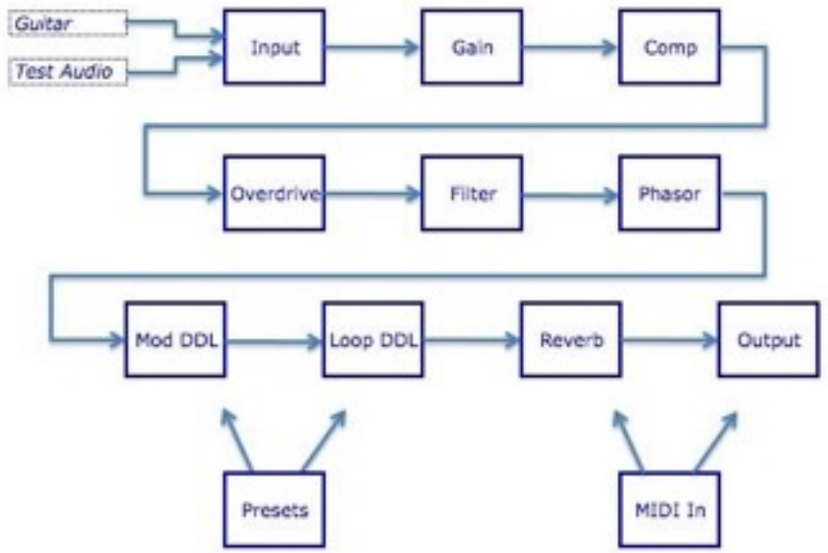
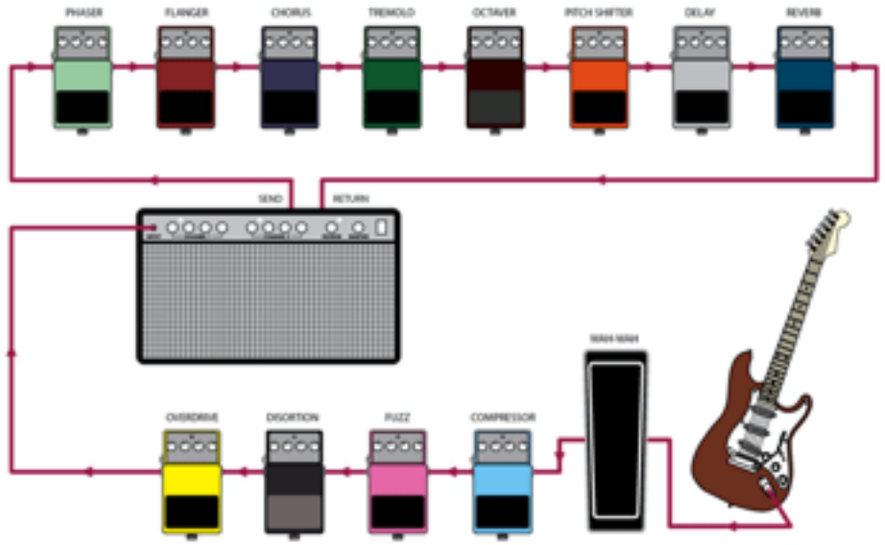
adsr = attack decay sustain release
gate = note on/off state

# linear processing flow

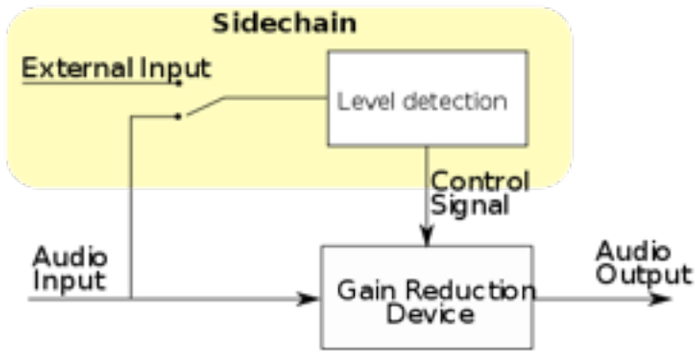



remember every change in sequence sounds different!

processing flow with effects loop



using signal analysis to control processing




side chain

using signal analysis to control processing

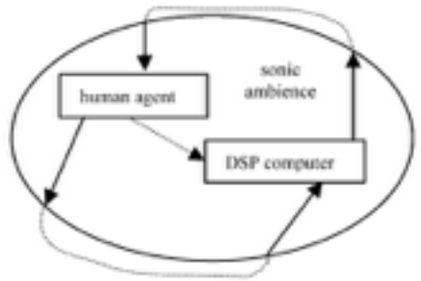



**Figure 3.** Triangular recursive ecosystemic connection.

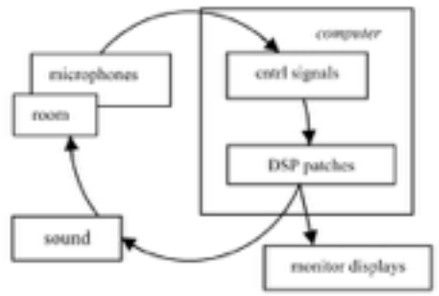
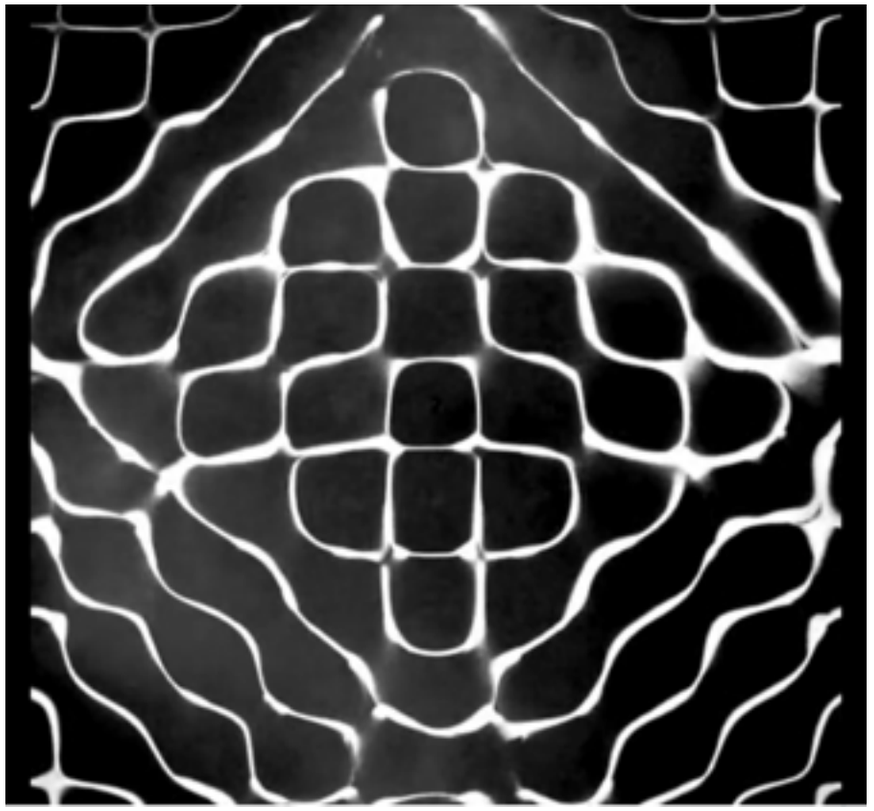



**Figure 4.** Basic design of the Audible Eco-Systemic Interface.

Agostino Di Scipio: “Sound is the interface”

Zimoun : 64 ventilators, 98m² polyethyleen foil 0.08mm, 2015

https://vimeo.com/126050589



Meara O’Reilly : https://vimeo.com/53453906


Michael Vorfeld: https://vimeo.com/3245278