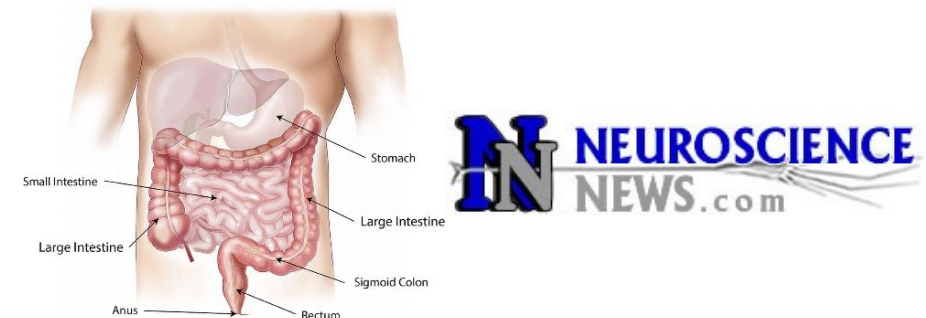


A gloomy person might become less so by 'ingesting' a bit of fecal matter from a happier person.



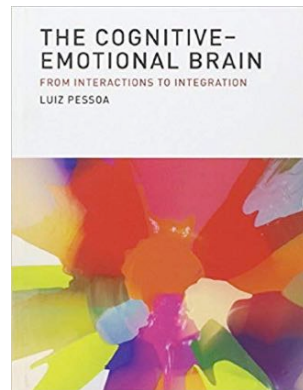
We cannot separate emotion from thinking.



## Cognition-Emotion



Luiz Pessoa



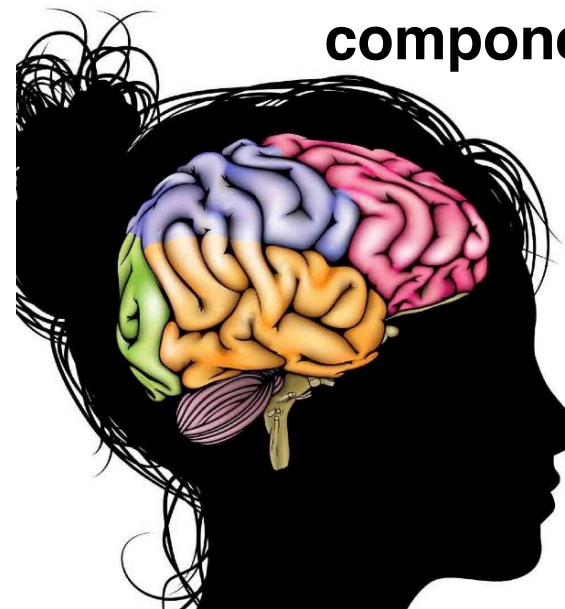
Pessoa, L. (2013). *The cognitive-emotional brain: From interactions to integration*. MIT press.

**Emotion = cognition**

**Feelings = physical reactions**



**Emotional component**



**Cute = Positive**



**Dangerous = Negative**



## Resulting Feelings



Attraction



Fear

## Emotion steers us through life

It is the brain's way to connect  
“It is literally neurobiologically impossible to build memories, engage complex thoughts, or make meaningful decisions without emotion. And after all, this makes sense. The brain is highly metabolically expensive tissue, and evolution would not support wasting energy and oxygen thinking about things that don't matter to us. Put succinctly, we only think about things we care about.” (Immordino-Yang, 2016, p.2)

Immordino-Yang, M. H. (2016). Introduction: Why emotions are integral to learning. *MH Immordino-Yang, Emotions, learning, and the brain: Exploring the educational implications of affective neuroscience*, 17-24.

Immordino-Yang, M. H. (2015). *Emotions, Learning, and the Brain: Exploring the Educational Implications of Affective Neuroscience* (The Norton Series on the Social Neuroscience of Education). WW Norton & Company.

Immordino-Yang

## No emotion, no learning

It informs us what we should attend to and learn or not



Damasio

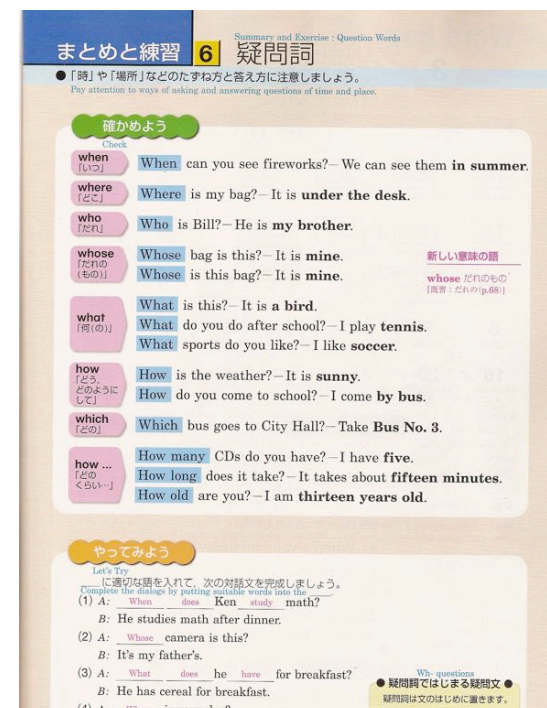
Immordino-Yang

## Teacher's duty

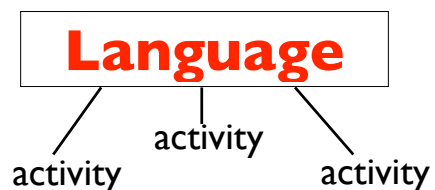
emotion  
analysis



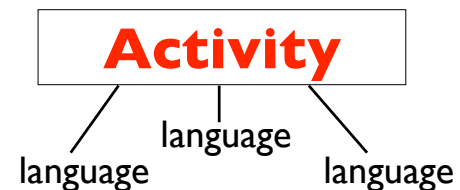
# Emotion arousing



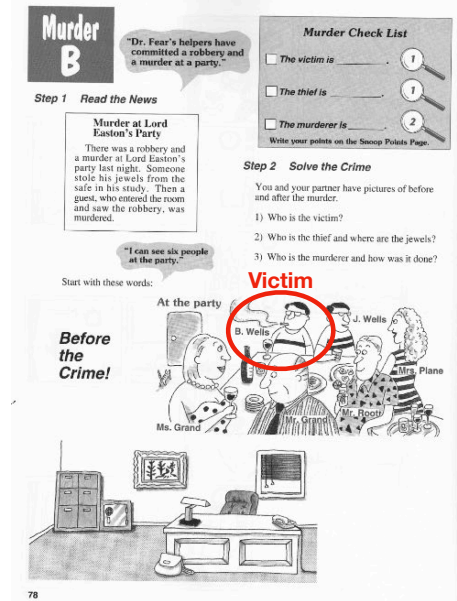
# Editor's view



# My view



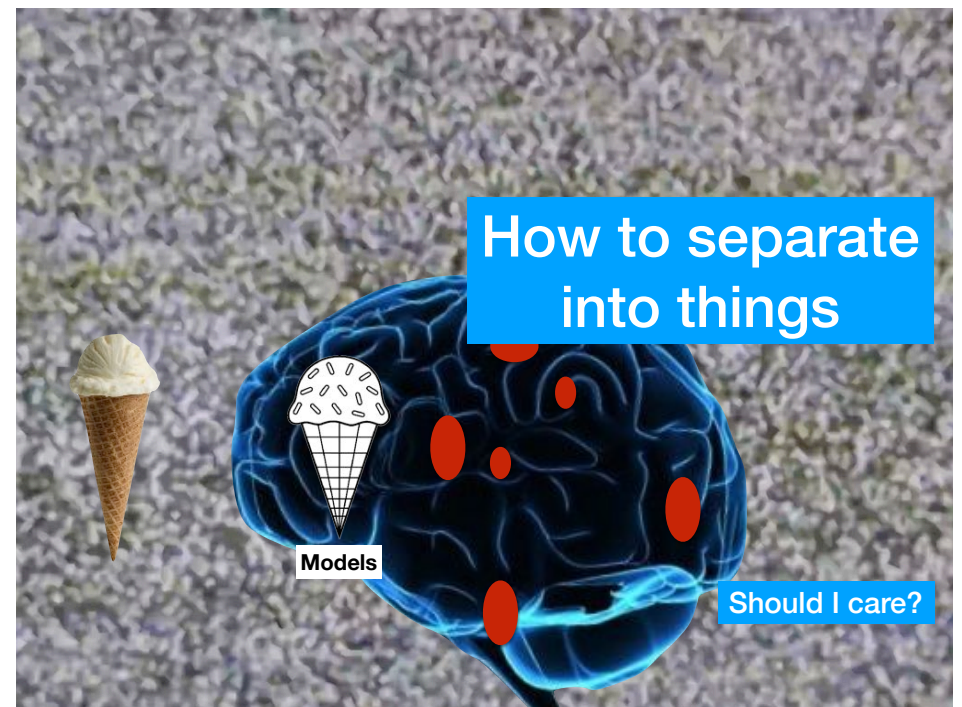
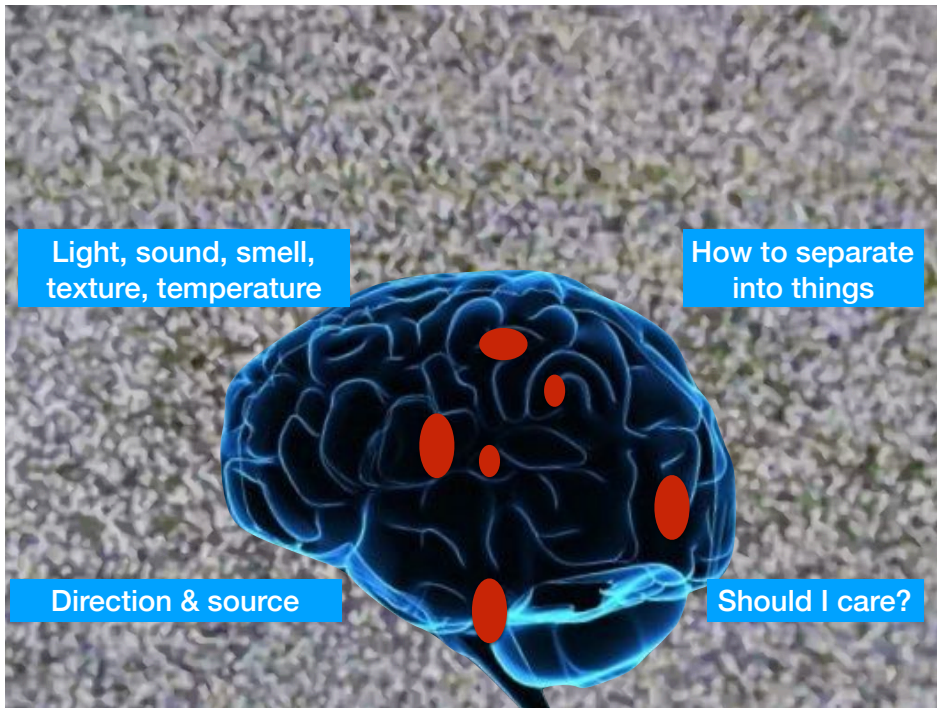
not "activity"



# Predictive Processing





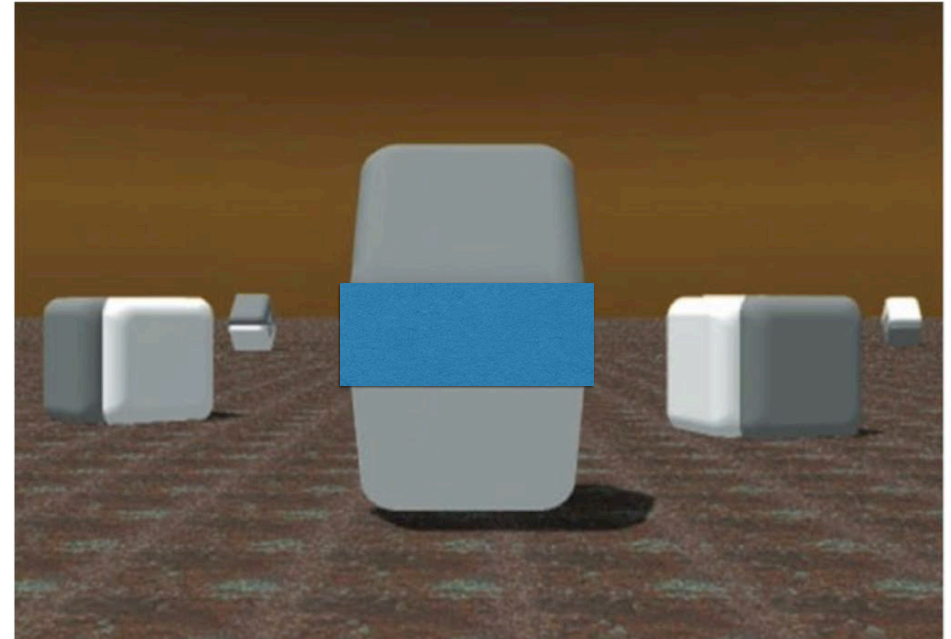
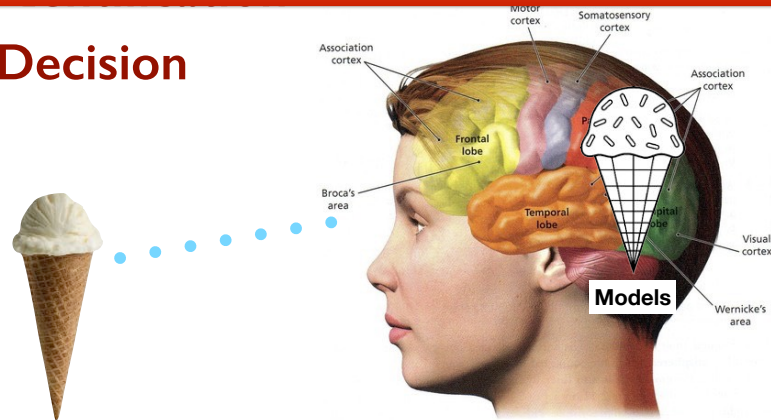




# Processing

We **process** the world

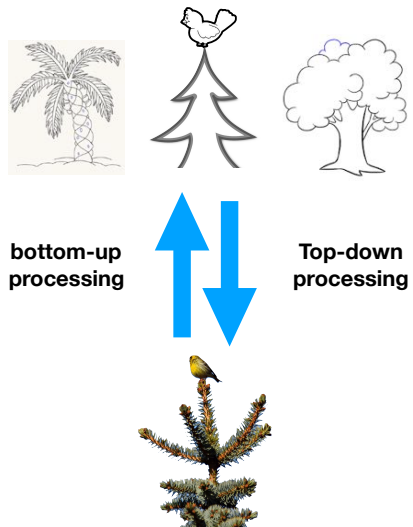
## 3. Decision



Hinton, G. E. (2007). Learning multiple layers of representation. *Trends in cognitive sciences*, 11(10), 428-434.  
<https://www.sciencedirect.com/science/article/pii/S13646661307002173>

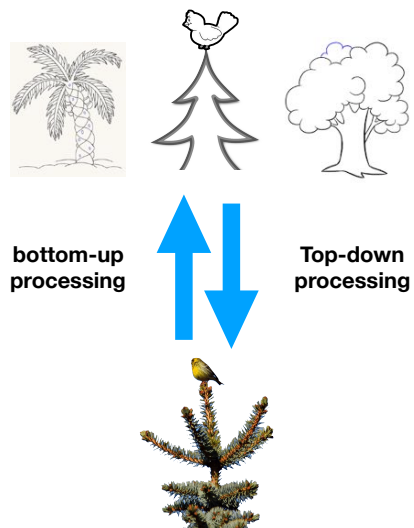
# Bayesian Brain

## Hierarchical Generative Models



# Bayesian Brain

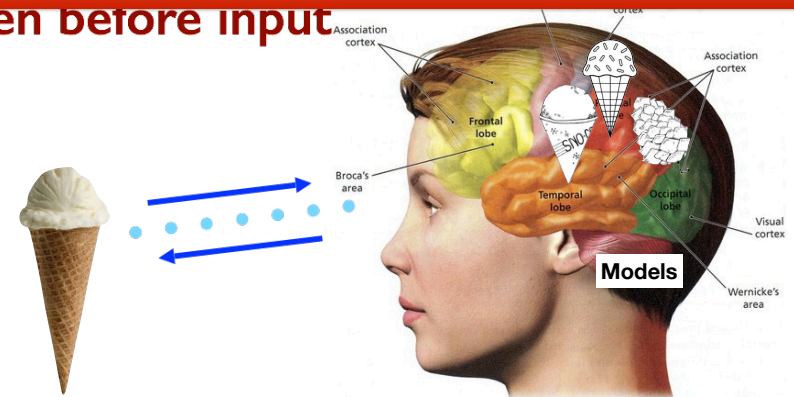
## Hierarchical Generative Models



The Mind-Expanding Ideas of Andy Clark,  
New Yorker Magazine, March 2018

## Processing

We **Predict** the world  
even before input





## Predictive Language Processing

a linguistic unit is activated before that unit is actually encountered

**In the summer it is hot  
and in the winter it is....**

Kaan, E. (2014). Predictive sentence processing in L2 and L1: What is different?. *Linguistic Approaches to Bilingualism*, 4(2), 257-282.

Verhagen, V., Mos, M., Backus, A., & Schilperoord, J. (2018). Predictive language processing revealing usage-based variation. *Language and Cognition*, 10(2), 329-373.

## Hierarchical Generative Models for Language?

You Americans, I can't  
believe you elected ...

**Situational Emotional**  
**Cause & effect**  
**Word correspondences**

# Grammar

**How neuroscience has changed my  
teaching**

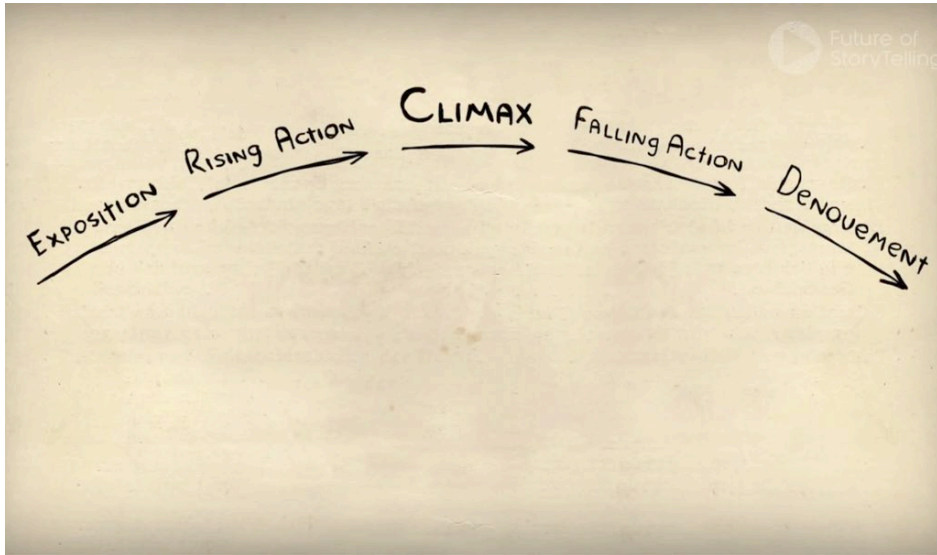
**Stories**

## Some Amazing Findings about Stories

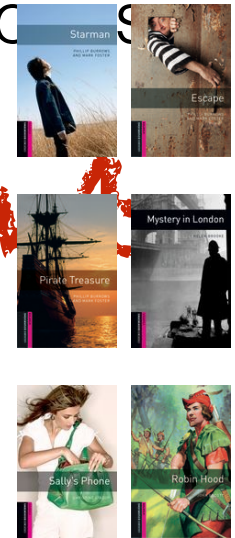
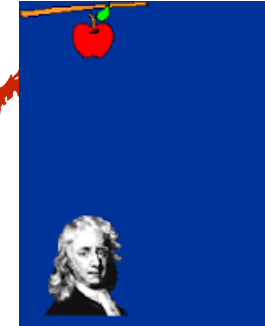
read faster, remembered longer

more retention than lectures or television

because of narrative structure



## Power of Stories



# Tell a story

Use of Predictive Language Processing

Funny	Scary
Exciting	Romantic

suku, pixabay.com

# Key Concepts in the Neuroscience of Language Learning

Curtis Kelly, EdD