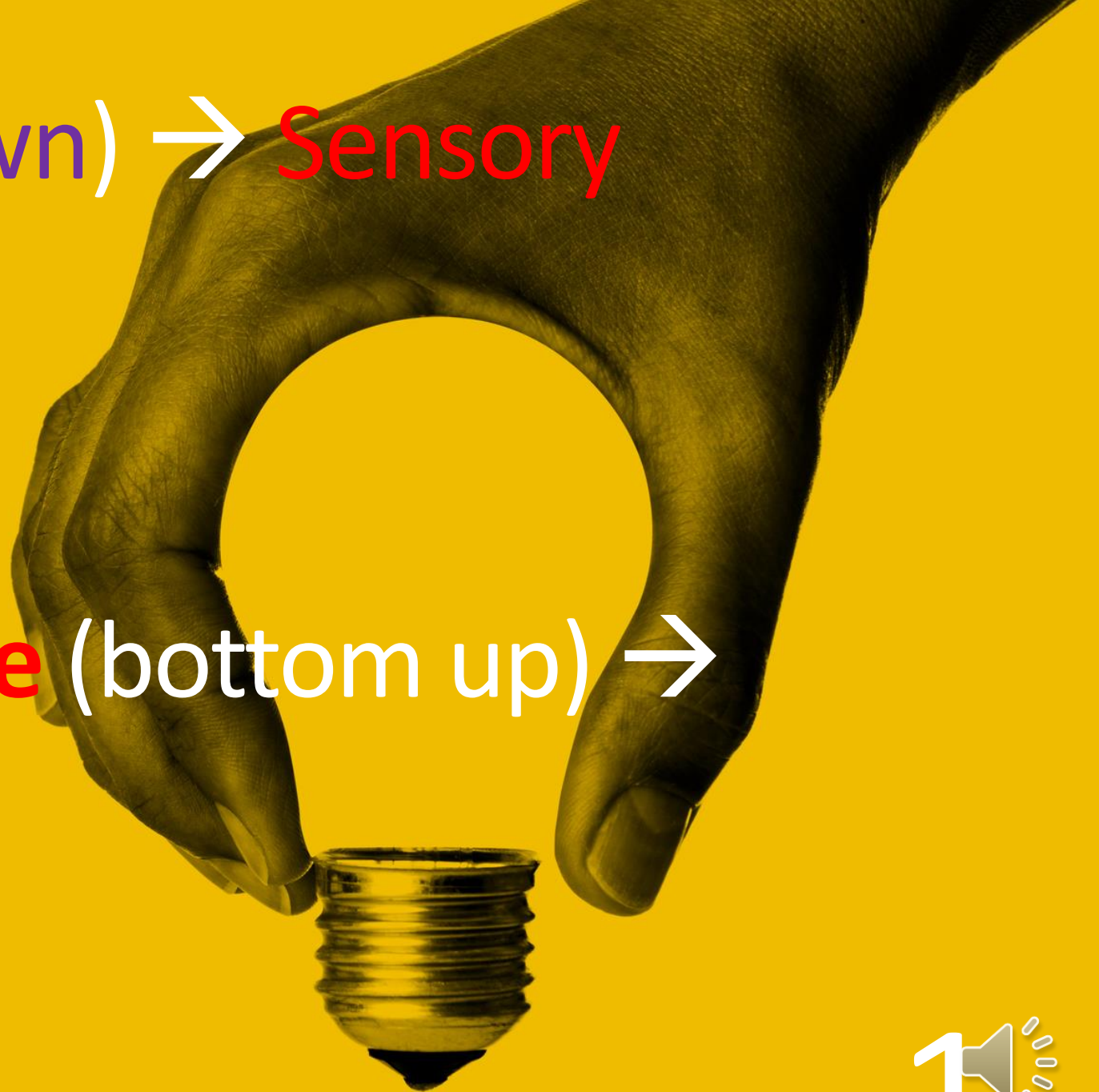


**Cognition (top-down)** → **Sensory**  
experience

but also

**Sensory experience** (bottom up) →  
**Cognitive models**





# sensation

Sight

Hearing

Taste

Smell

Touch

Sight

Hearing

Taste

Smell

Touch

Temperature

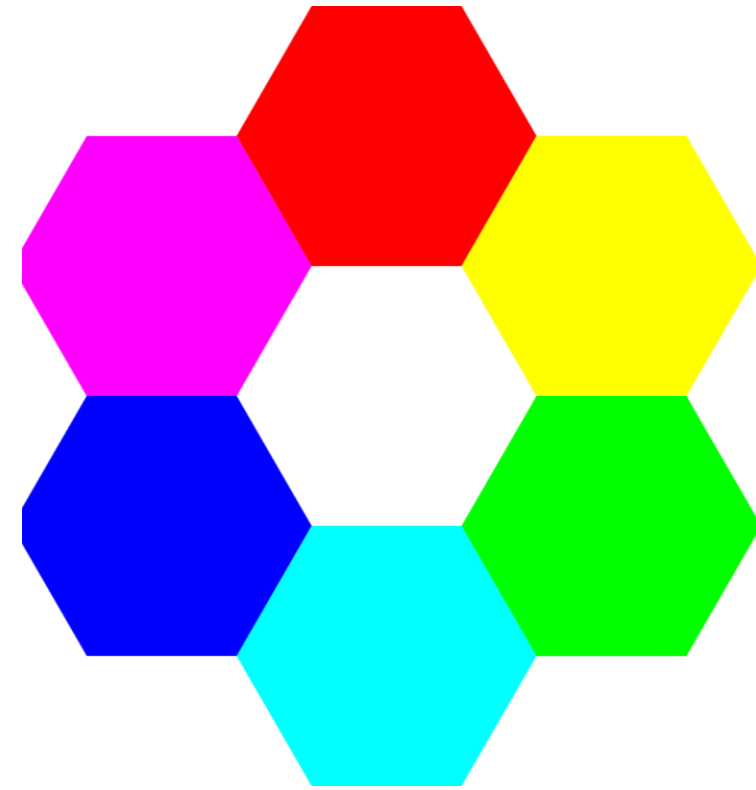
Kinesthetic

Pain

Balance

Vibration

...



# The Gibson v Gregory debate

## JAMES GIBSON

Biological model of perception that basically says 'Sensation = Perception'

Sensory registers powerful enough to perceive reality directly without any cognitive manipulation

Provided the pathways to sensation are clear (e.g., no sensory illusion / mirage / cloudy day)... reality perceived accurately 99% of the time

V

## RICHARD GREGORY

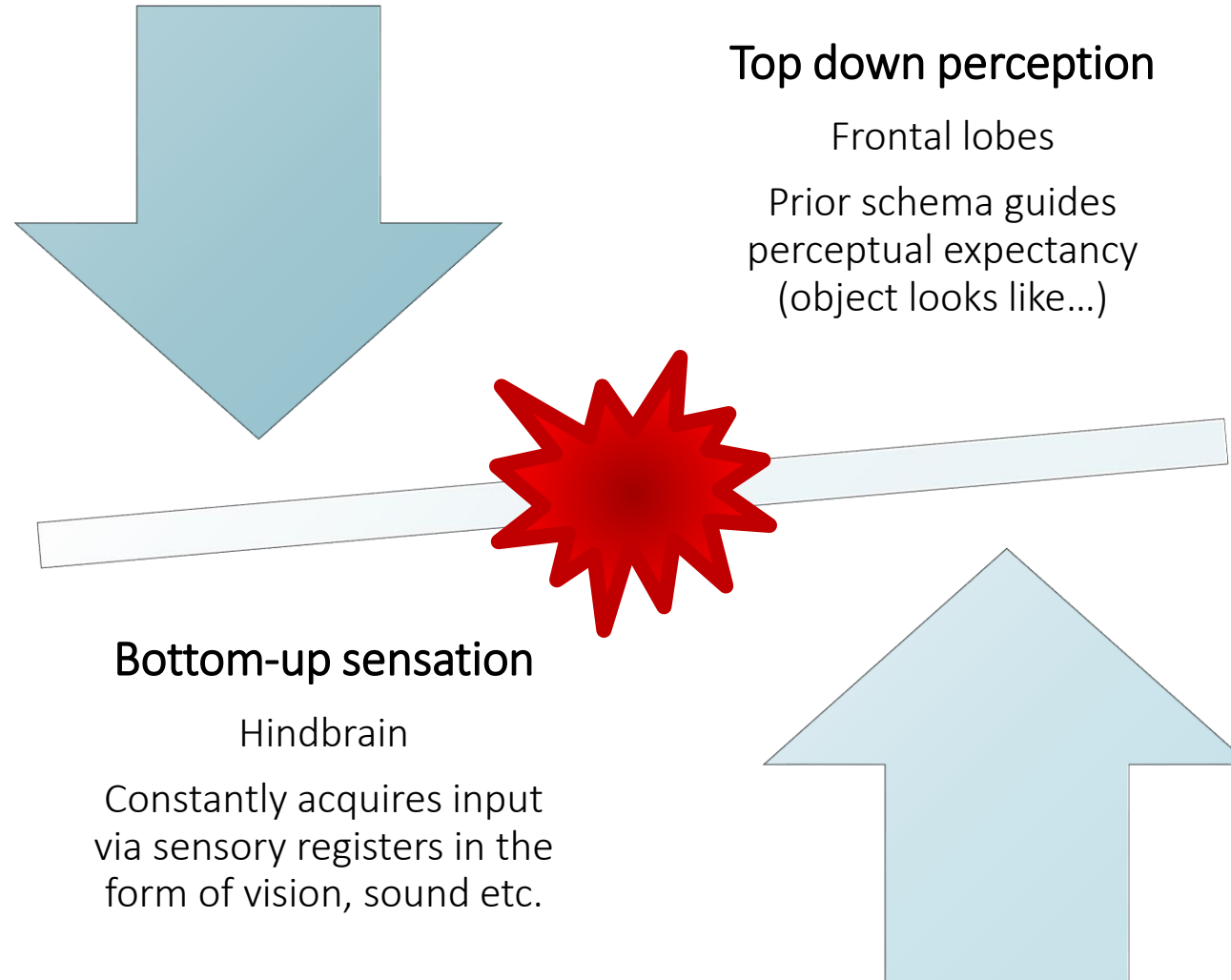
Argued the sensory registers are poor at capturing all important information about our reality (likely only capture ~10%)

We instead 'estimate' our reality based on top-down cognitive inferences

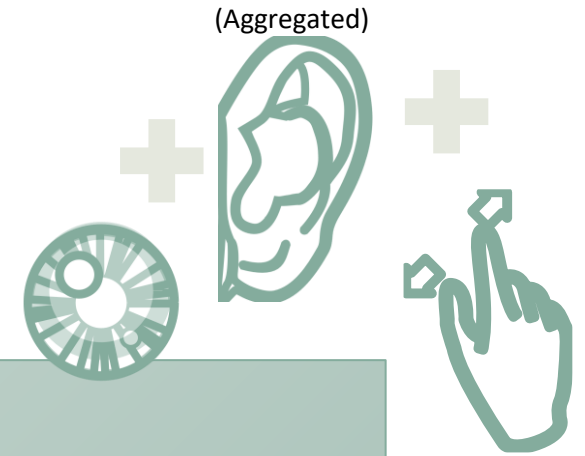
Our perception of reality is mostly based on subjective constructions of it  
→ We most certainly do not see reality as it really is



# How do cross-modal effects appear??



# Examples: Cross v multi-modal

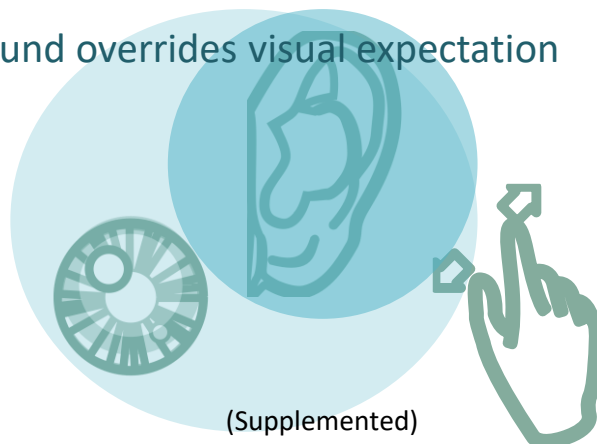


## CROSS-MODAL

You thought you saw a diesel truck passing by your window as you half-glanced to look up, but when you looked up properly again you realised it was actually a construction vehicle chopping down a tree

The sound created the expectation to see something different altogether and so it totally skewed your visual experience

Here: Sound overrides visual expectation



## MULTI-MODAL

Your ex-girl/boyfriend just randomly tied you up and blindfolded you on the living room couch and then adamantly told you to listen to them (what/why!?)

So, you hear his/her voice talking to you ... but after 2-3 minutes something just doesn't sound quite right

You decide to untie the blindfold, and you suddenly realise it's not even your ex talking; just a video tape of them playing on the TV – Ahh it's these sort of shenanigans that made you dump his/her butt in the first place – Shoulda known better!!

Only when vision and hearing's combined (MSI) can we ACCURATELY combine sensory data to cognitively conceptualise our perceived world

Another example: Why do some gaming consoles and VR headsets add a 'vibration' to the controllers?



1

Stimulus that requires right button press

2

Stimulus that requires left button press

