

# How memory shapes judgements...

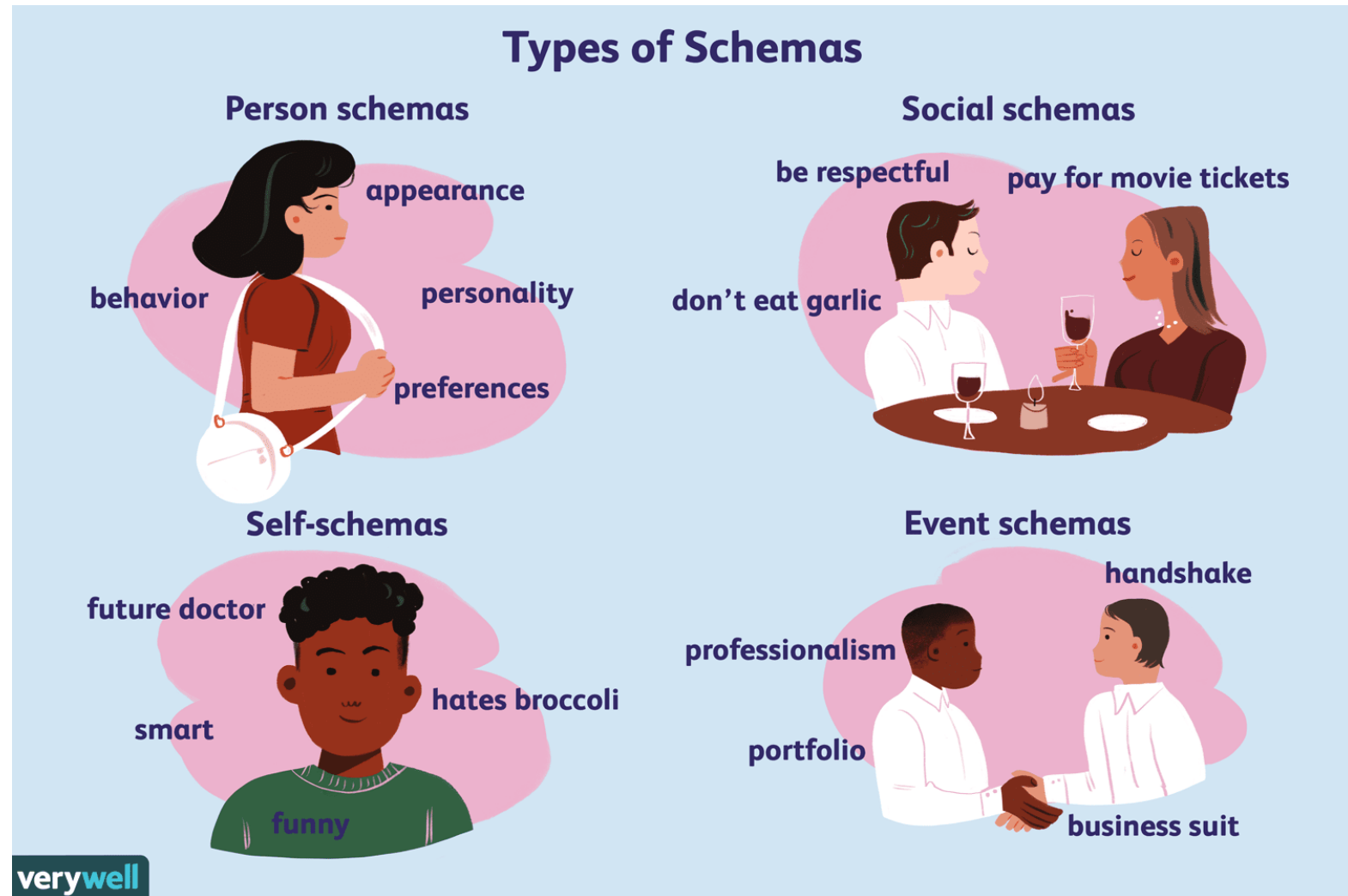
12<sup>th</sup> April 2023

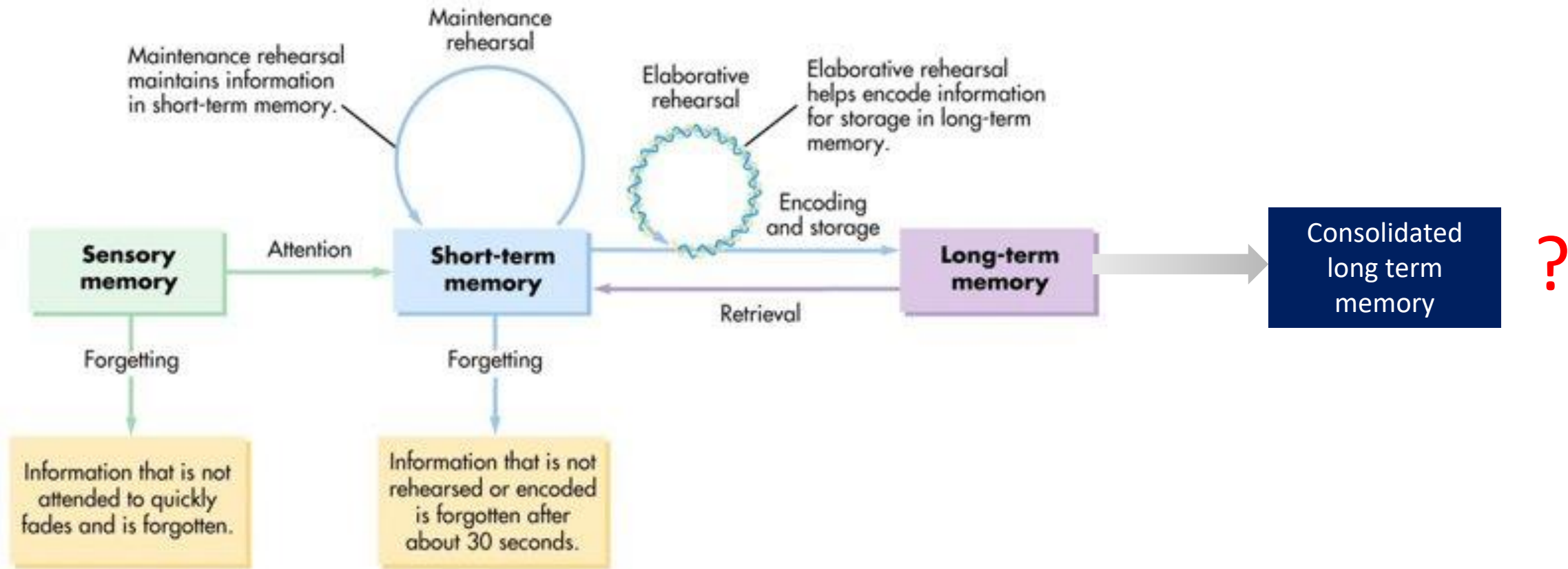
Bhaktee Dongaonkar

What do you typically do when you go to a restaurant?

# Schemas

A schema is a cognitive structure that serves as a framework for one's knowledge about people, places, objects, and events.





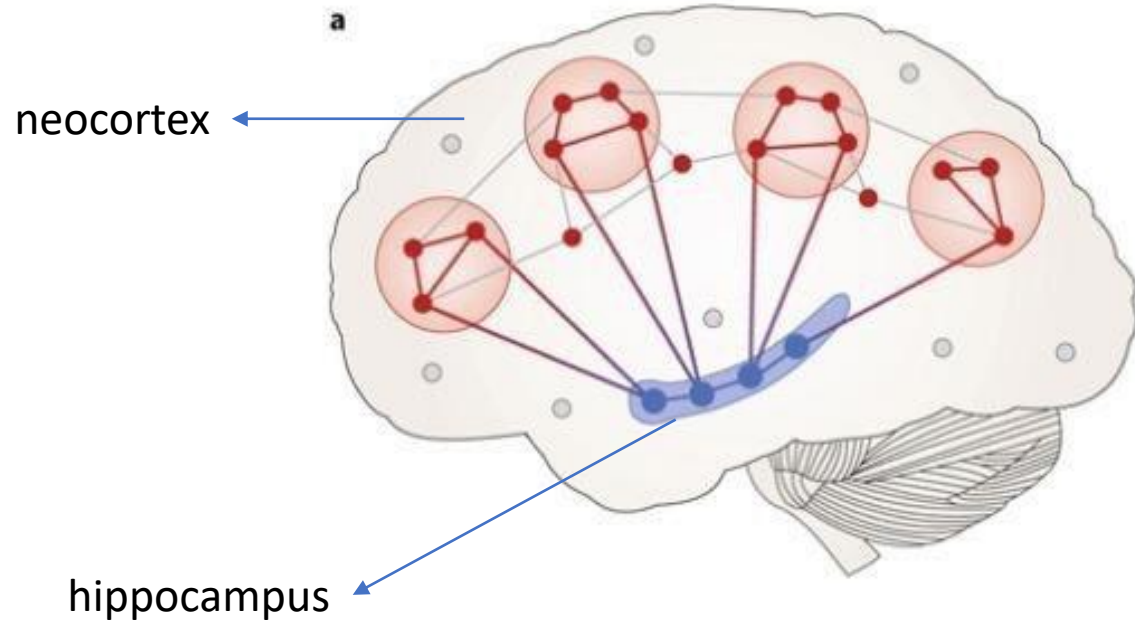
*verb*

1. make (something) physically stronger or more solid.

"the first phase of the project is to consolidate the outside walls"

2. combine (a number of things) into a single more effective or coherent whole.

"all manufacturing activities have been consolidated in new premises"



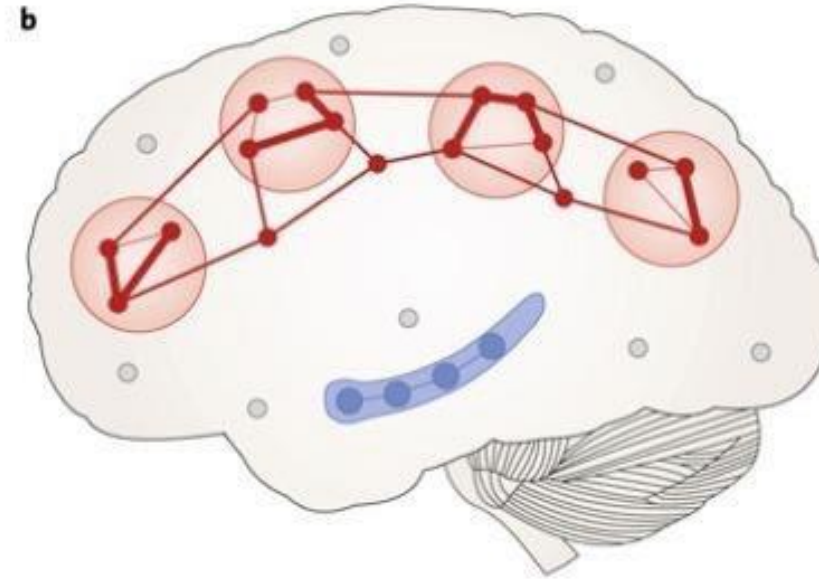
Cell ensembles contributing to...



Recently encoded neocortical part of a representation



Recently encoded hippocampal part of a representation

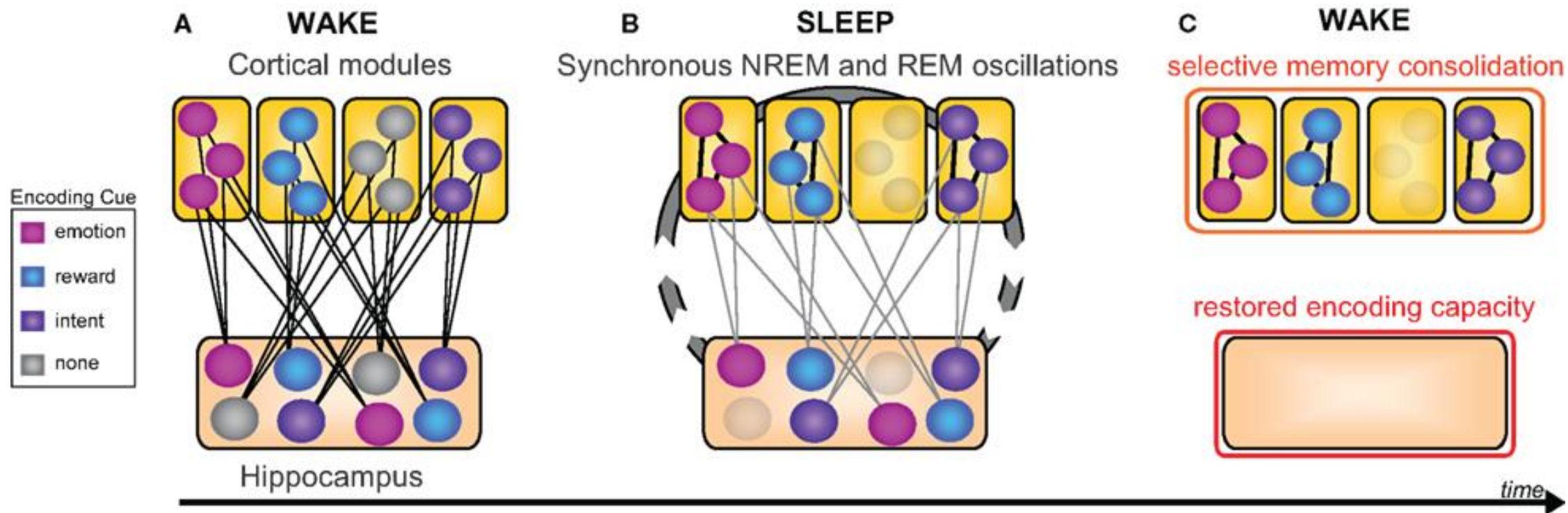


Associated pre-existing representation



Unrelated pre-existing representation

nature  
neuroscience

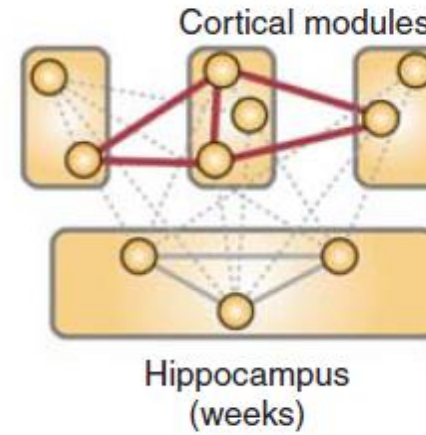
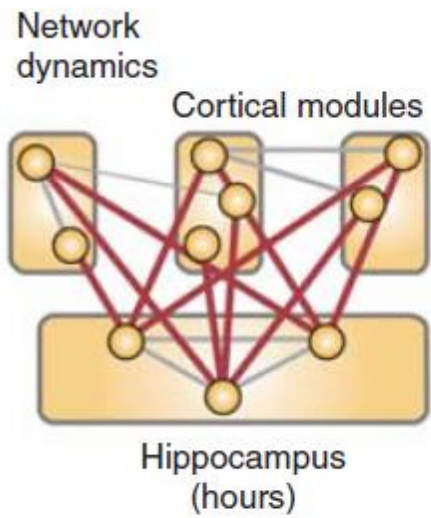
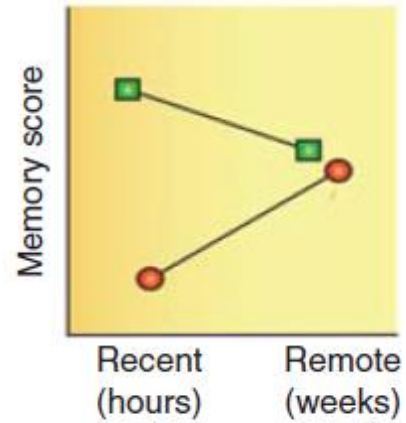




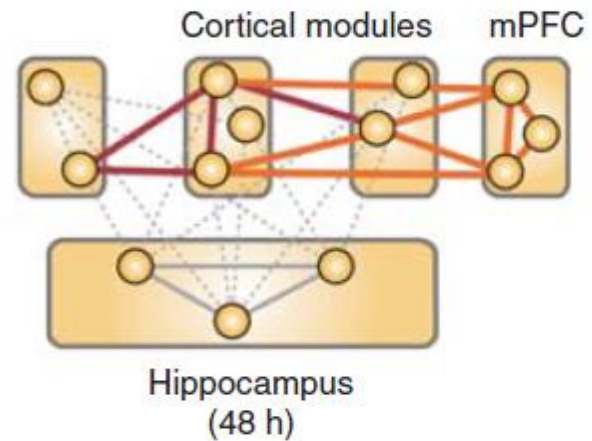
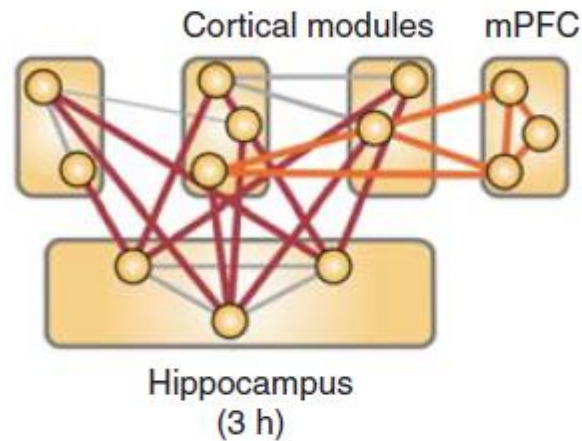
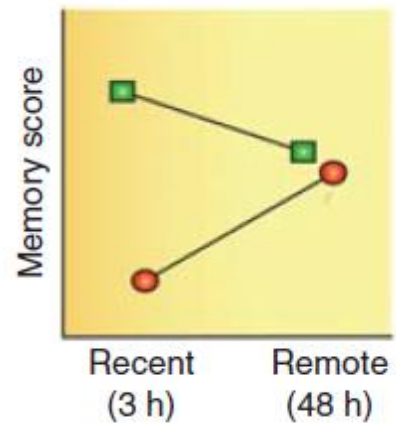
## A Standard systems consolidation

Behavior

■ Controls  
● HPC lesion

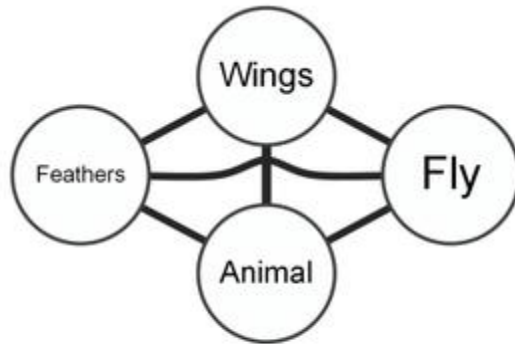


## B Systems consolidation with schema

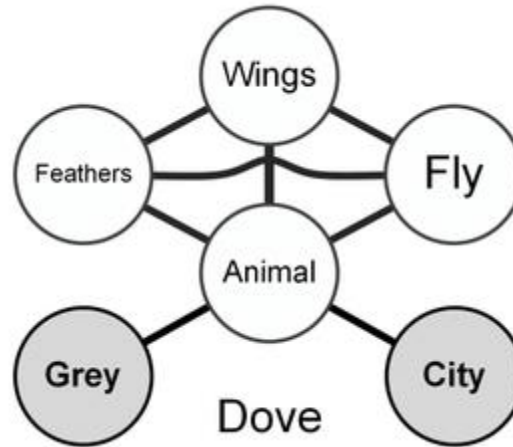


Sleep

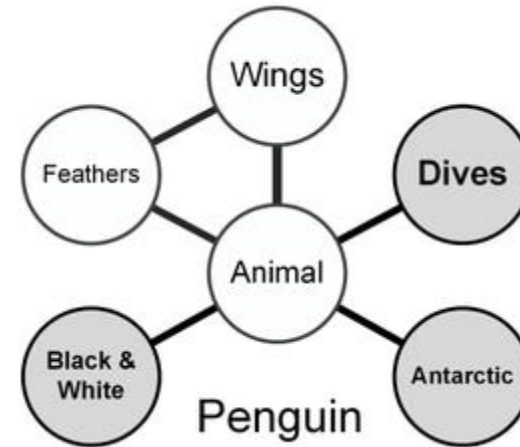
# Concept of a Bird



Prototypical Bird



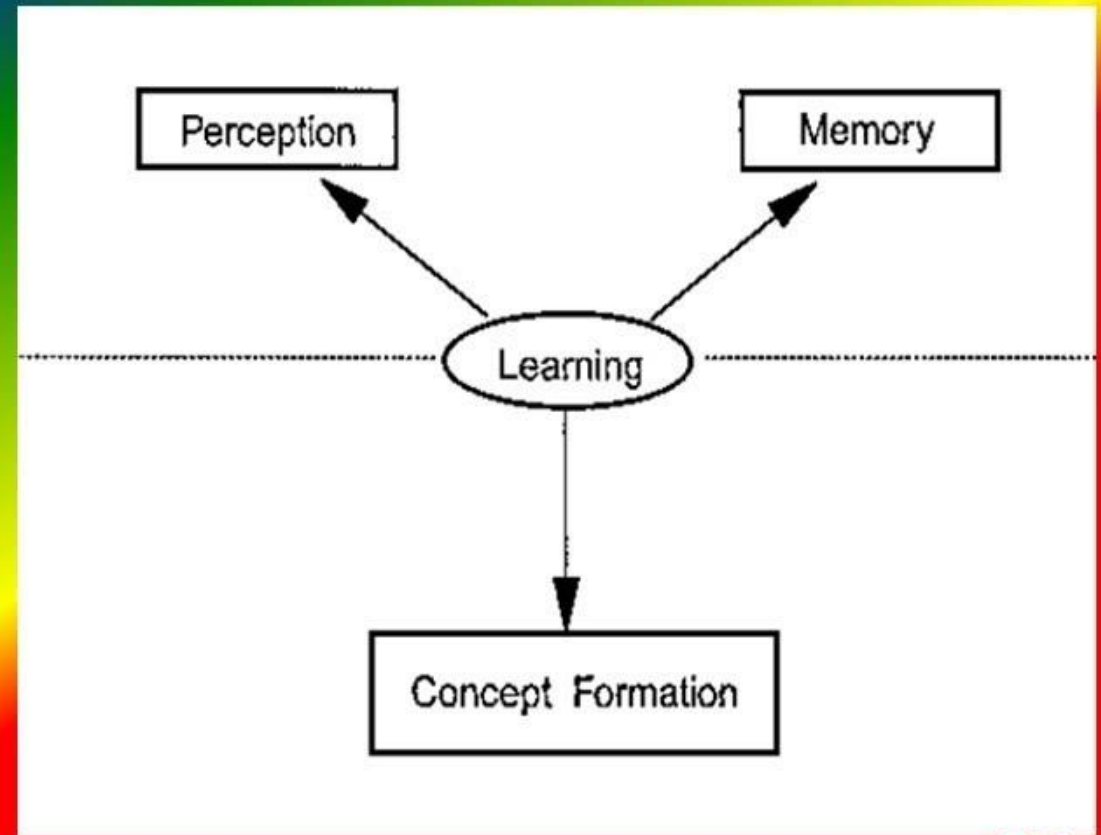
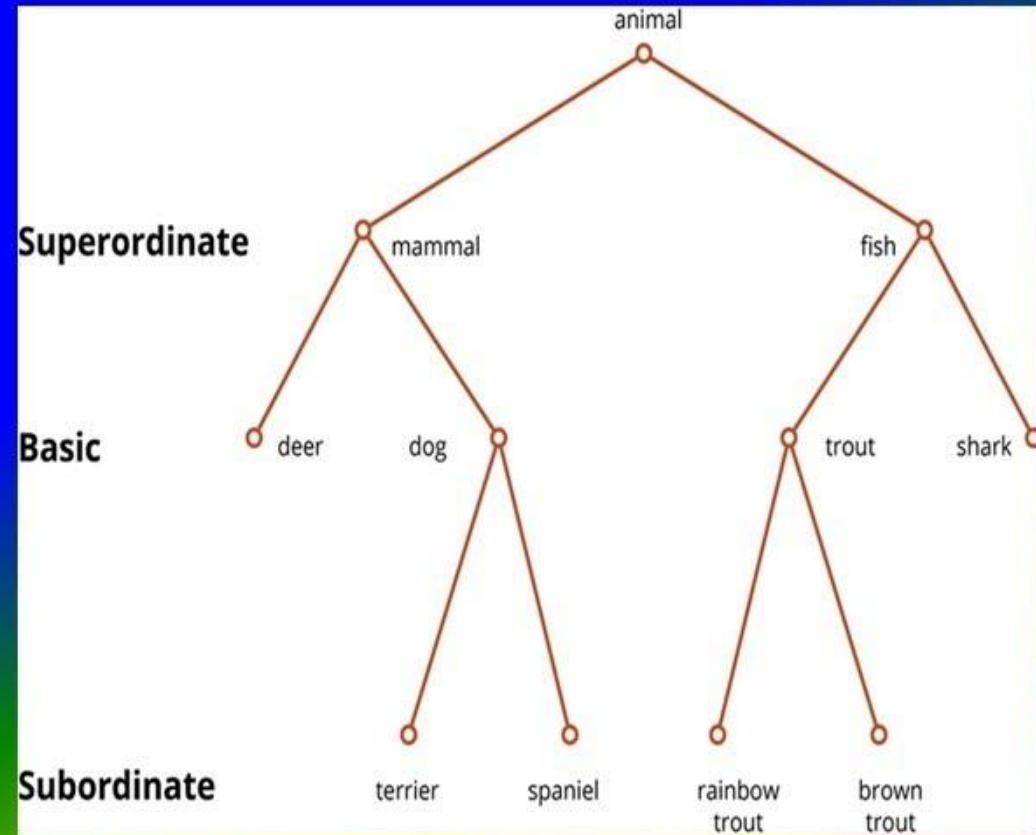
Dove



Penguin

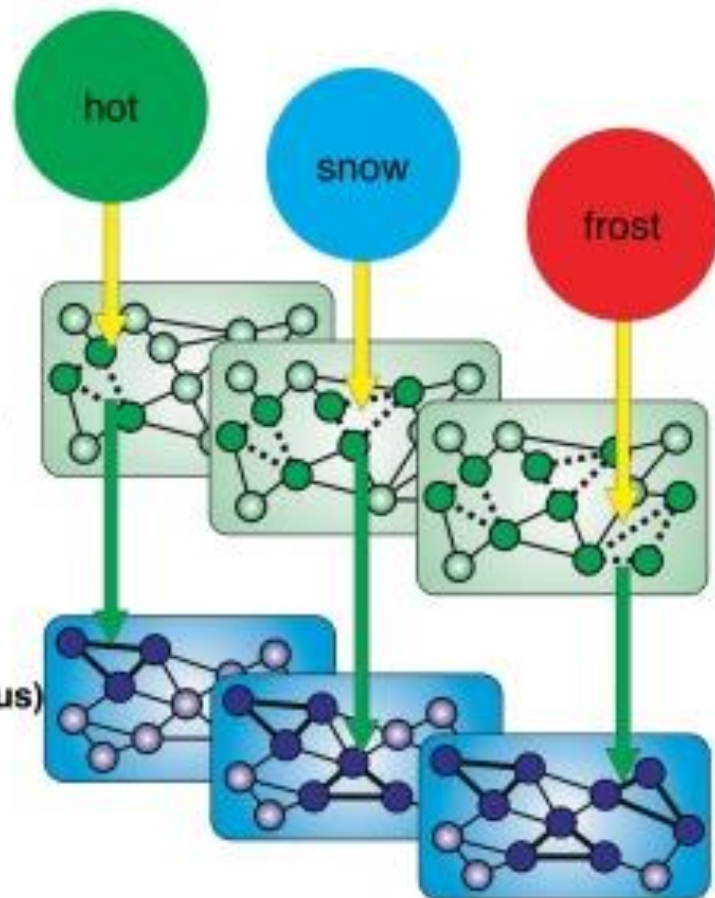


# CONCEPT FORMATION



## Wakefulness

Encoding of large amounts of items



## Sleep

Active systems consolidation



Synaptic homeostasis

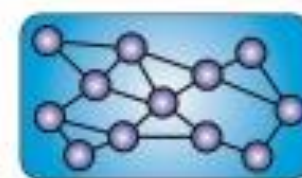
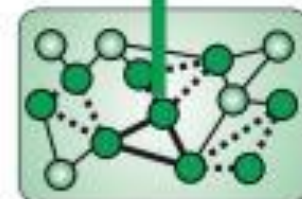
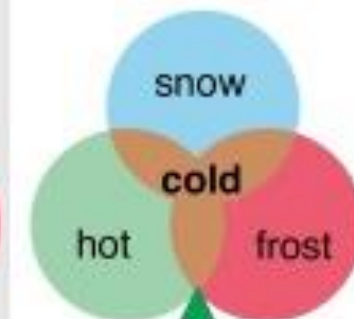


Global synaptic renormalisation



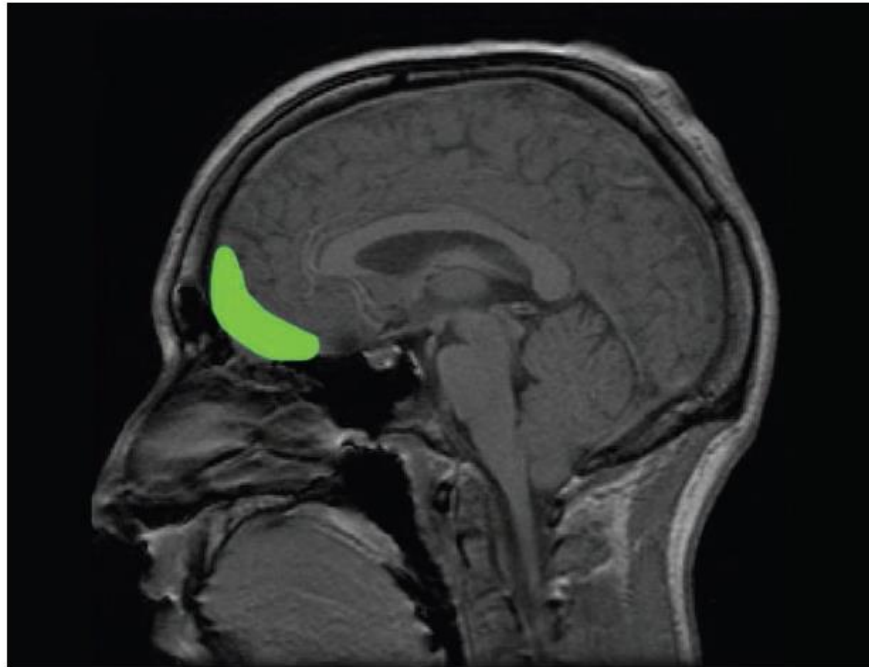
## Wakefulness

Increased gist retrieval & decreased item memory



As abstraction increases, the more anterior frontal regions are involved

FIGURE 12.1 ORBITOFRONTAL CORTEX



The area highlighted in green is the orbitofrontal cortex — the portion of the brain just behind the eyeballs. Many researchers argue that this brain region plays a crucial role in the processes through which we detect and interpret our emotions.

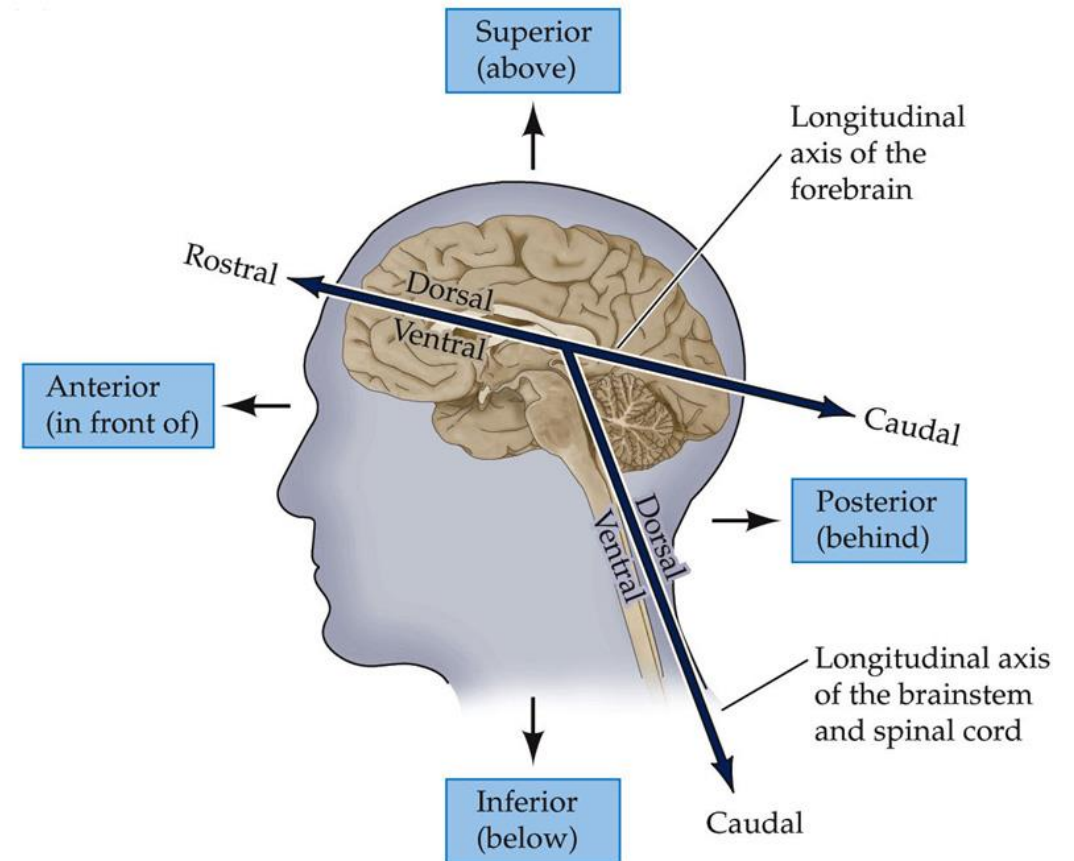


Figure 1.3. Conventions for specifying location in the human CNS. Note the flexure in the long axis of the nervous system near the junction of the midbrain and diencephalon. (Figure A1A from Neuroscience, 6th Ed.; after original from N.B. Cant)

What are memories used for?

# Visual Priming

2



RED

BLUE

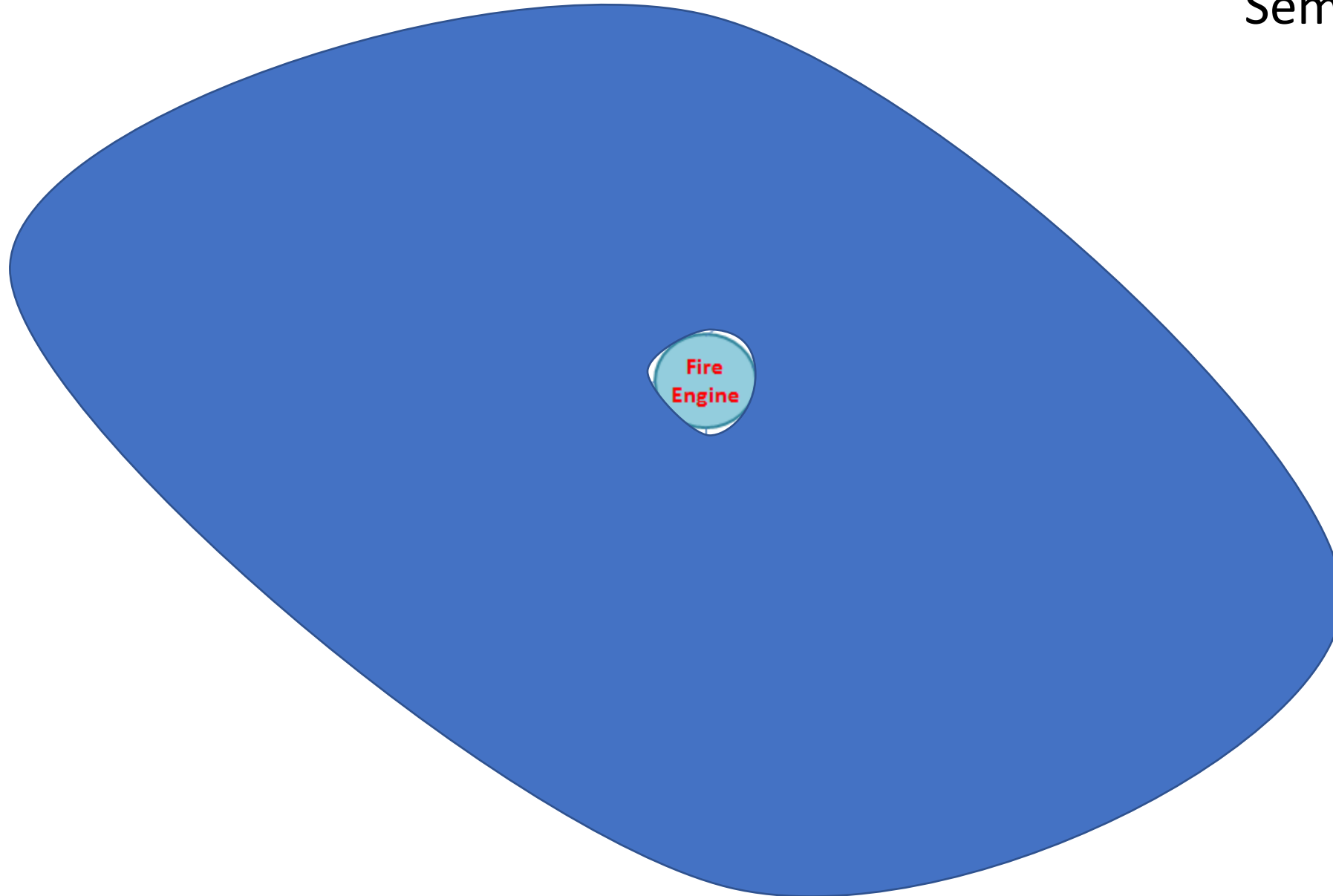
ORANGE

YELLOW

GR\_\_\_\_\_



# Semantic Priming



concepts  
 subconscious  
 associative-network  
**PRIMING**  
 stimuli  
 judgement  
 association  
 behaviour  
 perceptions  
 thoughts  
 senses  
 mental  
 memory

RESEARCH SUPPORT  
 Research in psychology is often  
 based on a number of studies which  
 are then combined to form a  
 general conclusion. This is known as  
 meta-analysis. The results of  
 many studies are combined to form  
 a single conclusion. This is known as  
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10/20

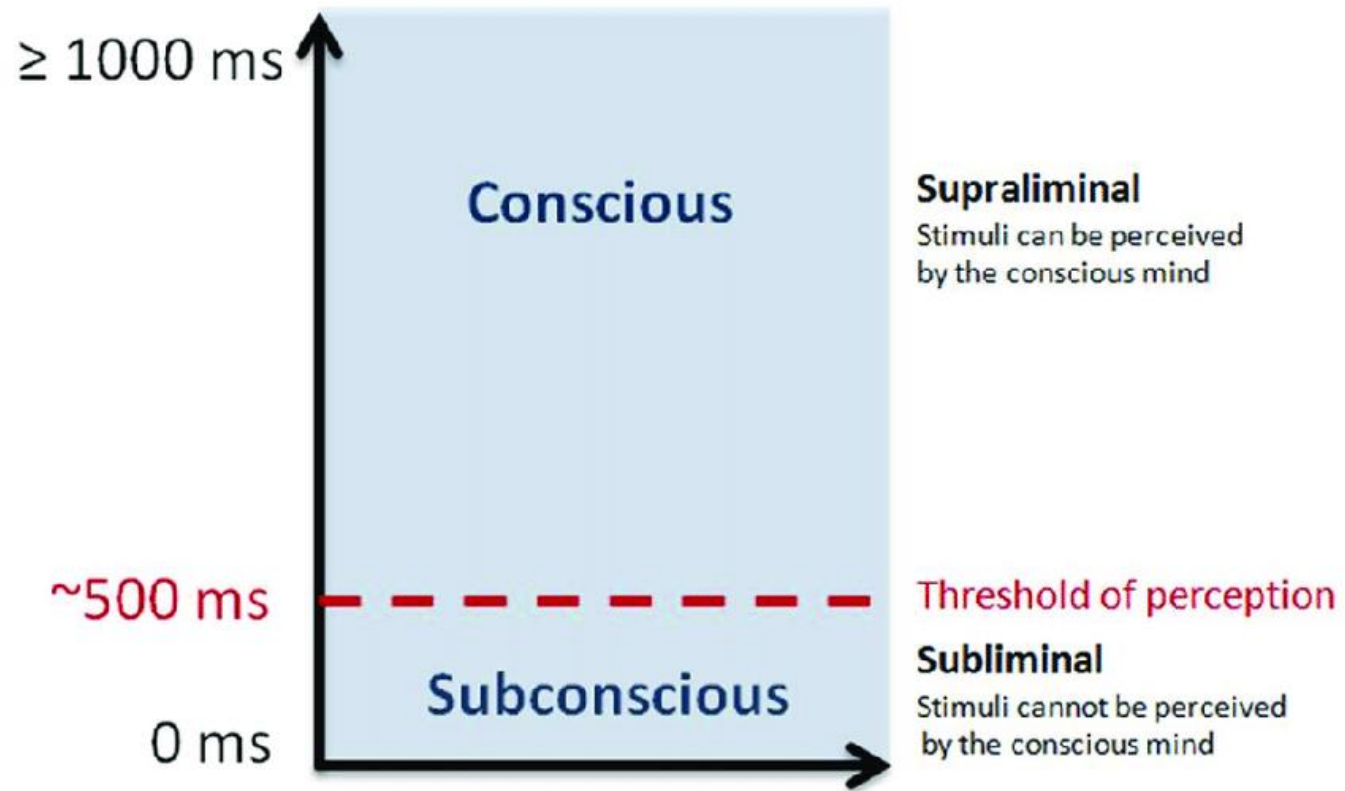
## ***cognitive priming***

refers to temporary increase in the  
 accessibility of thoughts and ideas.  
 for example, violent media activates  
 thoughts or ideas about violence,  
 which activate other aggressive  
 thoughts through their association  
 in memory pathways.



**You own a restaurant and a ordered too much French wine.** A good way to psychologically prime your clients into buying this type of wine is to play French music in the background.

Priming works by using associations made in our subconscious, and are almost always unnoticeable to the subject.





<http://www.kreative.blogspot.com/2013/02/graphic-designer-of-month-paul-rand.html>  
<http://www.vimeo.com/puoceri>

<http://tech.fortune.cnn.com/2011/06/27/asora-designing-woman/>  
<http://topics.nytimes.com/topics/reference/timestopics/people/f/fairfax/index.html>



**Is India a safer place to live in now compared to a decade ago?**

**Does the letter *k* occur more often at the beginning of a word or as the third letter?**

**Covid has killed a devastating number of people !**

**Does the letter *k* occur more often at the beginning of a word or as the third letter?**

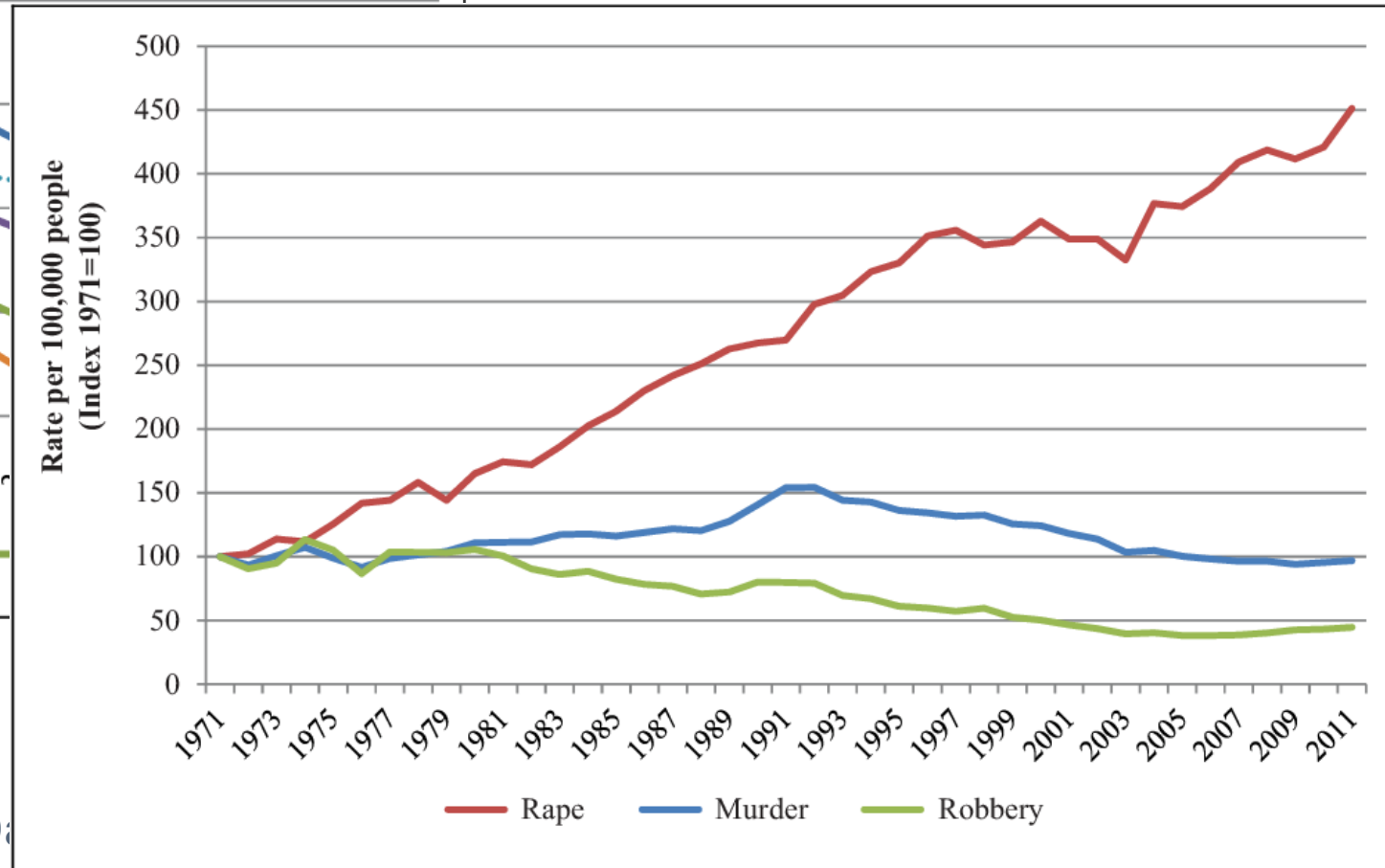
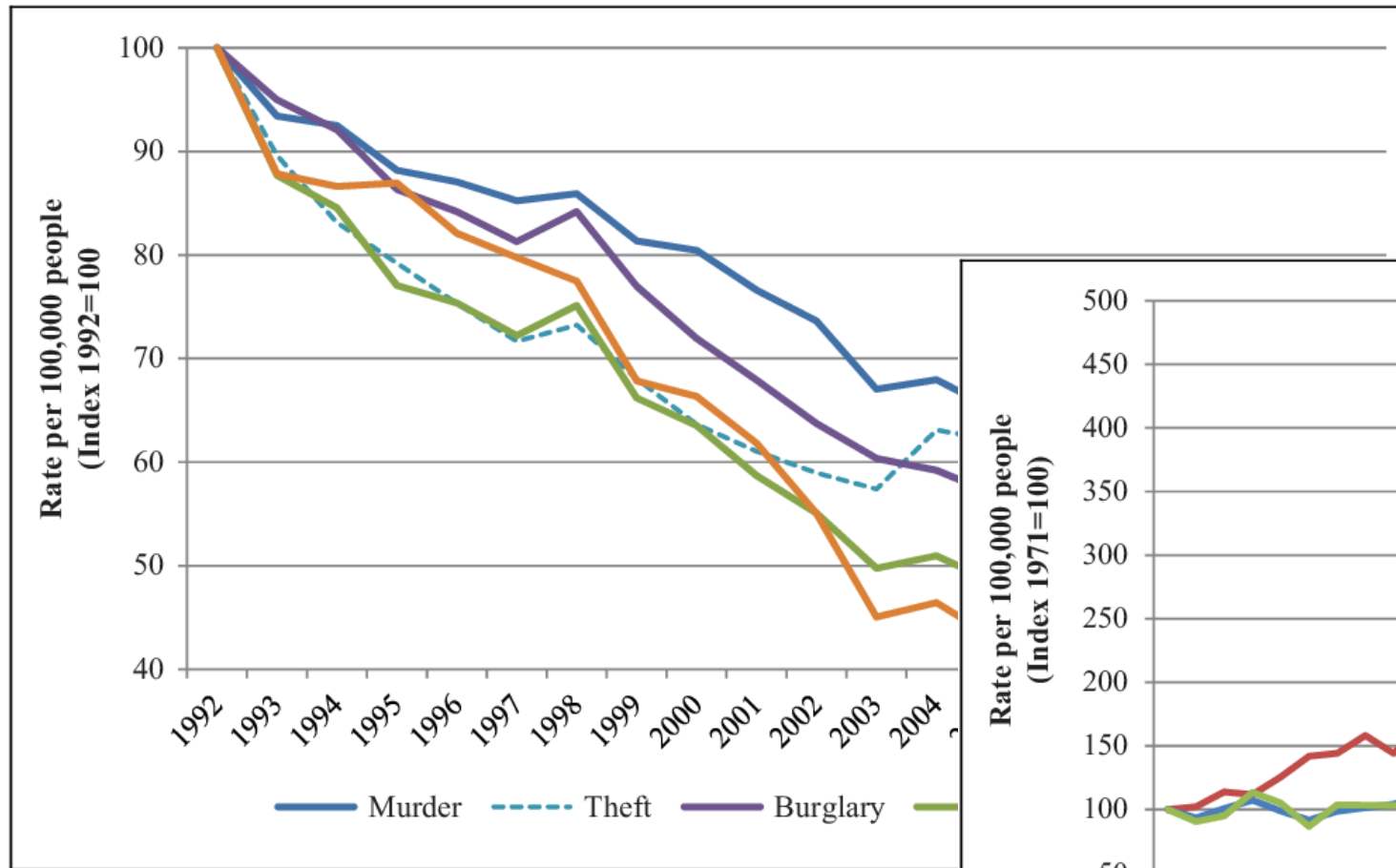
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<i>K</i> in first position	105 (69.1%)
<i>K</i> in third position	47 (30.9%)

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# Is India a safer place to live in now compared to a decade ago?



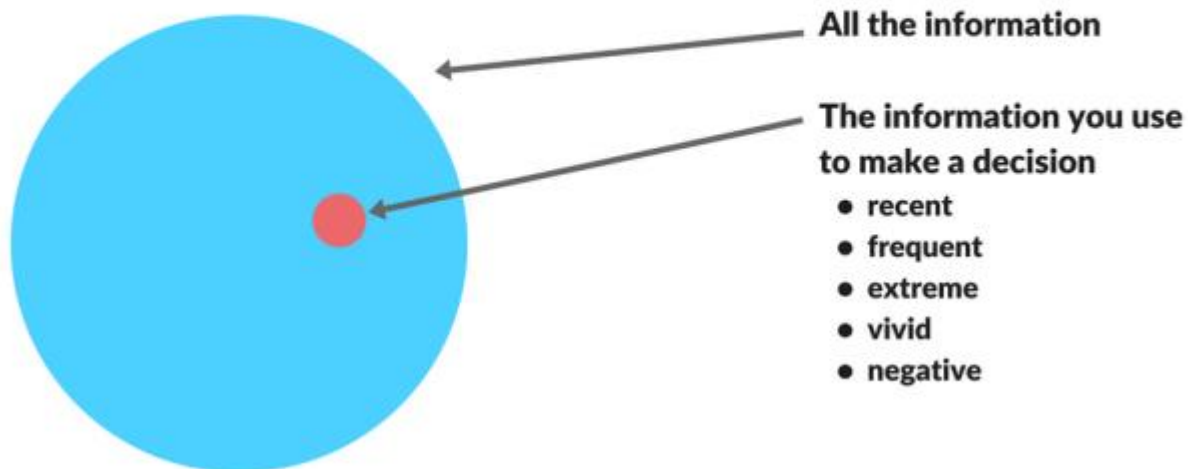
Published in 2015

[Crime Rates in India](#) S. Ansari, A. Verma, K. D.

1. Frequent is easier to recall than infrequent
2. Extreme is easier to recall than ordinary
3. Negative is easier to recall than positive
4. Recent is easier to recall than the distant past
5. Vivid is easier to recall than non-vivid

what comes to mind the easiest—what's most available—is true.

## The availability heuristic





**Donald J. Trump** ✓

@realDonaldTrump

Follow

In the East, it could be the COLDEST New Year's Eve on record. Perhaps we could use a little bit of that good old Global Warming that our Country, but not other countries, was going to pay TRILLIONS OF DOLLARS to protect against. Bundle up!

4:01 PM - 28 Dec 2017



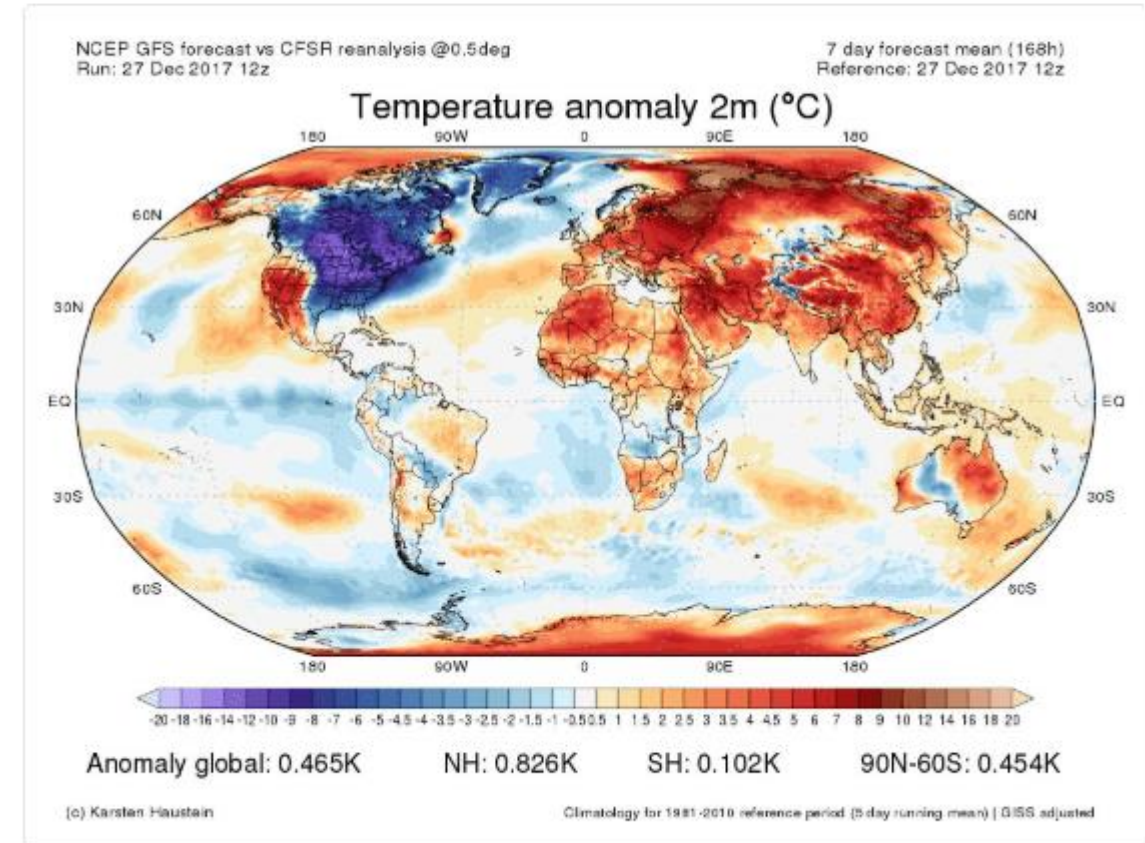
**Zack Labe** ✓

@ZLabe

Follow

The coldest weather (relative to average) will be positioned right over North America through at least the next 7-days...

[Maps: [karstenhaustein.com/climate](http://karstenhaustein.com/climate)]

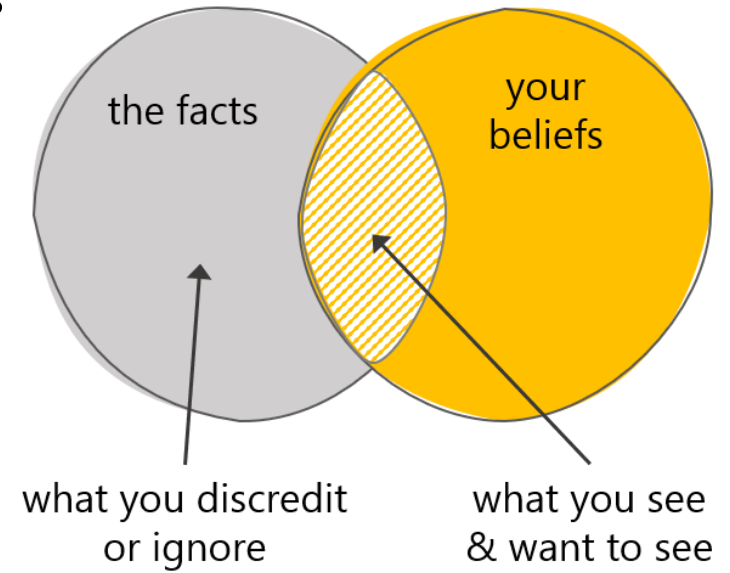


9:15 AM - 27 Dec 2017

A particular university ranks high because it takes high ranking students

Voters seek info that supports their opinion/beliefs

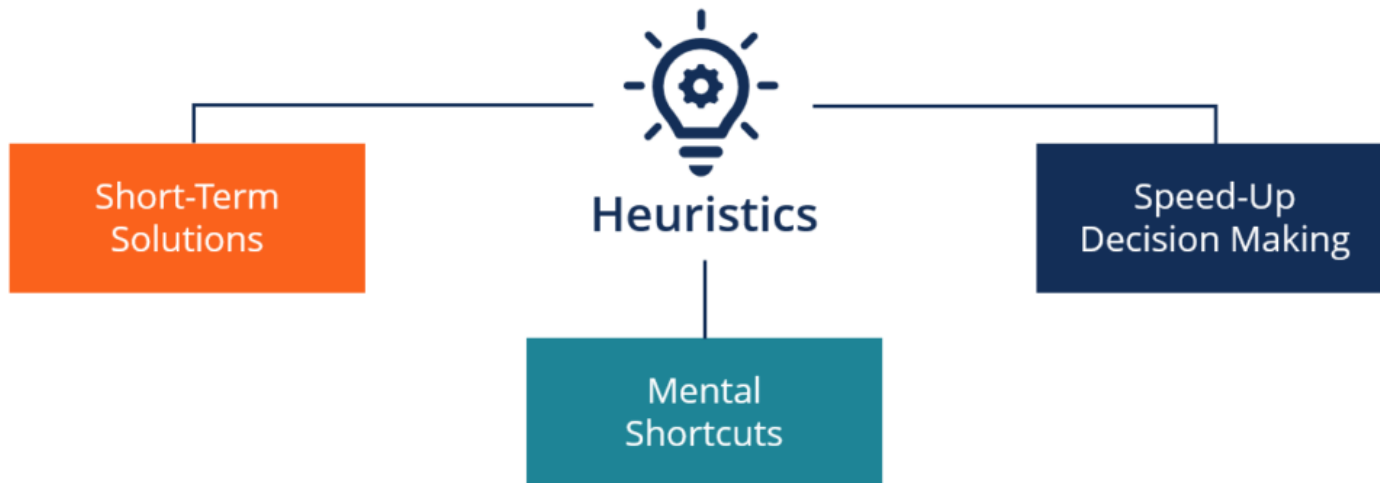
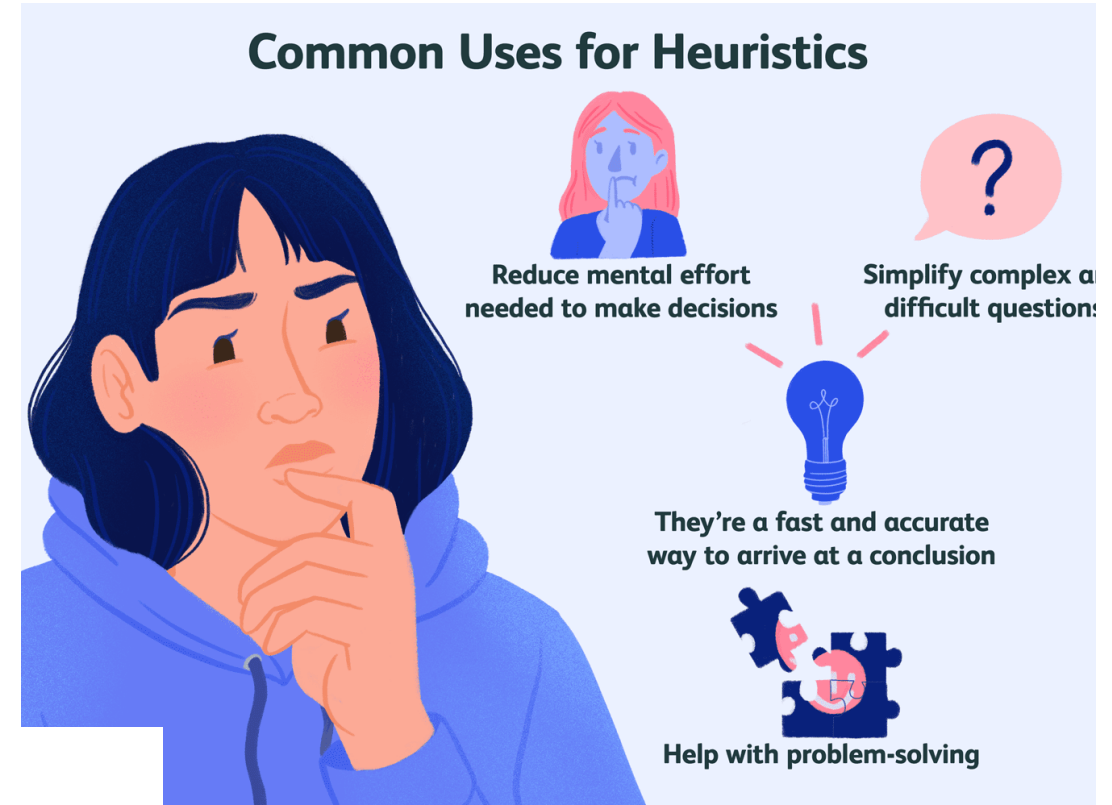
will ignore information from news broadcasters  
that contradicts their existing views.

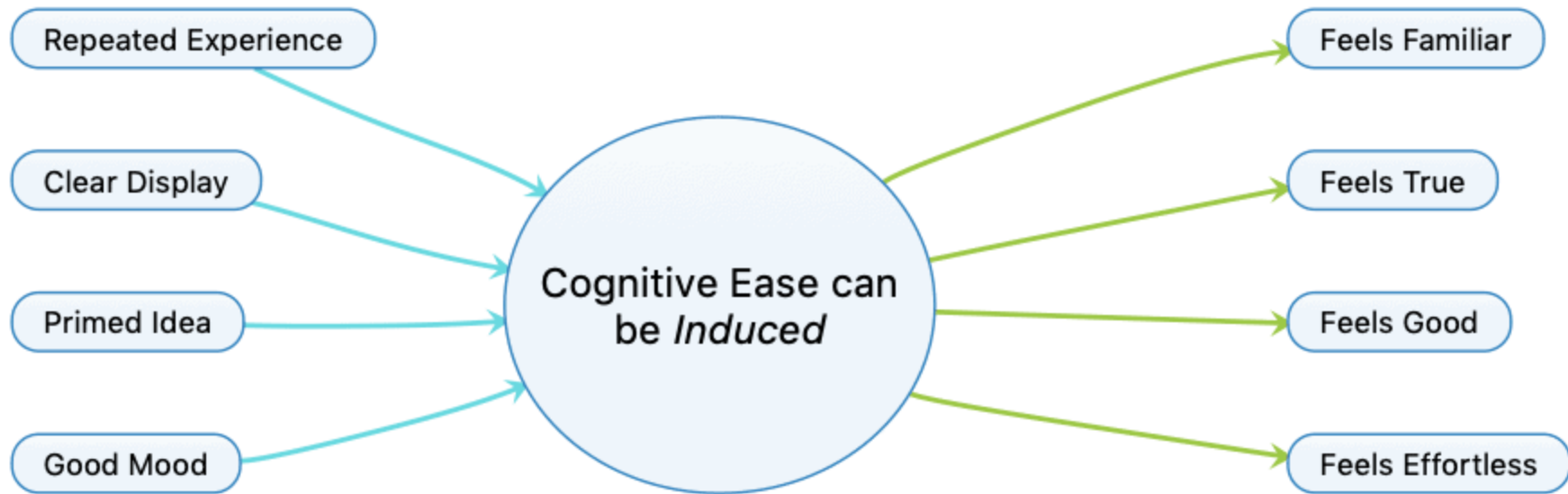


Confirmation bias

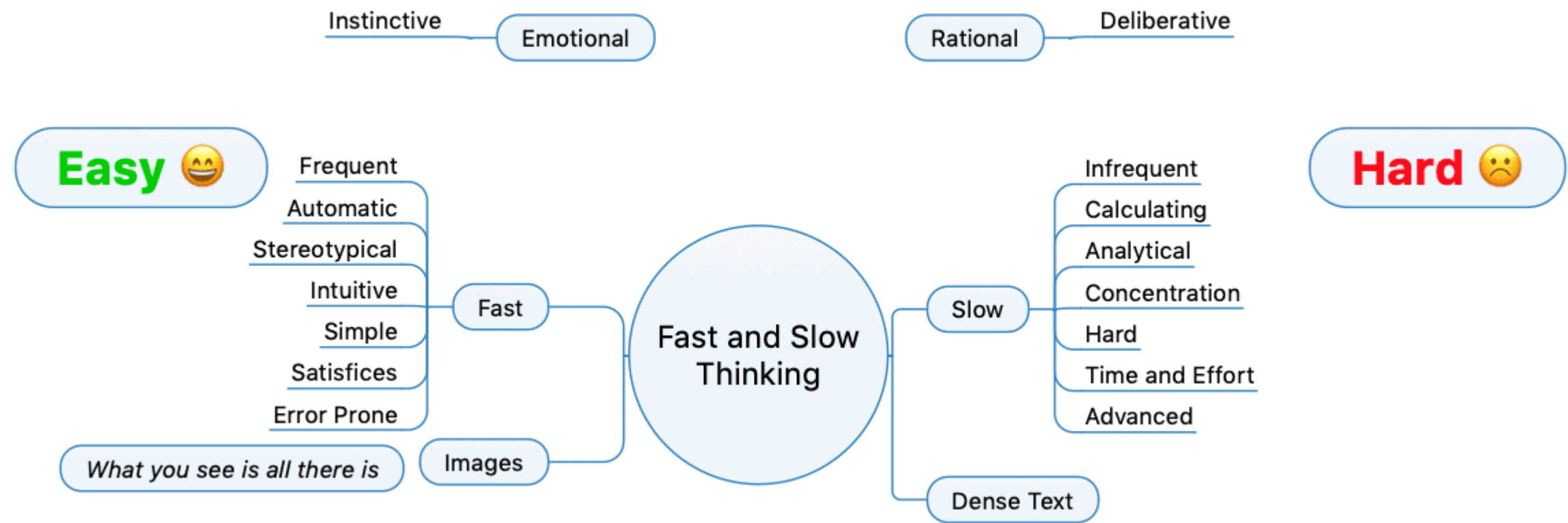
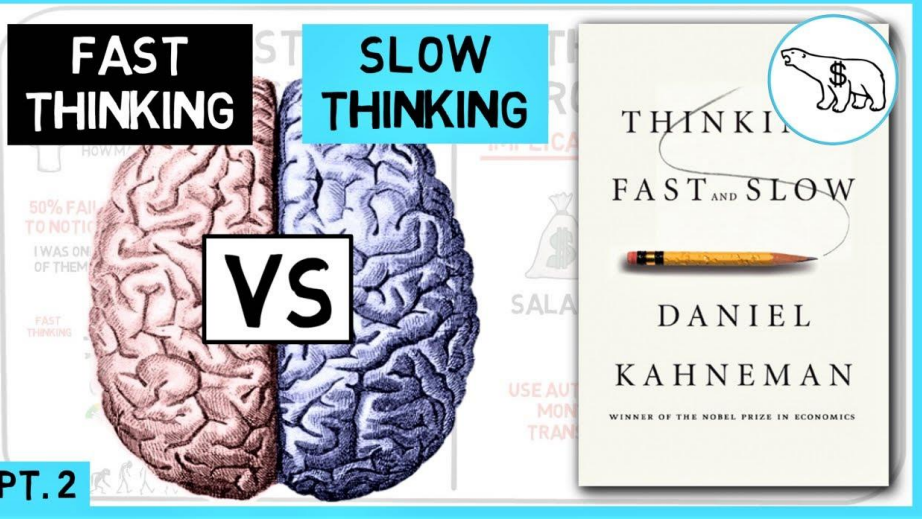


# Heuristics?









**Long-term  
memory**

**Explicit  
memory**

**Implicit  
memory**

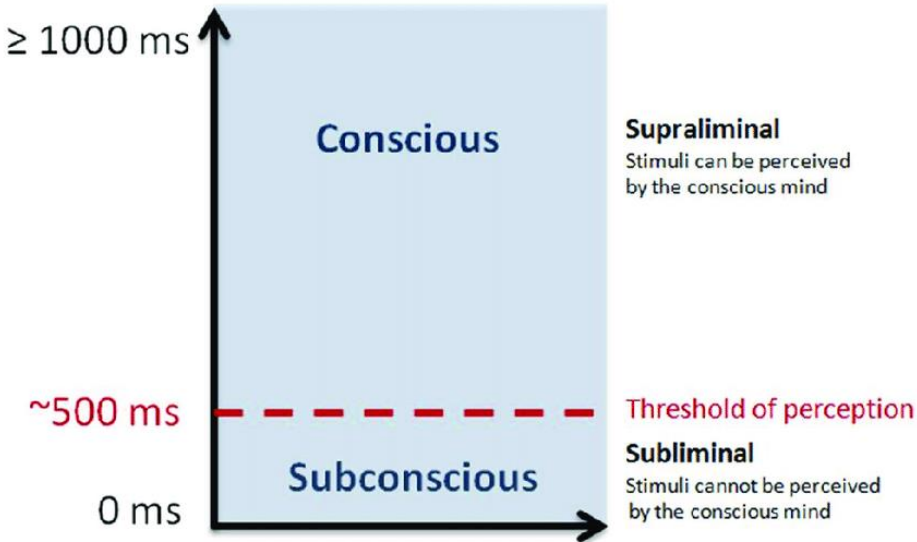
**Episodic**  
(Events & experiences)

**Semantic**  
(Concepts & facts)

**Procedural**  
(How to do things)

**Priming**  
(Stimulus exposure affects responses to a later stimulus)

**Emotional conditioning**  
(Classically conditioned emotional responses)

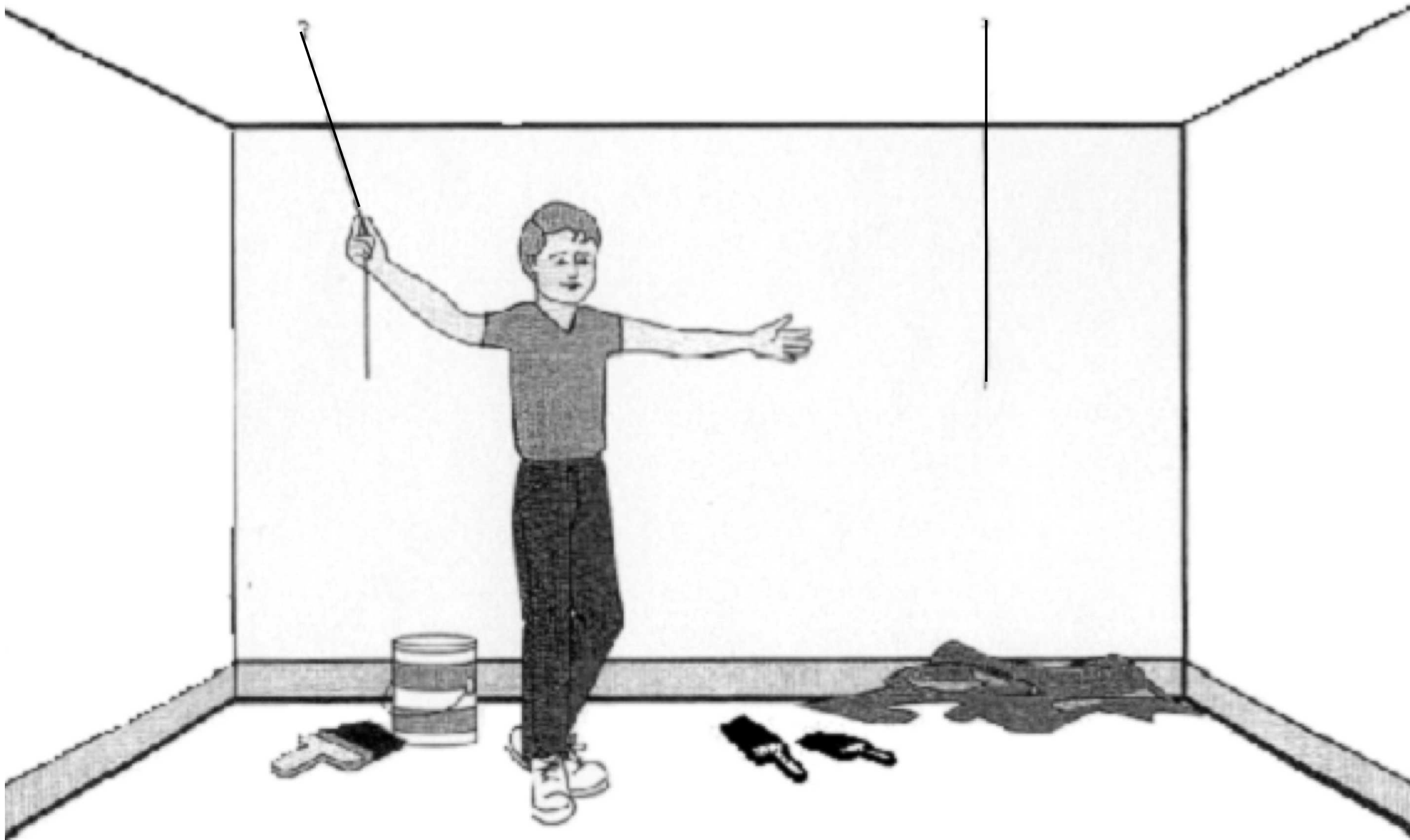


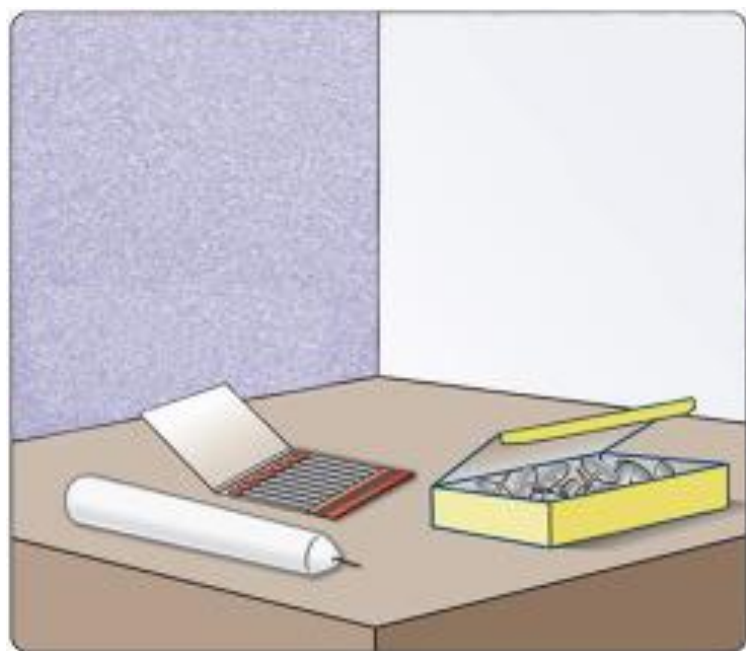
Suppose you are a doctor faced with a patient who has a malignant tumor in his stomach. To operate on the patient is impossible, but unless the tumor is destroyed the patient will die. A kind of ray, at a sufficiently high intensity, can destroy the tumor. Unfortunately, at this intensity the healthy tissue that the rays pass through on the way to the tumor will also be destroyed. At lower intensities the rays are harmless to healthy tissue but will not affect the tumor. How can the rays be used to destroy the tumor without injuring the healthy tissue?

## Analogy

A dictator ruled a country from a strong fortress, and a rebel general, hoping to liberate the country, vowed to capture the fortress. The general knew that an attack by his entire army would capture the fortress, but he also knew that the dictator had planted mines on each of the many roads leading to the fortress. The mines were set so that small groups of soldiers could pass over them safely, since the dictator needed to move his own troops to and from the fortress. However, any large force would detonate the mines, blowing them up and also destroying the neighboring villages.

The general knew, therefore, that he couldn't just march his army up one of the roads to the fortress. Instead, he devised a simple plan. He divided his army into small groups and dispatched each group to the head of a different road. When all were ready, he gave the signal and each group marched up a different road to the fortress, with all the groups arriving at the fortress at the same time. In this way, the general captured the fortress and overthrew the dictator.



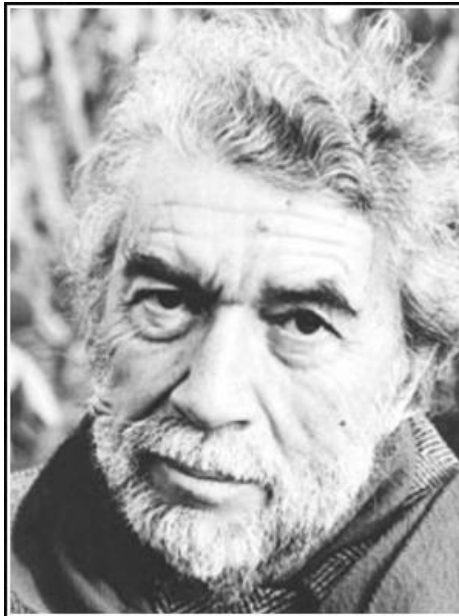


Functional fixedness



# Mental time travel

- Past – present – future

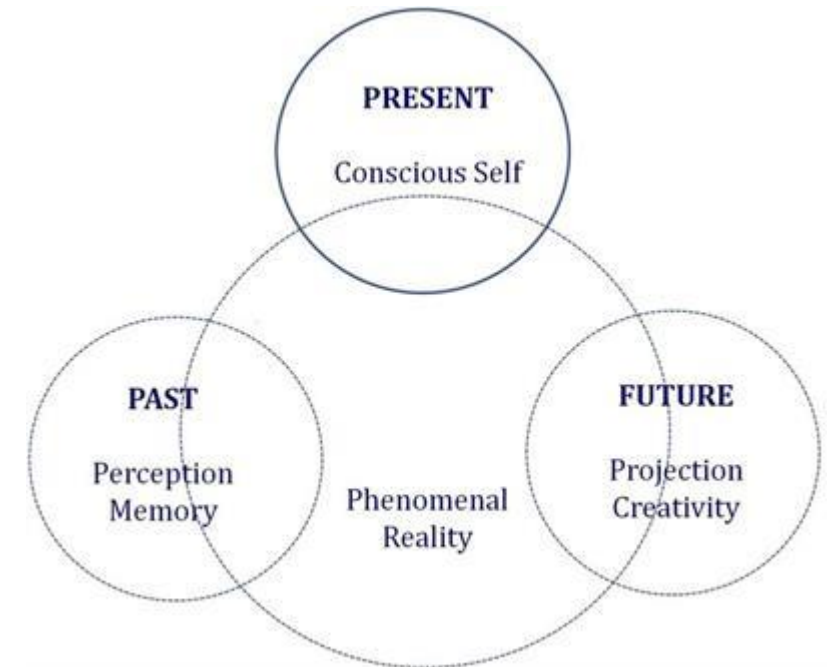
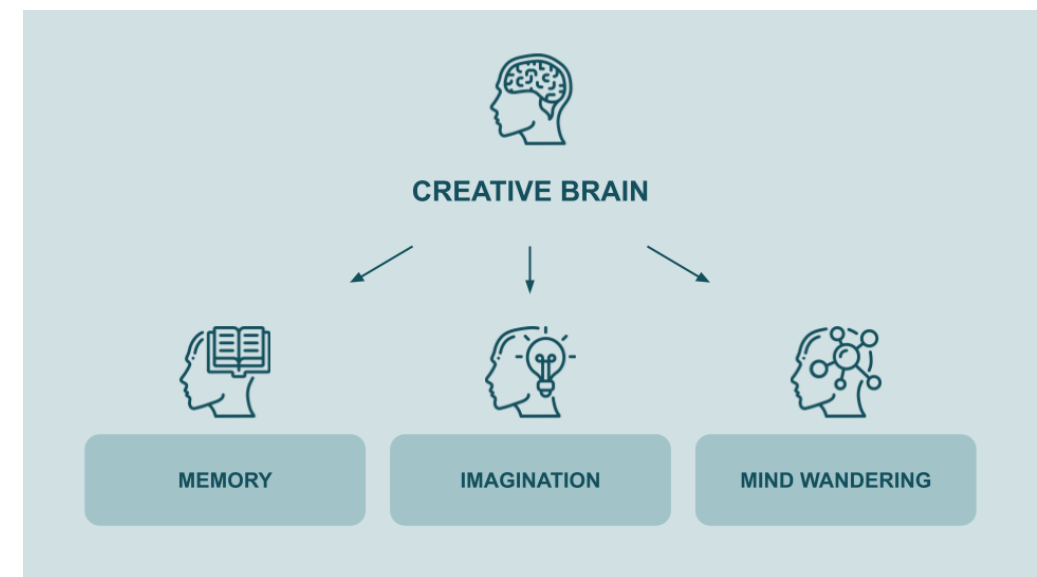


Memory belongs to the imagination.  
Human memory is not like a  
computer which records things; it is  
part of the imaginative process, on  
the same terms as invention.

— *Alain Robbe-Grillet* —

AZ QUOTES

## Imagination



Fig, Dresp-Langley, 2022